Skomer Marine Conservation Zone Annual Report 2024/25

NRW Evidence Report No: 844

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Dyma Adroddiad Blynyddol Parth Cadwraeth Morol Sgomer i'r Pwyllgor Cynghori. Mae'r Pwyllgor Cynghori yn cynnwys sefydliadau ac unigolion sydd â diddordeb yn yr ardal y mae'r Parth Cadwraeth Morol yn ei gwmpasu.

Mae'r adroddiad yn crynhoi pob agwedd ar waith y Parth Cadwraeth Morol gan gynnwys dadansoddiad o waith maes staff, gwaith ystâd, defnydd hamdden o'r warchodfa, digwyddiadau, cyswllt, wardeinio, goruchwylio, monitro a gwaith ymchwil. Mae hefyd yn cynnwys canlyniadau rhai prosiectau monitro a chrynodebau o adroddiadau a gyhoeddwyd.

Executive Summary

This is the Skomer Marine Conservation Zone (Skomer MCZ) 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 Skomer MCZ.

The report summarises all aspects of the work of the Skomer MCZ including a breakdown of staff fieldwork, estate work, recreational use of the reserve, incidents, liaison, wardening, patrol, monitoring and research. Also included are results of some monitoring projects and summaries of published reports.

2. Summary of the Year

It was a challenging season as *Skalmey* broke down at the end of June and was not back in action for the remainder of the season. Thankfully due to good conditions many of the dive monitoring projects were completed during May and June. To complete the core projects we used a combination of hiring a dive charter boat for full diving days aided by local volunteers, alongside getting simple diving projects done using our RIB *Morlo*.

Stormy weather in August prevented the intertidal survey being completed. Survey work was however completed at the more sheltered MarClim intertidal sites on Skomer, Skokholm and mainland Pembrokeshire.

A return to our sea fan sites found 2 fans missing at Rye Rocks site which will be re-checked in 2025, and a further fan at this site was found broken off, this was subsequently secured to a ringbolt. The continued loss of sea fan, along with the poor condition we are observing due to large numbers of catshark eggs, necrosis (dead tissue) and other attached seaweeds and animals is a concern. PhD student Kaila Wheatley, from Exeter University, joined the team for a week to collect small samples for DNA work. Her study will include determining whether reproduction is taking place, aging fans, connectivity with other populations, larval supply and potential links to sea water temperature.

New methods were tested, with the help of a team of volunteer divers, to monitor fish, urchin, starfish and crustacean (crabs and lobsters) communities found in kelp habitats. As always, we are grateful for the help and enthusiasm of our volunteer dive team. Our team also tested methods to record kelp and seaweed densities at a selection of sites, and plan to build on this algae communities project further in 2025.

The Skomer sediment infauna survey was completed, the samples are currently being sorted and species identified by specialist laboratories.

The Skomer MCZ team supported other marine monitoring surveys during 2024, these included Water Environment Regulations (2017) water quality sampling and Special Area of Conservation (SAC) lagoon and sediment infauna surveys. We also supported researchers from Exeter and Swansea University in addition to researchers from Ghent University in Belgium and a visiting Swiss research vessel.

The Skomer MCZ booklet was revised, with some new images and text changes. The new edition was printed in autumn, so supplies are ready for distribution when the exhibition room opens in 2025.

3. Staff

3.1 Staffing

The staff complement at Skomer MCZ: Kate Lock, Mark Burton, Jen Jones and Ali Massey, make up the NRW team based at Martins Haven. Kate and Mark are both full-time, Ali works year-round on a 3-day week. Jen is full time but splits her year: 6 months with the Skomer MCZ from April to September, and then from October to March completes other work within the Marine Monitoring team. This allows the Skomer MCZ to field a 4-person team during the diving field season as required for HSE diving at work, and to complete the busy fieldwork schedule.

The Skomer MCZ team is part of the Marine Monitoring, Assessment and Reporting Team (MMART) within NRW's Marine Service. The MMART team is responsible for delivering all marine monitoring work in Wales and has a team of skilled staff that support each other's work areas. In 2024 the Skomer MCZ team helped with Pembrokeshire Special Area of Conservation (SAC) lagoon and sediment infauna surveys, Water Framework Directive (WFD) fish surveys, MarClim shore surveys and conducted water sampling at different sites during the winter months. We were provided with dive survey assistance by Matt Green, and Adam Leyshon helped with boat maintenance work on *Skalmey*.

3.2 Volunteers

Diving volunteers qualified to dive under HSE regulations, continued to supplement our own diving team when required. In 2024 this was particularly valuable with the algae communities and sponge monitoring surveys. Following the break-down of our survey vessel, *Skalmey*, mid-season, these surveys were completed using a dive charter vessel with our volunteers supporting our staff team to maximise our efforts. A big thank you to Phil Newman, Becky Tooby, Blaise Bullimore, Ross Bullimore, Francis Bunker, Jon Moore, James Perrins, Kaila Wheatley.

Figure 3.1 Skomer MCZ team with local volunteers Phil Newman, Becky Tooby, Francis Bunker and Blaise Bullimore (Photo credit: Becky Tooby)

In 2024 we welcomed a team of volunteer recreational divers for one weekend to complete the algae communities survey (see Section 8.1.11). The volunteers faced very challenging underwater conditions with poor visibility and rolling swell in the shallow waters, we are grateful for their efforts and perseverance.

3.3 Development and training

In April 2024 the Skomer MCZ team, along with volunteer Becky Tooby, completed a one-day dive refresher training day. The training allowed the team to practise diver recovery drills and become familiar with dive rescue operations on *Skalmey*. This was followed by a one-day oxygen administration training day for the team and NRW marine monitoring staff Mike Camplin and Matt Green.

The team all completed NRW maritime incident training through a combination of e-training and a workshop held in Swansea. To comply with changes to Marine Coastguard Agency (MCA) workboat codes the team all completed the MCA small workboat stability course and a 5-day navigation and radar training course.

3.4 Health and Safety

Skomer MCZ team continue to maintain health and safety documentation linked to diving and boat operations as well as more routine office-based safety elements.

Diving and boat safety and rescue procedures are tested during the annual training days.

3.5 Diving Operations

Diving operations at Skomer MCZ continue to operate under the HSE's Scientific and Archaeological Diving Agreed Code of Practice, with staff assuming the legal responsibilities associated with the role of diving supervisor and Kate acting as NRW's Skomer Dive Project Manager.

Harry Goudge in the MMART team acts as NRW's Dive Project Manager and is the representative on the Scientific Diving Advisory Committee, which is the HSE-recognised representative body for the Scientific and Archaeological diving sector.

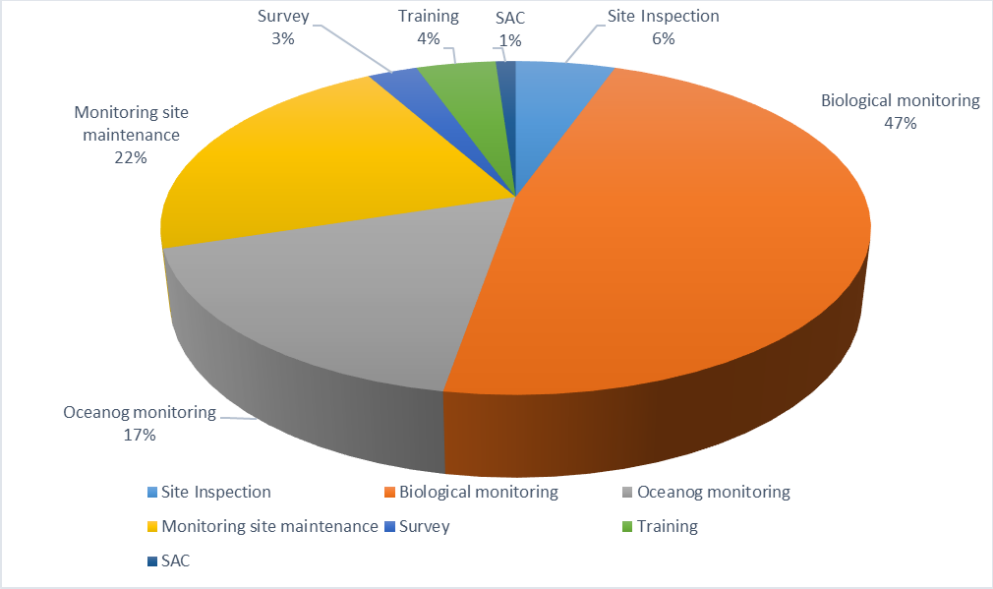
In 2024, 33 dive days were completed with a total of 184 dives and 104 hours logged underwater, the average dive time was 34 minutes (Table 3.1). 23 % of the dives were completed by volunteers supporting the Skomer MCZ team.

Biological monitoring contributed to 47% of the dive time and 17% on oceanographic monitoring projects (see Figure 3.2). We took delivery of a new underwater drill allowing some much-needed site maintenance to be completed contributing to 22% of dive time.

Table 3.1 Summary of Skomer MCZ Diving Activity 2024

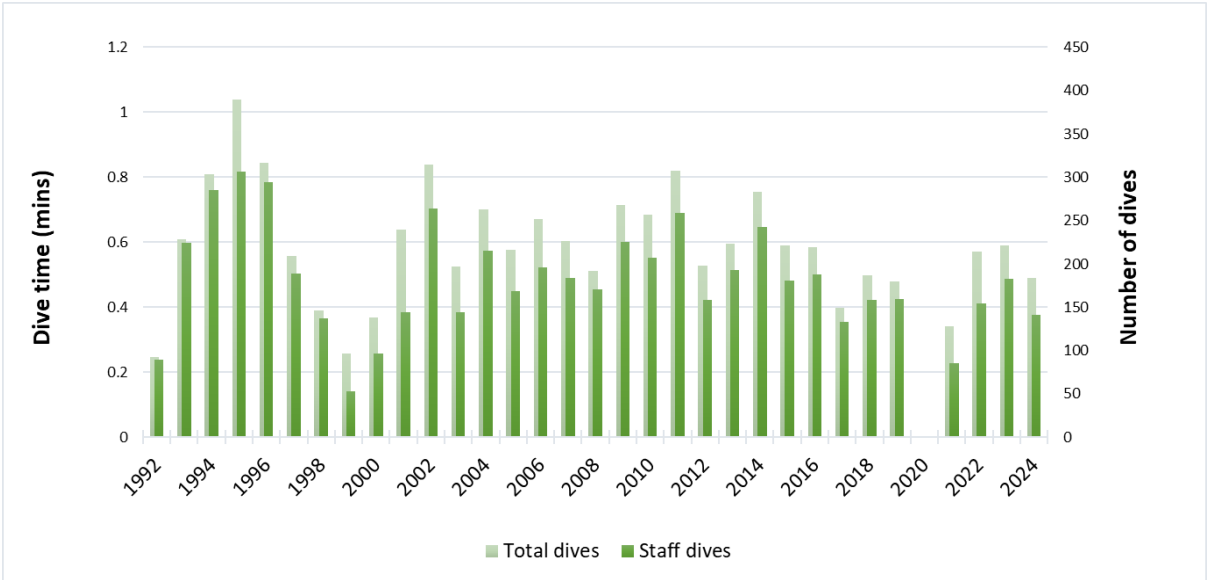
	MCZ STAFF	VOLUNTEER DIVERS	TOTAL
Dives	141	43	184
Dive time (min)	4503	1743	6246
Dive time (hrs)	75.05	29.05	104.10
Average dive time (mins)	32	41	33.95

Figure 3.2 Skomer MCZ Diving Operations 2024, dive time



A summary of Skomer MCZ diving activity from 1992 to 2024 is shown in Figure 3.3.

Figure 3.3 Summary of Skomer MCZ diving activity 1992 to 2024



4. Estate

4.1 Buildings

Skomer MCZ buildings include the office and exhibition centre at Fisherman's Cottage in Martins Haven and the industrial unit in Milford Haven, where larger and more robust items of equipment are stored. The NRW facilities team supports with routine building inspections and co-ordinates maintenance of the buildings.

All waste handling for buildings, use of consumables and energy are monitored in accordance with the BSI ISO14001 environmental standard.

Emergency preparedness and response plans for pollution incident response are in place for both Fisherman's Cottage and Unit 4, these were both tested in 2023.

4.2 Boats

Skalmey spent 30 days at sea between April 2024 to end March 2025 and logged 100 engine hours. A summary of boating activity from 2015 to 2024 is given in Table 4.1.

At the end of June 2024, *Skalmey* broke down with continuing issues with the injectors (recurring problem from the 2023 breakdown) and remained out of action for the rest of the fieldwork season thereby impacting operations. The issues have been investigated and a solution sought to get the boat back in action for the 2025 season.

Whilst out of action, *Skalmey* was kept at its berth at Neyland marina. Unfortunately its inactivity led to the jet seal perishing, luckily during a routine visit in October, water was spotted leaking into the engine hold. Fortunately, the marina staff were on hand to tow the boat to allow Dale Sailing to haul her out of the water.

Table 4.1 Summary of Skomer MCZ Boating Activity 2015-24

Survey year recorded from April to end March
Staff = Skomer MCZ staff, other NRW Staff and Volunteers
Staff days at sea = total days on which each member of staff went out in a boat
Staff seatime = total of each member of staff's seatime

a) Days at Sea

Days at sea	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
Skalmey	73	69	49	79	65		62	60	44	30
RIB *Morlo*	32	34	36	40	33		25	34	47	46
Total	105	103	85	119	98		87	94	91	76

b) Staff days at sea

Staff days at sea	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Skalmey	243	256	175	314	256		225	229	177	117
RIB *Morlo*	88	108	97	115	83		46	87	125	130
Total	331	364	272	429	319		271	316	302	247

c) Staff sea time

Staff sea time	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Skalmey	893	973	563	847	805		887	843	691	424
RIB *Morlo*	277	337	275	403	280		164	319	367	365
Total	1170	1310	838	1250	1085		1052	1167	1058	789

d) Engine hours

Engine hours	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Skalmey	284	237	145	259	207		216	207	156	100
RIB *Morlo*	98	105	97	129	105		85	114	124	132
Total	382	342	242	388	312		301	321	280	232

The rigid hull inflatable boat *Morlo* spent 46 days at sea and logged 132 engine hours between April 2024 to end of March 2025 (Table 4.1). *Morlo* was used on weekend patrols, plankton and water sampling and for intertidal survey work. *Morlo* was also used to allow some dive survey work to be completed from July to October.

Morlo is fitted with twin outboard engines which, during the season, both needed repairs. In January 2025 the boat was fitted with a new set of engines which we hope will ensure smooth operations during 2025. Winter maintenance work was completed in the Milford Haven unit.

Morlo faced damage during the summer, due to a resident bull seal in Martins Haven. Whilst the boat was on its mooring the seal regularly used it as a haul-out, causing damage to the boat's tubes, seats, fuel lines and fire extinguishers, along with leaving very smelly excrement and snot slimed all over the tubes and hull (Figure 4.2).

Figure 4.2 Seal damage to *Morlo* (photo credit: Blaise Bullimore)

The small inflatable tender *Suzimar* was, as ever, useful for our lagoon sampling effort, especially at Carew millpond.

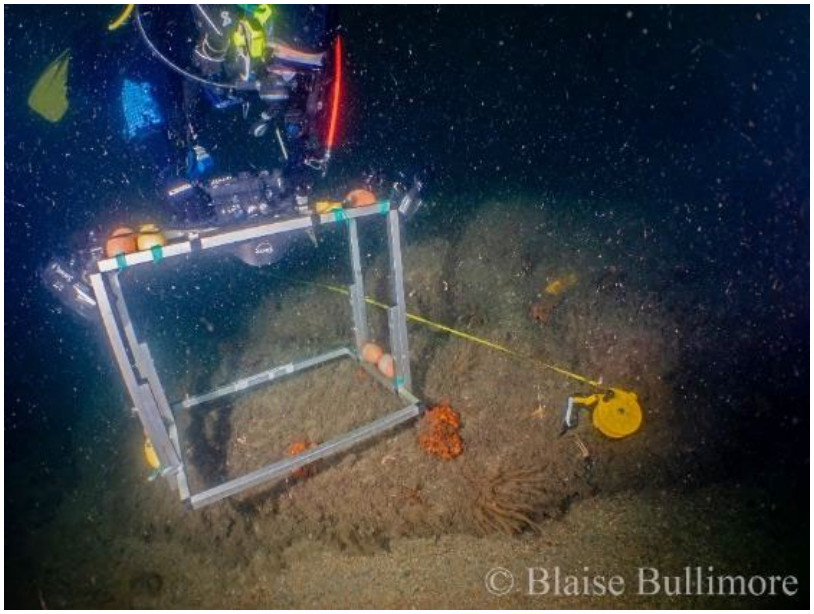
A new workboat code from the Maritime and Coastguard Agency (MCA Workboat Code Edition 3) came into force in December 2023, to be fully complied with by 2026. These codes will apply to both *Skalmey* and *Morlo*. To enable preparation of the boats, NRW, with Mark as the lead, have joined the Workboat Association. The new codes will also require further training for the team.

4.3 Optical, photographic and scientific equipment

Photographic equipment continues to be serviced by a contractor on an annual basis with routine maintenance carried out by Skomer MCZ staff.

The primary camera set up for dive monitoring projects is a housed digital SLR and underwater lights fixed to a large framer as shown in Figure 4.3. A smaller framer is used for the close-up photo projects.

Figure 4.3 Large underwater framer with camera and lights (photo credit: Blaise Bullimore).



A GoPro video camera and housing is used to complete RUVS (Remote underwater video system) surveys using a baited arm in North Haven eelgrass bed. It was also used to survey algae communities, a modified lobster pot was used to house the camera, (Figure 4.4) preventing it being damaged on uneven, rocky reefs or being snagged by kelp plants.

Figure 4.4 GoPro fixed in modified lobster pot.

All scientific equipment is serviced and calibrated according to manufacturer recommendations with minor maintenance (battery replacement, etc.) carried out by Skomer MCZ staff. The weather station was serviced in February 2025.

4.4 Vehicles

The Isuzu 4-wheel-drive pickup truck continues to be a 'good workhorse'. The sliding tray installed in the boot makes loading and unloading much easier, although it is showing its age and needs constant maintenance.

The RIB trailer and box trailer are serviced annually by a local contractor.

The fuel bowser with its powered pump has made fuelling *Skalmey* at Martins Haven much easier. The tank is double skinned to prevent spillages, and we carry absorbent materials should spillage occur. The bowser trailer is serviced and maintained by a NRW contractor.

4.5 Marine estate work

The moorings for Skomer MCZ boats in Martins Haven were maintained at the beginning of the season by staff who also completed routine mooring checks during the season.

Skomer MCZ staff continue to maintain visitor moorings in North Haven as part of the site's management to protect the eelgrass bed in the bay. The moorings normally operate from Easter through to autumn at which point the buoys and riser ropes are replaced with temporary marker buoys advising "no mooring". The North Haven "no-anchoring" buoys are deployed at the same time as the visitor moorings and maintained through the season.

To help keep users away from the seabird cliffs on the east side of North Haven a new signage buoy in collaboration with Pembrokeshire Coastal Forum was installed (see Section 5.2 and 7.4.4). The buoy was fixed to the seabed using two eco-anchors, these are 1.2m in length and screw into the sediments like a giant cork screw, quite a challenge to do diving. The aim of the eco-anchors is to replace the use of large mooring blocks and chains which damage the eelgrass bed. We installed further eco-anchors as fixed corner makers for the eelgrass survey plot and will check they are still in position during the 2025 season.

The underwater battery-powered drill had been out action since 2021, the internal mechanism was flooded by seawater and not repairable. In 2024 we bought a replacement drill and managed to work through a long ‘to do list’, replacing missing ring bolt site markers, Figure 4.5.

Figure 4.5 Underwater drill and monitoring site maintenance (photo credit: Ross Bullimore).

5. Management

5.1 Wardening and Patrol

Skomer MCZ staff carried out boat patrols on 17 Sundays and Bank Holiday weekend days between the end of April and September 2024. Three days in August were lost due to bad weather. Observations of visiting recreational and commercial users were also made during routine monitoring surveys throughout the season.

The patrols are not just for us to keep an eye on visitors, but also serve a valuable purpose in providing a point of contact for visiting vessels to obtain information about Skomer MCZ, and a way for staff to promulgate the byelaws and codes of conduct to visiting recreational users (see Section 5.2).

We are fortunate that the majority of recreational users and sightseeing commercial users are coming to the site to enjoy its wildlife and are therefore well disposed towards the aims of Skomer MCZ. However, our visible presence helps deter those whose activities may be illegal (under fishery or conservation byelaws) or at least contrary to the voluntary codes of conduct. See Section 8 for all data relating to visitors and use of Skomer MCZ.

In the interest of efficiency, mapping of fishing effort (see Section 7.1), sampling for water quality and plankton monitoring (see Sections 9.2.4 and 9.1.7) are carried out during weekend patrols.

5.2 Information

The revised Skomer MCZ User Regulation leaflet has been welcome, see Figure 5.1. The leaflet was distributed to boat visitors during weekend boat patrols and were available at Martins Haven from a dispenser positioned next to the zone map display panel.

Boat users, including groups of canoeists, were informed about changes to breeding protections zones for both the seals and seabirds, in particular the no entry area on the east side of North Haven. The information has been supported by a sign fixed to the no anchoring buoy located on the east side of the bay (installed in 2023), and a new signage buoy added in 2024. The signs requests that all water-based users keep 50m away from the sea bird cliffs. The signs have been made in collaboration with the South and West Wales Wildlife Trust and the Pembrokeshire Marine Code team at Pembrokeshire Coastal Forum, see Figure 5.2.

The Skomer MCZ booklet and seal watching guide continue to be dispensed via the exhibition room (see section 10.1).

Figure 5.1 Skomer MCZ User Regulation Zone Map, byelaws and codes of conduct

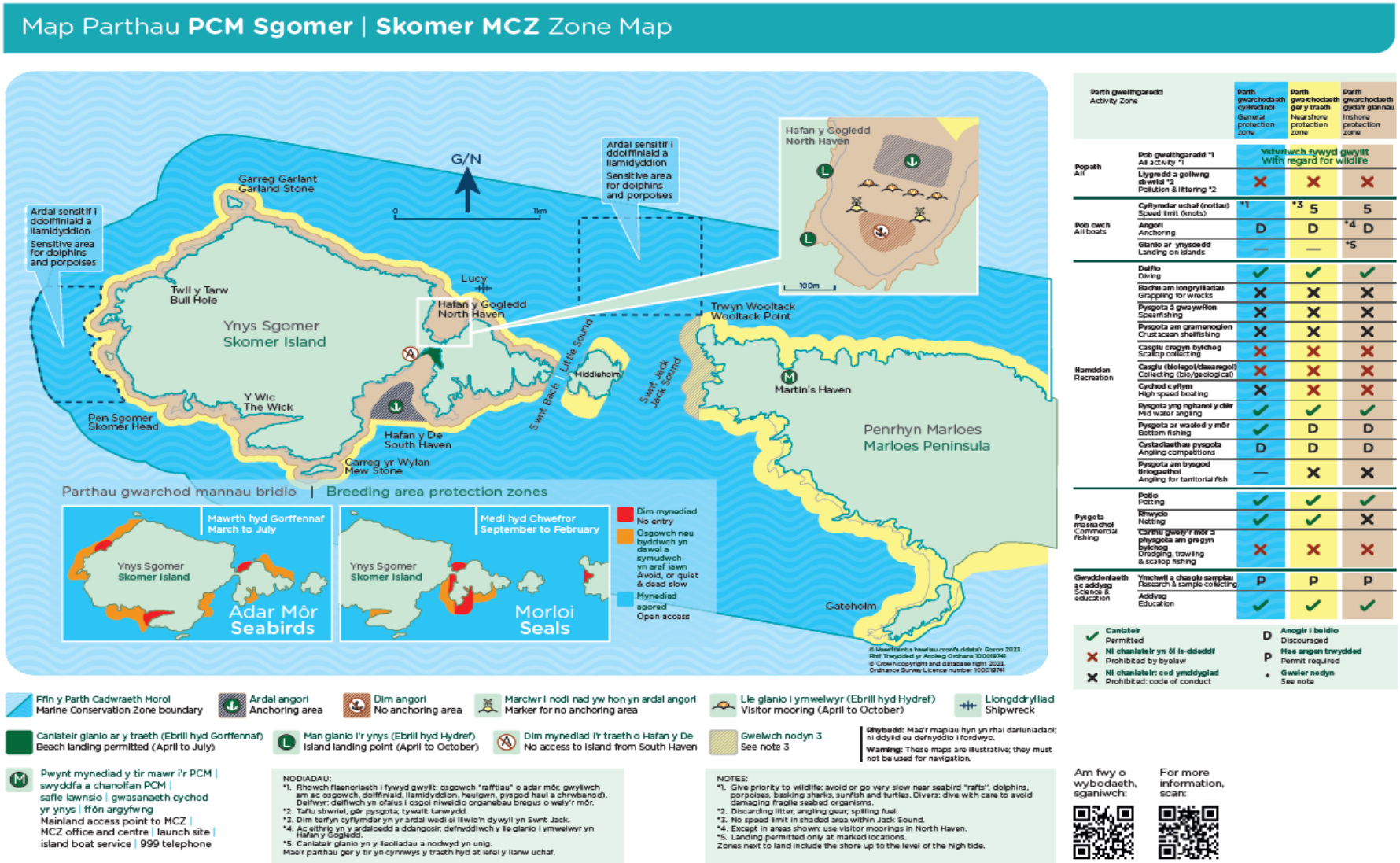


Figure 5.2 Seabird sign fixed to No anchoring buoy and wildlife signage buoy.

5.3 Management Issues

5.3.1 Dredging/beam trawling

No illegal dredging or beam trawling was recorded or reported in 2024.

5.3.2 Potting

Commercial fishing vessels operating in the Skomer MCZ are listed in Section 6.1 and fishing effort records are presented in Figures 6.1 and 6.2. See Section 5.3.8 for disturbances of fishing boats to cliff-nesting birds.

5.3.3 Tangle and gill netting

No tangle or gill netting was observed or reported in 2024.

5.3.4 Collection of shellfish by divers

No collection of shellfish by divers was observed or reported in 2024.

5.3.5 Collection of curios

No collection of curios was observed or reported in 2024.

5.3.6 Collection of specimens for education and research

NRW Skomer MCZ permits were issued to:

- Francis Bunker for seaweed collection for the purpose of education and research; he has submitted a species list for his 2023 collection for the archive and is finalising the 2024 list.
- Dr Luna van der Loos for seaweed collection to support the EULVA project and other algae research at Ghent University, Belgium.
- Swiss Arvor expedition on board research vessel *Mauritius* to collect plankton samples.

5.3.7 Disturbance or entanglement of seals

A few incidents of Seal disturbance were recorded by Skomer Island staff. In May a dive RIB went within 30m of the seal beach in North Haven, the Skomer warden radioed them and they retreated to a visitor mooring, very apologetic. In September South Haven two yachts came too close to the cliffs during the seal pupping season, a group in a dingy were radioed by Skomer wardens and requested to move away.

During the seal pupping survey, the Skomer wardens maintained a log of all possible seal disturbance, no major disturbances (level 3 & 4) were observed. The level of disturbance is classified as follows:

1 = unaware of human presence);

2 = alert/aware of human presence but stay on beach

3 = Panic and rush into the water, stay nearshore

4= Panic rush into water and swim away from shore.

Monofilament line and netting were the most visible pollutants affecting seals in 2024.

Seal watching leaflets, which include information on how to safely observe with minimal disturbance, were dispensed in the visitor exhibition room and by National Trust car park

attendants. National Trust seal signs located at Martins Haven were also used to inform visitors on how to minimise disturbance.

5.3.8 Disturbance to cliff-nesting birds

In 2024 Skomer Island staff logged 2 incidents of recreational boats in the Wick but no significant disturbances were reported. In April a fishing boat was recorded with pots in the Wick and a fishing boat was also reported potting close to Bullhole, a flock of kittiwakes were observed flushed from the cliffs and then again from the water. Two RIBS were spotted under the east cliffs in North Haven, they were provided with the User Regulations leaflet and were apologetic.

5.3.9 Spearfishing

In June a spear fisherman was free-diving with a spear gun from a boat at Rye Rocks. He was approached by Skomer MCZ staff on patrol, initially he was confrontational but once handed a leaflet and talked to nicely he agreed to go elsewhere.

5.3.10 Angling

See Section 6.2 for records of visiting anglers.

Although numbers of anglers recorded in Skomer MCZ was low in 2024, especially shore anglers, sea bed angling litter still presents a problem where angling gear gets snagged on the seabed.

Neptune's Army of Rubbish Collectors (NARC) have continued to clear seabed litter, including lost angling tackle, from sites in the Skomer MCZ, (See Section 5.3.14). They have also provided information advising anglers how best to avoid snagging and losing tackle in the Martins Haven area, both on-line and in the form of paper leaflets. Leaflet dispensers are positioned next to the two 'angling bins' located at the entrance to the Deer Park and besides the coast path at Martins Haven beach.

The angling bins at Martins Haven continue to be used, they are designed specifically for anglers to safely dispose of broken hooks and line, although all sorts is put in them. The bins are emptied during the year by Skomer MCZ staff (Figure 5.3).

Figure 5.3 Angling waste bin located at Martins Haven with angling litter and rubbish emptied from bins.

5.3.11 Mooring and anchoring

All vessels appear to be complying well with the No-anchoring Code of Conduct, and there have been no reports of vessels anchoring other than in the permitted areas of North and South Haven.

The visitor moorings in North Haven continue to be popular with all visiting vessels.

5.3.12 Wrecks

The Lucy wreck is marked with a surface buoy and continues to be a popular dive site.

5.3.13 Oil pollution

No oil pollution was recorded at Skomer MCZ during the 2024/25 season.

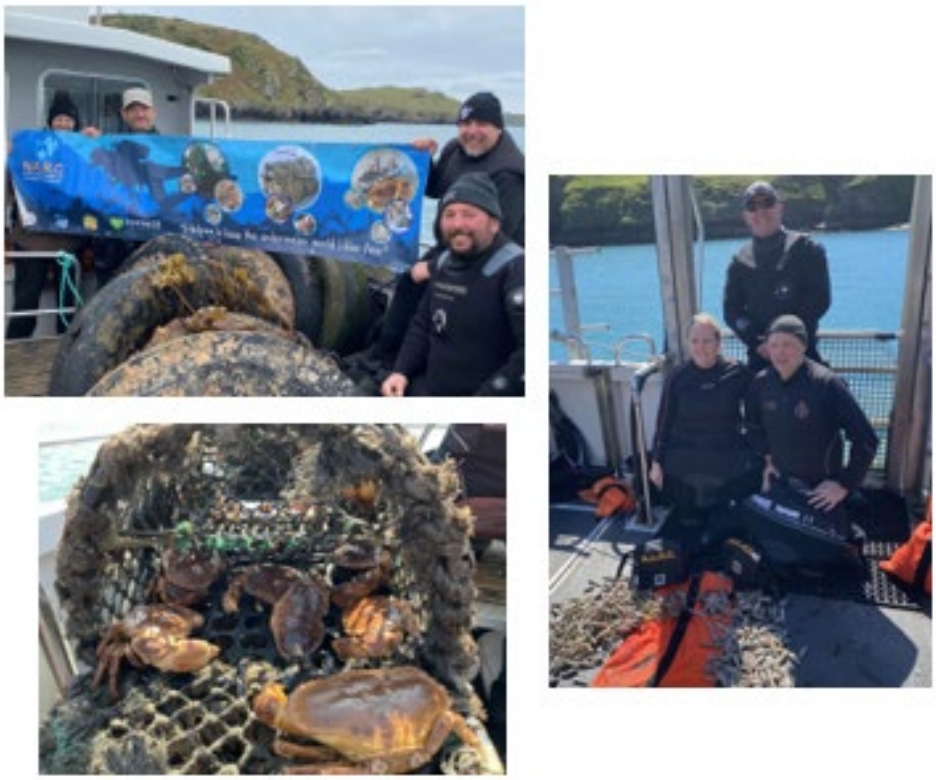
5.3.14 Litter

Neptunes Army of Rubbish Cleaners (NARC) have been busy recovering heavily encrusted lost fishing pots from sites around Skomer. Many of these are still actively ghost fishing, the crabs and fish found are released back to the sea and the pots cleaned of attached living animals.

NARC have also been clearing angling line and weights from sites on the North Marloes Peninsula. In one day, 396 fishing weights weighing 47kg were cleared.

The NARC team completed a dive below the North Haven landing recovering 8 tyres from the seabed. It was NARC's 20th Anniversary in 2024, their commitment to cleaning a wide variety of litter from the seabed around Pembrokeshire, including annual clean-ups in the Skomer MCZ is incredible. We are so grateful to their teams of volunteer divers (Figure 5.4).

Figure 5.4 NARC diving volunteers removing old tyres, angling weights and ghost fishing pots from Skomer MCZ



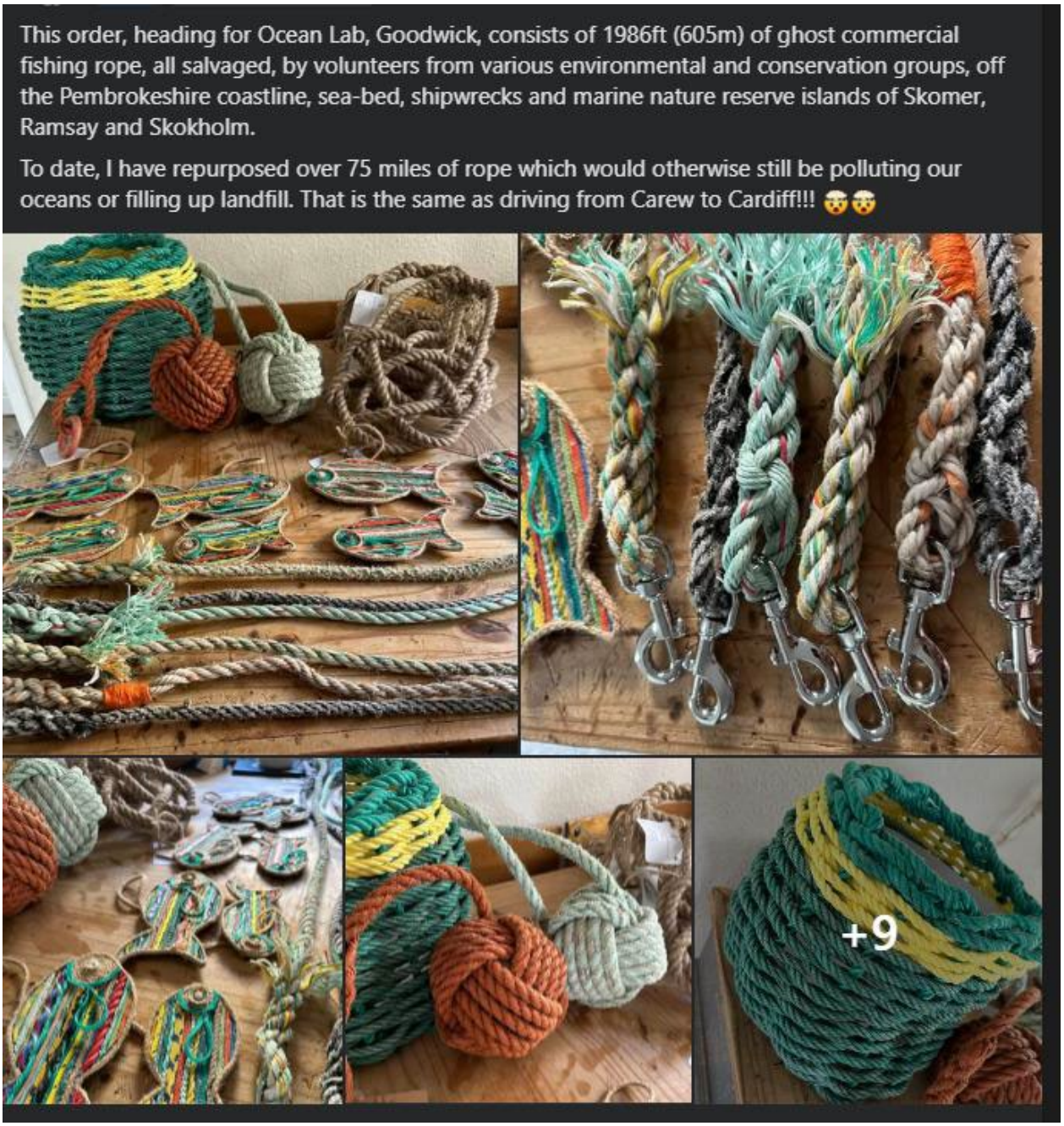
Litter has been picked up from Martins Haven beach and at sea throughout 2024. In our Milford unit we have been storing: fishing net and ropes, plastic containers and broken buoys, collected from sites within the Skomer MCZ and also by the community from Marloes beach. In July Sea Trust's Recyle Môr project came to collect over three builders bags full to sort for re-use and recycling, (Figure 5.5).

Figure 5.5 Sea Trust Recycle Môr project collecting fishing waste from Milford unit.

Sea Trust and NARC are collaborating with Pembrokeshire business *Willow and Waves* who is re-purposing salvaged fishing rope to make a large range of products (Figure 5.6) and run local community craft workshops.

Figure 5.6 Willow and Waves salvaged rope re-purposed products.

Sea Trust

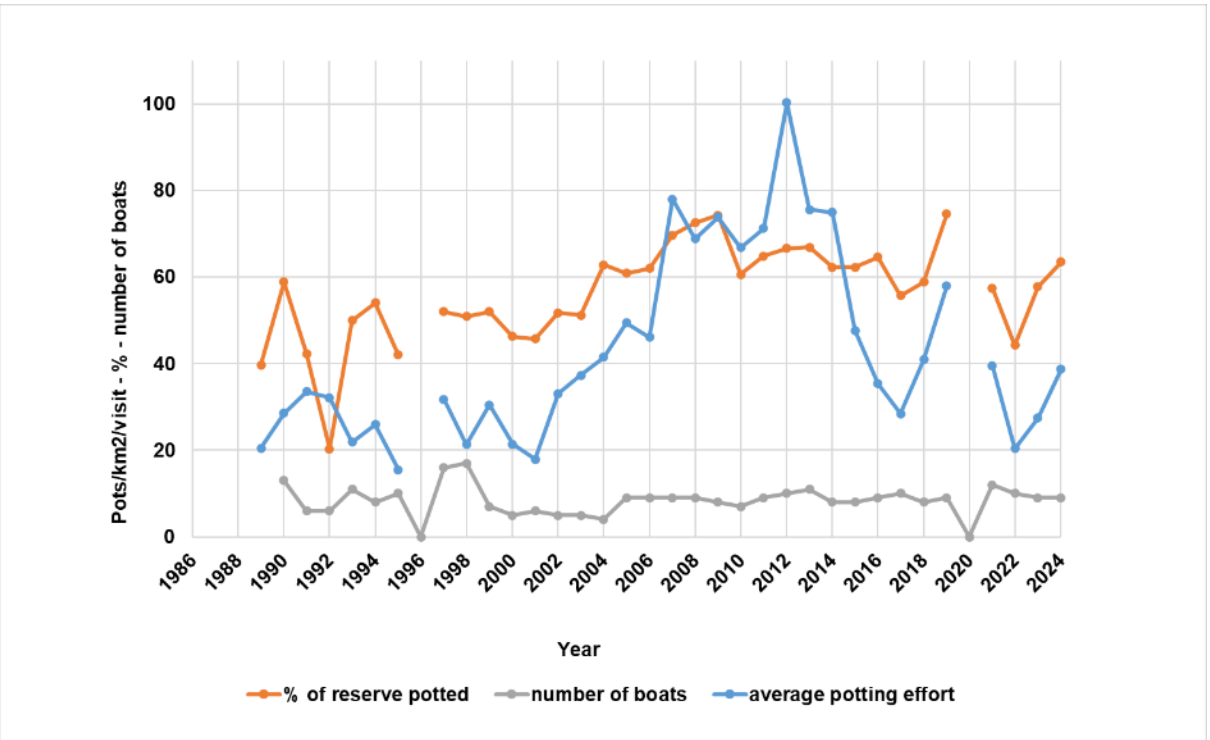


6. Visitors and Use of the Skomer MCZ

6.1 Commercial use

Fishing vessels recorded (or whose gear was recorded) operating within Skomer MCZ during 2024 included: *Emma Jane* (M119), *Marie Louise* (M36), Boys Pride (BD217), *Korey Jo* (M1122) and *Wren & Rose* (M75).

Figure 6.1 Summary of fishing effort within Skomer MCZ 1989 to 2024



The number of commercial fishing vessels operating within Skomer MCZ has remained steady over the past 15 years. However, fishing effort has varied substantially. Effort reached a peak in 2012 and then declined until 2017. After 2017 there was a rapid increase up to 2019. No surveys were conducted in 2020. Both fishing effort and the proportion of the reserve that is fished decreased in 2022 but a slight increase was recorded in 2023 and again in 2024 (Figure 6.1).

The distribution of fishing effort in 2024 is shown in Figure 6.2, and the potting intensity at the main Skomer MCZ survey areas from 1989 to 2024 is shown in Figure 6.3.

The highest density of fishing is taking place along the North Marloes Peninsula, Jack Sound, the north-east coast of Skomer and around the Garland Stone and Bull Hole on the north-west coast. The north Skomer areas cover a high proportion of the sea fan *Eunicella verrucosa* and ross coral *Pentapora foliacea* monitoring sites.

Figure 6.2 Pot fishing intensity map within Skomer MCZ 2024

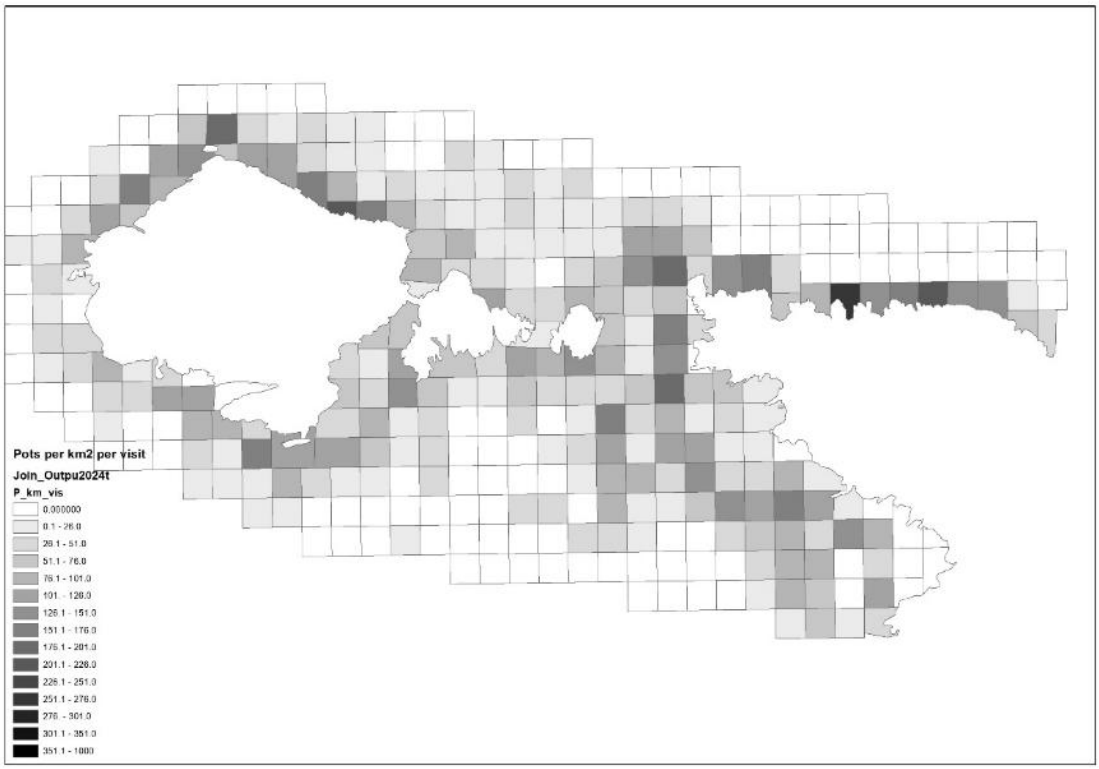
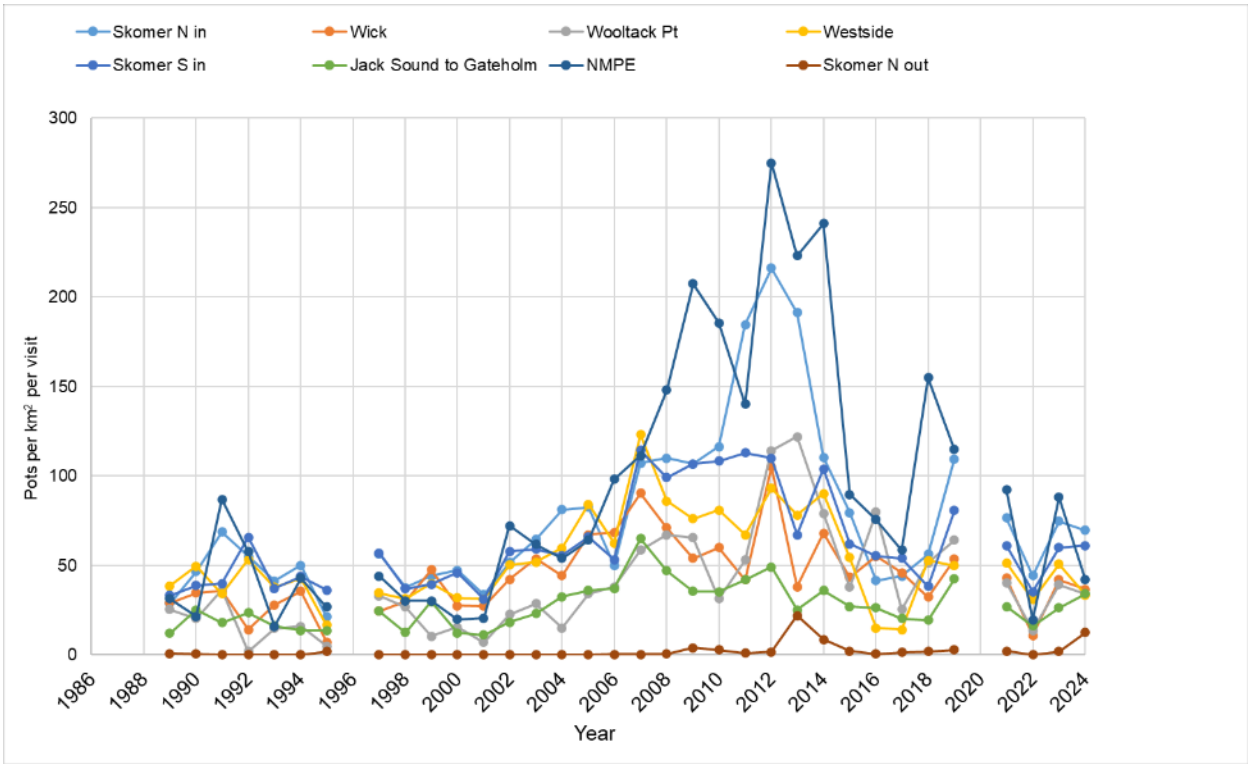


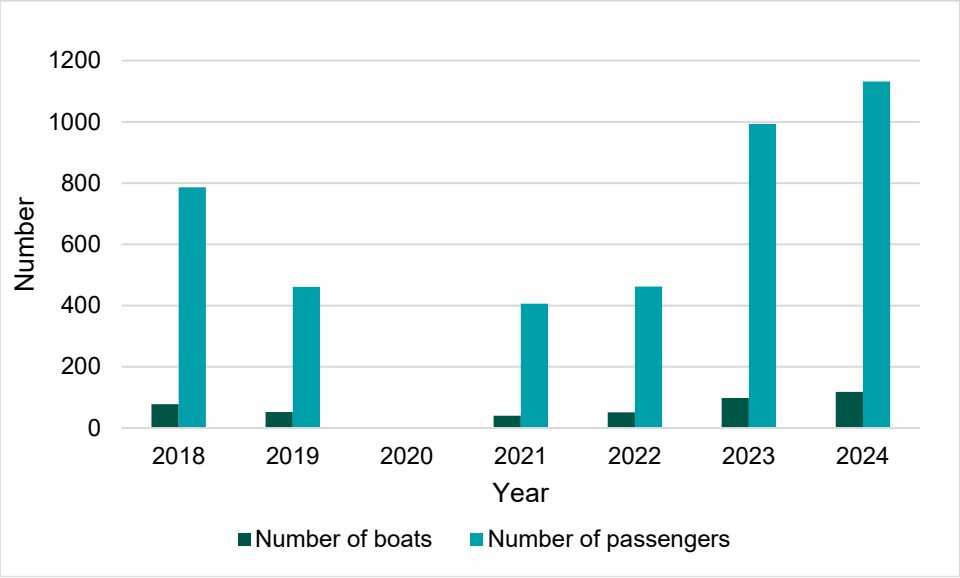
Figure 6.3 Potting intensity around Skomer MCZ split into the main monitoring areas 1989 to 2024



Another major commercial presence at Skomer MCZ is sightseeing vessels, these include operators from Martins Haven, Milford Haven and North Pembrokeshire (St Justinians) in addition to occasional cruise ship visitors. Pre-2018, the recorded total numbers of sightseeing boats fluctuated from year to year but were generally less than 15 boats per season. In 2018 a large increase in the number of boats (78 boats) was observed, so a decision was made to put more effort into recording these vessels due to their economic importance and possible impacts (Figure 6.4). In 2024, 118 boats with 1132 passengers were recorded, this included two visiting cruise ship with a total of 18 inflatable boats in the water with sightseeing passengers.

These figures do not include the Dale Sailing operated ferry between Martins Haven and Skomer or their sightseeing 'round island' trips. It should be noted that in 2022 the *Dale Princess* (max 50 passengers) was replaced by the *Dale Queen,* a much bigger boat that can carry 95 passengers. The numbers landed onto Skomer has not changed (maximum 250 people per day), but the numbers of sightseeing passengers on the 'round island' trips have significantly increased, on a busy May bank holiday there can be up to 800 passengers.

Figure 6.4 Sightseeing vessels (excluding Dale Princess/Dale Queen) and total people on board 2018 to 2024.



Commercial dive, snorkelling and angling charter boats also operate in Skomer MCZ and these records along with the sightseeing boats are included in the recreational boat use data (see Figures 6.6 to 6.9).

Tanker movements within St Brides Bay have been logged for many years by Skomer MCZ staff, and now automated methods are used to record use of this anchorage that lies within Pembrokeshire Marine SAC.

6.2 Recreational use

Recreational use of Skomer MCZ is presented in Figures 6.6 to 6.9, records are from April 2024 to March 2025. Recreational craft are recorded by both Skomer MCZ staff whilst out on the water and by Skomer island staff observations, from April to the end of October. Recreational use figures for divers and anglers remain low, as has been the case since 2019. There was a slight increase in both recreational boats and total people on board, this is influenced by the changes that have been seen in the different boat visitors; peak time for all activities is between May and August.

The numbers of recreational craft (combined dive, angling, yachts, motor boats and canoes) have fluctuated over the years, ranging between 928 (2018) and 406 (2007) with 713 recorded in 2024 (see Figure 6.7). The greatest change has been seen in the number of canoes. From 1982 to 2003 less than 100 were recorded each year, this has gradually increased to the highest record of 330 in 2023, and in 2024 284 canoes were recorded. The total number of people on boats in 2024 was 2225 of which 50% were passengers on sightseeing vessels (see Section 6.1) NB these figures do not include the Dale Sailing operated ferry or their sightseeing 'round island' trips.

Diver numbers from 1987 to 2005 ranged between 2000 to 3500 divers per year, but since 2006 the numbers have decreased, ranging between 500 to 1600 divers per year. Only 525 divers (including snorkel/free divers, see Figure 6.5) were recorded in 2024 of which a record low of 71 were Martins Haven shore divers compared to 848 recorded in 1994 (see Figure 6.8). It should be noted that diving activities throughout the UK have seen significant reductions, there are fewer dive clubs and boats along with the infrastructure of dive shops and dive charter boats.

Figure 6.5 Organised snorkelling activities in South Haven

.

The numbers of anglers have fluctuated over the years, but the last 10 years have seen reductions. From 1987 to 2011 shore anglers ranged between 766 (1993) and 313 (2010), this has dropped to just 87 shore anglers in 2024 (see Figure 6.9). Angling boats have been more consistent over the years with 81 angling boats recorded in 2024. The highest numbers of boat anglers were recorded between May to July, whereas shore angler numbers were low but consistent through the season. It is expected that the actual number of shore anglers is higher as many come in the evenings and these are not recorded.

The changes of recreational craft users from 1989 to 2024 are shown in Figure 6.10. The numbers of dive boats visiting Skomer MCZ has dramatically decreased whilst the number of canoeists has increased, in contrast numbers of yachts, motor boats and angling boats have been relatively stable.

Figure 6.6 Recorded Recreational Use Skomer MCZ

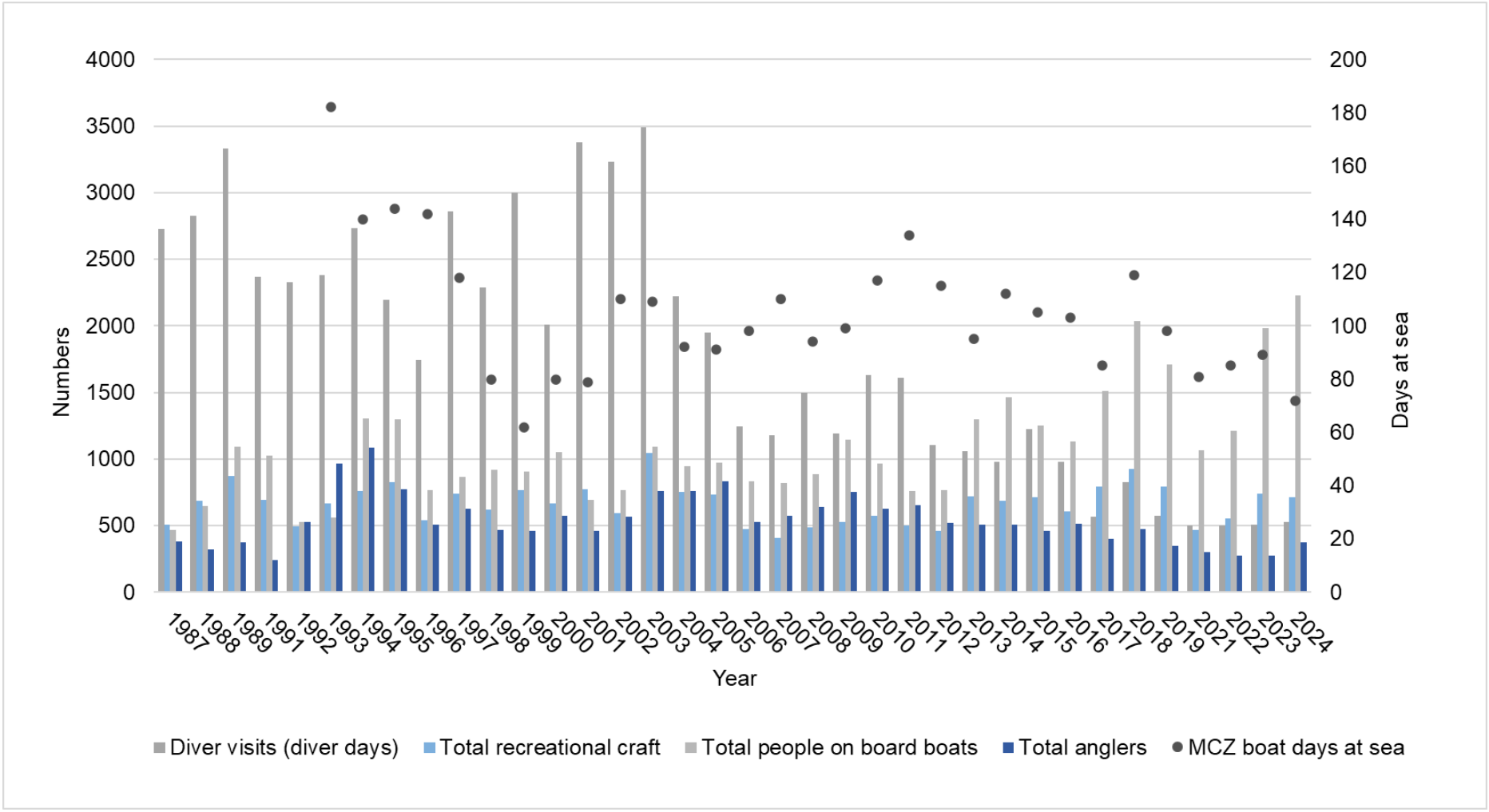


Figure 6.7 Skomer MCZ 2024/25 Recreational Craft

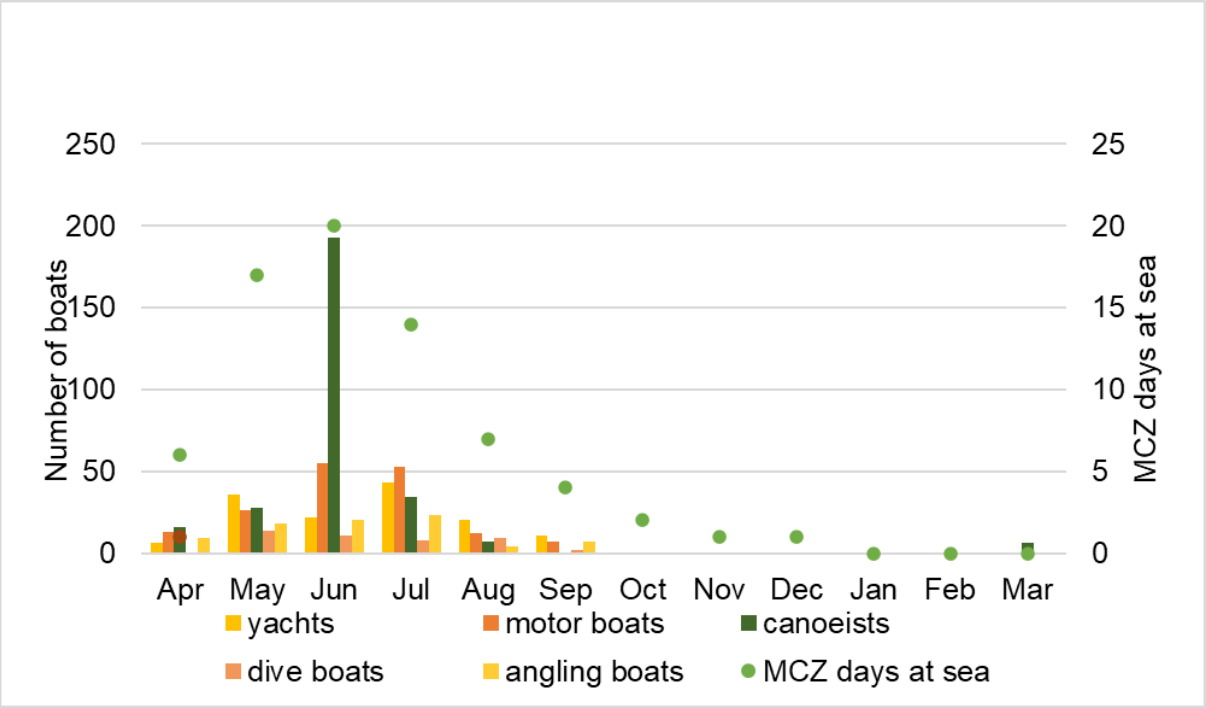


Figure 6.8 Skomer MCZ 2024/25 Divers

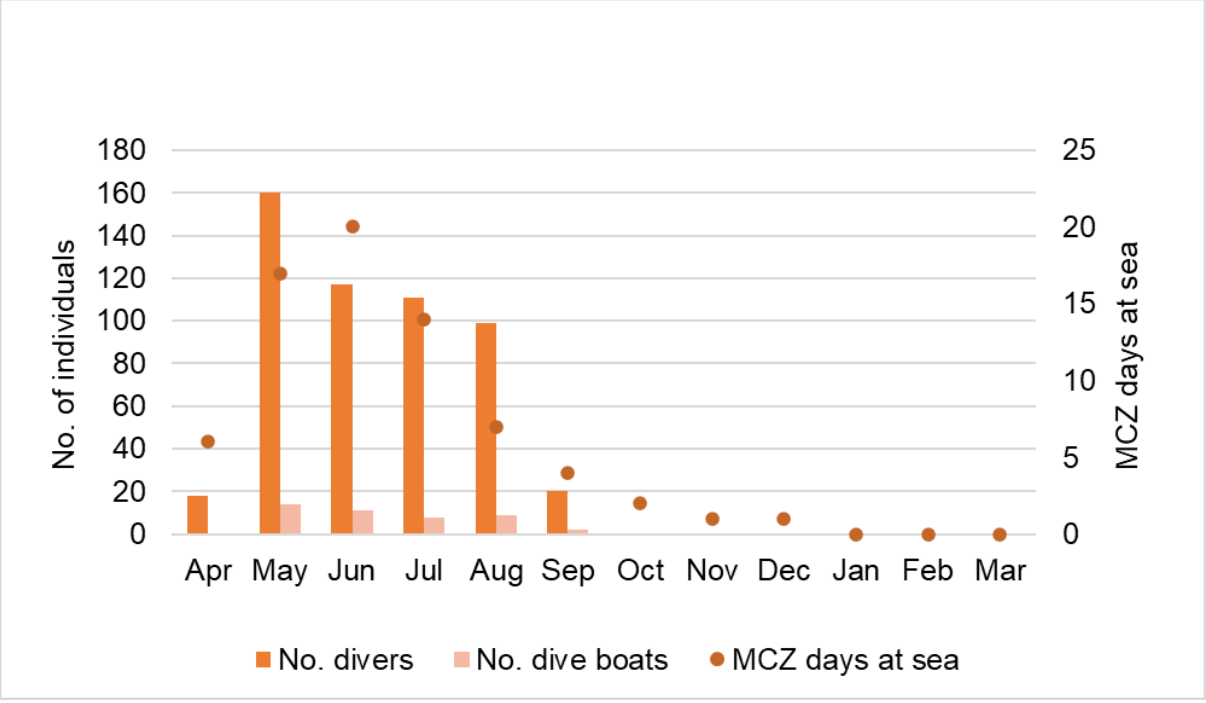


Figure 6.9 Skomer MCZ 2024/25 Anglers

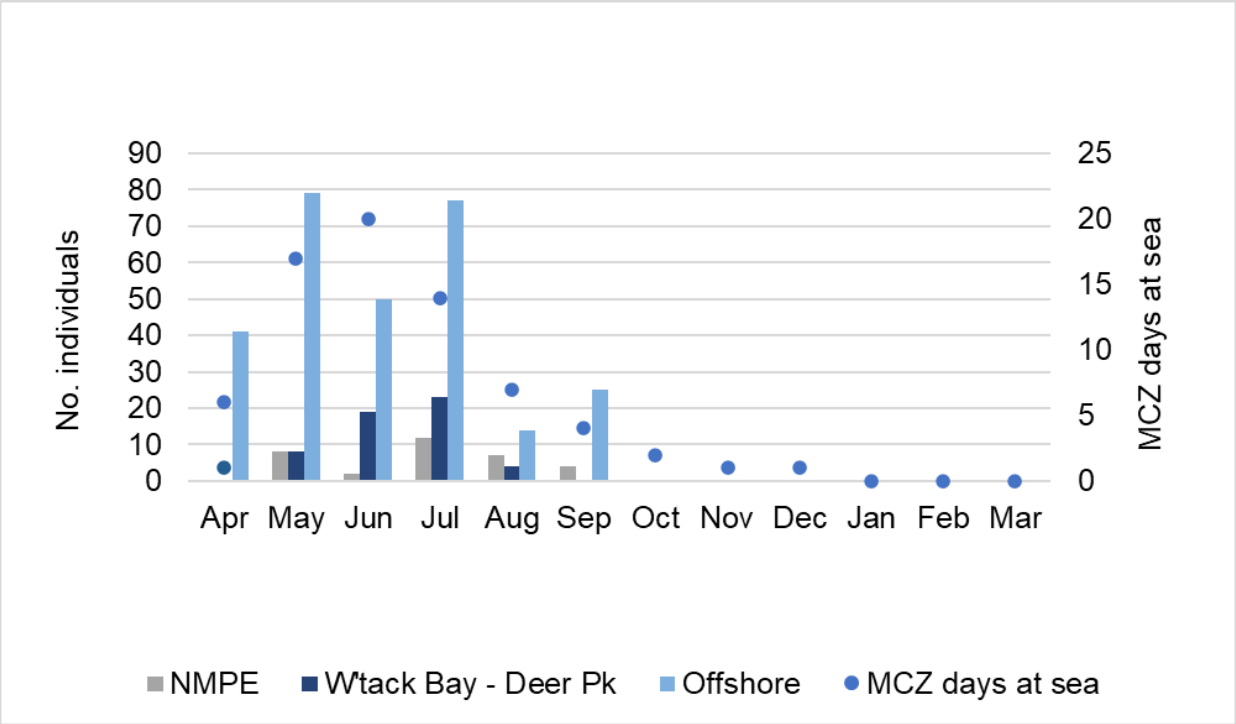
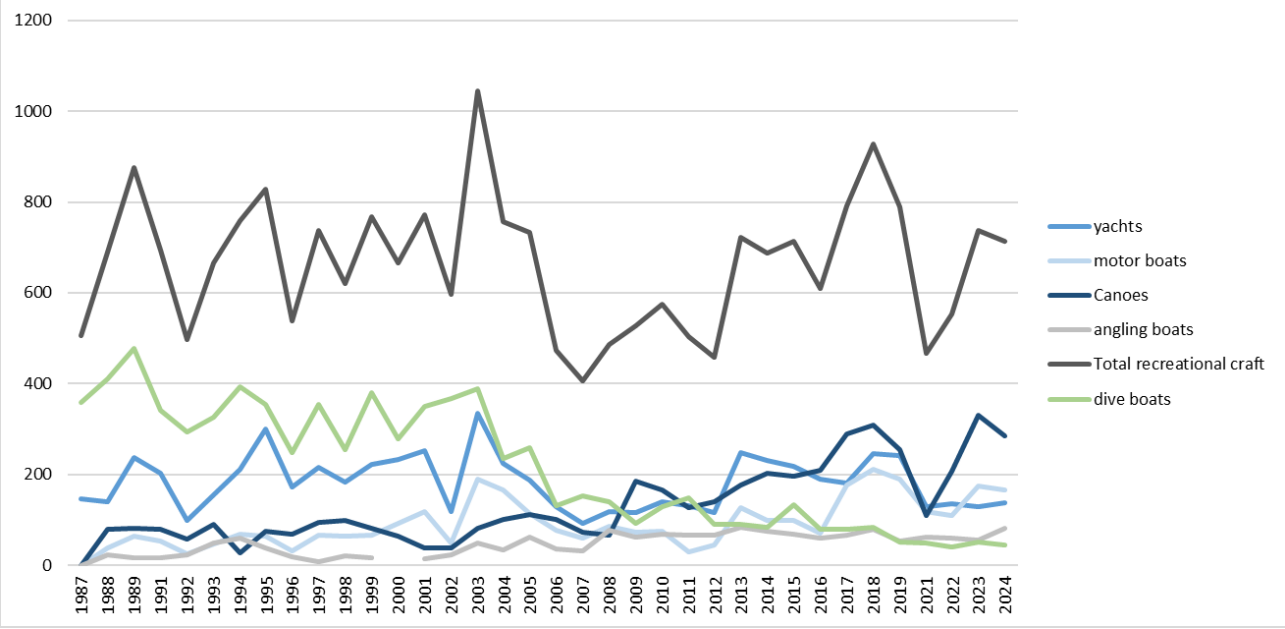


Figure 6.10 Skomer MCZ Recreational craft use 1989 to 2024



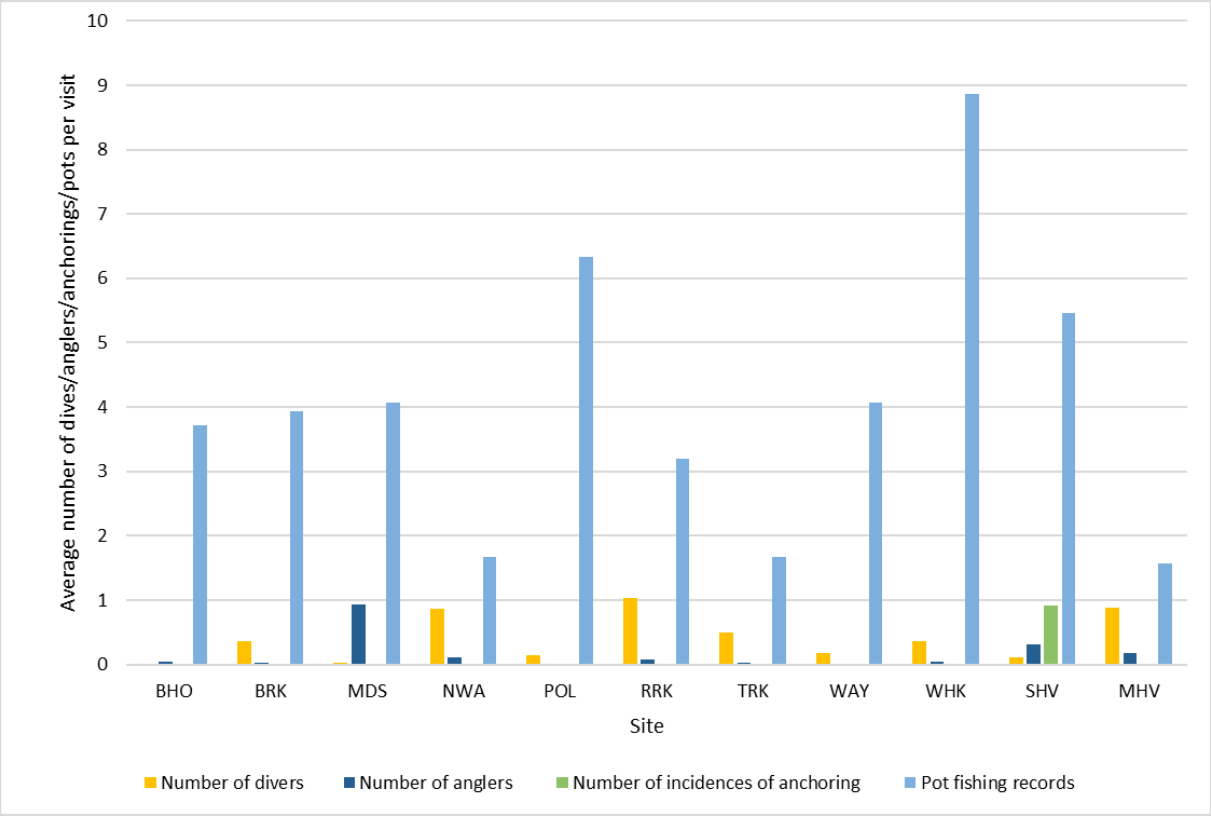
6.3 Seabed contact activities

All activities in Skomer MCZ recorded during 2024 with the potential to contact the seabed have been recorded at monitoring sites for fragile species (pink sea fan *Eunicella verrucosa*, ross coral *Pentapora foliacea* and erect sponge species), and are shown in Figure 6.11. Recorded activities include numbers of divers, anglers, incidences of anchoring and pot fishing.

The data presented is effort corrected for differences in the numbers of days on which data were collected for different activities, and at different sites, to allow comparisons to be made. Data for South Haven (SHV) and Martins Haven (MHV) have been included for context as South Haven is a highly popular (and permitted) anchorage and Martins Haven a popular shore diving site.

Diving numbers include both recorded recreational dives and Skomer MCZ monitoring dives. The activity most often recorded at all monitoring sites is lobster potting. It should be noted that all data are likely to be an underestimate of actual activity, but more so for commercial fishing effort, which is only usually recorded once per week between May and September.

Figure 6.11 Seabed activity recorded at Skomer MCZ monitoring sites for fragile species corrected for recording effort 2024.
(Sites: Bullhole BHO, Bernies Rock BRK, South Middleholm MDS, Northwall NWA, Pool POL, Rye Rocks RRK, Thorn Rock TRK, Waybench WAY, West Hook WHK, South Haven SHV, Martins Haven MHV)



7. Liaison and Advisory Committees

7.1 Advisory Committee

The Skomer MCZ Advisory Committee meeting was held on 16th April 2024 in Dale village hall, chaired by Dr Madeleine Havard, twenty-four members attended. Members discussed a range of issues from presentations made by Skomer MCZ staff updating committee members on management and monitoring work.

Jenny Oates, NRW Lead Specialist Advisor, Marine & Costal Policy & Planning provided an update on behalf of Welsh Government on the Marine Protected Areas in Wales and Skomer MCZ transition. A change of Ministers in WG has resulted in a delay in the new MCZ sites consultation and therefore the Skomer MCZ designation consultation, it is unlikely to happen in 2024. In preparation of the consultation NRW have been working on the Skomer MCZ features list and conservation objectives and the Committee were assured that there will be no reduction in protection for the Skomer MCZ.

An update was given on the status of pink sea fan, *Eunicella verrucosa* and the fragile sponge and anthozoan habitat both of which are 'declining and in unfavourable condition'. A list of recommendations for action and management options were discussed by members.

Guest speaker Kaila Wheatley, Exeter University, gave an update on her PhD studentship to study factors effecting the distribution and genetics of the pink sea fan (*Eunicella verrucosa*). Members welcomed the research talk, agreeing that its inclusion in the meeting usefully brings management and science together.

7.2 Wildlife Trust South and West Wales

In 2024 Leighton Newman returned for his fourth year as Skomer warden with Ceri Aston again employed as assistant warden. Island staff and volunteers assisted with collecting data of both recreational boat activities, disturbances and cetacean sightings. This data is valuable and significantly boosts our records.

The NRW Skomer seal survey contract was not funded in 2024 due to reduced available funds. Wildlife Trust staff reviewed the survey methods to enable a reduced effort survey to be completed by Island staff with support by a Swansea University placement student.

The assistance of the staff at the Wildlife Trust shop at Lockley Lodge with opening up the Skomer MCZ exhibition was very much appreciated again in 2024. This enabled us to maximise the number of days the exhibition was open, even when Skomer MCZ staff were off-site.

Skomer MCZ staff also liaised with the wardening staff on Skokholm during MarClim intertidal surveys (see Section 9.4), and with the WTSWW Pembrokeshire Islands Manager Lisa Morgan, both locally and via the Advisory Committee.

7.3 Welsh Government Marine Enforcement

Skomer MCZ staff did not contact Marine Enforcement staff in 2024, which could be taken as a positive in that there were no observations of fishery byelaw infractions to report.

7.4 Pembrokeshire organisations

7.4.1 Pembrokeshire Coast National Park

Skomer MCZ staff continue to liaise with Pembrokeshire Coast National Park (PCNPA) staff locally and via the Advisory Committee.

78.4.2 National Trust

Liaison with National Trust staff continues through the Advisory Committee and also directly with Matt Thompson, local ranger, James Roden, lead ranger in North Pembrokeshire and Kate Mellor, welcomes manager.

7.4.3 Pembrokeshire Marine Special Area of Conservation

Skomer MCZ has continued to liaise and collaborate with Sue Burton, Pembrokeshire Marine SAC Officer who also works for the Marine Conservation Society coordinating the marine projects in Pembrokeshire for the Wales' flagship Green Recovery project led by NRW *Natur am Byth!* In November and December 2024, the *Natur am Byth! Môr* citizen science water quality SWEPT 2024 project has been collecting water samples along the coast and waterway in Pembrokeshire to test for nitrate and phosphate levels. Sampling was completed at Martins Haven (Figure 7.1). The results will be written up in the Spring, but individual results can be seen at Our data | FreshWater Watch.

Figure 7.1 Sue Burton water sampling at Martins Haven.

7.4.4 Pembrokeshire Coastal Forum

Skomer MCZ continues to work with Pembrokeshire Coastal Forum and the Pembrokeshire Marine Code team, collaborating on the production of signage at North Haven (see Section 6.2) and provision of a signage buoy installed in 2024.

Kate worked with Alec Denny, Sustainable Recreation Coordinator, to assist with revisions of the Pembrokeshire Marine Code zone maps and Codes of Conduct.

7.4.5 Marloes Community Council

The local community has continued to be very supportive of the team, helping to protect the Skomer MCZ by reporting potential incidents, and by their active participation in the Advisory Committee.

7.4.6 Other Organisations

Skomer MCZ staff have worked alongside others including the Neptune's Army of Rubbish Collectors (Section 6.3.2 and 6.3.10) and National Coastwatch Institution (NCI), who maintain watches at the former Coastguard Lookout on Wooltack Point.

Mark and Ali in their MCA Coastguard roles joined NCI volunteers at Wooltack Point to help celebrate their 30th anniversary, (Figure 7.2).

Figure 7.2 National Coastwatch Institution 30th anniversary celebration.

7.5 Academia

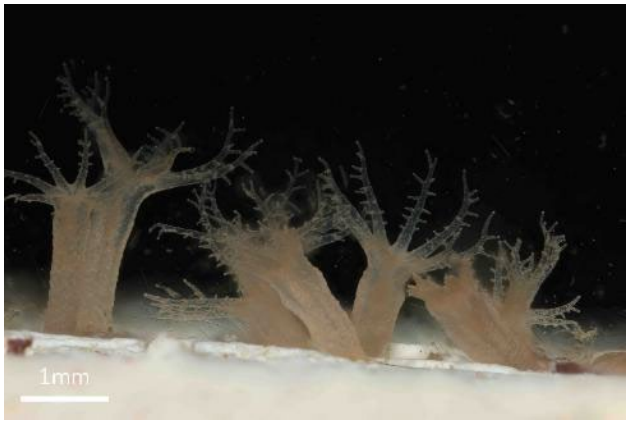
A number of academic institutions and students have worked with Skomer MCZ staff during 2024.

In September 2022 Kaila Wheatley began a PhD titled "*Factors limiting marine connectivity at a species range edge – the case of the pink sea fan, Eunicella verrucosa"* supervised by Dr Jamie Stevens, Exeter University. Kaila visited the Skomer MCZ for a week both in May 2023 and May 2024, diving with the team to collect samples to complete DNA analysis. The first subset has already shown higher-resolution connectivity between populations than before. The second submission is currently undergoing sequencing and will help to answer more detailed questions about connectivity and the health of populations. Kaila has been developing ocean models to mimic the dispersal of larvae within the ocean to understand current connectivity patterns and gain insight into how these might change in the future, see Appendix 1.

Kaila has also been working with the aquarium team at the Horniman Museum and Gardens in south London: sea fan collected off the coast of Devon have been photographed spawning for the first time in a UK institution (Figure 7.3). The larvae have settled and are growing into juvenile sea fan with their progress being constantly monitored (Figure 7.4). Experiments were carried out to obtain crucial information for their conservation, such as the settlement period and the effect of warmer temperatures on settlement success and periods. All this will be used to evaluate the current MPA network and suggest improvements that will maintain connectivity under future conditions and safeguard our sea fan populations in the UK and beyond.

Figure 7.3 Pink sea fan spawning (photo credit: Kaila Wheatley)

Figure 7.4 Pink sea fan juveniles (photo credit: Horniman Museum and Gardens)



In June, Manning Hope, a Masters research student at Swansea University joined the team for a day (Figure 7.5). Manning is studying eelgrass, *Zostera marina,* collecting samples from different UK sites.

Figure 7.5 Manning Hope with sample bag of *Zostera marina*

In June, Dr Luna van der Loos and a team of seaweed researchers from Ghent University, Belgium visited to collect seaweed samples (Figure 7.7). *Ulva* species samples are being collected from all over Europe as part of a project called EULVA that aims to conduct a thorough assessment of *Ulva* biodiversity in the Northeast Atlantic, Mediterranean, and Macaronesia. As *Ulva* species are (extremely) difficult to identify based on morphology, they will use DNA sequencing. The Skomer MCZ team collected additional samples from a selection of sites (Figure 7.6). For further information https://sites.google.com/view/eulva/home

Figure 7.6 Ulva seaweed sample prepared for the EULVA DNA project

Figure 7.7 Dr Luna van der Loos and co-researchers Ghent University Belgium, preparing to dive at Martins Haven.

In July a Swiss expedition called ‘Arvor’ on board research vessel *Mauritius* visited Skomer MCZ (Figure 7.8). The expedition team included young scientist from all around Europe with a broad range of interests including microplastics, plankton, seawater parameters and cetacean acoustic monitoring. The team were also experimenting with innovative equipment designs using solar and wind energy generated onboard. Mark and Kate joined the team for an interesting tour of the vessel.

Figure 7.8 Arvor research team on board research vessel *Mauritius* in North Haven

In September, Elin Down, a Swansea University undergraduate, helped complete seal survey work. Elin is analysing the Marloes Peninsula seal data 1992 to 2024 for her project work, supervised by Professor James Bull.

The second generation “Sea-Hives” supplied by David Francis from the Sea Hives project in 2018 continue to be deployed at the ocean monitoring site. These modular glass structures are intended to provide shelter to marine organisms and provide a foothold for

natural habitats to re-establish in damaged seabed areas (Figure 7.9). We were asked to test the effectiveness of the sea hives; we can confirm that they have been successfully colonised by a variety of marine organisms. This project is one of a number we have carried out over the years where there is no impact on the Skomer MCZ and where a minimal amount of effort is required on our behalf to collaborate in innovative work.

Figure 7.9 Sea-Hives at OMS site (photo Blaise Bullimore)

Local naturalist and micro-photographer Julian Cremona has been supplied with monthly plankton samples from Skomer MCZ and photographs of the species found have been incorporated into his website: planktonmilfordhaven.org – in the “Skomer and St Brides Bay” section (Figure 7.10).

Figure 7.10 Plankton species from Skomer MCZ (photo Julian Cremona)

7.6 Visiting organisations and groups

In 2024 NRW colleagues from both the Marine Management Area Team and the Waste Enforcement team visited to learn about the work that we do and enjoy a seal survey walk on the Marloes Peninsula.

7.7 Wider marine environmental initiatives

Mark represents NRW and the Skomer MCZ for the ‘Big Picture’, a JNCC led project involving government, non-government and academic organisations. The purpose of the Big Picture is to collaborate and develop the use of imagery and annotation techniques for marine images and video. Mark is chairman of the annotation software group and attended online meetings during 2024.

8. Science

All science monitoring and recording projects completed in the 2024 season are reported in detail in the **Skomer MCZ Project Status Report 2024/25 (NRW Evidence Report number 845)**, which is available via the NRW website Natural Resources Wales / Marine and coastal evidence reports . Summaries of these projects are provided below.

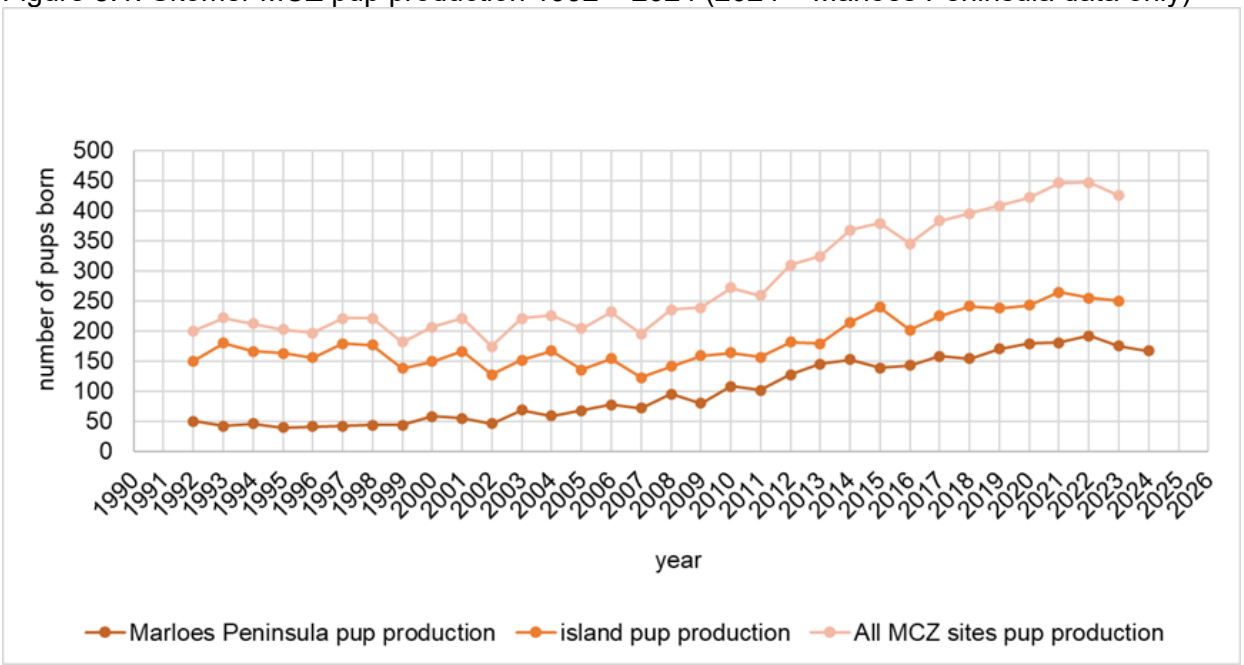
8.1 Biology

8.1.1 Monitoring Seals

In 2024 the Skomer island seal survey work was not contracted due to cuts in NRW funding. WTSWW Skomer Island staff reviewed the survey methods to test a scaled down methodology using cliff top views only (beach and cave access stopped). Sites on the mainland were monitored by the Skomer MCZ team.

In 2024 167 pups were recorded at Marloes Peninsula sites, this is a slight drop from that recorded in the last 5 years but remains within expected natural fluctuations. Results from Skomer island sites are unavailable, therefore a total for the Skomer MCZ is not possible. Since 2009 there has been a steady increase in pup production at both the island and Marloes Peninsula sites as shown in Figure 8.1.

Figure 8.1. Skomer MCZ pup production 1992 – 2024 (2024 – Marloes Peninsula data only)



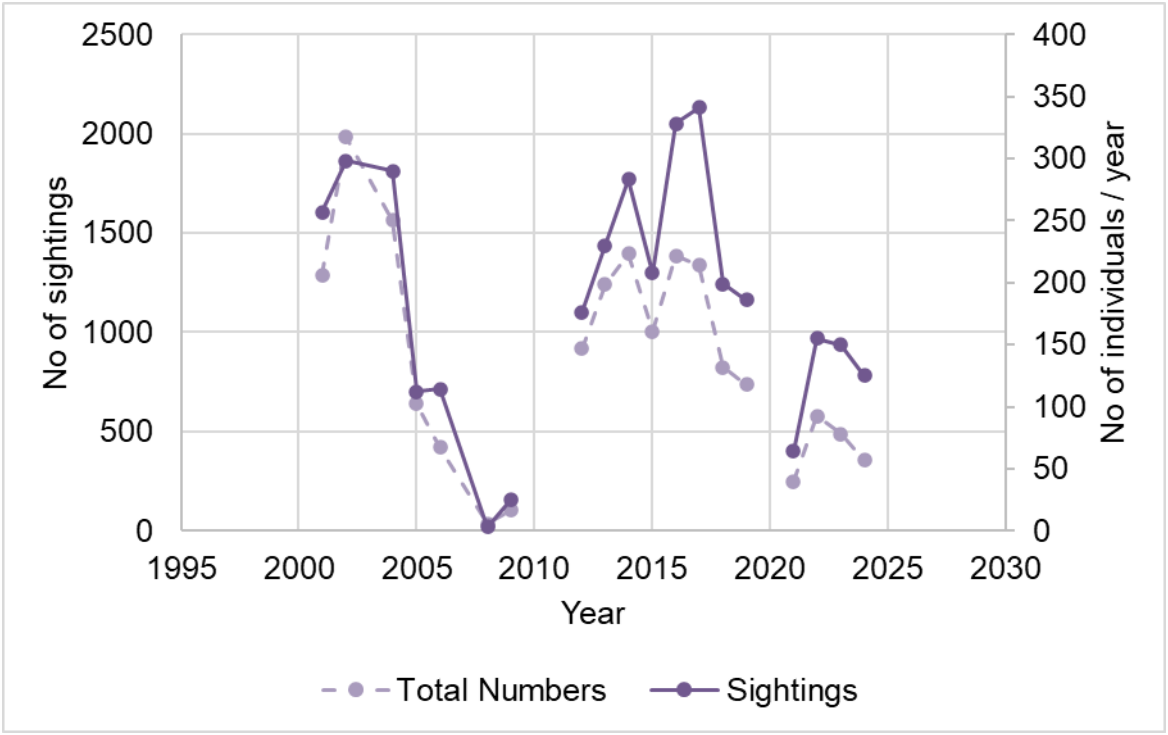
In 2024, pup survival through to moult was recorded as 80% for Marloes Peninsula sites, results from Skomer island sites are unavailable, a total for the Skomer MCZ is not possible. In the Skomer MCZ, pup survival from 1992 to 2023 fluctuated between 69% and 88%, with an average of 79%

8.1.2 Monitoring Cetaceans

Skomer MCZ staff collate all sightings of cetaceans collected by Skomer Island staff, Skomer MCZ staff and Dale Sailing boat crews. The effort is variable not just between years but also during the season which makes the data difficult to effort correct. Very few records were received from Dale Sailing staff in 2017 or 2018, records were received in 2019, 2023 and 2024, but none for 2020 - 2022. As several cetaceans are frequently seen together during the same sighting, total numbers of cetaceans reported are higher than total sightings reported.

The total numbers of harbour porpoise (*Phocoena phocoena*) sightings between 2001 and 2024 is shown in Figure 8.2.

Figure 8.2 Harbour porpoise sightings Skomer MCZ 2001 – 2024. (No recording occurred in 2010, 2011 and 2020).



Common dolphin (*Delphinus delphis*) uses the area infrequently, but they can appear in large numbers. In 2024 sightings were made by Skomer Island and Dale Sailing staff, there being 82 sightings with 859 individuals recorded.

In 2024 there was just one sighting of a Bottlenose dolphin (*Tursiops truncatus*) and no Risso's dolphin (*Grampus griseus*). A single sighting of a Minke Whale (*Balaenoptera acutorostrata)* was spotted by Island staff off Skomer Head in June.

8.1.3 General Species Recording

There are many species in the Skomer MCZ that do not have a dedicated monitoring project. However, it is important that species lists are maintained, particularly for phyla that are under-recorded or of particular conservation importance. Recording of species of principal importance as defined under Section 7 of the Environment (Wales) Act 2016 and

'Alien' invasive and non-native species (INNS) are just two examples. Records are entered into the JNCC-administered Marine Recorder database for access via the National Biodiversity Network Atlas on-line gateway. General recordings of unusual, rare, scarce or vagrant species are also maintained.

Two sunfish *Mola mola* was recorded in August 2024.

Crawfish *Palinurus elephas* is an Environment Act (Wales) 2016, Section 7 species of principal importance. From 2009 to 2024 it was recorded in low numbers in Skomer MCZ by staff and volunteers. All data is submitted to Crawfish survey | iRecord Crawfish are identified as a sensitive species , therefore site details can't be reported but distribution data is available within 20 km^2 areas NBN Atlas - UK's largest collection of biodiversity information

8.1.4 Monitoring Littoral Habitats / Communities

Littoral habitat and community surveys are completed in the Skomer MCZ using different methods at a range of sites as summarised in Table 8.1.

The MarClim project offers an opportunity to compare Skomer MCZ shores to the rest of the UK and contribute to the assessment of the effects of climate change on shore communities. Martins Haven, North Haven and South Haven were selected as suitable sites for the project

Viewpoint photos were also taken to provide long term records of shore condition.

Table 8.1 Summary of methods completed at each littoral site in 2024.

Site	Permanent Quadrats	Shore zone quadrats, Limpets, Barnacles	Lichen quadrats	MarClim	Shore clingfish
North Haven	No	No	No	Yes	Yes
South Haven	Yes	No	No	Yes	Yes
South Stream	Yes	Yes	Yes	No	No
The Lantern	Yes	Yes	Yes	No	No
The Wick	Yes	Yes	Yes	No	No
Double Cliff	Yes	Yes	No	No	No
Pig Stone	No	Yes	Yes	No	No
Wooltack	No	Yes	Yes	No	No
Martins Haven	No	Yes	Yes	Yes	Yes
Hopgang	No	No	Yes	No	No

In 2024 monitoring was only possible at 3 of the 7 sites due to bad weather over the spring tides. Data analysis in 2024 is therefore limited and not been completed for: whole community analysis, mean percentage of barnacles, limpet size and counts. Data analysis for the 2004 to 2023 results are detailed in the 2023 report (Burton *et al* 2024).

The barnacle species counts have been completed at the 3 MarClim Sites: Martins Haven, North Haven and South Haven. For the last 3 years barnacles species ratios on middle and lower shores have shown a shift from the cold water *Semibalanus balanoides* dominating to the *Cthalamus spp* usually found further south. This may be due to spring

sea temperatures affecting spat survival. The minimum sea temperatures in last 3 years were the highest on record since 2007, 9.1 ºC was the minimum recorded in March 2024 compared to an average of 7.9 ºC for 2000 to 2024.

8.1.5 Plankton Recording

Zooplankton samples continued to be taken at Skomer MCZ in 2024 using methods recommended following a review by Plymouth Marine Laboratory in 2014. Zooplankton sampling was completed alongside the collection of phytoplankton samples using the Water Environment Regulations methodology. This also included the collection of nutrient and chlorophyll samples.

Zooplankton identification was conducted by the Marine Biological Association (MBA) and data entered into the DASSH Pelagic Lifeforms Tool. The results from Skomer samples show how variable the abundances are between years and between species. Since 2010 210 taxa have been identified, and 98 taxa were identified in 2024.

Phytoplankton identification is currently being completed by CEFAS. The adoption of the WFD methodologies will allow results to be compared with samples all across the UK.

8.1.6 Monitoring Sponge Assemblages

In 2024 quadrats at all sponge monitoring transects were photographed.

Improvement in image quality and resolution has meant that more sponge entities have been recorded from 2009 onwards than in previous years. However, in 2012 and 2014 there was a noticeable drop in the numbers of sponges across all transects. In 2019 all sites decreased in abundance, despite good image quality, this lower number was still present in 2021. In 2022 a new digital camera with increased pixel resolution was used, the number of sponges seen increased in 2022 and it was noted that small entities could be confidently identified in the new images. In 2024 the image quality was again good, and it was noted that there was very little fine sediment on the rock on the day the photographs were taken.

Statistical analysis of what types of sponge (based on their morphology) make up the communities at Skomer shows similar results to previous years. The sponge assemblage at Thorn Rock is a “hot spot” for sponges within the Skomer MCZ. The community at Thorn Rock is quite dynamic in terms of total number of sponges visible but the overall community structure appears stable.

A full sponge species diversity survey was completed in 2023 and a total of 132 sponge species (42 of which have been named to genus level only) have now been recorded from the Skomer MCZ. A full survey report was completed in 2024 Skomer Marine Conservation Zone Sponge Diversity Survey 2023. The results include records from previous surveys conducted before 2003, when the first of the four-yearly full species surveys took place. Four species present in the Skomer MCZ are on the nationally rare and scarce marine benthic species list for Great Britain (Sanderson 1996) and several have only recently been described or have limited distribution in the British Isles.

8.1.7 Monitoring Pink Sea Fan Population

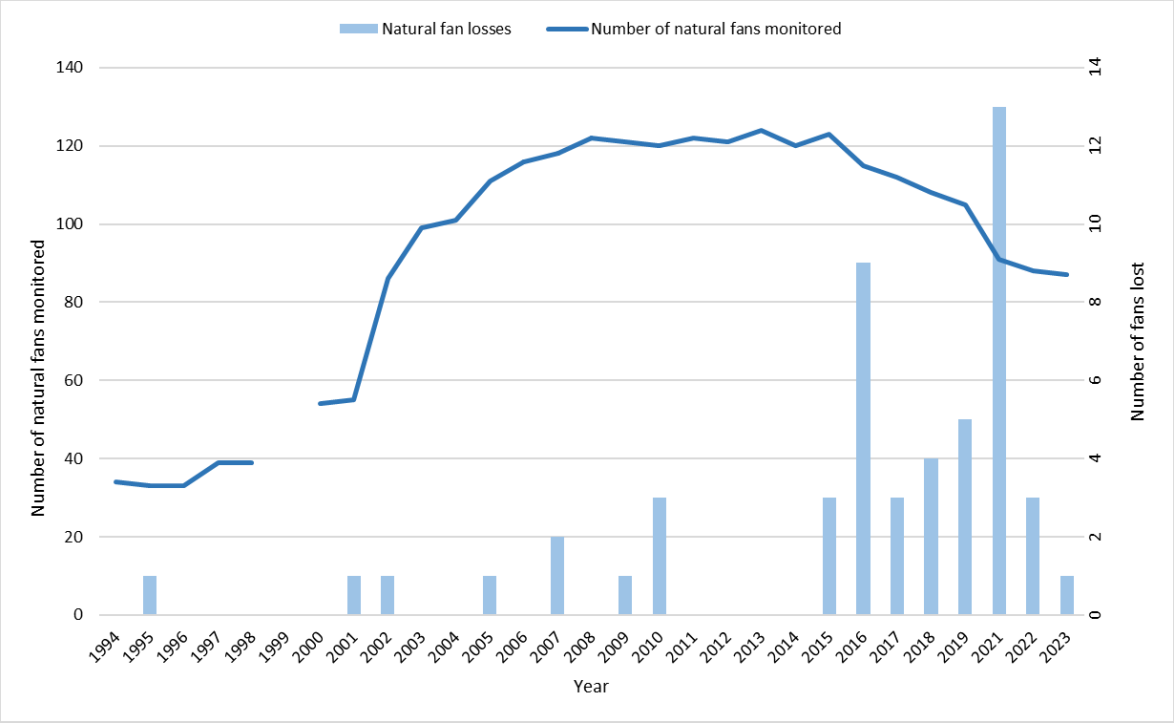
All sea fan monitoring sites were visited, except for South Middleholm, and individual colonies photographed in 2024.

In 2023, 1 fan were found missing, MDS2, South Middleholm was not dived in 2024 so this fan will need to be re-checked in 2025. In 2024 there were two further sea fans missing, RRK 1 and RRK15, these will be checked, and their status confirmed in 2025.

In 2023 one broken sea fan was found at Rye rocks recognisable as RRK16, it was attached using cable ties to the Lucy mast. It was still present in 2024 and moved to a better location, now attached to a piton. In 2024 a further sea fan at Rye rocks was found broken off, recognisable as RRK25, it was left lying alongside a cluster of other sea fans with the intention of returning to securing it to a ringbolt. The return visit was not possible so we hope to re-find it in 2025.

From 1994 new sea fan sites were mapped until there were 10 monitoring sites established by 2005, some sites were expanded until there was a peak 124 sea fans in the programme in 2013. A total of 50 losses of natural sea fans have been recorded throughout the period of the project, with 40 of these since 2015 (Figure 8.3). There have also been 6 losses of artificially attached fans.

Figure 8.3. Total number of natural sea fans monitored 1994 to 2023 and number of losses each year. (2020 omitted as no survey completed, 2024 data to be included when losses are confirmed in 2025) Note: artificially attached sea fans not included in these data.



Sea fan condition assessment methods were reviewed in 2021, when the full data set was revisited, to track the condition of each individual sea fan and to assess the overall condition, looking at levels of necrosis, epiphytes, damage, branch loss and entanglement

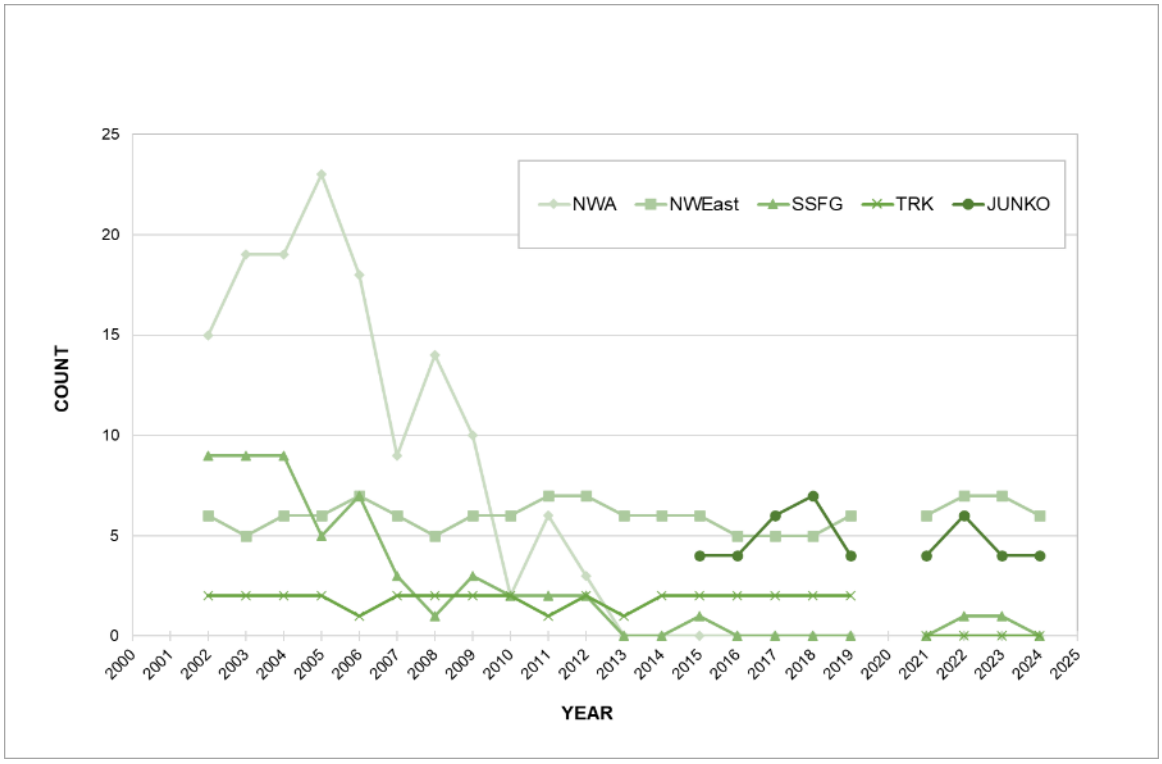
of catshark eggs. The condition assessment methods were applied to the 2024 photo data set and findings are detailed in the Skomer MCZ Project Status Report 2024/25.

8.1.8 Monitoring *Alcyonium glomeratum* Population

The abundance of *A. glomeratum* continues to decline at all monitoring sites except for North Wall East (NWEast) and Junko's reef (JUNKO), which have sizable colonies. North Wall Main (NWA), Rye Rocks (RRK), Thorn Rock (TRK) and Sandy Sea Fan Gully(SSFG) now have no visible colonies as shown in Figure 8.4.

The reason for this decline is unknown. There is no evidence of disease or physical damage at the monitoring sites and changes in environmental conditions are not thought to be significant enough to cause colony loss.

Figure 8.4 Number of quadrats with *A. glomeratum* present at Skomer MCZ sites 2002 – 2024: NWA = North Wall main, NWEast = North Wall east, SSFG = Sandy Sea fan gully, TRK = Thorn rock and JUNKO = Junko's reef.



8.1.9 Monitoring Cup Coral Populations

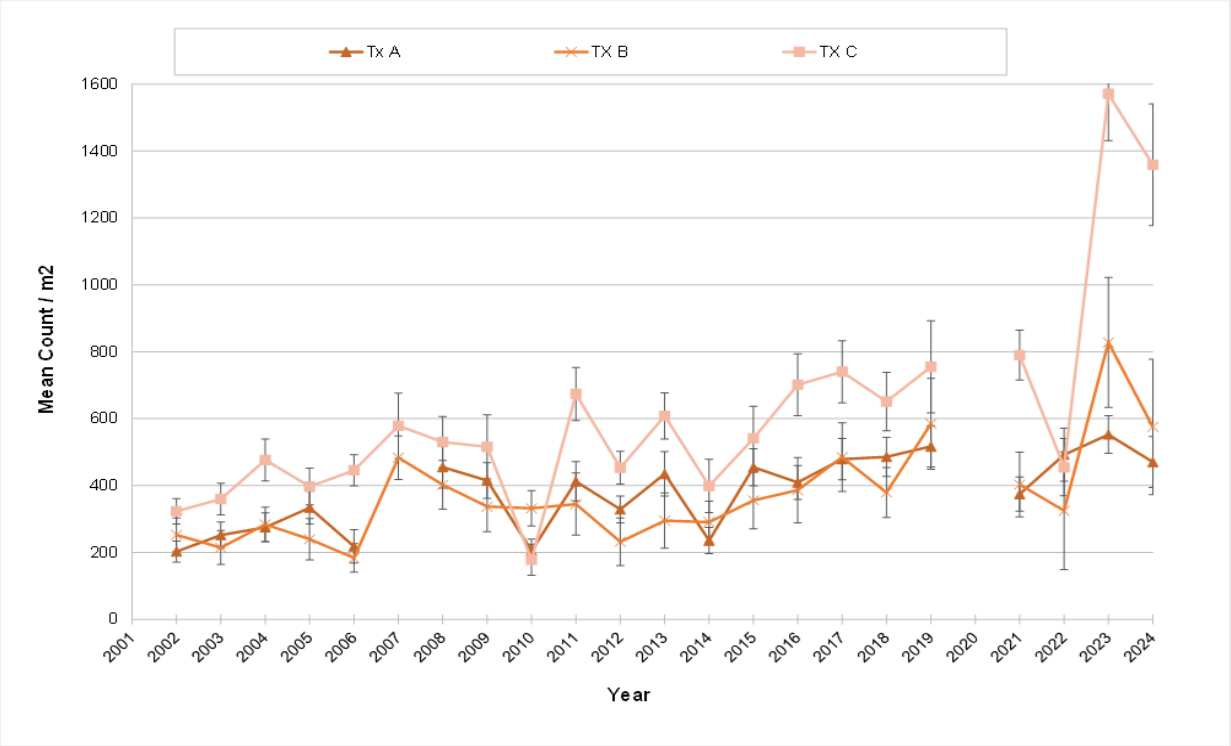
Quadrats were photographed for both Devonshire cup corals (*Caryophyllia smithii*) and the Lusitanian scarlet and gold cup coral (*Balanophyllia regia*).

Balanophyllia regia

The average number/m^2 of *B. regia* has fluctuated at the Wick transects A, B and C. The variability is most likely to be caused by variations in the covering of silt across the site from year to year. Deep silt can hide individual cup corals and occasionally cause very poor photographic conditions (e.g. 2010). In 2023 there was very little silt and the cup

corals were particularly visible, even very tiny ones could be seen, which might explain why counts were their highest for each of the transects. Transect C continued to have high density counts in 2024, as shown in Figure 8.5.

Figure 8.5 *Balanophyllia regia* abundance per metre^2 at Transects A, B and C at the Wick 2002 to 2024



At Thorn Rock five photo quadrats are taken in the Rock Mill and further photo quadrats are taken along two short transects. The average count /m^2 of *B. regia* has fluctuated at the Rock Mill, variability is most likely due to dense covering of algae obscuring the corals and thick coverings of silt at the site from time to time. Years with data missing are due to poor photographic conditions. An increase in numbers has been recorded over the last ten years when high photo quality was obtained with clear images of the corals. The average count /m^2 of *B. regia* at the transects is lower than that at Rock Mill. Further data is needed to monitor trends.

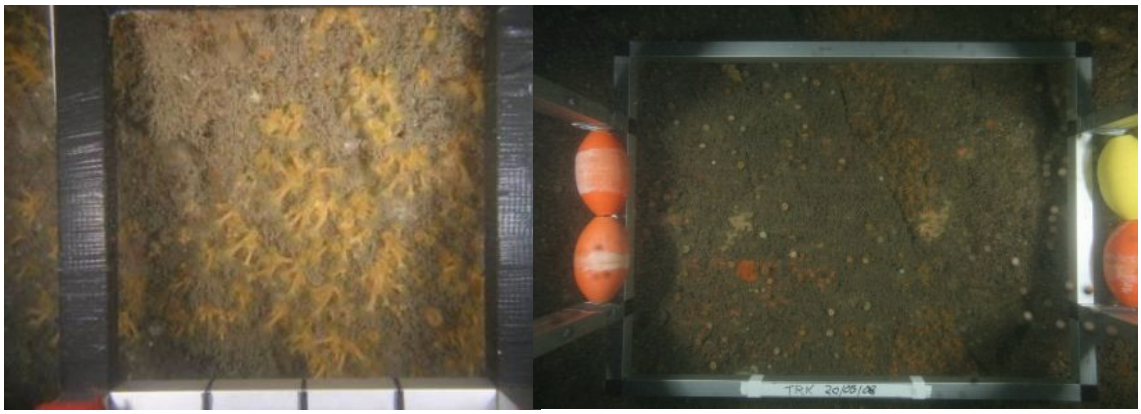
Caryophyllia smithii

The average number/m^2 of *C. smithii* has fluctuated at each of the Thorn Rock sites. This may be due to variable levels of surface sediment affecting the actual numbers visible during recording. The Windy Gully (WG) quadrats show significantly higher counts compared to the other sites. This is most likely due to it being the only vertical wall site where less surface sediment accumulates. The other three sites are all on horizontal rock.

8.1.10 Monitoring *Parazoanthus axinellae*

All monitoring sites were visited and all yellow trumpet anemone, *P. axinellae* colonies were still present. Photos are taken to assess both colony area and density (Figure 8.6).

Figure 8.6 Density method: 20 x 20cm framer and Colony area method: 50 x 70cm framer



The colony area and the mean density of *P. axinellae* polyps (numbers of polyps /m^2) at all sites has shown fluctuations year to year, but overall are stable.

The frequency of *P. axinellae* at all sites has shown fluctuations year to year, but overall show a stable population. The mean frequency of *P.axinellae* at Thorn Rock and Sandy Seafan Gully transects showed an increase from 2023 to 2024 (Figure 8.7 and 8.8).

Figure 8.7 Mean frequency of *Parazoanthus axinellae* 2002 – 2024 at Thorn Rock (TRK) transects.

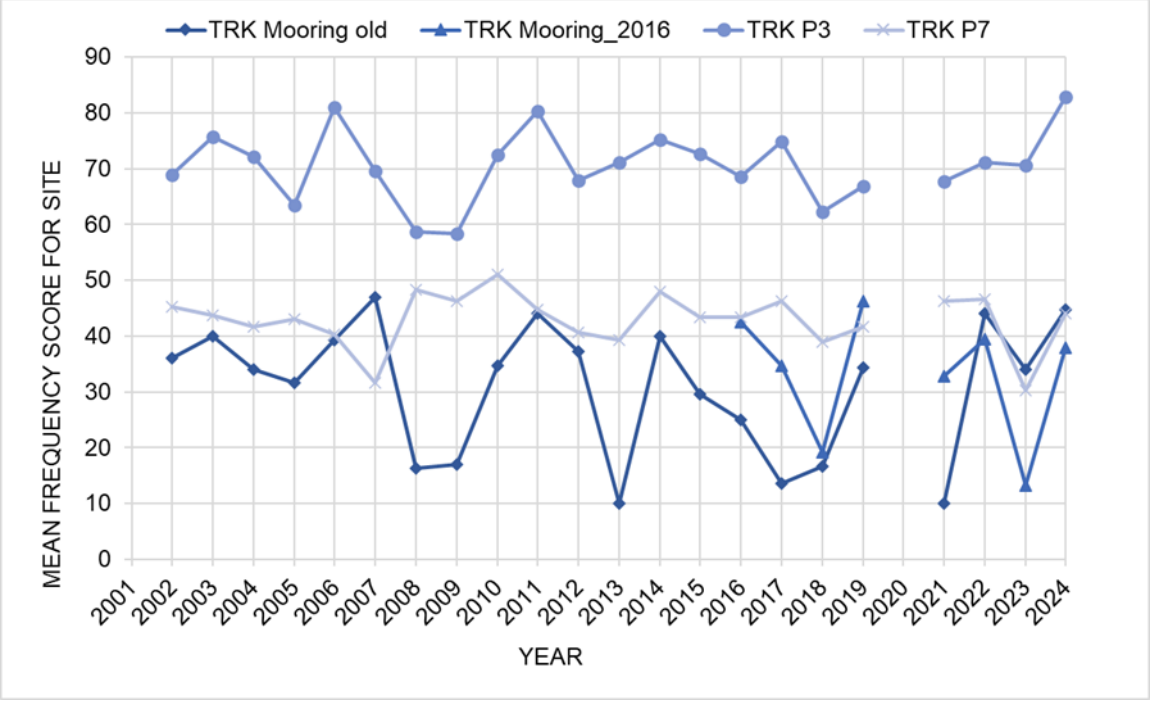
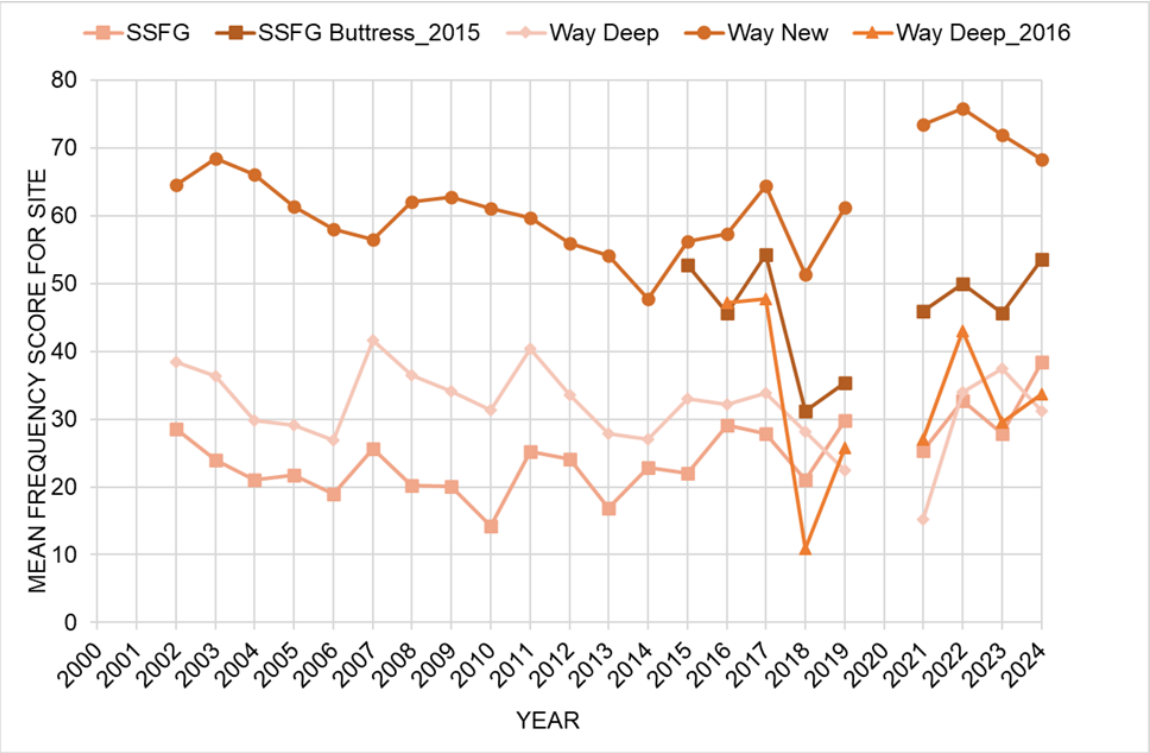


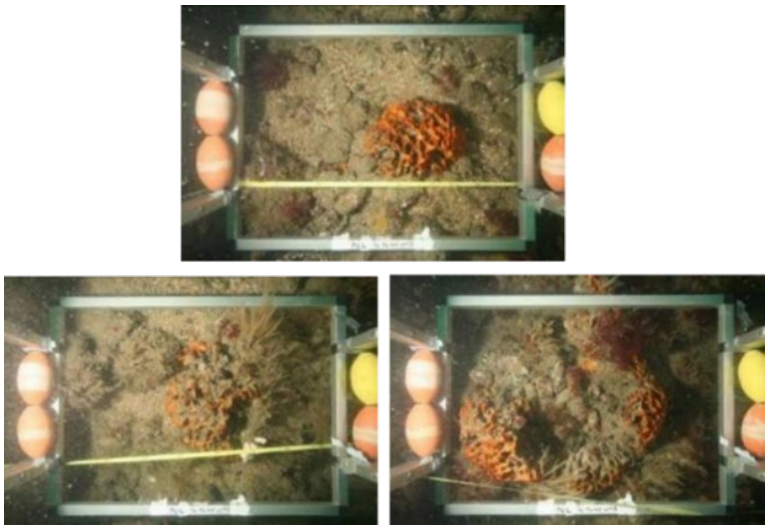
Figure 8.8 Mean frequency of *Parazoanthus axinellae* 2002 – 2024. Waybench (Way Deep, Way New) and Sandy Sea Fan Gully (SSFG, SSFG Buttress) transects.



8.1.11 Monitoring *Pentapora foliacea* Population

In 2024 all *Pentapora* sites were visited and photographed. The classification system developed in 2006 and revised in 2010 has been used to characterise the population at Skomer, see Figure 8.9.

Figure 8.9. *Pentapora foliacea* - examples of Class 4 (above) and Class 5b colonies (below).

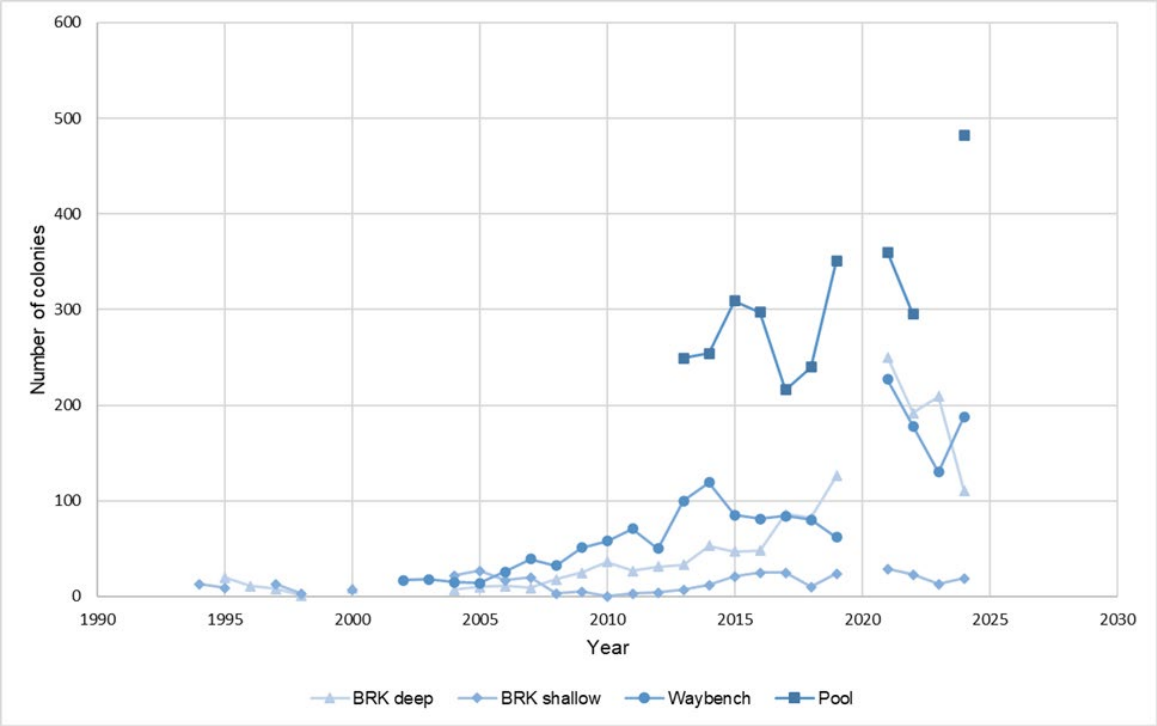


By comparing numbers of Class 2-4 colonies, which represent healthy growing colonies, with Class 5 colonies, which represent those with deterioration from either natural or anthropogenic factors, it can be demonstrated that there are more Class 2-4 colonies than

Class 5, which might indicate a population with more healthy growing colonies than degraded colonies. However, without comparing this ratio to a control area where there are no anthropogenic factors, no definite conclusion can be made.

Waybench, Pool and Bernies Rock are the largest sites surveyed, the total number of colonies (all classes) recorded in each survey year is shown in Figure 8.10. A record high number of colonies were recorded at the Pool site in 2024, 56% were the small 1 and 2 size classes showing good recruitment. It will be interesting to see if these small colonies grow to larger sizes.

Figure 8.10 Total number of *Pentapora foliacea* colonies (all classes) recorded for each year surveyed at Waybench, Pool and Bernies Rock (BRK deep and BRK shallow).



8.1.11 Monitoring Algae Communities

In 2024 methods were tested to monitor kelp species abundance and distribution and to monitor kelp associated fish, echinoderm and crustacean communities. The use of Remote Underwater Video System (RUVS) was also explored to capture visual records of algae communities condition.

The survey was divided into three sections:

A. Kelp habitats

This method is completed in two depth zones for kelp forest and kelp park and requires a good level of algae indentification skills. Counts are completed in 1m^2 quadrats along 10m length transect line.

1. Number of adult kelp plants (=/> 50cm height), total for each species)

2. Number of juvenile kelp plants (< 50cm height), total for each species
3. Numbers of crustacean, echinoderm and fish, total for each species
4. Percentage cover of foliose algae and of encrusting algae.
5. List of dominant red and brown algae species.

B. Associated Kelp communities – fish, echinoderms and crustaceans

This method has been designed for use with volunteer divers and follows the methods used for territorial fish population and echinoderm populations surveys. It is completed in the two depth zones as for the kelp habitat. Counts are completed 1m either side (2m width) along a 30m transect tape.

1. Numbers of crustacean, echinoderm and fish, total for each species
2. Measured diameter of common urchin *Echinus esculentus*

C. Algae communities condition – visual records

A Remote Underwater Video System (RUVS) is used to record the condition of the kelp and algae habitat and the presence of mobile species and to obtain a visual condition assessment of the algae community at a selection of sites.

The methods worked well, further data will be gathered in 2025, the data analysed and a report completed.

8.2 Meteorology/Oceanography

8.2.1 Recording Meteorological Factors

Weather data at Skomer MCZ continues to be collected via an automatic weather station, which is compatible with other Environmental Change Network sites across Wales (Table 8.2).

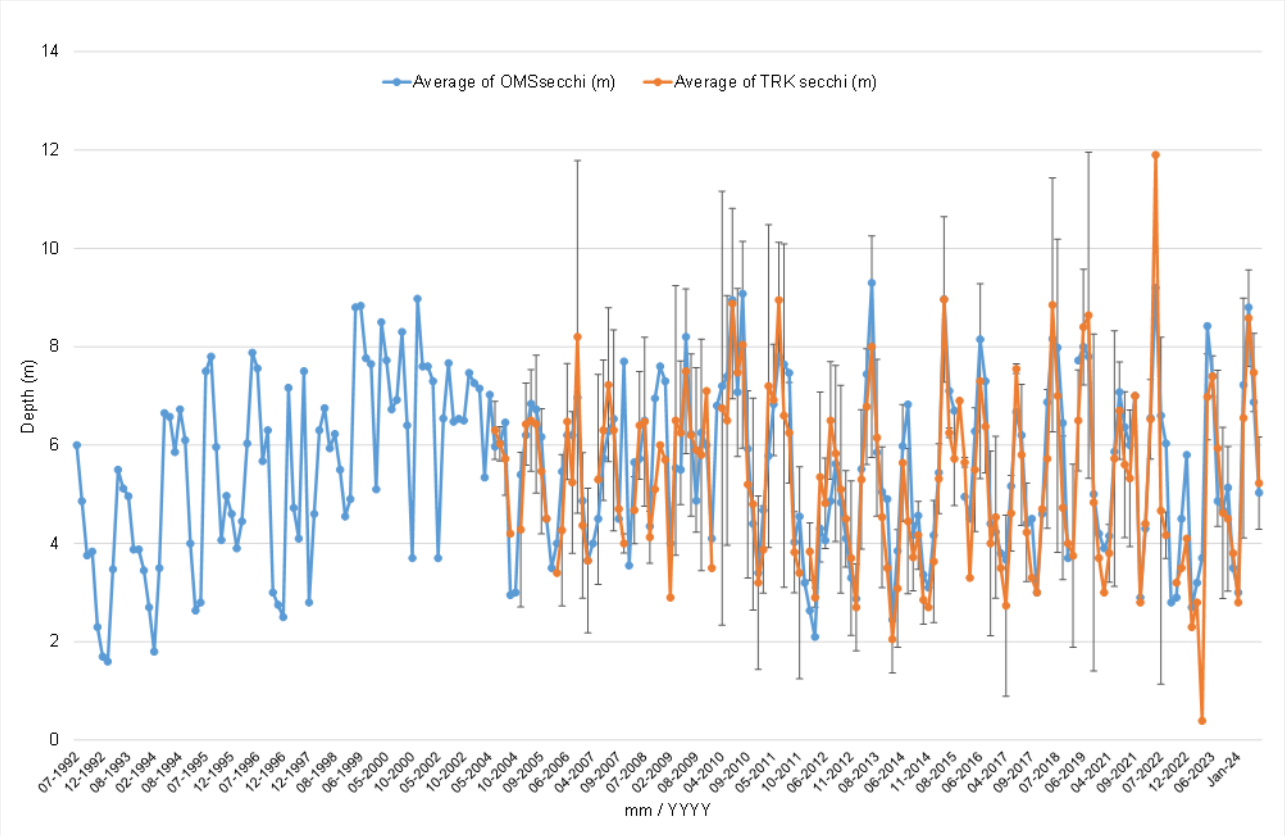
Table 8.2 The highs and lows of temperature and wind recorded in 2024:

Maximum temperature (ºC)	23.3 (August)
Minimum temperature (ºC)	-0.4 (January)
Annual maximum gust (knots)	101 mph (December)
Direction of maximum gust (degrees)	288 (Westerly)

8.2.2 Monitoring Seawater Turbidity / Suspended Sediment

Seawater turbidity was measured using a Secchi disc weekly between May to October at Thorn Rock (TRK) and Ocean Monitoring Site (OMS). Turbidity at Skomer MCZ in 2024 was average when compared with previous years. TRK and OMS follow a very similar trend over time suggesting that the waters on the north and south side of the island are well mixed, see Figure 8.11.

Figure 8.11 Skomer MCZ summary of monthly mean Secchi disc data (m) 1992 – 2024 with 95% standard error bars.



8.2.3 Monitoring Seabed Sedimentation

Seabed sedimentation samples were collected at the Ocean Monitoring Site (OMS) and Thorn Rock (TRK) sites using passive sediment traps. Analysis of the samples is carried out by NRW laboratories for dry weight, organic content, grainsize analysis and metal content (Figure 8.12). 2024 samples are being analysed by the NRW laboratory and this data will be available in 2025.

Figure 8.12 Skomer MCZ sediment trap sample total sediment, particle size analysis and organic content analysis at OMS and TRK sites combined 1994 to 2023

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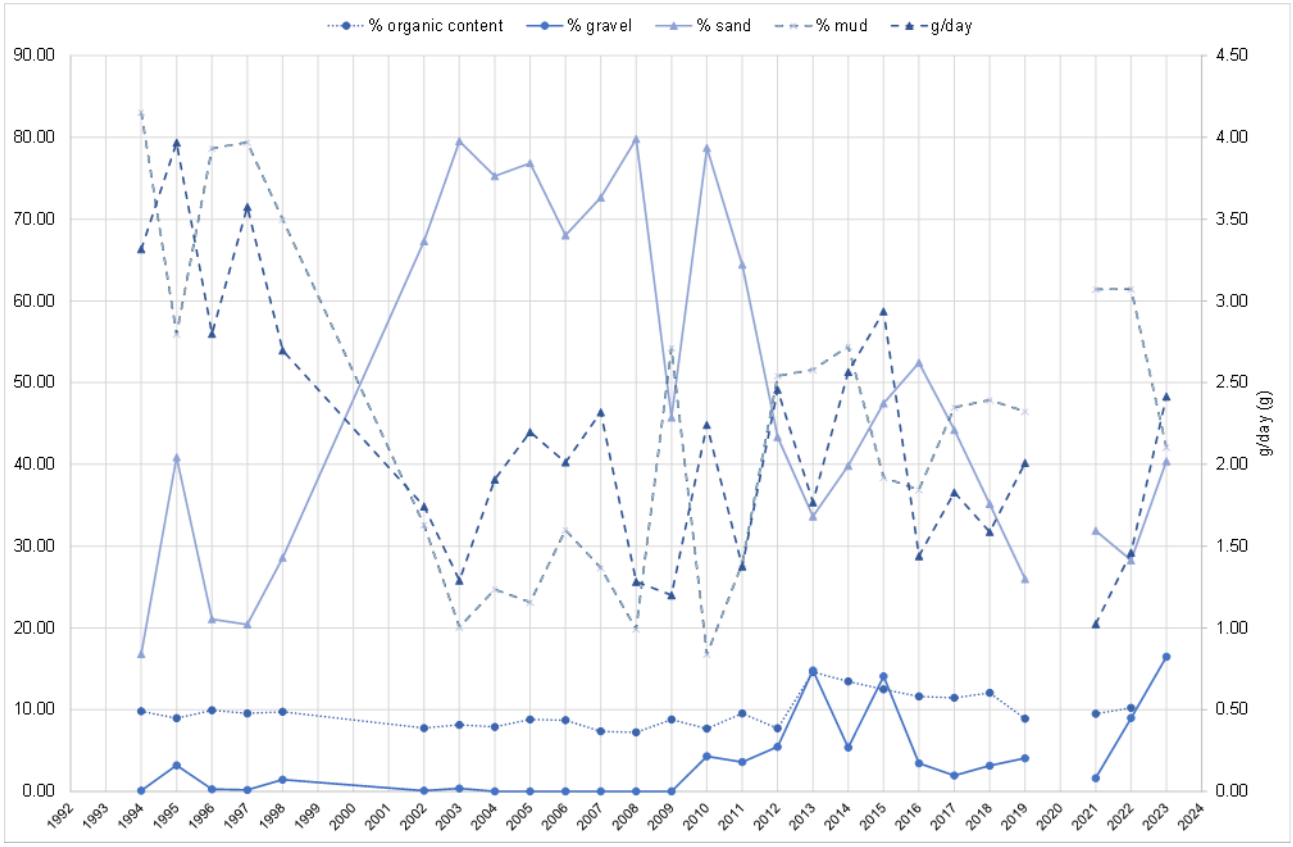


In general mud-sized particles have increased as a proportion of the total sediment since 2009, whereas the proportion of sand has reduced.

8.2.4 Recording Seawater Temperature

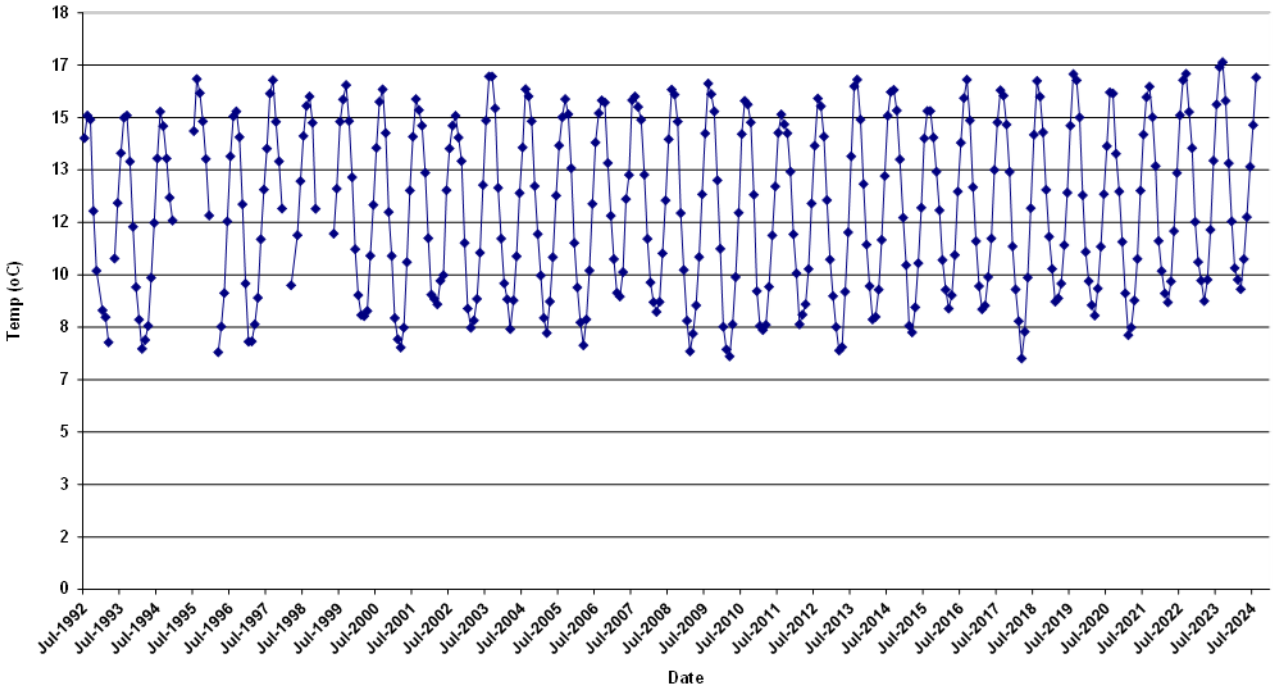
Seawater temperature data was collected from an automatic logger located at 19m below chart datum at the Ocean Monitoring Site (OMS) and from vertical temperature and salinity profiles carried out from surface to near seabed at the same time as plankton sampling.

A summary of the seabed temperatures for 1992 to July 2024 from the logger at 19 m below chart datum is shown in Figure 8.13. The rest of the 2024 data will be added to the dataset when the logger is retrieved for downloading in April 2025.

Seawater minimum temperatures are recorded in March, the minimum average for 2000 to 2024 is 7.9 ºC, ranging from the lowest of 6.6ºC in 2016 to the highest of 9.1ºC in March 2024 (1.2ºC above the average). The mild winter in 2023-24 follows mild winters in both 2021-22 and 2022-23. The maximum average seawater temperature for 2000 to 2023 is 16.5 ºC ranging from the lowest 15.6 ºC in 2002 and the highest of 17.5 ºC in 2023.

Monthly means have been calculated from seabed temperature but substituted with the vertical profile seabed temperature data where logger data were absent.

Figure 8.13 Skomer MCZ summary of monthly mean seabed temperature July 1992 – July 2024.



8.3 Data handling developments

As a remote site with very poor internet connection at Martins Haven, all our documents, data and images are stored on site, but with back-ups made regularly to portable hard drive for storage off-site.

Skomer MCZ reports continue to be available via the NRW website, Natural Resources Wales / Marine and coastal evidence reports.

8.4 Other work

As team members of the Marine Monitoring, Assessment and Reporting team (MMART), Skomer MCZ staff continue to support the work of the NRW marine monitoring programme, especially where it is most efficient logistically for us to carry out the work or where the Skomer MCZ staff have the necessary skills or equipment. In 2024 this included:

- WFD monthly water sampling at Skomer site and Pickleridge (Dale) lagoon site.
- Mark continued to service a number of temperature loggers around the Pembrokeshire coast, including shore and lagoon sites;
- Jen provided boat support for bird counting work at Stackpole to support NRW's Senior Reserve Manager, Paul Culyer.
- The whole team has continued to fulfil NRW's commitment to the UK-wide MarClim project, carrying out shore surveys throughout Pembrokeshire, including on Skokholm Island;

- In August Julian Woodman, NRW terrestrial species specialist, visited to survey shore dock (Figure 8.14). Shore dock is a species conservation feature of Pembrokeshire Marine SAC and currently Watery Bay located on the south Marloes peninsula is the only site where it is found in Wales. Kate and Jen supported the survey providing boat access to the shore. A healthy crop of shore dock with flowering plants were recorded.

Figure 8.14 Watery Bay Shore Dock survey

- In September Jen joined other NRW Marine Monitoring team members to completed the WFD fish survey in the river Teifi.
- In September our team along other NRW Marine Monitoring team members completed the Pembrokeshire SAC Milford Haven sediment infauna grab survey. We spent a day setting up *Pedryn* (the monitoring team's survey RIB usually based in North Wales) for its first outing to complete a grab survey. It was a challenge to fit the all the equipment on board but after its first day of operations we had a good routine established (Figure 8.15).

Figure 8.15 Milford Haven sediment infauna grab survey on board *Pedryn*

- In December 2024 the whole team completed all the SAC lagoon sampling at Pembrokeshire sites: Pickleridge (Dale), Neyland and Carew lagoons.

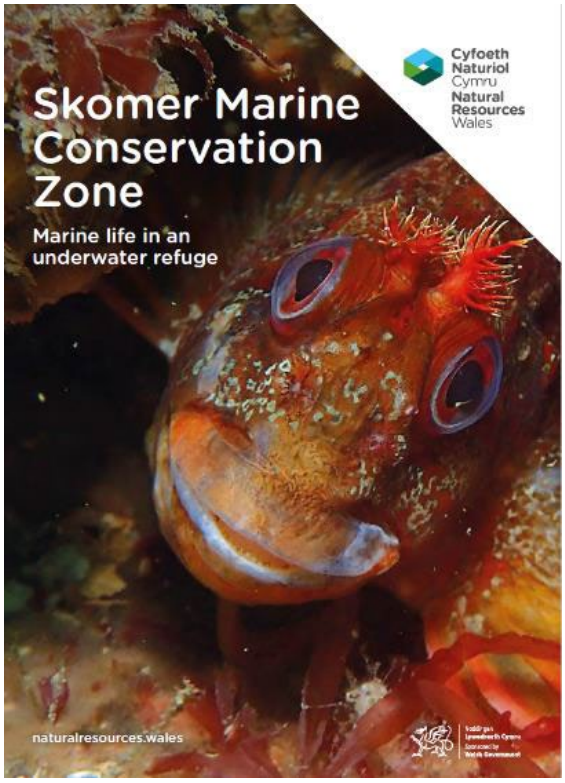
9. Education and Interpretation

9.1 Fisherman's Cottage Skomer MCZ Exhibition

The Skomer MCZ exhibition room at Martins Haven was once again opened to the public in 2024. In addition to the permanent displays, temporary posters are displayed on the notice boards and the booklet and leaflet dispensers are kept full. The Skomer MCZ booklet and seal watching booklet continue to be very popular with the public. Thanks again to WTSWW staff at Lockley Lodge for opening the exhibition centre when Skomer MCZ staff are away from the site.

The Skomer MCZ booklet was revised with some new images and text changes. The new edition was printed in autumn, so supplies are ready for distribution when the exhibition room opens in 2025.

Figure 9.1 Skomer MCZ booklet new edition



9.2 Talks and Presentations

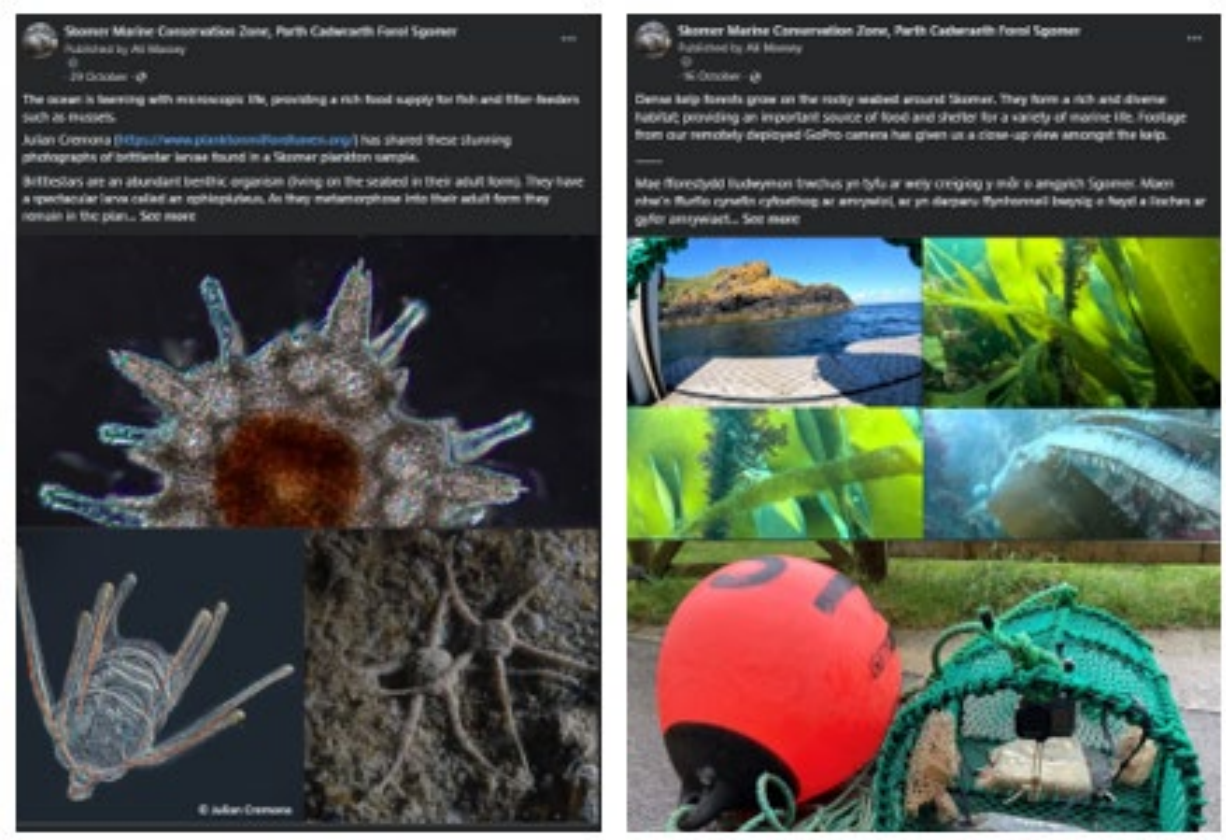
Mark provided a talk about the Skomer MCZ to both Spring and Summer Marine camps held at Dale Fort Field Centre. He additionally gave talks to visiting universities at Dale Fort.

At the Milford Haven Festival of the Sea March 2025, Kate and Ali along with NRW marine colleagues hosted a stall with activities for public participation to raise awareness of our marine work. A series of talks were held in the Torch Theatre where Mark gave a presentation on our work.

9.3 Media

Skomer MCZ team continue to work with the NRW's Communications Team. Staff posted various articles on NRW's internal social medium, "Yammer", and Ali has been regularly posting on the Skomer MCZ's Facebook page, including topics such as pink sea fan monitoring, kelp forest recording, long-term photo monitoring and visitor information on seal watching.

Figure 9.2 Example social media posts



10. Acknowledgements

Skomer MCZ staff wish to thank all those who have supported our work or contributed directly to it over the past year.

Special thanks to:

- Members of the Advisory Committee
- All of our kelp communities project diving volunteers and dive charter skippers
- Skomer Island NNR Warden, Leighton Newman, Cerys Aston and the rest of the Skomer Island team
- Phil Newman, Blaise Bullimore, Ross Bullimore, Francis Bunker, Jon Moore, James Perrins, Becky Tooby, Kaila Wheatley for fieldwork support
- The Dale Sailing crews from *Dale Queen, Dale Princess, Wave Dancer and Helen Clare*
- Lockley Lodge WTSWW staff for regularly opening the MCZ visitor centre
- Neptune's Army of Rubbish Collectors for helping to keep the Skomer MCZ (and indeed the waters of Pembrokeshire) less full of rubbish

With apologies to anyone missing from the list above.

Appendix 1. Investigating connectivity in the Pink Sea Fan to assess the MPA Network.

University of Exeter

Investigating connectivity in the Pink Sea Fan to assess the MPA network

Molecular ecology and evolution group (MEEG), Faculty of Health and Lifesciences, University of Exeter - Kalia Wheatley Kornblum; Dr Peter Robins (Bangor); Prof Dr Jamie Stevens (Exeter)

Background

The Pink Sea Fan (*Eunicella verrucosa*) is a Gorgonian cold-water octocoral with a distribution ranging from the north of Ireland to the Canary Islands. This species is nationally protected and holds significant conservation importance. In 1996, the International Union for Conservation of Nature (IUCN) assessed *E. verrucosa* as globally vulnerable, noting that its populations are severely fragmented and mature individuals are declining. This decline and fragmentation are observed throughout its range but are especially pronounced in edge populations.

Previous studies using microsatellite and SNP analyses have shown that the pink sea fan exhibits low levels of overall species differentiation. Whole genome sequencing has become a powerful tool for understanding fine-scale connectivity patterns and local genetic diversity.

By combining genetic data with particle tracking, we aim to identify crucial populations for maintaining gene flow, which should be prioritized for conservation. Due to its long generation time, slow growth rates, and fragility, the pink sea fan serves as an excellent model organism for assessing Marine Protected Area (MPA) networks across Europe.

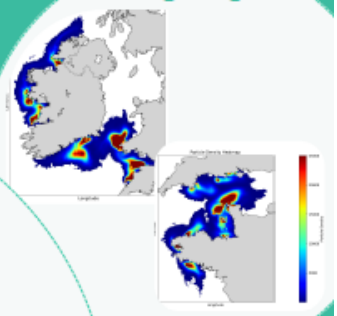
Objectives

Our research seeks to evaluate the current effectiveness of the MPA network in preserving connectivity within pink sea fan populations. By integrating genetic insights, biological data, and ocean dynamic models, we aim to provide valuable information for the conservation of this remarkable species and the broader preservation of marine biodiversity in the UK and beyond.

Genomics

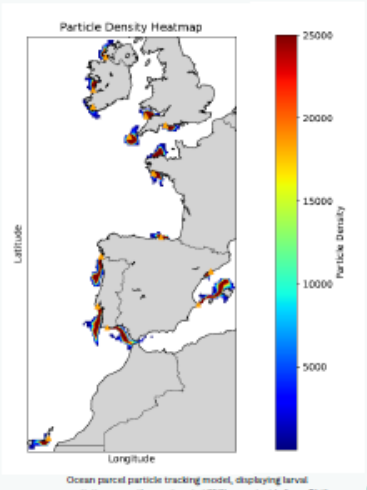
PCA plotting WGS 20x coverage samples across 14 locations.

Range edges



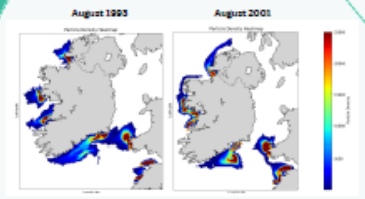
Larval connectivity at range edges, 15 days, August 2021.

Larval connectivity



Ocean parcel particle tracking model, displaying larval connectivity across the range using 250km centroids from Gbif distributions, 15 days, August 2021.

Temporal variation



Larval dispersal temporal patterns of connectivity temporal variation.

Conclusions

- Genetic connectivity shows a distinct cline, with a break in the Bay of Biscay
- Current MPAs do not cover crucial points of connectivity
- Range edges are not limited by larval dispersal
- Temporal patterns of larval connectivity display high degrees of variation

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Photos by Kalia Wheatley Kornblum

Natural England · Cyfoeth Naturiol Cymru Natural Resources Wales · Horniman Museum & Gardens · Alderney Wildlife Trust · Jersey Marine Conservation · Prifysgol Bangor University · SMMA

Data Archive Appendix

No data outputs were produced as part of this project.

The data archive contains: [Delete and / or add to A-E as appropriate. A full list of data layers can be documented if required]

The final report in Microsoft Word and Adobe PDF formats.

Further copies of this report are available from library@cyfoethnaturiolcymru.gov.uk