



SKOMER MARINE NATURE RESERVE REPORT 2010

CCW Regional Report CCW/WW/10/9



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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 FOREWARD

The first big event of 2010 was our 20th Anniversary celebration and a big thank you to all who made the effort to attend, despite the icy wind blowing straight in from St Brides Bay. An especially big thank you to the ladies from the WI who kept us happy with cakes and hot drinks throughout the day and to TV star Iolo Williams, who kept the ladies from the WI happy!

Later in the summer we were able to assemble a number of past (and present) members of staff aboard Skalmey for an informal birthday party. The prize for the furthest travelled ex-MNR person had to go to Liz Vang (nee Macedo), who happened to be visiting the UK from her home in Australia

The next big thing for us was the sea slug survey. With the help of Bernard Picton from Ulster Museum (UK's foremost sea slug expert) we identified 55 species. This means that of all UK species ever found, two-thirds have at some time been recorded in the MNR.



Later in the summer we revisited the North Haven eelgrass bed with our volunteer dive teams for its 4-yearly check-up. Although possibly a little thinner in places the bed has continued to grow in size. This project would not have been possible without the help of our loyal volunteers – so many thanks to them and to the individual volunteers who helped us achieve our whole work programme this year.



This year was decidedly the year of the placement with over a dozen students coming to us from all over the UK for project ideas and work experience. Projects included video sledge work, plankton, Ross corals, eelgrass, sea urchins, intertidal survey and site management. Again the weather was not always kind to the students, but we think it should be seen as a necessary part of the learning experience!

Skomer MNR also took to the “interweb” in a variety of different ways this year with blogs on sea slugs and our 20th birthday party, participation in Pembrokeshire Coast National Park’s website video, my talk from the Pembrokeshire marine Code Sightings event and even our weather and oceanographic data getting onto websites.

We continued to raise the profile of the work done at the MNR through the Pembrokeshire Coast National Park “Coast to Coast” magazine, CCW’s internal marine publication “H₂O”, by contributing photographs to the Wales Environment Link for publications and by presenting the MNR’s work on scallops to the European Marine Biology Symposium in Edinburgh. Thanks to the incredible pictures from our competition entrants Skomer MNR even made the centre pages of the Sun newspaper.

On a more local level we maintained our efforts to preach marine conservation to the younger generation through our “Marine Day” event at Martins Haven. If nothing else a number of spectacular hats were achieved!



Skomer MNR staff continue to participate in projects outside the MNR. We assisted with surveys on the Milford Haven maerl bed and with data collection at the Pickleridge Lagoon – even in the depths of the cold-snap.

Collaboration with workers from the Institute of Oceanology at the Polish Academy of Sciences has got underway as part of a Europe-wide research project. Settlement plates were set up early in the season and monthly photographs and samples taken.

2 STAFF

2.1 STAFFING

The MNR staff complement has remained the same during 2010 with two full-time (Phil Newman – PN, and Mark Burton – MB) and one part-time staff (Kate Lock- KL). At the end of 2010 and after 5 field seasons with the MNR we said goodbye to Rob Gibbs. Rob left at the end of the summer to take up teacher training, in which we wish him all the best for the future.

Local CCW marine colleagues Mike Camplin and Anne Bunker also supported MNR staff when their time allowed.



As in previous years our work has been greatly supported by teams of volunteer divers and this year their efforts ensured the success of the eelgrass survey in North Haven (see Section 7.3).

Thanks are due to other volunteers who helped to supplement the MNR team, contributing to fieldwork (above and below water) and to weekend patrols:

- Lisa Whitfeld, Holly Latham, John Archer Thomson, Jen Jones and Ross 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, Eleanor Cutforth, Carolyn Waddell, Kate West, Hannah Curwin, Flora Kent and Manon Chamberlain, who helped with non-diving work including intertidal monitoring.
- The teams of volunteer divers involved in the eelgrass 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*

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

Jane Hodges, PCNP

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 both MNR staff and volunteer divers. Training included simulated rescue operations and emergency procedures.

A specialist manual handling course was held at the MNR, with a particular focus on, and potential improvements to, the working practices of the MNR team, especially with regard to diving and boat work. The trainer made a major contribution to our lumbar health by suggesting the “diving thrones”, which were then constructed by MNR staff.



Bernard Picton, author of the definitive guide to British nudibranchs, came to the MNR in June 2010 to run an identification refresher for MNR staff. Many of the nudibranch species recorded during this year’s survey were found during the course of this event (see Section 7.3).

In January 2011 MB attended a statistical workshop in Bangor, looking at a variety of MNR and other CCW datasets and PN renewed his First Aid training in Feb 2011.

MNR staff also attended a one-day update on marine invasive and non-native species held at Dale Fort Field Studies Centre in February 2011.



Crepidula fornicata the slipper limpet – coming soon to a golf course near you!

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.

No accidents were recorded in 2011.

3 ESTATE

3.1 BUILDINGS

Project: ME12/01

The barn rented from NT has undergone repairs with timber reinforcements to the corroding concrete beams of the back wall and repairs to the roof lights and door runners. These improvements have helped protect the MNR RIB and a variety of non-delicate consumables from the elements.



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 refurbished MNR exhibition at Martin's Haven continues to be popular and MNR staff continue to update the interactive display with new photographs from recent surveys (see Section 8.2). In 2010 the outer shutter to the exhibition room had to be modified to allow a pair of swallows access to the nest they had succeeded in building inside the room, despite attempts to discourage them. The swallow "flap" allows access to the birds without compromising the security of the building.

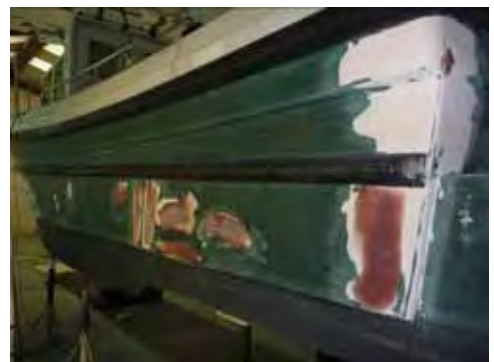
3.2 BOATS

Project: MM00/01

3.2.1 Boats

Skalmey spent 69 days at sea in 2010 and logged 241 engine hours. In March 2011 after nearly 19 years service *Skalmey* is being treated to some cosmetic care and attention to her hull. Minor damage to the gel coat will be repaired and the gel coat itself renewed.

In addition to normal diving duties *Skalmey* was used to support surveys of the maerl bed in Milford Haven and for helping students from Bangor University's School of Ocean Sciences carry out video sledge surveys. (see Section 6.6).



The MNR RIB *Morlo* spent 48 days at sea in 2010 and logged 157 engine hours. *Morlo* is used mainly for patrol work, seal monitoring and for accessing intertidal monitoring sites around the MNR.



3.2.2 Seatime

Staff and vessel seatime are shown in Table 3.1.

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.

Table 3.1 SUMMARY OF STAFF BOAT AND SEATIME

	1994	1995	1996	1997*	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Days at sea																	
Skalmey	18	68	90	19	9	23	42	48	73	77	52	48	58	72	58	61	69
SkalmeyII/Morlo	124	76	52	99	71	39	38	31	37	32	40	43	40	38	36	38	48
Total	140	144	142	118	80	62	80	79	110	109	92	91	98	110	94	99	117
MNR Staff seatime (hrs)																	
Skalmey	213.7	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
SkalmeyII/Morlo	1038.9	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
Total	1252.7	1259.6	1271.4	914.5	584.25	414	746.65	847.5	1160.3	1056.3	1101.25	1023.25	952	1272.35	962.6	1025	1013.4
MNR Staff days at sea																	
Skalmey	43	156	223	51	14	42	96	129	225	205	154	158	165	202	170	189	183
SkalmeyII/Morlo	316	168	104	214	149	62	60	58	80	70	104	99	86	84	73	73	93
Total	359	324	327	265	163	104	156	187	305	275	254	257	251	286	243	262	276
Other Staff seatime (hours)																	
Skalmey	n/a	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
SkalmeyII/Morlo	n/a	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
Total							379.5	286.25	293.7	157	183.95	163.25	375.75	334	220.4	302.8	547.4
Other Staff days at sea																	
Skalmey	n/a	n/a	n/a	n/a	n/a	n/a	40	36	23	21	15	18	30	26	26	57	94
SkalmeyII/Morlo	n/a	n/a	n/a	n/a	n/a	n/a	17	19	22	15	21	17	22	12	29	18	35
Total							57	55	45	36	36	35	52	38	55	75	129
Total Staff seatime (hrs)																	
Skalmey	n/a	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
SkalmeyII/Morlo	n/a	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

Total							1126.5	1133.8	1454	1213.3	1285.2	1186.5	1327.75	1606.35	1183.58	1328	1561
Total Staff days at sea																	
Skalmey	n/a	n/a	n/a	n/a	n/a	n/a	213	242	248	226	169	176	195	228	196	246	277
SkalmeyII/Morlo	n/a	n/a	n/a	n/a	n/a	n/a	77	77	102	85	125	116	108	96	102	91	128
Total							213	319	329	311	294	292	303	324	298	337	405
Engine hours																	
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
SkalmeyII/Morlo	333.5	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
Total	333.5	357.5	305.75	256.4	188.75	184	330	280.1	363.3	380.54	333.8	310.2	310.25	364.9	313.3	363	398

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

MNR Staff = Philip Newman, Kate Lock, Mark Burton, Rob Gibbs

Other Staff =, Mike Camplin, other CCW Staff and Volunteers

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.

Diving communication equipment has been adapted by MNR staff 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 returned to station following work to remedy the seawater damage it suffered last year. The buoy has now been fitted with a different form of wireless communication, which has facilitated its incorporation into 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 damaged when a skip lorry ran into the back of it, but was repaired and continues to serve for carrying diving equipment and launching and retrieving boats.

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 2010, however one of the buoys disappeared under suspicious circumstances. At the same time some of the ground-lines for the eelgrass survey were found to have been cut and removed. The incident occurred overnight following the last eelgrass survey (fortunately) but nothing was seen by Skomer Island or MNR staff.

The buoys are inspected annually by Trinity House as they are classed as navigation buoys and would normally be



recovered ashore in the autumn and any necessary repairs carried out.



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 unmaintained 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.



Photo: Annette Gardener



Also contributing to marine litter clearance within the MNR were Haverfordwest Kayak Club, who cleared the Wick beach and Neptune's Army of Rubbish Collector's (NARC), who carried out seabed litter clearances.

MNR staff also assisted the local community litter clearance of Little Castle beach in June 2010. The beach is not easily accessible and rubbish bags were recovered by boat. MNR staff are grateful for the clean up as many seal pups are born on this beach later in the year.



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 that an increasing proportion of Skomer MNR's diving work is being supported by volunteer divers as part of the MNR diving team and these figures do not even include the dives carried out by the volunteer diving survey teams in 2010, who surveyed the eelgrass bed in North Haven.

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

FIGURE 3.1 SUMMARY OF MNR DIVING ACTIVITY 1992-2010

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

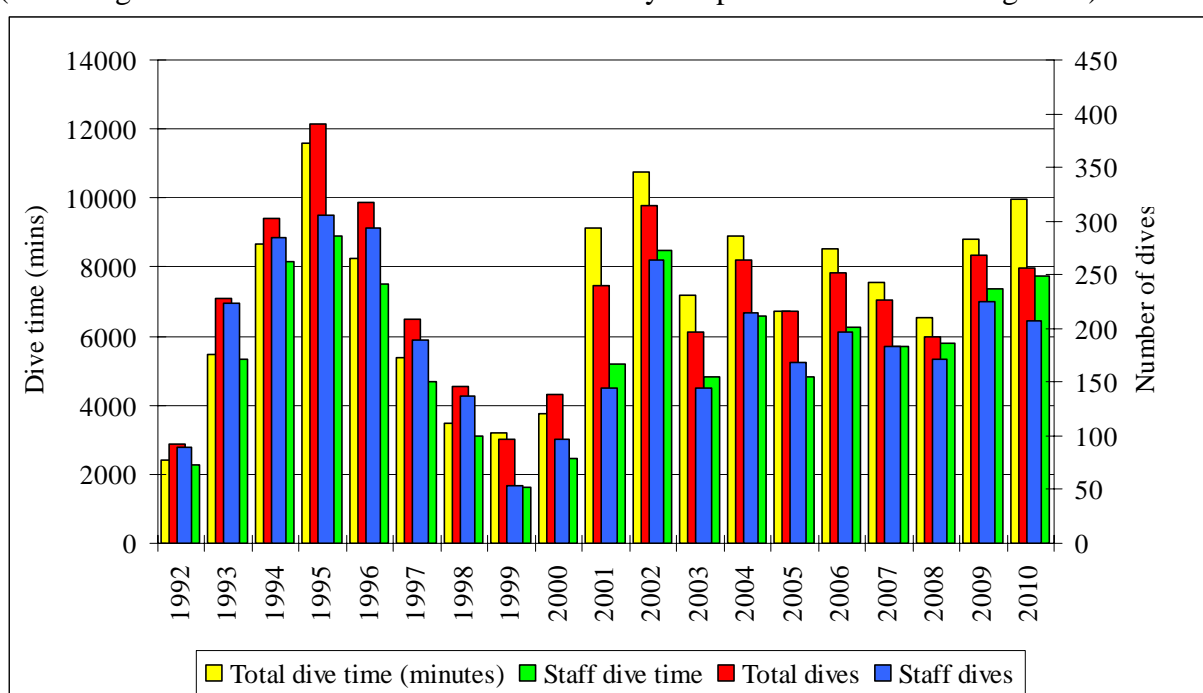
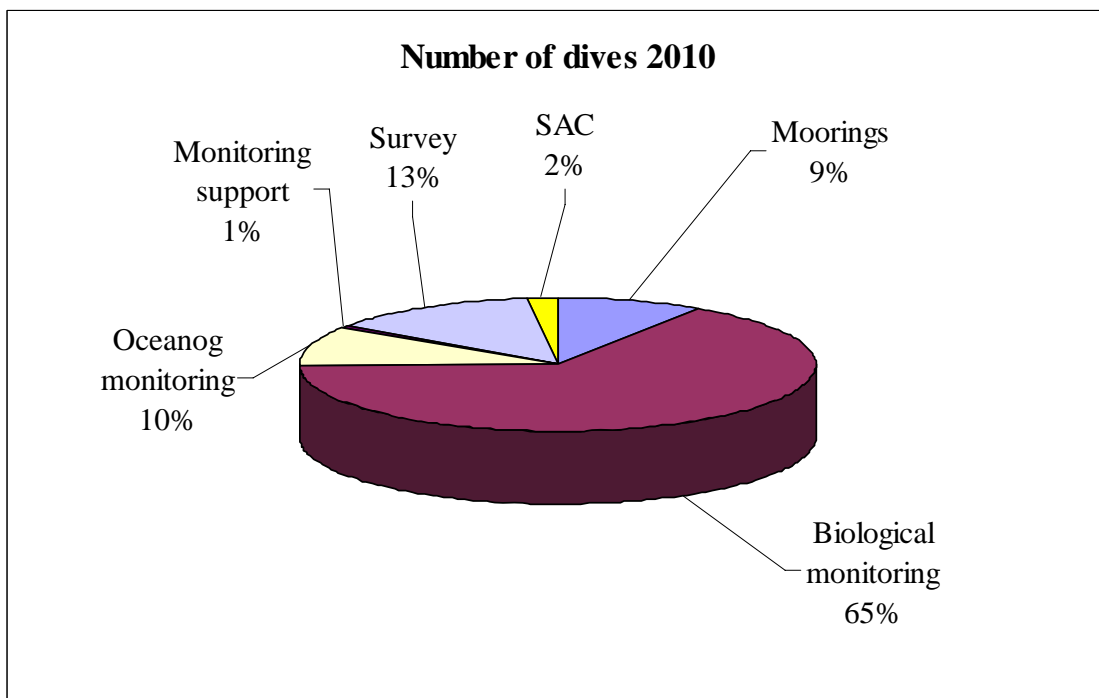
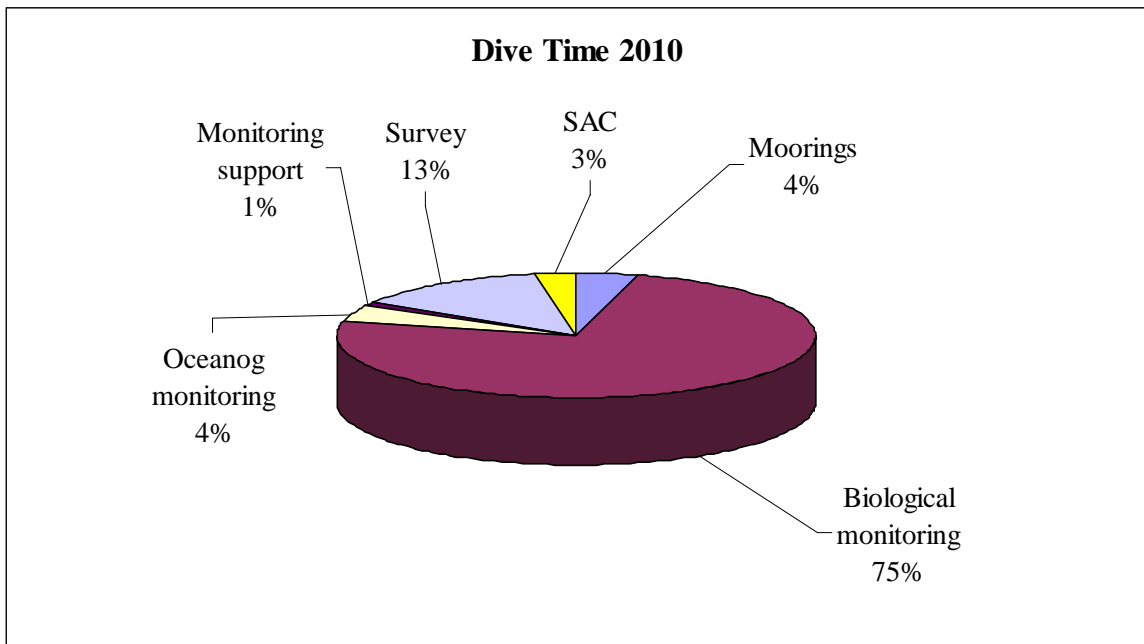


TABLE 3.2 SUMMARY OF DIVING ACTIVITY 2010

	MNR STAFF	CONTRACT & VOL DIVERS	TOTAL
Dives	207	50	257
Dive time (min)	7742	2221	9963
Dive time (hrs)	129.03	37.02	166.05
Average dive time (mins)	37	44	38.77
Diving days			45

FIGURE 3.2 MNR DIVING OPERATIONS 2010

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



4 MANAGEMENT

4.1 WARDENING AND PATROL

Project: MP00/01

Site Patrol at Skomer MNR was carried out on 22 days in 2010, concentrating on Sundays and Bank Holidays between May and September. This is out of a possible 25 dedicated patrol days with some days lost to bad weather and others because of commitments to supervising volunteer diving surveys, although a watching brief was maintained during these periods and at other times when staff were out on the water.

For sea time statistics see table 3.1.

Data for all observed visitors and use of the MNR from April 2010 to end of March 2011 is shown in Section 5.

4.2 INFORMATION



Because of the fully pictorial nature of the MNR display at Martin's Haven the MNR interpretative booklet "Stars, squirts and slugs...marine life in an underwater refuge" is an essential component of the display providing written information to support the display's images and video footage (see section 8.2).

Also available in the display are 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 the 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 potential scallop "poachers".

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 2010, although the occasional scallop dredger has been seen passing through.



4.3.2 Potting *Project: RH03/05 Watching brief*

Vessels operating in the MNR in 2010/11 are listed in Section 5.1 and for fishing effort estimates see Appendix 1.



MNR staff continue to record incidents of potting gear proximity to fragile species in 2010. Improvements in photographic equipment used for underwater monitoring mean that staff have more opportunity to record these photographically.

A number of lost pots have also been encountered. These are recovered if possible, but otherwise 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 2010.

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

Two divers were reported as taking scallops from Martin’s Haven by a local diving instructor; unfortunately not enough information was available on their identities to follow up on the report.

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

None observed in 2010.

4.3.6 Collection of specimens for education and research

Permits for collection of specimens were renewed for Valerie Morse and Dr Anthony Campbell, Pembrokeshire Darwin Science Festival and issued to workers from CEFAS to collect dogwhelks from the MNR for ongoing long-term monitoring of the effects of tributyl tin from antifouling paints as part of the UK-wide “Clean Seas Environment Monitoring Programme”.

4.3.7 Disturbance to seals *Project: RH03/04 Watching brief*

Permits were issued to the Wildlife Trust South and West Wales seal census 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, Lockley Lodge and by the NT car park attendants.

Seven seals were seen by seal survey workers on Skomer in 2010 with either monofilament line or fishing net caught around their necks, although a total of twenty three different seals were seen around the island with obvious signs of having been caught in nets at some time in their lives. The most common indication being a deep scar around the necks, sometimes with a small amount of netting still embedded.



Photo: Dave Boyle

There were no records of disturbance to seals during 2010.

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

Only one incident was recorded in 2010. This involved six inflatable tenders from the cruise ship “Expedition” entering the Wick during May. The Skomer Island Warden later contacted the company to prevent such incidents in the future.

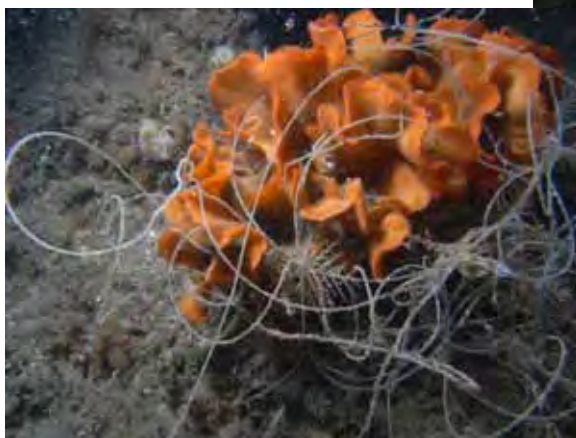
4.3.9 Spear fishing *Project: RH36/01 Watching brief*

None observed in 2010.

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.



The sterling efforts of Neptune’s Army of Rubbish Collectors have to be mentioned here as this volunteer group visited the MNR three times in 2010 removing huge amounts of angling and other debris from the seabed, as reported in their own 2010 annual report for just one visit on 5th June: “Once again

sunshine greeted our departure for our second clean-up event of the year and the first visit to Skomer Marine Nature Reserve for 2010. A full boat brimming with 12 eager divers was soon empty (well apart from Andy of course) as everyone made the giant stride into the water off Low Point. An hour or so later and we were sorting through over 200 weights, 500 hooks, line, cans and plastic bottles.” The volunteer group freed several types of animals from fishing line, including one sea fan that was almost invisible below a coat of rubbish (see below).



Before



After

Photos: NARC

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

No incidents of vessels anchoring outside the permitted areas of the MNR were recorded in 2010.

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

There were no reports of speed limit byelaw infringements in 2010. Boat visitors of note included CCW's research vessel *Pedryn*, the paddle steamer *Waverley* and the survey vessel carrying out multibeam acoustic surveys on behalf of MCA.



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*

One report reached MNR staff from NCI volunteers manning the Wooltack coastguard hut of a minor oil leak from a vessel anchored in St Bride's Bay. "Bro Globe" was awaiting a berth in dry dock to investigate a leaking stern tube. According to the report the vessel uses a vegetable-based "environmentally friendly" stern-lube. No oil was seen ashore or at sea by MNR staff.

4.3.15 Water Quality *Project: RP63/03*

Bathing water quality data for Martins Haven continues to be obtained from Pembrokeshire County Council. 2010 results have not yet been obtained, but see below for 2009 results (missing from 2009 Annual Report).

Sampling Date	Sampling Time	Total Coliforms (Presumptive) Cfu/100ml	Faecal Coliforms (Presumptive) Cfu/100ml	Faecal Streps (Presumptive) Cfu/100ml	Total Coliforms (Confirmed) Cfu/100ml	Faecal Coliforms (Confirmed) Cfu/100ml
11/05/2009	11:45	10	2	2	10	2
18/05/2009	11:10	10	2	2	10	2
27/05/2009	10:40	36	13	11	18	13
01/06/2009	10:40	10	2	2	10	2
08/06/2009	10:10	10	2	2	10	2
15/06/2009	11:25	10	2	2	10	2
22/06/2009	10:45	10	4	6	10	4
29/06/2009	10:30	10	2	2	10	2
06/07/2009	11:20	18	15	4	10	11
13/07/2009	10:30	10	2	2	10	2
20/07/2009	10:35	10	2	2	10	2
27/07/2009	10:30	10	2	2	10	2
03/08/2009	11:20	10	11	2	10	9
10/08/2009	10:30	10	2	2	10	2
17/08/2009	11:20	10	2	2	10	2
24/08/2009	10:00	18	2	2	10	2
02/09/2009	13:00	10	4	2	10	4
07/09/2009	10:30	10	2	2	10	2
14/09/2009	10:40	10	11	2	10	11
21/09/2009	10:00	10	2	2	10	2

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 weekly mapping of pot marker buoy distribution.

19 pot maps were produced in 2010 using GPS and these have been transferred to the GIS mapping system MapInfo. The summary maps for 2010 can be seen in Appendix 1 together with a graph summarising fishing effort since 1992.



Fishing boats operating in the MNR during 2010 were recorded as Crowded Hour (M1140), Lydon (M1050), Barbara Anne (M33), KTJ (SU02), PW9, M1, M7 and M1094.

Potting activity decreased in 2010 compared to previous years with less activity to the south of Marloes peninsula accounting for some of the change.

5.2 RECREATIONAL USE

Project: RH33/01

Types and numbers of visitors recorded for 2010 are summarised in Table 5.1 and Figures 5.1 to 5.4.

Skomer MNR was particularly popular with recreational boats in 2010, although diver numbers remain low. Kayaks, “sit-on-tops” and canoes continued to be very popular in 2010, but the number of anglers coming by boat was well down compared to last year.

Numbers of visiting yachts are up, while motor boats have remained steady for the last three years.

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

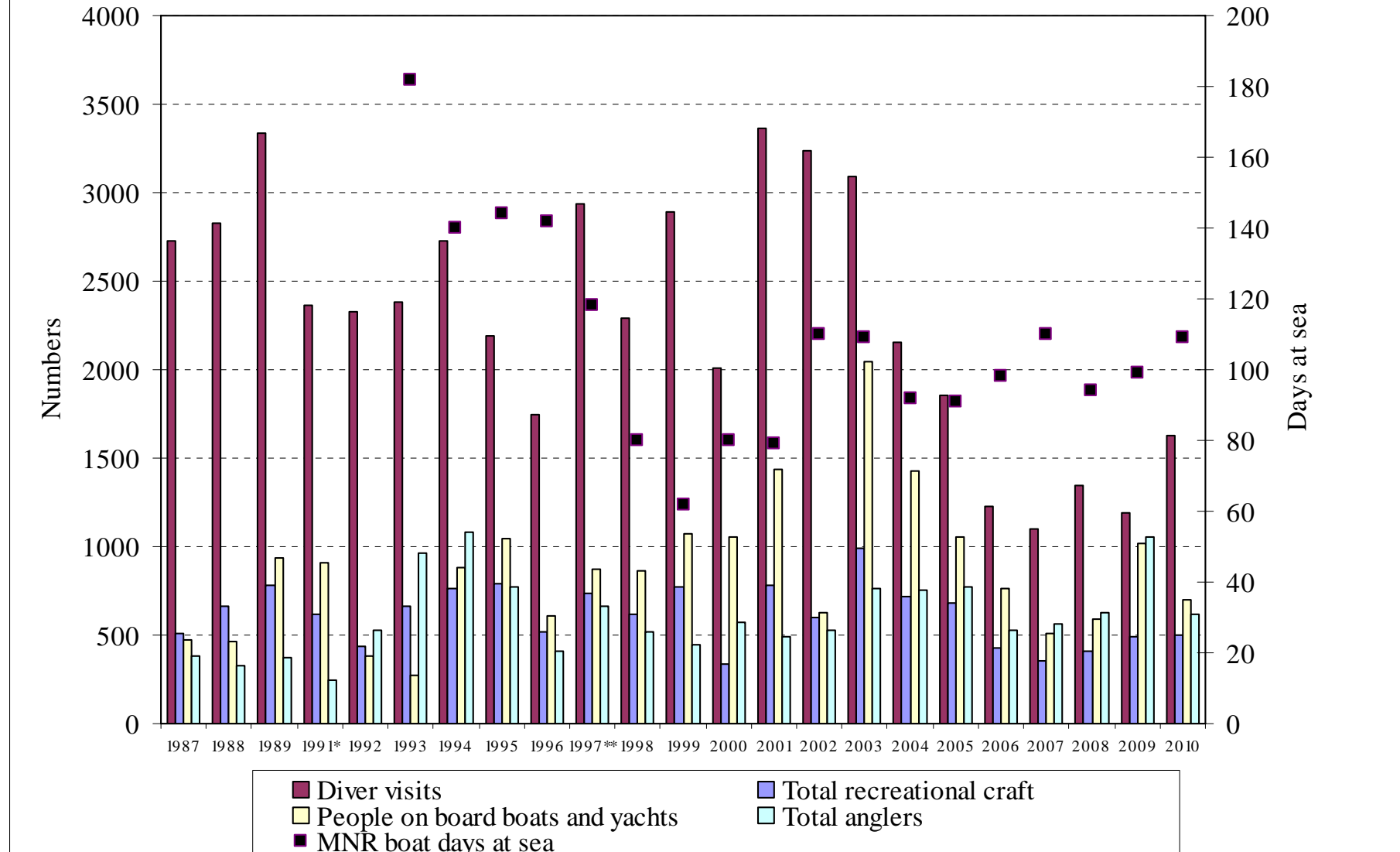


TABLE 5.1 RECORDED RECREATIONAL USE OF SKOMER MNR

	1989	1991*	1992	1993	1994	1995	1996	1997**	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Diver visits (diver days)	3334	2368	2327	2379	2730	2192	1745	2934	2287	2893	2008	3360	3234	3089	2154	1854	1230	1102	1342	1189	1629
Shore dives @ Martins Haven	662	34	436	678	848	537	482	814	817	500	537	537	539	522	666	458	470	411	468	293	428
Dive boat visits	477	341	293	325	394	354	247	361	254	378	278	349	367	350	224	257	97	127	138	106	107
Total yachts	237	203	99	155	213	299	173	218	183	221	232	266	121	338	218	163	128	92	120	115	140
Total motor boats	65	70	47	95	129	65	39	70	87	95	93	153	70	225	187	155	102	65	87	89	93
Canoes				91	27	74	62	84	98	79	63	48	38	80	108	110	101	68	68	184	163
Total recreational craft	779	614	439	666	763	792	521	733	622	773	333	779	596	993	721	685	428	352	413	494	503
Total people on board boats	939	905	380	273	883	1041	612	874	868	1075	1051	1435	626	2041	1424	1059	764	512	591	1022	704
Shore anglers	300	199	437	766	735	600	331	630	433	386	501	396	458	519	556	569	378	398	333	752	551
Boat anglers	73	43	93	199	347	173	81	30	89	60	72	55	70	243	199	210	150	168	290	306	68
Total anglers	373	242	530	965	1082	773	412	660	522	446	573	494	528	762	755	769	528	566	623	1058	619

* Part of 1991 only ** Figures are for Jan 97 to end of March 98 All subsequent figures are for financial year April to end of March

MNR staff days at sea				427	359	324	327	265	163	104	156	187	305	275	253	247	251	286	243	337	390
Boat days at sea				182	140	144	142	118	80	62	80	79	110	109	92	91	98	110	94	99	109

Figure 5.2 Skomer MNR 2010 SCUBA divers

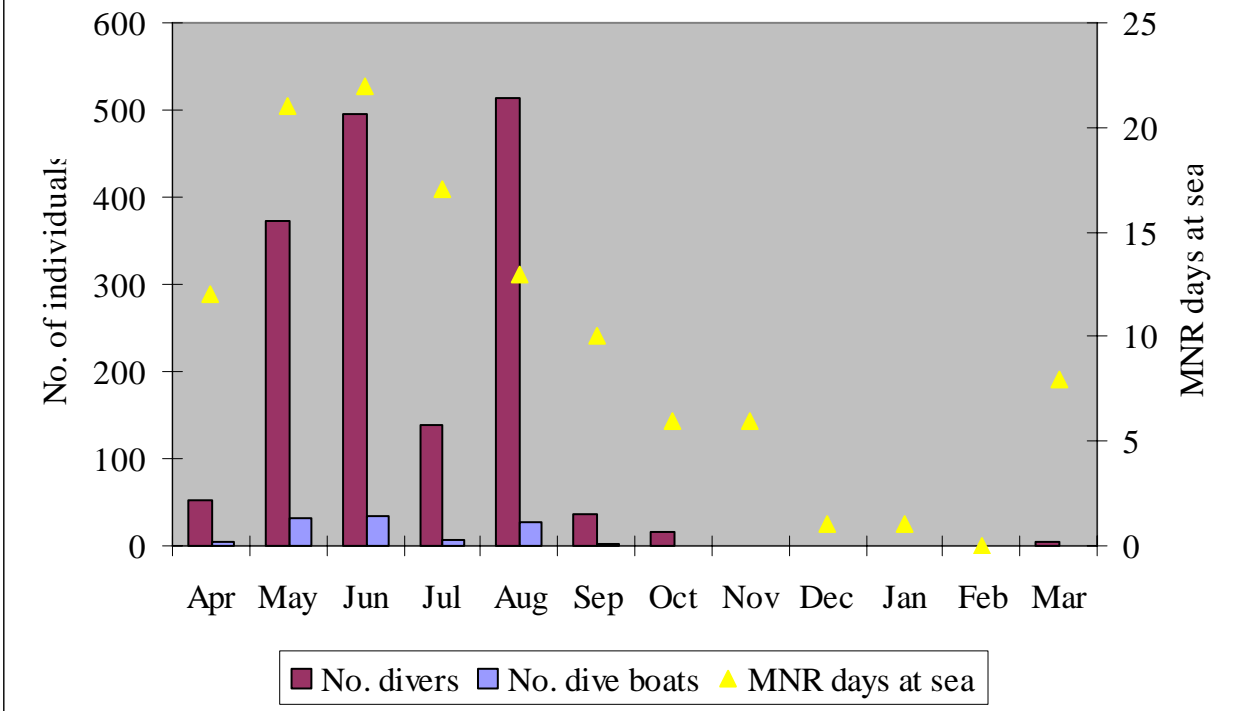


Figure 5.3 Skomer MNR 2010 Recreational Craft

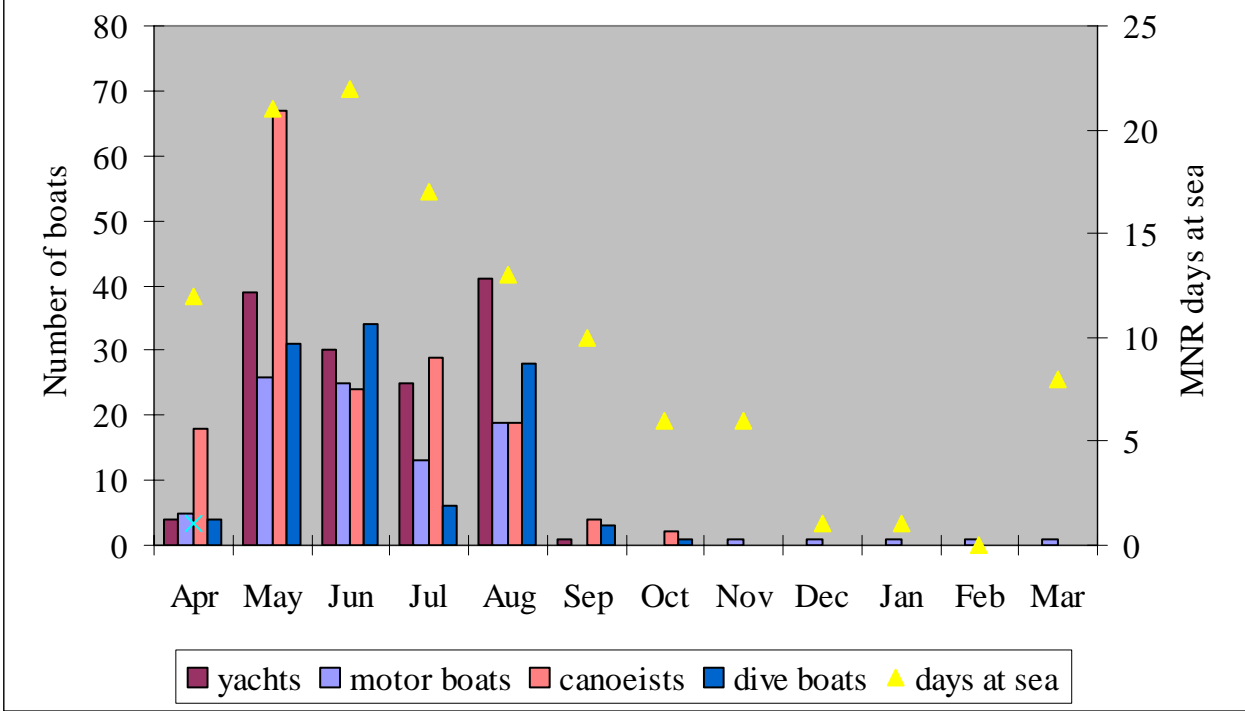
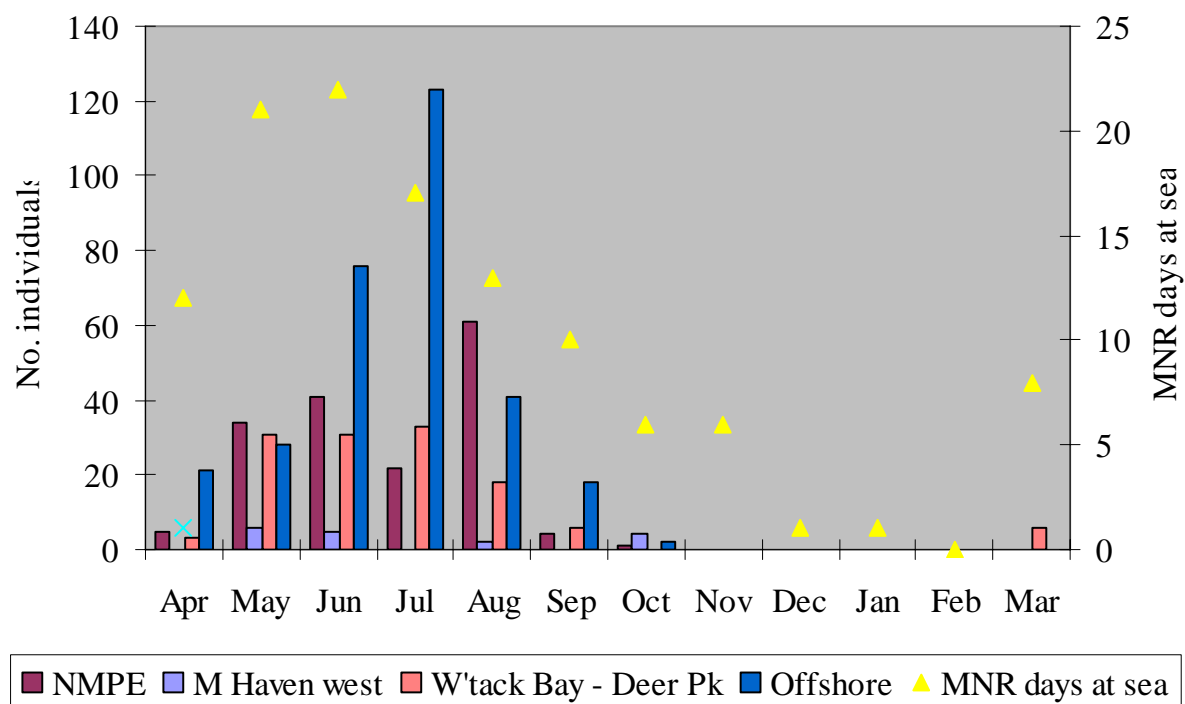


Figure 5.4 Skomer MNR 2010 Anglers



6 LIAISON AND ADVISORY COMMITTEES

6.1 ADVISORY COMMITTEE

Project: ML80/01

The annual Advisory Committee meeting was held in April 2010. 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.



Photo: Catherine Duigan

The Committee meeting was followed by a celebration of the 20th anniversary of the designation of the MNR at the reserve office in Martin's Haven, which was well attended by members of the Committee, senior representatives of Pembrokeshire Coast National Park and CCW, local and national press and other long-term supporters of the MNR. There was also a guest appearance from Iolo Williams, who announced the winner of the Skomer MNR photographic competition (see section 8).



Guests were able to see displays of MNR work, a "rogue's gallery" of photographs from the last 20 (and more) years as well as a prototype 3D stereo viewer designed by RG.

Later in the year we were able to gather together a number of past and present MNR staff for a gathering on *Skalmey*, which was suitably decorated for the day.



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).



Skomer seal pup that “defected” to Martin’s Haven



MNR staff raised concerns regarding visitor safety at Martin’s Haven in view of large early morning queues for Skomer boat tickets at peak times. Occasionally there has been conflict between those queuing and other visitors trying to get vehicles to the bottom of the lane to unload diving gear or kayaks. A number of options to resolve this have been discussed.

MNR staff were also involved in the official Heritage Lottery Fund launch of the Skomer building project, with visits from WAG first minister Carwyn Jones among other VIPs.

6.3 SOUTH WALES SEA FISHERIES COMMITTEE/WAG FISHERIES ENFORCEMENT

Project: RH90/01

SWSFC ceased to exist as of April 2010, but liaison has been maintained with former officers who are now part of Fisheries Enforcement within WAG’s Department for Rural Affairs.

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;

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

MNR staff were also involved with the making of PCNPA’s “Conserving the Park” video, contributing underwater footage and interviews about the work of the MNR. (see www.youtube.com/user/pcnpa2008#p/u/3/O3Iy0TsvAqE)

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, subcommittees and visits to Martin's Haven.

PN gave a presentation to the National Trust "Wales Coastal Engagement Workshop" in Aberystwyth on the ways in which the MNR engages and includes users of the site in its management. Examples included the MNR volunteer diving surveys and photographic competition, among others. The aim of the workshop was to explore ways to offer opportunities for people to engage in the outdoors and experience conservation in action, particularly on NT properties.

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.

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.

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 2010:

PN presented a paper on the monitoring of scallop populations at Skomer MNR to the European Marine Biological Symposium hosted by Heriot-Watt University and MNR staff have been working with Dr Jo Porter from the University to prepare a paper for the proceedings of this conference.

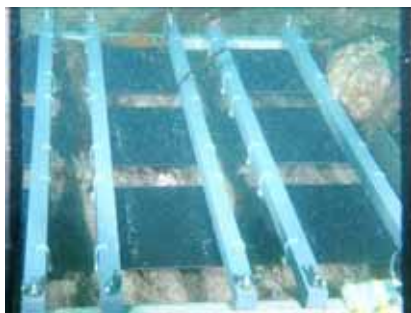
Dr James Bell continues his connection with the MNR, with sponge quadrat photos from Skomer being worked on by his PhD students at the Victoria University of Wellington, New Zealand (see Section 7.3). Dr Bell has expressed an interest in publishing the work in the scientific press and is keen for the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



UW Aberystwyth MSc students again visited Martin's Haven to talk to MNR staff about possible projects in the MNR and about the developments in marine legislation. 2010 saw a large increase in the numbers of student requesting information, help with projects or provision of work placements. Students from Plymouth University, Swansea University and a secondary school in Carmarthen took part in MNR projects.

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.

Ross Bullimore, from Plymouth University, continued his undergraduate project into fish behaviour within the MNR, using seabed video cameras. In return for deploying his camera equipment during the survey, Ross provided invaluable diving support for a variety of MNR projects.



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).

MNR staff have continued to help two PhD students from Bangor University with their fieldwork: Katrin Bohn was surveying the distribution of the invasive slipper limpet (*Crepidula fornicata*) in Wales, looking at the potential northward expansion of *C. fornicata* from Milford Haven into Cardigan Bay and North Wales. Marija Sciberras was investigating the efficacy of the mobile gear closed area at the MNR for biodiversity conservation as one of eight MPA case-studies along the West coast of the UK. Fortunately the weather was a good deal better this year than last and some



additional sites were surveyed. MNR staff also assisted with plankton sampling in Milford Haven waterway during periods when *Skalmey* was in the area.

MB attended a PRIMER statistics package seminar in Bangor, contributing data from the MNR.

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, South West Wales Amphibian and Reptile Group, Seafair Haven and Dyfed Powys police.

MNR staff contributed to the revision of local BAP plans for grey seals, native oysters, and pink sea fans.

MNR staff were able to provide information on a slate wreck for Malvern Archaeological Diving Unit who are carrying out a study on behalf of Cadw (the historic environment service of the Welsh Assembly Government).

PN continues to serve on the executive committee of Natur, the Welsh institute for countryside and conservation management. He gave a presentation to the Natur-organised careers fair at Aberystwyth University in March 2011.

6.7 WIDER MARINE ENVIRONMENTAL INITIATIVES

KL continued as the southwest Wales coordinator for the MCS Seasearch project in 2010.

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. WEL were also supplied with MNR photographs for some of their publications.

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 selection criteria for Marine Conservation Zones and other elements of the process.

7 SCIENCE

7.1 RESEARCH AND EDUCATION SUBCOMMITTEE

No meetings of the research and education subcommittee were held in 2010.

More detail on all of the research projects undertaken in the MNR can be found in the “Skomer Project Status Report 2010/11”.

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/10/07).

In 2010 pup numbers for the whole MNR reached 272, which is 57 pups higher than the average for the last 19 years. Pup survival was 78%, which is 2% below the average. The majority of deaths were caused by abandonment or separation and by one period of harsh weather. There were no signs of disease. The most prolific period was September with 45% pups born in the reserve, 27% were born in October and 17% in November. The last observed pup of the season was born on 17th January 2011.

Photo-monitoring indicates that Skomer does not have an isolated seal population. For the last three years efforts have been made to photograph all the cows giving birth on Skomer. In 2010 only 44 of the 164 cows were known from previous years, whereas 249 different cows are known to have pupped on Skomer in the three years 2008-2010 (Boyle 2010).

The bull held responsible for the killing of four pups in 2009 also returned in 2010 and is thought to have killed three pups during the 2010/11 season. Again, no logical explanation can account for this behaviour.

For detailed mainland site results see Appendix 2.

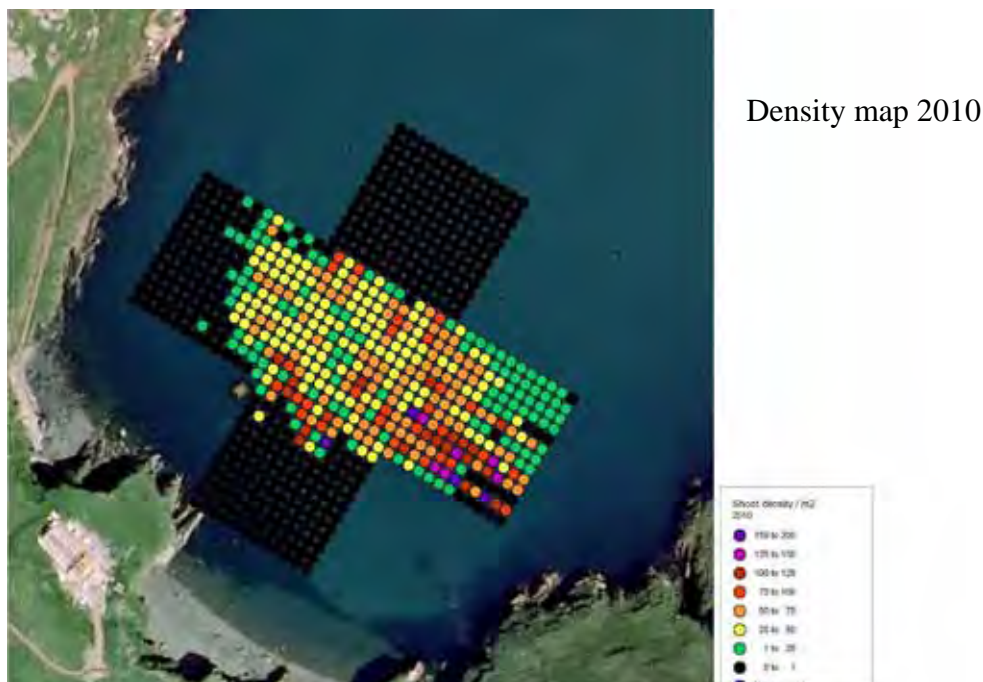
7.3 IN-HOUSE MONITORING

Project code: RF23/01 **ZOSTERA MARINA POPULATION**

The 2010 survey of the eelgrass (*Zostera marina*) bed in North Haven was carried out by teams of volunteer divers operating from local dive charter vessels. Surveys took place over three weekends with up to 12 divers on each day. Although the weather cooperated the surveys themselves were hampered by large amounts of drift seaweed, which obscured the eelgrass



shoots. Despite this the whole bed was surveyed with results indicating a slight overall decrease in shoot density, but an increase in extent.



For more detail on this project see “Skomer Marine Nature Reserve Distribution and Abundance of *Zostera marina* in North Haven 2010” (CCW Regional report CCW/WW/10/10).

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 2010 included sunfish (*Mola mola*) and basking shark (*Cetorhinus maximus*).

Another record of note was an otter, seen by PN crossing the entrance to Martin’s Haven. Otters were also seen and photographed on the Deerpark by local photographer Mike Crutchley and are being seen more frequently in coastal locations.



Sea Otter Deer Park 1st June 10 Photo: Mike Crutchley

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 in the upper shore appears stable over the last 6 years, but variable between sites. The Wick has shown a significant increase in abundance in 2010.

The increasing trend in barnacle coverage on the middle shore previously reported now appears to have stabilised.

Barnacle coverage in the lower shore appears stable but variable between sites.

In the middle shore limpet numbers are highest on the North facing shores, but these figures tend to be quite erratic. 2007 appears to have had a dip in numbers on 6 of the sites, which all showed an increase the following year.



Most sites have a low abundance of limpets in the upper shore, but Double cliff has significantly more limpets than any other site (north facing shaded cliff) and an interesting declining trend from 2003 – 2006, which has dropped again in 2010.

In 2004 the lower shore underwent some dramatic changes in barnacle species composition with *Semibalanus balanoides* declining and being immediately replaced by *Chthamalus montagui*. This may be due to a poor settlement of *S. balanoides* spat in the winter of 2002/3 (possibly linked to mild sea temperatures) *Chthamalus montagui* individuals would then benefit from a lack of competition. The Middle & Upper shore is starting to show a trend of an increasing presence of *Semibalanus balanoides* with a corresponding decreasing in *Chthamalus spp.* There was a huge spat fall of *S. balanoides* in March 2010.

Project code: RB04/01 PLANKTON RECORDING

In 2010 samples were taken using a 200um zooplankton net vertically hauled from 40m to replicate the methods used by Plymouth Marine Laboratory for their existing time series.

Samples were taken from March 2010 to November 2010 with weekly samples between May and September. All the samples were sent to Plymouth Marine Laboratory for analysis. No phytoplankton samples were taken in 2010 due to a lack of funds to work up the samples.

There was a notable spike in barnacle *cirripedia* abundance in April, which coincided with a large spat fall of *Semibalanus balanoides* on the shore (see RB03/01 above).

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. (See Appendix 3 for project summary.)

Crawfish *Palinurus elephas* became a national Biodiversity Action Plan species in 2008. In 2010 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 with the aim of gaining better knowledge of the historical and current status of this species in the UK.



At the end of 2008 large numbers of common mussel (*Mytilus edulis*) spat were found on mooring ropes and the hull of RV Skalmey. During 2009 it was evident that the mussel spat had settled at several sites in the MNR, but in 2010 observations showed that, although the mussel beds were still present, they were much reduced and there was no evidence of fresh settlement.



Trapania pallida
David Kipling

Seasearch survey forms were completed by volunteer divers at three sites in the Skomer MNR, South Middleholm, North Middleholm and High court reef cliff. These surveys are useful as they provide general species and habitats records in the Reserve at sites where little general recording has been completed. The data has been entered into the national Marine Recorder database. In addition, Seasearch divers participating on a nudibranch training course completed dives at Martin's Haven, and produced a nudibranch species list for this site. Notable were two scarce species in the UK, *Okenia elegans* and *Trapania pallida*. *T. pallida* is a new record for the Reserve.

Project code: RM03/01

MONITOR EPIBENTHIC ROCK COMMUNITIES: MESO-SCALE

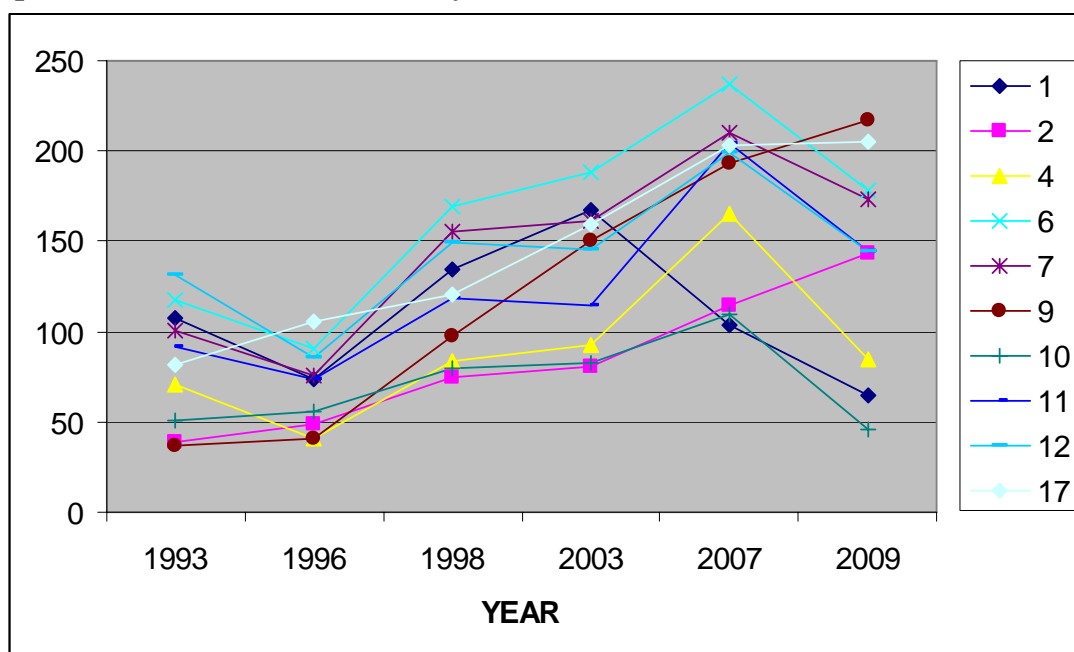
One set of stereo photographs was taken at the North Wall and one at the Thorn Rock site for epibenthic rock community photo monitoring in 2010. Image quality has drastically improved with the new digital cameras being used.





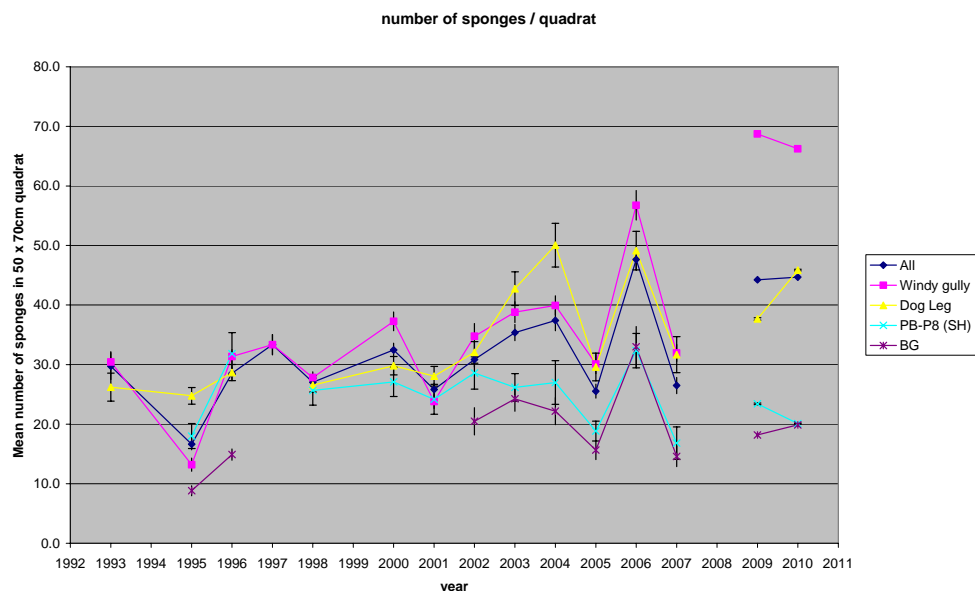
In 2010 the MNR received the report on the 2009 sediment surface and burrowing communities survey. In summary the last four surveys have shown the infaunal community to be healthy and species rich. The similarity between 1998, 2003, 2007 and 2009 is encouraging as is the increase in richness and abundance since 1996. This suggests that the community has recovered from relatively low numbers of species and individuals in 1996 and is stabilizing.

Species Richness 1993-2009 site by site



In addition to the MNR's normal round of annual photographic monitoring photographs have continued to be taken for the PhD study into seasonal variation in sponge communities at Thorn rock that has been running since 2006 (see Section 6.6). The data is currently being processed and compared with the data of other sponge assemblages in Indonesia and New Zealand for submission in July 2010.





At least part of rise in numbers of sponges in 2009 and 2010 is thought to be due to the increase in image quality of the digital cameras now used.

Project code: RM23/01 MONITOR EUNICELLA POPULATION

Population survey results 1994 -2010:

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			4
2010	10	120	115	5	0	3	5
totals					10	10	

In 2010 there were 3 confirmed losses of sea fans from the 2009 season at two sites on the north coast of Skomer.

One colony has been re-found after not being seen for 2 years.

Five sea fans were reported missing in 2010, but these will not be counted as “lost” until their status is confirmed in 2011.

There were no new recruits in 2010. The cluster of 5 baby fans at Bull Hole are all present and branching can now be seen in two individuals.

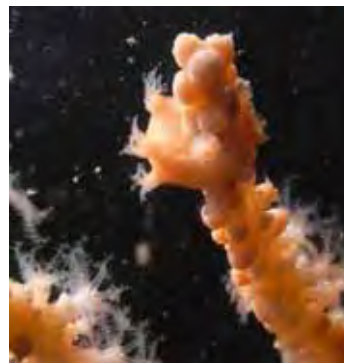
A sea fan that had been artificially attached to a piton at Thorn Rock in 2009 was not seen at all in the 2010 season.

Condition assessments of fans have been completed in 2010 using both field observations and photo images and results can be seen in “Skomer Project Status Report 2010/11”.

From 2008 onwards the images taken with an SLR digital camera provided excellent quality images and allowed improved recording of necrosis from the photos. Although a large drop in necrosis was observed in 2009 with records of its presence in only 12% of the surveyed sea fans the occurrence of necrosis has increased in 2010 to 54%.

Simnia patula was found on one colony during the survey in 2010.

The pink sea fan slug *Tritonia nilsodheri* was recorded in June 2010 at Protheroe’s Dock during the nudibranch survey.



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

North Wall stereo site: the group of large individual colonies has remained stable for over 10 years according to photographic monitoring.

The number of quadrats containing colonies of *A. glomeratum* at other transect sites is variable. The North Wall and Sandy sea fan gully areas have shown a decreasing trend in distribution of *A. glomeratum*. The other areas have a stable trend.

In terms of the density of colonies within quadrats North Wall has a decreasing trend over the survey period, whereas other sites are more stable.



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



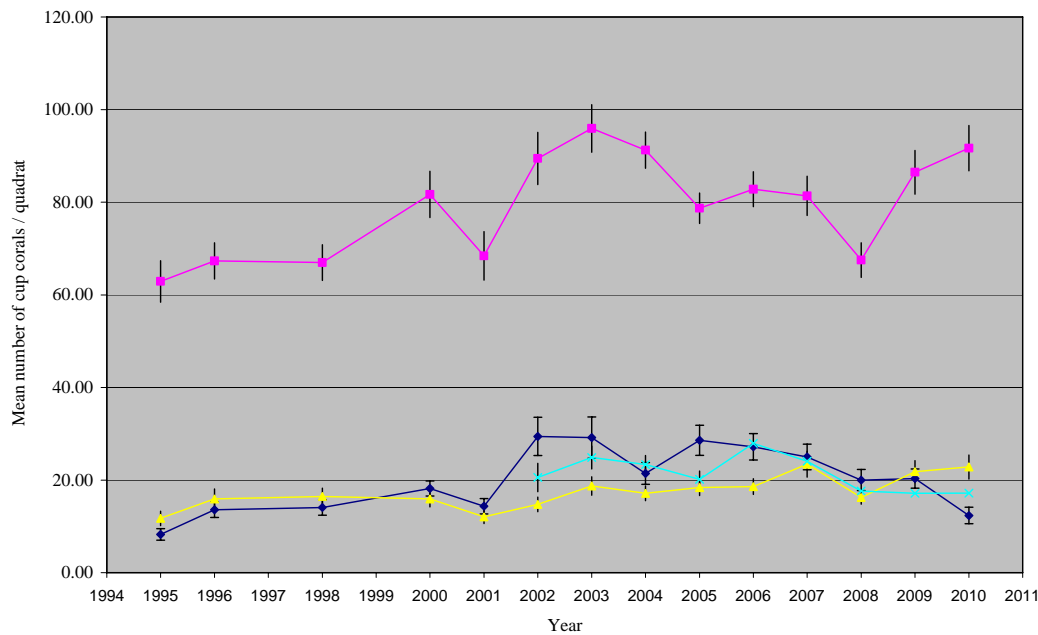
All quadrats were completed for both *Caryophyllia smithii* and *Balanophyllia regia*.

The average number of *B. regia* has fluctuated at transects A, B and C. From 2007 to 2009 numbers remained consistently high, but 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.

Site	Year	2002	2003	2004	2005	2006	2007	2008	2009	2010
WCK A	Mean	202.5	251.8	274.8	333.6	217.8		454.7	415.0	204.7205
	S.E.	31.6	39.3	43.1	49.0	50.0		62.3	53.4	34.79557
WCK B	Mean	252.6	214.0	283.8	239.3	183.3	483.1	401.9	515.6	177.9048
	S.E.	37.7	47.0	63.0	54.7	46.4	97.6	76.4	74.6	52.8992
WCK C	Mean	280.0	359.7	476.3	344.0	415.7	578.7	529.9	336.9	331.8681
	S.E.	52.4	50.8	51.8	64.5	49.4	64.9	73.0	95.8	46.4477

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

Mean number of *C. smithii* per quadrat at 4 sites from 1995 to 2010



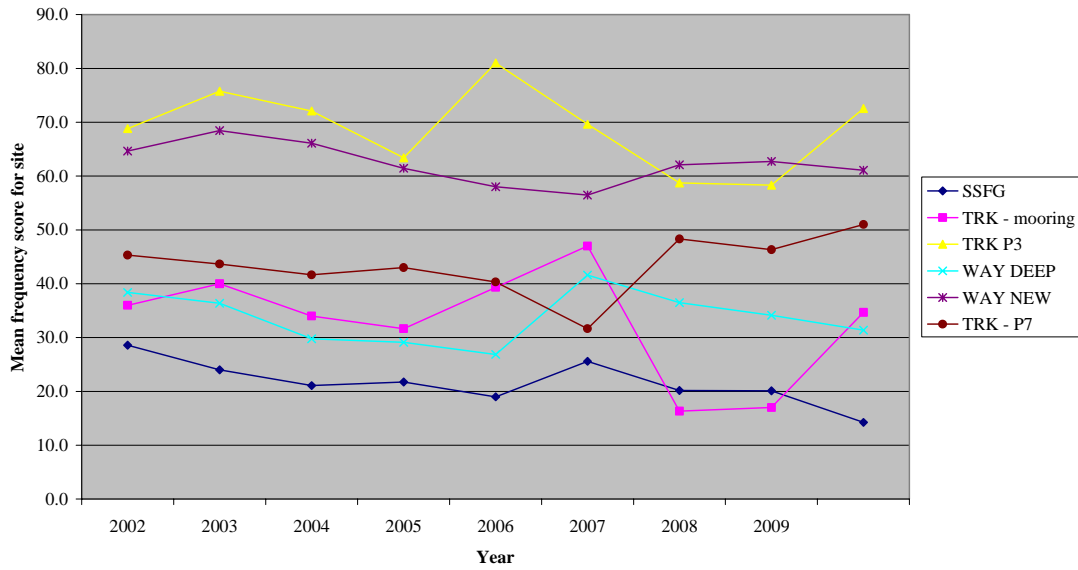
Project code: RM23/05 MONITOR PARAZOANTHUS AXINELLAE

All the colonies are still present.
The frequency counts show a stable trend for area of colony at most sites between 2002 - 2010.

Thorn Rock Mooring and P7 both showed a decrease in area in 2008 that remained the same in 2009 and then has increased in 2010 (see graph below).



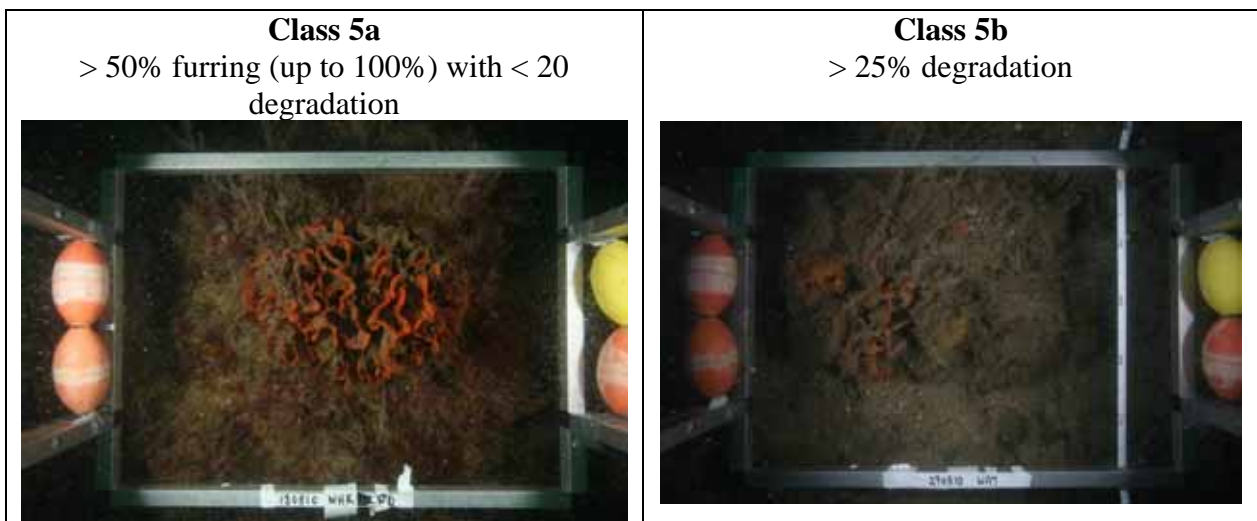
Parazoanthus transect results 2002 - 2010



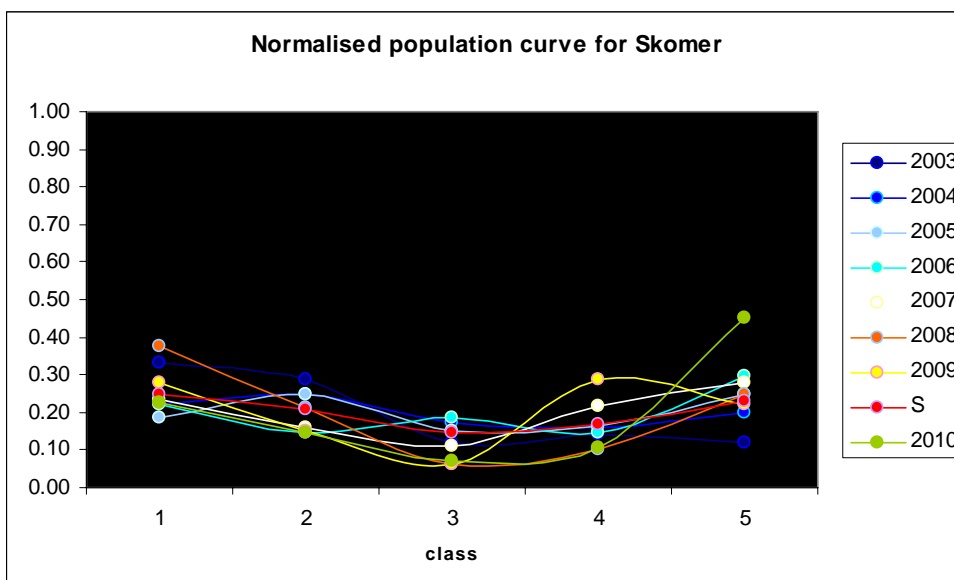
The density of polyps seems very erratic, following a relative stable or increasing trend there was a decrease at all sites in 2010.

Project code: RM63/01 MONITOR PENTAPORA POPULATION

The morphological classification method developed by RG in 2006 was applied to the current and historical photo dataset in 2007, 2008 and 2009. In 2010 the method was reviewed and revised guidelines were produced. Classes 1 – 4 now relate to size development using the floats on the camera framer to make size estimates consistent. Class 5 is not size based but relates to the levels of natural degradation: 5a is when more than 50% of the colony is covered in epiphytes and 5b when more than 25% of the colony has broken down. Class 5 can occur at any stage from class 2 – 4. If the breakdown of the colony has been caused by obvious physical damage from anthropogenic activities then this will be recorded separately.



The revised guidelines were applied to the 2010 dataset and reapplied to the full historical dataset.



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

Project code: RM54/01 **NUDIBRANCH SPECIES DIVERSITY**

In 2010 a nudibranch species identification course was provided by specialist Bernard Picton during which a total of 14 sites representing a range of habitats were surveyed for nudibranch species, resulting in a total of 55 species. Photographs of 54 species were taken in situ or in an aquarium.



Diaphorodoris luteocincta

A review was completed of all records for surveys between 1975 and 2010, including sediment infauna surveys. A total of 72 nudibranch species have been recorded in the Skomer MNR during this period, which represents 66% of UK species. 59 species have been found on those surveys carried out between 2002 and 2010, of which 5 species were

unrecorded in the Skomer MNR before 2002. Nudibranch species recorded include several classed as nationally scarce or with limited national distribution in the British Isles. For more details see Skomer Marine Nature Reserve Nudibranch Diversity Survey 2010 (CCW Regional Report CCW/WW/10/11).



Acanthodoris pilosa

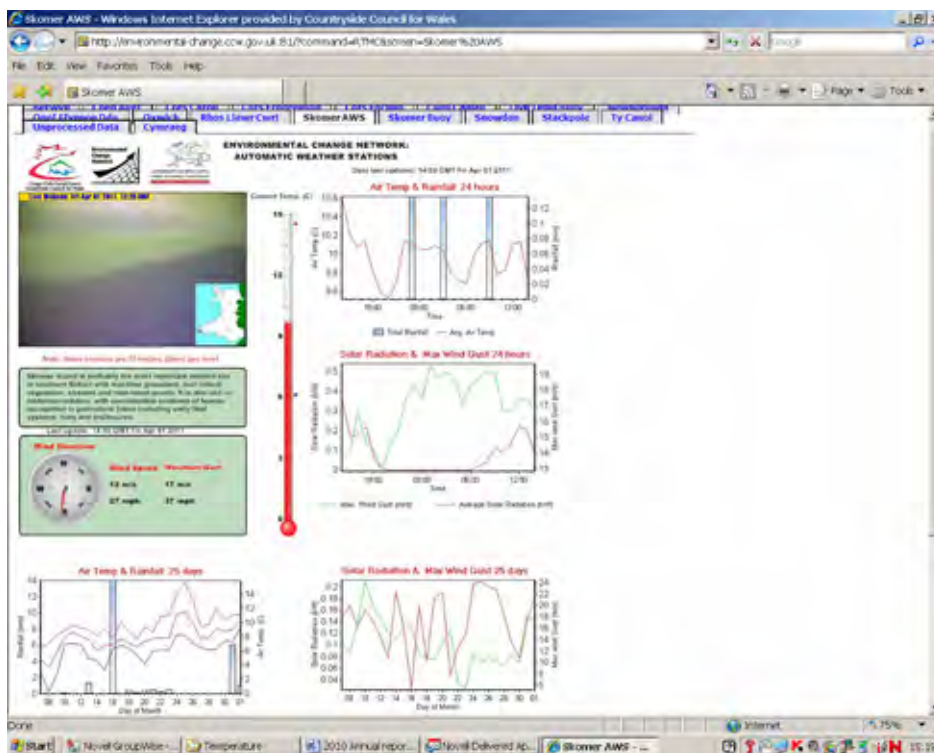


Crimora papillata

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 now automatically updated onto a website, from where it can be viewed graphically or downloaded in spreadsheet format. The same page also shows images from the webcam mounted near the weather station in the Deer Park coastguard hut.



See <http://environmental-change.ccw.gov.uk>

The summary for 2010:

Maximum temperature (°C)	19.7 (July)
Minimum temperature (°C)	-3.9 (Dec)
Annual Maximum gust (knots)	75.3 (July)
Direction of Maximum gust	226°



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

Turbidity was measured in Skomer MNR by Secchi disc at the OMS and at Thorn Rock. A YSI 6600 multi-parameter sonde, previously used on the seabed frame at the OMS site with

mixed success since 2007, has now been mounted on the OMS data buoy 1m below surface. See Section 7.5 for further developments with oceanographic data recording.

27 Secchi disc measurements of water turbidity were made at OMS and at Thorn Rock in 2010. The maximum reading (clearest water) between March and November was 13.1 m for OMS and 12.1 m at Thorn Rock.

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 2009 data).

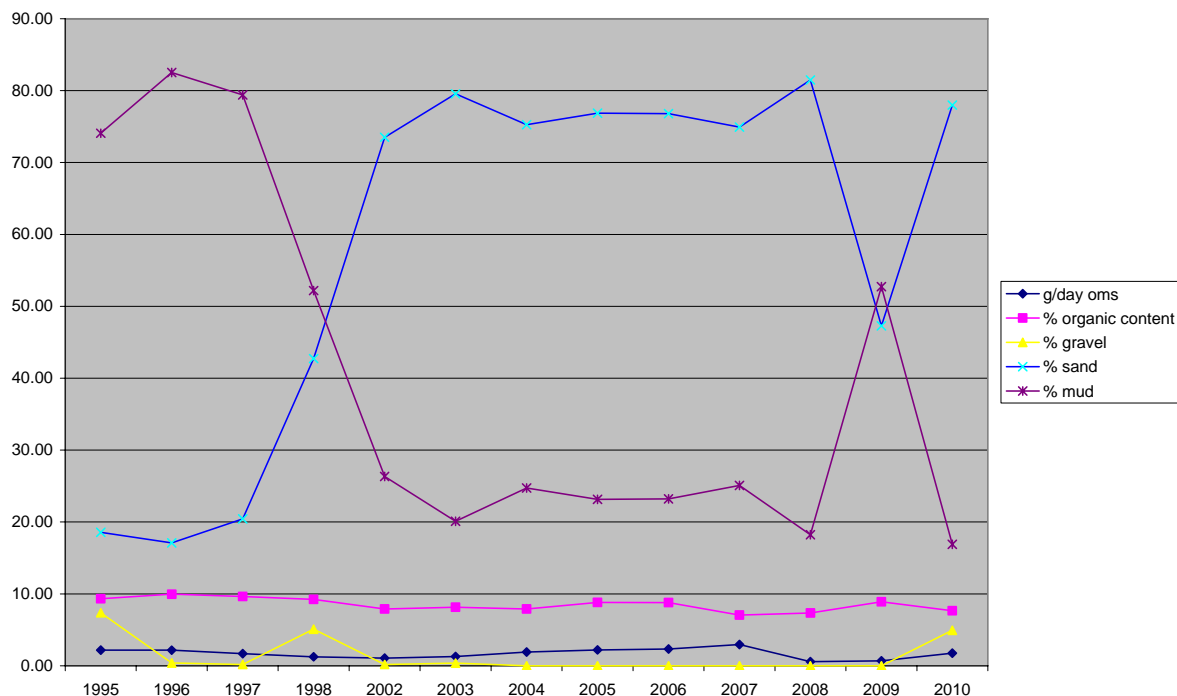
The YSI 6600 multi parameter sonde mounted on the OMS data buoy also measures seawater salinity, pH, dissolved oxygen and chlorophyll.

Project code: RP63/04 MONITOR SEABED SEDIMENTATION

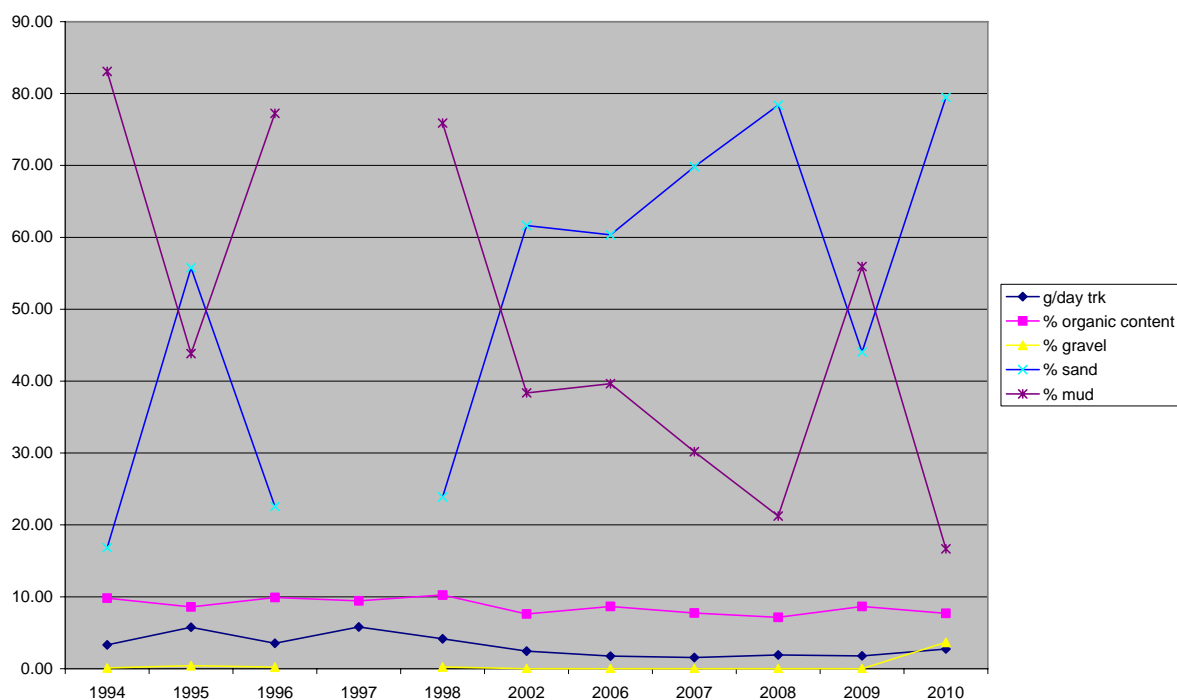
A total of 20 seabed sedimentation samples were collected at Skomer MNR using passive sediment traps: 10 at the OMS site and a further 10 at the second OMS-type frame at Thorn Rock.

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

Yearly results from the OMS site



Yearly results from the TRK site



In 2010 the sediment character at both sites has reverted back to one with higher sand content, reversing the previous year's change.

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. 26 profiles were recorded between March and November 2010 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):

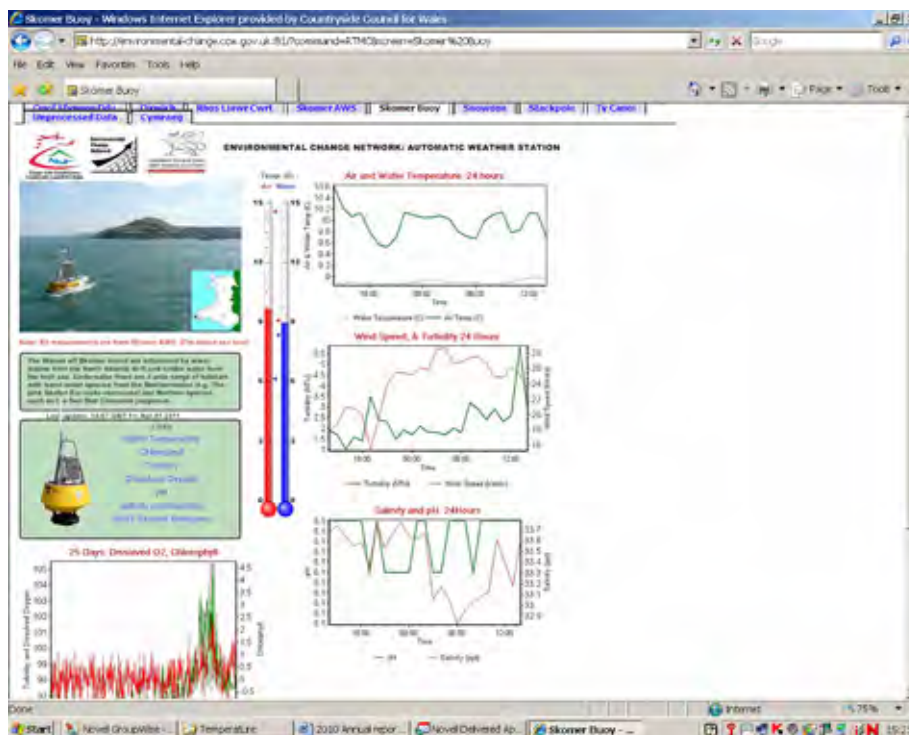
Temperature °C	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Minimum	8.4	7.27	8.7	7.6	7.7	7.36	7.5	8.8	8.4	7	6.9
Maximum	16.27	16.3	15.6	17.1	16.76	16.4	16.3	16.3	16.3	16.8	16.8

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 remains as before with back up facilities put in place by RG continuing to provide data security. The plan to install a proper server at Martin's Haven in 2010, allowing automated back up of files to tape, has yet to happen.

The addition of a GSM receiver to the automatic weather station now allows the weather data to be automatically updated into an external website over what is effectively a mobile phone link (see project RP04/01 above). The website has separate tabs for all CCW weather stations and the OMS data buoy (see below) and allows access to both graphic displays and to a data archive.



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.

7.5 OTHER WORK

MNR staff have also been increasingly involved with wider initiatives especially in SAC monitoring. This has included the taking of seabed samples in Pickleridge Lagoon, Dale, assisting with maerl surveys in Milford Haven waterway and the deployment of data loggers at a variety of sites within Pembrokeshire Marine SAC.



At the end of 2009 the OSIL telemetry buoy was recovered ashore after suffering significant flooding of the electronics compartment and subsequent damage to the electronic components. The buoy was repaired by the manufacturer and redeployed in 2010 (see section 3.3.2).



8 EDUCATION AND INTERPRETATION

8.1 RESEARCH AND EDUCATION SUBCOMMITTEE

The Research and Education Committee did not meet in 2010.

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 continues to be popular with the visiting public and figures for 2009 show another increase on previous years for the average number of visitors per day (160). The total number of visitors recorded was slightly down on 2008’s total to over 26000, but the exhibition was open for 60 fewer days. Unfortunately, due to equipment malfunction, there are no figures for 2010, but judging by the numbers of people in Martin’s Haven figures would have remained high, especially since the new mobile office for Skomer ferry tickets came into use (see Section 6.2).

8.3 OTHER INITIATIVES

The MNR ‘Marine Day’ was held in July 2010 primarily aimed at local children. The event was well attended by children of all ages taking part in rock pooling in Martins Haven, looking at marine creatures brought up by MNR divers and playing the marine food web game. Activities on the beach were followed by marine hat making at Marloes Village Hall.



One of the scarier marine creatures found at Martin’s Haven!

The winning entry for the 2009 Skomer MNR Photographic Competition was selected by the SMNR Advisory Committee in April 2010 and announced during the MNR twentieth anniversary even by TV presenter Iolo Williams.



The overall winner was a picture of a cuckoo wrasse by Tim Moran, with category prizes going to Nathaniel Gonzales (scenery category) and Rob Spray (unusual macro category). Entries from photographic competitions are now displayed on the MNR exhibition screen as one of the viewing options.



Photo: Nathaniel Gonzales



Photo: Tim Moran

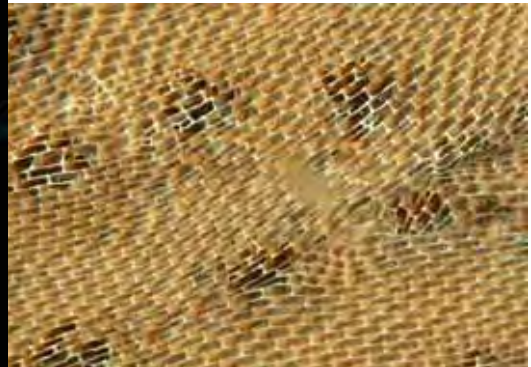


Photo: Rob Spray

PN has been dragged kicking and screaming into the electronic media era with contributions to CCW’s “blog” site www.thewelshview.co.uk on sea slugs and about the MNR’s twentieth anniversary.



Sea slugs seem to catch the attention of the web media with the press release and photographs being picked up by a number of websites and BBC Wildlife magazine.

Articles were also submitted to CCW's internal magazine "H2O", "Pembrokeshire Life" magazine, "Biodiversity News" and PCNPA's "Coast to Coast".

Photographs supplied by MNR staff have also appeared in "Natur Cymru" and a book entitled "Underwater Challenge".

MNR staff were also involved with the making of PCNPA's "Conserving the Park" video (see Section 6.4).

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 took the MNR display to the Pembrokeshire biodiversity gathering in Dale.

KL also helped to run "snorkel safaris" for local school children in 2010 in conjunction with Pembrokeshire Marine SAC officer, Pembrokeshire Coastal Forum and Dale Fort FSC staff and staff from West Wales Divers.

Project: MI00/01

PN gave a presentation to an audience of over 200 at the Pembrokeshire Marine Code "Wildlife Sightings" event. This can be seen at <http://vimeo.com/17430758>.

MNR staff also contributed photographic and other presentation materials to colleagues in CCW, and on request from NT and Brecon Beacons National Park staff.

8.5 MEDIA

Project: ML70/01

By combining the announcement of winners of the 2009 Skomer MNR photographic competition with MNR twentieth anniversary celebrations and with a good deal of work from CCW PR staff considerable media interest was generated in the MNR. Articles appeared in the Western Telegraph, Western Mail, Daily Mail, Sunday Times, and even the Palestine Telegraph. The most unlikely newspaper appearance had to be the centre spread of the Sun newspaper under the headline "The Great Barry Reef – exotic underwater paradise off the coast of ... Wales", even if they did manage to relocate Skomer off the coast of Northern Ireland!

Online the article was carried by the BBC website and the Times Online.

9 ACKNOWLEDGEMENTS

The MNR staff wish to thank all those who contributed to, or supported in any way the management of the MNR in 2010.

Thanks to:

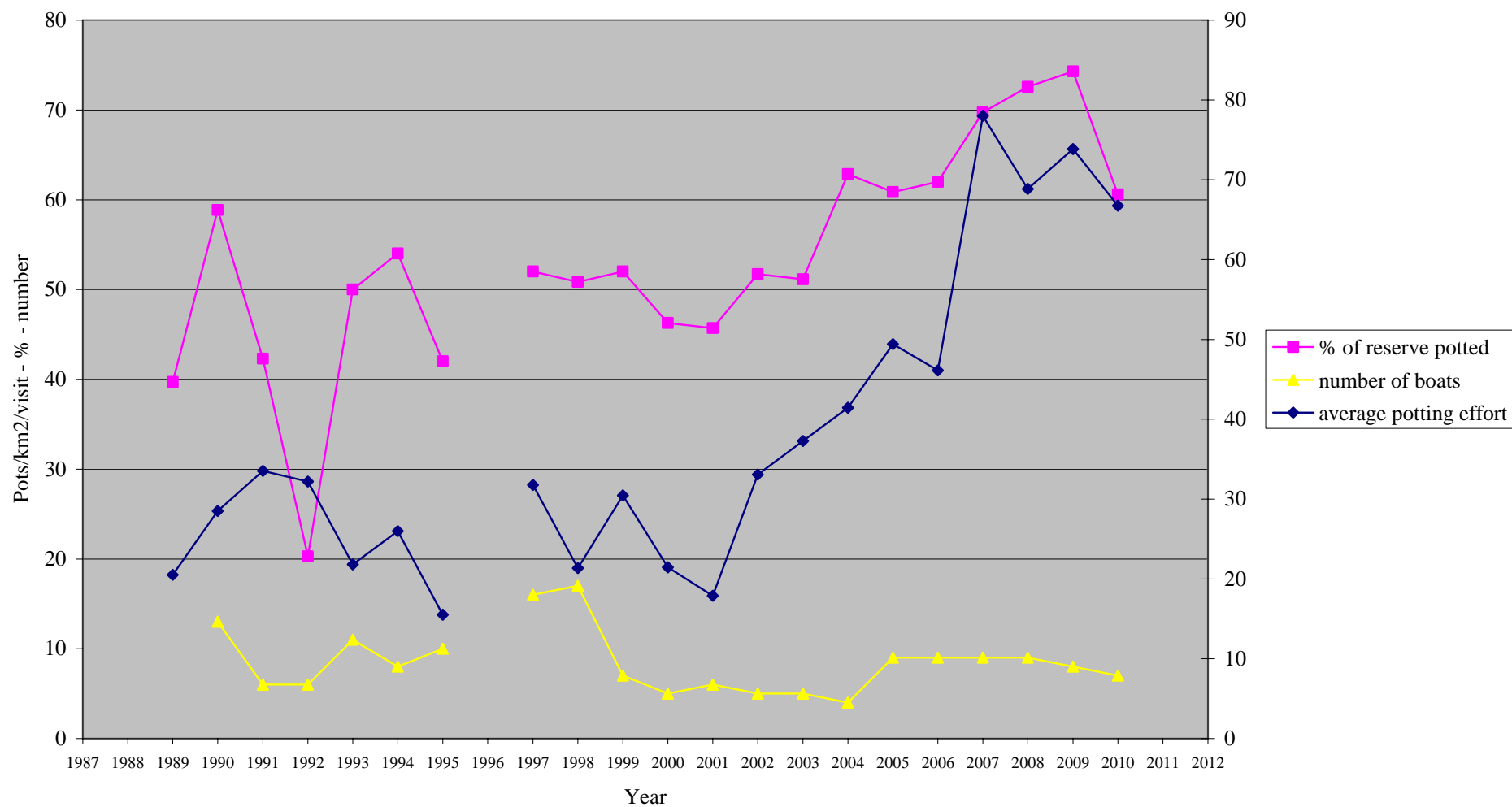
- Contributors to the Advisory Committees, especially Dr Robin Crump who chairs the main committee.
- Honorary Wardens;
- Chris Taylor and Skomer Island NNR staff;
- Lisa Whitfeld, Holly Latham, John Archer Thomson, Jen Jones and Ross and Blaise Bullimore for diving support;
- Ross Bullimore for volunteer warden assistance with boat patrol and shore field work;
- The crew of the *Dale Princess*;
- All our Honorary Wardens for contributing to user records and Dave, 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.

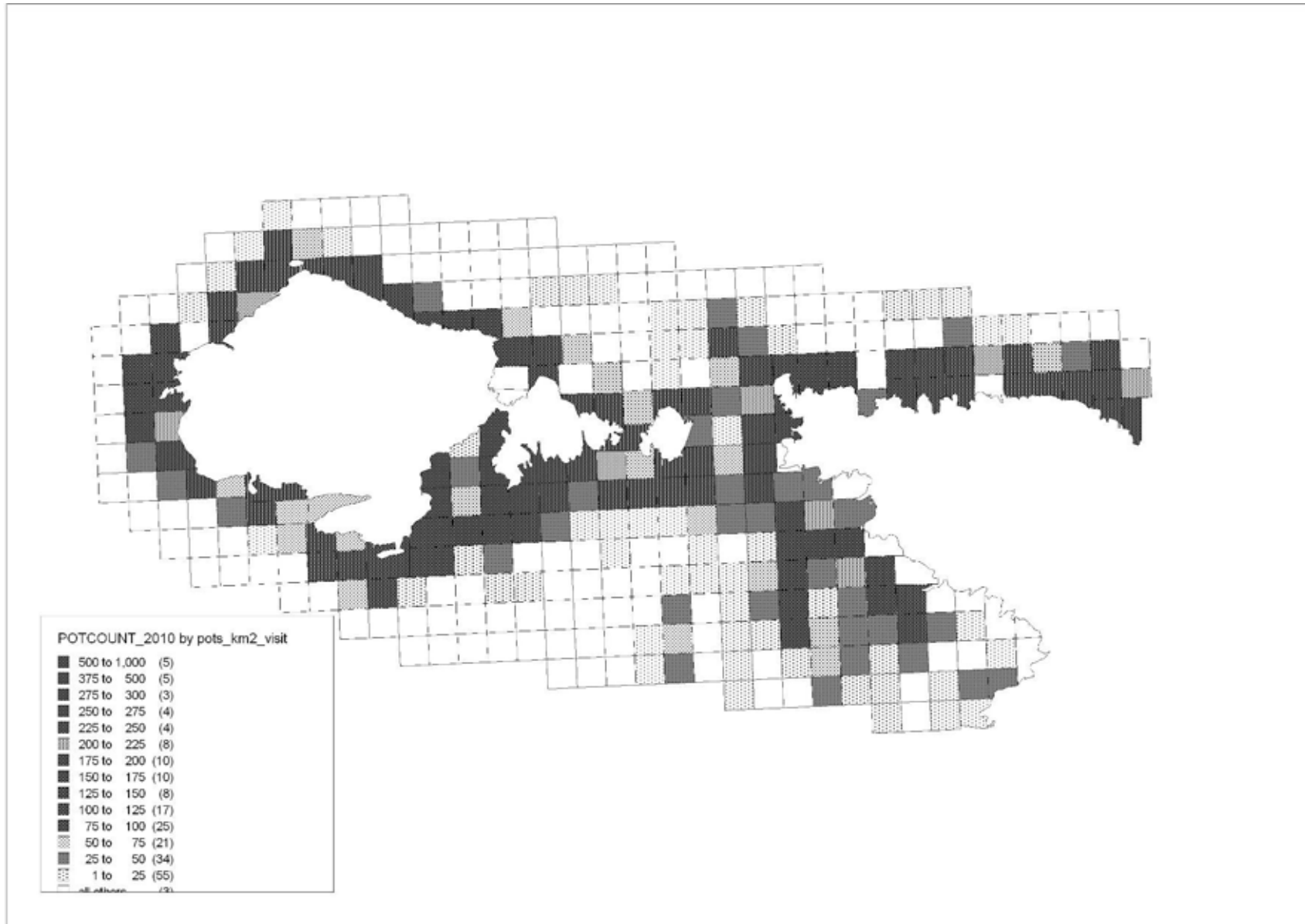
APPENDIX 1

FISHING EFFORT IN THE SKOMER MNR

Summary of fishing effort in the Skomer MNR



SMNR POT FISHING DISTRIBUTION SUMMARY 2010



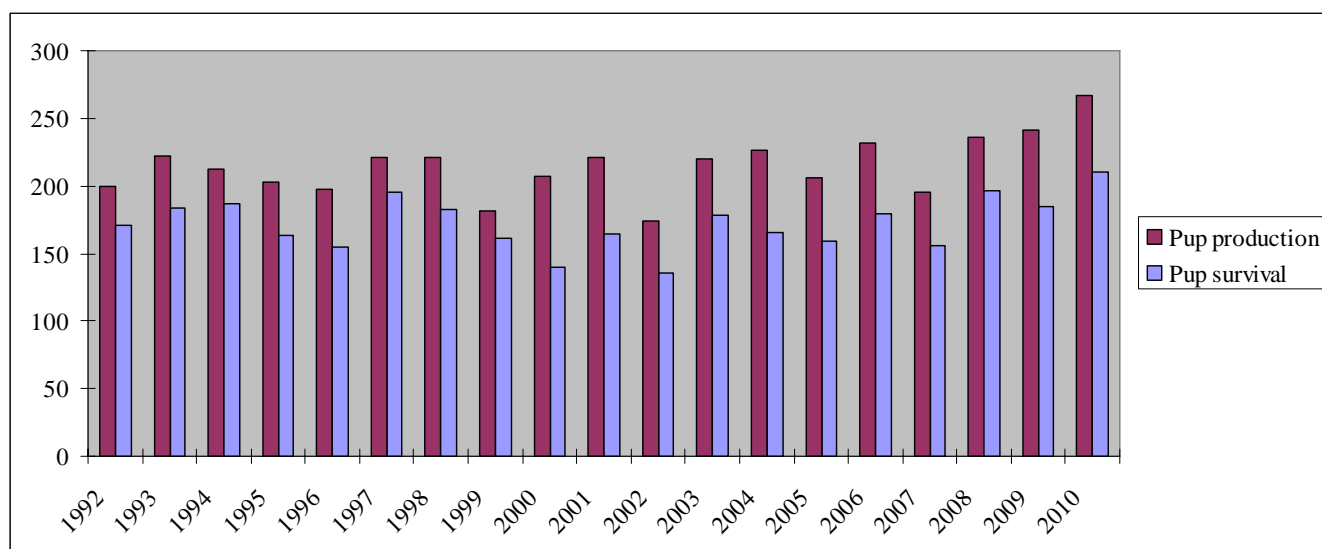
APPENDIX 2

SKOMER MNR SEAL WORK

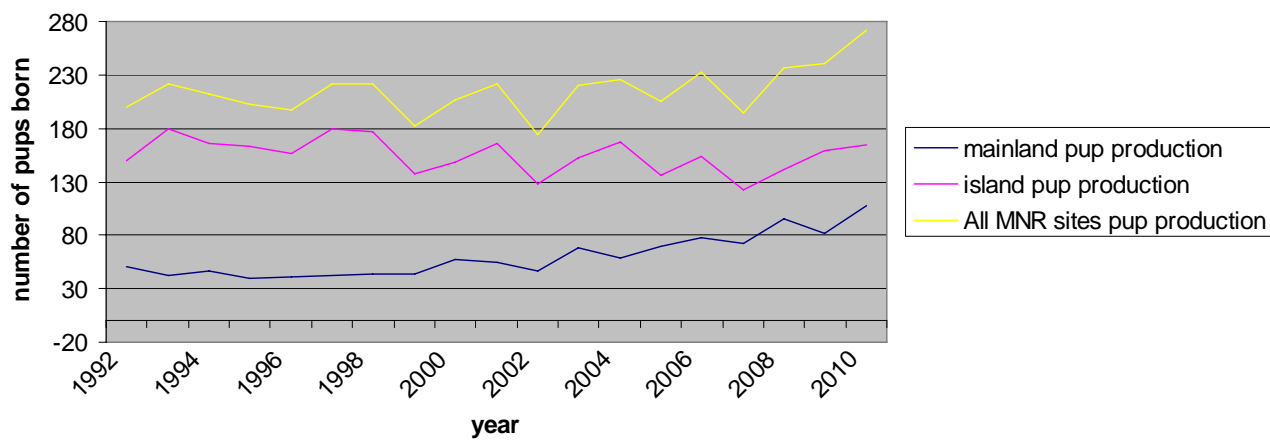
Seal Pup Production Skomer MNR Mainland 2010

First sighted at	No. first sighted at location	Seen to moult	No. Survival assumed*	No. moved after first sighted
Wooltack Bay Caves	5		3	
Martins Haven Caves	1			
Jeffery's Haven	23	16	3	
Pebbly Beach	42	34	2	
Three Doors Cave & Beach	8	6	2	1
Horseshoe Cave				
Boulder Beach & Cave	7	3	1	
Little Castle Bay	9	4		
Victoria Bay	1	1		1
Rainy Rock Beach & Cave	8	7		1
Renny Slip & Cave	3		2	
Watery Bay	1	1		
Total	108	72	13	3
Number of seal pups unaccounted for	14			
Mortality assumed	6			
Still born	3			
RSPCA care				

Skomer MNR Pup production for ALL sites:



Skomer MNR pup production 1992-2010



APPENDIX 3

SKOMER MNR SCIENCE REPORT SYNOPSES AND PAPERS

Grey Seal Breeding Census: Skomer Island, 2010
D. P. Boyle

Wildlife Trust of South and West Wales CCW Regional Report CCW/WW/10/07

SUMMARY

164 pups were born on Skomer Island in 2010, the highest total since 2004

267 pups were born in Skomer Marine Nature Reserve as a whole in 2010, the highest total ever recorded.

128 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 39, between the 27th September and 3rd October, when 27 pups were born.

The busiest sites this year were South Haven (37 pups), Matthew's Wick (31 pups) and North Haven (30 pups).

The mean age at the onset of moult was 14 days and the mean duration of moult was 6 days (see section 4.5).

Photo-monitoring continued in 2010 and is starting to show some really good results. 268 seals were photographed in 2010, including 134 (82%) of the pupping cows, and 135 individual seals (112 cows, 23 bulls) were positively identified from previous years (see section 6)

The haul-outs were very normal in 2010

Seven seals were seen in 2010 with either monofilament or fishing netting caught around their necks

There were no serious instances of disturbance to seals on Skomer in 2010

Three seal pups were killed by the same bull that killed three pups in 2009

There were no serious instances of disturbance to seals on Skomer in 2009

Four seal pups were killed by bulls in 2009

**Long term monitoring of the king scallop *Pecten maximus* population at Skomer Marine Nature Reserve,
Pembrokeshire, UK.**

Newman, P.¹

Lock, K.¹

Burton, M.¹

Gibbs, R.¹

Bullimore, B.¹

Sanderson, B.²

Porter, J. S.³

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Wales, UK

²Countryside Council for Wales, Penrhosgarnedd,
Bangor, Gwynedd, LL57 2DW, Wales, UK

³School of Life Sciences, John Muir Building, Gait 1,
Heriot - Watt University, Edinburgh, EH14 4AS, UK

Given the current high levels of interest in the use of Marine Protected Areas (MPA's) as conservation management tools, it is perhaps surprising that still less than 1% of the UK coastline is afforded such protection. The Skomer Marine Nature Reserve (MNR) in Pembrokeshire is currently the only MNR of its kind in Wales and one of just three in the UK. In 1990 two fisheries byelaws were introduced to prohibit the harvesting of the king scallop *Pecten maximus* by any means from within the MNR boundary. Monitoring surveys of the scallop population at a range of sites within the MNR were conducted in 2000, 2004 and 2008 using teams of volunteer divers. Scallops were collected, counted, measured and growth ring distances were recorded in order to allow analyses of scallop densities, size and age to be conducted. The combined survey data (2000, 2004 and 2008) allowed for population parameters to be examined over time at each sampling site. ANOVA tests of the density data showed significant increases to scallop abundance had occurred (over 4-8 years) at four of the seven sites. Density increases (non-significant) were observed at the remaining three sites. Over time there was no significant difference in mean scallop length over the whole reserve, although some site-to-site variation was found. The data obtained show clear evidence of recovery of the scallop population over the monitoring period. This case study adds to the growing body of literature from other areas in the UK and beyond, illustrating the benefits of protected areas as a management tool. These studies provide useful data for policymakers currently consulting on designation of networks of Marine Protected Areas. Significant gaps in knowledge still remain, including population genetic structuring, dispersal/recruitment of larvae and levels of connectedness within and between regions. Studies in these areas are necessary to fully understand the natural dynamics of unimpacted *P. maximus* populations.

Assessing fish assemblages and effects of recreational fishing with remote underwater video in a temperate marine nature reserve

Ross Bullimore¹

Supervisor – Dr. Andy Foggo²

¹ University of Plymouth, Plymouth, UK

²Marine Biology and Ecology Research Centre, University of Plymouth, Plymouth, UK

Correspondence: ross.bullimore@gmail.com

ABSTRACT: The value of marine protected areas to the conservation of marine biodiversity is increasingly recognised on a global scale. Failure to acknowledge the potential contribution of recreational fishing to fishery declines have resulted in it being exempted from the majority of marine protection initiatives. This study developed and deployed remote underwater video equipment to compare nearshore territorial fish assemblages from two areas of differing recreational fishing pressure in the Skomer Marine Nature Reserve. Fish assemblages were observed to be of significantly lower diversity and abundance on the North Marloes Peninsula coast, where more than 89% of recreational angling in the Marine Nature Reserve is focused, than the Skomer Island coast which is subject to minimal boat based recreational fishing only. Although sample data indicated fish assemblages varied considerably between individual sites and across habitats, there remained significant differences in assemblages between island and mainland sample groups. The absence of discernible differences in environmental conditions, other anthropogenic activities or natural predation on sampled fish species provides evidence that the observed differences in fish assemblages in the Skomer Marine Nature Reserve are, at least in part, attributable to the impacts of recreational fishing pressure on the North Marloes Peninsula.

Settlement plate project summary:

Monitoring of colonization and succession processes of encrusting fauna in the area of Skomer Island

Piotr Kuklinski ^{1,2}

¹Natural History Museum, Cromwell Road, London, UK

²Institute of Oceanology, Polish Academy of Sciences, Sopot, Poland

The project at Skomer Island is part of pan-European study of colonization and succession processes spanning from Mediterranean Sea across Baltic Sea up to the European Arctic. The aim of the project is to understand how encrusting communities change in different environmental conditions (e.g. temperature, salinity, light intensity). The project focuses on speed of colonization, life histories, growth rates and time of spawning of selected species. Locally the project will act as monitoring tool for a rapidly changing marine environment. We aim to build a baseline for knowledge of local biodiversity and monitor how the fauna changes over time. The project should also act as a first warning of invasive species presence.

**APPENDIX 4
MNR PHOTOGRAPHIC COMPETITION ENTRIES 2010**

Animals



Tim Moran



Rob Spray



Rob Spray



Tim Moran



Rob Spray



Ross Bullimore

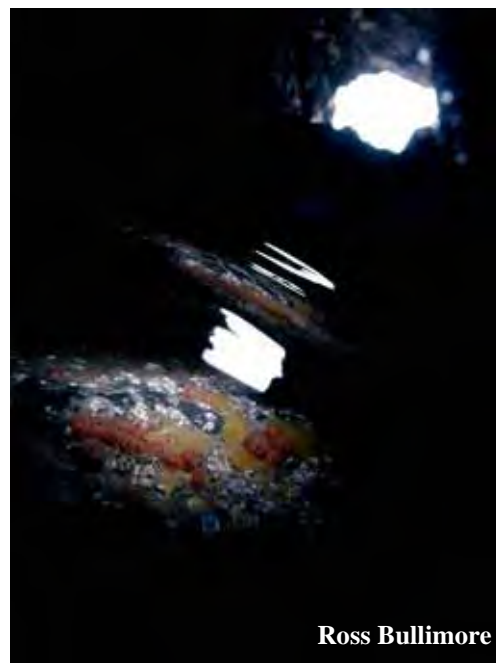
Scenery



Ross Bullimore

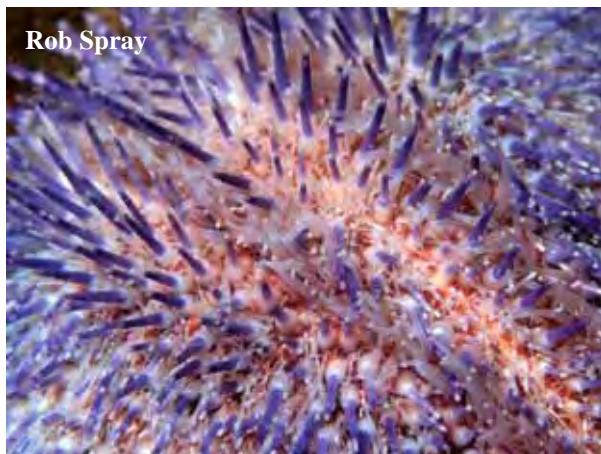


Nathaniel Gonzales



Ross Bullimore

Unusual macro



Rob Spray



Tim Moran

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
NCI	National Coastwatch Institution
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
WAG	Welsh Assembly Government
WTSWW	Wildlife Trust South and West Wales