



SKOMER MARINE NATURE RESERVE REPORT 2006

CCW Regional Report



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APRIL 2007

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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 time, 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

2006 has been another busy year with all planned field projects being completed thanks mainly to the calm spell in October and despite a staff shortfall at the beginning of the season (see Section 2).

Highlights of the Skomer MNR 2006 season included:

- The eelgrass survey – volunteer divers covered a wider area this year to improve the accuracy of the monitoring method.
- Volunteer sea slug surveyors helped us find 35 of the 67 species that have been recorded in the MNR over the years.
- Far greater use of the Pembrokeshire Marine SAC Relevant Authority Group video equipment has been made and Rob Gibbs' expertise in video editing has been put to good use producing video for the SAC RAG, for MNR presentations and for the MNR exhibition.
- The MNR Marine Day was a great success with 50 or so adults and children, including many local children, looking at marine life on the shore and creating their own sea creatures in activities in the Marloes village hall. Thanks to Yvonne Evans and the ladies of the WI for supporting us again.
- The new weather station has had plenty of exercise during the winter recording one maximum wind gust of 97.9 mph. The new weather station is compatible with a Wales-wide network of climate change sites being set up by CCW and also with the UK Environmental Change Network.
- We also had visits from the BBC with an appearance on Iolo's Welsh Safari.
- Work has commenced on the new MNR exhibition as part of the Skomer Interpretation Project and it is hoped that the exhibition will be up and running around Easter time.

We've continued to build partnerships for projects inside and outside the MNR:

- The MarClim project, which is looking at long-term trends in intertidal data from around the UK in terms of climate change, has been continued at sites in the MNR. MNR staff have also continued the monitoring at other Pembrokeshire sites as part of CCW's adoption of the project's Welsh sites.
- MNR sponge work in conjunction with staff late of University of Wales, Aberystwyth and now at Wellington University, New Zealand has continued. In exchange for expert species identification the MNR have taken seasonal photographs of quadrats at the Thorn Rock monitoring site to be used for a PhD study into seasonal variation in sponge communities.
- MNR monitoring has continued to contribute to national and local Biodiversity Action Plan species reporting,
- Workers from University of Wales, Aberystwyth and from Italy have been looking at lifecycle changes in Ross coral using slide datasets started by Blaise Bullimore in the 1980s and MNR monitoring photos up to the present.
- *Skalmey* was used to carry out multibeam sonar swathe bathymetry. Workers from University of Wales, Cardiff were interested in comparing swathe and sidescan bathymetry and also using swathe bathymetry for seabed type discrimination. We were interested in getting higher resolution bathymetry on our monitoring sites and so a trade was made!
- Marine Protected Areas are the topic of the moment and MNR staff have been called on to give the benefit of their experiences with last year's fishery byelaw proposal at various workshops. The Marine Bill White Paper has now been published and MNR

staff have been involved in the various rounds of consultation. More locally MNR staff are awaiting dates from South and West Wales Fishing Communities to discuss potential research areas for the MNR.

Please note that no staff times have been included in this Annual Report due to a breakdown in the Countryside Management System software used to collate that data.

2 STAFF

2.1 STAFFING

The season started rather shakily when Louise Luddington, our seasonal assistant since 2002, decided to leave to pursue her own projects. In the weeks before recruitment of Lou's replacement we were helped out by a number of volunteers, including John Archer Thomson, Blaise Bullimore and Steve Myatt. We owe all of them a huge debt of gratitude because their efforts meant that we were able to get essential fieldwork done that would otherwise have been lost to the monitoring programme.

Rob Gibbs joined us in July and coped well with being dropped into the deep end (literally) with the field season in full swing.

Otherwise the MNR staff complement remains the same with two full-time (Phil Newman – PN, and Mark Burton – MB) and one part-time staff (Kate Lock- KL).

Because of restrictions on CCW's staffing levels Lou's resignation has meant that her time has gone into a central "pool" to be reallocated according to a review on workloads being carried out within the organisation. The future of the MNR seasonal post is therefore unclear at this time.

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

As mentioned volunteers have played an important part in the work of the MNR, not only in carrying out the immensely important volunteer diver survey of the North Haven eelgrass bed, but also supplementing the MNR team in the field and helping with weekend patrols. Thanks are due to:

- Steve Myatt, John Archer Thomson 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.
- The whole gang of underwater grass counters.
- Our small (but perfectly formed) band of sea slug surveyors who helped us notch up a tally of 35 species (67 have been recorded in the MNR over the years).
- Ross Bullimore, who provided extra help during weekend and Bank Holiday patrols and with shore work, and on the occasion of his birthday was elevated to the status of Honorary Warden.

2.2 HONORARY AND VOLUNTARY WARDENS

The following served as Honorary Wardens (HW):

The whole Bullimore family

Sue Burton

Nic Davies, skipper *Crowded Hour* (M1140)

Brian Dilly, dive charter operator

Kenny Gainfort, Skipper *Dale Princess*

Carl Wonnacot, crew *Dale Princess*

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

Jane Hodges, PCNP
Ivor Johnson, Old Mill Diving Service
Bruce Jones, BSAC
Steve Lewis, Pembrokeshire Dive Charters
James Perrins

2.3 TRAINING

All MNR staff, together with some MNR volunteer divers, attended a dive-safety training day where they practised rescue operations and emergency procedures.

MNR staff attended oil spill training in the use of Net Environmental Benefit Analysis techniques to assess clean up procedures and KL attended an oil spill contingency exercise at Milford Haven Port Authority.

All CCW staff are required to undertake Diversity Awareness training, testing attitudes to race, disability, and other issues relevant to dealing with the public.

PN and MB attended a course in the use of the YSI multiparameter sonde, which the MNR will be using next season (see Section 7.5).

MB underwent First Aid refresher training.

KL completed a series of training sessions for Adobe Video Editing, both with an external trainer and then with RG, who has extensive experience with the system.

PN attended training in the use of the latest version of the Countryside Management System software. He also attended Disability Equality training and training in the use of CCW's corporate purchasing card.

RG undertook training in the use of four-wheel drive vehicles.

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.

Two entries were made in the accident book when PN wrenched his back catching a falling diving cylinder and again fitting a wheel clamp to one of the MNR's trailers.

3 ESTATE

3.1 BUILDINGS

Project: ME12/01

The barn rented from NT continues to be used for the storage of larger equipment and for storage and maintenance of the MNR RIB *Morlo*. The barn lost several wall panels during winter storms and some concern was raised about the condition of the building's framework when the lease was renewed in early 2007.

A new weather station was installed in April on the old Coastguard lookout hut (see Section 7.3).

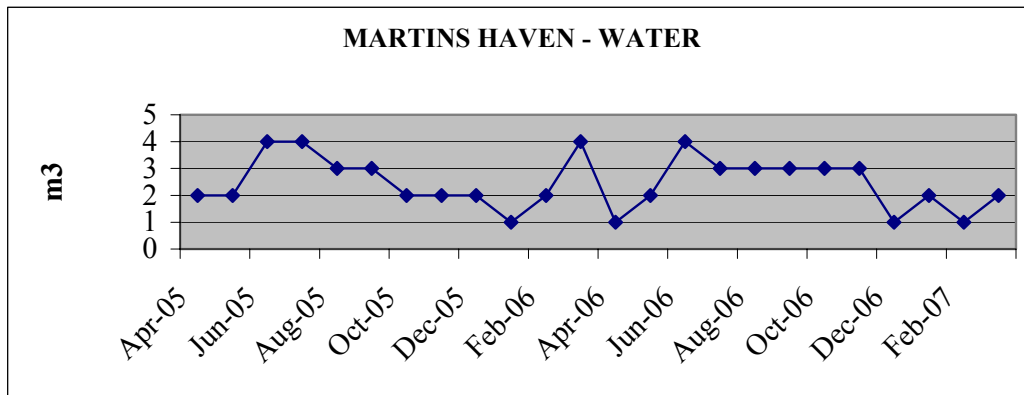


In January 2007 the MNR's environmental management systems were audited by the British Standards Institute as part of CCW's efforts to attain ISO 14001. The auditors were impressed by the use of "dunk-tanks" for rinsing off diving equipment, the fully bunded bowser trailer for refuelling Skalmey, the recycling of buoys found at sea or on MNR beaches for site marking and the reuse of discarded trawl net recovered from Martin's Haven beach as goal nets at Marloes playing field.

Outside contractors were also used to carry out fire risk assessments of the MNR building.

A slightly alarming development at Fisherman's Cottage is the quarry tile office floor, which has "sprung" from the concrete sub-floor resulting in an interestingly sprung quality to the floor. Although this is good from an anti-fatigue perspective, it does mean that MB's chair tends to roll away and we have to fish him out from behind the photocopier from time to time!

As part of the systems in place records are kept of consumption of paper, fuel, water and electricity as well as the amount of waste generated. An example is water use (see graph below), where water use increases during the diving season for washing down equipment. However the peak in March/April was due to water taken for building work on Lockley Lodge.



An unpleasant incident occurred at Martin's Haven when a memorial bench installed by the NT was damaged by vandals attempting to set fire to it. At the same time one of the old fishermen's winches on the beach was uprooted and tipped over.



Project: MI50/01

The MNR exhibition at Martin's Haven was open from Easter through to November 2006. Unfortunately no visitor numbers are available due to a breakdown in the counter equipment. The exhibition forms part of the Skomer Interpretation Project and work has started on refitting the display (see Section 8.2).

3.2 BOATS

Project: MM00/01

3.2.1 Boats

Skalmey spent 58 days at sea and logged 159 engine hours. In addition to routine MNR work she was used for sidescan and multibeam sonar work to support a student from University of Wales, Cardiff (see section 7.5).





Skalmey II was pensioned off in 2006 and has gone to a good home in North Wales.

The new RIB *Morlo* spent 39 days at sea and logged 137 engine hours used mainly for patrol work, seal monitoring and for accessing intertidal monitoring sites around the MNR. *Morlo* has performed well and has had very few teething troubles with minor modifications being made to the self-baler and increased bow protection added over the winter.



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

	1993	1994	1995	1996	1997*	1998	1999	2000	2001	2002	2003	2004	2005	2006
Days at sea														
Skalmey	112	18	68	90	19	9	23	42	48	73	77	52	48	58
Morlo	70	124	76	52	99	71	39	38	31	37	32	40	43	40
Total	182	140	144	142	118	80	62	80	79	110	109	92	91	98
MNR Staff seatime (hours)														
Skalmey	n/a	213.7	614.8	919.0	181.55	70	195	492.5	621.75	882.9	777.61	640.35	618	621
Morlo	n/a	1038.9	644.7	352.4	732.92	514.25	219	254.15	225.75	277.4	278.7	460.9	405.25	331
Total		1252.7	1259.6	1271.4	914.47	584.25	414	746.65	847.5	1160.3	1056.3	1101.25	1023.25	952
MNR Staff days at sea														
Skalmey	293	43	156	223	51	14	42	96	129	225	205	154	158	165
Morlo	134	316	168	104	214	149	62	60	58	80	70	104	99	86
Total	427	359	324	327	265	163	104	156	187	305	275	254	257	251
Other Staff seatime (hours)														
Skalmey	n/a	n/a	n/a	n/a	n/a	n/a	n/a	273.75	197.25	204	88	76.7	75.25	233.25
Morlo	n/a	n/a	n/a	n/a	n/a	n/a	n/a	105.75	89	89.7	69	107.25	88	142.5
Total								379.5	286.25	293.7	157	183.95	163.25	375.75
Other Staff days at sea														
Skalmey	n/a	n/a	n/a	n/a	n/a	n/a	n/a	40	36	23	21	15	18	30
Morlo	n/a	n/a	n/a	n/a	n/a	n/a	n/a	17	19	22	15	21	17	22
Total								57	55	45	36	36	35	52
Total Staff seatime (hours)														
Skalmey	n/a	n/a	n/a	n/a	n/a	n/a	n/a	766.25	819	1086.9	865.61	717.05	693.25	854.25
Morlo	n/a	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
Total								1126.5	1133.8	1454	1213.3	1285.2	1186.5	1327.75
Total Staff days at sea														
Skalmey	n/a	n/a	n/a	n/a	n/a	n/a	n/a	213	242	248	226	169	176	195
Morlo	n/a	n/a	n/a	n/a	n/a	n/a	n/a	77	77	102	85	125	116	108
Total								213	319	329	311	294	292	303

*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*.

Lif jackets 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. New personal equipment was purchased for RG when he joined the team.

Some of the diving cylinders had to be condemned due to corrosion, but these were some of the oldest of the MNR inventory and have been in use since 1991.

3.3.2 Optical, photographic and scientific

Project: MM20/03

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

A new digital camera and underwater housing were purchased to explore the possibility of replacing existing 35mm cameras for monitoring. The new camera has been very successful for close-up photographs and using a small monitoring framer (see Section 7.3), but limitations exist due to lighting for the bigger monitoring frames used in most monitoring projects. As a result the MNR will continue to use its Nikonos 35mm cameras for the time being.



As part of CCW's capital replacement timetable the MNR's 1994 vintage Hi8 equipment has been replaced by a new HDV digital video camera and housing. Video footage will continue to be collected both in the MNR and at sites throughout Pembrokeshire for interpretative as well as scientific needs.

Video equipment on loan from Pembrokeshire Marine SAC RAG has been used extensively to acquire footage for both SAC and MNR interpretation projects (see Section 8).

Progress has been made on digitising the MNR's stock of Hi8 video footage spanning 10 years or more to make it more accessible and to preserve it before the old video tapes deteriorate any further. A suitable home has also been found for the original 16mm cine film shot during the very important scallop dredging trials carried out in the then proposed MNR during 1984. The National Film and Sound Archive for Wales, based at the National Library in Aberystwyth have agreed to curate the film for us.

Project: MM20/04

Maintenance of Skomer MNR scientific instruments included recalibration of the salinity, depth and temperature equipment.

The Idronaut turbidity logger required repairs when its power cable was damaged, possibly during deployment. Damage was minimised due to the design of the equipment, which has a separate battery compartment connected to the main body of the logger by waterproof connectors.

A new weather station was installed in April 2006 (see Section 7.3).

3.3.3 Vehicles

Project: MM00/03

The MNR's Toyota HiLux is not quite so shiny and silver now, but it does have a nice white hat!



The MNR has another, albeit more modest, vehicle – the all-terrain sack trolley as used for carrying equipment to mainland intertidal sites.

3.4 ESTATE WORK

Project: ME01/01

The North Haven eelgrass markers were deployed again in 2006 and passed their annual inspection by Trinity House. Due to the stainless steel construction of the buoys anodes recycled from *Skalmey* are used to prevent electrolytic corrosion and act as counterweights.

Project: ME02/01

Skomer MNR moorings in Martins Haven were maintained. One riser chain on *Skalmey*'s mooring was replaced in addition to the normal renewal of shackles at the start of the season. *Skalmey II*'s riser chain was replaced and the mooring at Dale was also checked periodically.

Project: ME02/02

Visitor moorings in North Haven were maintained. The mooring buoys were replaced with pellet buoys marked 'no mooring' to discourage winter visitors from using unmaintained moorings. New multiplait mooring ropes were fitted, which are more resistant to "crippling" of the ropes due to twisting than the three-strand ropes previously used.

Project: ME02/03

In addition to routine maintenance of Skomer MNR monitoring sites, the new seabed frame at the Thorn Rock site has been reinforced using an old sinker weight found in another part of the MNR. This frame is used for the secure and efficient deployment of seabed instruments such as sediment traps and temperature loggers. The additional weight allows MNR vessels to moor during monitoring work, saving fuel and ensuring that the support boat does not drift during diving operations.



Because CCW HQ staff's underwater SDS drill proved so invaluable a bid was made to purchase one for the MNR, but this was not successful. The drill allows the installation of stainless ringbolts for accurate relocation of quadrats and was particularly useful when setting up new quadrats for sponge community studies (see Section 7.3).

Project: ME04/01

Martin's Haven beach continued to be cleaned as part of the Marine Conservation Society 'Adopt a Beach' project, although the regular visits by local authority beach care staff have left little for MNR staff to do.



Skomer MNR staff removed office rubbish and beach rubbish. Occasional litter encountered at sea, including fishing rope, nets and large pieces of wood, were recovered if considered to be a hazard to navigation. See Section 3.1 for the MNR's green certification efforts.

Litter is becoming more of an issue with a number of incidents of seabirds and seals being reported by Skomer Island staff (see Sections 4.3.7 and 4.3.8)

3.5 DIVING OPERATIONS

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

As can be seen from Figure 3.1 volunteer divers have again played a large part in enabling the MNR to carry out its work. This was particularly important in 2006 as recruitment of a replacement seasonal assistant did not happen until July. Thanks to the efforts of volunteers this did not impact the MNR team's available diving time as much as it could have.

Work had started early on diving projects, mainly estate work, in 2006, but protracted periods of bad weather in May and August did offset the early gains.

The majority of diving was carried out for biological monitoring projects.

FIGURE 3.1 SUMMARY OF MNR DIVING ACTIVITY 1992-2006

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

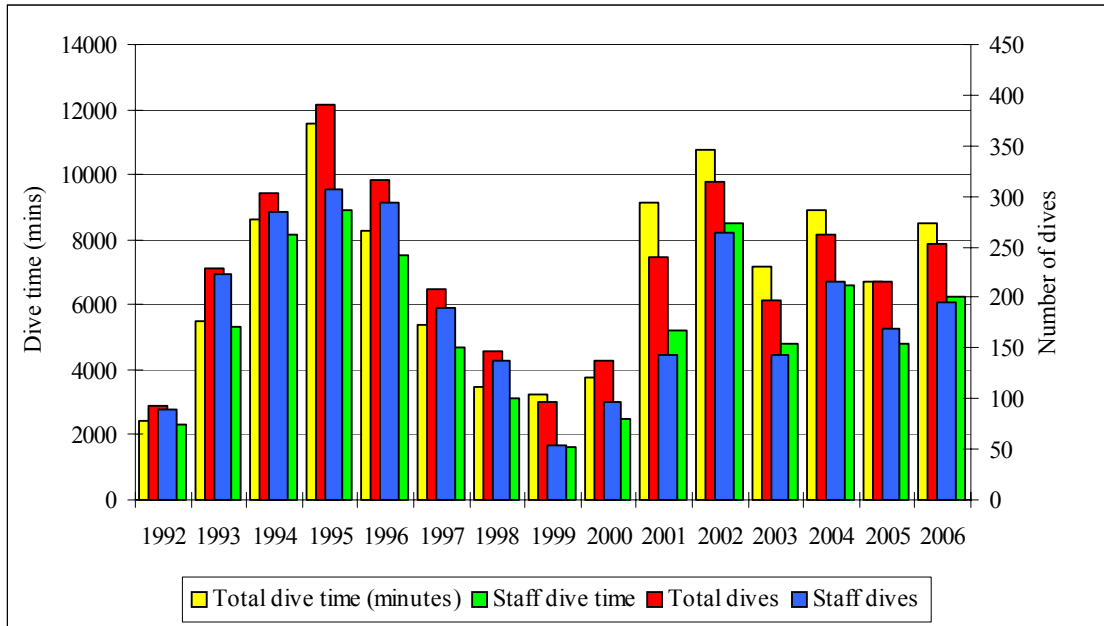
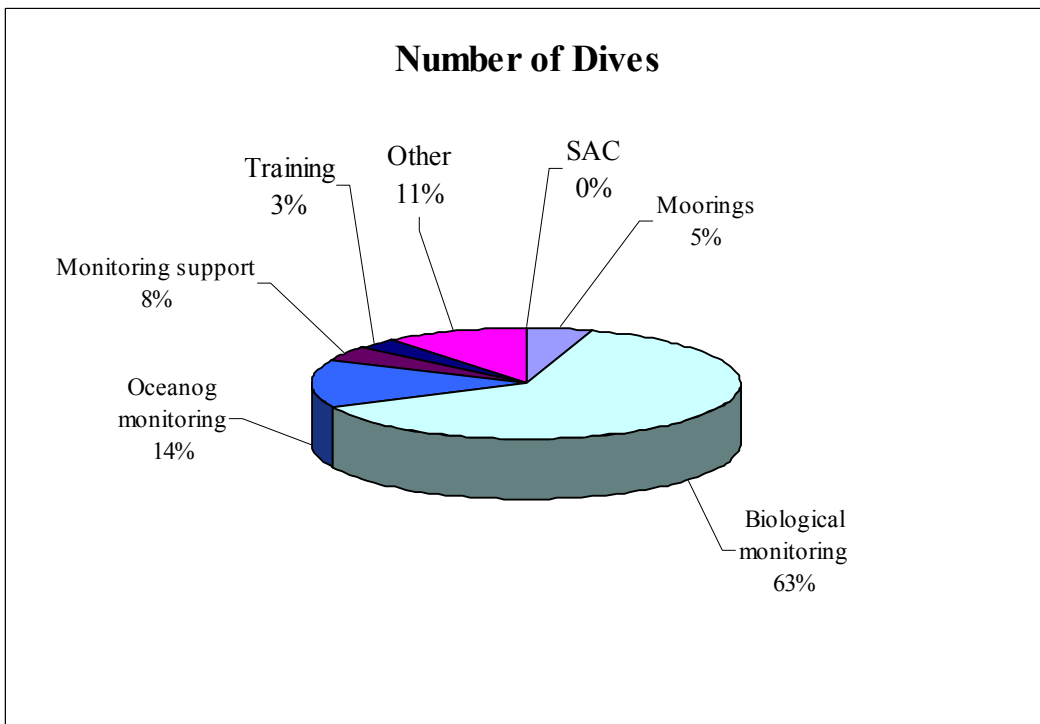
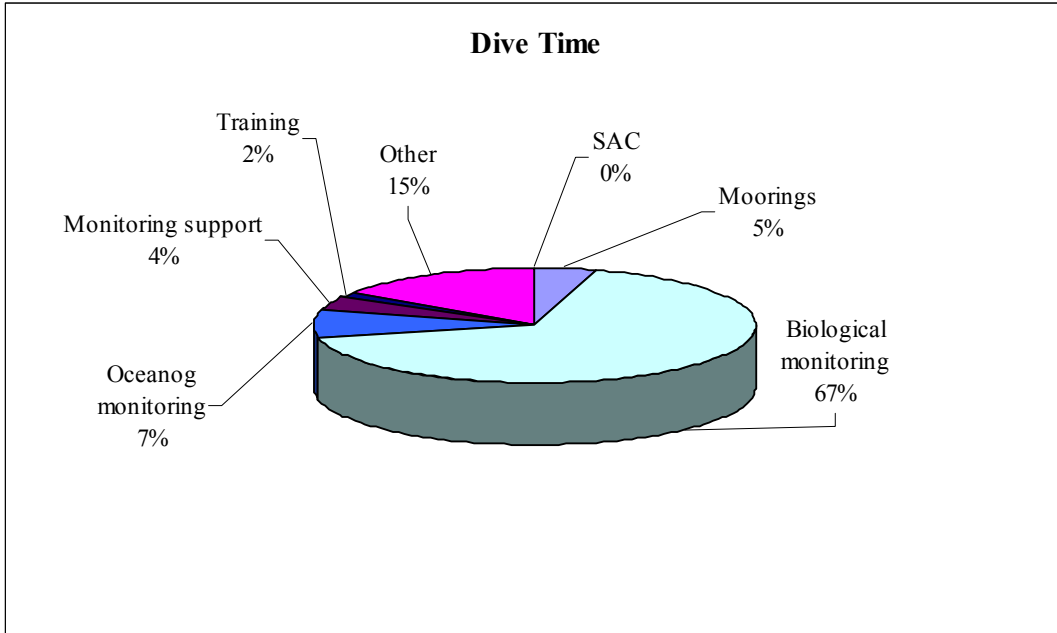


TABLE 3.2 SUMMARY OF DIVING ACTIVITY 2006

	MNR STAFF	CONTRACT & VOL DIVERS	TOTAL
Dives	169	47	216
Dive time (min)	4805	1897	6702
Dive time (hrs)	80	31.60	111.60
Average dive time (mins)	28	40	33.80
Diving days	42		

FIGURE 3.2 MNR DIVING OPERATIONS 2006

(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 19 days, concentrating on Sundays and Bank Holidays between May and September. This is lower than previous years because sea conditions on several weekends were too rough to carry out patrols. A watching brief was maintained at other times when staff were out on the water.

Sea time statistics were 251 staff days and 98 boat days (see table 3.1).

Data for all observed visitors and use of the MNR from April 2006 to end of March 2007 is shown in Section 5.

4.2 INFORMATION

The MNR interpretative booklet “Stars, squirts and slugs...marine life in an underwater refuge” continued to be very popular and a reprint of 5000 copies was carried out during 2006. Stocks of the MNR computer-generated seascape poster ran out during the winter of 2005, but no reprints have been forthcoming.

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

The MNR “User Regulations” and “Diver Safety” leaflets continue to be available via the MNR office, West Wales Divers, Old Mill Diving Services, local yacht clubs and marinas, local dive charters and schools, and South Wales Sea Fisheries Committee.

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. Also displayed is a joint SWSFC and MNR poster, explaining the scallop byelaw along with a poster clearly indicating the fine that will be imposed on those breaking the byelaw.

4.3 MANAGEMENT ISSUES

4.3.1 Dredging/beam trawling

None observed in 2006.

4.3.2 Potting *Project: RH03/05 Watching brief*

Vessels operating in the MNR in 2006 are listed in Section 5.1 and for fishing effort estimates see Appendix 7.

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

None observed in 2006.

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

None observed in 2006.

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

None observed in 2006.

4.3.6 Collection of specimens for education and research

Permits for collection of specimens were renewed for Dr Joanne Porter, University Wales Aberystwyth and Valerie Morse, Pembrokeshire Darwin Science Festival.

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.

Temporary signs were again erected at the Deer Park entrances and the head of Martin's Haven beach to increase public awareness about seals.

Workers on Skomer Island reported that between 15 and 20 seals on Skomer were seen to have net or line entangled around their necks, but only two appeared to be in any distress as a direct result. Efforts to disentangle accessible seals met with very limited success. Of the adult seals photographed for identification purposes ten had the types of lesions or scars associated with entanglement.



One seal at the Wick was reported by Skomer Island staff to be in a blue plastic bag with only its head sticking out!

Building work in North Haven appeared to have little effect on seals other than when a barge was unloaded at a time when a seal pup was on the landing beach and this had no lasting effect.

Hauled out seals in North Haven were frightened into the water by a fishing vessel setting pots very close to the haul out beach in spring according to reports from Skomer Island staff and MNR Honorary Wardens.

The MNR 'Seal Watching leaflet', containing information on seals and how to minimise disturbance whilst watching them, is now out of print and a reprint is awaited.

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

Most incidents reported by Skomer Island staff have involved puffins and gannets being caught in fishing line or net.

PN observed a herring gull being caught on a shore angler's line when it misguidedly took the bait. Despite being somewhat roughly handled the bird flew away apparently unharmed.

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

None observed in 2006.

4.3.10 Angling *Project: RH03/08 Watching brief*

See Section 5 for numbers of anglers observed. See also Section 4.3.8 above for interaction with seabirds.

Angling litter continues to be a problem at popular angling sites, both above and below the water. Walkers on the coast path have called in to the MNR office to complain about litter left by anglers on numerous occasions.

Neptune's Army of Rubbish Cleaners (NARC) continue to carry out good work in the MNR as well as at other sites in Pembrokeshire. (NARC is made up of local diving clubs and is the first underwater clean up Coastcare group funded by Keep Wales Tidy.)

The 'AngleBin' project to encourage anglers to reduce losses of angling gear and to clean up their own rubbish has been continued by MNR staff. The 'AngleBin' is a container designed specifically for the disposal of angling gear; these along with posters are being trialled at locations around the Pembrokeshire Coast.



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

Visitor moorings continue to be popular with both yachts and motorboats, but one RIB was seen anchored in the eelgrass bed.

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

There were very few reports of speed limit byelaw infringements in 2006.

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 records of pollution were made in 2006, although an area behind Paines Rock exhibited signs that could be linked to a localised pollution incident with bleaching of coralline algae and kelp.

4.3.15 Water Quality *Project: RP63/03* *Staff time: Estimated: 5.0* *Actual: 0.0*

Bathing water quality data for Martins Haven continues to be obtained from Pembrokeshire County Council (see Table 4.1).

TABLE 4.1 WATER QUALITY DATA FOR MARTINS HAVEN 2006

Week	Sampling Date	Sampling Time	Total Coliforms (Presumptive) Cfu/100ml	Faecal Coliforms (Presumptive) Cfu/100ml	Streps (Presumptive) Cfu/100ml
1	03/05/06	11:10	18	10	1
2	08/05/06	11:00	27	10	7
3	15/05/06	10:50	36	10	1
4	22/05/06	09:45	100	10	5
5	31/05/06	09:32	18	10	2
6	05/06/06	11:10	10	10	1
7	12/06/06	11:15	220	82	5
8	19/06/06	09:30	64	10	1
9	26/06/06	10:45	27	36	15
10	03/07/06	11:15	520	200	232
11	10/07/06	13:10	10	10	1
12	17/07/06	11:45	10	10	3
13	24/07/06	10:20	10	10	12
14	31/07/06	10:25	10	10	1
15	14/08/06	10:30	10	10	1
16	21/08/06	10:20	10	10	1
17	30/08/06	09:30	10	10	3
18	04/09/06	10:50	10	10	1
19	05/09/06	09:35	10	10	1
20	11/09/06	10:20	27	10	3

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.

18 pot maps were produced in 2006 using GPS and these have been transferred to the GIS mapping system MapInfo. The summary map for 2006 can be seen in Appendix 1 together with a graph summarising fishing effort since 1992.

Fishing boats operating in the MNR during 2006 were recorded as Crowded Hour (M1140), Lydon (M1050), Progress (M32), Industrious (M3), Keyte (M1148), Arctic Wolf (M888), Emma Louise (M1130) and Barbara Anne (M33).



5.2 RECREATIONAL USE

Project: RH33/01

Types and numbers of visitors recorded for the year ending 31 March 2007 are summarised in Table 5.1 and Figures 5.1 to 5.4.

All visitor numbers, particularly those coming by boat, continue to decline. Some of this decline can be attributed to reduced returns from record collectors such as some of the commercial operators and particularly missed are the records normally submitted by the Bristol University Sub-Aqua Club. The weather may also have had an effect in that Bank Holiday weekends were affected by bad weather and August was particularly poor. There may also have been more visitors coming on a Saturday, when MNR staff are not around. Fuel price increases may also have a part to play meaning that both commercial and recreational craft are staying closer to their point of launch.



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.

5.3 CASUALTY ASSISTANCE

MNR staff helped the *Dale Princess* free a rope from their propeller; this time it was KL's turn to benefit at the Dale Princess Christmas Party!

Figure 5.1 Recorded Recreational Use Skomer MNR

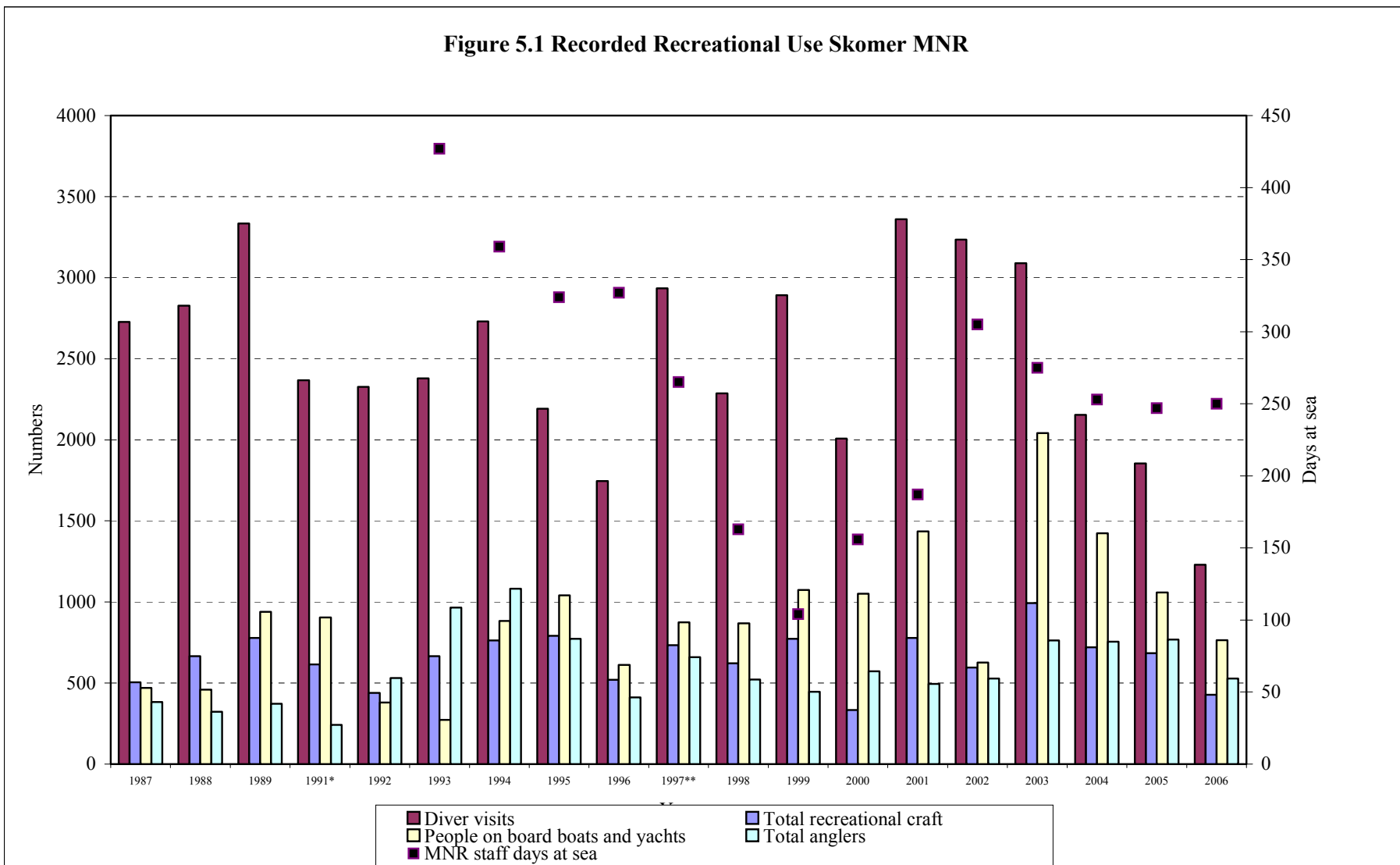
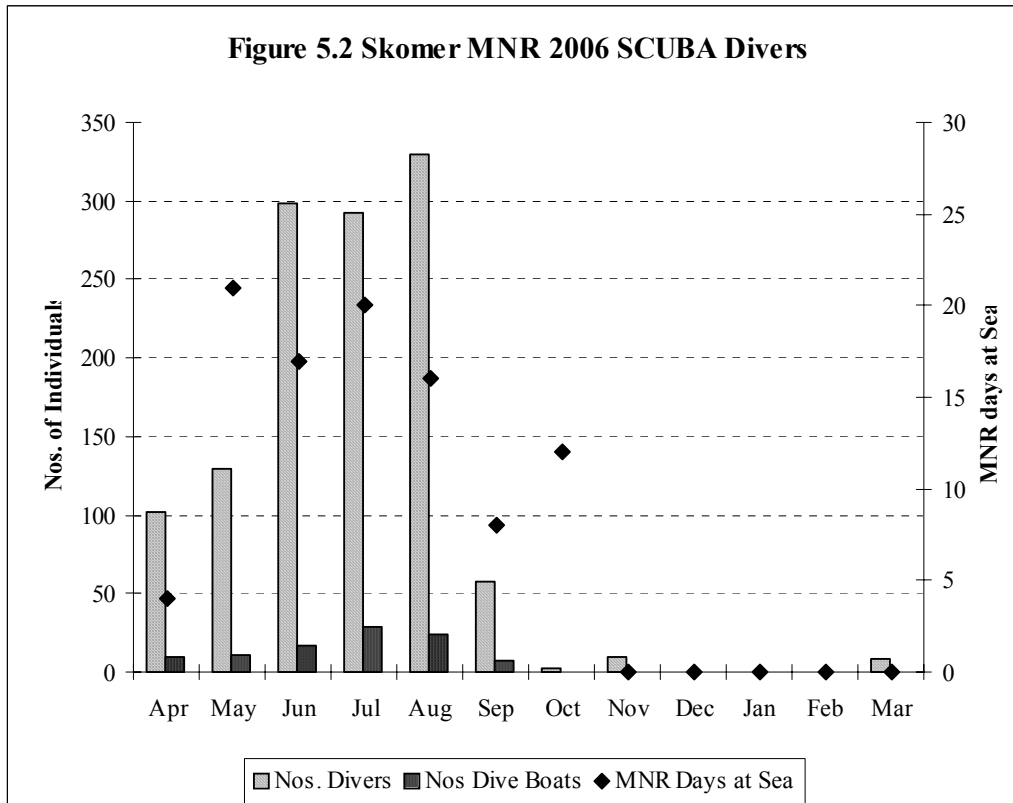
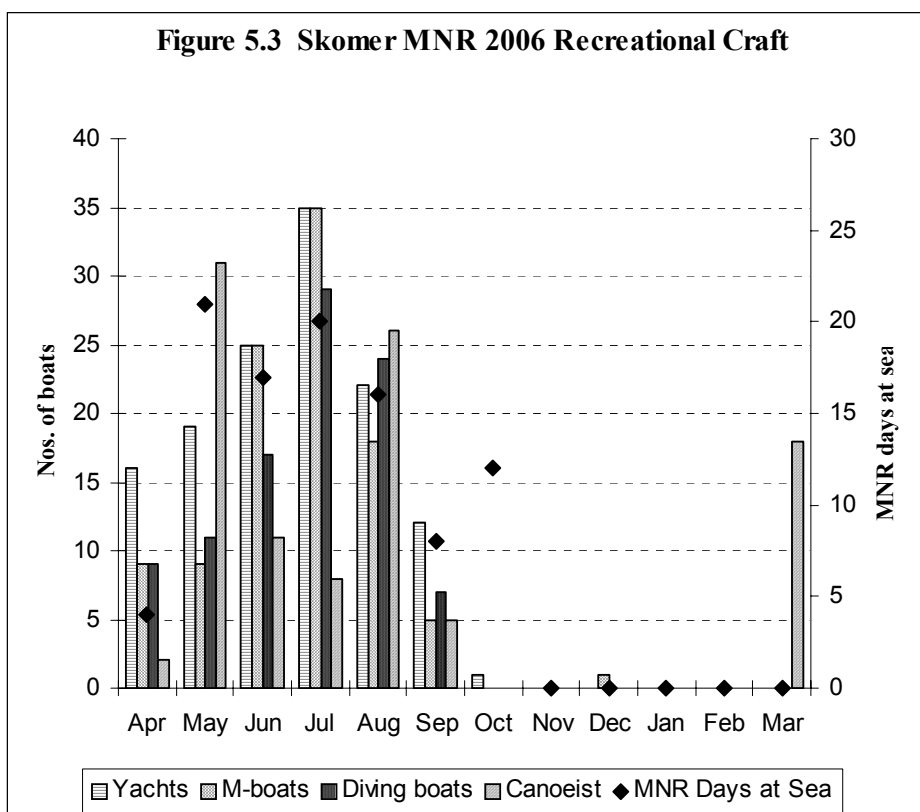


Figure 5.2 Skomer MNR 2006 SCUBA Divers



	MNR Days at Sea	Nos. Divers	Nos. Dive Boats	Total Records
April	4	102	9	17
May	21	129	11	22
June	17	299	17	41
July	20	293	29	42
August	16	330	24	60
September	8	57	7	9
October	12	2	0	1
November	0	10	0	3
December	0	0	0	3
January	0	0	0	0
February	0	0	0	0
March	0	8	0	2
Total	98	1230	97	200

Figure 5.3 Skomer MNR 2006 Recreational Craft

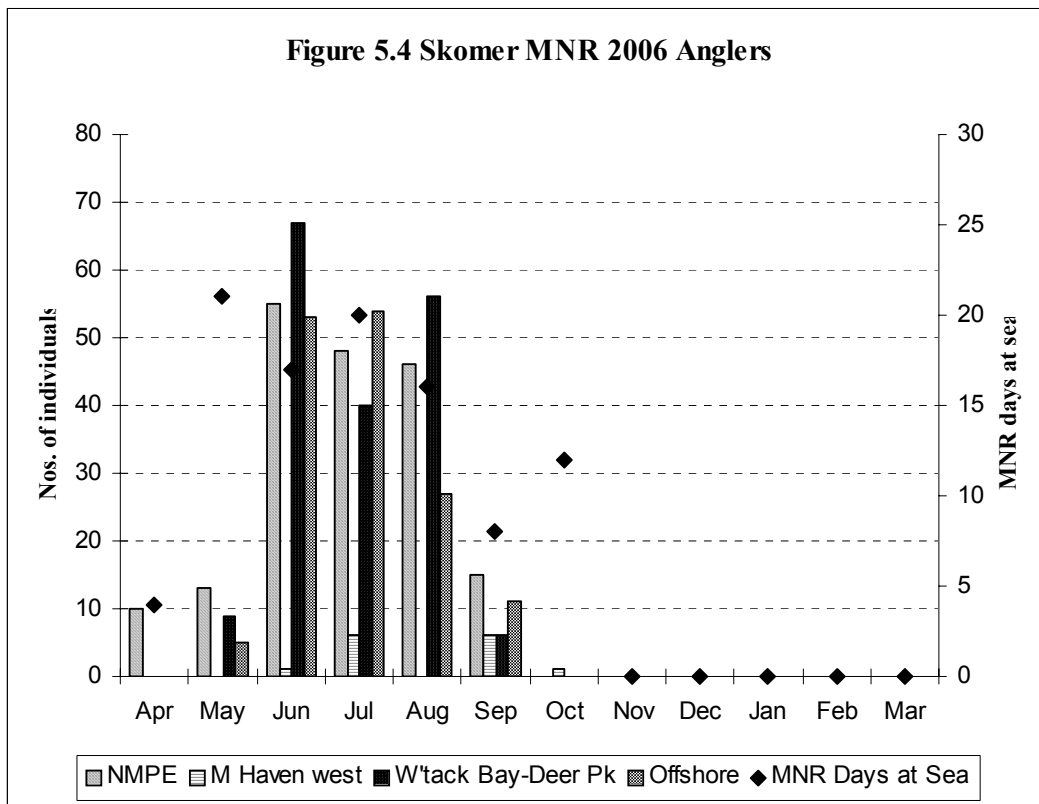


	MNR Days at Sea	Yachts	M-boats	Canoeist	Diving boats	Est. POB*	POB**
April	4	16	9	2	9	70	37
May	21	19	9	31	11	92	52
June	17	25	25	11	17	163	87
July	20	35	35	8	29	241	185
August	16	22	18	26	24	138	75
September	8	12	5	5	7	55	2
October	12	1	0	0	0	3	0
November	0	0	0	0	0	0	0
December	0	0	1	0	0	3	0
January	0	0	0	0	0	0	0
February	0	0	0	0	0	0	0
March	0	0	0	18	0		0
Total	98	130	102	101	97	764	438

**POB = Total of people aboard yachts and motor-boats - actual observations

*Est POB = Total of people aboard yachts and motor boats estimated for all vessels using mean below
 Mean POB Yts & MBs = 3.29

Figure 5.4 Skomer MNR 2006 Anglers



	MNR Days at Sea	NMPE	M Haven west	W'tack Bay-Deer Pk	Offshore
April	4	10	0	0	0
May	21	13	0	9	5
June	17	55	1	67	53
July	20	48	6	40	54
August	16	46	0	56	27
September	8	15	6	6	11
October	12	0	1	0	0
November	0	0	0	0	0
December	0	0	0	0	0
January	0	0	0	0	0
February	0	0	0	0	0
March	0	0	0	0	0
Total	98	187	14	178	150

NMPE = North Marloes Peninsula East

6 LIAISON AND ADVISORY COMMITTEES

6.1 ADVISORY COMMITTEE

Project: ML80/01

The annual Advisory Committee meeting was held in April 2006. 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.

Meetings of the Research and Education subcommittee were also held in July and August 2006 (see Section 8.1).

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.

The MNR continues to help with mail delivery to the island.

PN has been involved both in liaison with Trust staff and contractors for the Skomer Island building project as well as for the associated interpretative project (see Section 8.1).



MNR staff have also been involved with Sea Trust surveys of cetaceans as observers and also providing boat support for a search for the “Little Haven dolphin”.

6.3 SOUTH WALES SEA FISHERIES COMMITTEE

Project: RH90/01

Liaison with SWSFC director, Phil Coates, has returned to the more usual occasional contact since the MNR fishery byelaw proposal was turned down last year.

MNR staff have discussed potential joint projects with SWSFC staff to benefit the MNR and fishery management in the SWSFC region.

6.4 PEMBROKESHIRE COAST NATIONAL PARK

Project: ML40/03

Close liaison continues with:

Jane Hodges, Advisory Committee member and HW;

Steve Drinkwater: Research and Education subcommittee member;

Elaine Jones: Interpretation officer and Research and Education subcommittee member;

Polly Groom: Archaeologist

Charles Mathieson: Recreation Management Officer.

MB assisted Polly Groom with bathymetric data for work she was carrying out on shipwrecks and nautical archaeology in the area.

6.5 NATIONAL TRUST

Project: ML30/03

Skomer MNR staff continued to liaise with National Trust. Informal liaison is maintained with Warden Debbie Kearsley and Jonathan Hughes through the Advisory Committee, subcommittees 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.

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 via one of their officers who was a Pembrokeshire College placement student at the MNR. 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 introducing themselves to fishermen new to the MNR as and when opportunity presents and contact being maintained on the water.

One local fisherman continued to serve as an Honorary Warden.

Project: ML80/06

Project: MI20/01

It has been another very busy year in terms of establishing links with academic bodies, including:

Dr Jo Porter of UW Aberystwyth has continued to develop areas of work that involve the MNR, especially involving Ross coral (*Pentapora foliacea*), namely:

In 2006 an Aberystwyth University grant was awarded to support work started in 2005 to study the genetic make up of colonies and populations, dispersal between known locations as well as smaller scale dispersal events within the MNR. The samples were heavily calcified which made it very difficult to get pure DNA and the work is on-going. The focus of the DNA work is to look at:

- 1) How closely related are *Pentapora foliacea* colonies growing closely together at North Wall?
- 2) What bacteria are associated with the tissues of *Pentapora foliacea*?

Additional samples have been collected in Italy and Norway so that the *Pentapora spp* population genetics can be compared with those from Skomer and Devon in the UK.

A paper by workers at UW Aberystwyth (Sharpe et al: Differential microbial fouling on the marine bryozoan *Pentapora facialis* (Pallus, 1766)) is currently being submitted for publication.

RG has been working closely with Dr Porter in the establishment of methods to assess size of colonies and also to look at life-cycle changes (see Section 7.3).

Dr James Bell, formerly of UW Aberystwyth has now emigrated and is senior lecturer at the Victoria University of Wellington, New Zealand, but continues his connection with the MNR through the wonders of digital photography (see Section 7.3). The paper he submitted on sponge monitoring in the MNR was published in the Marine Ecological Progress Series journal in April 2006.

UW Aberystwyth MSc students again visited Martin's Haven to talk to PN about possible projects in the MNR and about the MNR fishery byelaw proposal.

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 carried out MarClim surveys both within the MNR and at 5 sites in Pembrokeshire with CCW colleague Anne Bunker. A related project to record environmental data at some of the MarClim sites was also initiated and MB installed temperature and light loggers at a number of sites inside and outside the MNR.

Dr M Kaiser of UW Bangor School of Ocean Sciences has also been keen to use the experience of the MNR for work they will be undertaking to look at seafans and Ross coral in Lyme Bay.

Project: ML80/05

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

Pembrokeshire Marine Code, UK and local BAP workers, the Wave Dragon project team, WWF, JNCC, Mid and West Wales Fire Brigade, MCS, Pembrokeshire Coastal Forum, Milford Haven Environmental Surveillance Group, and the Pembrokeshire Marine SAC Relevant Authority Group, Sea Anglers Conservation Network, the National Coastwatch Institution, RMAS, Wave Dragon wave energy pilot project, Pembrokeshire Marine Code group, North Eastern Sea Fishery Committee.

6.7 WIDER MARINE ENVIRONMENTAL INITIATIVES

KL continued as the southwest Wales coordinator for the MCS Seasearch initiative. MNR staff have continued their involvement with the Pembrokeshire Marine Code. PN attended a BAP sea fan workshop in Plymouth and has been involved in the review of UK BAP species.

MB has continued to be involved with the MHWSG and with MarClim (see Section 6.6 above). He also attended a Marine Environmental Change workshop and the UK Global Ocean Observing System Action Group workshop hosted by CCW in Bangor.

All MNR staff attended the CCW Marine Monitoring Workshop in Bangor and PN, KL and RG all made presentations on different aspects of MNR work.

6.8 MARINE BILL

Project: AS00/01

Although the byelaw proposal was turned down by the SWSFC in 2005 PN has been involved in a great deal of comment and discussion in advance of the proposed Marine Bill. This has included contributing to CCW's response to WAG, contributing to reports on the "Ecosystem Approach" to Marine Protected Areas and "Analysis of options for delivering Highly Protected Marine Reserves in Wales. PN has also contributed to workshops hosted by EN (now Natural England) looking at angling in MPAs and CCW workshops looking at benefits of HPMRs and seabed sensitivity to fishing.

7 SCIENCE

7.1 RESEARCH AND EDUCATION SUBCOMMITTEE

Meetings of the research and education subcommittee were held in 2006, but were convened especially to discuss the Skomer Interpretation Project (see Section 8).

More detail on all of the research projects undertaken in the MNR can be found in the “Project Status Report 2006/7”.

7.2 CONTRACT SCIENCE

Project code: RA03/01 **MONITORING GREY SEALS** **Priority:** 2

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).

2006 pup numbers reached 241, 16 pups higher than the average for the last 15 years. Pup survival was 77%, the same as in 2005 but 3% lower than the average. There were relatively few periods of harsh weather until late November and little sign of disease; the majority of deaths were caused by abandonment or separation. 62% of births occurred in September. The most prolific period was week 39 (24th – 30th September) when 43 pups were born.

Between 15 and 20 seals on Skomer were seen to have net or line entangled around their necks, but only two appeared to be in any distress as a direct result. Of the adult seals photographed for identification purposes ten had lesions or scars associated with entanglement.



A report was produced Jane Matthews: “Grey Seal Breeding Census: Skomer Island 2006” (see Appendix 3).

7.3 IN-HOUSE MONITORING

Project code: RA01/01 **RECORD CETACEANS** **Priority:** 2

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** **Priority:** 2

Vagrant and alien species were recorded by MNR staff and the crew of the Dale Princess. Species recorded in 2006 included sunfish (*Mola mola*) and By-the-Wind Sailors *Veleva veleva*.



A *Zostera* shoot density and boundary map was completed following the method established in 2002, some modification were made to the method to improve the mapping of the areas outside of the main survey plot.



The *Z. marina* shoot density showed a significant overall increase over most of the bed between 1997 and 2002, with a mean density increase from 34.2 shoots/m² to 64.3 shoots/m². In 2006 the mean density was lower than in 2002 with 51 shoots/m², this reduction is due to a lower maximum shoot density (2002: 156 shoots/m², 2006: 128 shoots/m²) and a smaller area of the very high shoot densities being recorded. The lower 2006 mean shoot density will also be partly due to the increased survey area providing a thorough record of the outer areas of the bed where lower densities are found, thus reducing the overall mean.

Between 1997 and 2002 the most significant density increases were found in the southwest and northeast areas of the bed, in 2006 the densities in the southwest had reduced and the high density areas were found in the north and east areas of the bed.

Project code: RM54/01 **MONITOR NUDIBRANCH SPECIES DIVERSITY** **Priority: 2**

Thirty-five nudibranch species were recorded from 13 sites during 21 dives. The sites represented a range of habitats for nudibranch species. The species lists for 2002 and 2006 were compared. Combining the 2002 and 2006 data 41 dives completed at 20 sites recorded 46 species. Notable records were *Doris sticta* a nationally scarce and three species not previously recorded in the historical data set, *Cadlina laevis*, *Doto eireana* (Unconfirmed by specialist) and *Onchidoris pusilla*.



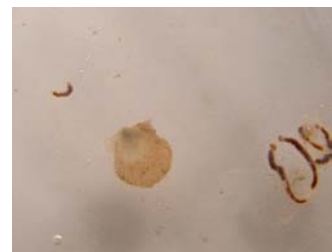
Doris sticta, Thorn Rock

Project code: RB03/01 **MONITOR LITTORAL HABITATS / COMMUNITIES:**
MACRO SCALE **Priority: 2**

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

Project code: RB03/01 **MONITOR SCALLOP POPULATION**
Priority: 2

Efforts to collect scallop spat have been started in the MNR although initial results have been somewhat discouraging with only one juvenile scallop collected from collectors during 2006!



Project code: RB03/02

**MONITOR LITTORAL COMMUNITIES:
MESO-SCALE**

Priority: 2

The 2003 methods were continued for another year with the assistance of John Archer Thomson and Dr Robin Crump. All the sites were completed including the lower shore quadrats at The Pig Stone, which defeated us last year. The MarClim sites were all completed along with 5 sites outside the Reserve.



Project code: RM03/01

MONITOR EPIBENTHIC ROCK COMMUNITIES: MESO-SCALE

Priority: 2

Two sets of photographs was taken at the North Wall and one at the Thorn Rock site for epibenthic rock community photo monitoring. Unfortunately photographic equipment breakdowns meant that one set from North Wall was unusable.

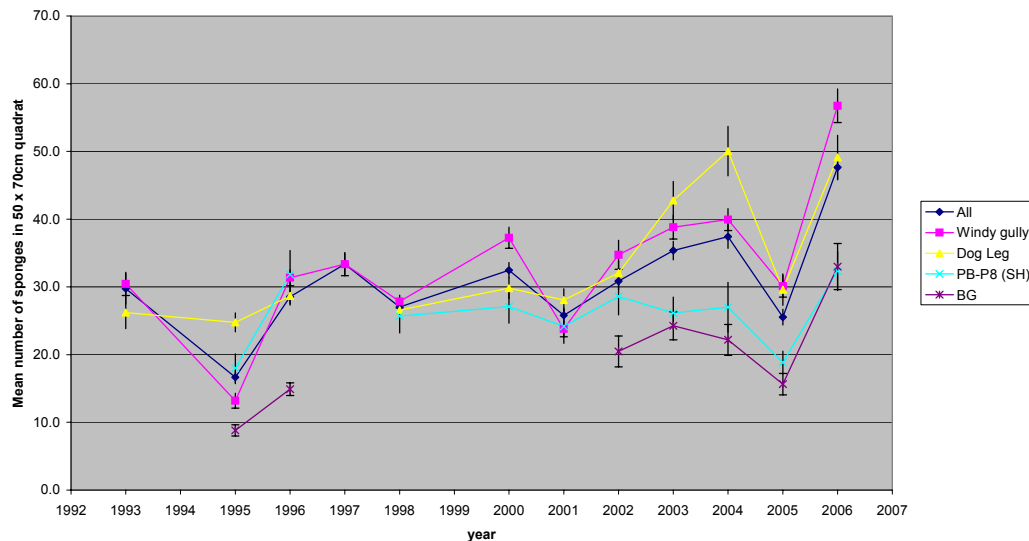
Project code: RM13/01

MONITOR SPONGE POPULATIONS

Priority: 2

All sponge monitoring was completed with the results for 2006 showing an increase in sponge abundance with very high numbers of encrusting sponges seen at the Windy gully site.

Graph showing the average number of sponges per quadrat at each transect.



A study of seasonal variation in sponge assemblages at Thorn Rock was initiated in conjunction with Dr J Bell, senior lecturer at the Victoria University of Wellington, New

Zealand, who has been analysing digital images taken by MNR staff of specially set up quadrats and digital photography. RG developed a technique which allowed individual photographs to be put together in a mosaic to cover the full 1m x 1m quadrat.



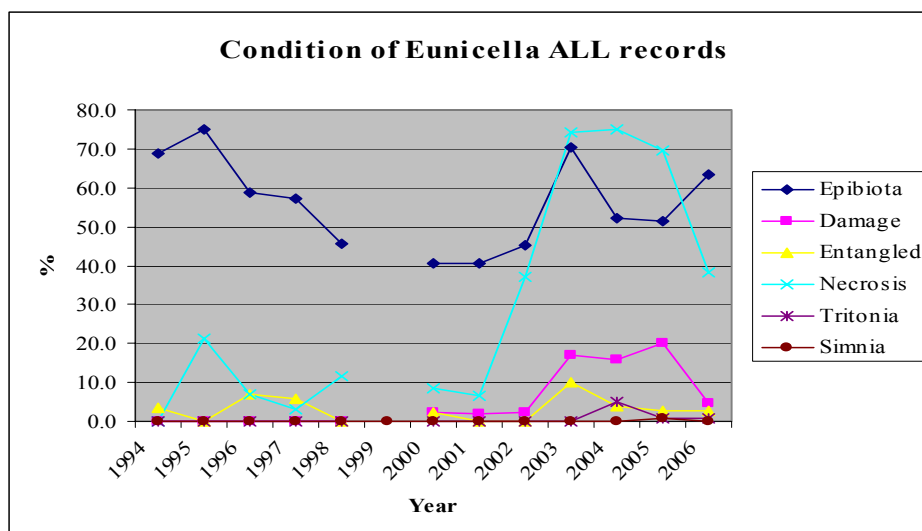
Project code: RM23/01 **MONITOR EUNICELLA POPULATION** **Priority: 2**

CURRENT STATUS

- **Numbers:** 4 definite losses, 1 probable loss and a 1 possible loss in 12 years (1994-2006); one unknown colony found detached at Rye Rocks in 2003 and two unknown colonies found detached at RRK and WHK during 2004. Colony 7 is a probable loss from North Wall East in 2005 and Colony 15 a possible loss from Waybench in 2006.
- **Condition:** 3 records of entanglement in 2006. Epibiotic fouling in 2006 was similar to 2005 but did not reach the peak observed previously in 2002. The number of sea fans with necrotic areas dramatically decreased in 2006 to 38.3% of colonies analysed compared to a peak 70.5% of colonies in 2005, this is the lowest level recorded since field records commenced in 2002.
- *Tritonia nilsodhneri* and *Simnia patula* were not observed in 2006.

Sampling effort 1994 -2006:

Year	Number Recorded	No of fans analysed	New recruits (babies)	Missing or lost sea fans (definite/probable)	Condition assessment	
					Photo	Field
1994	33	29		0	yes	no
1995	32	28		Way 9	yes	no
1996	33	29		0	yes	no
1997	37	28		0	yes	no
1998	37	28		0	yes	no
1999	4	0		0	yes	no
2000	55	26	Way 14	0	yes	no
2001	54	35		Trk1& Way 12	yes	no
2002	74	64		0	yes	yes
2003	102	94	Bho 23		yes	yes
2004	105	101		Bho23	yes	yes
2005	107	105	Nwa 15	Nwa7	yes	yes
2006	112	106	Bho 32-36, Ssg 23		yes	yes



Project code: RM63/01 **MONITOR PENTAPORA POPULATION** **Priority:** 2

Population:

Site	1993	1994	1995	1997	1998	2000
North of Neck						
Waybench	53?	?	?	?	?	
Bernie's Rocks Deep			17	8	2	0
Bernie's Rocks Shallow		10	14	9	4	8

Site	2002	2003	2004	2005	2006
North of Neck	11	14 (2 lost 5 new)	14 (2 lost 2 new)	16 (2 new)	Data not worked up
Waybench	17	17 (3 lost 3 new)	14 (5 lost 2 new)	10 (4 lost)	Data not worked up
Bernie's Rocks Deep	0	2	9	12 (3 new)	Data not worked up
Bernie's Rocks Shallow	10	13	25	29 (4 new)	Data not worked up
South Middleholm		12	19 (2 lost 9 new)	16 (3 lost)	Data not worked up

Pentapora growth

Because of inaccuracies in the method used to assess growth by base area alternative growth measurement methods have been investigated:

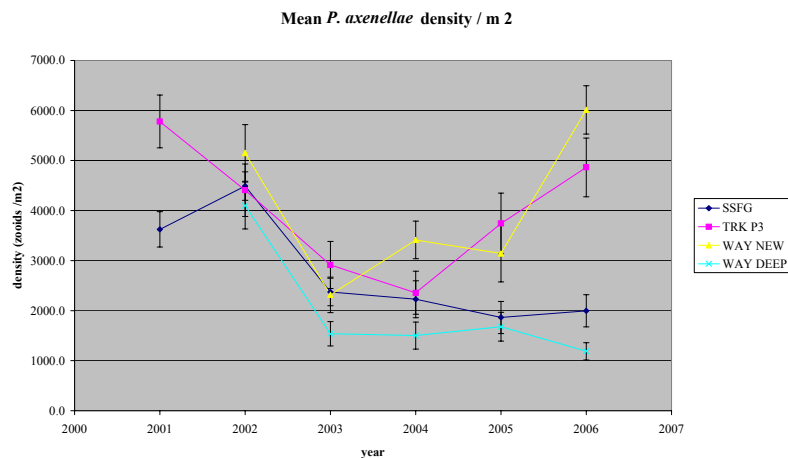
RG developed an empirical calibration method by which a three-dimensional reconstruction of a *Pentapora* colony may be created from the stereophotographs. By studying timelapse images of the same colonies taken over several years (part of the stereo photomonitoring project) he was able to come up with a way of classifying colonies by size to better assess the population as a whole.

Project code: RM23/03 **MONITOR ALCYONIUM GLOMERATUM POPULATION**
Priority: 2

All the samples were completed for *Alcyonium glomeratum* monitoring in 2006. The last 4 – 5 years worth of data show a very variable picture for the distribution of *A. glomeratum* at all of the new transect sites, however the colony on the North Wall stereo run (which is made up of large individuals) has remained stable over the last 10 years. A graph summarising the overall picture for the North Wall grid shows that if all the quadrats are averaged the overall picture is quite stable. The rapid drop in average frequency between 2002/3 and 2004 onwards is probably due to a refinement in the methods of “wafting” the polyps to make them retract before taking the photographs. The large changes in frequency seen for individual quadrats may be due to small differences in quadrat placement and this will be addressed in 2007.

Project code: RM23/05 **MONITOR PARAZOANTHUS** **Priority: 2**

All the samples for Parazoanthus monitoring were completed in 2006. All the colonies are still present. The frequency counts suggest a decline in area covered between 2005 and 2006 but the density counts have a stable or increasing trend.

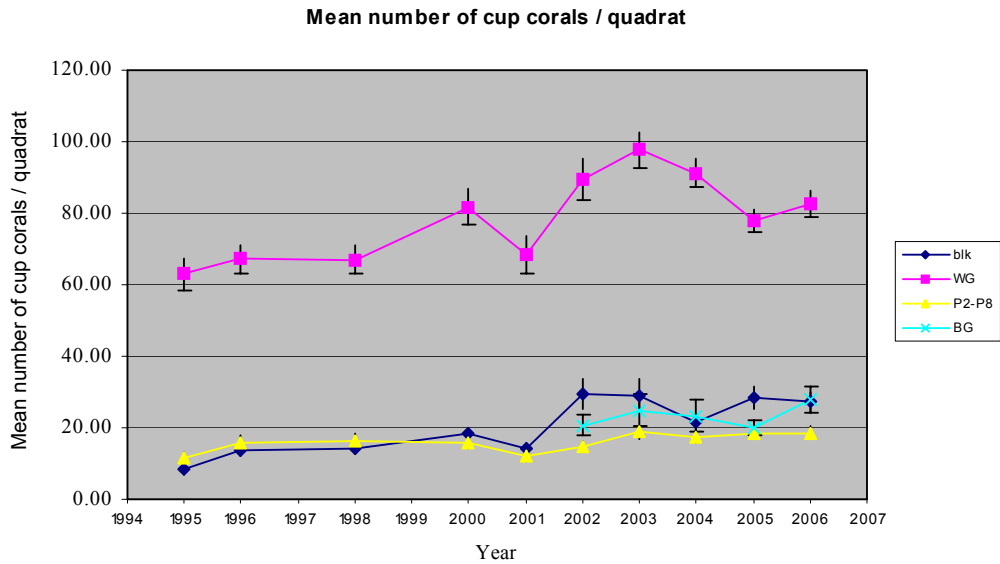


Project code: RM23/04 **MONITOR CUP CORAL POPULATIONS** **Priority: 2**

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

***Balanophyllia regia*:** At Thorn Rock individuals have been traced for 18 years. Some evidence of recruitment has been observed, however surface sediments obscure small individuals. At the Wick the average number of cup corals has increased but there are no significant differences in densities observed between the 5 years for transects A, B or C.

Caryophyllia smithii shows changes in mean abundance that maybe due to variable levels of surface sediment affecting the actual numbers visible during recording.



Project code: RP04/01 **RECORD METEOROLOGICAL FACTORS** **Priority: 2**

The old weather station was removed from the Coastguard lookout in October 2005 while renovations were being carried out on the building by NT. The new weather station was installed at the end of April 2006 and is compatible with the Environmental Change Network project sites (weather station and related biological monitoring projects throughout the UK) such as the CCW weather station on Snowdon. It also means that it will be fully compatible with the new network of weather stations at “Environmental Pressure Reference Sites” that CCW is establishing in Wales.

The new installation is a big improvement in technology and in data storage; so far there has been no loss of data. The new system took a while to debug; problems with the positioning of the rain gauge meant that readings were unreliable before 10th Oct 2006 and the pyronometer was not properly calibrated until 14th Nov 2006.

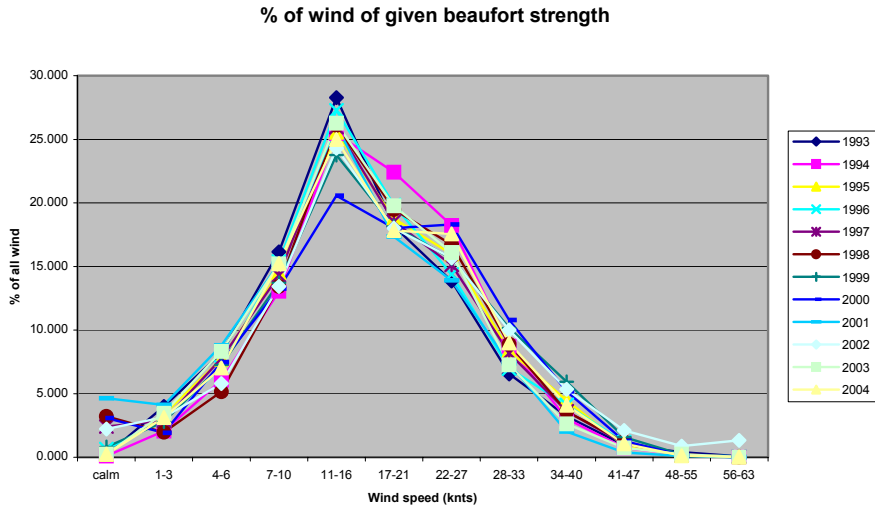
The summary for April - December 2006:

Maximum temperature of 28.2 degrees Celsius was recorded in July.

Minimum temperature of 0.7 degrees Celsius was recorded in December.

Annual Maximum gust, December, 85.1 knots

Direction of Maximum gust, 243 degrees



Project code: RP63/01 MONITOR SEAWATER TURBIDITY / SUSPENDED **Priority:** 2

Turbidity was measured in Skomer MNR by Secchi disc at the OMS and (as of 2004) at Thorn Rock. An automatic logger is also used.

24 measurements of turbidity were made at OMS and 23 at Thorn Rock using Secchi disc between March and October 2006. The maximum reading (clearest water) between June and September was 8.8 m for OMS and 12.2 m at Thorn Rock.

Water samples continue to be collected for filtration to determine sediment loads.

Project code: RP63/03 MONITOR SEA WATER CHEMISTRY **Priority:** 2

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

Project code: RP63/04 MONITOR SEABED SEDIMENTATION **Priority:** 2

A total of 18 seabed sedimentation samples were collected at Skomer MNR using passive sediment traps: 9 at the OMS site and a further 9 at the second OMS-type frame at Thorn Rock.

It is intended to analyse the backlog of frozen samples for total sediment quantity.

Project code: RP64/01 RECORD SEAWATER TEMPERATURE **Priority:** 2

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. 24 profiles were recorded between March and October 2006 in conjunction with projects to measure turbidity and salinity.

By having two Minilog temperature loggers working in relays on the OMS frame we have again been able to record continuous hourly seabed temperatures in 2006 (see Appendix 4).

Maximum surface temperature of 16.8 degrees Celsius was recorded in August; minimum surface temperature of 7.8 degrees Celsius was recorded in March.

Minimum seabed temperature of 7.5 degrees Celsius was recorded during March, and maximum seabed temperature of 16.3 degrees Celsius was recorded at the end of August 2006, although logger data for the months following October have yet to be retrieved.

Seawater temperature data is also analysed and summarised for use in statistical studies of biological communities.

Project code: RP64/02 RECORD SEAWATER SALINITY **Priority:** 2

Seawater salinity 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 above the seabed. 24 profiles were recorded between March and October 2006 in conjunction with projects to measure turbidity and temperature.

Salinity varied between 34.2 and 34.9 parts per thousand.

7.4 DATA HANDLING DEVELOPMENT

Advances have been made with the IT infrastructure at Fisherman's Cottage, with improved access to Internet and corporate systems and a specially built computer and extra hard drives to handle digital video editing.

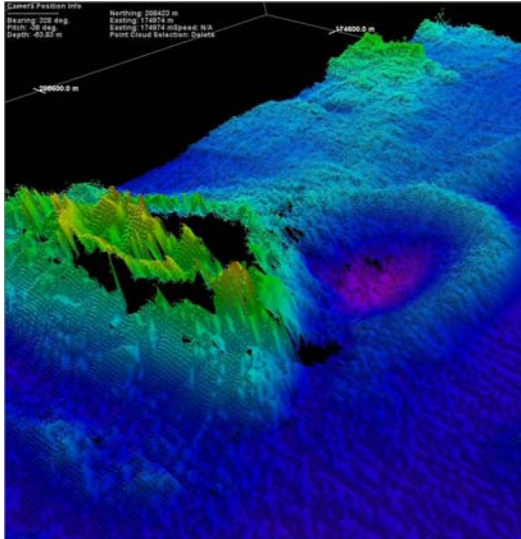
One computer is dedicated to handling data from the weather station.

MNR staff have been entering MNR records into the Marine Recorder, which is CCW's corporate database.

7.5 OTHER WORK

The small scale experiment to see if sea fans could be propagated from cuttings was a limited success. 5 clippings were attached to the seabed in 2005 and were still present and feeding in early 2006, but towards the end of the 2006 field season all but two of the clippings had disappeared. The fact that the clippings survived the winter storms when little or no diving or lobster potting took place, but disappeared during the relatively calm months of 2006 implies that their loss might not be due to natural causes.

In May 2006 MNR staff helped Hugh Smith, a Phd student from UW, Cardiff, to complete bathymetric surveys in Milford Haven and at targeted locations in the MNR, including the eelgrass bed in North Haven (See Project Status Report 2006/7).



The survey showed up a number of interesting features, such as this “crater” near the Blackstones, which bear further investigation.

Of particular use to the MNR was the opportunity to increase the detail of data for better mapping of monitoring sites.

MNR staff have also been increasingly involved with wider initiatives including SAC monitoring including the taking of seabed samples in Pickleridge Lagoon, Dale and the deployment of data loggers at a variety of sites within Pembrokeshire Marine SAC. MNR staff have also been involved in the planning of a Wales Marine Environmental Change Network, to link biological monitoring to nearby environmental data.

8 EDUCATION AND INTERPRETATION

8.1 RESEARCH AND EDUCATION SUBCOMMITTEE

The Education members of the Research and Education Committee met in July to discuss the Skomer Interpretation plan and comment on designs submitted for the MNR aspects of the project.

A further informal meeting was held with the contractors responsible for designing and installing the display to discuss the subcommittee's specific reservations with the design and content of the MNR display. At that meeting it was agreed that the backlit panels be retained and that new transparencies be prepared that would be text-free. The display will be equipped with a large (42") flat screen to display high-definition underwater video footage and even incorporate a touch-sensitive overlay to allow visitors to choose from a range of video options.

KL has also been involved with the design of educational materials as part of the Skomer Interpretation Project.

Project: M150/02

The MNR interpretative booklet "Stars, squirts and slugs...marine life in an underwater refuge" was reprinted during the 2006 season, but no reprints have been forthcoming for the seal watching leaflets or the computer generated 3d poster, which have both been in great demand.

MNR staff have been involved with supplying materials for the redesigned CCW website and KL has been heavily involved with the production of CCW's new rock pool and marine ecosystems booklets.

8.2 FISHERMANS COTTAGE MNR EXHIBITION

Project: M150/01

MNR staff have spent a considerable amount of time assisting the project with the marine elements: RG edited together MNR footage shot using the Pembrokeshire Marine SAC underwater equipment and KL sourced and collated underwater images and helped design photomontages to mount in the display.

It is hoped that installation will be carried out in May 2007.

8.3 OTHER INITIATIVES

The MNR mobile display, including MNR monitoring work was used at:

- CCW monitoring workshop, Bangor
- 'Pembrokeshire Fish Week' at Milford Docks;
- Conservation Management conference in Brecon, March 2007;
- MNR marine 'Fun Day' in Marloes.

It was also used at some talks and presentations.

The 2005 Skomer MNR photographic competition entries were judged by the MNR Advisory Committee in April.

The overall winner was Andrew Kiddier for his photo of the basking shark.



Category winners were:

Animals – Caroline Bateman

Seaweeds – Vicki Howe

Scenery – Rosa Blanch

People and activities – John Archer Thomson

Junior – Brendan Bunker

2 special prizes for most unusual and most amazing – Andrew Kiddier and Vicki Howe

Entries were displayed in the MNR exhibition (see Appendix .

MNR staff have also helped with marine images for the forthcoming book about Skomer, written by Jane Matthews on Skomer.



The MNR ‘Fun Day’ was held in August and about 50 people, mostly children (local and visitors), attended. Activities included following a seashore trail at Martins Haven, looking at marine creatures brought up by MNR divers and building a giant marine food web. The day continued in Marloes Village Hall with a “design a sea monster” competition.



Refreshments were provided by the Dale and Marloes WI group.

8.4 TALKS AND PRESENTATIONS

Project: M110/01

Visitors to the Martins Haven office were given information about Skomer MNR. Enquiries included the usual requests for tickets for the boat to Skomer, and enquires about seals and marine life encountered by divers.

Project: M120/01

Skomer MNR liaison with academic and educational bodies continued. This included talks to visiting academic groups and supplying information to students (see Section 6.6).

KL spoke to Broad Haven school assembly and ran a “snorkel safari” for about 30 children in June with Pembrokeshire Marine SAC officer, Pembrokeshire Coastal Forum staff and staff from West Wales Divers.

Project: MI00/01

In addition to the events mentioned above MNR staff gave presentations to a range of audiences:

PN gave talks to the North Pembrokeshire group of the Wildlife Trust, to the St Bride’s and Dale Business Showcase and for the Pembrokeshire Marine Code “Sightings” event at Merlin’s Theatre, Pembrokeshire College in December.

MB gave a presentation to the Porcupine Marine Natural History Society in March.

8.5 MEDIA

Project: ML70/01

Media interest in the MNR included appearances on “Iolo’s Welsh Safari” with presenter Iolo Williams snorkelling in North Haven with PN. PN was also interviewed by BBC Natural World for a programme intended for 2007. S4C also sought footage for another Iolo Williams programme looking at commercial fishing.

PN was also interviewed by Radio Pembrokeshire for their “On the Waterfront” programme.

The MNR also features in the launch of the Royal Mail “Sea Life” series of stamps, with an article appearing in the Western Telegraph.

Another Western Telegraph article featured the MNR Fun Day.



KL prepared an article entitled ‘Tackling the underwater litter louts’ for CCW’s ‘Adain y Ddraig’ publication (see Appendix 5) and also articles on the MNR’s work on eelgrass, sea fans and seals appeared in the Biodiversity Action Plan newsletter.

9 ACKNOWLEDGEMENTS

The MNR staff wish to thank all those who contributed to, or supported in any way the management of the MNR in 2006.

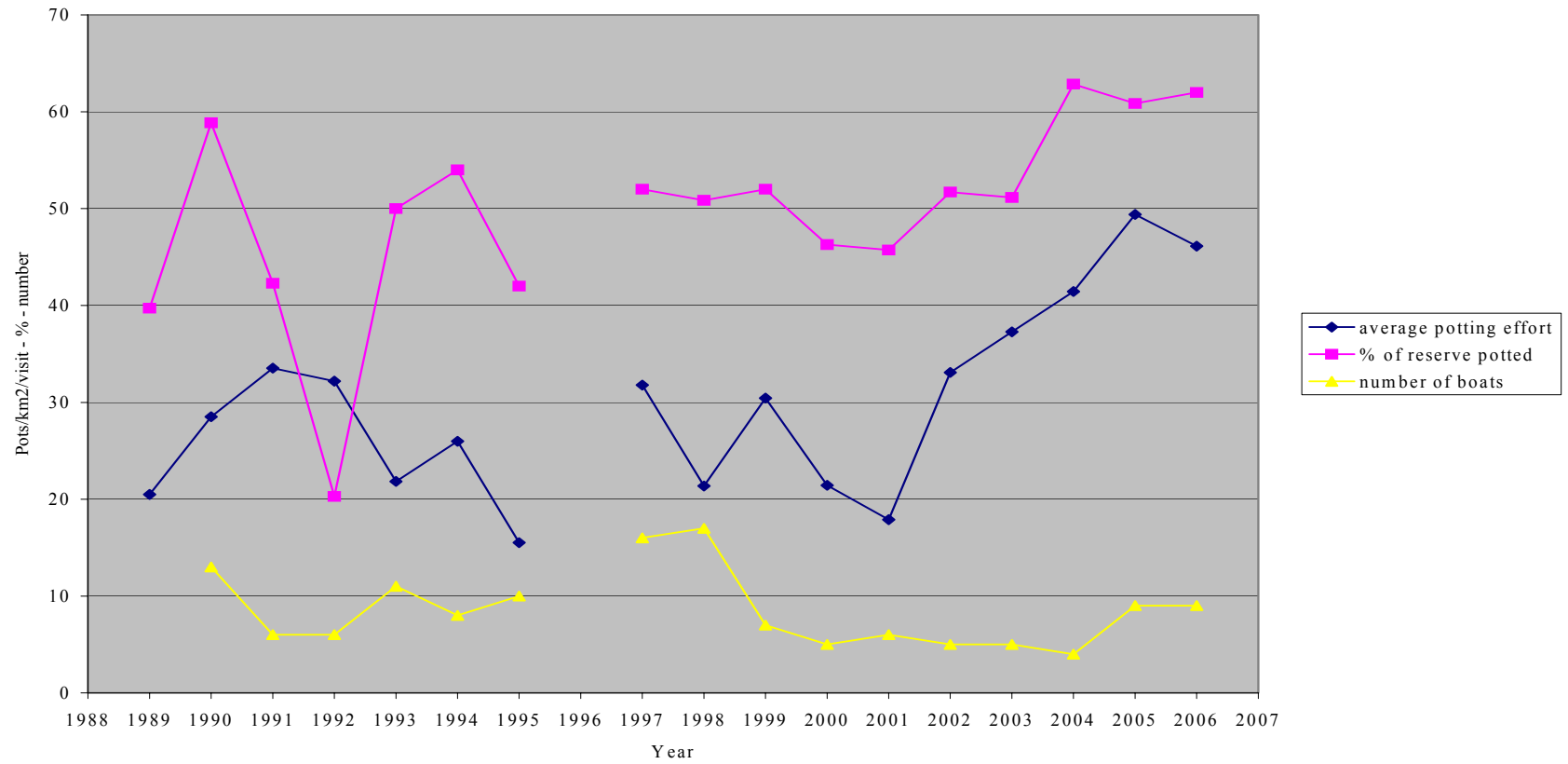
Thanks to:

- Contributors to the Advisory Committees, especially Dr Robin Crump who chairs the main committee.
- Honorary Wardens;
- Juan Brown and Skomer NNR staff;
- Steve Myatt, John Archer Thomson, and Blaise Bullimore for volunteer diving assistance;
- 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 Brian and Lionel for making sure the exhibition is opened as often as possible.
- ‘Neptunes Army of Rubbish Collectors’ for organising and completing the underwater litterpick along the NMPE;
- The volunteer diving teams that were involved in the eelgrass survey.

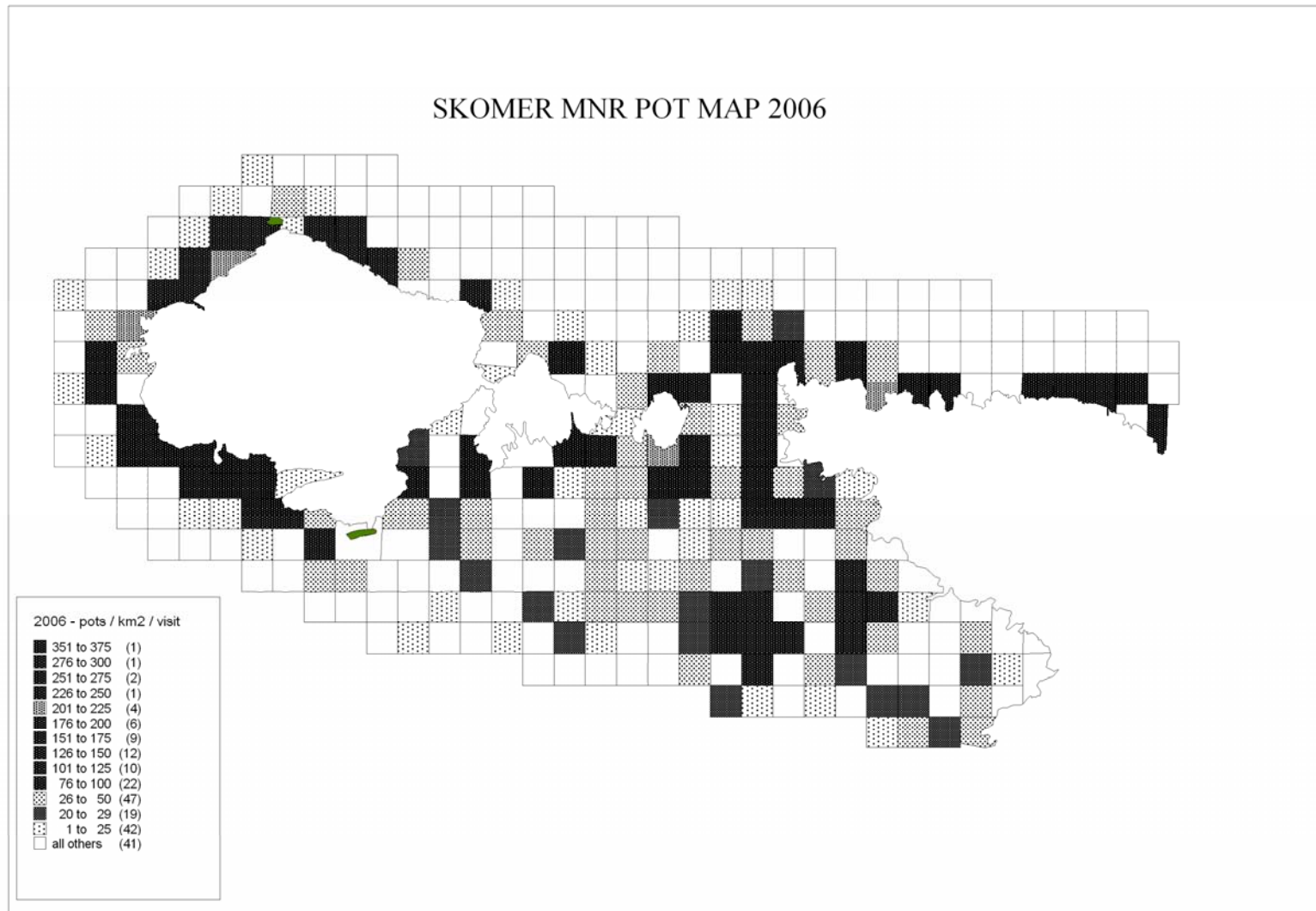
With apologies to anyone omitted from above.

APPENDIX 1 FISHING EFFORT IN THE SKOMER MNR

Summary of fishing effort in the Skomer MNR



SMNR POT FISHING DISTRIBUTION SUMMARY 2006

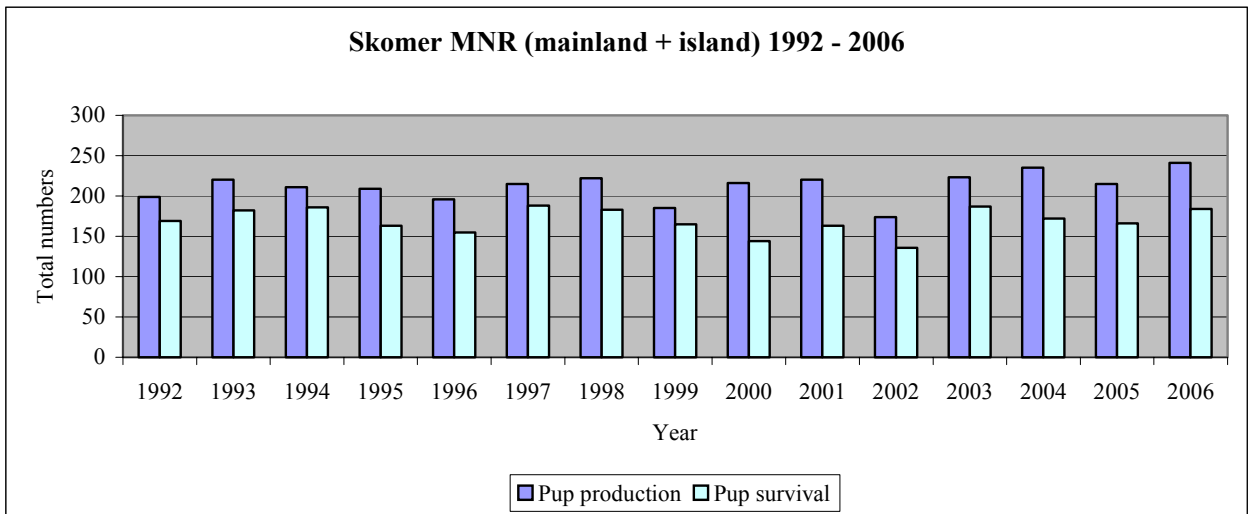


APPENDIX 2

SKOMER MNR SEAL WORK

Seal Pup Production Skomer MNR Mainland 2006

First sighted at	No. first sighted at location	Seen to moult	No. Survival assumed*	No. moved after first sighted
Wooltack Bay Caves	3	0	2	
Martins Haven Caves	2	1	1	
Jeffery's Haven	15	9	4	1
Pebbly Beach	24	14	6	
Three Doors Cave & Beach	3	1	1	
Horseshoe Cave	1	0	0	
Boulder Beach & Cave	6	0	0	
Little Castle Bay	9	8	1	1
Victoria Bay	8	2	3	
Rainy Rock Beach & Cave	7	1	4	1
Renny Slip & Cave	0	0	0	
Watery Bay	0	0	0	
Total	78	36	8	3
Number of seal pups unaccounted for	11			
Mortality assumed	8			
Still born	2			
RSPCA care	21			



APPENDIX 3

SKOMER MNR SCIENCE REPORT SYNOPSES

Distribution and Abundance of *Zostera marina* in North Haven 2006

Title of Report:

Lock. K, Burton. M, Gibbs.R & Newman.P. (2006) Skomer Marine Nature Reserve Distribution and Abundance of *Zostera marina* in North Haven, 2006. CCW Regional Report CCW/WW/07/2

SYNOPSIS

Divers mapped the boundaries of the *Zostera marina* bed in North Haven and completed a density map of *Z.marina* shoots occurring within the boundaries. Permanent markers and methods used in the 1997 and 2002 surveys were used with some modifications made to increase the survey area and improve the map quality.

The area of *Z.marina* bed has increased slightly from 6398m² in 2002 to 6957m² in 2006. The increased survey area outside the plot area that recorded the presence of isolated patches will have contributed to this increase in bed area. There was a reduction in the overall mean shoot density of the bed from 64.3 shoots/m² in 2002 to 51 shoots/m² in 2006; although this is still higher than 34.2 shoots/m² recorded in 1997. The 2006 map shows that there has been a decrease in densities in the southwest since 2002 and the highest density areas are found in the north and east of the bed.

Boundary maps surveyed using a boat based Geographic Positioning System unit were completed in 2000, 2002 and 2004, these show similar positions to the boundary maps from the 1997, 2002 and 2006 surveys. These are useful for a quick comparison in the extent and position of the *Z.marina* bed every two years as an indicator of gross change.

Limiting factors that may affect the growth and distribution of *Z.marina* at North Haven are discussed. A depth contour map of the area has been produced which shows that the depth of water over the bed ranges from 2.3 to 12.3m below.

The North Haven *Z.marina* bed is in favourable condition as it is currently within the limits of acceptable change as detailed in the Skomer Marine Nature Reserve Management Plan 2000. A full survey is recommended every four years.

Summary of Work on *Pentapora foliacea* at the Skomer Marine Nature Reserve Autumn 2006

Title of report:

Gibbs R (2007) Summary of Work on *Pentapora foliacea* at the Skomer Marine Nature Reserve Autumn 2006. CCW Regional Report CCW/WW/07/1

ABSTRACT

Pentapora foliacea has been monitored in the area of Skomer Island (Bullimore 1987) since before a Reserve was designated. Upon designation of the Skomer Marine Nature Reserve the colony-building bryozoan continues as a targeted indicator species for monitoring the health of the Reserve and national marine-ecosystem (Porter 2006). An historic stereophotographic record exists of 9 colonies of *P. foliacea* in the Reserve covering a time period of 13 years from 1984 until 1997, in addition to a recent (2000 to the present) dataset. An empirical calibration method by which a three-dimensional reconstruction of a *P. foliacea* colony may be created from the stereo photographs is demonstrated. With a precise dataset this method would allow the quantification of the growth of the *P. foliacea* colony over time. With the historical dataset the precision is insufficient, however a method of useful qualitative interpretation of the data by the creation of time lapse films (at a rate of 25 days per second) in both monoscopic-colour and dichromatic-stereo is demonstrated. The resulting films are presented on an accompanying DVD and High Definition HDV-Cassette. Conclusions drawn from study of the films leads to the creation of a 5 stage morphological classification system for *P. foliacea* upon which new and elucidating monitoring programmes may be based. Examples of the possible further work are given. Concluding remarks stress the importance and value of long-term monitoring work and the need for an un-impacted marine eco-system to study.

Grey Seal Breeding Census: Skomer Island 2006

Report title:

J. H. Matthews, Grey Seal Breeding Census: Skomer Island 2006. CCW Regional Report
CCW/WW/07/5

SUMMARY

163 pups were recorded as being born on Skomer Island in 2006. This figure includes three pups born outside the main period of observation (10th August – 30th November); one a spring pup and two born in December after the island had been vacated. A further eleven pups are included in the total that qualify as 'wanderers'.

The weather was unsettled this season with several periods of gales and rough seas. There were 20 definite losses and 14 pups that were assumed to have died; a total of 34, an overall mortality rate of 21%. This is 1% lower than last year. Most died from unknown causes.

It was a slow start to the season with fewer pups born in August than recent years. The busiest period this year was between the 16th and 30th September - weeks 38 and 39, with 22 pups born in each of these weeks. This peak is at least one week later than 2005 and 2004.

The mean age of onset of moult ranged from 8 days on the flippers to 13 days on the body and the mean age at completion of moult was 19 days; the same figure as 2005 which was the lowest in the 12 years that this has been recorded.

A possible case of twins was recorded for the first time on Skomer in 2006, born in late October. Although not proven as twins they were both reared by the same cow and moulted successfully.

Photo-monitoring continued this year. 50 seals were photographed and a possible 25 were re-identified from previous years. The adult female LBK18 was again, as last year, not seen after a record 18 years on the island. Several adults showed signs of site fidelity, choosing to pup on the same or adjacent sites as previous years. BK46 pupped at the Wick for (at least) the fourth consecutive year, a week later than last year.

There were no incidences of boat disturbance but a major programme of re-building on the island continued in 2006, causing some disturbances to haul outs. It is not thought to have affected pup numbers or disturbed nursing cows.

APPENDIX 4

SKOMER MNR PHOTO COMPETITION

Overall winner:
Andrew Kiddier



Scenery: Rosa Blanch



Animals: Caroline Bateman



People and activities: John Archer Thomson



Junior: Brendan Bunker



Seaweeds: Vicki Howe



Most amazing: Vicki Howe

APPENDIX 5 MEDIA ARTICLES

February 31st, 2007 · County news

www.westerntelegraph.co.uk

Stamps receive seal of approval

PEMBROKESHIRE'S stunning coastline gave its seal of approval to Royal Mail's new Sea Life stamps at Skomer Marine Nature Reserve on Monday.

The ten first class stamps, on sale from February 1st, feature examples of underwater photography, brought together to produce a snapshot of life around the UK's 11,000 mile coastline.

Reserve officer Phil Newman said they were delighted to help launch the Sea Life stamps.

He said: "We are busily preparing for next season's volunteer diving course at the moment and people on that course will have the opportunity to spot almost every sea creature featured on the stamps during the course."

The set of ten first class stamps feature stunning images of sea life, including moon jellyfish, common starfish, beadlet anemone, bass, thornback ray, lesser octopus, common mussels, grey seal, shore crab and the common sun star.



SPECIAL Delivery: Reserve officer Phil Newman helps launch the new Sea Life stamps with Skomer's local postman.

PICTURE: Martin Cavaney Photography

Tackling the underwater litter louts

A push bike and two shopping trolleys were amongst items found by divers who are helping to clean up the Pembrokeshire seabed.

"Neptune's Army of Rubbish Collectors" was formed by Keep Wales Tidy and Llanreath Divers, a local diving club. Other diving clubs have joined the clean-up which will start again this spring with the backing of CCW.

"We concentrate on items that can harm fish and other wildlife, for instance lost angling gear such as hooks and weights," says Kate Lock from Skomer Marine Nature Reserve. "But we are also interested in clearing general rubbish."

At two organised dives at Stackpole Quay last year, five large sacks of lost angling equipment were brought to the surface, including two sacks of fishing line and 865 lead fishing weights.

The push bike and trolleys were found at Hobbs Point near Pembroke Dock, along with a revolving chair, beer cans and bottles as well as an anchor, 130 fishing weights and four large sacks of angling equipment.

On shore the items are sorted for recycling or disposal. The fishing weights are melted down and moulded into diving weights which are sold to fund the project.

In order to make anglers more aware of their responsibilities, CCW has also placed angling litter bins on the Pembrokeshire shore and recycling bins at angling shops.



Clirio sbwriel – o dan y tonnau

Roedd beic a chadair ymhlith yr eitemau gafodd eu codi o'r dŵr gan ddeifwyr mewn ymgyrch i glirio gwely'r môr ger glannau Sir Benfro.

Mae nifer o glybiau deifio wedi ymuno yn y gwaith sydd ar fin ail-ddechrau gyda chefnogaeth y Cyngor Cefn Gwlad.

"Rydym yn canolbwyntio ar eitemau sy'n gallu niweidio pysgota a bywyd gwylt, fel offer pysgota - yn enwedig plwm a lein a bachau," meddai Kate Lock o Warchodfa Natur Fôr Sgomer.

Yn y Stagbwll y llynedd daethpwyd â llond pum bag mawr o offer pysgota i'r

wyneb gan gynnwys 865 darn o blwm pysgota. Yn Hobbs Point ger Doc Penfro y cafwyd y beic a'r trolis ynghyd â chadair a phedwar sachaid o offer pysgota.

Mae'r Cyngor Cefn Gwlad hefyd wedi gosod biniau sbwriel arbennig i bysgotwyr a biniau ailgylchu mewn siopau offer pysgota.

APPENDIX 6 ABBREVIATIONS

AcoP	Approved Code of Practice
AWS	Automatic weather station
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
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