



SKOMER MARINE NATURE RESERVE REPORT 2003



PHILIP NEWMAN

SKOMER M.N.R.
OFFICER

MARCH 2004

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SKOMER MARINE NATURE RESERVE

REPORT 2003

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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 FOREWORD

This report covers the period 1 April 2003 to 31 March 2004, in line with other reporting requirements within CCW.

2003 has been another year of positive developments (apart from those with Skalmey, of course!), with confirmation of staff posts for Mark and Lou, and a great deal of useful work being made possible.

Other positive developments have overtaken MNR staff, with Kate currently on maternity leave and Mark looking forward to becoming a dad in the summer!

As monitoring methods and data processing become more established it is becoming evident that it is making our work more efficient. The hope is that this will free time to concentrate on expanding some projects where necessary or even starting others that have been on hold until now.

Another welcome development is the increased awareness of the work of the MNR, not just by the public and media, but also by academic institutions, that is if the increase in student interest is anything to go by.

Part of this is due to the efforts of our Advisory Committee members, but also to our own capacity to disseminate the results of our work through having improved staff and IT resources. We hope to continue to improve this through making reports available via the Internet.

2004 looks like being a busy year for the MNR team, particularly with Kate away until early June and some of our volunteers committed to passing exams and other excuses! We will be running another volunteer diver survey, but this time over two weekends. The aim this year is to repeat the scallop survey of 2000 and to widen its coverage, which given the enthusiasm shown by those who have taken part in these surveys before, should be possible.

I hope you enjoy the report this year.

Phil Newman

Skomer MNR Officer

2 STAFF

2.1 STAFFING

Staff levels at Skomer MNR continued to be consolidated with a number of positive changes.

The two permanent staff, Phil Newman (PN) as Skomer MNR Officer and Kate Lock (KL) as Assistant Marine Conservation Officer, remain in post, although KL has remained part-time (three days per week).

Mark Burton (MB) has had his fixed term appointment made permanent as Assistant Marine Conservation Officer.

Louise Luddington (LL) has now been appointed our Seasonal Assistant Marine Conservation Officer. This means that she has a permanent contract to come back for 6 months of the field season each year.

Although these staffing levels would normally allow the MNR team to field a 4-person field team on three days of the week KL was obliged to stop diving when she found that she was expecting a baby. Kate being Kate, however, was able to act as boat handler well into her pregnancy and insisted on taking part in work on the shore even when quite rotund! Happily she and her baby boy, Aran, are doing very well since his birth soon after Christmas.

The MNR team was also supplemented by local CCW staff; Blaise Bullimore (BB), who continues as Senior Marine Conservation Officer (West Wales) and is the professional lead within CCW for the MNR, and Mike Camplin, Marine Conservation Officer (West Wales). BB and MC have been unable this year to support much MNR fieldwork because of other commitments, but have had significant input into the development of methods and analysis of results. MC has also been active in providing images rendered (largely in his own time) from the multibeam bathymetric survey to be used for interpretative projects (see section 8 and Appendix 7).

CCW HQ marine staff also visited Pembrokeshire and took part in MNR and SAC projects during June and July.

Claire Walker, former Marine SSSI officer based at Haverfordwest, but now based at CCW's Newtown office still makes the trek down to the MNR to help out on occasional weekends on a voluntary basis.

Although much reduced because of their other commitments valuable contributions have nonetheless been made to the work of the MNR by:

- Steve Myatt, Nick Jeremy and John Archer Thomson, who helped with voluntary diving assistance,
- Honorary Wardens, who continue to open the MNR exhibition when MNR staff are not at Martins Haven, and help in recording visitor numbers, disturbance incidents, infringements of MNR code of conduct and contribute to various aspects of species recording,
- Lorna Pegg from Pembrokeshire College who carried out observations of disturbance



PN and KL try out the MNR's new peril-sensitive glasses

to seals during the pupping season in 2003 as well as extensive visitor surveys aimed at gauging the effectiveness of the MNR's trial seal watching leaflet

- Our faithful teams of volunteer divers who carried out surveys of the edible sea urchin on behalf of the MNR (see section 7).

Although the contribution of volunteers to the routine work of the MNR is extremely valuable and much appreciated it is important to note that they are not a resource that we should plan our work around other than for specific organised events, which work very well. People's personal circumstances and other commitments change from year to year and so they might not be able to put as much, if any, time into helping the MNR. This is reflected in this year's total dive times (Figure 3.1) where reductions in availability of volunteers as well as MNR staff have significantly reduced the available diving time for projects.

2.2 HONORARY AND VOLUNTARY WARDENS

The following continue to serve as Honorary Wardens (HW):

- Lana Bullimore
- Sue Burton
- Nic Davies, skipper *Mizpah* (M162)
- Brian Dilly
- Kenny Gainfort, Skipper *Dale Princess*
- Jane Hodges, PCNP
- Ivor Johnson, Old Mill Diving Centre
- Bruce Jones, BS-AC
- Steve Lewis
- James Perrins
- Brian Martin and Lionel Jewell, Martin's Haven National Trust car park attendants.
- Carl Wonnacot, crew *Dale Princess*

2.3 TRAINING

Skomer MNR staff, West Area marine staff and MNR diving volunteers attended diving safety training, which included familiarisation with MNR safety procedures and equipment, oxygen administration and emergency "scenarios" set by the trainers from West Wales Diving School.

Both KL and MB attended first aid at work refresher courses in accordance with HSE diving requirements.

LL completed the RYA Advanced Powerboat course and also attended



Nitrox and basic sea survival training.

MNR staff attended a demonstration of drop down video equipment presented aboard Skalmey by contractors engaged to provide equipment to CCW's HQ marine monitoring team.

PN attended an advanced course in Microsoft Excel and MB attended an intermediate course in Microsoft Access.

PN attended a three-day staff management course.

PN has had to discontinue Welsh lessons due to pressure of work.

2.4 HEALTH AND SAFETY

The MNR Safety Document continues to be kept updated: COSHH assessments and PPE assessments are added as necessary and PUWER assessments are being prepared for new and existing equipment.

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

One accident report was prepared when PN tripped on paving stones at the back of the office. The stones have now been replaced with a concrete path (see section 3.1).

DSE assessments were carried out for Skomer MNR staff by staff from the West Area office. Changes to office furniture were made and further changes are planned.

See also section 3.2.1 for details of work carried out on Skalmey for compliance with the small workboat regulations.

3 ESTATE

3.1 BUILDINGS

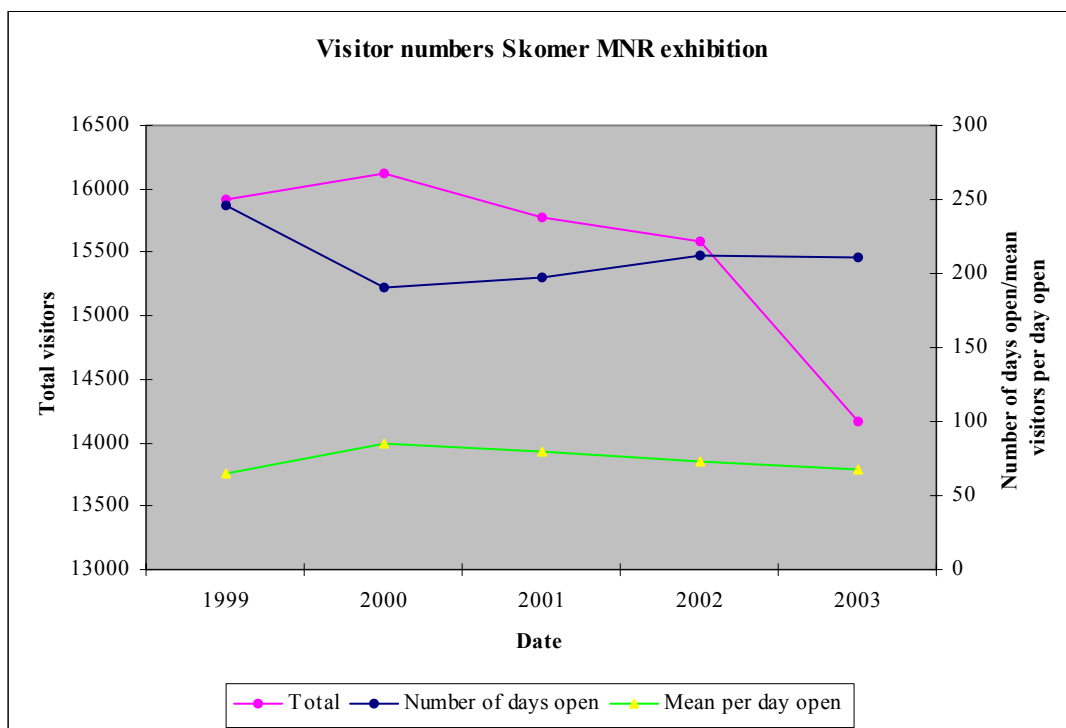
Project: ME12/01 Staff time: Estimated 14.50 Actual: 2.6

Larger items of equipment continue to be stored in a barn rented from NT. Boat maintenance equipment continued to be brought more into the Iron Age following last year's replacement of Phil's Sea-Scout-esque A-frame for a fully tested and moveable A-frame. Now a welded steel trestle has replaced the timber one that has served for many years. The old timber version lives on in a new incarnation as a horse jump!

Skomer MNR buildings were again inspected by CCW safety and properties staff and repairs to the path at the back of the office have been carried out.

Project: MI50/01 Staff time: Estimated 8.0 Actual: 1.6

The MNR exhibition at Martin's Haven was open from the end of March 2002 through to mid November and again during half-term week in February. Although the exhibition continues to be popular with visitors, estimates of total numbers of visitors show a decline. This year's estimates from the break-the-beam logger showed the total number of visitors to be 14172; with a mean of 67.2 visitors for each day the exhibition was open. It would appear that the exhibition is getting fewer visitors as the years progress and this may be a result of the age of the exhibition and the fact that many people who have been to Martin's Haven more than once have already seen the exhibition.



The year's data can be seen in more detail in Appendix 3.

MNR staff are trying to keep the exhibition more current by displaying posters featuring aspects of the MNR's work of particular relevance to the year or season (see Chapter 8).

3.2 BOATS

Project: MM00/01 Staff time: Estimated 34 Actual: 54.1

3.2.1 Boats

Skalmey went to sea 77 times and logged 284.54 engine hours. Having tempted fate in the introduction to last year's Annual Report the gods acted promptly as *Skalmey* was out of action for several weeks at the beginning of 2003. This was due to problems with the hydraulic system of the water-jet that followed its overhaul by "a specialist engineer" as reported at the end of last year. Her first shakedown outing to Pembroke Dock ended when the hydraulic pump overheated and failed and Phil and Mark were presented with an opportunity to test the back-up propulsion method: *Skalmey* returned to Neyland using the Honda 5 hp outboard! Much time was then spent investigating and rectifying the problem.

Routine services for engine and gearbox were carried out.

Skalmey is now fully certified under the small workboat code. The certificate allows us to carry up to 12 persons on board, unless the A-frame is being used for lifting operations, in which case the limit is reduced to 6.

Annual maintenance of *Skalmey's* life raft was carried out.

Skalmey II went to sea 32 times and logged 88 engine hours. Her use during May was restricted due to delays in obtaining a workboat certificate and problems with the fuel system. Routine outboard services were carried out at the end of the year.

Skalmey II has been fitted with a new Honda 90 outboard ready for the 2004 season. The old outboard (also a Honda 90) had performed very well up until the beginning of the 2003 season, but had been in service since 1997 and was beginning to show signs of ageing.

Skalmey II has been modified to comply with the workboat code, with additional safety equipment such as life-rings and life raft being fitted and is now licensed to carry 6 people. The life raft can be used aboard *Skalmey* in addition to its own when more than six persons are carried.

The 2.8m Zodiac RIB has been replaced now that, due to the porosity of its fabric, it deflates faster than we can pump it up! Its replacement will continue to use the 5 hp outboard.

The increasingly battered MNR GRP dinghy is still in use and, when the sun shines through the patches in the hull, does a passable, if rather unlovely, imitation of a Chinese lantern!



3.2.2 Seatime

Staff and vessel seatime are shown in Table 3.1.

Staff days at sea = total of 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 [#]
Days at sea											
Skalmey	112	18	68	90	19	9	23	42	48	73	77
Skalmey II	70	124	76	52	99	71	39	38	31	37	32
Total	182	140	144	142	118	80	62	80	79	110	109
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
Skalmey II	n/a	1038.9	644.7	352.4	732.92	514.25	219	254.15	225.75	277.4	278.7
Total		1252.7	1259.6	1271.4	914.47	584.25	414	746.65	847.5	1160.3	1056.31
MNR Staff days at sea											
Skalmey	293	43	156	223	51	14	42	96	129	225	205
Skalmey II	134	316	168	104	214	149	62	60	58	80	70
Total	427	359	324	327	265	163	104	156	187	305	275
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
Skalmey II	n/a	n/a	n/a	n/a	n/a	n/a	n/a	105.75	89	89.7	69
Total								379.5	286.25	293.7	157
Other Staff days at sea											
Skalmey	n/a	n/a	n/a	n/a	n/a	n/a	n/a	40	36	23	21
Skalmey II	n/a	n/a	n/a	n/a	n/a	n/a	n/a	17	19	22	15
Total								57	55	45	36
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
Skalmey II	n/a	n/a	n/a	n/a	n/a	n/a	n/a	360.25	314.75	367.1	347.7
Total								1126.5	1133.75	1454	1213.31
Total Staff days at sea											
Skalmey	n/a	n/a	n/a	n/a	n/a	n/a	n/a	213	242	248	226
Skalmey II	n/a	n/a	n/a	n/a	n/a	n/a	n/a	77	77	102	85
Total								213	319	329	311

*1997 includes Jan - March 98

[#]Financial year April - End of March

MNR Staff = Philip Newman, Kate Lock, Mark Burton, Louise Luddington, Blaise Bullimore

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

3.3 EQUIPMENT

Project: A110/01 Staff time: Estimated 0.5 Actual: 0.9

A full inventory of all equipment is maintained and all items of equipment are security marked or stamped as appropriate. CCW staff from the West Area office carried out an audit of capital and inventory items held by Skomer MNR.

3.3.1 Safety, diving and protective equipment

Project: MM20/01 Staff time: Estimated 2.0 Actual: 0.7

Skalmey's life raft had its annual inspection and a Solas-approved life raft hired for *Skalmey II*. Other equipment was also added to bring both boats up to the standard required for the MCA Small Workboat Code.

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

Project: MM20/02 Staff time: Estimated 14.0 Actual: 8.7

Regulators were all serviced and cylinders tested as per regulation requirements. Other Skomer MNR diving equipment was maintained by MNR staff or by contractor. Diving cylinders continue to be filled by contractors as necessary. The MNR team continues to use Nitrox (oxygen-enriched air mixture) for much diving as this has significant benefits at the type of depths that most monitoring work is done, both in terms of dive duration and safety margins.

PN is now sporting a more svelte look in a better-fitting dry suit than hitherto.

3.3.2 Optical, photographic and scientific

Project: MM20/03 Staff time: Estimated 9.0 Actual: 2.1

All cameras and flashguns were serviced and repaired by contractor during the winter. One flashgun required a new battery pack and an additional battery pack has been purchased to extend the use of the flashguns on site.

Although the digital camera has continued to be a great success for general photography and for intertidal work, it is limited in its close-up capability and so a bid for a new camera is to be made in 2004, together with digital video equipment to replace the outdated Hi8 camera. It is hoped that the existing video housings can be used with new cameras, which should reduce the cost of this transition to new technology.

Project: MM20/04 Staff time: Estimated 4.0 Actual: 0.4

Maintenance of Skomer MNR scientific instruments included calibration of the salinity, depth, temperature equipment and replacement of some connectors that have suffered in the 16 years since the equipment was purchased. The Minilog that had been out on the seabed frame all winter was unable to download, but its data was successfully retrieved



by the manufacturer. Unfortunately "the patient died on the operating table" and so a new logger was purchased.

Project: RP04/01 Staff time: Estimated 2.5 Actual: 1.6

Since the MNR office was re-equipped with new computers in March 2002 problems continue to be experienced with the Met-Ocean System software.

3.4 ESTATE WORK

Project: ME01/01 Staff time: Estimated 1.75 Actual: 2.3

Following approval by Trinity House of the design of buoy to be used to mark the North Haven eelgrass bed, the buoys, which are spherical yellow with a yellow cross top-mark and a central no-anchoring symbol, have been made ready for deployment in 2004.

Details of the buoys and their positions were advertised in the local press and at Haverfordwest library.

The top buoy marking the wreck of the "Lucy" was replaced, but is reported to have again gone missing over the winter.

Project: ME02/01 Staff time: Estimated 6.0 Actual: 8.4

Skomer MNR moorings in Martin's Haven were maintained. Riser chains on *Skalmey's* mooring were replaced in addition to the normal renewal of shackles at the start of the season (*Skalmey II's* riser was in good enough condition to remain for another season). The mooring at Dale was also checked periodically.

Project: ME02/02 Staff time: Estimated 5.0 Actual: 3.7

Visitor moorings in North Haven were maintained. The mooring buoys were removed at the end of September and replaced with pellet buoys marked "No mooring" to avoid winter visitors using unmaintained moorings. One mooring buoy came adrift during the season, but was recovered from North Haven beach (the moorings have a pick-up strop attached to the top of the riser so the loss of the buoy will not have endangered any vessel moored to it at the time).

Project: ME02/02 Staff time: Estimated 6.0 Actual: 3.8

A new Skomer MNR monitoring site for seafans and Ross corals was established south of Middleholm. Maintenance work was carried out on North Wall seabed markers and the OMS was rebuoyed. A second seabed frame has been designed for deployment at the Thorn Rock site to replace the shipwreck deck beams that were used until they broke up during the winter storms.

Additional sites have also been set up for littoral monitoring (see section 7).

Project: ME04/01 Staff time: Estimated: 1.5 Actual: 1.2



Martins Haven beach continued to be cleaned as part of the Marine Conservation Society 'Adopt a Beach' project. Recognised categories of litter were recorded on prepared forms, which contributed to MCS's central database collected from all beaches adopted in the UK.

Skomer MNR staff removed office rubbish and beach rubbish. Occasional litter encountered at sea was also recovered where it was considered a hazard to navigation.

3.5 DIVING OPERATIONS

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

MNR staff dives and diving time were both reduced in 2003 due to various factors: Early in the season diving operations were hampered both by bad weather and problems with Skalmey (already mentioned in 3.2.1). This meant that there was very little diving fieldwork carried out in May.

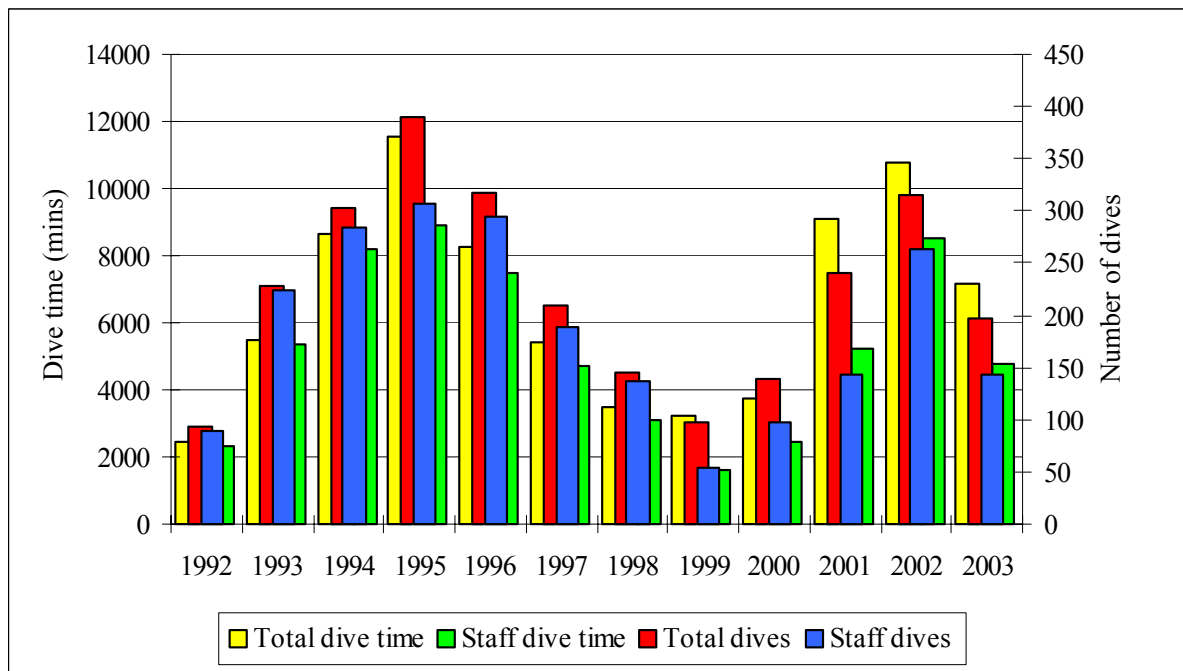
Before diving work began KL was obliged to stop diving when she found that she was pregnant. KL was still able to act as boat handler and dive supervisor, and most routine projects were completed.

It did, however, mean that only one pair of divers was available unless we could persuade one of our volunteers to help out and, as can be seen from the figures, our individual volunteers were unable to give us as much of their time as in the past.

Again the majority of diving was carried out for biological monitoring projects.

FIGURE 3.1 SUMMARY OF MNR DIVING ACTIVITY 1992-2003

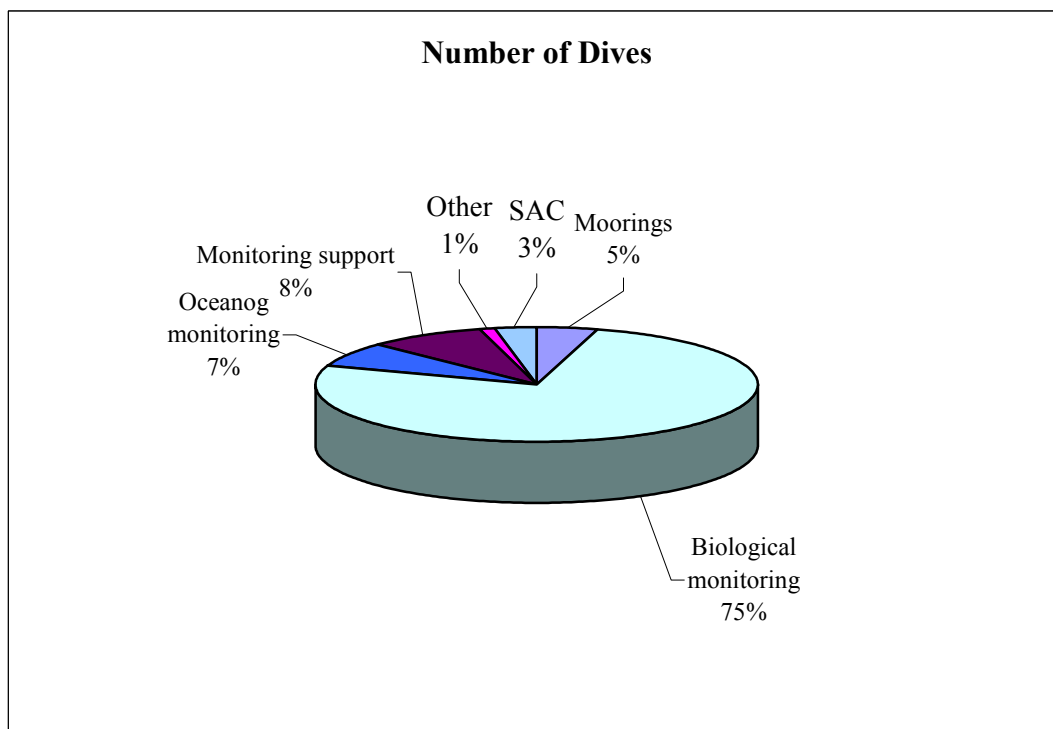
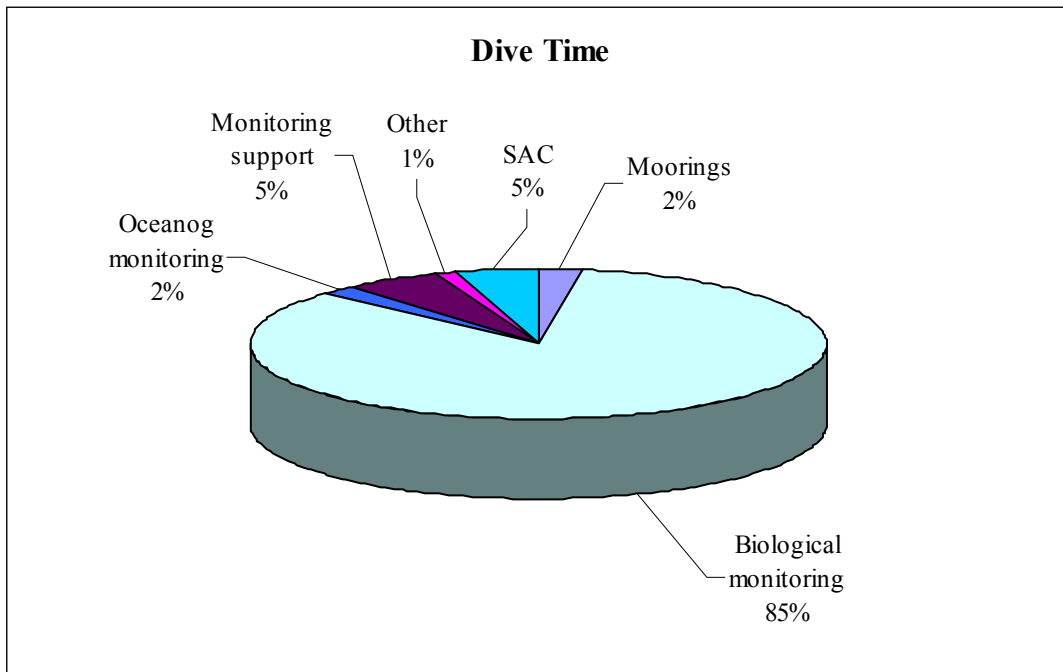
(Including contract and volunteer divers where they are part of the MNR diving team)

**TABLE 3.2 SUMMARY OF DIVING ACTIVITY 2003**

	MNR STAFF	CONTRACT / VOL DIVERS	TOTAL
Dives	144	53	197
Dive time (mins)	4799	2375	7174
Dive time (hrs)	79.98	39.58	119.57
Average dive time (mins)	33	45	36.4
Diving days			50

FIGURE 3.2 MNR DIVING OPERATIONS 2003

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



4 MANAGEMENT

4.1 WARDENING AND PATROL

Project: MP00/01 Staff time: Estimated 27.0 Actual: 16.9

Site patrol at Skomer MNR was carried out on 22 days, despite problems with both boats and the appalling weather in May. Patrols concentrated on Sundays and Bank Holidays between May and September. A watching brief was maintained at other times when staff were out on the water.

Sea time statistics were 275 staff days and 109 boat days, close to levels reached in 1995 and 1996 (See Figure 5.1).

The recording of all observed visitors and use of the MNR has been continued; data from April 2003 to April 2004 is shown in Section 5.

4.2 INFORMATION

Project: AS00/01 Staff time: Estimated 3.0 Actual: 0.3

The MNR interpretative booklet "Stars, squirts and slugs...marine life in an underwater refuge" was published at the beginning of the season and has proved immensely popular. Of the original 5000 printed only a few hundred remain and a reprint has been promised for 2004.

See Section 8 for other interpretative material and for details of the MNR page on the BBC website.

The MNR 'User Regulations' leaflet has continued to be popular with visitors. People taking part in recreational water sports within the MNR particularly welcomed the waterproof version. It is proposed to reprint this leaflet with amendments to the CCW logo and the inclusion of areas of particular sensitivity for cetaceans (to be discussed at the 2003 Advisory Committee meeting). The leaflet would then incorporate all the information referred to by the Pembrokeshire Marine Code (see Section 6.7).

Pembrokeshire County Council have kindly agreed to reprint the diving safety information leaflet as stocks are now exhausted.

Leaflets have been 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. The 'Skomer Marine Nature Reserve - General Information' leaflet is also available from dispensers in the exhibition room at Martins Haven.

A laminated version of the MNR zonation map is displayed alongside "Keep Wales Tidy" campaign and Beach awards/water quality information on the 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.

4.3 MANAGEMENT ISSUES

4.3.1 Dredging/beam trawling

None observed in 2003.

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

See Section 5.1 for vessels operating in the MNR in 2003 and Appendix 8 for fishing effort estimates.

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

None observed in 2003.

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

MNR staff recorded no incidents of crustacean collection by divers in 2003. MNR staff continue to be vigilant particularly where dive boats are seen operating in areas where the only attraction for divers on the soft sediments, other than the small invertebrates that live there, would be scallops.

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

None observed in 2003.

4.3.6 Collection of specimens for education and research *Project: AS20/01*

No permits were issued for collection of specimens.

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

Permits were issued to 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.

NNR staff noted approximately 12 individuals with either monofilament line or rope netting fast around the neck. Two moulted pups were found entangled in fishing gear.

At least 20 pups were recorded with tar spots on their natal coats; none seemed to be adversely affected.

Other incidents included:

Dive boats very close to hauled-out seals in NHV beach and off the Garland stone.



Kayakers were seen disturbing seals on Rye Rocks on two occasions.

2 people discovered on Driftwood Bay during the pupping season were asked to leave by the seal contractor.

Commercial tourist RIBs were observed disturbing seals at Castle Bay, Driftwood Bay, High Cliff and South Haven beach.

Lorna Pegg, a Pembrokeshire College placement student, continued a study into seal disturbance around mainland sites begun by other students the year before. The study included an assessment of effectiveness of the MNR trial 'Seal Watching leaflet', which was distributed at the National Trust Car park at Martins Haven. The leaflet included information about how to behave whilst watching seals. A copy of her report is expected in 2004.



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

MNR staff, research workers and the Skomer Island Warden recorded bird disturbance incidents. A small number of boats were seen going through rafts of puffins and entering the Wick.

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

None observed in 2003.

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

See Section 5 for numbers of anglers observed. No angling impacts other than the eternal shore litter were recorded in Skomer MNR.

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

Visitor moorings continue to be popular with both yachts and motorboats and encourage vessels to avoid anchoring. One yacht, however, was observed dragging anchors in the North Haven eelgrass bed by Island staff. New marker buoys have been prepared for the 2004 season (see section 3.4).

One or two boats needed reminding of the code of conduct regarding no anchoring within the nearshore (50m) zone.

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

Several vessels were reminded of speed limits, or of the no anchoring policy in the MNR. One notable case was that of the MCA RIB speeding into North Haven in pursuit of a yacht. MNR staff were unable to make contact with the MCA crew to

inform them of the speed limit byelaw.

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*

Some tar spots were seen on Martins Haven beach in February following contact from the Coastguard who had had reports of oil on Musselwick beach from a member of the public.

4.3.15 Water Quality *Project: RP63/03 Staff time: Estimated 7.0 Actual: 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 MARTIN'S HAVEN 2003

Sampling Date	Sampling Time	Total Coliforms cfu/100ml	Faecal Coliforms cfu/100ml	Faecal Streptococci cfu/100ml
07/05/03	10.20	9.1	<10	<10
12/05/03	9.40	9.1	<10	<10
19/05/03	10.00	<10	<10	<10
28/05/03	10.15	<10	<10	36
02/06/03	10.40	<10	<10	<10
09/06/03	10.30	36	<10	<10
16/06/03	10.30	<10	<10	<10
23/06/03	10.25	36	<10	18
30/06/03	11.00	64	36	9
07/07/03	12.25	18	9	9
14/07/03	10.40	<10	<10	<10
21/07/03	11.20	27	<10	<10
28/07/03	10.45	9	<10	<10
04/08/03	10.00	9	9	<10
11/08/03	10.40	73	73	18
18/08/03	10.40	45	9	<10
27/08/03	11.05	<10	<10	<10
01/09/03	11.20	145	36	9
08/09/03	10.20	100	100	<10
15/09/03	11.45	<10	<10	<10

Excellent Quality= less than 500 total coliforms and less than 100 faecal coliforms per 100ml of water.
EC guidance standard = 80% achievement.

5 VISITORS AND USE OF THE MNR

5.1. COMMERCIAL USE

Project: RH90/01 Staff time: Estimated 27.0 Actual: 17.7

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.

In 2003 15 pot maps were produced using GPS positions and these have been transferred to the GIS mapping system MapInfo. The summary map for 2003 can be seen in Appendix 8 together with a graph summarising observed fishing effort since 1992.

Fishing boats operating in the MNR during 2002 were recorded as Mizpah (M162), Lydon (M1050), Iris May (SE44), and Mi Amor (P227), which was replaced by Progress (M32).

Of some concern was a 15 kg bag of winkles found abandoned in the lane to Martins Haven, suggesting that commercial winkle picking had been taking place in Martins Haven.



5.2 RECREATIONAL USE

Project: RH33/01 Staff time: Estimated 4.1 Actual: 7.8 (data entry)

Types and numbers of visitors recorded for the year ending 31 March 2003 are summarised in Table 5.1 and Figures 5.1 to 5.4.

Figures do not include the routine sailings of the *Dale Princess*, Dale Sea Safaris or Shearwater Safaris trips to Skomer.

Records kept by MNR Honorary Wardens and the Skomer Warden and staff have again been most valuable.

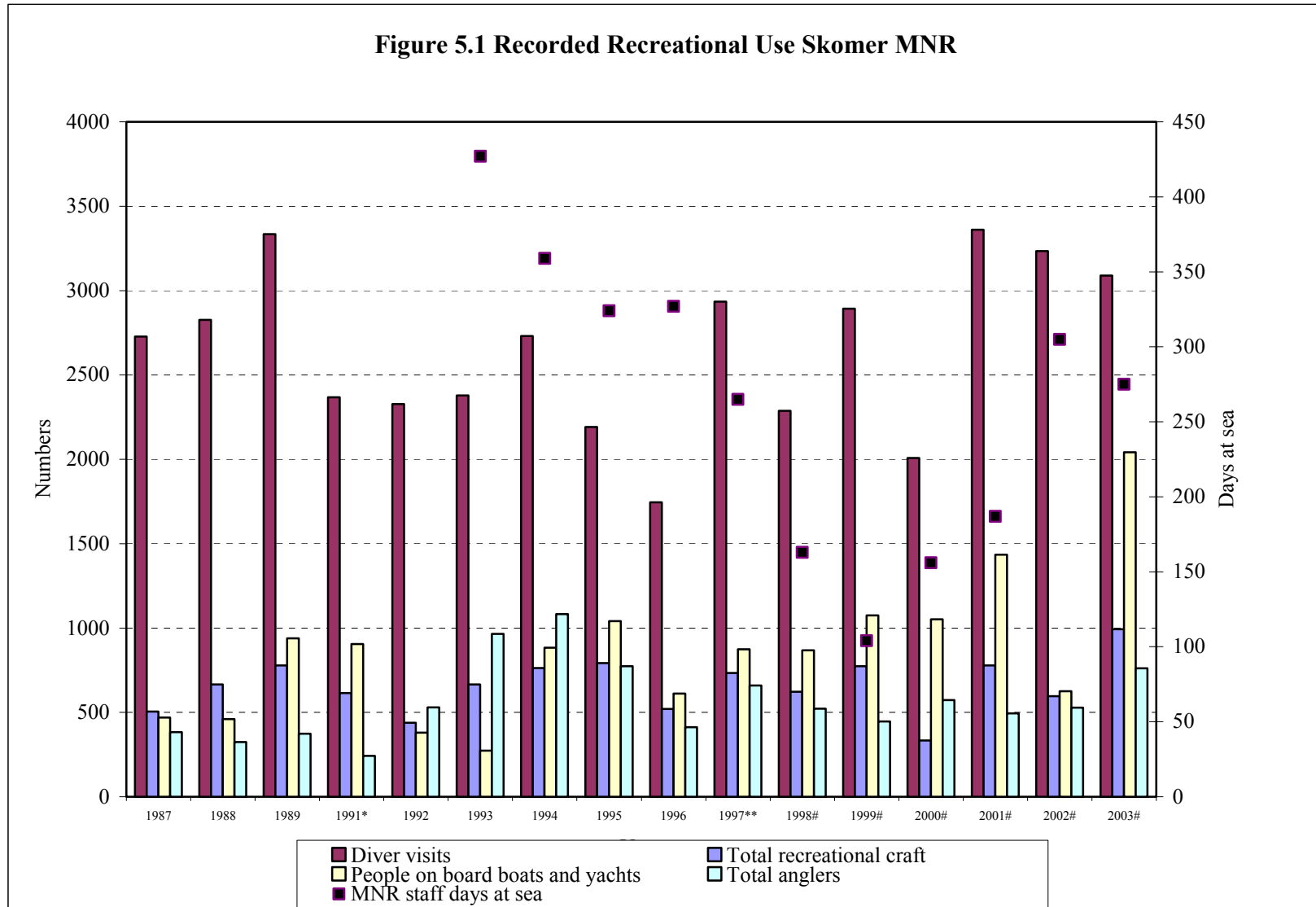
5.3 CASUALTY ASSISTANCE

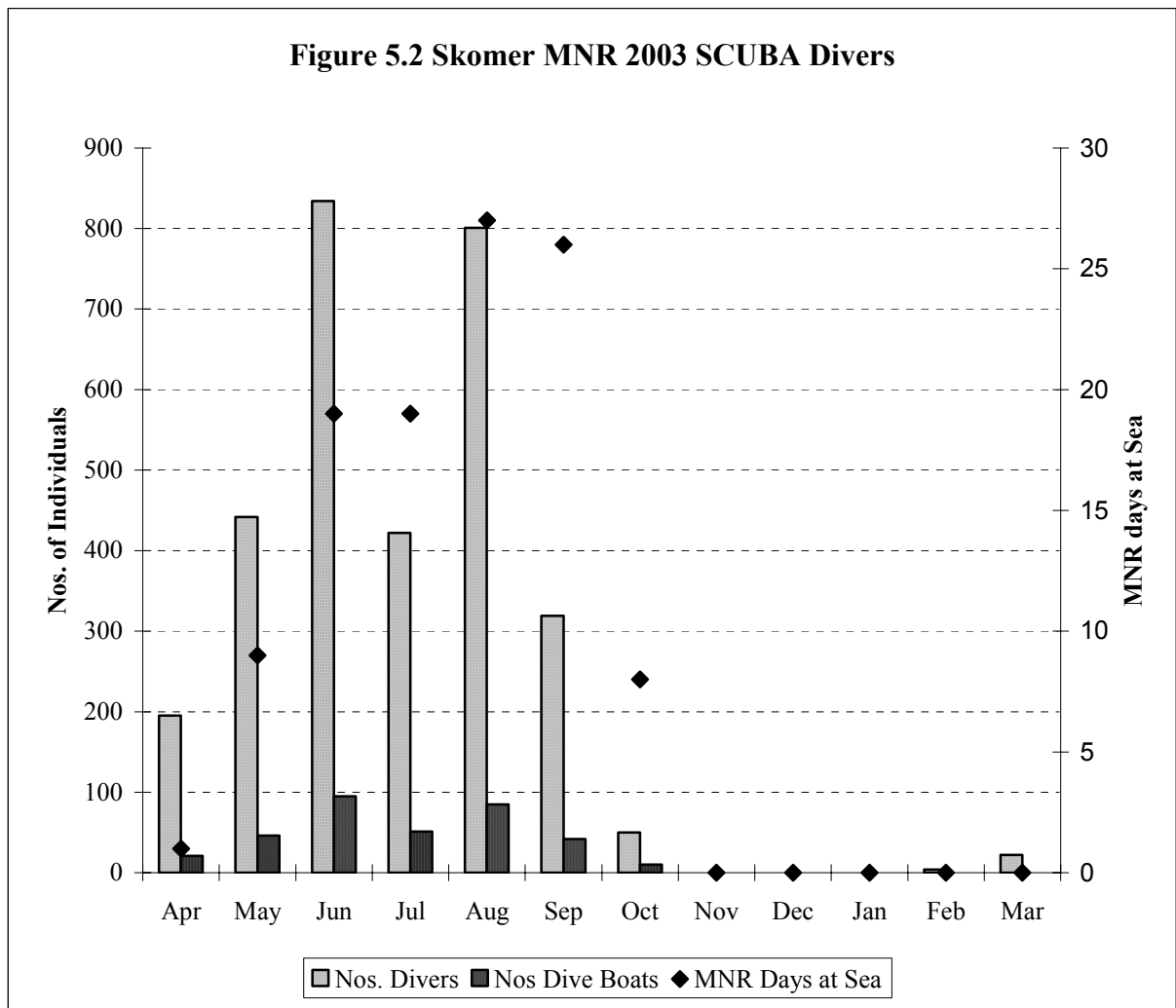
The MNR team were spared the stress and anxiety of dealing with visitors in danger in 2003. Everyone seemed to be avoiding getting into trouble in the MNR, at least while MNR staff were on duty!

TABLE 5.1 RECORDED RECREATIONAL USE OF SKOMER MNR

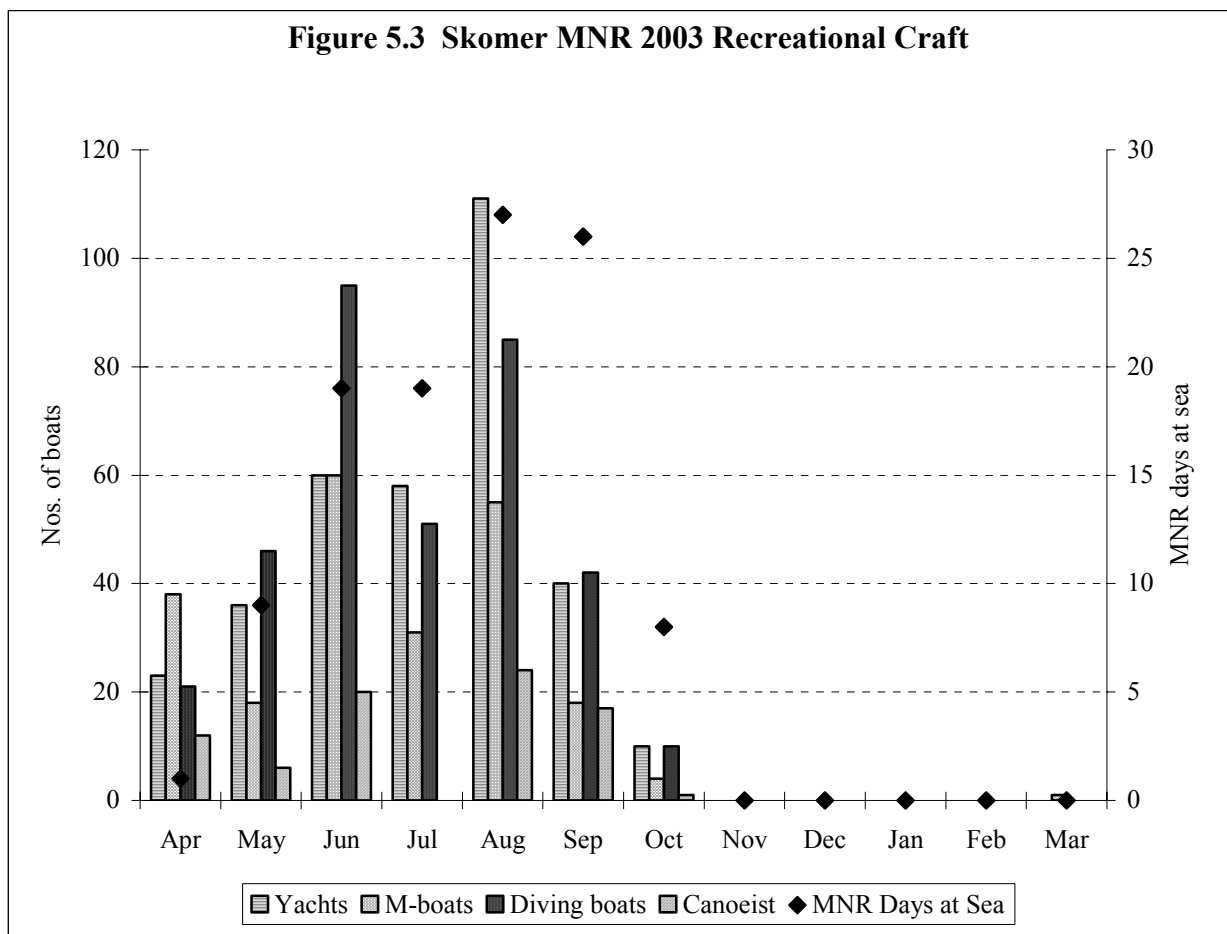
	1987	1988	1989	1991*	1992	1993	1994	1995	1996	1997**	1998#	1999#	2000#	2001#	2002#	2003#
Diver visits (diver days)	2727	2827	3334	2368	2327	2379	2730	2192	1745	2934	2287	2893	2008	3360	3234	3089
Shore dives @ Martins Haven	418	511	662	34	436	678	848	537	482	814	817	500	537	537	539	522
Dive boat visits	358	410	477	341	293	325	394	354	247	361	254	378	278	349	367	350
Total yachts	147	139	237	203	99	155	213	299	173	218	183	221	232	266	121	338
Total motot boats	-	37	65	70	47	95	129	65	39	70	87	95	93	153	70	225
Canoes	-	80				91	27	74	62	84	98	79	63	48	38	80
Total recreational craft	505	666	779	614	439	666	763	792	521	733	622	773	333	779	596	993
Total people on board boats	470	460	939	905	380	273	883	1041	612	874	868	1075	1051	1435	626	2041
Shore anglers	383	216	300	199	437	766	735	600	331	630	433	386	501	476	458	519
Boat anglers	-	108	73	43	93	199	347	173	81	30	89	60	72	18	70	243
Total anglers	383	324	373	242	530	965	1082	773	412	660	522	446	573	494	528	762

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





	MNR Days at Sea	Nos. Divers	Nos Dive Boats	Total Records
April	1	195	21	20
May	9	442	46	56
June	19	834	95	82
July	19	422	51	58
August	27	801	85	91
September	26	319	42	31
October	8	50	10	6
November	0	0	0	0
December	0	0	0	0
January	0	0	0	0
February	0	4	0	1
March	0	22	0	5
Total	109	3089	350	350

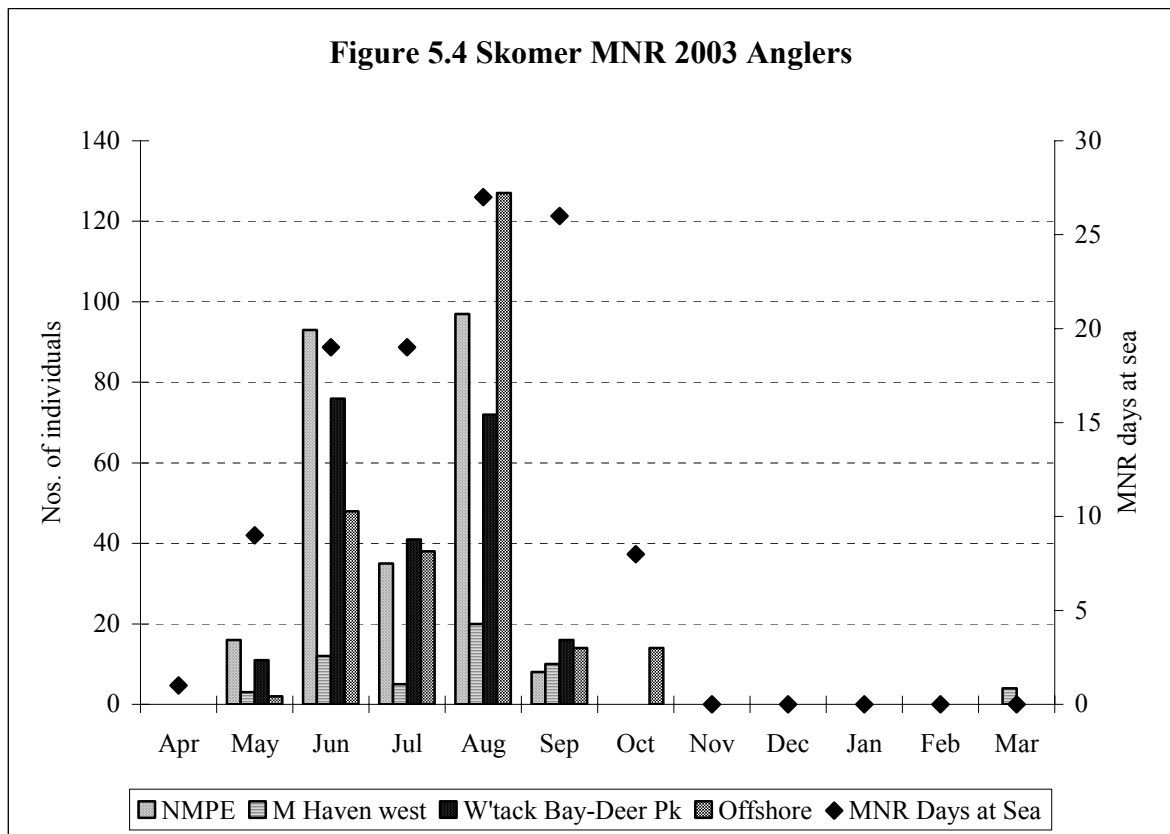


	MNR Days at Sea	Yachts	M-boats	Canoeist	Diving boats	Est POB*	POB**
April	1	23	38	12	21	222	8
May	9	36	18	6	46	226	88
June	19	60	60	20	95	443	127
July	19	58	31	0	51	295	88
August	27	111	55	24	85	585	185
September	26	40	18	17	42	218	22
October	8	10	4	1	10	52	5
November	0	0	0	0	0	0	0
December	0	0	0	0	0	0	0
January	0	0	0	0	0	0	0
February	0	0	0	0	0	0	0
March	0	0	1	0	0	0	0
Total	109	338	225	80	350	2041	523

**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 = 3.63194



	MNR Days at Sea	NMPE	M Haven west	W'tack Bay-Deer Pk	Offshore
April	1	0	0	0	0
May	9	16	3	11	2
June	19	93	12	76	48
July	19	35	5	41	38
August	27	97	20	72	127
September	26	8	10	16	14
October	8	0	0	0	14
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	4	0	0
Total	109	249	54	216	243

6 LIAISON AND ADVISORY COMMITTEES

6.1 ADVISORY COMMITTEE

Project: AP80/01 Staff time: Estimated 18.8 Actual: 8.6

The annual Advisory Committee meeting was held in April 2003. Dr Robin Crump continued as the chairman of the main committee, and MB and KL acted as secretariat. Presentations summarising the annual report and the project status report were made by PN and MB respectively.

6.2 WILDLIFE TRUST WEST WALES

Project: ML30/02 Staff time: Estimated 6.5 Actual: 0.6

Liaison with Skomer Island NNR staff and Wildlife Trust West Wales continued throughout the year on an informal basis and via the MNR Advisory Committee, as well as during the Trust's role as contractors for the annual seal pup monitoring.

Practical support of the Skomer Island NNR included helping to launch and recover boats.

MNR staff also represented Skomer and Skokholm Wardens over plans for a marine code of practice for commercial tourist boats. (see Section 6.7).

MNR staff are grateful to the Skomer NNR staff for their observations and records of visitors to the MNR, particularly on days when MNR staff are not on the water.

Project: ML80/04 Staff time: Estimated 1.5 Actual: 0

No Skomer MNR staff attended Skomer and Skokholm committee meetings.

6.3 SOUTH WALES SEA FISHERIES COMMITTEE

Project: ML40/02 Staff time: Estimated 1.9 Actual: 4.1

Informal liaison has continued with Phil Coates, SWSFC director, and with local Fisheries Officers. Liaison is also maintained via the Skomer MNR Advisory Committee.

PN and Phil Coates have, as action points from the 2003 Advisory Committee meeting, had discussions over ways of progressing towards establishing a No Take Zone within the MNR.

SWSFC have also helped with a student project involving questionnaires to fishermen about fishery management and the MNR.

6.4 PEMBROKESHIRE COAST NATIONAL PARK

Project: ML40/03 Staff time: Estimated 1.5 Actual: 0.7

Close liaison continues with:

- X Jane Hodges, Advisory Committee member and HW;
- X Steve Drinkwater: Research and Education subcommittee member;

- X Ian Meopham, Ranger;
- X Malcolm Cullen, Ranger,
- X Charles Mathieson, Recreation Management Officer.

MB contributed to the PCNP's "Coast to coast" magazine an article featuring the computer generated image of the MNR seabed that is due out in 2004.

6.5 NATIONAL TRUST

Project: ML30/03 Staff time: Estimated 1.1 Actual: 0.1

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 Martins Haven continued to serve as HW's (see Section 2.2 and 8.2) and assisted MNR staff with opening and closing the MNR exhibition and distributing 'Seal Watching' leaflets.

6.6 OTHER ORGANISATIONS AND INDIVIDUALS

Liaison with a wide range of organisations and individuals has continued. Whilst much of this liaison has been with members of the Advisory Committee it has also included other groups or individuals:

Project: ML30/01 Staff time: Estimated 0.6 Actual: 0.2

Project: ML50/01 Staff time: Estimated 0.2 Actual: 1.9

Liaison with Skomer MNR neighbours at West Hook and Treehill farms continued on an informal basis (including the exchange of meteorological data), as does liaison with other members of the local community. PN gave a talk about the MNR, which helped to raise funds for the local Coronation Hall, and members of the local community have visited the MNR office.

Project: ML40/01 Staff time: Estimated 0.2 Actual: 0

Skomer MNR liaison with local authorities continued via the MNR Advisory Committee, the Pembrokeshire Outdoor Charter group and through local officers responsible for beach signs.

MNR staff also liaised with PCC to obtain water quality results for Martins Haven (see section 4.3.15) and in organizing Pembrokeshire Fish Week events.

Project: ML60/01 Staff time: Estimated 1.2 Actual: 0.3

Contact with HM Coastguard is maintained during fieldwork and on an informal basis. PN and MB have also been in contact with MCA officials with regard to the certification of Skalmey and Skalmey II under the small workboat regulations.

Contacts with the Coastguard were also maintained when minor oil pollution was reported in the local area (see section 4.3.14).

Project: ML80/02 Staff time: Estimated 1.5 Actual: 4.2

Liaison with the most active commercial fishermen using Skomer MNR was continued. A local fisherman also continued to serve as an Honorary Warden. MNR staff have also had meetings with individual fishermen who use the MNR to discuss the NTZ proposal. Further meetings are planned.

The MNR also sent out letters to all fishermen on the SWSFC address list between and including Fishguard and Tenby explaining the NTZ ideas (see Appendix 9). The letter also introduced a Cardiff student wishing to get fishermen's views on fishery management techniques. The student's questionnaire was prepared in consultation with MNR staff, advisory committee members and SWSFC staff.

Fishermen were also invited to respond directly to the MNR with questions or comments about NTZ's. Of the 80 or so letters sent out the MNR had 6 replies, two of which were in writing. The main concern of fishermen was displacement of those using the MNR at present onto the grounds of other fishermen.

MNR staff also dived to attempt to locate a lost rudder belonging to a local fisherman.

Project: ML80/03 Staff time: Estimated 1.1 Actual: 0.1

Skomer MNR staff continued to liaise with recreational bodies including diving groups requiring information and local commercial dive charter operators.

Commercial passenger operators taking sightseeing trips around Skomer were also provided with information to ensure adherence to the MNR's byelaws and codes of conduct.

PN also gave an illustrated talk to Celtic Divers Sub-Aqua Club in February 2004.

Project: ML80/06 Staff time: Estimated 5.0 Actual: 9.0

It has been a very busy year in terms of liaison with other organisations, particularly academic bodies:

This included dealing with individual student enquiries and sending lists of potential projects to Marine Science departments at Bangor, Swansea, Cardiff, Plymouth and Sussex Universities.

MNR staff gave talks to visiting groups from Pembrokeshire College and Swansea University.

Seal data was provided to workers in population modelling at Imperial College, London, which we hope might be worked up into a published paper in due course.

Support has been given to two students from Plymouth University wishing to carry out underwater projects looking at commercial crustacean and sea urchin populations in the MNR (see section 7).

A placement was provided for a student from Pembrokeshire College, who was put to work to study disturbance to the seals using beaches on the Deer Park and the effectiveness of a trial information leaflet.

A student from Cardiff University was supported in his work looking at management of fisheries.

A second Cardiff student has been looking at image analysis techniques using MNR sea fan images with a view to improving estimates of sea fan area.



MNR staff have also been liaising with a researcher at Aberystwyth University with the possibility of a joint publication on the techniques used in MNR sponge monitoring.

Project: ML80/05 Staff time: Estimated 10.0 Actual: 19.5

Skomer MNR staff continued to liaise with other individuals and groups. These included: MCS, Dorset Wildlife Trust officers (Lulworth Cove), MarClim staff from Plymouth Marine Labs (see section 7), the Darwin Initiative, English Nature, JNCC (marine monitoring workshop), Dale Fort FSC, MHWESG, the Irish Sea Pilot project, Pembrokeshire Marine Code (Pembrokeshire Coastal Forum), Tom Bennett, Hydraulics Research Wallingford, MHPA (and Willy Thomas), CEFAS (Waverider loan - see section 7) and RSPB.

MNR staff have contributed to the Milford Haven Waterway Environmental Steering Group and to dredge spoil impact assessment work carried out by MHPA and their contractors.

MNR staff have also contributed to national lists of important algal species and sites being compiled by the Natural History Museum.

A meeting with individuals involved in setting up the Lundy MNR and St Agnes NTZs took place in the New Year.

6.7 WIDER MARINE ENVIRONMENTAL INITIATIVES

KL continued as the south and southwest Wales coordinator for Seasearch, a Marine Conservation Society initiative using volunteer divers to conduct >phase 1' style sub-littoral habitat surveys.

MNR staff have continued with their involvement in the planning of the Pembrokeshire Marine Code, which has been led by Pembrokeshire Coastal Forum. The codes have been tested by commercial tourist boat operators during the 2003 season and extra incentive has been given for compliance by providing free training and the awarding of "Seawise" accreditation.

7 SCIENCE

7.1 RESEARCH AND EDUCATION SUBCOMMITTEE

No meetings of the Research and education subcommittee were held in 2003.

More detail of all the science projects undertaken at the MNR can be found in the "Project Status Report 2003".

7.2 CONTRACT SCIENCE

Project code: RA03/01 **MONITOR GREY SEALS** **Priority:** 1

	Estimated	Actual
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Staff: AMCO;AMCO2;SMNRO;SS **Time:** 81.0 11.3

Grey seal pup production on Skomer Island breeding sites was monitored under contract by Wildlife Trust South and West Wales and by MNR staff at mainland sites.

Pup numbers reached an all time high of 228 with an 82% survival rate in 2003. This follows last year's relatively low numbers. Total seal pup births were 155 for Skomer and 68 born on mainland beaches, which made a much larger contribution to the MNR total than normal (See Appendix 2).

A report was prepared on the 'Grey Seal Breeding Census: Skomer Island, 2003' by Jane Matthews, (see Appendix 2).

Project code: RM13/01 **MONITOR SPONGE POPULATIONS** **Priority:** 1

	Estimated	Actual
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Staff: AMCO2;SMNRO;SS **Time:** 11.00 26.5

The detailed sponge survey started in October 2002 by Francis Bunker and Jen Jones was completed in September 2003. The final report is awaited, although photographic and actual prepared samples have been delivered. 58 different species were recorded of which 5 encrusting species have yet to be identified and 9 out of the 13 species identified in Picton & Morrow (1993) as species of conservation value (*Antho inconstans*, *Antho involvens*, *Aximella damicornis*, *Axinella dissimilis*, *Tethyspira spinosa*, *Raspaciona aculeate*, *Halicnemia patera*, *Homaxinella subdola* & *Hymeraphia stellifera*) were recorded in 2002-3.

The results will be used to produce a report comparing species methodologies with morphological methodologies. MNR staff have been liaising with a researcher at Aberystwyth University with the possibility of a joint publication on the techniques used in MNR sponge monitoring.



Project code: RM03/04 **MONITOR SEDIMENT INFAUNA**

Priority: 1

Staff: AMCO1;AMCO2;SMNRO;SS;VOL **Time:** 1.4 2.5

Cetaceans were recorded in Skomer MNR. Species numbers have yet to be collated from observations on Skomer and from the MNR Honorary Warden appointed to record sightings. "T-pods" used for acoustic monitoring of cetaceans in Cardigan Bay were tested in Skomer MNR at the OMS site.

Project code: RA34/01 RECORD ANGLING CATCH RECORDS **Priority:** 2
Estimated Actual

Staff: AMCO;SMCO;SMNRO **Time:** 1.0 0.0

No angling catch records were made at Skomer MNR. Recording forms designed for distribution to angling clubs using Skomer MNR have not yet been distributed.

Project code: RB01/01 RECORD VAGRANT & ALIEN SPECIES **Priority:** 2
Estimated Actual

Staff: AMCO;SMNRO **Time:** 0.2 0

Vagrant and alien species were recorded in Skomer MNR. MNR staff recorded several sightings of sunfish (*Mola mola*). *Dale Princess* crew sightings are still awaited for collation of all records.

Project code: RM73 01 MONITOR SEA URCHIN (*ECHINUS ESCULENTUS*)
 POPULATION **Priority:** 1

Estimated Actual
Staff: AMCO;AMCO2;SMNRO;SS;VOL **Time:** 26.0 39.2

The echinoderm volunteer project was successfully run involving 50+ volunteers from all over the UK. The number of *E. esculentus*, *Marthasterias glacialis*, *Crossaster papposus* and *Luidia ciliaris* (three easily identified starfish species) were recorded 1m either side of 30m transects. In addition, the widest diameter of each urchin was measured using callipers and the distance on the tape measure recorded. The method was designed for volunteer divers and is described in the report (see Appendix 5 for the synopsis).



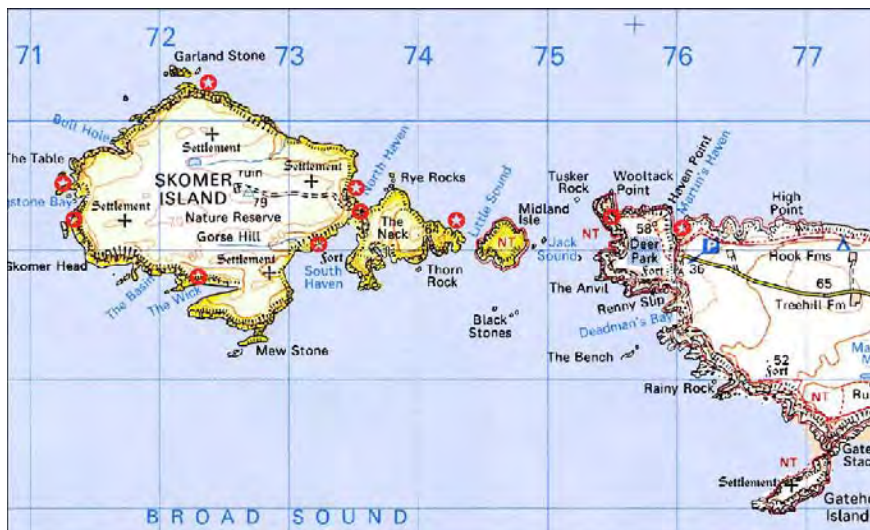
Estimated Actual
Project code: RB03 01 MONITOR

Staff: AMCO;AMCO2;SMNRO;SS **Time:** 3.7 2.4
 Viewpoint photographs were taken for sites on Skomer and for Deer park and Martins Haven.

Project code: RB03/02 MONITOR LITTORAL COMMUNITIES: MESO-SCALE
Priority: 1

Staff: AMCO;AMCO2;SMNRO;SS **Time:** 21.0 52.4

New quantitative methods were tested at the 6 original sites and 4 additional sites were established, including mainland sites. The methods are detailed in the Skomer MNR Project Status Report 2003. We have also linked our work in with the MarClim project based at Plymouth Marine Laboratories, which is looking at long-term trends in intertidal data from around the UK in terms of climate change.



Project code: RB06/01 MAINTAIN SPECIES LIST **Priority:** 2
Staff: AMCO;SMCO;SMNRO **Estimated** **Actual**
Time: 1.5 0
 Skomer MNR species list was maintained.

Project code: RM03/01 MONITOR EPIBENTHIC ROCK COMMUNITIES: MESO-SCALE
Priority: 1

Estimated **Actual**

Staff: AMCO;AMCO2;SMNRO;SS **Time:** 9.0 1.7
One dive took place at the North Wall site for epibenthic rock communities photo monitoring.

Project code: RM03/05 MONITOR BARNACLE & MOLLUSC POPULATIONS
Priority: 2

	Estimated	Actual
Staff: AMCO	6.0	0

See Project: RB03/02 MONITOR LITTORAL COMMUNITIES: MESO-SCALE for details.

Project code: RM23/01 MONITOR EUNICELLA: POPULATION **Priority:** 1

	Estimated	Actual
Staff: AMCO;AMCO2;OTH;SMCO;SMNRO;VOL	16.0	46.8

Time: 16.0 46.8
During 2003 a total of 28 additional colonies were located and mapped at Bull Hole and two new sites, Rye Rocks and South Middleholm, bringing the total recorded to 102.

For results see Skomer MNR Project Status Report 2003.

Project code: RM24/01 RECORD EUNICELLA: GROWTH RATE **Priority:** 1

	Estimated	Actual
Staff: AMCO;SMCO;SMNRO	3.5	0

Stereo photographic samples were taken of four seafan colonies (*Eunicella verrucosa*) at North Wall site. Photographs of other seafans taken for project RM 23/01 are also used for this project and have been scanned and registered for analysis using MapInfo (see above). From yearly visual comparisons of colonies 17% (12 of 72 colonies) of the monitored population were identified as showing no apparent growth.

Project code: RM44/01 RECORD COMMERCIAL CRUSTACEAN POPULATIONS
Priority: 2

	Estimated	Actual
Staff: AMCO;AMCO2;SS;SMNRO;VOL	6.0	10.0

Skomer MNR staff helped University of Plymouth students carry out studies in the MNR:

Two single pots were set at each of three sites and hauled every 3-4 days between 12th August and 24th September 2003. The carapace length of *Homarus gammarus* (Common lobster) *Cancer pagurus* (Edible or brown crab) and *Maja squinado* (Common spider crab) was measured to the nearest mm. In addition, *H. gammarus* and *C. pagurus* were tagged by securing a small cable tie to one limb; individuals were identified by which limb was tagged and colour of cable tie. Animals were quickly released back to the same sites.



Three commercial species made up the total catch. Common lobster comprised 51 % of the catch whilst Common spider crab and Brown crab comprised 32 % and 15.5 % respectively. MNR staff would like to thank local fishermen who helped with these trials by reporting any tagged shellfish appearing in their own pots.

Project code: RM63/01 MONITOR PENTAPORA POPULATION **Priority:** 1

	Estimated	Actual
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Staff: AMCO;AMCO2;SS;SMNRO;VOL	Time: 10.0	6.6
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The results from 2003 show an increase in the number of Ross coral, *Pentapora foliacea*, colonies. A detailed search at Bernie's Rocks showed several new colonies. The average size of colonies also increased at Waybench. By contrast, colony size decreased at North of the Neck, but this was due to the loss of a large colony.

A new site was established on the South side of the island (South of Middleholm).

Project code: RM64/01 RECORD PENTAPORA GROWTH RATE **Priority:** 1

	Estimated	Actual
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Staff: AMCO;SMCO;SMNRO	Time: 3.00	0.00
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See project RM63/01.

Project code: RM23/03 MONITOR ALCYONIUM GLOMERATUM: POPULATION
Priority: 1

	Estimated	Actual
Staff: AMCO;AMCO2;SMNRO;SS;VOL	Time: 4.0	7.0

The three quadrats from the North Wall stereo site have a steady abundance of *A. glomeratum* of approximately 50% since 1984. Quadrats 2 and 3 show some evidence of an increase in abundance.

2002 was the first sampling event for the North Wall "A. glom" wall and Thorn Rock.

These were repeated in the 2003 season and an additional site was established at Rye rocks. There are now several small colonies along the transects as well as larger ones.



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

	Estimated	Actual
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Staff: AMCO;AMCO2;SMNRO;SS;VOL	Time: 2.0	11.8
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Parazoanthus axinellae colonies were photographed at established MNR sites using the

methods developed in 2001.

A new site, called 'New Wall', was established at Waybench and marked with pitons.

Density estimates were made using close up photographs and polyps counted using MapInfo GIS software.

Colony area	
Site	Index of Area
<i>Sandy Sea Fan Gully</i>	5 transects (20 samples)
Waybench – <i>New Wall</i>	11 re-locatable samples
Waybench – <i>Deep Wall</i>	2 transects (8 samples)
Thorn Rock – <i>Piton 7</i>	3 re-locatable samples
Thorn Rock – <i>Mooring</i>	3 re-locatable samples
Thorn Rock – <i>Piton 3</i>	3 transects (12 samples)

Density			
Site	2001	2002	2003
<i>Sandy Sea Fan Gully</i>	25 samples	16 samples	32 samples
Waybench – <i>New Wall</i>	None	16 samples	34 samples
Waybench – <i>Deep Wall</i>	None	16 samples	30 samples
Thorn Rock – <i>Piton 7</i>	None	None	None
Thorn Rock – <i>Mooring</i>	None	None	None
Thorn Rock – <i>Piton 3</i>	17 samples	17 samples	24 samples

Density estimate results (number of polyps / 0.03255 m²)

Site	Statistic	2001	2002	2003
<i>Sandy Sea Fan Gully</i>	Mean	117.96	146.19**	77.25**
	STDEV (s)	57.37	36.87	50.61
	n	25	16	32
Thorn Rock – <i>Piton 7</i>	Mean	188.18	143.5**	94.875**
	STDEV (s)	70.85	72.37	75.12
	n	17	18	24
Waybench – <i>New Wall</i>	Mean		167.69	75.38**
	STDEV (s)		73.71	67.54
	n		16	34
Waybench – <i>Deep Wall</i>	Mean		133.5	45.1**
	STDEV (s)		60.92	41.87
	n		16	30

** = Mean significantly different to previous year (P< 0.01 t-test)

Project code: RM23/03 MONITOR CUP CORALS

Priority: 1

Estimated

Actual

Staff: AMCO;AMCO2;SMNRO;SS;VOL

Time:

4.0

7.0

Balanophyllia regia: Stereo photographic samples were taken at the five 50 x 40cm quadrats

at Thorn rock (established in 1984). Individuals have been traced for 18 years. Evidence of recruitment has been observed, however this may be due to small individuals becoming visible due to low levels of seabed sedimentation.

Abundance of *Balanophyllia regia* in The Wick

Transect	2002		2003	
	Mean	S.D.	Mean	S.D.
A	40.5	26.3	50.4	43.1
B	64.6	36.3	71.9	39.3
C	53.1	33.4	49.9	42.5

Caryophyllia smithii: Number at the Thorn Rock site have shown an apparent increase, but the changes in mean abundance observed may have been due to variable levels of surface sediment affecting the actual numbers visible during recording.

For full results see Skomer MNR Project Status Report 2003.

Project code: RP04/01 RECORD METEOROLOGICAL FACTORS **Priority:** 1
Staff: SMNRO, AMCO2 **Time:**

Estimated	Actual
2.5	1.6

The summary for January - December 2003:

Maximum temperature of 26.01 degrees Celsius was recorded in August.

Minimum temperature of -2.24 degrees Celsius was recorded in March.

Annual wind speed >22knots (Gale Force 6) frequency 26.9%*

Annual Maximum gust, March, 80.68 knots

Direction of Maximum gust,

Annual sunshine hours

Mean monthly sunshine hours 51.01 hrs

Annual net radiation, w/m'

Average monthly net radiation

Annual rainfall,

Monthly average rainfall,

* Standardised data to 100% i.e. missing data filled in/estimated



Project code: RP63/01 MONITOR SEAWATER TURBIDITY / SUSPENDED **Priority:** 1

Staff: AMCO;AMCO2;SMNRO;SS **Time:**

Estimated	Actual
8.5	8.3

Turbidity was measured in Skomer MNR by Secchi disc and by automatic logger.

The self-recording suspended sediment probe was deployed from the end of May to the end of September 2003 and data analysed graphically.

Lessons learned from last year about length of deployment before biofouling affects the readings were put to good use and a maximum of two weeks left between cleaning the probe (unless someone forgot!). Fortunately this coincided with planned servicing of the sediment traps. Similar probes deployed in the Menai Strait have also shown this two-week operational window (Des Barton - SOS).



Calibration figures were revisited and the decision made to take more seawater samples during 2004 for better calibration.

20 measurements of turbidity were made using Secchi disc between April and October 2003. The maximum reading from June to September was 9.5 m.

Project code: RP63/03	MONITOR SEA WATER CHEMISTRY	Priority: 2
	Estimated	Actual
Staff: AMCO;SMCO;SMNRO	Time: 7.0	0

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: 1
	Estimated	Actual
Staff: AMCO;AMCO2;SMNRO;SS	Time: 19.0	1.4

A total of 9 seabed sedimentation samples were collected at Skomer MNR using passive sediment traps at the OMS site. The seabed wreckage used for mounting the sediment trap at Thorn Rock had broken up too badly to be able to deploy the trap there in 2003. A second OMS-type frame is being prepared to deploy at Thorn Rock in 2004.

No analysis is intended with the samples that are stored frozen unless episodes of unusually high turbidity are recorded in project RP63/01. Subsamples of these have again been sent to Environmental Tracing systems Ltd, who are contracted by the Milford Haven Port Authority to monitor dredge spoil dispersal from the recently licenced site, for analysis for their fluorescent tracer.

Project code: RP64/01	RECORD SEAWATER TEMPERATURE	Priority: 1
	Estimated	Actual
Staff: AMCO;SMCO;SMNRO;VOL	Time: 11.5	7.0

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 above the seabed. 18 profiles were recorded between April and October 2003 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 2003.

Maximum surface temperature of 17.8 degrees Celsius was recorded in August, minimum surface temperature of 11.87 degrees Celsius was recorded at the beginning of June (sea conditions in May and damage to equipment prevented readings being taken at the surface).

Minimum seabed temperature of 7.6 degrees Celsius was recorded during March, and maximum seabed temperature of 17.1 degrees Celsius was recorded at the end of August 2003.

Seawater temperature data has been analysed and summarised for use in statistical studies of biological communities.

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

	Estimated	Actual
--	------------------	---------------

Staff: AMCO;SMCO;SMNRO;VOL **Time:** 8.5 6.6

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. 18 profiles were recorded between April and October 2003 in conjunction with projects to measure turbidity and temperature. Salinity varied between 34.758 and 35.35 parts per thousand.

Project code: RP64/04 RECORD TIDAL REGIME **Priority:** 1

	Estimated	Actual
--	------------------	---------------

Staff: SMNRO **Time:** 2.5 0

Tidal height data for Skomer MNR was recorded from the end of May to the end of September 2003 by using the depth recording facility of one of the Minilog temperature loggers. No tidal current data was collected other than notes on slack water times.

Project code: RV40/01 COLLATE BATHYMETRIC INFORMATION **Priority:** 2

	Estimated	Actual
--	------------------	---------------

Staff: AMCO;SMCO;SMNRO **Time:** 6.0 0.0

See project RP32/01.

Project code: RV40/02 MAP MONITORING SITES**Priority:** 2**Estimated****Actual****Staff:** AMCO;SMCO;SMNRO;SS**Time:** 10.0

3.3

Some mapping of new and existing monitoring sites took place. New sites included south of Middleholm (for *Pentapora* and *Eunicella*) and Rye Rocks (for *Pentapora*, *A. glomeratum*, and *Eunicella*). Further mapping was carried out at Bull Hole.

New equipment was purchased to help map and mark intertidal monitoring sites.

**Project code:** RP32/01 SURVEY SEABED TOPOGRAPHY**Priority:** 1**Estimated****Actual****Staff:** AMCO;MCO;SMCO;SMNRO**Time:** 6.0

0

No further survey of seabed topography was carried out at Skomer MNR pending development by Area staff of logging software for soundings.

Once again some projects have exceeded their planned time due to time spent analysing data and refining methods. It is hoped that as methods become more refined then time taken to store and analyse data will be reduced. Other projects that appear to be well below their allotted time may well just be reflecting changes to the way time is planned and recorded in CMS. Contractors' time, for example, is no longer estimated or recorded.

7.4 DATA HANDLING DEVELOPMENT

Data handling has continued to be improved, particularly since the replacement of all the MNR's computers in March 2003. New skills acquired through training have also been put to full use, such as the use of the PRIMER statistics software and training in databases and spreadsheets that PN and MB have attended.

Pot map data continues to be recorded using the GPS unit and transferred electronically to the Geographical Information System based on MapInfo (see Appendix 8).

Analysis of monitoring photographs has continued and includes: littoral viewpoint and transect work, sublittoral projects: *Eunicella verrucosa*, *Pentapora foliacea*, *Parazoanthus axinellae*, *Alcyonium glomeratum*, *Balanophylia regia*, *Caryophylia smithii*, epibenthic rock communities, and sponge assemblages.

With many analyses tested and data storage spreadsheets now refined, keeping on top of ongoing data analysis has become much easier.

7.5 OTHER WORK

More clippings were taken from MNR *Eunicella* colonies to help the CCW Species Challenge funded project investigating the reproductive biology of seafans, further refine its conclusions.

PN and MB attended a pink seafan workshop hosted by English Nature, discussing

monitoring methodologies and future plans for research.

MNR staff were again involved in taking samples for Environmental Tracing Systems (ETS).

This company was contracted by Milford Haven Port Authority to carry out monitoring of dredge spoil dispersal from the licensed site. Grab samples and sub samples from MNR sediment traps were sent to ETS for analysis for fluorescent tracers used during the dredge spoil disposal operation. See also project RP63/01.

The Waverider buoy, which has been out of commission for several years, was loaned to CEFAS to take part in environmental assessments of the proposed wind turbine development near Scarweather Point.



8 EDUCATION AND INTERPRETATION

8.1 RESEARCH AND EDUCATION SUBCOMMITTEE

No meetings of the Research and Education subcommittee were held in 2003, perhaps a good sign that science and interpretation projects are proceeding well! We hope that if members were not happy with the direction of the work that MNR staff are undertaking, as described in the Project Status and Annual Reports, they would contact us to convene a meeting of the subcommittee or make their feelings known at the main Advisory Committee meeting.

Project: MI50/02 Staff time: Estimated 0 Actual: 2.8

The MNR interpretative booklet "Stars, squirts and slugs...marine life in an underwater refuge" was published at the beginning of the season and has proved immensely popular and of the original 5000 print run only a few hundred remain. A reprint has been promised for 2004.

8.2 FISHERMAN'S COTTAGE MNR EXHIBITION

Project: MI50/01 Staff time: Estimated 8.0 Actual: 1.6

The MNR exhibition at Martin's Haven was open on 211 days from the end of March 2002 through to the end of October and again during February half-term.

Following the purchase of the new mobile display, the old panels have been used to mount a semi-permanent central display mounted on a timber frame.

This central display is used to display presentations on current work in the MNR, current marine issues in the UK and seasonal displays (e.g. seals in autumn). New laminated posters showing MNR work have been prepared by CCW interpretation staff to a high standard with bilingual text and a corporate design (see Appendix 7), including one designed as a wipe-clean "score-board" to inform visitors during the seal pupping season of current totals of seal pup counts. The new posters can also be used on the mobile display (see section 8.3).



A poster with the 3D computer generated image of the MNR seabed with the sea taken away has been produced and is already proving extremely popular.

The exhibition video player has been replaced with a DVD player, which, it is hoped, will be

less prone to degrading picture quality due to worn heads and the consequent costs of repairs. The existing video has been transferred to DVD and the player will also be able to play the Pembrokeshire Marine SAC video and animations generated from the same digital bathymetric data as the 3D poster.

Counts from the logger (break the beam counter) showed the total number of visitors to be approximately 14172 for the period the exhibition was opened (see Appendix 3).

8.3 OTHER INITIATIVES

A MNR mobile display using the posters mentioned above was used at:

- CCW monitoring workshop, Caernarfon;
- 'Pembrokeshire Fish Week' launch day at Milford docks;
- Pembrokeshire College event in March;
- JNCC marine monitoring seminar, Grange-over-Sands, in February;
- Pink seafan workshop, Exeter, in January;
- MCS conference in October;

8.4 TALKS AND PRESENTATIONS

Project: MI10/01 Staff time: Estimated 1.5 Actual: 0.2

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

Other enquiries included local geology and comparing notes with visitors from New Zealand.

Project: ML80/06 Staff time: Estimated 5.0 Actual: 9.0

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). MNR staff gave talks to visiting groups from Pembrokeshire College and Swansea University.

Project: MI00/01 Staff time: Estimated 1.0 Actual: 2.4

MNR staff had an active year giving presentations to a range of audiences: PN gave a presentation to the Dale WI in May, to the University of the Third Age in October, Freystrop WI in January and Celtic Dive Club in February.

MB gave a presentation to the JNCC Marine Monitoring workshop in February.

All four MNR staff gave presentations to the CCW marine monitoring workshop in November.

8.5 MEDIA

Project: ML70/01 Staff time: Estimated 1.1 Actual: 6.5

Skomer MNR liaison with the media continued to increase in 2003:

KL prepared articles for the Western Telegraph and Western Mail about the volunteer diver urchin survey and her Seasearch activities. She also prepared articles about MNR work with BAP species.

Articles also appeared in the local press covering the NTZ proposals and the new MNR booklet. The MNR also contributed images to "Natural World" magazine.

PN contributed to CCW's "State of the Environment" report and attended the press launch of CCW's "Marine Code".

BBC Radio Wales interviewed MNR staff; PN was interviewed as part of coverage of a WWF conference about the future of the Welsh marine Environment. PN was also interviewed live at the Pembrokeshire Show by Roy Noble.

PN and KL were interviewed for the "On the Waterfront" programme for Radio Pembrokeshire in June and PN again in February.

MNR staff took part in filming for a CCW organised TV diary.

PN was interviewed by Roger Pinney for BBC "Wales Today" programme.

The MNR also featured in the Iolo Williams series "Iolo's Special Reserves", which was shown during 2003.

MNR staff have also had enquiries from other media companies regarding potential projects in 2004.

An item left out of last year's Annual Report was the web page dedicated to the MNR on the BBC website, featuring text by PN and images by MNR staff (see Appendix 6).

9 ACKNOWLEDGEMENTS

The MNR staff thank all those who contributed to, or supported in any way the management of the MNR during 2003.

Thanks to:

- < Contributors to the Advisory committees, especially Dr Robin Crump, who chairs both the main committee and, with Dr Chris Wooldridge, the Research and Education subcommittee;
- < Honorary Wardens;
- < Juan Brown and Skomer NNR staff;
- < Steve Myatt for voluntary warden assistance with diving, boat and shore fieldwork;
- < Nick Jeremy for voluntary assistance with diving;
- < Lorna Pegg for her work on the seal disturbance study;
- < The crew of the *Dale Princess*;
- < All our Honorary Wardens for contributing to user records and Brian and Lionel for making sure the exhibition opened as often as possible;
- < The volunteer diving teams that were involved in the sea urchin survey.

With apologies to anyone omitted from above.

APPENDIX 1

ABBREVIATIONS

AcoP	Approved Code of Practice
AWS	Automatic weather station
BS-AC	British Sub-Aqua Club
BTO	British Trust for Ornithology
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
ETS	Environmental Tracing Systems
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
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
NCEAG	National Coasts and Estuaries Advisory Group
NNR	National Nature Reserve
NT	National Trust
OMS	Oceanographic monitoring site
PCC	Pembrokeshire County Council
PCF	Pembrokeshire Coastal Forum
PCNP	Pembrokeshire Coast National Park
PMcSAC	Pembrokeshire Marine candidate Special Area of Conservation
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
WAG	Welsh Assembly Government
WTSWW	Wildlife Trust South and West Wales

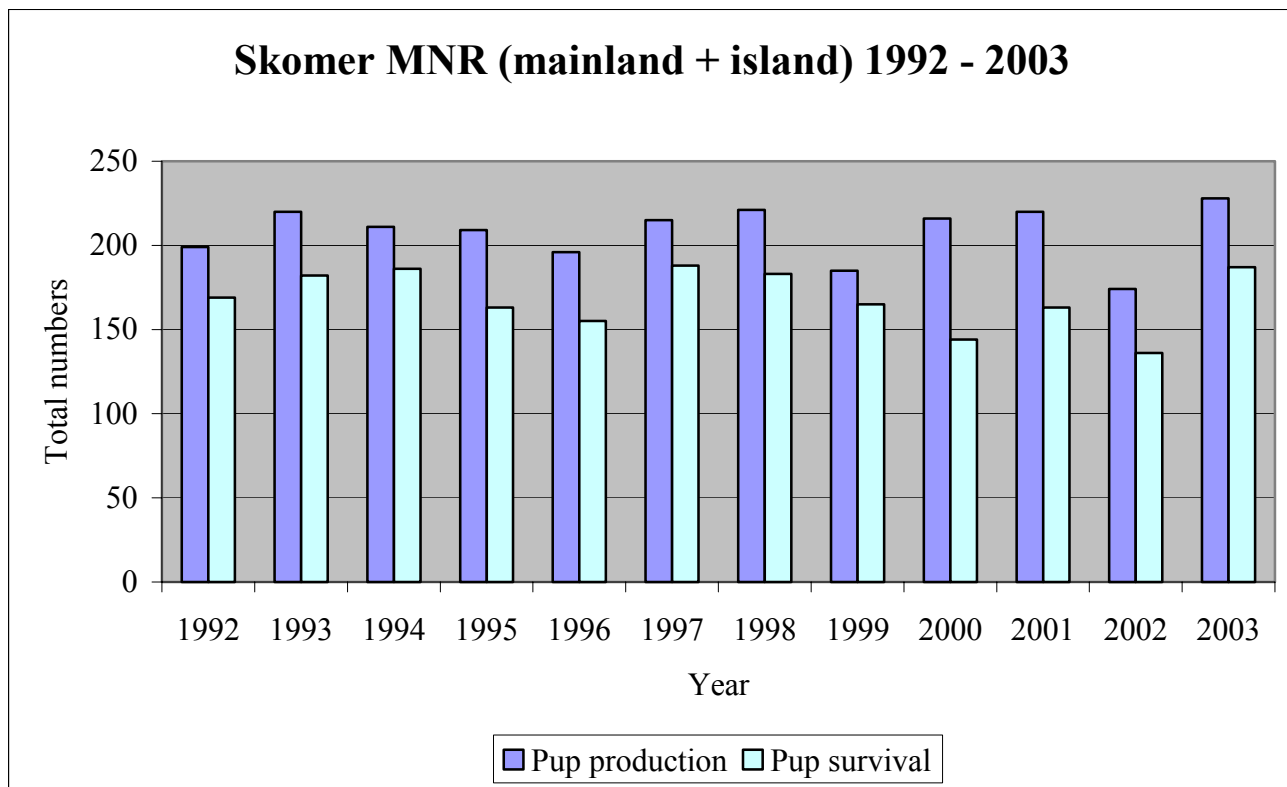
APPENDIX 2

SKOMER MNR SEAL PUPPING DATA

Seal Pup Production Skomer MNR Mainland 2003

First sighted at	No. first sighted at location	Date last checked	Seen to moult	No. Survival assumed*	No. moved after first sighted
Wooltack Bay Caves	2	15-Sep-2003	2	2	
Martins Haven Caves	1	13-Oct-2003	1	1	
Jeffery's Haven	13	4-Nov-2003	12	12	
Pebbley Beach	16	4-Nov-2003	12	12	2
Three Doors Cave & Beach	7	24-Oct	6	6	1
Horseshoe Cave		16-Sep			
Boulder Beach & Cave	6	3-Nov-2003	5	5	1
Little Castle Bay	7	24-Oct-2003	6	6	
Victoria Bay	7	24-Oct-2003	6	6	
Rainy Rock Beach & Cave	4	24-Oct-2003	4	4	
Renny Slip & Cave	3	3-Nov-2003	1	1	
Watery Bay	2	24-Oct-2003	2	2	1
Total	68		57	57	5

Number of seal pups unaccounted for 5
 Mortality assumed 2
 Still born 4
 RSPCA care
 Marine strandings



J.H. Matthews. Grey Seal Breeding Census: Skomer Island 2003. Science Report no. 621

SUMMARY

158 pups were recorded as being born on Skomer within this year's period of observation (12th August - 20th November). This figure includes four pups that qualify as 'wanderers' - pups that appeared at sites from unknown locations. The total is the same as that for 2000, and corresponds with the mean for the last ten years. There were 34 pups known or assumed to have died, giving a mortality rate of 21.5%.

The peak number of pups born in any seven-day period was 33, between 15th and 21st September. This is 33% higher than the most prolific seven-day period in 2002 (10th-16th September; 22 born).

The mean age of onset of moult ranged from 11 days on the flippers to 14 days on the body. The mean duration of moult ranged from a minimum of 6 days (moult on body to completion) to 10 days - from first signs of moult on flippers to completion.

Sketches were made of 74 seals, 19 of which were positively re-identified from past records. SH72 was re-recorded this season after an absence of 10 years and LS71, last recorded on the island nine years ago, was almost certainly seen on two occasions in Matthew's Wick this year.

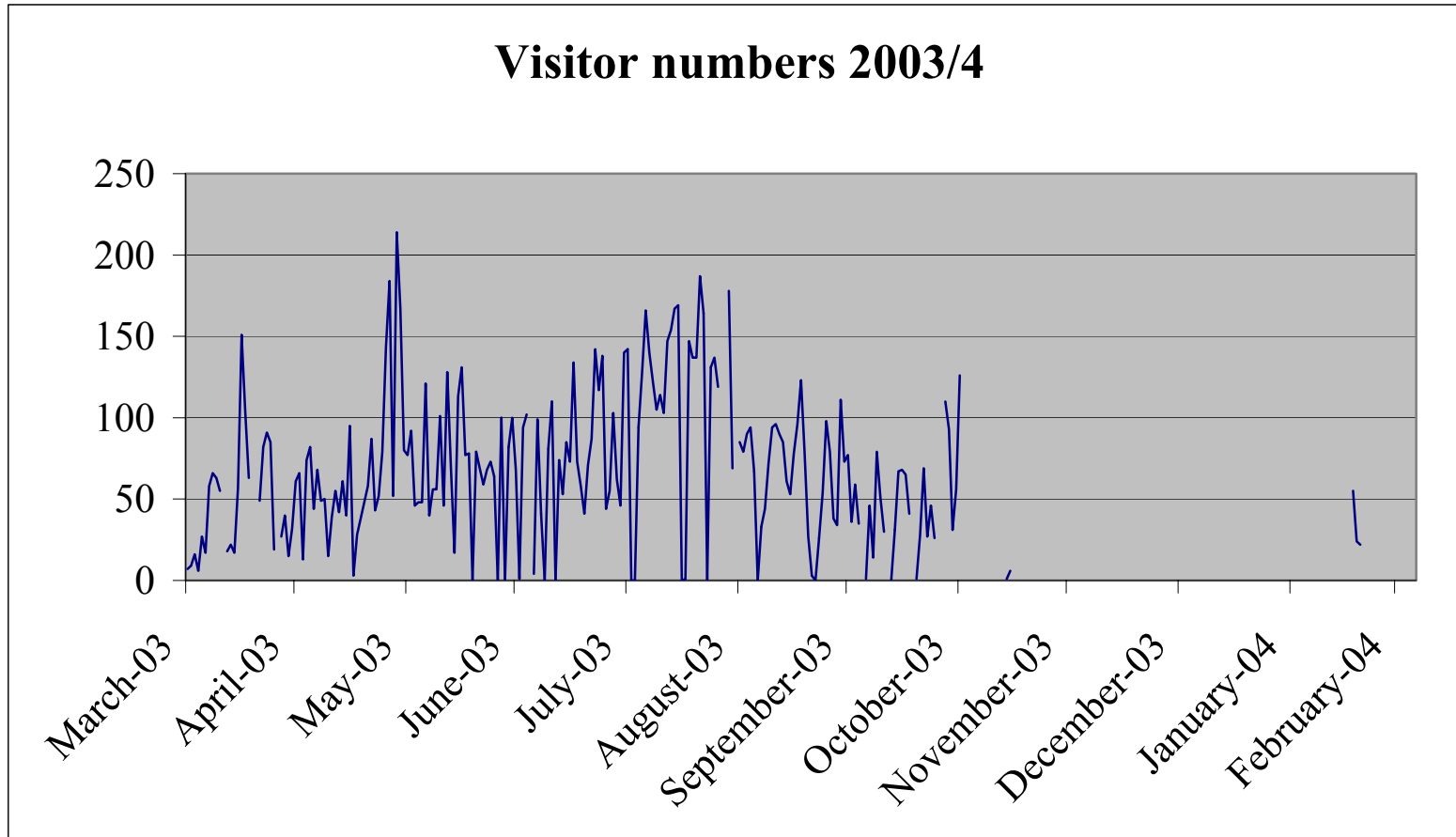
There were approximately 12 individuals noted with either monofilament line or rope netting fast around the neck. Two moulted pups were found entangled in fishing gear.

At least 20 pups were recorded with tar spots on their natal coats; none seemed to be adversely affected.

There were three recorded incidences of boat disturbance.

Two cows were observed feeding pups other than their own, and one cow was observed feeding two pups simultaneously.

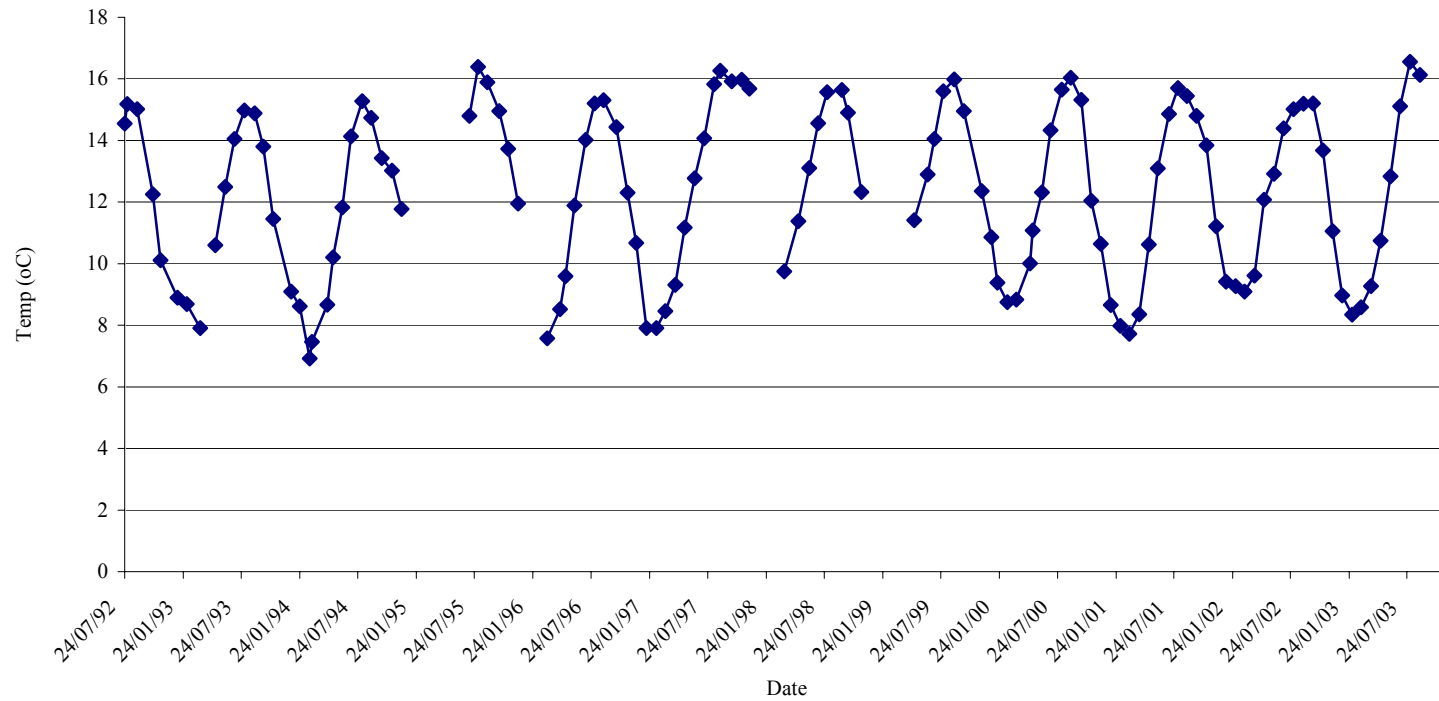
APPENDIX 3
SKOMER MNR VISITOR CENTRE NUMBERS 2003/4



Days open = 211 Mean visitors per day open = 67.2
Total visitors
= 14172

APPENDIX 4
SEABED TEMPERATURE RESULTS
 (MONTHLY MEANS 1992-2003)

Sea temperature near sea bed at Skomer MNR.



APPENDIX 5

SKOMER MNR SCIENCE REPORT SYNOPSES

Luddington, L. & Lock, K. (2004) Skomer Marine Nature Reserve, Distribution and abundance of *E. esculentus* and selected starfish species, 2003. CCW West Area Report No. 45.

REPORT INTRODUCTION

Echinus esculentus Linnaeus, 1758 is an omnivorous grazer and a biological structuring factor of primary importance in subtidal communities. During the 1970s divers targeted the Skomer MNR population for the curio trade and large numbers were removed. The Underwater Conservation Programme carried out the first survey of the *Echinus esculentus* population in Skomer MNR in 1978 (Earll, 1979). The results of the 1978 survey prompted a similar survey in 1981 by the Underwater Conservation Society (Bishop, 1982). Bishop (1982) reported that mean densities of *E. esculentus* in Skomer MNR in 1981 were not significantly different from densities in a commercially exploited population in Lamorna Cove, Devon. Densities were also significantly lower than those of other localities around the UK. The aim of the 2003 survey was to establish the current status of the population, including distribution, abundance, density and size frequency.

M. Burton, K. Lock, L. Luddington & P. Newman. (2004). Skomer Marine Nature Reserve project status report 2003/04. CCW West Area Report 29

SYNOPSIS

The second project status report produced by the Skomer Marine Nature Reserve summarises the progress and status of the monitoring projects at Skomer MNR. A summary of all established projects in the MNR is provided in a table format. For each project that was worked on in the 2003 field season a more detailed account is given including a history and summary of the results so far.

Mae'r ail adroddiad ar statws prosiectau, a luniwyd gan Warchodfa Natur Forol Ynys Sgomer, yn crynhoi cynnydd a statws y prosiectau monitro yng Ngwarchodfa Natur Forol Sgomer. Ceir crynodeb o'r holl brosiectau sydd wedi hen sefydlu o fewn Gwarchodfa Natur Forol Ynys Sgomer ar ffurf tab. Ar gyfer yr holl brosiectau yr aethpwyd i'r afael â nhw yn ystod tymor maes 2003, rhoddir mwy o fanylion, gan gynnwys eu hanes a chrynodeb o'r canlyniadau hyd yn hyn.

Crump, R. G. & Burton, M. (2004). Skomer Marine Nature Reserve. Littoral monitoring: Development of methods. CCW West Area Report 27

SYNOPSIS

The methods for monitoring the littoral habitats of Skomer Marine Nature Reserve were revisited in 2003. Extra sites and new methodologies were established after field trials and consultation with local experts. The modified methods involve frequency counts of species from quadrats, detailed recording of limpet size and abundance, detailed recording of barnacle % cover and species ratios, lichen coverage and the incorporation of MarClim methodologies.

It is proposed to continue this work on an annual basis and review the results in 2008

CRYNODEB

Yn 2003, aethom ati i ddiwygio'r dulliau ar gyfer monitro'r cynefinoedd ar lannau Gwarchodfa Natur Forol Sgomer. Ar ôl treialon maes ac ymgynghori ag arbenigwyr lleol, cafodd rhagor o safleoedd a dulliau newydd eu sefydlu. Mae'r dulliau diwygiedig yn cynnwys cyfrif amledd y rhywogaethau drwy ddefnyddio cwadratau; cofnod manwl o faint a niferoedd y cogyrnod; cofnod manwl o ba ganran o'r glannau sydd wedi'i gorchuddio â chregyn llong a chymhareb y rhywogaethau; pa ganran sydd wedi'i gorchuddio â chennau, ac ymgorffori methodolegau MarClim.

Y bwriad yw parhau â'r gwaith bob blwyddyn, ac adolygu'r canlyniadau yn 2008.

Sea-nature Studies (2004). Skomer MNR: A repeat survey of the sublittoral macrobenthos 2003. CCW West Area Report 28

SUMMARY

Sea-nature Studies was contracted by the Countryside Council for Wales (CCW) to carry out the laboratory analysis of biological and sediment samples from Skomer Marine Nature Reserve (SMNR) taken during a repeat survey of the sublittoral macrobenthos. The CCW SMNR team carried out the survey work in October 2003.

The sorting, biomass and quality assurance work was carried out by the University of Hull. The particle size analysis was undertaken by the British Geological Survey who used the X-ray Sedigraph system to analyse the fine grain fraction. Lastly the organic carbon content and total hydrocarbon analysis were performed by TES Bretby. Full contact details are supplied.

Descriptions of the methodologies employed are given in Section 2 of the report.

The tabulated results of these analyses are presented (Section 3). No species of a rare or unusual nature were encountered and abundances were not outside of expectation. As in 1998 the range of species encountered from just 20 samples was large.

Recommendations for future work are presented in Section 4 and include the following:

- The primary consideration with regard to the shape of future work is to know very clearly what question you are hoping to answer and how does this potential work compliment and support the current duties required of by CCW of the SMNR team and others.
- It is recommended that, unless legislative requirements/funding dictates otherwise, the current 5-year rolling programme be continued. This snapshot monitors the status of the benthic communities and augments the knowledge base of the species, which inhabit these environments.
- Other possible options for future work might be to take biological and sediment (for PSA and organic carbon content) samples every 2 years and to store these against possible future need (e.g. another oil spill) or an increase in available funds.

APPENDIX 6

EXAMPLES OF SKOMER MNR IN THE MEDIA

BBC - South West Wales Nature - Features Skomer's Marine World Page 1 of 3

BBC i

FRIDAY
19th March 2004
Text only

BBC Homepage
Wales Home
South West

»Nature

- Things to do
- Places to go
- Features
- Organisations
- Web Guide
- Look and listen
- Habitats
- Species

News

- Sport
- Weather
- Traffic & Travel
- What's On
- Music
- Family History
- Swansea Life
- Rural Life
- Surfing
- Fun & Games
- Local History
- Hall of Fame
- I Love Wales
- In Pictures
- Walks
- Web Guide
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Skomer's Marine World



Out beyond the shores of Skomer lies the fascinating marine world of the Skomer Marine Nature Reserve. Home to a wealth of wildlife, it's one of only three such reserves in the UK.

Join Reserve Officer Phil Newman on a tour along the shores and through the water, as he tells us what he and the other CCW Reserve Officers do...

Around Skomer Island National Nature Reserve and the Marloes Peninsula lies Wales' only statutory Marine Nature Reserve and one of only three in the UK. The area has long been considered special both by divers and by marine biologists for its underwater scenery and the amazing range of marine life.



Skomer MNR owes a lot of its special nature to the influence of the sea; the coast and seabed have been shaped physically by the battering of waves that have been measured at over 13m high and the tidal currents that rip through the sounds at over 20 kph. The warm waters of the Gulf Stream help to keep seawater temperatures higher than they would otherwise be.

Marine life is specialised to cope with all the different environments that result and this is reflected in the huge diversity of shapes and colours encountered underwater in the MNR. Some animals and plants are adapted to living where they are exposed to the crashing waves, some to living where water currents would soon wash away less tenacious creatures and some can tolerate both. Many animals filter feed on the rich food supply carried by currents.



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from around
and we'd like

Click here to

mc

What's
Events
go, cine

Bale is
Get the
Haverfc
Crusadi

Meet t
Where
meet ir
outdoor

more

http://www.bbc.co.uk/wales/southwest/nature/features/pages/skomer_marine.shtml 19/03/04

Some species can only live so far north before the sea gets too cold to support them. Others can only live so far south before it gets too warm or other southern species out-compete with them. Skomer MNR is important in that it exists where the ranges of both northern and southern species overlap.

So what does the small team of diving marine biologists at Skomer MNR do?

The main purpose of the MNR team is to ensure that the MNR stays in good condition and to do this we have a range of duties:



Monitoring - we count, measure and examine, by diving and underwater photography, many of the important, rare or sensitive marine species and compare observations with previous years to see what changes are occurring. Such species range from over 70 species of sponges to grey seals, and from the tiny and colourful sea slugs to the graceful and slow-growing seafans.

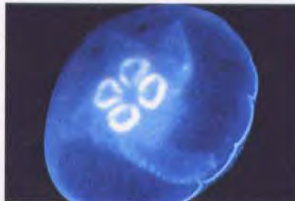


We also measure things like seawater temperature, salinity and the amount of silt in the water, as all these factors affect marine life.

Research - we carry out or encourage others to carry out studies to answer questions raised by our monitoring.

Liaison - talking to people, whether in partner organisations or individuals to make sure we are all working towards the same ends and to see how we can help each other.

Interpretation - we try to spread the word that sea life in the UK (particularly around Skomer, we think!) is exciting and colourful and how important it is to look after it.



Patrol - we keep an eye on what's happening in the Reserve and make sure that people using it are keeping to the rules. We're also there to give information to visitors.

For more information about Skomer MNR contact:
 Phil Newman, Skomer MNR Officer
 Tel: (01646) 636736
 or e-mail at: skomer.mnr@ccw.gov.uk

You can also find out lots about the Marine Nature Reserve



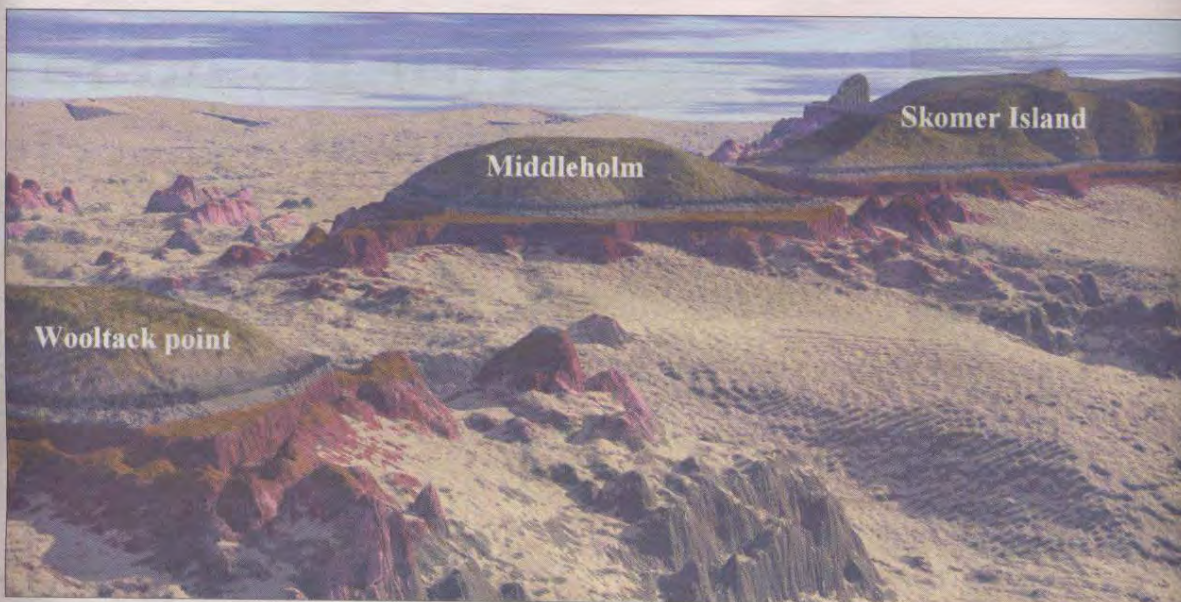
Wild Britain
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The National Park's visitor newspaper



Hidden world beneath the waves

By Mark Burton,
Skomer Marine Nature Reserve

PEMBROKESHIRE IS FAMOUS for its rugged coastline, imposing cliffs, secluded coves and sandy beaches, all set against the backdrop of the Preseli Mountains. It's a dramatic, beautiful landscape that plunges into the Atlantic Ocean - the ever-present ocean, sometimes still as glass, sometimes exploding with winter swells.

But what happens to the landscape as it dives beneath the water?

Most of us don't even consider the question. Obviously there are rocks lurking beneath the tide waiting for unwary sailors, but is there a vast seascape hidden from our view? Or is it just one huge, flat plain?

What would we see if all the water drained away just for one day?

This is a question that those lucky enough to dive could start to answer but even when the water is at its clearest divers can only see for a

few square metres. You can see the details but not the whole picture.

More than most, the marine conservation team of the Countryside Council of Wales (CCW) would like to see and understand this seascape and over the past few years they have been using the wealth of new technologies available for mapping the seabed.

Some of the most dramatic results have come from using multi-beam sonar. It is very similar to echo sounders or fish finders used on recreational boats but instead of just sending one 'ping' down to the seabed it sends 126 at once and then listens for all of the echoes to return. This not only allows the sonar to determine the depth of the sea but also the structure and shape of the seabed at the scale of one square metre or less.

So far 95 square kilometres of Pembrokeshire's seabed have been surveyed producing a massive 60 gigabytes of information. The image (above) shows just a tiny section of the sea north of Wooltack Point and Skomer Island. There are 46 million soundings used to produce this image and it took a computer five

and half hours of number crunching to convert the multi-beam information into this 3D map of the seascape. This isn't just a pretty picture - every point on the map represents a real point on the earth's surface with a corrected depth below sea level.

Those who have visited the Deer Park at Wooltack Point or Skomer Island will know how spectacular the coastal scenery is in that area but this map shows that the underwater scenery is just as dramatic and diverse. There are rocky cliffs dropping down to 40 metres, sandy gullies rippled by the tidal currents of Jack Sound and complex rock and boulder reefs running hundreds of metres offshore.

There are many different seascapes spread around Pembrokeshire's ocean floor and this is what gives rise to the huge diversity of sealife in the waters around our coast. These sorts of maps are not just inspirational in appreciating our seascapes but they help us understand how to manage the marine environment and what our marine heritage consists of and looks like.

The next time you stand on a windswept cliff taking in the superb view spare a thought for what lies out of sight below the waves. There are hidden mountains, chasms, plateaus and plains covering 70 per cent of the earth's surface.

For more information please contact Skomer MNR:
Skomer.mnr@ccw.gov.uk



Spider crab



Bass



Lobster

APPENDIX 7 SKOMER MNR DISPLAY POSTERS



GWARCHODFA NATUR FOROL SKOMER

SKOMER MARINE NATURE RESERVE

Yr hyn sy'n ganeud yr ardal hon yn arbennig yw'r nifer fawr ac amrywiol o anifeiliaid a phlanhigion. Mae annog deimyddio'r Warchodfa mewn modd gofalus a chyfrifol yn sicrhau bod cynefinoedd a bywyd gwylt yn cael eu diogelu rhag difrod ac nad oes unrhyw aflonyddu amynt.

It is the great variety and abundance of animals and plants that makes this area special. By promoting careful and responsible use of the Reserve, habitats and wildlife are protected from damage and disturbance.



Mae'r anemonei tyllu yn deimyddio'r demataclau i ddal bwyd o'r dŵr sy'n mynd bobio, tra bod ei gorff yn aros yn ddiogel.

Burrowing anemones use their tentacles to capture food from the water passing by, whilst their bodies remain safely protected.



Mae sbyngau cŵrwrain, sy'n agored i'w sbectol, yn ffynnu yn symudiad ysgafn y dŵr. Mae dros 75 o wahanol sbyngau yn y Warchodfa.

Delicate sponges, susceptible to damage, thrive in gentle water movement. There are over 75 different sponges in the Reserve.



Mae ser môr yn ymdroelli ar draws gwely'r môr gan ddefnyddio cannoedd o draed tŷbiog a chanddynt hennau fel uwgwy, bob rhywogaeth yn chwilio am ei hoff ysgyfarth ei hunan.

Starfish meander across the seabed using hundreds of lubed feet with sucker-like ends, each species seeking out its own favourite prey.



Mae hoganod dŵr yn llywyddo i gael cuddio drwy siâp eu corff, lliw a phatrwm.

Dragonet achieve camouflage by body shape, colour and pattern.



Mae'r sêr-gweli auradd ac ysgarlod llachar yma'n ffynnu yn ymchwylld cryf y tonau.

These bright scarlet and gold star corals thrive in strong wave surge.



Nid yw cornewyg rhoddu yn gwredu o gosh mewn gwirionedd, ond yn gytrifi o unigolion dirieddi sy'n llyw mewn blociau adeiladu calcifedd microsgopig. Mae'r ffurfiau bregus llyn yn tyfu hyd at fwy na metr ar draws.

Ross corals are not corals at all, but are colonies of countless individuals living in microscopic chalky building blocks. These fragile structures grow to over a metre across.



Mae'r octopus yn llyw mewn tyllau rhwng crugiau yn ystod y dydd, ond yn ystod y nos mae'n chwilio am grancod, ei hoff fwyd.


Octopus live in holes amongst rocks by day, but at night hunt for crabs, their favourite food.



Mae môr-syntyllau fflydain yn tyfu'n araf iawn. Mae llawer yn y Warchodfa yn hanner cant i gant oed. Ychydig o gytrifi a geir, ac anaf y mae'n ymddangos.

Sea fans grow very slowly. Many in the Reserve are fifty to one hundred years old. Young colonies are few and appear infrequently.





GWARCHODFA NATUR FOROL SKOMER

SKOMER MARINE NATURE RESERVE

Mae Gwarchodfa Natur Forol Ynys Skomer yn sefyll ar lwynt de-orllewinol Cymru. Mae'n cynnwys 27 cilometr o arfordir a 1500 hectar o wely'r môr o amgylch Ynys Skomer a Phenrhyn Marloes.

Skomer Marine Nature Reserve lies at the south-western tip of Wales. It includes 27 kilometres of coast and 1500 hectares of seabed around Skomer Island and the Marloes Peninsula.



Mae clogywni serth yr ynys yn disgyn yn ddwfn dan y dŵr. Mae'r arfordiroedd y de a'r gorllewin yn cael eu taro gan donnuau mawr ac ymchwylld y llanw.

The island's steep cliffs plunge deep underwater. The west and south coasts are often pounded by big waves and heavy swells.



Mewn bacau cysgodol mae cynefinoedd tywod, graean a fflaid yn aml yn ymddangos yn dawel.

In sheltered bays sand, gravel and mud habitats often appear tranquil.



Pe bai modd draenio'r dŵr o Swnt Jac, dyma a geid yn olygfa ymhell uwchlaw'r môr ar gyrion Martin's Haven.

If the water could be drained from Jack Sound, this would be the view from high above the sea outside Martin's Haven.




Mewn cerrynt cryf mae angen i anifeiliaid fod wedi eu glynu'n dynn rhag iddynt gael eu hysgubo i ffwrdd.

In strong currents animals need to be firmly attached so as not to be swept away.



Mae coedwigoedd trwchus o blanhigion gwymon brown mawr yn cael eu cyfyngu i'r wyth metr mwyaf has yn y Warchodfa. Mae coedwigoedd trwchus o blanhigion gwymon brown mawr yn cael eu cyfyngu i'r wyth metr mwyaf has yn y Warchodfa. Dense forests of large brown kelp plants are restricted to the shallowest eight metres in the Reserve.



GWARCHODFA NATUR FOROL SKOMER
SKOMER MARINE NATURE RESERVE

Prosiectau Deifio Gwirfoddol
Volunteer Diving Projects

Mae cyfres o brosiectau plymio gwirfoddol wedi cael eu datblygu i gyfrannu tuag at gyrraedd nod yn rhaglen waith Gwarchodfa Natur Forol Ynys Skomer. Rhwng 2000 a 2003 mae pob un o'r prosiectau wedi eu cwblhau a bydd pob un yn parhau ar gyfchred pedair blynedd.

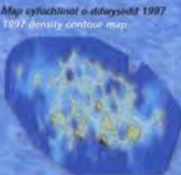
A series of volunteer diving projects have been developed to contribute to achieving goals in the Skomer MNR work programme. Between 2000 and 2003 each of the projects have been completed and each will continue on a four yearly cycle.

AROLWG GWELY GWELLT Y GAMLAS 1997 A 2002

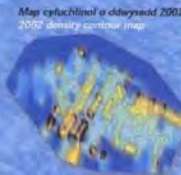
EELGRASS BED SURVEY 1997 & 2002

Cynorthwydd plymyr gwirfoddol i fapiau ffrisiau gwely gwellt y gamlas (*Zostera marina*) yn North Haven gan gwblhau map truch o'r sgriniau gwellt y gamlas sydd ar gael o lein y ffrisiau. Fellydwyd arwyddion parhau a dulliau arolwg yn ystod arolwg 1997, a delwyddwyd y rhain eto yn arolwg 2002 er mwyn gallu cychwyn'r mapiau.

Volunteer divers helped map the boundaries of the eelgrass (*Zostera marina*) bed in North Haven and completed a density map of the eelgrass shoots occurring within the boundaries. Permanent markers and survey methods were established during the 1997 survey and these were used again in the 2002 survey so that the maps could be compared.



Map cyfuchlinol o ddensydd 1997
1997 density contour map



Map cyfuchlinol o ddensydd 2002
2002 density contour map

Nid yw arwyddedd gwellt y gamlas wedi newid yn sylweddol rhwng 1997 a 2000. Ffdd llysoeg, mae map 2002 yn dangos bod cymrydd cyfuchlinol wedi digwydd o safon truch y sgriniau (dau yn dargyn truch fel ar oen druch uchel).

The area of the eelgrass bed has not changed significantly between 1997 and 2000, however the 2002 map shows that there has been an overall increase in shoot density (blue shows low and orange high densities).

Gwellt y gamlas (*Zostera marina*) yw'r unig blwyddyn sy'n blodeuo o lein Ynysodd. Prynau eidd hefyd yn fyw ac yn cynhyrchu hollau ag ystau wead ei orchuddio'n gyflwr gan ddio a môr. Fe'i rhestrir yn arlymch yn gromdaliol ac fe'i cynhyris yn gredol arwyddol ar gyfer cadwraeth yng Nghyrtas Gwarchodfa Biosymysaeth y DU.


The eelgrass (*Zostera marina*) is the only flowering plant within the British Isles that grows and produces seed entirely submerged by seawater. It is listed as nationally scarce and is included as a key habitat for conservation in the UK Biodiversity Action Plan.

AROLWG MŌR DDRAENOGOD 2003

SEA URCHIN SURVEY 2003


Môr-ddraenogod cyffwrdd (*Echinus esculentus*) yn 'cwmngol' y byd murel ac maent yn hanfodol i gynnal biosymysaeth. Dyna borwyr mwyaf pysgyl arwynebau creigiau, ac maent yn llysoeg ar wyron ac anffailid cwrwau, gan bwne arwyneb y graig yn effeiddiol nes ei fod yn fud. Mae hyn yn tynnu tyllant y rhywogaethau trechol ac yn creu lle i farfau ymyeliadau - ac felly yn annog amrywiol dda o rhywogaethau.

Common sea urchins (*Echinus esculentus*) are the 'vibrators' of the marine world and vital to maintenance of biodiversity. They are the most important grazers of rock surfaces feeding on seaweeds and supporting animals, efficiently honing the rock surface bare. This helps reduce the density of dominant species and allows space for larval settlement thus helping to promote species diversity.




Dwy gydol tymor plymio 2003 cwblhodd tîm o blymyr gwirfoddol drwsianau oedd yn gorchuddio 8620m² o wely'r môr ac yn cyfrif 508 o fôr-ddraenogod. Cafodd pob draenog ei fesur ar draws ei ddiametr llell gan ddefnyddio caliperau a wead yn arberog ar gyfer y gwellt. Yn ychwanegol at hyn, cafodd niferowdd sŵr pŵp, heulau a sŵr môr hirfaisc eu cofnodi hefyd.

Throughout the 2003 diving season teams of volunteer divers completed transects covering 86,200m² of seabed and counting 508 sea urchins. Each urchin was measured across its widest diameter using purpose-made callipers. In addition numbers of spiny starfish, sunstars and seven armed starfish were also recorded.



Bydd owyddion Gwarchodfa Natur Forol Ynys Skomer yn defnyddio'r wybodaeth yma i ffurfio llinell fud ar gyfer monitro ddiarbitiad a statws poblogaeth môr-ddraenogod cyffwrdd a rhywogaethau arbenig o sŵr môr yn y Warchodfa.

The Skomer MNR officers will use this data to form a baseline for monitoring the distribution and population status of common sea urchins and selected starfish species in the Reserve.





GWARCHODFA NATUR FOROL SKOMER
SKOMER MARINE NATURE RESERVE

Prosiectau Deifio Gwirfoddol
Volunteer Diving Projects

Mae cyfres o brosiectau plymio gwirfoddol wedi cael eu datblygu i gyfrannu tuag at gyrraedd nod yn rhaglen waith Gwarchodfa Natur Forol Ynys Skomer. Rhwng 2000 a 2003 mae pob un o'r prosiectau wedi eu cwblhau a bydd pob un yn parhau ar gyfchred pedair blynedd.

A series of volunteer diving projects have been developed to contribute to achieving goals in the Skomer MNR work programme. Between 2000 and 2003 each of the projects have been completed and each will continue on a four yearly cycle.

AROLWG CREGYN BYLCHOG 2000

SCALLOP SURVEY 2000

Cynorthwydd tîm o 10 o blymyr gwirfoddol i gaelu gwlybodaeth am boblogaeth cregyn bylchog yng Ngwarchodfa Natur Forol Ynys Skomer. Cafodd cregyn bylchog (*Pecten maximus*) eu cyfrif a'u casglu i tagiau rhydd gan y plymyr, ac ar fwrdd y cwch plymio cafodd y rhain eu storio mewn bwrdd o ddŵr y môr. Cwblhodd y gwirfoddolwyr fesuriadau hyd a lleth pob cregyn bylchog a mesur 'cylchoedd tyllant' er mwyn pennu graddfeydd oed a thyllant. Cafodd y cregyn bylchog i gyd eu dychwelyd yn ofalus wedyn yn ôl i'r môr ar y safle arolwg perthnasol.

A team of 10 volunteer divers assisted in the collection of scallop population data in the Skomer MNR. King scallop (*Pecten maximus*) were counted and collected into net bags by the divers, on board the dive boat these were stored in buckets of seawater. The volunteers completed length and width measurements of each scallop and measured 'growth rings' so as to determine age and growth rates. All scallops were then returned carefully back into the sea at the relevant survey site.





Mae owyddion CNI Ynys Skomer yn defnyddio'r wybodaeth yma i sicru ddiarbitiad perennol a statws poblogaeth cregyn bylchog yn y Warchodfa.

Skomer MNR officers have used this data to assess the current distribution and population status of the King scallop in the Reserve.

AROLWG PYSGOD TIRIOGAETHOL 2001 A 2002

TERRITORIAL FISH SURVEY 2001 & 2002

Yn ystod 2001 a 2002 cymrodd tîmau o blymyr gwirfoddol ran mewn arolwg a fwrladwyd i ffurfio llinell fud ar gyfer monitro rhywogaethau pysgod tiriogaethol yn GNF Ynys Skomer.

Roedd y rhywogaethau y gwnaethpwyd arolwg ohonynt yn cynnwys cleiriach y gwymon, gwrachen resog, gwrachen fair, gwrachen curben, bal melyn, llyfrothen, twmpol, sgorpion môr a gobi mannog.

During 2001 and 2002 teams of volunteer divers took part in a survey intended to form a baseline for monitoring of territorial fish species in the Skomer MNR.

The species surveyed included ballan wrasse, cuckoo wrasse, goldsinny, corkwing wrasse, rock cook, butter fish, tompot blenny, sea scorpion and leopard spotted goby.



Yn ogystal â'u pwysigrwydd i'r ecosystem wrth ymryllan mae rhai rhywogaethau o ddiddordeb aberwydd cych eu bysod a'u hymddyddat. Gwyddom fod cleiriach y gwymon a'r wrachen resog yn byw yn hir (y cyntaf o leiaf 25 mlynedd a'r ail 17) a gwyddom hefyd eu bod yn newid rhyw o fenyw i wryw yn eithaf hwyr yn eu bywydau. Mae rhai rhywogaethau gwrachen a gobi yn gwneud mythod ble maent yn dodwy wyau ac yn gofalu amdanynt.

Besides their importance to the nearshore ecosystem some of the species are of interest for their lifecycle and behaviour: Ballan and cuckoo wrasse are known to be long-lived (at least 25 and 17 years respectively) and are also known to change sex from female to male quite late in their lives. Some of the wrasse and gobi species make nests in which eggs are laid and tended.



Cleiriach y gwymon (*Gobius auratus*)
Ballan wrasse (*Gobius auratus*)



Twmpol blenny (*Parablennius gattorugos*)
Tompot blenny (*Parablennius gattorugos*)

GWARCHODFA NATUR FOROL SKOMER SKOMER MARINE NATURE RESERVE

Morloi Llwydion Sir Benfro Atlantic Grey Seals in Pembrokeshire

Ar wahân i forlifod, morloi llwydion, *Halichoerus grypus*, yw ysglyfaethwyr mwyaf Prydain, ac mae'r gwrywod yn pwyso tua 230 cilogram. Mae'r helwyr gwyrdd, medrus hyn yn byw mewn amgylchedd sy'n naturiol arw ac yn aml yn ddigroeso, ble mae'r trechaf yn unig yn goroesi.

Atlantic grey seals, *Halichoerus grypus*, are, excluding cetaceans, Britain's largest predators with males weighing around 230kg. These tough, skilful hunters live in a naturally harsh and often inhospitable environment where only the fittest survive.

Mae'r morlo benyw yn zhol genedigaeith i un morlo bychan ar draeth tawel neu mewn ogof, rhwng mis Awst a mis Rhagfyr.

The females give birth to their single pups on quiet beaches and in caves, from August through to December.

Mae'r fam forlo'n dod i'r lan i fwydu'r morlo bychan dair neu bedair gwaith y dydd. Rhaid i'r rhai bychain dreblu eu pwysoau goni yn ystod eu tair wythnos cyntaf, felly mae arwynt angen pob cyfle i fwydo.

Mothers seals come ashore to feed their pups three or four times a day. Pups must treble their birth weight in their first three weeks, so they need every feed.

Mae morloi benyw yn byw am tua 35 mlynedd, morloi gwryw am tua 25 mlynedd. Mae'r ddau yn aeddfedu'n rhywiol yn bedair neu bum mlynedd oed. Mae gwrywod sy'n llwyddiannus wrth haru yn debygol o fod yn 11-16 mlynedd oed.

Female seals (cows) live for about 35 years, males (bulls) for about 25 years. Both become sexually mature at four to five years. Successful mating males are likely to be 11-16 years old.

Mae paru'n digwydd gynnedd y bydd y fam wedi gadael ei morlo bychan wedi iddo gael ei ddiddlyfnu. Ar ôl paru, mae beichiog'n cael ei ohirio am dri mis. Yna mae'r cyfnod cario'n naw mis.

Mating takes place as soon as the mother has left her weaned pup. After mating, pregnancy is delayed for three months. The gestation period is then nine months.

Mae morloi llwydion yn teithio ar gyflymder o tua 4 milltir yr awr ar gyfartaledd, ac maent yn gallu plymio dros 100 m o ddyfnder, gan hlymio am hyd at 20 munud. Maent yn bwydo ar ba brynag bysgod fydd yn yr ardal ble maent ar y pryd.

Grey seals travel at an average speed of about 4 mph and can dive to over 100 m depth, diving for up to 20 minutes. They feed on whatever fish are in their area at the time.

Mae morloi llwydion i'w gweld yn gorllwys ar greigiau neu draethau. Mae morloi'n bwrw eu croen yn ystod misoedd y gaef pan ddaw niferedd mawr o'r oedolion i'r lan ar draethau arbennig.

Grey seals "haul out" to rest on rocks or beaches. An annual moult takes place during the winter months when the adults come ashore forming large seal assemblies on selected beaches.

GWARCHODFA NATUR FOROL SKOMER SKOMER MARINE NATURE RESERVE

Morloi Llwydion Sir Benfro Atlantic Grey Seals in Pembrokeshire

SUT I WYBOD BETH YW OEDRAN MORLO BYCHAN HOW TO TELL A SEAL PUP'S AGE

DOSBARTH I (0-5 DIWRNOD) CLASS I (0-5 DAYS)

Slâp y corff yn denau, croen mewn plygiadau llac o amgylch y corff. Gall y croen fod wedi staenio'n lelyn. Mae'r symudiadau braidd yn afrosgo.

Body shape thin, skin in loose folds around body. Coat may be stained yellowish. Movements are rather uncoordinated.

DOSBARTH II (6-10 DIWRNOD) CLASS II (6-10 DAYS)

Amlinellad mwy llyfn. Gwddi yn dal i'w weld ond dim plygiadau llac ar y corff. Y corff yn wynnach. Swillyd lawn. (Mae'r morlo ifanc yn y llun wedi cael ei farcio gyda llw i bwrsau ymchwili).

Smoother outline. Neck still visible but no loose folds on body. Coat whiter. Very vocal. (The pup shown has been marked with dye for research purposes).

DOSBARTH III (11-15 DIWRNOD) CLASS III (0-5 DAYS)

Y corff yn gwyn neu ar ffurf casgen. Y gwddi ddim i'w weld. Y corff yn wyn.

Body rounded or barrel-shaped. Neck not visible. White coat.

DOSBARTH IV (16-20 DIWRNOD) CLASS IV (16-10 DAYS)

Slâp fel III ond ei fod wedi dechrau colli peth o'i flew gwyn mewn manau. Yna agos at neu wedi ei ddiddlyfnu.

Shape like III but patches of white fur have moulted. Weaned or near weaning.

CYSWLLT


Os dewch o hyd i forlo mewn trafferthion, neu os byddwch angen cyngor, ffonwch yr RSPCA ar 08705 555 999

Dylid dweud wrth y Celtic Marine Strandings Network (01348 875 000) os dewch ar draws unrhyw forloi marw (neu forlifod). Mae llyso yn arbennig o bwysig os byddant newydd farw gan y gall archeiliad post morien gynnig gwybodaeth am lefelau llygredd a'u heffeithiau.

CONTACT

If you find a seal in difficulty, or require advice phone the RSPCA on 08705 555 999


Any dead seals (or cetaceans) should be reported to the Celtic Marine Strandings Network on 01348 875 000. This is especially important for fresh carcasses as post mortems can provide information on pollution levels and their effects.




Marine Conservation Society
Cymdeithas Iddiweddau'r Môr

GWARCHODFA NATUR FOROL SKOMER SKOMER MARINE NATURE RESERVE

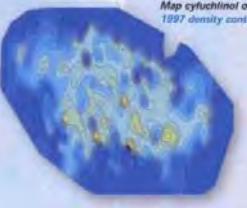
Prosiect Mapio Gwellt y Gamlas Eelgrass Mapping Project



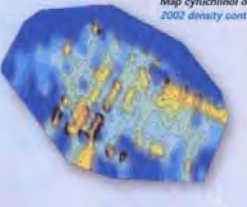
Map o ffin gwellt y gamlas.
North Haven, 2000 a 2002



Map cyfuchinol o ddiwyedd 1997
1997 density contour map



Map cyfuchinol o ddiwyedd 2002
2002 density contour map



Gwellt y gamlas (*Zostera marina*) yw'r unig blanhigion a'y'n blodeuo a lewis Ynysoedd Prydain sydd hefyd yn tyfu ac yn cyflwynu bwlau ag ystus wedi ei orluddio'n gyfngwbl gan dŵr y môr. Mae poblogrwyddau gwellt y gamlas yn gywblhodedd cyhyrchedol lawn a'y'n cynnal cymunedau o algae a chreaduriaid ddi-angern-cale sy'n ffrithonell trwy'r hysgwrdd ac ar ôl morol orall.

Blwstir rhyngwastthau gwellt y gamlas yn ariannu ym gennedlaethol ac fe'u cyrhwysu yn gyfeir allweddol ar gyfer cadwraeth yng Nghyngor Gwerthedd Bwcaerddwrth y DU. Amcangyfrifodol y cyfluni gwelltredia ar gyfer y cyrhwyl hwn yw cynnal nifer paratennol cynaliadwy gwellt y gamlas a songyllb arllwll Prydain.

Caludd gwellt y gamlas ei gwinodi am y tro cyntaf yn North Haven, Ynyw Sgomer gan Bassindale yn 1946 a chafodd ei lapio am y tro cyntaf yn 1979. Yn 1982 cafodd y dull mamol cyntaf ei ddyfynio, wedi ei seilio ar ardal o grid sefydlog gan ddefnyddio gwallau sillensiad wedi ei ddiffinio. Y dull hwn oedd sail arlyggo Gwarchodfa Natur Fforol Ynyw Sgomer a gubliarid yn 1997 a 2002, ond had cyfrif penodol sbectra gwellt y gamlas mewn cwadratau wedi cynryd lle'r cadddia sillensiad.

The Eelgrass (*Zostera marina*) is the only flowering plant within the British Isles that grows and produces seed entirely submerged by seawater. Eelgrass populations are highly productive habitats that support algal & invertebrate communities that are an important source of food for other marine animals and birds.

Eelgrass species are listed as nationally scarce and are included as a key habitat for conservation in the UK Biodiversity Action Plan. Key objectives of the action plan for this habitat are to maintain the current extent of eelgrass habitats around the coast of Britain.

The occurrence of eelgrass in North Haven, Skomer was first recorded by Bassindale in 1946 and it was first mapped in 1979. In 1982 the first detailed method was devised based on a fixed grid area and used a defined abundance scale. This method formed the basis of the Skomer MNR surveys completed in 1997 and 2002 except that the abundance scale was replaced by actual counts of eelgrass shoots in quadrats.

Mae'r mapiau hyn wedi cael eu cyhyrchu drwy ddefnyddio meddalwedd 'mapier fertigol' er mwyn dangos dosbarthiad ac amlder gwellt y gamlas yn North Haven yn 1997 a 2002. Mae'r rhannau oren/ffiw yn dangos trwch uchel a'r rhannau gwyrdd/glas yn dangos trwch isel.

Mae map 2002 yn dangos bod cynnydd cyffredinol wedi digwydd o safbwynt trwch y ddrigau, a chynnydd mawr yn sbectra y ddrigau yn rhannau de-orllewin a gogledd-ddwyrain y gwellt.

Yn 2000 a 2002 cwblhawyd mapiau ffiniau drwy ddefnyddio lleoliadau Systemau Llesli Ddearyddol (GPS). Buodd lleoliad y ffin yn 2002 yn debyg i'r ffin oedd yn 2000.

These maps have been produced using 'vertical mapper' software to show the distribution and abundance of eelgrass at North Haven in 1997 and 2002. The orange/yellow areas show high densities and green/blue areas low densities.

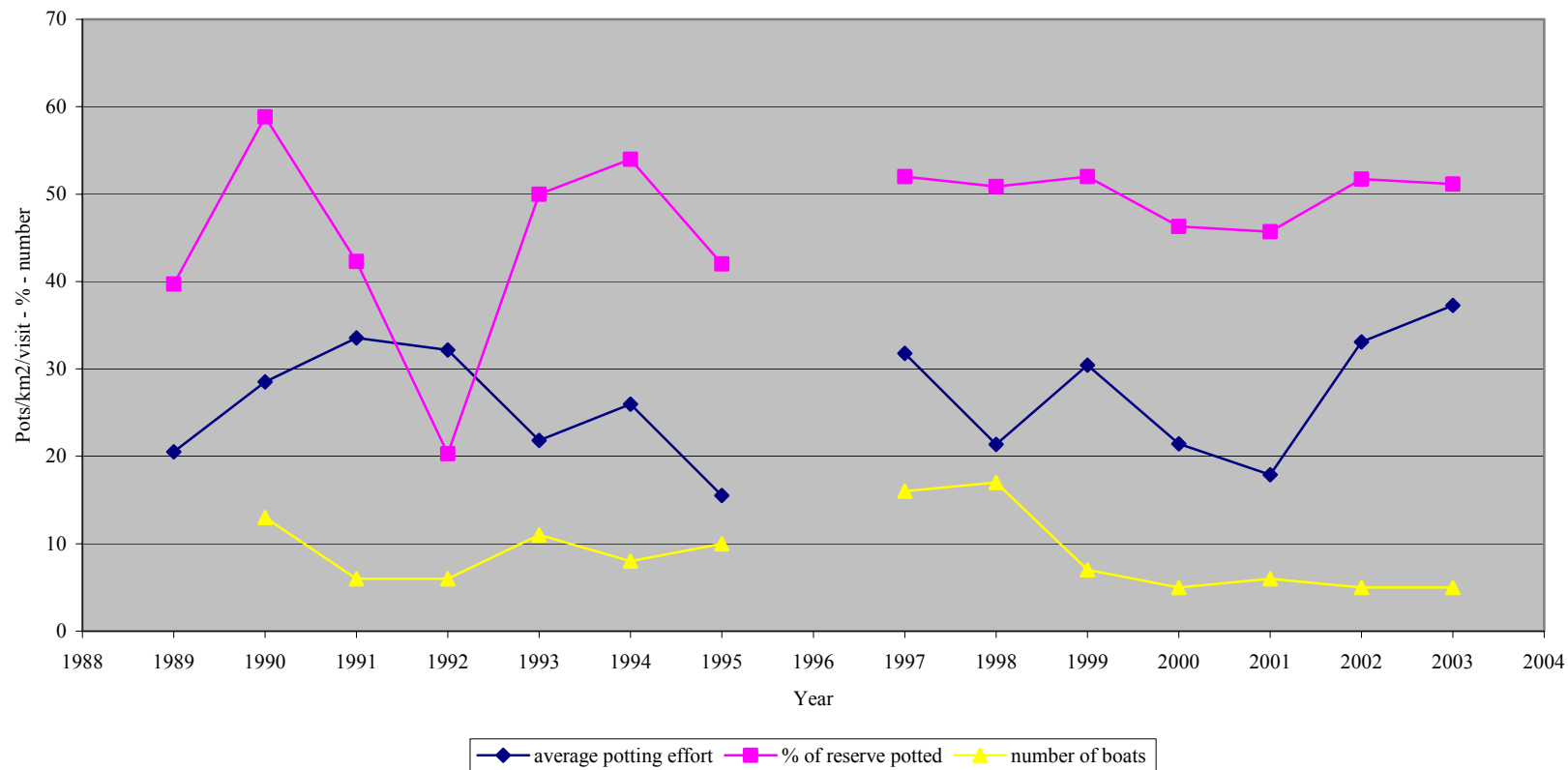
The 2002 map shows that there has been an overall increase in shoot density and a large shoot density increase in the southwest and northeast areas of the bed.

In 2000 and 2002 boundary maps were completed using GPS (Geographical Positioning Systems) positions. The boundary position in 2002 was similar to that in 2000.

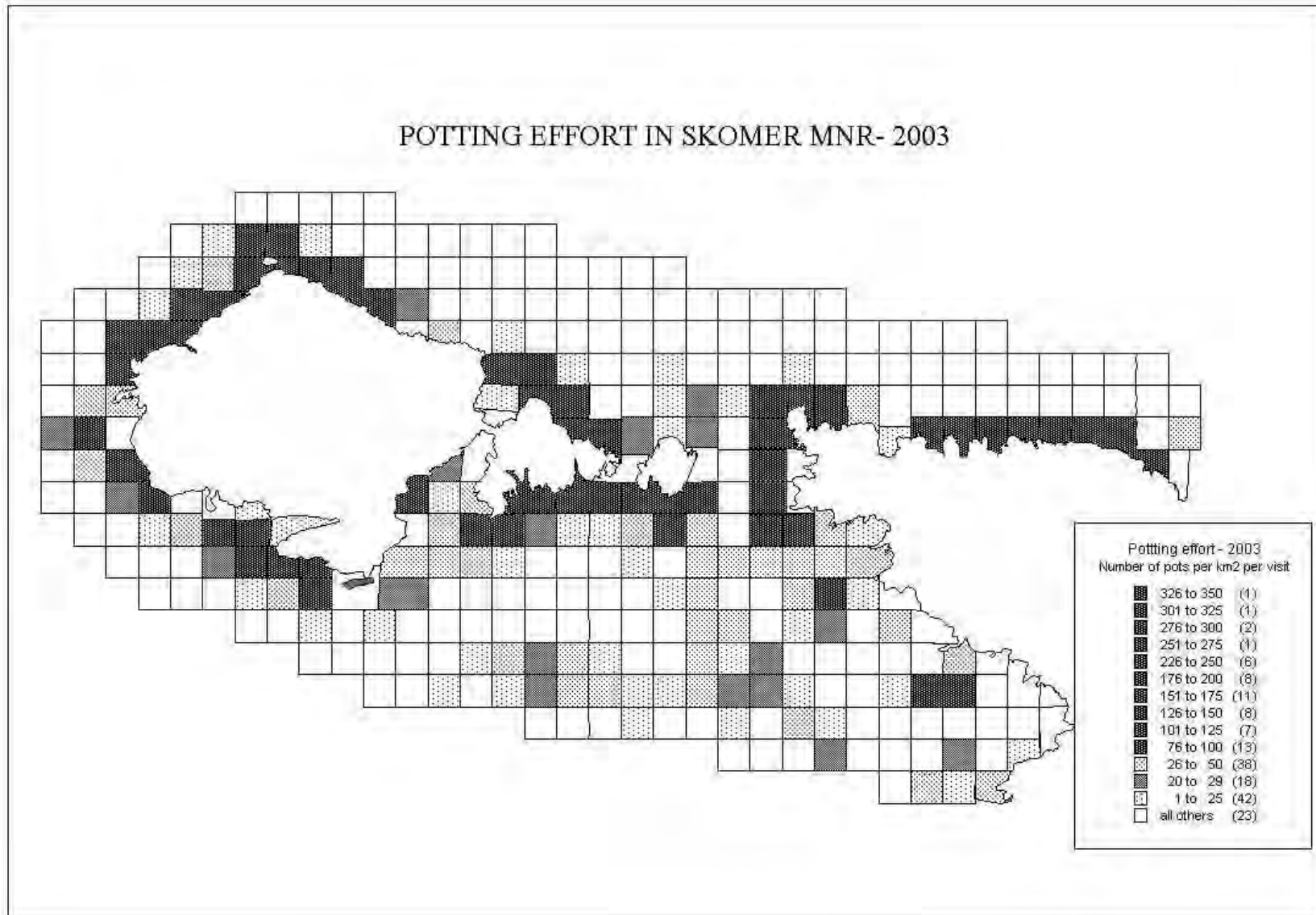
APPENDIX 8

FISHING EFFORT IN SKOMER MNR

Summary of fishing effort in the Skomer MNR (1990 - 2003)



POTTING EFFORT IN SKOMER MNR- 2003



APPENDIX 9

SKOMER MARINE NATURE RESERVE – A POSSIBLE ‘NO TAKE ZONE’?

The Skomer MNR Advisory Committee comprises more than 40 members drawn from commercial, fisheries, recreational, conservation and education interests.

In April 2003, members agreed that the Countryside Council for Wales and South Wales Sea Fisheries Committee should investigate and discuss with users the idea of establishing a ‘no take zone’ (NTZ) within the Skomer MNR.

What is a no take zone?

- An area of sea and seabed from which no marine life is removed.

Where did the idea come from?

- *The Skomer MNR Advisory Committee meeting in 2002.*

What has happened so far?

- CCW & SWSFC officers and the chairman of the MNR Advisory Committee have met to discuss the idea.
- The idea was discussed in detail at the 2003 Advisory Committee. Fisheries representatives were involved.
- The Committee asked MNR staff to research the possibilities of a NTZ.
- There is no firm proposal. A Skomer MNR NTZ is an idea only.
- There is no secrecy. CCW, SWSFC & the Skomer MNR Advisory Committee issued a joint press release after the meeting.

How big would an NTZ be?

- There are no specific proposals. Whether all or part of the MNR would be proposed for inclusion remains to be considered.

What would be the benefits of an NTZ?

- More effective marine wildlife protection.
- Safeguard and enhance reproductive capacity of local fish and shellfish stocks.

- An unexploited “control” area for research.
- Improved communication and awareness raising with the general public.

Why now?

- To develop the idea raised at the 2002 Skomer MNR Advisory Committee meeting

- There has always been a nature conservation case for an NTZ.

Fishing industry recognition of need and potential benefits of NTZ is growing:

- St Agnes voluntary NTZ has been recently established by the fishing industry (Cornwall).
- UK’s first statutory NTZ recently established in Lundy MNR (Devon SFC).
- Fishing industry in South West England appears supportive.
- NTZs recommended by recent CFP review.
- Newly formed South & West Wales Fishing Communities should facilitate effective consultation and liaison.
- Fewer fishermen are using the sea around Skomer than of recent years.
- Scientific monitoring & research in Skomer MNR has confirmed a critical need for unexploited “control” areas.

Would an NTZ work?

- Demonstrated as effective in other countries.
- Would depend on the understanding and cooperation of everyone using the area.
- Cannot be shown to work without unexploited scientific control areas, data collection and monitoring. Where better than an MNR?

What are the potential fishery benefits?

- Protected brood stock
- Increased larval production spreading through natural dispersal;
- Increased stock sizes, leading in turn to “overspill” migration of adults;
- Scientific control area for researching population dynamics.

What are the potential nature conservation benefits?

- Reduced disturbance and physical impact to the seabed and wildlife.
- Enable a more natural predator – prey balance to be established.
- Reduction in effect from lost and discarded fishing tackle and gear.
- Protection of territorial fish from angling and from commercial by-catch.
- Fisheries benefits of safeguarded commercial species are also a nature conservation benefit.

What are the potential scientific benefits?

- Creation of an unexploited control area. Control areas are *vital* to the collection of meaningful fisheries and nature conservation information.

How would it be policed?

- It would mostly have to be “self-policed”. It would not work unless there was general acceptance of an NTZ and a willingness to observe the no-take rule.
- Enforcement would be the responsibility of the SWSFC, with support from the police marine unit, MNR staff and Reserve users.
- When fisheries benefits become clear, the fishing community may become guardians as they have around the Leigh Marine Reserve in New Zealand.
- Successful implementation would need the NTZ to apply to all activity within an easily and clearly defined area.

How would an NTZ come about?

- Through SWSFC byelaw – in response to formal request from CCW (and the Advisory Committee).
- SWSFC byelaws require Committee agreement, public advertisement & opportunity for response, endorsement by NAW, DEFRA and European Community.

Could CCW impose an NTZ unilaterally?

- No. CCW do not have legal authority to establish an NTZ. Authority lies with SWSFC (or the Government through legislation).
- CCW have undertaken to consult with all potentially affected interests and take all comments and concerns from all parties on board.

Will the idea of an NTZ in the Skomer MNR today, become a proposal for an NTZ in the whole of the Pembrokeshire Marine SAC tomorrow?

- This idea is for the Skomer MNR ONLY. It does NOT extend to other locations within Pembrokeshire Marine SAC.

- The objectives and management requirements of the SAC and the MNR are different.
- Any change in management of activity in the SAC will be determined by the SAC's relevant authorities group, in full consultation with the public and sectoral interests.
- There is an established SAC liaison framework with representation from the fishing community.

In conclusion, an NTZ in the Skomer MNR:

- is *potentially* possible through the SWSFC enactment of a new byelaw;
- would need to apply to *all* persons, commercial and recreational, to be seen as even-handed;
- could be introduced in all or part of the MNR, in phases or seasonally, with different effects and benefits.
- could have direct, though medium-term, benefit for commercial fishermen;
- would be difficult to bring into effect and to enforce under byelaw unless the case in favour was strong and had widespread community support.

Conservation, mitigation or encouragement *may* be enhanced by:

- EU grant aid for conservation practices.
- Mitigating short-term losses by, for example, releasing hatchery reared shellfish or using the site as a release point for V-notched lobsters.
- Tagging shellfish in the NTZ to facilitate growth and movement studies.
- Contracting professional local fishermen to carry out shellfish sampling for monitoring and research.

What will happen next?

We talk:

- with the most potentially affected groups, particularly commercial fishermen, anglers and local community
- with all potential users in the Pembrokeshire area
- and try to ensure all dialogue is transparent, inclusive and open-minded.

For further information or discussion, please contact Skomer MNR staff:

by phone on: 01646 636736,

by post to: Fisherman's Cottage, Martin's Haven, Marloes, Haverfordwest SA62 3BJ

by e-mail to: Skomer.MNR@ccw.gov.uk