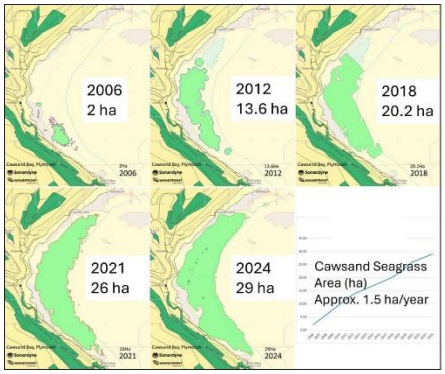
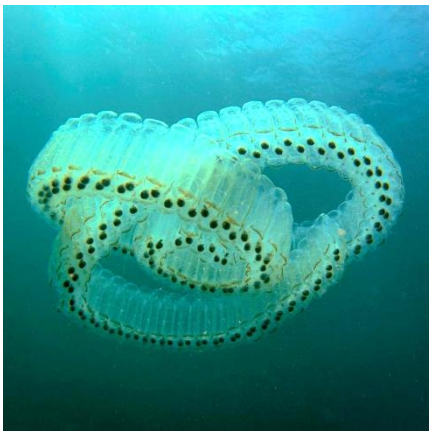
South-West Marine Ecosystems - The State of South-West Seas in 2024 Report

A collation of observations made through the year from monitoring studies, harvested from social media, publications etc. and recorded by the editors of chapters.



Seagrass showed continued expansion. Here, the *Zostera marina* bed in Cawsand Bay, Plymouth Sound. 2006-2018 – diver surveys; 2021 & 2024 – sonar surveys. Image: Sonardyne/Peter Holt.



Salps were exceptionally abundant in places during 2024 especially in south Cornwall. Here, a Spiral Salp *Pegea confoederata* at Lundy in mid-August. Image: Rollin Verlinde.

Waves of maerl in St Austell Bay. Surveys included by drop down video and divers. The results of surveys significantly increased the known extent of maerl. Image: Matt Slater

No additional non-native species were reported but some established ones extending range and abundance. Here, a high settlement of Pacific Oysters at Loe Beach , Carrick Roads in July. Image: Chris Sharp.

Species new to science described from the south-west in 2024. *Arabella ampulliformis*: collected at Lundy in 2022. Image: Teresa Darbyshire. *Pleurobranchia brittanica* from off Start Point. Image: Ross Bullimore/Cefas.

Habitat enhancement – a sculptured reef block incorporated into the groynes at Hengistbury Head - one of several projects using 'Marinecrete'. Image: Alice Hall

Edited by Keith Hiscock and Bob Earll
Lead chapter editors:
Tim Smyth; Bob Earll; Angus Atkinson and Jeanette Sanders; Keith Hiscock; Simon Thomas, Douglas Herdson and Bob Earll; Alex Banks; Sue Sayer; Duncan Jones, Dan Jarvis, Joe Dennett and Rebecca Allen; Libby West; Carli Cocciardi; Eleanor Ward; Mae Van Loef; Dan Barrios-O'Neill; Rachel Yates

South-West Marine Ecosystems - The State of South-West Seas in 2024

South-West Marine Ecosystems - The State of South-West Seas in 2024

Contents

1. The South-West Marine Ecosystems Model:

Building Social Capital to produce an Annual State of South-West Seas Report

Bob Earll (bob@bobearll.co.uk)

The aim of the SWME model is to enable and produce an annual report on the state of south-west seas and build the social capital among organisations, networks and individuals active within this region who are involved in research, management and recovery of the marine environment. Each year SWME provides a communications platform including webinars, a YouTube channel, an annual conference, an annual report and wider publicity that enables this community to share the changes they have recorded.

The SWME Model (Version 3) is accessible via this link: https://swmecosystems.co.uk/swme-organisation

The key points of the South-West Ecosystems Model (SWME) are set out below:

- **Annual** The programme of communication runs on an annual cycle to report change and the state of south-west marine ecosystems in a timely way to influence research, management and recovery.
- **Communication: Meetings** Through conferences, webinars and the digital media including videos.
- **Communication: Reporting - State of the South-West Marine Ecosystems** The reports cover a number of thematic topics on natural systems: oceanography, plankton, seabed and seashore, fish, seal, marine and coastal birds, cetaceans, and management thematic topics: spatial management, MPAs, fisheries, water quality and plastics pollution.
- A**udience** Citizen scientists, scientists - researchers, managers & policy advisors, organisations and the wider public.
- **Regional scale & resonance** Covering the Celtic Sea & English Channel and adjacent countries, achieving a level of granularity that is not achieved at a larger national scale and having a relevance and resonance with the target audiences.
- **Social capital, organisation, partnership & collaboration** Building social capital through meetings that enable greater co-operation and collaboration through an informal partnership. To provide a network for cascading information and raising awareness.
- **Voluntary – Finance** Relying on the voluntary input of the south-west marine community to build continuity and certainty which is not dependent on fund raising.
- **Freedom of decision making** SWME has no official status or affiliation with any research, management or policy programme or with any organisations. This gives the steering committee the freedom to act as it sees fit in relation to any year's programme.

2. Introduction to the 2024 report

Keith Hiscock (khis@mba.ac.uk) **and Bob Earll** (bob@bobearll.co.uk)

This is the eleventh in the series of annual reports on the observations of species, ecology ecosystems and management for a specific year. For reporting on 2024, we benefitted from the development of 'Communities of Practice', bringing together experienced and active individuals in many of the topics. We held a strong series of webinars during early 2025 hosted by the Marine Biological Association, Exeter University (Penrhyn campus), University of Plymouth, the MMO and Devon Maritime Forum and from a conference at the Plymouth Marine Laboratory in May 2025. It remained, however, for the editors of separate chapters of this report to draw-together events and news through the year, helped my monthly collations of observations by Paul Naylor. The webinars and conference presentations can be seen on the SWME YouTube Channel: https://www.youtube.com/channel/UCojA2OkFX0fM-oq7bVTofhQ .

This report can be cited (but depending on the house style of where it is being cited) as:

Hiscock, K. & Earll, R. (eds) 2025. South-west Marine Ecosystems Report for 2024. *Marine Biological Association of the UK, Plymouth.* DOI: https://doi.org/10.17031/WD2D-T194

We encourage you to cite the specific chapter and the editor of that chapter.

Thanks to the chapter editors and all the people who have contributed their observations, views and images. It is a fantastic collaboration.

The development of the SWME report

The report for 2024 continues the expanded number of chapters and the ever-stronger focus on conclusions that tell something of the 'State of South-West Seas'. The chapters often reflect the contributions of hundreds of recorders across the south-west many of whom have gone the extra mile to record and photograph and report their sightings. SWME demonstrates how citizen and professional science can work effectively together on many issues. Hopefully the SWME report will provide another source of feedback that encourages more people to take part in the overall effort. We now have a contact list for SWME of over 1250 people who will receive the links to this report. You can sign up on http://swmecosystems.co.uk/.

The separate chapters occupy different lengths and have different approaches to how information is presented. We have tightened the editorial guidance to chapter editors to try to make chapter lengths more similar and more readable: especially to provide a narrative that can be widely understood and passed-on. The character of each chapter relies greatly on the type of information being collected and the history of study for the topic – so expect some unevenness.

During 2024, there was some discussion about how to describe what we are reporting including some suggestion that SWME is 'monitoring on the cheap'. SWME reports are not monitoring or surveillance reports (although where such reports exist, they will likely be cited). What is especially reported is 'evidence' – observations that contribute to understanding change and the reasons for change.

Making the links and interpreting change

Preparing the annual report makes the report editors especially think about how best to present observations and actions in a way that can inform and influence. We have continued to look for 'indicators' that summarize an often-complicated picture. It's not easy and there are many flaws in converting observations and effectiveness of actions into measurements that are repeatable. Many of the observations and measurements reported give clues or conclusions on the 'state of south-west seas'. Making links between different aspects of reporting (for instance management measures and change in species abundances or oceanography (especially now rising temperatures)

and increased/decreased abundance of species continues to be difficult and likely will be for some time to come. Often, it is looking for historical precedents, knowing about life history traits of species and understanding that other factors (such as ocean currents) may be relevant that may help to explain change.

Marine heat waves have especially featured in interest from the media during 2024. There will be mention of seawater temperatures in the 'Oceanography' chapter of this report. More widely, the National Oceanography Centre (NOC) has monitored and reported on the marine heatwaves theme. Their 2024 report and paper* points-out that the UK is not a particular 'hotspot' and that we are short of 'cause-and-effect' evidence. Statements such as "could cause a serious threat to species" may, based on examples from around the world, be correct but are speculative. Bearing in mind that much parallel change may be coincidence and not correlation, do look for evidence of links.

Satellites are identified as a key source of information, but everyone should bear in mind (and adjust their research) to the fact that satellites measure sea surface temperature and not water temperature near to the seabed where much of the change (or of no change) is reported.

*The relevant paper published on 4th October 2024 is:

Jacobs ZL, Jebri F, Wakelin S, Strong J, Popova E, Srokosz M and Loveridge A (2024) Marine heatwaves and cold spells in the Northeast Atlantic: what should the UK be prepared for? Front. Mar. Sci. 11:1434365. doi: 10.3389/fmars.2024.1434365. Link:

Marine heatwaves and cold spells in the Northeast Atlantic: what should the UK be prepared for?

'Using' the annual reports

In the introduction to the report for 2021, we listed and explained our thinking for the following headlines:

- Describing 'normal' patterns of events
- Population trends – up and down
- Marking major events and their effects
- Highlighting significant ecological and population changes including:
- 'Stand-out' observations – new novel and exceptional events
- Managing human activities in the south-west marine ecosystems
- Acting to focus interest
- Telling stories about what we know and providing access for education and outreach

What next?

During 2024, with financial backing of the Defra sponsored marine Natural Capital Ecosystem Assessment - Land Seas Interface Programme we have been exploring how the SWME Model can be applied to other English regions. The first EAST Marine Ecosystems (EASTME) conference was held in 2024 and the results of this can be viewed via the EASTME website https://eastme.co.uk. The EASTME project has also had many benefits to SWME in helping think through what we have achieved and how we might develop, not least in the revision of the SWME Model paper – Version 3 which was based on explaining SWME to many other people.

Send your observations

We rely greatly on observations that you make. Do send a note of what you have seen and images to the relevant chapter editors.

3. Summary of conclusions

Keith Hiscock (khis@mba.ac.uk) **and Bob Earll** (bob@bobearll.co.uk)

The evidence collected from observations and publications in 2024 adds to a long history of recording 'change' and events. All-in-all, for species, there were some indications of increased occurrence of warmer water species, there were changes in abundance of long-established species which may be a part of decadal-scale fluctuations but should be monitored, there were observations (some-times of high abundance) of sporadically occurring species that may be considered 'blips' rather than trends.

Highlight conclusions are listed below. Do let us know what you think might be indicated and the reasons for change and events.

1. In the English Channel at the monitoring station halfway to the Eddystone reefs from Plymouth Sound, the spring and early summer temperatures were consistently at or above the average, which can be categorised as a Marine Heat Wave (MHW): the second year in a row that this has happened. Temperatures for the early summer months were warm but not markedly so, with MHW conditions recommencing in August to the end of the year. Although there were several named storms in 2024 and the winter of 2024/25, they were not severe or prolonged.
2. Significant changes continue to be seen in the regularly occurring plankton including decline in the abundance of diatoms (microscopic algae) and of the crustacean *Calanus helgolandicus* (important especially as food for Basking Sharks).
3. There were exceptionally high abundances of 'mauve stinger' jellyfish (*Pelagia noctiluca*) in summer 2024. This species was recorded in numbers not seen since 1966.
4. The very high abundance of salps (pelagic seasquirts) in 2024 was remarkable and provided a highly visual 'treat' for those at sea and diving.
5. There has been a shift in pelagic (open water) fish populations from meso-predators (e.g. codfishes) to apex predators (e.g. Bluefin Tuna, sharks).
6. Sardine and anchovy are expanding in range and show overall increase in biomass.
7. Many observers report that mackerel have become far less prevalent during the summer months with a seasonal shift of arrivals to later in September and October continuing in 2024; they are now present during the winter months in large quantities, including smaller fish.
8. A few 'recently arrived' warmer water species have increased in abundance and/or extent. They include small bream (likely Blackspot/Red Bream *Pagellus bogaraveo*) and Comber (*Serranus cabrilla*). Other warmer water species that have established in recent years have maintained their abundance and/or been found in new locations. They include the Mediterranean Feather Duster Worm *Sabella spallanzani*, Ringneck blennies *Parablennius pilicornis*,
9. Whilst no additional non-native species were reported in the south-west, several 'already arrived' species had increased in abundance and/or extended their distribution. They include Wakame, U*ndaria pinnatifida*, Darwin's Barnacle *Austrominius modestus*, Pacific Oysters *Magallana gigas* and Red Ripple Bryozoan, *Watersipora subatra*.
10. Some established non-native species may have declined in abundance including Pom-pom Weed *Caulacanthus okamurae* and the Slipper Limpet *Crepidula fornicata*.
11. Two species new to science and discovered in south-west waters were described in 2024: the polychaete worm *Arabella ampulliformis* and the seaslug *Pleurobranchia brittanica*.
12. The proportion of some warmer water species that are a conspicuous part of the intertidal fauna has increased including for some barnacles (*Chthamalus montagui*, *Perforatus perforatus*) and of colder water species declined (*Semibalanus balanoides*). More (warmer water) Gooseneck Barnacles *Pollicipes pollicipes* (the species that attached to extremely wave-exposed intertidal rock) are now present at the very few locations they are known from. Honeycomb Worm *Sabellaria alveolata* reefs have become more extensive and dominant in places and the species has extended their occurrence eastwards along the English Channel coast.
13. The abundance of Blue Mussels *Mytilus edulis* appears to have declined on many shores since 2023 at least.

14. Occurrences of unusual seaslugs (the Rainbow seaslug *Babakina andoni* and the Orange Seaslug *Discodoris rosi*) have increased but seaslugs can be sporadic in their occurrence and observation of persistence are needed.
15. Several experienced marine naturalists have expressed concern that the abundance of many seashore and shallow seabed species has declined in recent years.
16. Seagrass beds (*Zostera marina* and *Zostera noltii*) have continued to increase in extent in many areas with, for instance, a calculated expansion in extent from 2 ha in 2006 to 29 ha in 2024 in Cawsand Bay, Plymouth Sound.
17. Common Octopus *Octopus vulgaris* continued to be seen along English Channel coasts but not in the large numbers of the previous two years, especially 2022.
18. There was no significant outbreak of Highly Pathogenic Avian Influenza evident in breeding colonies of seabirds in 2024.
19. 2024 was generally another good year for southern breeding seabird sightings, with influxes of species such as Cory's and Great shearwaters. For cliff nesting birds, there was a general increase in numbers of Guillemots and Razorbills, and a mixed picture for Kittiwakes.
20. 2024 was a 'normal' year for seals in the following respects**: r**ange of seal movements; abundance which appears stable; geographical occurrence; numbers of entangled and hooked seals; amount of substantial ongoing serious disturbance.
21. Porpoise and dolphin populations seemed stable.
22. Conservation advice for 98% of MPAs has been completed by Natural England, while condition assessments have been finalised for 23% of MPA features.
23. The South-west seabed stores an estimated 35.8 million tonnes of organic carbon, with 32% of this blue carbon held within MPAs.
24. South West Water recorded the highest duration of monitored sewage spill events in England confirming that the frequency and duration of monitored storm overflow spills remain at unacceptably high levels.
25. In 2024, 98% of designated bathing waters in Devon and Cornwall met the minimum standard of 'Sufficient', with 95% achieving the highest standards of 'Good' and 'Excellent'.
26. The MMO reports there were a total of 43 licence applications in the South West Marine Plan areas in 2024. Of these, four were rejected, two were withdrawn, 16 were approved and 21 were in progress at the end of 2024. Nine wildlife licences were issued or renewed in the South West Marine Plan area - seven for scientific and educational activities, and two supporting offshore wind and nuclear energy projects.
27. Prospective and in-operation marine infrastructure developments in the south-west during 2024 included a desalination plant in St Austell Bay, seaweed farming in Porth Quin and the Hinkley Point C Nuclear Power plant.
28. Plastic pollution was as prevalent as ever on the south-west coastline. The top plastic pollution items recovered were ghost fishing gear and pollution stemming from single use plastic consumption.

4. Oceanography Background conditions – Western Channel Observatory

Tim Smyth (tjsm@pml.ac.uk): Plymouth Marine Laboratory

Figure 4.1: Stations of the Western Channel Observatory.

The Western Channel Observatory (WCO) is an oceanographic time-series and marine biodiversity reference site in the Western English Channel (Figure 4.1). In situ measurements are undertaken weekly at coastal station L4 and fortnightly at open shelf station E1 using the research vessels of the Plymouth Marine Laboratory and the Marine Biological Association. These measurements are complemented by PML's recognised excellence in ecosystem modelling and satellite remote sensing science. By integrating these different observational disciplines, we can begin to disentangle the complexity of the marine ecosystem. The WCO measures several key parameters important to the functioning of the marine ecosystem such as light, temperature, salinity and nutrients. Station L4 has some of the longest time-series in the world for zooplankton and phytoplankton, and fish trawls have been made by the MBA for a century. Station E1 has a hydrographic series dating from 1903.

Overall conditions for the year – 2024

Vertical profiles for multiple parameters are taken using a sampling CTD rosette on a weekly basis at station L4. This is at fine enough resolution to observe the start of the thermal stratification of the water column in spring (typically April) and the breakdown in autumn (typically September).

From Figure 4.2 (temperature) it can be seen that the year started with very warm conditions throughout the water column (well mixed, apart from fresher water intrusions at the surface) with temperatures around 11.2 °C. This cooled to the minimum recorded temperature (for 2024) in early February of 9.8 °C. Stratification became established in late April / early May, with the maximum stratified state (unusually) in late-June (briefly: surface around 15.6°C; depths below 30 m around 13.2 °C).

Stratification was gradually eroded in mid-September and the water column finally became mixed in late September (16.4 °C throughout).

Several freshening events (see Figure 4.2 - salinity) were observed in 2024 as a decrease in salinity below the background value of 35 PSU. These were particularly marked in March-April and October-November 2024 (these latter events likely linked to named storms Ashley and Bert). These are mainly driven by inputs from the Tamar Estuary as it responds to precipitation events within its catchment. Any summer-time events are usually confined to the upper few metres (giving the appearance of a lens) whereas winter events can penetrate the top 20 m or so of the water column. This is because of a combination of stratification and likely larger river flows in the winter months.

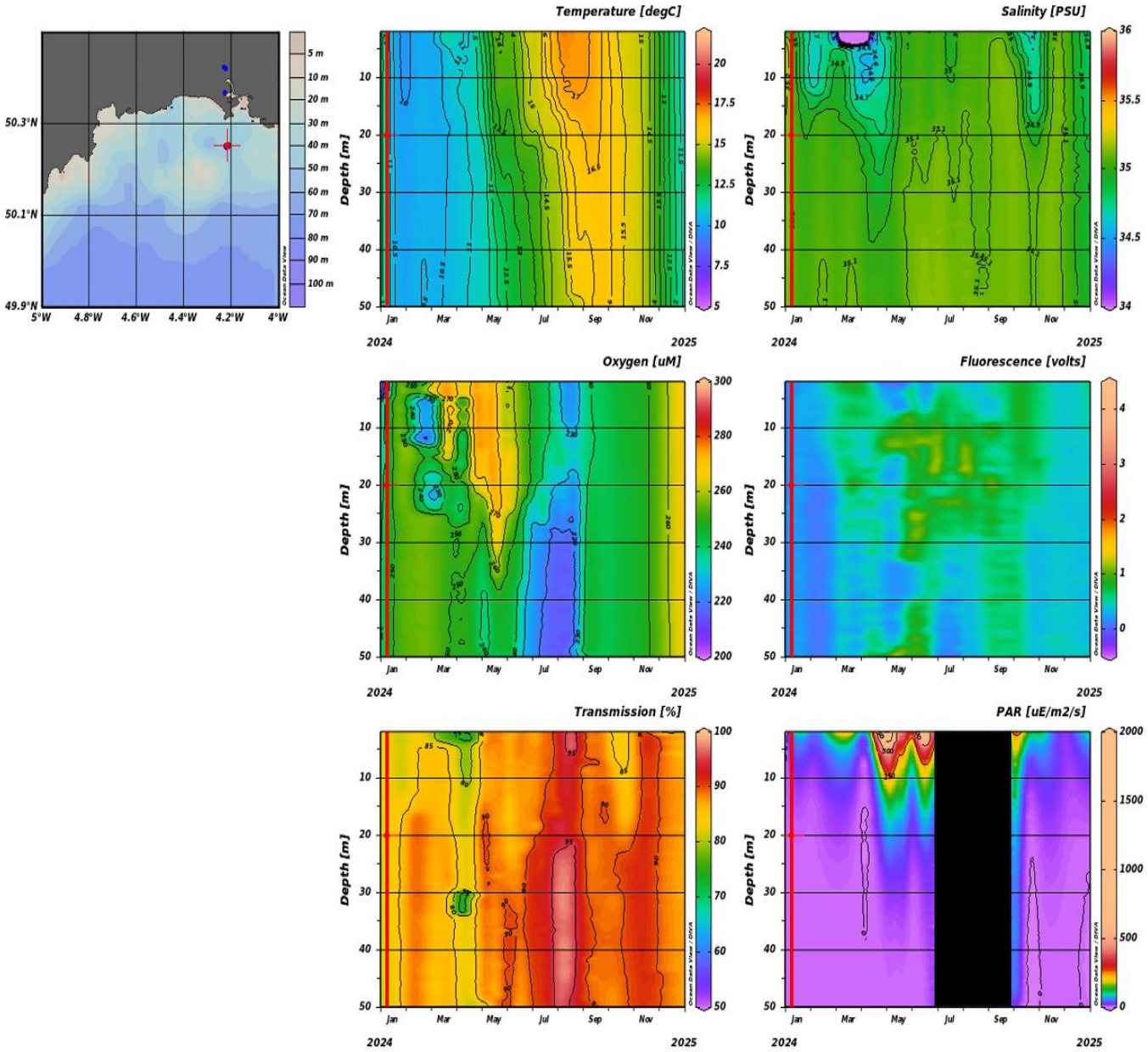


Figure 4.2. Conditions throughout the water column at station L4 during 2024 from individual profiles taken using a rosette sampler with multi-parameter "CTD", deployed from the RV Plymouth Quest. PAR sensor not operational July – September. Sampling was carried out by the MBA Sepia and KMS Valonia during September – December 2024.

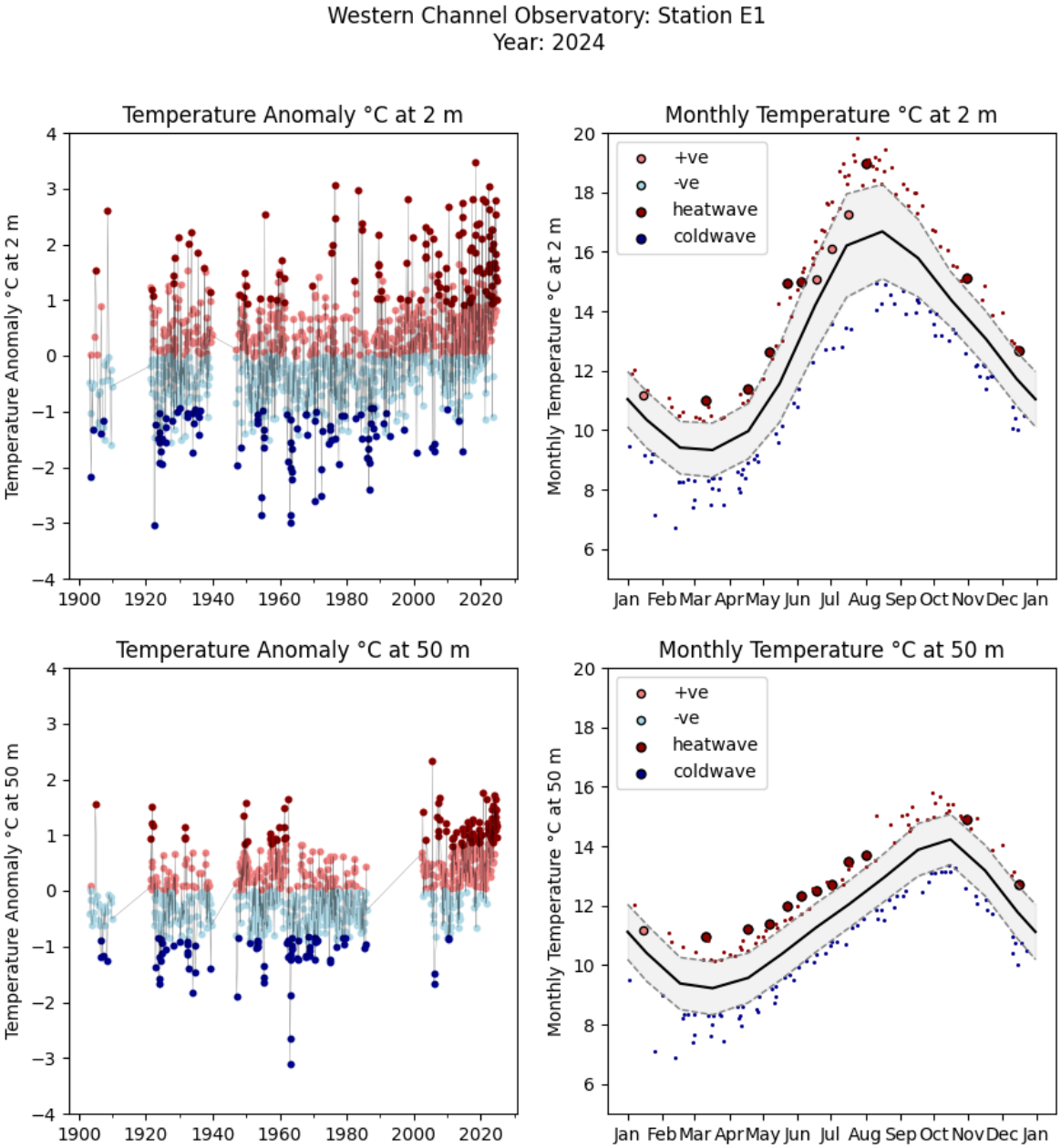


Figure 4.3. E1 temperature time-series and anomaly analysis (Left panels at surface and 50m) with light red points showing positive and light blue negative anomalies. Right panels: Solid lines show mean monthly temperatures (period 1903 – 2024), with dashed lines giving the 10th (lower) and 90th (upper) centiles, with the grey region being within this envelope. Large symbols represent individual observations (n=12) made by the RV Plymouth Quest during 2024. Dark red points represent data outside above 90th centile and dark blue below 10th centile. Record temperatures for given dates of any year during series represented by small points if outside the 10 – 90th centile. A Marine Heat Wave is defined as a temperature above the 90th centile.

Figure 4.3 shows the temperature time-series anomalies from station E1, which is one of the longest hydrographic series in the world.

At the surface, E1 started 2024 above average and only reached a minimum temperature of 11.0°C in mid-March (although no sampling was possible during February). The spring and early summer posted temperatures consistently at or above the 90th centile, which can be categorised as a Marine Heat Wave (MHW), which is the second year in a row that this has happened. Temperatures for the early summer months were warm but not markedly so, with MHW conditions recommencing in August to the end of the year. Temperature at 50 m depth,

relatively well insulated from the surface insolation driven surface layer, were at or above the 90th centile for the most part of the year.

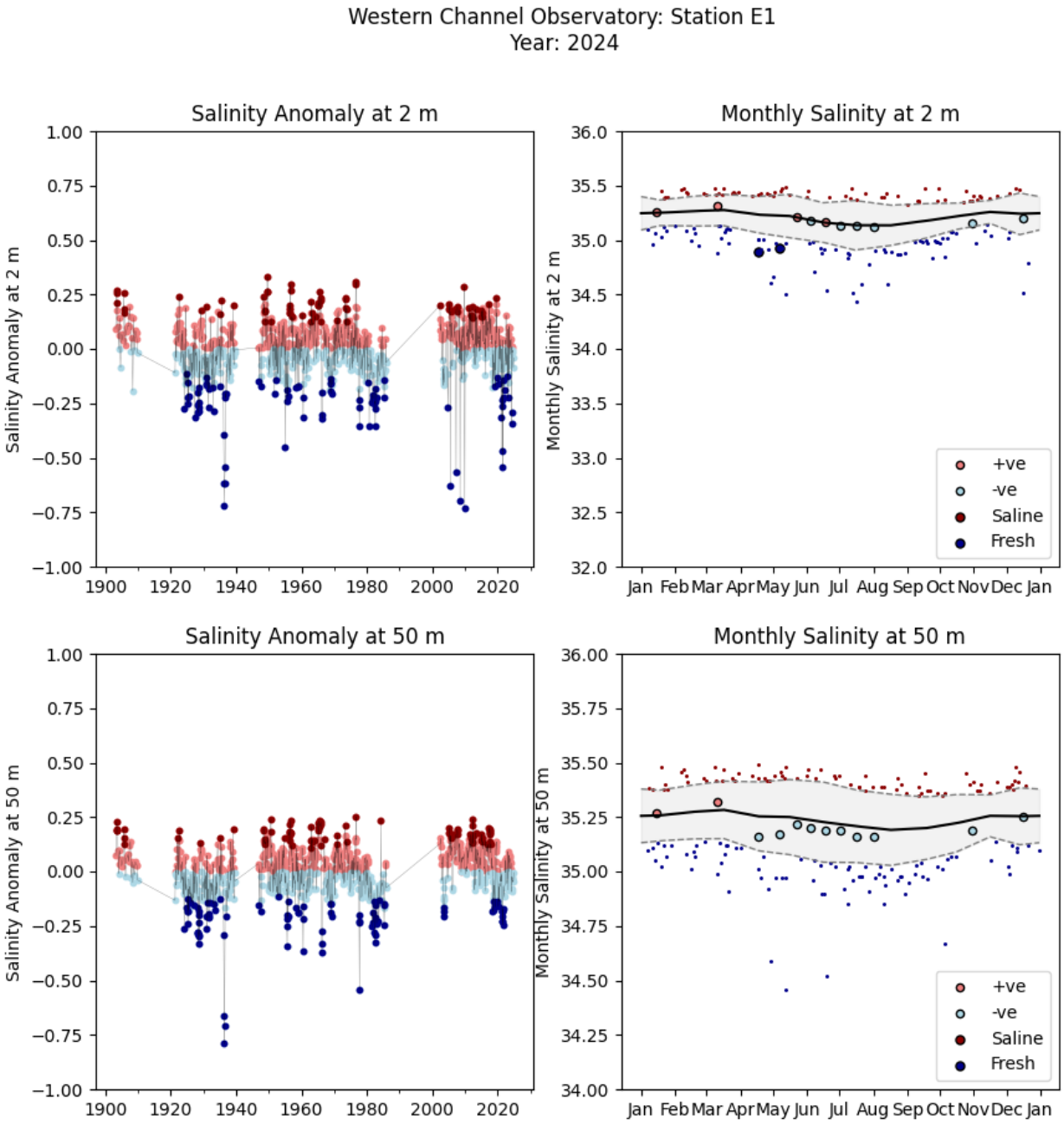


Figure 4.4. E1 salinity time-series and anomaly analysis (Left panels at surface and 50m) with light red points showing positive and light blue negative anomalies. Right panels: Solid lines show mean monthly salinities (period 1903 – 2024), with dashed lines giving the 10th (lower) and 90th (upper) centiles, with the grey region being within this envelope. Large symbols represent individual observations (n=12) made by the RV Plymouth Quest during 2024. Dark red points represent data outside above 90th centile and dark blue below 10th centile. Record salinities for given dates of any year during series represented by small points if outside the 10 – 90th centile.

Figure 4.4 shows the salinity time-series made using the CTD profiler at station E1.

For almost the entire duration of 2024 the waters were below the long-term mean salinity throughout the water column.

Western English Channel / Celtic Sea as a whole

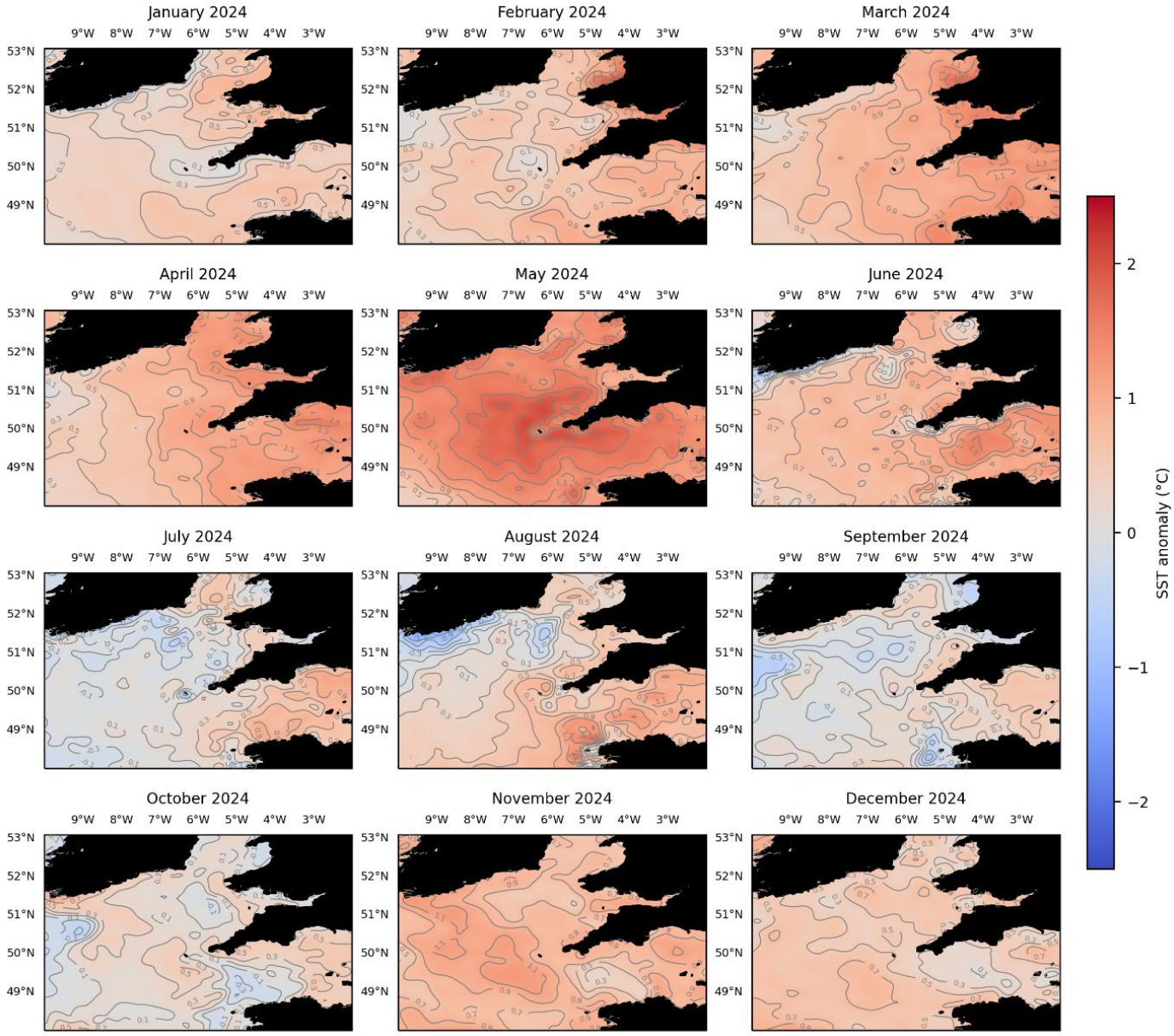


Figure 4.5. Sea-surface Temperature (SST) monthly anomalies during 2024 derived from AVHRR satellite data. Climatological period 1991 – 2020. Data provided by the NERC Earth Observation and Data Acquisition and Analysis Service (NEODAAS) and analysis by E. Sullivan.

Figure 4.5 shows the SST anomalies during 2024 from the 1991 – 2020 mean. May 2024 is noteworthy in that anomalies are 2 °C above the long-term mean in the Celtic Sea and western English Channel (reflected in the analysis for E1 – Figure x.3). Positive anomalies generally dominate during 2024, although slight negative anomalies are particularly apparent around the SW coastline during June and July (0.1°C below).

Appendix

Named storms during 2024 (UK / Ireland only).

https://weather.metoffice.gov.uk/warnings-and-advice/uk-storm-centre/uk-storm-season-2023-24

https://www.metoffice.gov.uk/weather/warnings-and-advice/uk-storm-centre/index

- Henk (2 January 2024)
- Isha (21 – 22 January 2024)
- Jocelyn (23 – 24 January 2024)
- Kathleen (6 – 7 April 2024)
- Lilian (22 – 23 August 2024)
- Ashley (20 – 21 October 2024)
- Bert (22 – 25 November 2024)
- Conall (27 November 2024)
- Darragh (6 – 7 December 2024)

Links to other useful analysis

UK Met Office Climatological summaries

Winter (December – February 2023/24):

https://www.metoffice.gov.uk/binaries/content/assets/metofficegovuk/pdf/weather/learn-about/uk-past-events/summaries/uk_climate_summary_winter_2024.pdf

Spring (March – May 2024):

https://www.metoffice.gov.uk/binaries/content/assets/metofficegovuk/pdf/weather/learn-about/uk-past-events/summaries/seasonal-assessment---spring24_v1.pdf

Summer (June – August 2024):

https://www.metoffice.gov.uk/binaries/content/assets/metofficegovuk/pdf/weather/learn-about/uk-past-events/summaries/seasonal-assessment---summer24.pdf

Autumn (September - November 2024):

https://www.metoffice.gov.uk/binaries/content/assets/metofficegovuk/pdf/weather/learn-about/uk-past-events/summaries/seasonal-assessment---autumn24.pdf

Winter (December – February 2024/2025):

https://www.metoffice.gov.uk/binaries/content/assets/metofficegovuk/pdf/weather/learn-about/uk-past-events/summaries/seasonal-assessment---winter25.pdf

Western Channel Observatory

https://www.westernchannelobservatory.org.uk/data.php

Plymouth Coastal Observatory (waves data – Looe Bay)

https://www.channelcoast.org/realtimedata/?chart=98

5. Storms in 2024 and in the winter of 2024-2025

Bob Earll (bob@bobearll.co.uk)

Prepared by Bob Earll, with compilations of the storm data and wave height material from Tim Smyth (PML) Channel Coastal Observatory and Katherine Bewsher (ACM@environment-agency.gov.uk) Coastal Project Support and Engagement Officer, Environment Agency. With inputs from other SWME thematic topic editors, Angus Atkinson, Keith Hiscock, Alex Banks, Paul St Pierre**,** Sue Sayer, Dan Jarvis, Duncan Jones and Paul Naylor.

Conclusions

The patterns of storms in 2024 and in the winter of 2024 to 2025 was normal in the sense that there were no really extreme storms which prompted high profile responses.

Introduction

Storms are a routine and complex part the natural pattern of events in the south-west. Through SWME we are developing a clearer understanding of storm impacts on the natural systems in the coastal and marine environment and the context (see below) of the different types of storms and their impact. With climate change it is predicted that storms will increase in strength and impact. This note covers 2024 and spans the winter months of 2024 and 2025 (Figure 5.1). Assessing the impact of storms is complicated, but *extreme* storms have a very high media profile and have both significant consequences for society and natural systems.

When storms produce significant events the marine and coastal community *do* record these events and so lack of records does give '*a sense'* of less storm impact. This note describes the named storms of 2023-2024, and the wave heights of 2023 and the winter of 2023 -2024 with note from thematic topic editors with their assessments.

Named Storms 2024 – 2025

Storm naming became confusing as all the other national meteorological agencies have adopted the practice. See UK / Ireland storms: (https://www.metoffice.gov.uk/weather/warnings-and-advice/uk-storm-centre/index).

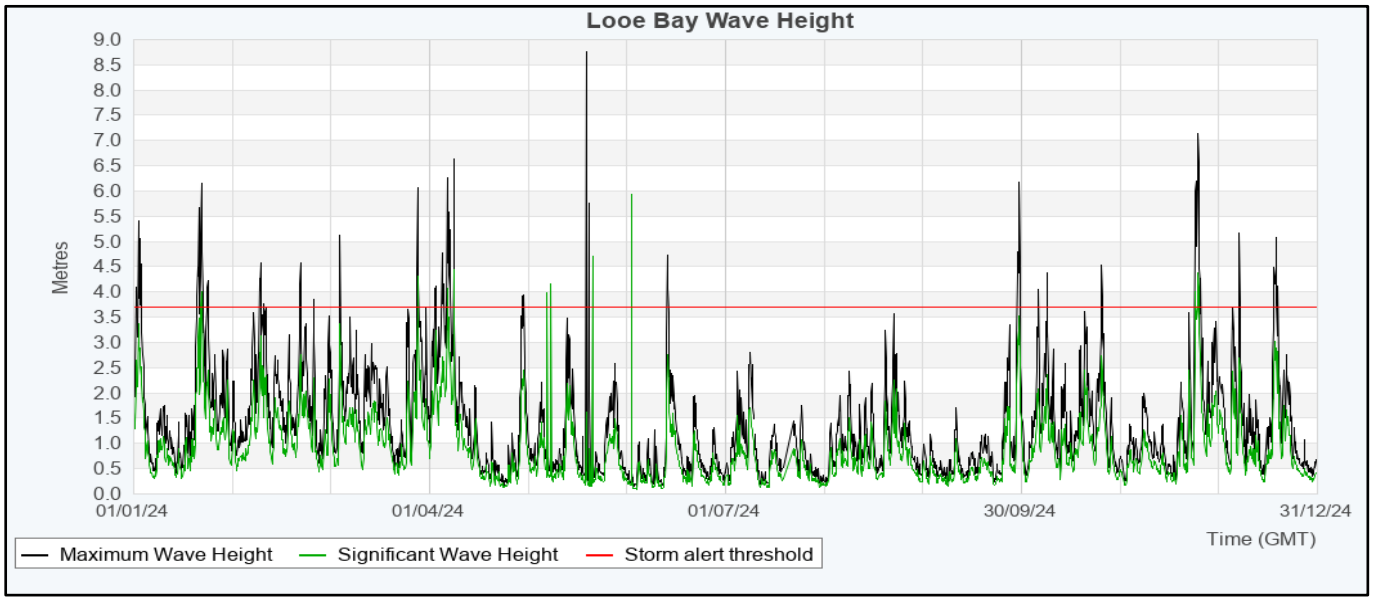
Each year there is a Wikipedia – European Windstorm season the link here is for 2024-2025 2024–25 European windstorm season - Wikipedia

Named storms for 2024 included:
Henk (2 January 2024)
Isha (21 - 22 Jan 2024)
Jocelyn (23 - 24 Jan 2024)
Kathleen (6 - 7 Apr 2024)
Lilian (22 - 23 Aug 2024)
Ashley (20 - 21 Oct 2024)
Bert (22 – 25 Nov 2024)
Conall (27 Nov 2024)
Darragh (6 – 7 Dec 2024)
2025
Éowyn, 24 January 2025

As in the winter to spring period of 2023 when there was one storm, in 2025 there has only been one named storm (Éowyn) on 24th January 2025. Microsoft Word - 2025_02_storm_eowyn.docx

Tim Smyth observes: "I would say that the storms we had in Nov / Dec (very short, week period) were particularly noteworthy. Although fixing the term "the first red weather warning for wind" needs to be taken in context (as this risk register type of thing has only been around for a decade) there were large swathes of Ireland which were particularly impacted by Bert and Darragh. Bert and Darragh were particularly noteworthy with red weather

warnings for at least one of them. The following link gives you a full description of the storm and its impact.' https://weather.metoffice.gov.uk/warnings-and-advice/uk-storm-centre/index



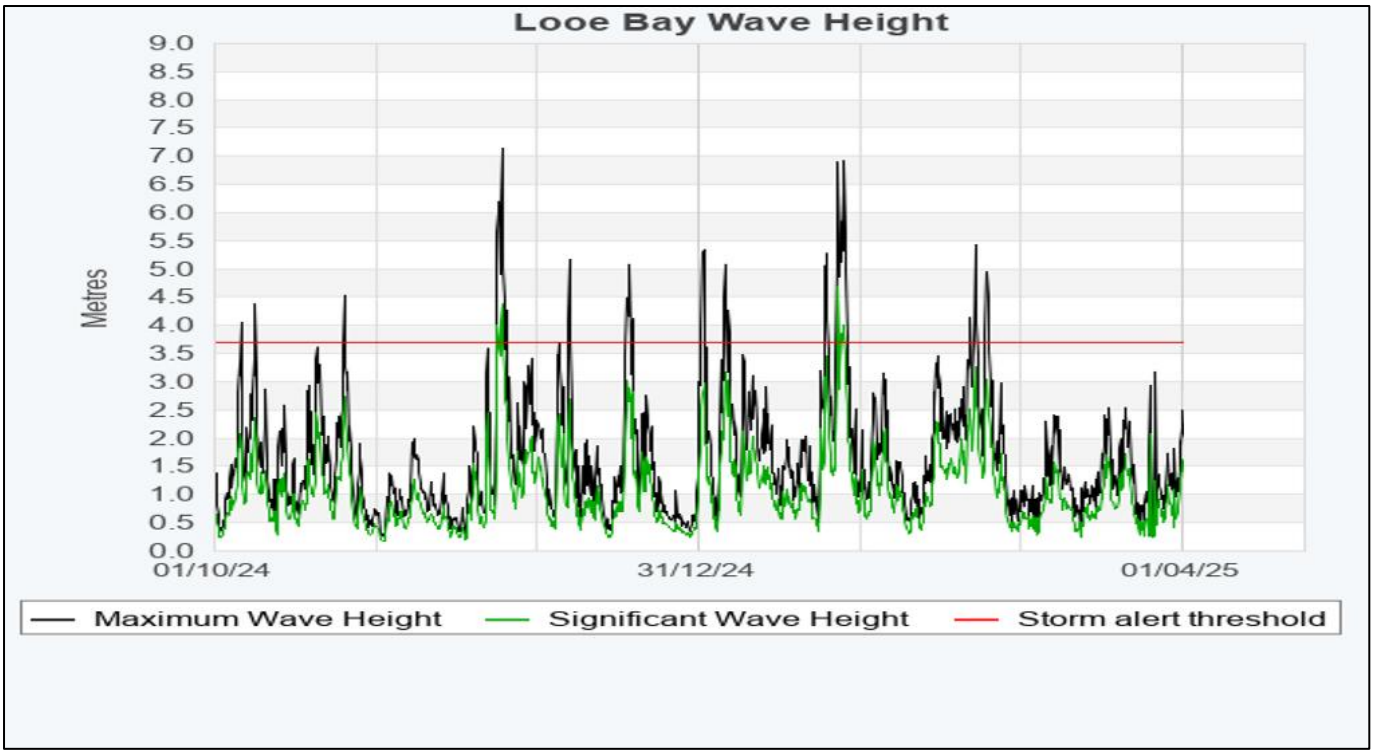


Figure 5.1. Wave height in Looe Bay

Storm impacts on thematic topics

The SWME editors were canvassed about the impacts of storms in 2024 and the winter of 2024-2025, however, there seems to been relatively few impacts which were notable.

Seabirds. Alex Banks (alexbanks@gmail.com). As far as I know there were no major wrecks - at least we didn't have a big peak in beached birds. Natural England is doing some work on this this year trying to make the systems of reporting wrecks better; Bec Jones is leading. Mark Grantham (markyjee@gmail.com): At one site I regularly watch in Cornwall (Rinsey), three out of six early nests were lost during poor weather in early April, two of which then went on to re-lay in May. Later in the season when we visited Rosevear (the exposed Western Rocks on the Isles of Scilly), it was evident that whilst Shags had fledged from the marginally more sheltered eastern side of the island, those on

the more exposed western side still had five to six week-old chicks. I can only think that early nesting attempts on the western side were lost to poor weather and the birds we were ringing were from re-lays.

Seals & extreme weather. Sue Sayer (sue@cornwallsealgroup.co.uk) and Dan Jarvis (dan@bdmlr.org.uk). We had a paper published on the impacts of storms and extreme weather events (rain bombs) on seal populations: Vulnerability of Grey Seal Pups (Halichoerus grypus) to Storm Disturbances in the Context of Climate Change: A British Isles Case Study. Each year rescue centres in the south-west get a number of seals during the pupping season. The autumn of 2024 was busy but normal in this regard with less call outs in 2025.

Storms and juvenile seal mortality. Dan Jarvis (dan@bdmlr.org.uk)

Each year rescue centres in the south-west get a number of seals during the pupping season. The autumn of 2024 was busy but normal in this regard with less call outs in 2025. The BDMLR Cornwall Seal Hospital received 78 grey seal pups for rehabilitation during the rescue season between August 2024 to April 2025. This season saw a marked decrease in rough sea and weather conditions and fewer severe storms compared with recent years, and this likely contributed significantly to the lower numbers of casualties received (noting as always that a small number of casualties were also received directly by the Cornish Seal Sanctuary). What was notable was that of the casualties that did come in for care, a higher proportion than usual were suffering from especially poor health and were either euthanased or passed away. It is theorised that in seasons with regular storms these animals would have mostly been killed off by the conditions before being found and reported, however as the seas between August to mid-November especially were quite settled, they were able to survive long enough until they were found and rescued instead.

Plastics. Rachel Yates (rachel@sas.org.uk). Storms do have a big impact on the prevalence of plastic pollution. For instance, a batch of medical waste (see Plastics chapter) after one storm. Things that we see on our beaches post storm include:

- An increase in plastic pollution and other debris on beaches and the coastline.
- Debris that's been at sea for a long time.
- More international plastic packaging/debris.
- More 'vintage' plastic packaging as the winds blow away sand and uncover buried pollution.
- We encounter more deceased marine wildlife such as seals, birds and dolphins too.
- Depending on where the storms are, swell/wind direction etc there can be more of a certain type of plastic pollution.
- And there is always more ghost gear as well.

Discussion

We have been noting the impacts of storms on the various thematic topics in the south-west now for a number of years. The contrast between the various scenarios, ultra strong winds and wave heights, multiple storms in short order and storms from the each that combine to form *extreme* storms and the normal winter pattern is starkly obvious. 2024 and the winter of 2024-2025 were normal and unremarkable in terms of the impact of storms on the natural systems we observe.

6. Plankton

Editors: Jeanette Sanders (sea@seadreameducation.com), **Angus Atkinson** (aat@pml.ac.uk) with Keith Hiscock, Claire Widdicombe, Amanda Beesley, Glen Tarran, Andrea McEvoy.

Please cite this chapter as:

Sanders, J., Atkinson, A., Hiscock, K., Widdicombe, C., Beesley, A., Tarran, G. and McEvoy, A. (2025) Chapter 6. Plankton In: Hiscock, K. and Earll, R. (editors). South-West Marine Ecosystems in 2024 - The State of South-West Seas. DOI: https://doi.org/10.17031/WD2D-T194

With particular thanks to: Paul Naylor, Matt Salter, Charlotte Cumming, Christine Ingram, Keith Raven, Louise Scammell, Jake Taylor Bruce, Julie Hatcher and Lin Baldock and all those others who have contributed records to this report.

Contact: Angus Atkinson (for general plankton)

Jeanette Sanders (for observations of gelatinous/stranded zooplankton): sea@seadreameducation.com; South Devon Jellyfish Survey https://www.seadreameducation.com/south-west-england-jellyfish-survey/

Headline conclusions

- There was continued presence of late summer salp blooms, especially along the south Cornish coast in 2024. These large, filter-feeding tunicates (unrelated to jellyfish) have become established in the south-west since about 2022. Blooms of salps have occurred previously in south-west England but never in such large numbers concurrently in so many places. They also have not previously been reported as blooms in two successive years in the same region.
- There were exceptionally high abundances of 'Mauve Stinger' jellyfish (*Pelagia noctiluca*) in summer 2024 with juvenile individuals being reported into November 2024, although the species was not reported on the coast of North Devon. This species was recorded in numbers not seen since 1966.
- The lowest ever recorded numbers of the major (biomass-dominant) copepod *Calanus helgolandicus*. Their populations had been stable for about 25 years until around 2015/2016 when they suddenly declined. This step-change coincides in timing with several other sharp changes observed in the larger marine fauna and its causes warrant further investigation.
- Crystal jellyfish continued (since 2020) to be a common sight in south-west waters whilst, since 2021, the By-the-Wind-Sailor, *Velella velella*, has become more frequently reported during spring and summer than in winter.
-

Introduction

This chapter is divided into the following sections:

(1) Phytoplankton
(2) Smaller, non-gelatinous zooplankton
(3) The larger gelatinous zooplankton

1. Phytoplankton

Sources of data are:

- PML surveys at the Western Channel Observatory in the English Channel, south of Plymouth
- Submitted observations harvested and compiled by Paul Naylor

Observations from Claire Widdicombe (PML) at Western Channel Observatory

The weekly observations from the Western Channel Observatory showed that patterns in the phytoplankton community were more-or-less as expected. However, winter diatom concentrations were slightly higher than previous years, and the spring bloom arrived relatively early again (March). Parasitic infections of diatoms and a decline in nutrients facilitated a succession of species during summer months, but lower numbers suggest a continuing decline of diatoms and dinoflagellates between June and August. Observations of rare or new species, such as the dinoflagellate *Prorocentrum gracile*, which is more typical along the French coast, the toxic dinoflagellate *Dinophysis caudata*, a freshwater green algae *Pediastrum* and increasing numbers of the 2023 arrival of the diatom *Pseudosolenia calcar-avis*, suggest a changing community and a potential warmer water / Gulf Stream influence. The autumn bloom, previously of little magnitude here, was again notable in terms of species diversity and cell numbers. These patterns of higher winter and autumn diatom numbers, plus recordings of 'new' species are consistent with observations from other sites in the English Channel, NW and NE Atlantic coastal areas.

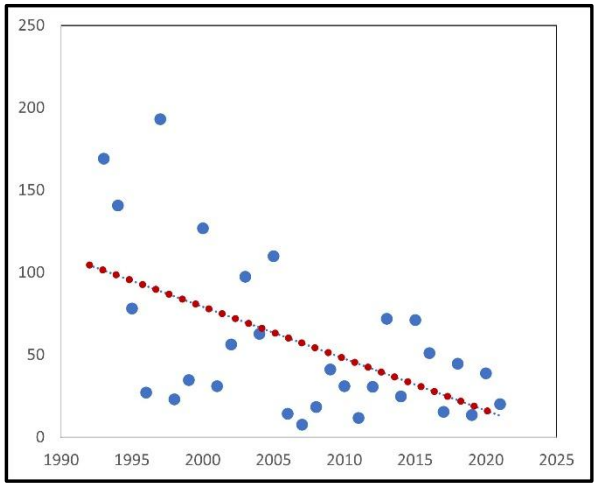


Figure 6.1. Declining trend in summer dinoflagellate abundance (cells per mL) since 1992.

Overall, the L4 site has experienced long-term declining abundances of major groups such as diatoms and dinoflagellates (Figure 6.1) especially in summer. The weekly observations from the Western Channel Observatory showed that patterns in the phytoplankton community were more-or-less as expected. However, winter diatom concentrations were slightly higher than previous years, and the spring bloom arrived relatively early again (March). Parasitic infections of diatoms (Figure 6.2) and a decline in nutrients facilitated a succession of species during summer months, but lower numbers suggest a continuing decline of diatoms and dinoflagellates between June and August.

Plate 6.1. Imaging FlowCytobot image of a parasitic infection of the marine diatom *Cerautulina* (Claire Widdicombe, PML)

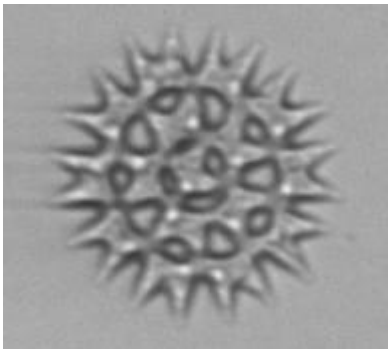


Plate 6.2. Imaging FlowCytobot image of the freshwater green algae *Pediastrum* (Bryony Pearton, PML).

Observations of rare or new species, such as the dinoflagellate *Prorocentrum gracile,* which is more typical along the French coast, the toxic dinoflagellate *Dinophysis caudata*, a freshwater green algae *Pediastrum* (Figure 6.3) and increasing numbers of the 2023 arrival of the diatom *Pseudosolenia calcar-avis*, suggest a changing community and a potential warmer water / Gulf Stream influence. The autumn bloom, previously of little magnitude here, was again notable in terms of species diversity and cell numbers. These patterns of higher winter and autumn diatom numbers, plus recordings of "new" species are consistent with observations from other sites in the English Channel, NW and NE Atlantic coastal areas.

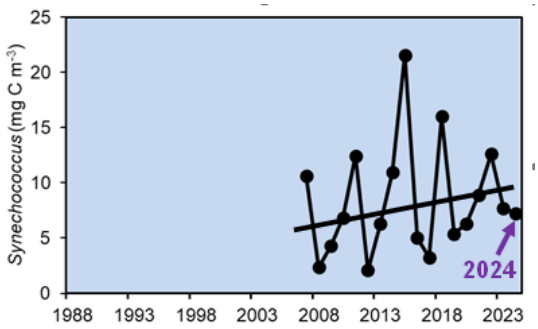


Figure 6.2. Observations of the picocyanobacterium *Synechococcus* spp. Estimated biomass at the Plymouth L4 site based on annual mean averages of weekly resolution surface data. Data are from a flow cytometer provided by Glen Tarran.

Unlike some of the larger phytoplankton taxa, the smallest phytoplankton fraction including pico-size cells (< 2 µm) are not showing a clear decline in the period from 2007 when measurements started. In this 17-year span *Synechococcus* spp., for example (Figure 6.4) has shown variable year-to-year abundances, meaning that their contribution to the total phytoplankton has tended to increase. This illustrates the importance of monitoring the small fraction; they can dominate the plankton during the low-nutrient summer months, and while being of a size that salps can eat they are mainly too small and of too low nutritional quality to be good food for copepods.

Submitted phytoplankton observations collated by Paul Naylor

May

Julie Hatcher, Dorset WT: "We had the thick plankton bloom very bad here in East Dorset. Kimmeridge was especially bad and you could see the individual diatoms making up the thick, soupy bloom. We carried out a plankton trawl but the gelatinous diatoms clogged up the net and were slimy and smelly. Very bad underwater visibility meant no-one was diving or snorkelling. When we did do a dive at the end of May, the green bloom had cleared slightly but the individual plankton were very visible making it difficult to focus on anything else, although overall visibility in the bay had improved to about 2m max. I have heard that the bloom off Bournemouth and Poole is currently very thick".

[From Lin Baldock, also Dorset] Nothing to report for May, though the plankton is bad at present - thought to be 'rather late'.

[Matt Slater, Cornwall WT] "Plankton has been patchy. Falmouth Bay is a bit murky but the north coast has seen very good visibility all through May and June as the swell has been low, and despite strong N winds".

2. Smaller, non-gelatinous zooplankton

Sources of data are PML monitoring at the Western Channel Observatory in the English Channel, south of Plymouth.

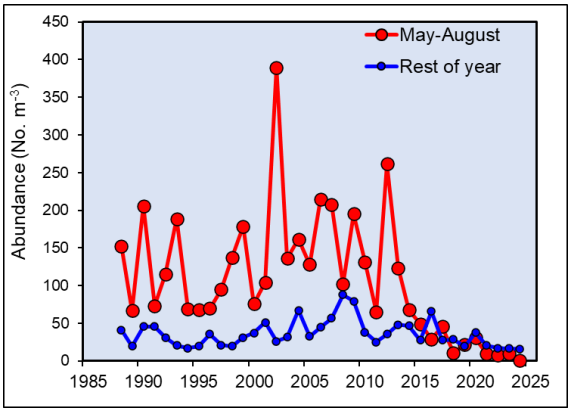


Figure 6.3. Mean abundance of the copepod *Calanus helgolandicus* at the Plymouth L4 site during the summer stratified months of May-August (red) and for the rest of the year (blue), based on weekly resolution, full-depth net sampling from 0-50 m with a pair of WP2 nets.

At the time of writing, the 2024 zooplankton analysed from the weekly resolution, 0-50m net hauls at the Plymouth L4 site have not been fully quality-checked. However, we present here QC'd 2024 results for two important taxa that have shown dramatic and opposite trends, namely the copepod *Calanus helgolandicus* (Figure 6.3) and the gelatinous, filter-feeding tunicates known as salps (described in Section 3). *C. helgolandicus* is traditionally considered a biomass-dominant copepod species which is an important and nutritious food source for a variety of predators including many fish. Their population densities have been reasonably stable in the 27 years spanning 1988 (when L4 weekly sampling started) to about 2015, after which the numbers (particularly in the summer months) have declined dramatically. The year 2024 now sets a record as being the lowest numbers we have seen. At the SWME 2025 annual conference this "step-change" was discussed and compared to other intriguing changes in the food web on the SW UK also at around this time. For instance, there have been increases in sardines and large predators such as tuna and shark species, with declines in the meso-predators such as cod and pollack. Interestingly, this period followed a major El-Nino event predicted to have major impacts on the pelagic fauna https://doi.org/10.1038/s41558-019-

0420-1 and while cause and effect are still unknown, the question over abrupt 'step-changes' in the food web warrants further investigation.

3. The larger gelatinous zooplankton

Sources of data are:

- The SW England Jellyfish Survey: citizen science sightings obtained from social media posts and by direct communications with Seadream Education. Sightings include both live animals and standings.
- Reports submitted direct to SWME. Reports were received from individuals across Cornwall, Devon and Dorset, with particular thanks to: Paul Naylor, Matt Slater, Charlotte Cumming, Christine Ingram, Keith Raven, Louise Scammell, Jake Taylor Bruce, Julie Hatcher and Lin Baldock. Those species that have been recorded washed-up on the shore are described in 'Seashore and Seabed' (Chapter 7).
- PML salp observations at the Western Channel Observatory in the English Channel, south of Plymouth.

All sources have been combined in the summary below for 2024

Scyphozoa – the true jellyfish

For most true jellyfish species, reports were similar to previous years across all sources. Barrel jellyfish *(Rhizostoma spp.)* were most commonly reported, as strandings, along the northern coasts of Devon and Cornwall. It appears that the large number of barrel jellyfish seen in 2019 close to the southern shores was unusual (although not unprecedented). The Blue jellyfish (*Cyanea* spp.), Compass Jellyfish (*Chrysaora hysoscella*) and Moon Jellyfish (*Aurelia aurita*) continue to be seen around the South-West between May and early autumn each year (see Figure 6.4). It is possible that all these species are being reported a little later in autumn compared to 2019 but this may simply be an artefact of increased reporting in later years e.g. 55% of the SW England survey data were collected in 2023 and 2024.

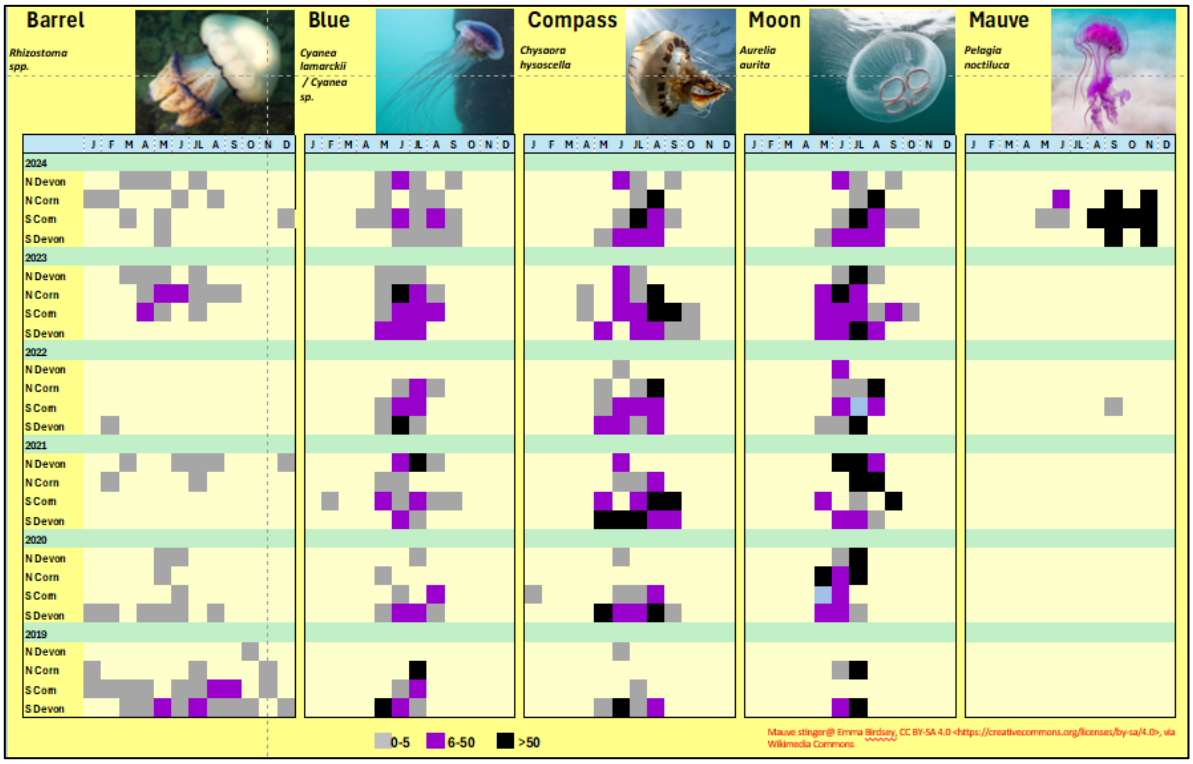


Figure 6.4. SW England Jellyfish Survey. Records of abundance of the common and more easily identifiable jellyfish by subregion, month and year. Please see SWME Report for 2022 for counting method and a description of survey, its strengths and limitations. Colours reflect max number reported by any single sighting in that month: lightest grey = max 5; purple = max between 6 and 50; Black = max >50. (N.B. SWME also received a report of "hundreds" of moon jellyfish in June 2025 in Newquay – not included in the SW Jellyfish survey data above).

In 2024, the Mauve Stinger jellyfish, *Pelagia noctiluca*, returned to SW shores in numbers not recorded since 1966 (Plate 6.3). Initially sighted in May (Penzance and Isles of Scilly), numbers gradually increased until the species bloomed from August into November from the Isles of Scilly to Dorset on the South coast and at least as far as Newquay on the North coast. The bloom included vast numbers of both mature (pink/purple) and immature individuals (brown/orange). The bloom was so large that it caused a charity swim, from the mainland to the Isles of Scilly, to be abandoned.

Plate 6.3. (a) Stranded Mauve Stingers in Gorran Haven (Image: Sally De Courcy, Seasearch Cornwall) (b) Immature mauve stinger (Louise Scammell, Hope Cove) (c) BBC news - https://www.bbc.co.uk/news/articles/c8djgzv01ljo

The Mauve Stinger is more usually sighted in the Atlantic and sometimes in the Irish Sea but no reports were submitted along the North coast of Devon in 2024, despite the species blooming around western Cornwall and in the Irish Sea.

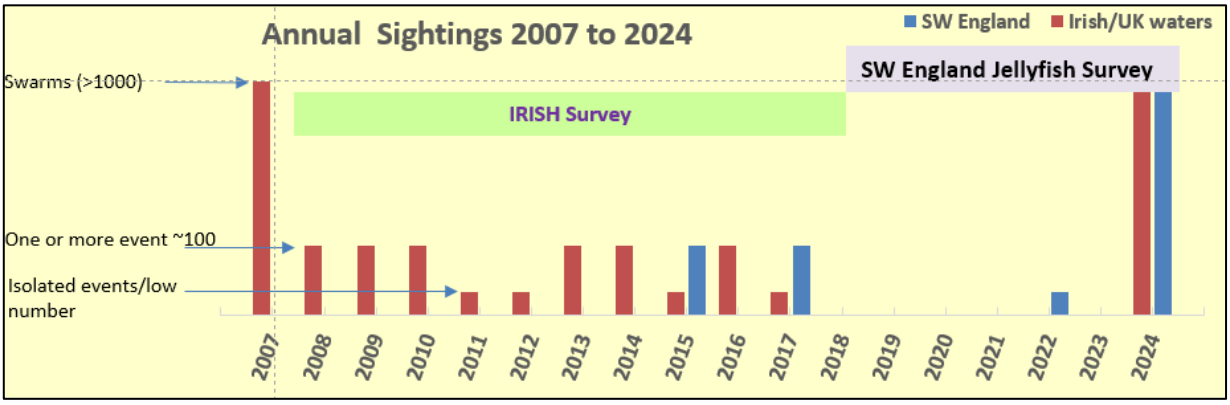


Figure 6.5. Annual sightings taken from a scientific survey (2007 to 2017) and citizen science projects (2018-2024) around Ireland (Red bars*) and sightings from the SW Jellyfish Survey (blue bars). (The vertical y axis is not to scale but provides three categories indicated by the blue arrows: "swarm >1000 individuals"; "one or more event ~100 individuals" and "isolated events/low numbers") ** A.P. Long et al. 2024: Regular widespread aggregations of the oceanic jellyfish Pelagia noctiluca in the northeast Atlantic over 11 years, Estuarine, Coastal and Shelf Science, Volume 303, 2024. 108805, ISSN 0272-7714, doi.org/10.1016/j.ecss.2024.108805. See also Facebook: The Big Jellyfish Hunt*

For context, Figure 6.5 shows the overall abundance of the Mauve Stingers around Ireland and SW England between 2007 up to 2024. Figure 6.6 shows historic records of blooms of Mauve Stingers since 1840 around the SW and Irish regions.

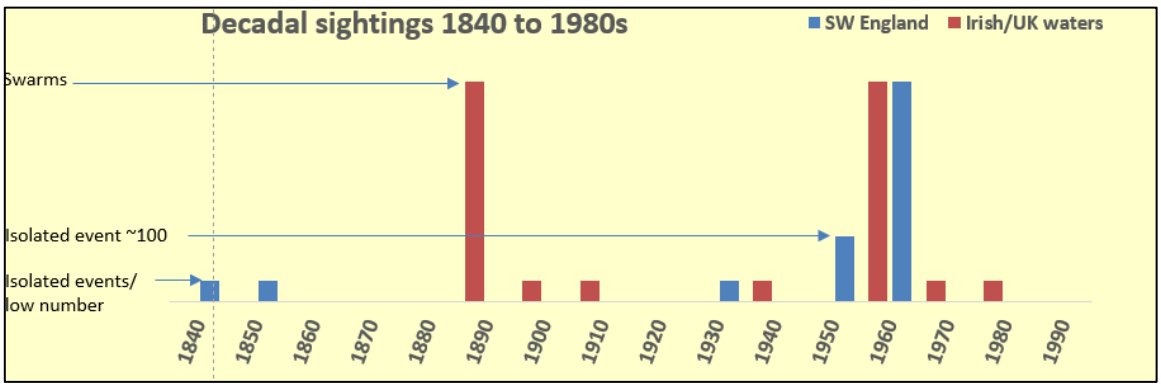


Figure 6.6. Reports of blooms of mauve jellyfish since the 1840 in the Irish Sea (red bars) and around SW England (blue bars) (Adapted from data in Russell https://plymsea.ac.uk/id/eprint/4/1/THE_MEDUSAE_OF_THE_BRITISH_ISLES_Vol_2.pdf).

Hydroids

Crystal jellyfish (*Aequorea* spp.) continued to be reported in large numbers across the south-west from May to September. What was an unprecedented event in 2023 has been repeated albeit with only a few locations having the extremely high abundance ('hundreds') reported in 2024. Few sightings identify the species but it is currently thought that there are three species of *Aequorea* occurring around the region.

Very few Portuguese Man O'War *Physalia physalis* were reported. In contrast, By-the-wind Sailors *Velella velella* stranded in huge numbers from early spring into summer and the two species rarely co-occurred in 2024. Some standings of Velella were estimated to be in the thousands (e.g. Ilfracombe, Portheras Cove) and included small young ones.

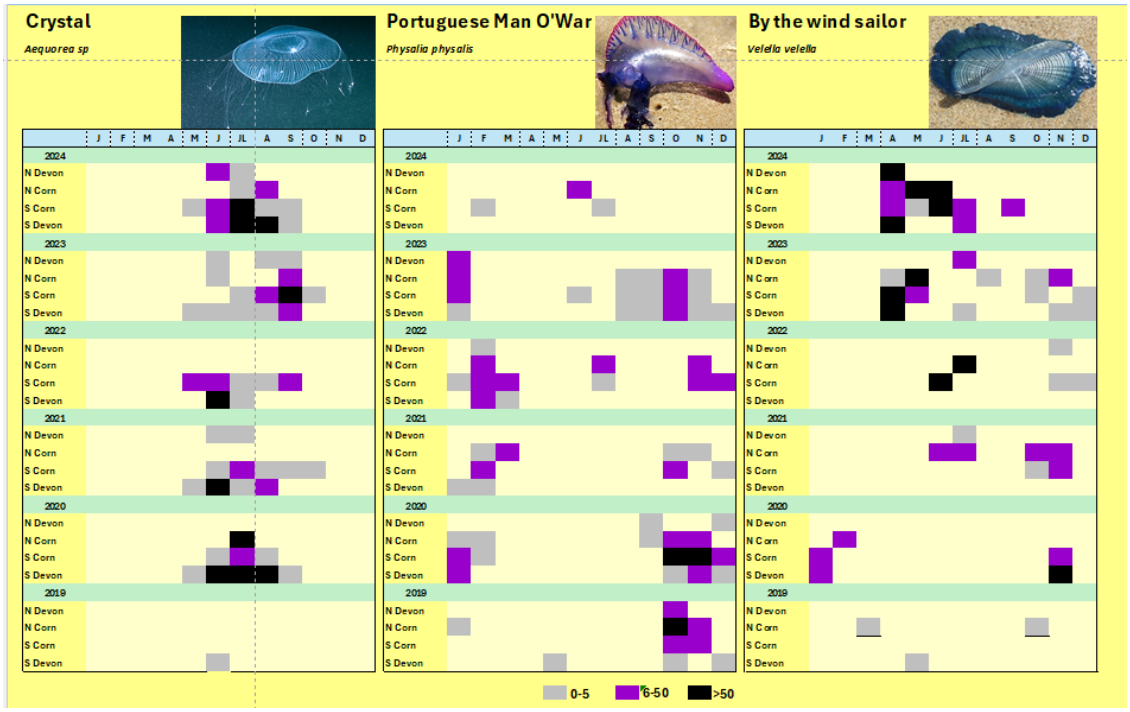


Figure 6.7. SW Jellyfish Survey. Records of abundance of crystal jellyfish and ocean drifters by subregion, month and year. Colours reflect max number reported by any one sighting in that month: lightest grey = max 5; purple = max between 6 and 50; Black = max >50.

Occasional sightings of long "stringy" siphonophores (species not confirmed) were also reported direct to SWME and the SW Jellyfish Survey in April (Falmouth), May (Cornwall) and in June (Cornwall, Wembury, Chesil Cove). Each year a few reports are made of the smaller, more ephemeral hydroid medusae and for 2024 these included: white cross jellyfish (May 2024 - Westward Ho!; June 2024 - Wembury, Cawsands) and purple cross jellyfish (June - Cornwall); these have not been identified to species.

Ctenophores – the comb jellies

Comb jellies continue to be reported across all coasts from spring to autumn. Several reports sent to SWME described dense aggregations in May and very early June: Christine Ingram reported "a swarm of sea gooseberries" in Plymouth and Jake Taylor-Bruce observed thousands of individuals at Wembury (there are at least three different species of comb jelly). At the same time, in Falmouth, particularly large individual comb jellies were photographed by David Hamilton. Reports of lower numbers of comb jellies continued into the summer – in line with the data recorded by the SW Jellyfish Survey (see Figure rrr)

Most citizen science reports do not identify the species. Overall, numbers do seem to have increased since 2019/2020 but the comb jellies are possibly under reported due to their fragile nature and transparency.

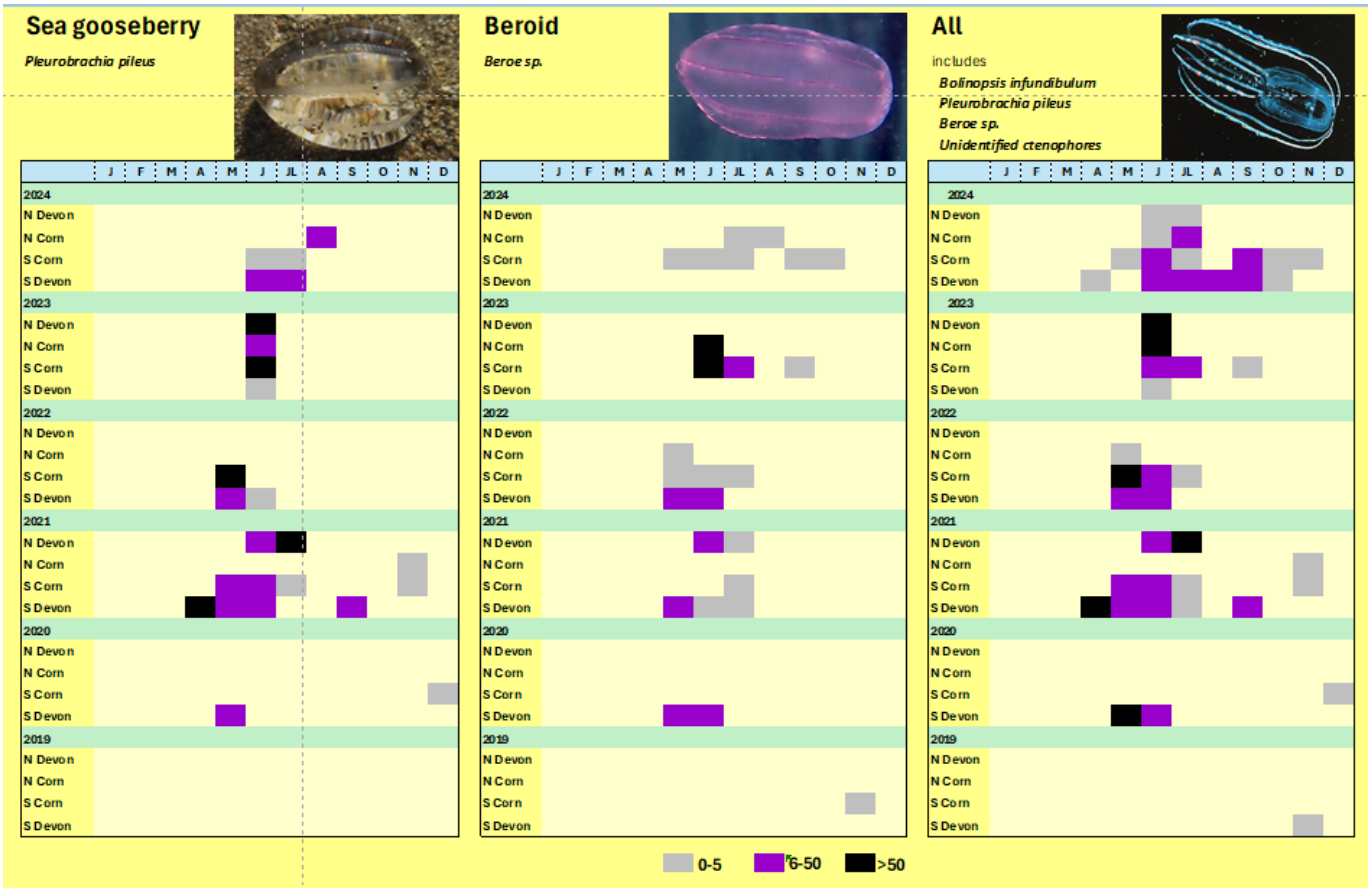


Figure 6.8. SW Jellyfish Survey. Records of abundance of the ctenophores by subregion, month and year. Colours reflect max number reported by any single sighting in that month: lightest grey = max 5; purple = max between 6 and 50; Black = max >50.

Salps

Salps were again reported in huge numbers in 2024, particularly in South Cornwall. PML have recorded high numbers of Salps at the L4 monitoring station for the last couple of years. With 2024 recording rather lower numbers at the L4 monitoring station than 2023 (Figure 6.9).

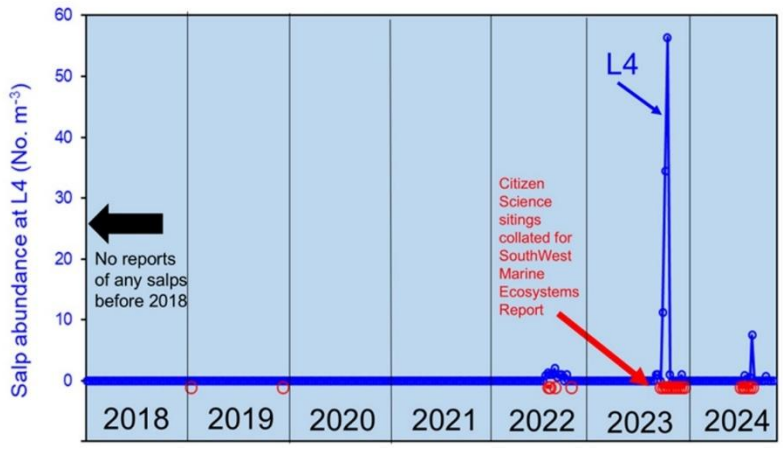


Figure 6.9. Abundances of salps at Plymouth L4 station (blue) and the timing of reported salp observations collated by Paul Naylor. No observations from either source were reported prior to 2018.

In August 2024, videos and photos obtained by Allen Murray at the Eddystone were reviewed by Andrea McEvoy, a plankton ecologist at PML. Andrea explained that there appeared to be two species present: *Salpa fusiformis,* also recorded at L4 and possibly the Spiral Salp *Pegea confoederata* (appearing as coiled chains) (see Plate 6.4b). Salps are efficient filter feeders pumping large quantities of seawater through their bodies. Their fast generation times enable them to dominate the plankton and make the most of phytoplankton blooms, giving them a competitive advantage over some zooplankton.

At least one other salp species was seen in 2024 (August: Porthkerris and Portmellon; diving the SS Foylemore and the SS Lucent ~22 miles east of Lizard Point) – it has been suggested this could be *Cyclosalpa bakeri* but the species identification is not confirmed. The seasonal and regional occurrence of salps in the SW JellyFish Survey is illustrated in Plate 6.4.

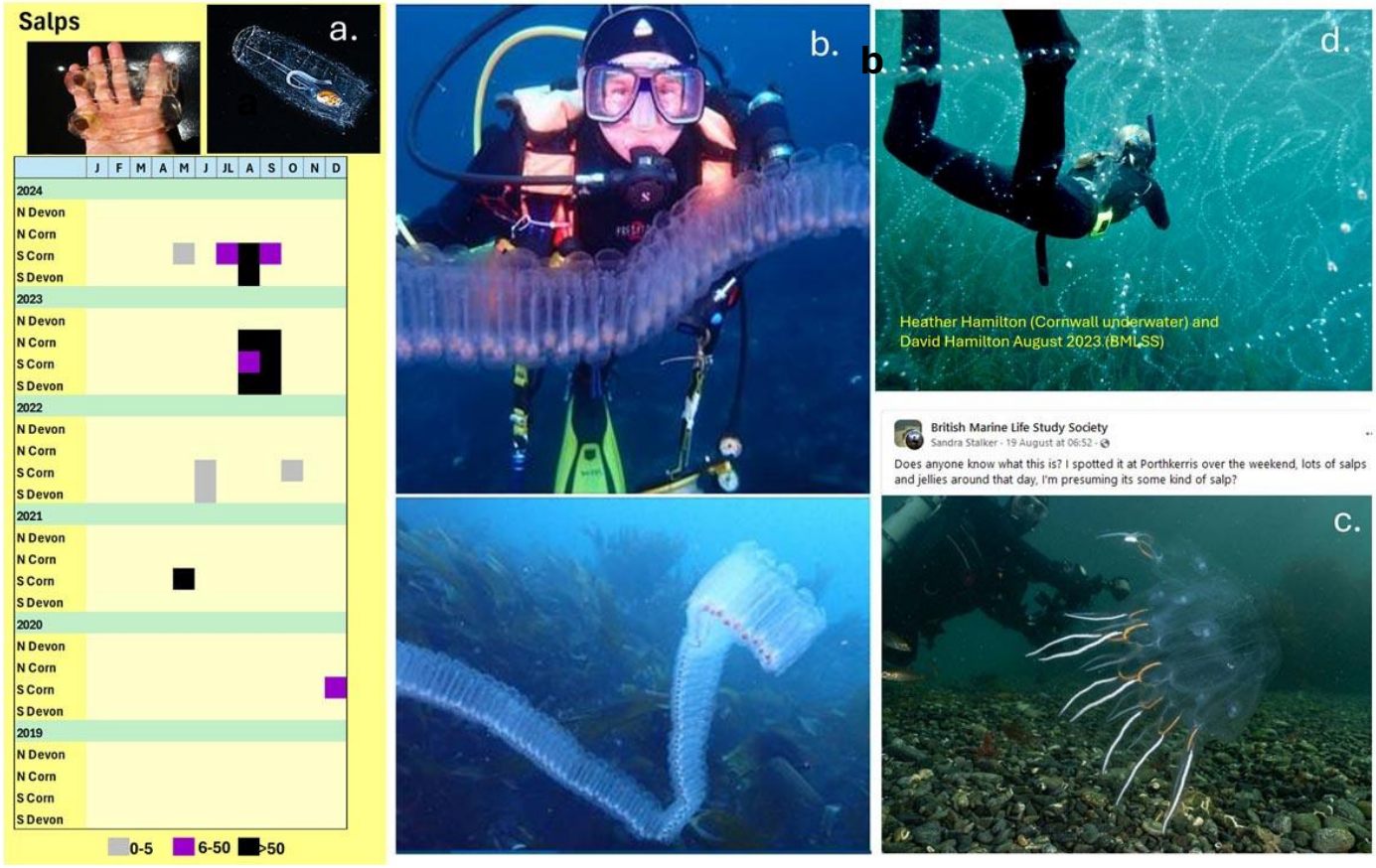


Plate 6.4. (a) Occurrence records of salps by subregion, month and year, from SW Jellyfish Survey. (Colours reflect max number reported by any one sighting in that month: lightest grey = max 5; purple = max between 6 and 50; Black = max >50). Extremely high abundances of salps were reported by: (b) PML (at the Eddystone) and divers at various locations including Porthkerris (c) on the Lizard Peninsula. Images (b) Allen Murray 2024; (c) Sandra Stalker (2024; (d) David Hamilton, Cornwall Underwater 2023.

7. Seashore and Seabed

Keith Hiscock (khis@mba.ac.uk)

This report benefits from through-the-year harvesting of information from scientific papers, social media and personal contacts and from observations subscribed by members of the Seashore and Seabed Community of Practice. For brevity, acknowledgement of their observations is by initials:

IA: Isobel Allsop; LB: Lin Baldock; PF: Paula Ferris; KH: Keith Hiscock; EH: Esther Hughes; TS: Toby Sherwin; MS: Matt Slater.

Summary conclusions

- Seemingly more 'lowlights' than 'highlights' in 2024 with concern about reduced abundance and variety of seabed marine life in several locations. Effects of climate change may have been significant in terms of storminess and high rainfall early in the year but range extensions or increase in abundance of warmer water species seems minimal.
- Recovery of populations of Spiny Lobsters *Palinurus elephas* continues after a 'disappearance' in some areas of the south-west for about 40 years until 2014.
- After large numbers being present especially in 2022-23, Common Octopus *Octopus vulgaris* continued to be observed but in smaller numbers
- in 2024. Previous high numbers (looking back to 1900) were essentially one/two-year 'wonders'.
- Nudibranch sea slug species maintained the reputation of some species disappearing and re-appearing. There were notable increases in sightings of the Rainbow Sea Slug *Babakina andoni*, of *Discodoris rosi* and a sighting at Lundy of the nationally rare *Trapania tartanella*.
- There were species new to science reported from the south-west in 2024: the worm *Arabella ampulliformis* and a pleurobranchid sea slug *Pleurobranchaea britannica.*
- There has been continued work on seagrass survey, protection and restoration programmes in the south-west during 2024 including recording of significant expansion of intertidal seagrass beds (mainly *Zostera nana*) and some decreases but more increases in extent of subtidal *Zostera marina* beds in Plymouth Sound at least.
- Many observers commented that seashore and seabed locations with which they are familiar were much less rich in species and/or with lower abundances of some species – sometimes continuing a trend from previous years.
- Honeycomb Worm *Sabellaria alveolata* reefs were expanding in extent at several locations including North and South-east Devon *S.alveolata* has a smothering effect on other rock epibiota and seems not to attract a significant associated biota.
- The poor condition of seabed marine life at Lundy continues to cause concern with several species are now difficult to find or of much lower abundance.
- There were no additional non-native species that established themselves in the south-west in 2024 but some increases in abundance and extent of existing species. The finding of a crab native to the waters of Florida and living in the structure of a fishing marker washed-up at Chesil Beach in 2016 (published in 2024) demonstrates that human activities continue to bring non-native species to our shores.
- Pacific Oysters, *Magallana gigas*, settled in large numbers, likely in 2023, at several locations in the south-west although seemingly individuals remained small during 2024.
- Several experiments deploying artificial structures to make infrastructure more attractive to marine life have been undertaken.

Introductory comments. The year started on the shore and seabed with the feeling that abundance and variety of species being seen was much lower than in previous years – the view persisted into the spring when most marine life is 'blooming' and on into the summer. However, it might be that some species re-appearance in spring was later than usual (LB re. *Pomatoschistus* sp(p) and *Gobius paganellus*). Persistent rain and freshwater runoff together with gales and 'high seas' characterized the first four months of the year and that may be important. Whatever the cause (if the observation – of decline in species variety and abundance - is correct) the reasons must have penetrated all the nooks and crannies of the ecosystem – inshore fish abundance was down, seashore species abundance and

variety was down and some species were at least seemed slow to 'take-off' after the winter. Such reductions in overall richness or presence of some species is often accounted for by long-term natural variability but see next.

The impoverishment of seashore and seabed species has been noted by several experienced observers looking back over the past, say, ten years. KH made the following note: I was been out-and-about during the low spring tides 17-20/09/24 and feel that it is much more difficult to find numbers and variety of species including under boulders. Andrew Cleave writes (re 'condition of marine life'): "I first visited Kimmeridge Bay in the early 1970s and it was a wonderful site then with a rich intertidal fauna – all the classic species in great abundance, with the added advantage of very gently shelving rocks in a sheltered bay making it ideal for field trips with students. It still looks the same, but you would struggle to find the carpets of Snakelocks Anemones, for example, or Worm Pipefish, or even Shore Crabs now. Steve Trewella tells me that it is the same story out in the bay when he is diving. Relatively recently, (2009 – 12) when Paul Sterry and I were photographing material for our Collins seashore guide we made repeated visits to Kimmeridge and never failed to find interesting specimens, admittedly not in the main bay which gets a lot of tourist attention, but only a short way to the east which is much quieter. Last year I took a group to this same area and it was really hard work to find things to show them. Having said that, two new species have arrived recently: *Asterina phylactica* and *Xantho incisus*, but there have definitely been losses." That commentary echoed a view from Paula Ferris (North Devon Coastwise) that shores there were much less rich than ten years ago. Similar conclusions were being reached by KH for Lundy and Plymouth area shores and seabed. Species too continue looking-out for are reduced abundance of Leach's Spider Crab (*Inachus phalangium* associated with Snakelocks Anemones, *Anemonia viridis*, apparent disappearance of Common Starfish *Asterias rubens* (could not be found off the south coast of Devon and Cornwall in 2024).

More evidence is needed but, if enough experienced naturalists agree that richness and abundance is in decline, the question will be "why?"

Some 'declines' in subtidal areas were likely usual winter die-offs and migrations to deeper water or into nooks and crannies (fish). By the end of May, KH observes (in inner Plymouth Sound) not seeing *Salmacina dysteri* (well, one colony seen at West Hoe) colonies when usually 'taking-off' after winter – they did 'take-off' later in summer but had died-back by end of the year. Also, looking for but not seeing Horseshoe worms *Phoronis hippocrepia*. Looking for but not seeing Ringneck Blennies at Firestone Bay – although others thought numbers were as usual.

Plate 7.1. A long-lived and slow growing branching sponge, *Axinella dissimilis*, being damaged (cut) by the tendrils of a Bull Huss egg case on 9th June at Gull Rock on Lundy.

Bull Huss/Nursehound *Scyliorhinus stellaris* continue to use various species (intertidally, the Bushy Wrack *Gongolaria baccata* and Rainbow Wrack; subtidally, Pink Sea Fans *Eunicella verrucosa* and the branching sponge *Axinella dissimils* especially). This activity has only been noted over the past c. 10 years in the south-west but, at Skomer, monitoring of Pink Sea Fans has shown that entanglement by Bull Huss egg case tendrils 'took-off' from 2000 and continued to increase steeply after 2015.

MarClim surveys

MarClim (Marine Biodiversity and Climate Change) surveys track the abundance and distribution of 87 intertidal species of invertebrates and macroalgae at 100 sites around the UK Regional Seas and northern France on an annual basis. The project has recorded some of the fastest distributional shifts in leading and trailing range edges of species in any natural system. MarClim is one of the MBA long-term time-series which span over half a century.

MarClim surveys are led by Dr Nova Mieszkowska and Prof. Steve Hawkins. Steve Hawkins reports for south-west England:

The cold-water barnacle *Semibalanus balanoides* has not recruited well on the south coast from Prawle around to Mounts Bay in the last couple of years and is rarely more than Frequent on shores. *Semibalanus* is getting usurped

by *Austominius modestus* low on shore especially at estuary mouths (for example, the Yealm, Plym etc). However, *Semibalanus* is still doing well from St Ives up to Bude (in 2024).

The warmer water species *Perforatus perforatus* seems to be recruiting well throughout the English Channel.

We found the hermit crab *Clibanarius erythropus* for the first time at Trevone this year (2025) - given their size they were probably there last in 2024.

Honeycomb Worm, *Sabellaria alveolata*, has spread eastwards beyond Portland Bill to Osmington and forming extensive sheets just reaching 'Abundant' (they had been there for the last four to five years in lower density). The species is cropping up as scattered tubes west of the Camel Estuary (Trevone) and in Mounts Bay - but not in enough density to form sheets or reefs (Occasional at most).

Mussels seem less common in last few years from St Ives, Newquay to Bude (except at Trevone - where seem to be recovering from loss in 2013/14). They used to be 'Superabundant' at most places - but now reaching 'Abundant' (40% cover) - mainly towards top of their zone (e.g., Bude, Duckpool).

Patella depressa is now the dominant limpet (>50%) at many sites throughout the south-west (both coasts) at upper mid shore levels on barnacle covered rock - but *Patella vulgata* is still doing well where there is *Fucus*, low on the shore, and on more sheltered shores.

There have been lots of signs of considerable tide-out damage to upper shore fucoids in recent years (*Pelvetia canaliculata*, *Fucus spiralis*) and occasionally, mid-shore, *Fucus vesiculosus* in the last few years (Mieszkowska *et al*., 2021 - Frontiers in Marine Science) - this trend has persisted.

Small *Clibanarius erythropus* hermit crabs have been found suggesting continued recruitment - perhaps from local populations.

There are more frequent Gooseneck Barnacles *Pollicipes pollicipes* present at Sennen - with at least a couple now close enough to breed.

Algae

Records of 'quite a lot' of the very rarely seen *Laurencia pyramadalis* in the sublittoral fringe on the ledges at Kimmeridge in September 2024 (LB). The most recent record prior to this was in 2010 (Juliet Brodie pers. com).

LB records that the green seaweed *Flabellia petiolata* continues to accumulate from Dorset limestone reefs in Weymouth Bay, near Kimmeridge and on blocks of Portland stone in Portland Harbour Wall. The species was first confirmed as a component of the British flora in 2018 with first records being made in 2013. Probably a species which has been overlooked in the past rather than a non-native.

Plate 7.2. *Padina pavonica* at a site in Torbay on 23/7/24.

Mike Puleston reports: "Last year I recorded none this year it was almost abundant in the shallow subtidal by far the most I have recorded at this particular site since initial recording in 2017". Image: Mike Puleston.

Surveys continued of maerl beds (*Phymatolithon calcareum* and *Lithothamnion corallioides*) in various locations in Cornwall with the 'highlight' in 2024 being the survey and mapping of newly discovered areas with maerl in St Austell Bay. (Plate 7.3). Results of the survey elicited considerable press coverage with the Western Morning News reporting: "Precious Barbieland pink seabed ecosystem found".

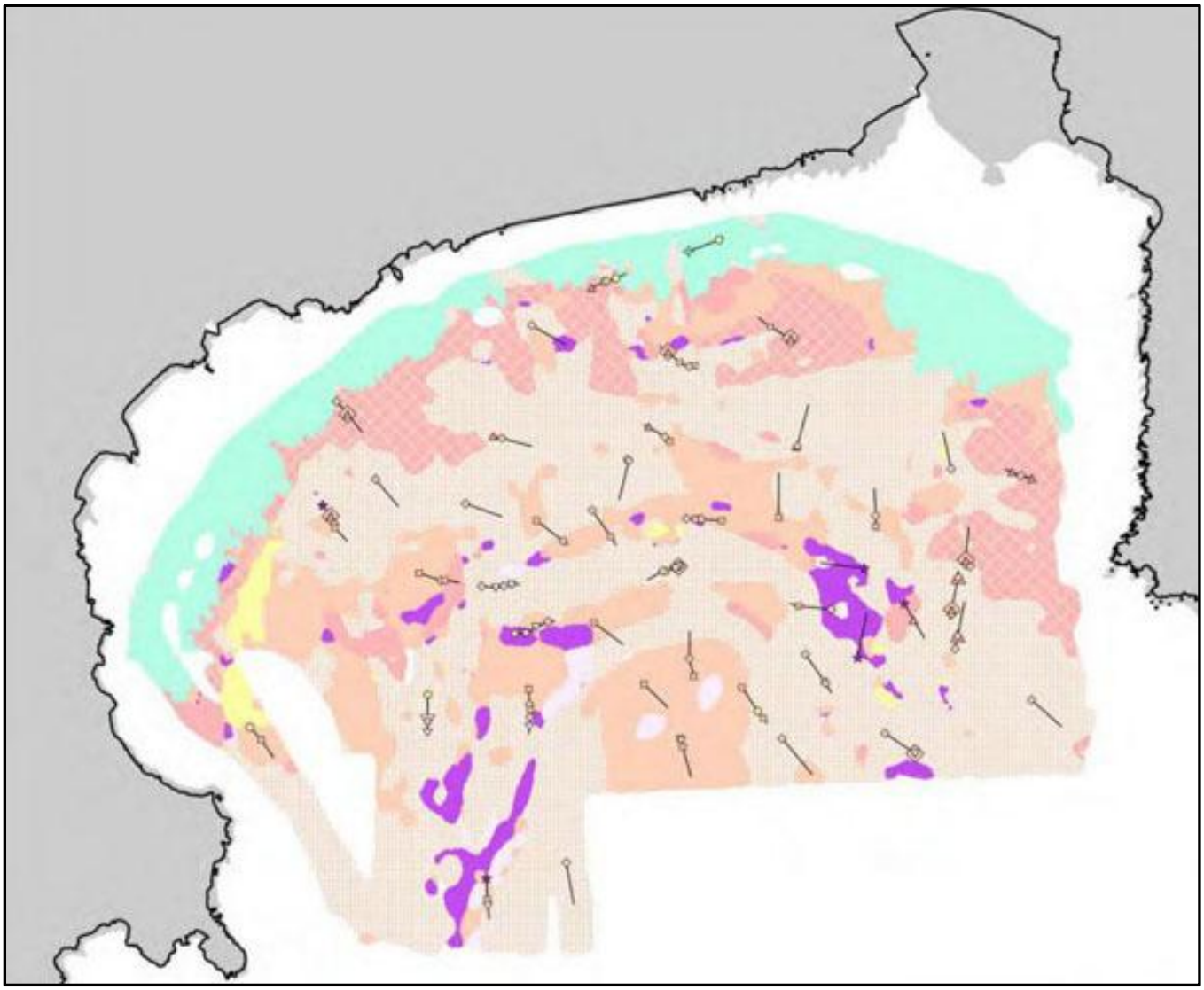


Plate 7.3. Distribution of biotopes from imagery (video) analysis in St Austell Bay.

Presence of maerl is coloured purple and of seagrass (*Zostera marina*) turquoise. For more detail and a key to colours, see NECR589 Falmouth Bay to St Austell Bay SPA Drop Down Video and Acoustic Survey Maerl Mapping - St Austell Bay 2023 - NECR589.

Seagrass

There has been continued work on seagrass survey, protection and restoration programmes in the south-west during 2024 including recording of significant expansion of intertidal seagrass beds (mainly *Zostera nana*) and some decreases but more increases in extent of subtidal *Zostera marina* beds in Plymouth Sound at least. In the Isles of Scilly, long term (27+ years) monitoring has shown little fluctuation in extent or health for many years (James Bell, Swansea University, pers. comm.). For more detail, see: NECR492 Edition 2 Isles of Scilly Seagrass - State of the Meadows 2023-v2 (6).pdf.

Notably, the ReMEDIES programme came to an end with a conference on 1st October. ReMEDIES was a five-year £2.5m marine conservation partnership led by Natural England and funded by the EU LIFE programme to help protect and restore sensitive seabed habitats at five (three in the south-west) Special Areas of Conservation: Isles of Scilly; Fal and Helford; Plymouth Sound and Estuaries.

The areas occupied by dwarf seagrass *Zostera noltei* (and some uncertain seagrass species) has continued to expand in 2024 in several south-west inlets. The view next is for Salcombe Harbour and the Kingsbridge Estuary.

Plate 7.4. Areas of intertidal dwarf seagrass (mainly *Zostera noltei*) mapped during 2024 and summarized by Nigel Mortimer (South Devon National Landscape Officer).

In Plate 7.4, dark green areas are mapped from Environment Agency – funded surveys and undertaken by EcoSpan. Lighter green areas are supplementary information from Nigel Mortimer. Although the locations where dwarf seagrass was present in 2024 are similar to 2023 (included in the Salcombe Harbour Guide), the density had greatly increased - expanding from a few plants in 2023 to hundreds in 2024. The seagrass plants had extended further down the mudflats and into the subtidal to a much greater extent than in previous years and are likely dwarf *Zostera marina.* On the upper mudflats however, the blanket weed was ca. 85% cover and it will only be known how seagrass there is doing next year. Information from Nigel Mortimer.

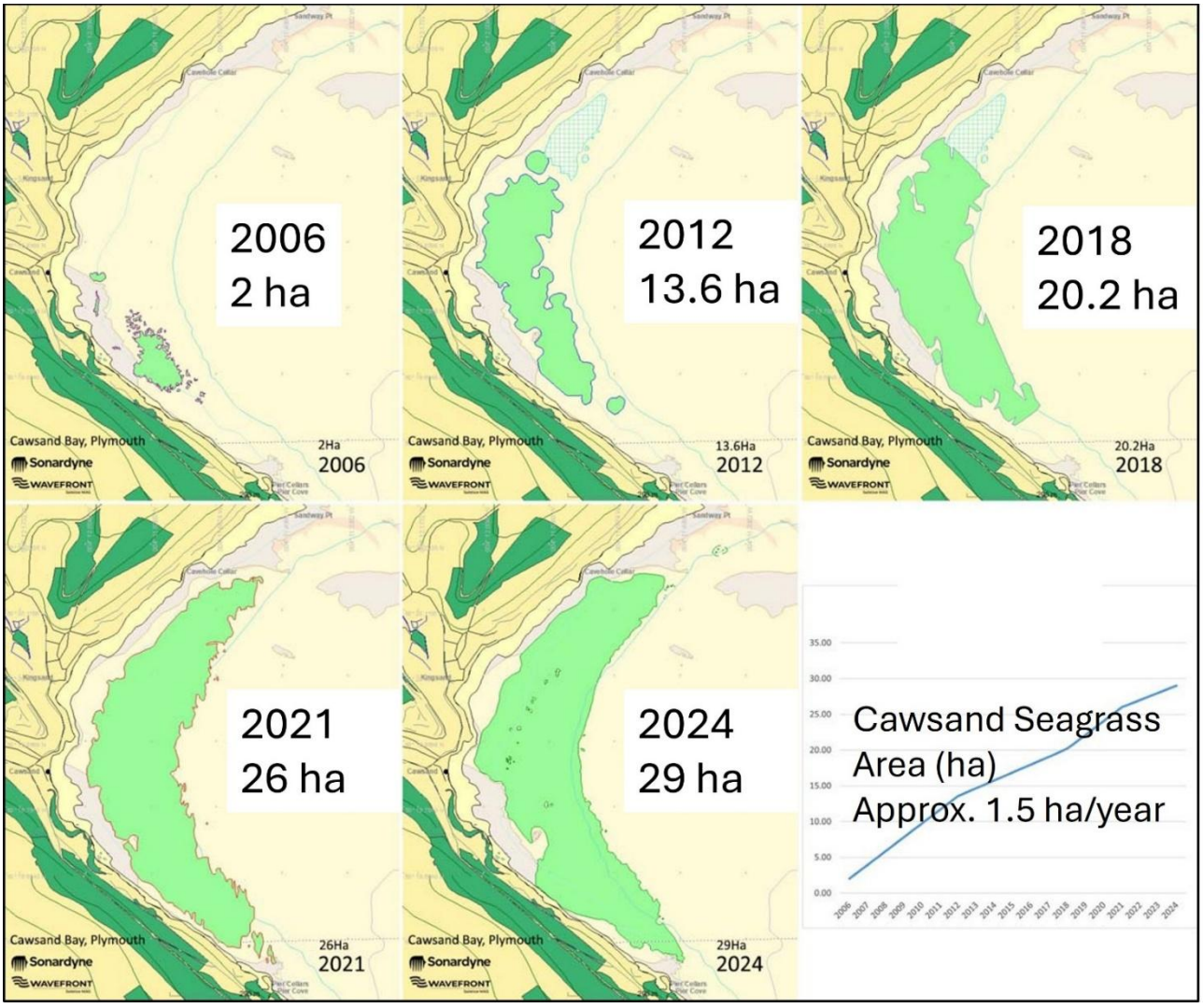


Figure 7.1. Expansion of the *Zostera marina* seagrass beds in Cawsand Bay, Plymouth Sound 2006-2024. Measured by diver surveys in 2006 to 2018 and sonar surveys in 2021 and 2024 . Image: Sonardyne/Peter Holt.

It is notable that seagrass surveys appear to address only extent, density and condition of plants and not 'quality' of the community in terms of associated flora and fauna (in/on the sediment and on the leaves). In 1984, in excess of 40 species were identified associated within two beds of *Z. marina* in the Isles of Scilly (Hiscock, 1985). It would be interesting to see comparable data for the present. Such data would assess 'quality' in terms of biodiversity, a much-emphasised feature of seagrass beds!

Hiscock, K. 1985. Littoral and Sublittoral Monitoring in the Isles of Scilly. September 22nd to 29th, 1984. (Contractor: Field Studies Council Oil Pollution Research Unit, Pembroke.) Peterborough, *Nature Conservancy Council, CSD Report,* No. 562.

Cnidaria

There continued to be (see previous annual reports) no spring 'bloom' of athecate hydroids in Plymouth Sound but images from ex-HMS Scylla in Whitsand Bay suggest thriving colonies on the railings there.

Plate 7.5. Plumose anemones, *Metridium senile*, at Cod Rock Ledges near Berry Head on 17th August during a Seasearch Dive. Image: Keith Hiscock.

The loss of Plumose Anemones along the mainland (inshore) coast of the south-west was noted in the 2023 Annual Report. That loss may extend offshore as divers on 28/08 from Plymouth Sound SAC do not recall seeing any at Hatt Rock where, in 10 out of 11 dives on the site by KH, photos of them were taken. However, the anemones are still being seen in small numbers generally and were abundant on appropriate surfaces at Cod Rock near Berry Head on 17th August (KH) and are still being reported from some locations at Lundy and from long-standing locations in the Isles of Scilly.

Plate 7.6. A pink Sea Fan *Eunicella verrucosa*, in poor condition at Gull Rock, Lundy on 9th June. Image: Keith Hiscock.

Some anthozoans (stony corals, Pink Sea Fans, possibly Red Sea Fingers) have declined at Lundy and marine life there seems a 'shadow' the richness that was observed from the late 1960s through to mid-1980.

Polychaetes

Plate 7.7. *Arabella ampulliformis*: a polychaete worm (anterior view) described new to science in 2024 and collected at Lundy in 2022 during a Porcupine Marine Natural History Society field trip. Image: Teresa Darbyshire.

In April, an article describing a polychaete species new to science and that was sampled during the Lundy Marine Festival in 2022 was published: Darbyshire, T. and Kara, J. Redescription of *Arabella iricolor* (Montagu, 1804) with descriptions of two new species from the United Kingdom and South Africa, *African Zoology*, DOI: 10.1080/15627020.2024.2306421. The title of the article obscures the name of the new species: *Arabella ampulliformis* Darbyshire & Kara 2024. The location of type material is given as: Devil's Kitchen, Lundy Island (51.162112, -4.652221), low shore, under rocks, coll. T. Darbyshire, 14.07.2022.

Plate 7.8. Honeycomb Worm reefs at Westward Hoe! – one of the areas where they are expanding. 16th May. Image: Robin Shrubsole.

Honeycomb Worm *Sabellaria alveolata* reefs were expanding in extent at several locations including North and South-east Devon (North Devon Coastwise (PF) and The Shore of South Devon – (TS)) *S.alveolata* has a smothering effect on other rock epibiota and seems not to attract a significant associated biota.

Molluscs (general)

No significant changes (?) but a random observation is that I (KH) am not seeing so many *Xandarovula* (was *Simnia*) *patula* or their (conspicuous) eggs.

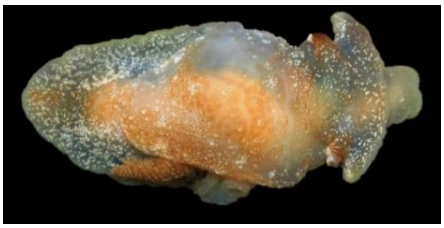


Plate 7.9. A new species of Pleurobranchaia (*Pleurobranchaea britannica*) described from the English Channel (samples nearshore off Start Point): Turani, M. et al. 2004. First occurrence of the genus *Pleurobranchaea* Leue, 1813 (Pleurobranchida, Nudipleura, Heterobranchia) in British waters, with the description of a new species. Zoosyst. Evol. 100 (1) 2024, 49–59. DOI 10.3897/zse.100.113707. Image: ©Ross Bullimore/Cefas.

Plate 7. 10. The seaslug *Trapania tartanella* ranks as 'Nationally Rare' (until another location is reported) and was photographed by Rollin Verlinde on the MV Robert at Lundy on 17th August. The species has only recently been discovered in Britain (Picton & Morrow 2023. Nudibranchs of Britain, Ireland and Northwest Europe).

Plate 7.11. The Rainbow Seaslug *Babakina andoni* first reported from Britain in the Isles of Scilly and Cornwall in 2022. Here at Wembury for the first time in Devon in 2024. The colourful character of the slug make it much sought for by rockpoolers. Image: Paul Naylor.

A lot more records of the orange seaslug *Discodoris rosi* were also reported in 2024.

Mollusca: Cephalopods

Common Octopus (*Octopus vulgaris*) continued to be seen/caught along the south coast of Cornwall and Devon but not in the high numbers seen in the previous two years, especially 2022. IA notes very infrequently seen in the Isles of Scilly. Small individuals were being seen late in the year suggesting local recruitment.

Crustaceans

Plate 7.12. There were lots of sightings of 'baby' crawfish including one being consumed by a cuttlefish. Image: Mike Markey.

Plate 7.13. A recently recruited crawfish in the boiler of the wreck of the Epsilon off the Lizard on 13th June. Image: Keith Hiscock.

Crawfish, *Palinurus elephas*, have continued to recruit during 2024 and numbers, especially of small ones, were high in some locations. For instance, approximately 25 were counted in one of the boilers on the wreck of the Rosehill in Whitsand Bay and high densities could be seen in a video (Christine Ingram) of the reef north of the wreck of the Persier in Bigbury Bay in autumn. Large ones (say, carapace length more than 110 mm are still rarely being seen at eastern Channel locations.

There seemed to be less observations of moulting aggregations of Spiny Spider Crabs (*Maja brachydactyla*) in 2024 than in the past few years. However, aggregations often occur a different locations each year. One specific observation on 17th June: Newquay Gazzle – Spiny Spider Crabs beginning to gather [Kay Pea on Seasearch Cornwall Facebook].

There seem to be many less hermit crabs (*Pagurus bernhardus*) noted subtidally in Dorset (Lin Baldock) but also (KH) in Plymouth Sound together with less *Pagurus prideaux*. LB observes that the same reported for Scotland and North Wales. St Piron's Crab (*Clibinarius erythropus*) continues to be present in 'the right sort of' rockpools with the furthest east recorded occurrence being [Prawle Point] (MarClim records). [The hermit crab was re-found in recent years after a c. thirty year 'absence').

Plate 7. 14. A sponge crab *Dromia personata*, in Firestone Bay, Plymouth Sound on 13th November. Image: Keith Hiscock

Plate 7.15. Possibly the same crab on 21st November 2018 at nearby Eastern King Point. Image: Keith Hiscock.

There are continued reports of divers and fishermen seeing more Sponge Crabs *Dromia personata*.

Montagu's (or Furrowed) Crabs *Xantho hydrophilus* continue to be reported as much more abundant than their historic numbers (although recorded (as *X. incisus*) as "common between tide-marks on all rocky shores" in the Plymouth Marine Fauna (1957)). Conspicuously increasing in abundance on Dorset shores (Julie Hatcher, pers. comm.). It has been suggested by several observers that *X. hydrophilus* are 'bullies' and may be displacing other crab species on shores. PN reports them 'stealing' crevice habitats from Tompot Blennies.

Plate 7.16. The Anemone Shrimp *Periclimenes sagittifer* amongst the tentacles of a Snakelocks Anemone *Anemonia viridis* near Newquay. Image: Keith Raven.

The warm water anemone shrimp *Periclimenes sagittifer* was recorded for the first time on the north Cornwall coast on 21st September by Keith Raven. Previously it had been known from a few isolated locations in south Cornwall, south Devon and Dorset.

Echinoderms

Offshore, there seem less Seven-Armed Starfish *Luidea ciliaris* and no *Porania pulvillus.* Maybe not seeing so many Bloody Henry starfish *Henricea* sp(p). Spiny starfish *Marthasteris glacialis* continue to be present is similar number to previous years. Common Starfish, *Asterias rubens* were not being seen in the Plymouth area at least. (KH)

Common starfish *Asterias rubens* have been 'difficult to find' in 2024 and the occasional 'wash-outs- have not been seen. However, images from Reef off North Devon (Maggs Ashton, Ilfracombe & North Devon Sub-Aqua Club) of large numbers on mussel beds demonstrate that they are still about in high abundance in places

A visit by KH to ex-HMS Scylla on 17th May suggested marine life 'much as always' (although structural loss of the vessel continues). However, Rosy Feather Stars *Antedon bifida*, which had been visually dominant in places since a few years after placement of the reef had disappeared (at least conspicuously) from sometime after mid-May. Feather stars could not be found on 11th September and, again, on 9th November (but had re-colonised the bow area by 15th March 2025).

Non-native species

Plate 7.17. *Pilumnus dasypodus*, a south-west Atlantic species found alive washed-up in Chesil Cove in the remains of a pot marker from Florida. Image: Kevin Webb, Science Photographer, NHM Publishing and Image Resources.

There have been no additional (new to Britain) non-native species noted as established in south-west England during 2024 (Dr John Bishop, pers. comm.). However, the finding (by Steve Trewhella) of a crab, *Pilumnus dasypodus* in the remains of a pot marker from Florida that washed-up in Chesil Cove demonstrates how species not native to the NE Atlantic may find their way to Britain. Found in 2016 and the record published in 2024: https://doi.org/10.11646/zootaxa.5569.1.6.

Wakame (*Undaria pinnatifida*) is widespread in the south-west (NBN Atlas) but has not been reported from the Isles of Scilly, North Cornwall and North Devon including Lundy but there is a record from Somerset. Plants were noted (LB) as occurring infrequently, not on Swanage Pier but present on Bournemouth Pier.

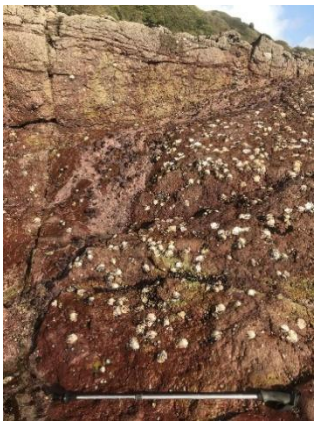


Plate 7.18. Settlement of *Magallana* gigas near Kingsand, Cornwall. First noted 11th February; here on 17th October. Image: Keith Hiscock.

Pacific Oysters *Magallana gigas.* Several areas in the south-west suffered high settlements of Pacific Oysters. Noted locations were Kingsand and Cawsand and Cellar Bay in Plymouth Sound and nearby (KH). PN records 'incredible density at Mothecombe' (west shore of the Erme Estuary) Density was estimated in places as about 50/sqm at Kingsand of small (many around 20mm) at about upper midshore and midshore in February. By October, settled individuals appeared not much larger, say 30 mm. In the Isles of Scilly, Rici Pender (Isles of Scilly IFCA) reports '30 ish' found on the rocks on St Martin's flats - two groups searched at low tide. Also, there is anecdotal evidence of some in Tresco channel which the people reporting have been asked to remove. All specimens were on the big side and no juvenile or intermediate sizes were found at this point.

TS reports big fields' in the Exe Estuary that are regularly harvested. Also, a lot of the shells are empty – a similar situation to the Yealm populations (KH).

In a survey of non-native intertidal species around Rat Island and at Quarry Bay at Lundy assisted by a volunteer working party on 22-24 June, KH concluded: "Whilst populations of Wireweed and of Red Ripple Bryozoan were conspicuous at locations around Rat Island, other listed species were not found there. The only non-native marine species recorded at Quarry Bay was one Darwin's Barnacle *(Austrominius modestus)* found after about 45 mins searching."

Red Ripple Bryozoan *Watersipora subatra* continues to be found on many rocky shores and is becoming more frequent in SE Cornwall. In surveys of the Fal and Helford, it is being found attached to seagrass leaves (EH). At Lundy (first found there on 27th May 2021) the bryozoan now covers extensive overhanging or vertical (shaded) rock surfaces on the NW side of Rat Island but was not found elsewhere (KH). In Torbay it occurs in the harbour and as far as Meadfoot (TS).

At Lundy, Wireweed, *Sargassum muticum*, occurred in June in about half of 'suitable' (height on the shore) rockpools which would be rated as Frequent or Common there. Harpoon weed often occurs in rockpools at Lundy and on the lower shore but has 'good' and 'poor' years. 2024 was a 'poor' year. Also, the tide was not likely low enough for attached plants to show at low water. Tara McEvoy-Wildling observed (from snorkeling) that large patches of Harpoon Weed were present below the jetty.

Particular effort was made to check for Pacific Oysters at Lundy but none were found.

Restoration and enhancement

'Living sea walls'

The relatively new concept of Living Sea walls in the UK converts harbour walls into homes for sea creatures. Over 150 textured hexagonal tiles have been introduced in Falmouth, Plymouth, and Mevagissey, with plans to expand to Newquay, Padstow and Port Isaac.

Plate 7.19. Tiles installed in Falmouth Harbour. Image: Vicki Spooner/Falmouth Harbour.

Plate 7.20. Tiles were installed at Commercial Wharf, Sutton Harbour in August 2023. Image: 1st December 2024 Keith Hiscock,

Textured tiles have been installed in Falmouth and are used across Cornwall to transform surfaces from flat to rocky - in order to boost marine life. Falmouth Harbour also has reef cubes on the foreshore.

Plate 7.21 and 22 . A textured 'Marinecrete' block and a Concrete rockpool – part of the 'Long Groyne' development at Hengisbury Head. Image: Alice Hall.

The upgrade of the 'Long Groyne' at Hengisbury Head in Dorset was completed in October 2024 and included placing a total of 33,500 tonnes of rock that arrived by sea from France and Norway. A host of environmental enhancements have been incorporated into the design to provide important new marine habitat (from: Hengistbury Head Long Groyne works 2021-2024 - Poole & Christchurch Bays Flood and Coastal Erosion Risk Management).

The Plymouth Living Sea Wall at Commercial Wharf outside of Sutton Harbour was bolted into place 1-18 August 2023 (a few panels seem to have been removed). First photograped and looked at by KH on 16th September 2023 when green algae had settled. By the end of 2024, the panels were visually dominated by Bladder Wrack *Fucus vesiculosus* with a very few limpets, *Patella* sp., juvenile Common Periwinkles, Flat Periwinkles *Littorina* cf *obtusata* and the topshell *Steromphala* (was *Gibbula*) *umbilicalis*. There were many Australasian Barnacle *Austrominius modestus* (no other barnacle species were observed on the panels), scattered tubeworms *Spirobranchus triqueter* and the non-native Red Ripple Bryozoan *Watersipora subatra*. In the rock pool mimics, some very juvenile ascidians - maybe *Ascidiella* sp. and very small patches of sponges. Interestingly, lots of Pacific Oysters *Magallana gigas* and Dogwhelks *Nucella lapillus* on the original seawall but not (yet) on the panels.

8. Fish

Edited by: Douglas Herdson (douglas.herdson@btinternet.com), **Simon Thomas** (bluedogfishing.simon@aol.co.uk) and **Bob Earll** (bob@bobearll.co.uk)

Contributors: Lin Baldock, Paul Naylor, Robin Bradley, Neil Garrick-Maidment, Jeroen van der Kooij, Matt Slater, Bex Allen, Tom Horton, Keith Hiscock, Rebecca Nesbit, Peter Davies, Mal Thomas, Steve Colclough, Martin and Sheilah Openshaw

Contact: Douglas.Herdson@btinternet.com

Conclusions

- A shift from meso-predators (e.g. gadoids) to apex predators (Bluefin Tuna, sharks).
- Sardine and anchovy are expanding in range and show overall increase in biomass. Sardine, sprat and anchovy show significant interannual biomass fluctuations with occasional 'spike' or drop.
- There was a major mortality event around Cornwall with the death of sardines on both coasts in March 2024, which coincided with common dolphin strandings. No obvious explanation has been determined.
- Seasonal shifts in mackerel leading to very reduced catches inshore in the summer.
- Continued very low basking shark sightings to the new normal of very low or no sightings.
- Range shifts in some southern species northward extensions e.g. Comber, and an explosion of juvenile Blackspot (Red) Bream.
- Range shifts species moving down the English Channel from the east to west e.g. Black Bream and stingrays.
- Conger eels and John Dory doing exceptionally well, confirmed by divers and anglers.
- Notable rare fish records including single records of rabbitfish, Saupe and two Red Scorpionfish.

Introduction

Significant changes to the south-west fish populations are happening. The aim of this chapter is to describe the changes that are occurring to the fish species in the south-west. Predictions arising from climate change on the composition of the fish fauna suggests that there will be significant changes over time and a number of these predictions seem to be being realised. We have specifically aimed to:

1. Describe how south-west fish populations are changing and their impacts on wider ecosystems.
2. Document the changes in the fish species new to the south-west and whose populations are becoming established (range extensions) – including records of them breeding in south-west waters.
3. Document the changes in fish species whose populations are becoming reduced (range declines).
4. Document changes of key species which are of conservation interest because of their threatened status.
5. Document changes to major commercial species where changes are being observed by many different sets of observers e.g. the seasonal shift in the mackerel population.
6. Document events involving fish populations e.g. sardine 'wreck'.
7. Note records of rare fish that are only occasionally reported in south-west and UK, but may well signal significant range expansions.
8. Document research and recording approaches which are making important gains to our knowledge.

In December 2024, with contacts from Douglas Herdson, we created the SWME Fish Community of Practice (CoP) which now has over 50 members; if you would like to join this group contact Bob Earll bob@bobearllc.o.uk . The first CoP meetings were held in December 2024 and in January 2025. It is notable that contributors came from very different observer communities including divers, sea anglers, commercial fishermen, eNGOs, academic researchers, strandings networks, users of baited and remote video recordings, telemetry, eDNA and observers who have reported novel finds. It is interesting to see how the inputs from the different observer groups are corroborating trends. The editorial team of 15+ topic specialists came together and a 28 page **Reference Report** was the product of their contributions. *Contributors emails are listed throughout this chapter and they should be contacted directly for further details*.

The editorial process to produce this chapter – 60% shorter than the Reference Report - has focussed on the objectives of the CoP, and also taken into account ecosystem elements include the key role of apex predators, pelagic forage fish and well as the demersal species. Information on some species which have been covered for many years in the SWME report is retained in the Reference Report but, where their populations have remained relative stable, reference to them has been considerably reduced for this report e.g. triggerfish.

Apex predators – Simon Thomas (ST) bluedogfishing.simon@aol.co.uk

Common Thresher (*Alopias vulpinus)*
There were 24 reports of Common Thresher captures in the Western English Channel, although fish didn't appear in numbers at the waters around the Isle of Wight during the summer. Common Threshers were present in relatively large number off the South Devon and Cornwall coast up to the end of the year, but this may also reflect increased effort in areas not normally fished for shark during the Autumn due to the increased effort from those participating in the bluefin tuna fishery. However, the pattern of fish migrating east in the English Channel during the early summer before migrating west again during the autumn months now seems established. Fish were reported off Penzance by the commercial fleet during December, but it is not known where these fish spend the late winter or spring. Greater insights into favoured sites and ecology are being made. The bycatch of threshers has been noted and there were three reported strandings in 2024.

Porbeagle (*Lamna nasus*)
Although several large fish were reported off the north coast of Cornwall, poor weather during the spring prevented much fishing activity. There were 19 reports of young fish (Year 0-3) off Falmouth and Looe in September and December, and off Falmouth in August-November. These reports were concentrated around certain shipwrecks and inshore reefs, where young fish are found in most years. Noticeably, there were many reports of mature fish present on shipwrecks in Lyme Bay throughout the year. However, there is little angling pressure for Porbeagle Sharks in Lyme Bay and most reports were of sightings and encounters by the commercial rod and line bass fishermen.

Blue Shark *(Prionace glauca*)

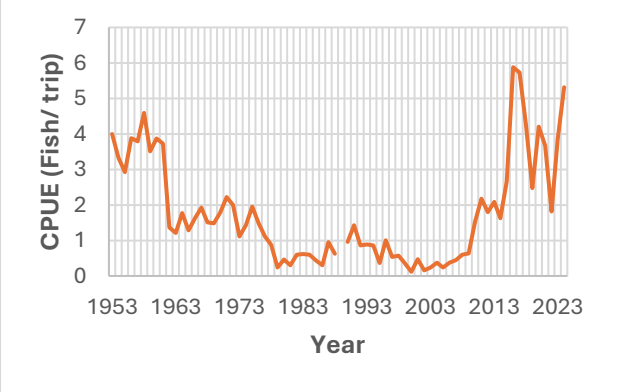


Figure 8.1. Catch Per Unit Effort (blue sharks per trip) from Looe, Plymouth and Falmouth from 1953 to 2024.

Two thousand, four hundred and one blue sharks were caught and released from Looe, representing a good year (Figure 8.1). NOAA , the MBA, Shark Hub and the Pat Smith database organised workshops in Plymouth and Looe to engage with anglers. The NOAA tagging programme funded 2000 FLOY tags of which more than 1900 have been deployed. The NOAA tagging programme also funded 6 satellite tags which are being monitored by Dr Matt Witt's team at Exeter.

Overall, the population of blue sharks were dominated by female fish (96%) but a number of small males were reported along with five mature males, including a fish of circa 150 kg, released by Dan Margetts of the Looe charter boat Sowenna. This fish was captured one year to the day that a similar sized male was released from Plymouth. The male fish appear on the large tides in late July and are not seen after August but the presence of mating scars on females, suggests that some breeding occurs locally. Numerous neonates were reported during the summer and early autumn suggesting with numbers increasing to the west of the region. This suggests that some pupping occurs locally.

Atlantic Bluefin Tuna (*Thunnus thynnus*) Tom Horton T.Horton@exeter.ac.uk **& Steve Murphy**
The recovery of Atlantic Bluefin Tuna (ABT) is ongoing story which has led to considerable interest in the specialist and wider community both locally and nationally.

Quota. In 2024, the United Kingdom was allocated a total of 66.15 tonnes of Atlantic bluefin tuna quota by the International Commission for the Conservation of Atlantic Tunas (ICCAT). This quota was distributed as follows: Commercial Fishery: 39 tonnes were designated for a trial commercial fishery. Recreational Permitting Schemes: 16 tonnes were allocated to support catch-and-release recreational fishing programs. Bycatch and Tagging Programs: The remaining quota was reserved for bycatch allowances and scientific tagging initiatives. For more information see the DEFRA website. This quota does not extend to the devolved administrations of the Channel Islands, where ABT are not fished. Permitted catch-and-release recreational fisheries operated in England, Wales and Scotland and reports indicate that >4,000 fish were caught and released.

Management. The Marine Management Organisation (MMO) manage and monitor both fisheries and to-date no statistics have been released. In due course these data should become available.

Tagging studies. The Thunnus UK programme finished its funded tagging activities in 2023 and no electronic tagging occurred in waters off England in 2024. Similarly, the CHART programme ceased in 2023 so no floy tagging took place in 2024.

Publications:
Horton, T.W., Binney, F.C., Birch, S., Block, B.A., Exeter, O.M., Garzon, F., Plaster, A., Righton, D., van der Kooij, J., Witt, M.J. and Hawkes, L.A., 2025. Annual migrations, vertical habitat use and fidelity of Atlantic bluefin tuna tracked from waters off the United Kingdom. Scientific Reports, 15(1), p.293.

Ford, J., Phillips, S., Ribeiro Santos, A., Murphy, S., McMaster, J., Thomas, S., Duffy, M., Davis, S., Arris, M. and Righton, D. (2024). Summary of the 2021-2023 Catch and Release Tagging (CHART) Programme for Atlantic Bluefin Tuna (*Thunnus thynnus*) in Southwest England. Collect. Vol. Sci. Pap. ICCAT, 81(5), SCRS/2024/161, pp.1-9.

The inaugural English Bluefin Tuna Catch and Release Recreational Fishery (CRRF) in 2024 yielded significant insights into the fishery's productivity and sustainability. Here are some of the key statistics and findings provided by Steve Murphy and via the MMO:

- Season Duration: The fishery operated from 3rd August to 31st December 2024, spanning 21 weeks and 4 days.
- Participation: Out of 93 permitted vessels (62 charter and 31 private), 81 (87%) were active during the season.
- Fishing Activity: A total of 1,014 trips were conducted, with 838 trips (83%) successfully catching at least one Bluefin Tuna (BFT) and 3,359 bluefin caught in total.
- Catch Rates: The overall catch per unit effort (CPUE) was 3.3 BFT per trip. Notably, during September and October, the CPUE peaked at 3.68 and 3.65 BFT per trip, respectively.
- Catch Success Rates by Month, ranged from August: 80% of trips successful, September: 86%, October: 86%, November: 73%, December: 43%
- Fish Size: The average length of BFT caught was 167.7 cm, with an estimated average weight of 95.5 kg.
- Fish Condition and Mortality: A remarkable 98.7% of BFT were released in good to excellent condition, with a low incidental mortality rate of 0.21%. Cefas and the University of Exeter are yet to publish a study on post-release mortality.
- Gear Usage: The most commonly used gear types were large spreader bars (used in 553 trips) and small spreader bars (455 trips). Live baits were employed in 171 trips, and other methods, including poppers and jigs, were used in 17 trips.

The First UK tuna catch and release competition was held in Cornwall (msn.com) in 2024

Sightings

There have been numerous sightings, key elements of which were:

- Earliest records: A sighting in March from Duncan Jones Marine Discovery, more sightings occur from July through to late December
- Feeding: ABTs taking fry, and feeding frenzies (as a recording parameter), garfish (ST), in Plymouth Sound chasing a shoal of garfish (Rob Hurrell) and eating Atlantic saury (*Scomberesox saurus*) MS DH All inshore data appears to be garfish, but I have learnt of reports of the feeding on sauries further offshore where they are commoner. General – stomach contents they seem to eat a range of species including sardine and whiting.
- Feeding with ABT associated with huge increases in southern shearwaters Cory's and Great Shearwater (Peltic survey) and from the Scilly Isles
- Size: ST lots of smaller BFT – Carrick Roads – 25-50 kg. Sighting of a large shoal (300-400) of these smaller fish taking fry.

Other tunas

Skipjack Tuna (*Katsuwonus pelamis*)
Mark Griffiths recorded a large skipjack tuna (9kg) stranded in Helford Creek – the 5th UK Record.

Bonito (*Sarda sarda*)
Sports anglers catching these and David Jenkins reports bonito being caught in October 2024 by bottom trawlers in the Bristol Channel.

Apex predators: Discussion
There is a developing pattern of a shift from meso-predators as evidenced by the decline of gadoids to apex predators notably large numbers of blue sharks and bluefin tuna (Figure 8.2).

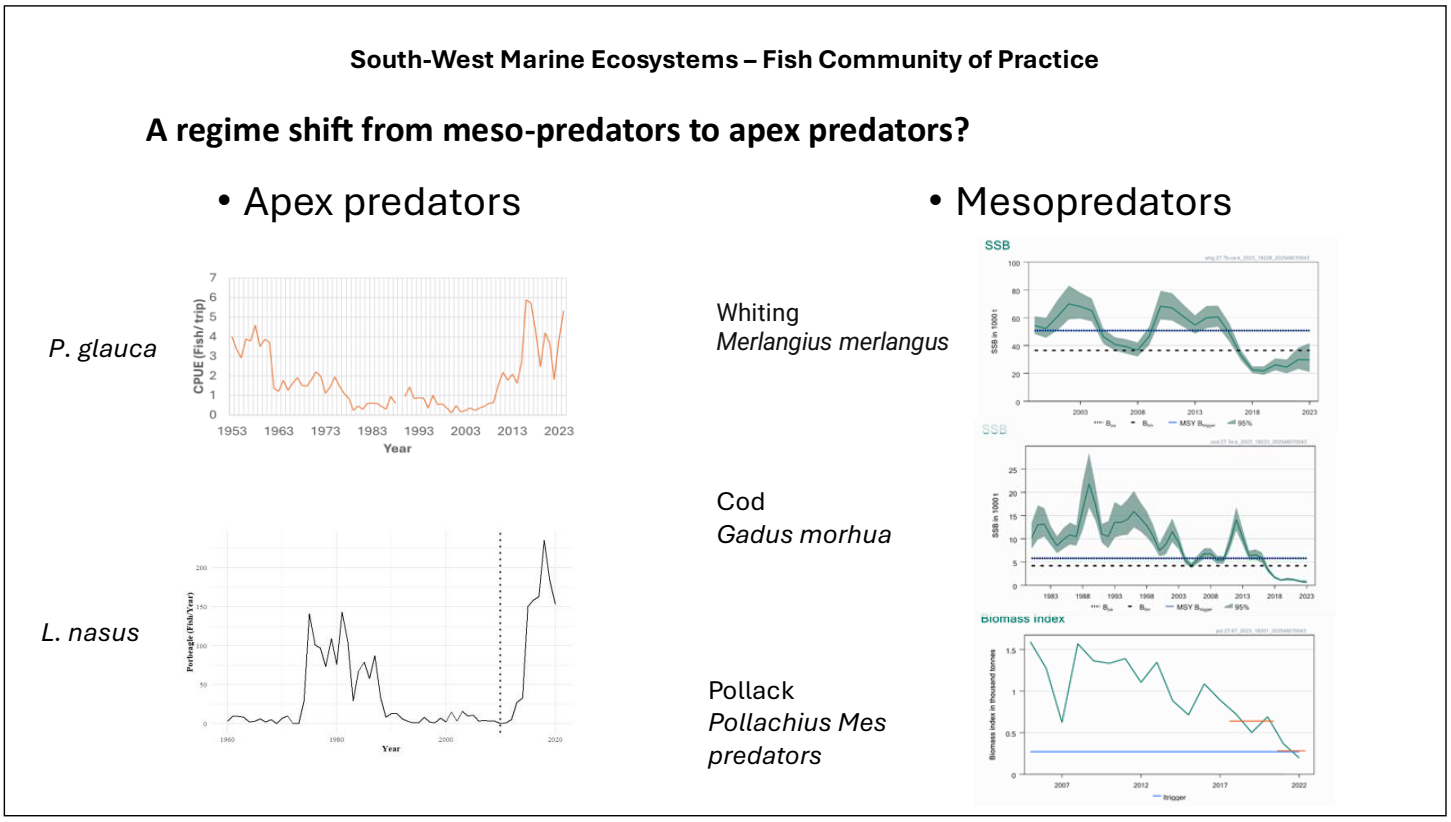


Figure 8.2. A regime shift from meso-predators to apex predators? Source: Simon Thomas.

Elasmobranch Observations – Simon Thomas bluedogfishing.simon@aol.co.uk

Basking Shark (*Cetorhinus maximus*) Harriet Allen Harriet@sharktrust.org
Basking Shark sightings are considerably down from the high in 2006 of 4145 sightings. Most unusually there were no Basking Shark sightings from the Isles of Scilly (John Headon). The reduced number of sightings in the Southwest is now normal, although reports from the west of Ireland suggest numbers of sightings there are increasing. Numbers in the table are approximate based on a polygon search for the Southwest. The Shark Trust National report for Basking sharks in 2024 has been published.

Sightings in the southwest have been as follows since 2020:

2020	2021	2022	2023	2024
21	36	10	0	5

Nursehound (*Scyliorhinus stellaris*)
KH reports less egg laying – obvious observations of egg cases. The species is relatively commonly encountered by both shore and boat anglers.

Spurdog (*Squalus acanthias*)
There were less large mature female spurdog reported to the east and SW of Start Point during 2024. However, increased captures of both males and mature females were reported off Penzance and many smaller males were reported off Falmouth. Commercial netters reported occasional large landings of both big females and smaller males. They shoal as single sex groups and both breeding and pupping seems to occur the south-west region during the autumn, when heavily gravid females are encountered, and males and females are found together.

Skates
Blue Skate (*Dipturus batis)*
Scott Belbin (Galloper) caught and released 15 blue skate in deep water to the south of the Lizard and further fish were reported from the Bristol Channel and Chesil beach. Commercial reports suggest a range expansion of the species. There was a confirmed egg case of a blue skate reported to the Shark Trust (Harriet Allen).

Undulate Ray (*Raja undulata*) - Martin & Sheilah Openshaw Martin@stardis.co.uk

Worryingly Undulate Ray numbers seem to have decreased according to three observers – The *Undulate Ray Project* started in 2012 has been run by Martin and Sheilah Openshaw, Mal Thomas (mal@castlemoreltd.co.uk) and Egg Case Hunt observations (Table 8.1) support this decline. The cause of decline seems to date back when fisheries restrictions were relaxed in 2015. MT: Undulate Rays spiked when they were on a no-take fishery rule, we even raised our 100% specimen rate because they were so numerous and bigger, 17lb was common. Now we struggle to find some. Ref: Spring 2021 Page 16 PMNHSBull15.pdf

The Shark Trust's Great Eggcase Hunt– Harriet Allen & Colleagues at the Shark Trust
The table (8.1) provides the common species records from the south-west to judge 'normality'.

Table 8.1. Eggcases by year for the Southwest. Numbers are approximate based on a polygon search for the Southwest.

Year	*Scyliorhinus canicula*	*Scyliorhinus stellaris*	*Raja clavata*	*Raja montagui*	*Raja microocellata*	*Raja brachyura*	*Raja undulata*
2018	645	563	1,040	1,353	131	219	211
2019	714	267	762	1,858	180	147	128
2020	436	247	273	1,240	158	153	75
2021	608	339	560	1,786	336	365	124
2022	528	411	391	2,067	197	431	62
2023	511	281	463	1,417	172	194	27
2024	254	165	381	719	93	99	37

Pelagic Species

Chub Mackerel (*Scomber colias*)
Individual fish were being caught and recorded. In the past, this species was often reported as *Scomber japonicus*, and incorrectly called Spanish mackerel (which is a totally different warm-water sub-family).

Garfish (*Belone belone*)
There has been a seasonal shift in their inshore occurrence from summer to autumn/ winter. They are being predated upon by Atlantic Bluefin Tuna across the region, and even in the Plymouth Sound.

Pilot Fish (*Naucrates ductor*)
ST As the numbers of Blue Shark increased in the summer months of 2024, many more Pilot Fish were reported. In 2023, several were seen with a Leatherback Turtle off Falmouth.

Horse Mackerel or Scad (*Trachurus trachurus)*
ST: The species was present in large numbers again this year with a large range of size classes. Horse Mackerel show a diel migration through the water column, staying close to the bottom during the day, before rising in the water column to near the surface during darkness.

Mackerel (*Scomber scrobrus*)
Many observers report that mackerel have become far less prevalent during the summer months with a seasonal shift of arrivals to later in September and October continued in 2024; they are now present during the winter months in large quantities, including smaller fish. The species was uncommon in the summer of 2024, with the angling boats fishing for sharks unable to fish the species for bait. It is noted that the species has historically showed great plasticity in movement patterns but has not been encountered in large numbers at high latitudes. Jeroen van der Kooij: 'It is thought that the centre of gravity of the main stock have shifted northward. That includes spawning activity and we certainly do not see the numbers of juvenile mackerel schools we saw 10 years ago in the Autumn.' Mackerel have moved further north, with large fisheries now present in Norway, Iceland and even Greenland; there is also a growing sense that the species is being fished beyond quota and so populations may be declining.

The CEFAS/PELTIC pelagic survey Highlights – Jeroen Ven Der Kooij – Cefas jeroen.vanderkooij@cefas.gov.uk

In March 2025 Jeroen hosted a webinar on the PELTIC survey in the SWME programme – this can be viewed with this link: Youtube https://www.youtube.com/watch?v=gm9tfp0SB6w

PELTIC Highlights:

- Sardine, Sprat & Anchovy biomass annually recorded.
- Sardine and Anchovy are expanding in range and show overall increase in biomass over last decade.
- In 2024, Sardine biomass second highest in time series (since 2013) but Anchovy lowest after highest value in 2023
- Sprat biomass also high in recent years but the fish are smaller due to reduction in older fish.
- All three species show interannual biomass fluctuations with occasional 'spike' or drop.
- Increased understanding of ecology and distribution, especially for sardine and anchovy stocks.
- Anchovy northward range expansion due to different processes: in '90s due to remnant North Sea populations reviving, in 2020's due to Biscay fish moving north.
- Systematic sightings of Bluefin Tuna recorded by observers capturing their return in 2014; also rarer pelagic species.
- Large increases in Cory's & Great Shearwaters sightings in 2023 and 2024.
- Reports published: PELTIC survey reports 2024.

Sardine Wreck 2024 (*Sardina pilchardus*) **Matt Slater** (MS) matt.slater@cornwallwildlifetrust.org.uk

On the 21st of March 2024, Matt Slater (CWT) highlighted large numbers of dead and dying sardines being washed ashore on both north and south coasts of Cornwall reported via CWT Marine Strandings Network and Seasearch diving volunteers. Hotspots were Mounts Bay, Sennen, Newquay, St Austell Bay. Fishermen have also reported seeing dead and gasping fish offshore at the surface, and divers describe the fish as leaning over and gulping and swimming upside down before dying.

It is fairly common to have events where sardine's wash-up dead but these events are usually localised and not seen over a large area like the one described here. Mortality is often associated with slippage from sardine ring netting, when they catch more fish than they can handle and discard surplus, dead and damaged fish into the sea. However, we are informed by the Cornish Sardine Fisheries Management Association that only two boats were fishing at the relevant time, both in Mounts Bay and they were not landing large quantities and had not discarded any fish. CWT reported the strandings to CEFAS, MMO and EA samples were taken but CEFAS fish health inspectorate did investigate but their work has been inconclusive to date (May 2025). A summary of sardine strandings, from the CWT Marine Strandings Network database shows how widespread these reports were. Numbers were approximate and many more were likely to have been washed in and not reported via the Cornwall Wildlife Trust Marine Strandings Network.

Records from 14 sites from both sides of Cornish peninsula have been tabulated from a period in early February to the end of March involving mainly hundreds of fish (max 1000) to 10s of fish (further information is available from Matt Slater).

Lots of bait fish inshore in the autumn – Keith Hiscock khis@mba.ac.uk
At the end of summer/mid-autumn there seemed to be lots of fin-fish (pelagics) and squid about including lots of 'bait fish – Facebook ('Cornish Kayak Anglers') post on 21st December: *'Another action packed day on the water. It didn't take long to get amongst plenty of bass but all were fairly small, so I went off in search of some Pollack. There were baitfish everywhere with Sardines filling the water-column and occasionally breaking the surface in spectacular shimmering shoals. Sometimes there can be too much baitfish and your lures don't stand up chance amongst the natural offerings, but not today. The pollack were present in thick shoals beneath the baitfish and whatever I chucked down at them they were hammering it with plenty on both jigs and soft plastics.'*

Ocean Sunfish (*Mola mola*) **Bex Allen** Rebecca.Allen@cornwallwildlifetrust.org.uk
Ocean sunfish when sighted always attract attention and sightings from Seaquest observers, divers, anglers and casual observers on social media during the summer months from May to October. Quantifying observations is difficult however they are recorded in effort based surveys in the Cornwall Wildlife Trust Seaquest project. This shows a decline in sightings for Cornwall and none were reported in surveys for 2024 (the decline is also reflected in the total number of records (excluding the Seaquest data) held in the Environmental Records Centre for Cornwall and the Isle of Scilly (ERCCIS) databases (see Figure 8.3).

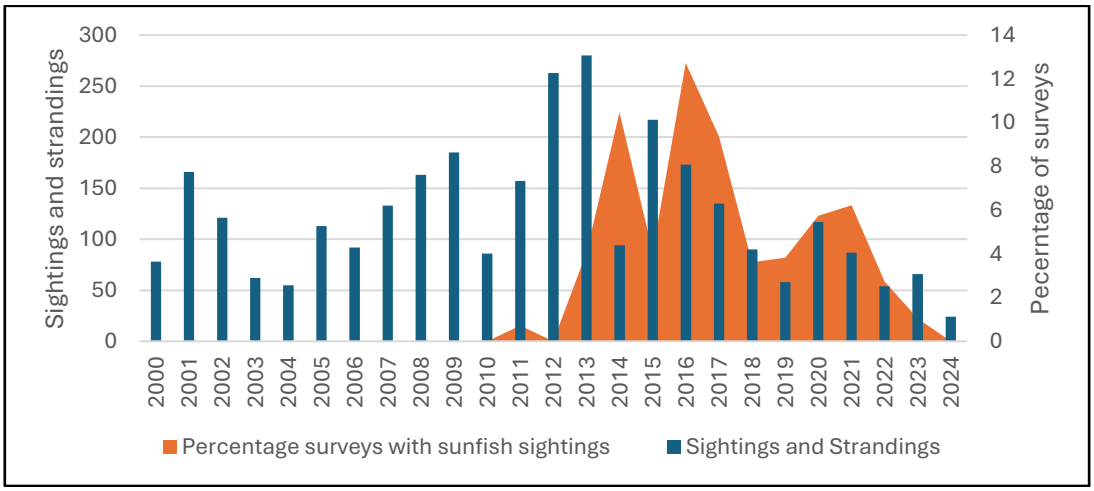


Figure 8.3. Sunfish sightings reported to Cornwall Wildlife Trust/ERCCIS (excluding Seaquest project data) and Seaquest survey records for Cornwall.

Species linked with riverine life history stages

Marine Lamprey (*Petromyzon marinus*) Douglas Herdson

Plate 8.1. A Marine Lamprey on a Common Dolphin off Berry Head, Devon on 17th December. Image: Bill Coulson.

There are good populations of Marine Lampreys in the Tamar and Exe. Several pairs were seen building 'redds' at Gunnislake. Juveniles were found on Whiting and other fish in Plymouth Sound and nearby areas in December and January. In December, one was photographed on a common dolphin off Berry Head. Occurrence on Common Dolphin had previously been seen in Torbay in January 2021. Sources: Bill Coulson; Simon Thomas; Robert Hurrell.

Sturgeon (*Acipenser sturio*) – **Steve Colclough** srcifm@gmail.com

Plate 8.2. *Acipenser sturio*, SE of Dartmouth, 21st July. Image: Sean Michael Beck.

Two species of sturgeon are native to Great Britain, the European, Common or Sea Sturgeon *Acipenser sturio* and the Atlantic or Baltic Sturgeon *Acipenser oyxrinchus.* Both were once common across the Atlantic face of Europe. There are no remaining natural spawning populations of either species anywhere in Europe. Both species are the subject of active restoration with artificial reproduction and stocking of juveniles (*A. sturio* in the Elbe and Gironde and *A. oyxrinchus* in the Baltic). As numbers build, more might begin to penetrate into estuarine and freshwater conditions. The most recent fish was taken 24m SE of Dartmouth in July 2024 (Sean Beck). Through education efforts and collaborations, all specimens taken at sea since 2017 have been returned alive. For further information on the map below and to report new records see – www.savethesturgeon.com & https://uksturgeonsightings.org/?page=Home

Salmonids Rob Hurrell rhhurrell@hotmail.co.uk
The EA reports that salmonid runs in the Tamar and Exe both were the lowest ever recorded. In 2024, Salmon (*Salmo salar*) runs were very low in the Tamar, Plym and Yealm. Numbers of Sea Trout (*Salmo trutta*) were also low. [Robert Hurrell].

Demersal species

Conger (*Conger conger*)
It seems very clear with corroboration from both diving and angling sightings that there had been a hugely successful recruitment of Conger Eels in the years 2023-2024 which has resulted in lots more observations of small conger eels. They have been found in the intertidal or by divers inhabiting small crevices or with multiple eels inhabiting one hole. Similarly, anglers Mal Thomas reports 'When you hear 30 good anglers in a room saying they are all being pestered by Congers you know you have a species explosion on your hands but why?'.

John Dory (*Zeus faber*) **Simon Thomas -** bluedogfishing.simon@aol.co.uk
As in 2023, certain areas had very high numbers of mature fish with roe – clearly in breeding condition. This number of fish at specific sites is unusual. This species is of growing commercial interest. Keith Hiscock: The normal scenario for observation of John Dories is with single fish being observed on wrecks: In 2024 there was no apparent change.

Pollack – Simon Thomas bluedogfishing.simon@aol.co.uk

Pollack captures increased both in numbers and size for the offshore boats in 2024. The species was prolific across the region, but especially to the west of the Lizard. For the first time since 2016, several fish over 9 kg were reported by anglers during the spawning period. Limited commercial fishing was possible due to a bycatch-only Total Allowable Catch (TAC). Spawning of pollack seemed to be occurring further east and in the deeper water to the west of the Lizard. Models suggest that spawning location is determined by water temperature and recruitment for the species (and other gadoids) has decreased since 2016. Together with the decline of other gadoids, it suggests that this group of fish are retreating northwards.

Seahorses Neil Garrick-Maidment (NGM) theseahorsetrust@gmail.com
Seahorses are species which have considerable public interest which is reflected in their conservation status. There have been seahorses in the UK for centuries, however, the setting up of the National Seahorse Survey and its database, the National (now World) Seahorse Database by The Seahorse Trust in 1994 has led to a massive increase in records (over 3,500 for the UK) over the last few decades. We now better understand the biases in our data.

Table 8.2. Records of the two species of seahorses in south-west waters.

		Devon	Dorset	Cornwall	**Total**
Spiny Seahorse					
Hippocampus guttulatus		6	9	6	**21**
Short-snouted Seahorse					
Hippocampus hippocampus		6	95	5	**106**
		12	104	11	**127**

Two seahorse species are routinely reported from the south-west the Spiny Seahorse *Hippocampus guttulatus* and the Short-snouted Seashore *Hippocampus hippocampus*. There have been a lot of seahorse records during 2024 (Table 8.2). In discussion at the Fish CoP it appeared that most observations of Spiny Seahorses *H. guttulatus* were in seagrass and seaweeds (including *Halidrys* and *Gracilaria*), whilst Short-snouted Seahorses *H. hippocampus* had a much wider range of habitat preferences**.**

One very notable record was 38 Short-snouted Seahorse fry in the stomach of a Black Bream. This has happened many times before in Brixham Harbour and other parts of the country, such as the Channel Islands, and so we know fish (and gulls) do eat seahorses at various stages of the seahorses' lives. We have not included the 38 in the chart below because the location and evidence of the bodies were not confirmed, even though we do have a photograph which shows 3-month old fry and 1 year plus old sub adults.

In April, a Spiny Seahorse was filmed in a Cornish estuary:https://www.cornwall.gov.uk/council-news/environment-culture-and-planning/discovery-of-rare-seahorse-highlights-need-to-protect-cornwall-s-marine-habitats/.

Bass (*Dicentrarchus labrax*) **Robin Bradley** bradley4ne@btinternet.com
The Cornwall Bass Investigations Group conducted 23 juvenile bass surveys on the Fal, 14 on the Helford, three on the Gannel and one on the Camel estuaries between May and September 2024. Total bass catches in the Fal were 4,302 '0' groups, 893 '1' groups and 145 '2' groups. For the Helford, the corresponding figures were 1,029, 401 and one. Combined figures for the Camel and Gannel were 12 '0' groups and one '1'group. Catches of '1' group bass in the Fal and Helford estuaries, particularly in May and June, confirms our provisional assessment of 'Good' for the 2023 year class in the Fal and Helford SAC. The first '0' group we encountered was a single fish (25mm) at St Clement on the Fal on 29th May, the earliest we've seen them. **'**0' group catches for both Fal and Helford estuaries allows us to make a provisional assessment of 'Good' for the 2024 year class in the Fal and Helford SAC. Cefas have presented our data from 2006 to 2024 to ICES with a view to possible inclusion in their bass stock assessment.
Annual reports and survey data can be found on our website. Simon Thomas: 'Certain year classes were found in deeper water than usual on wrecks where they have not been captured previously – change in depth profile. The fish remained on many wrecks where their presence had not been recorded before up to the end of the year and male fish contained mature roe.'

Comber *Serranus cabrilla* **Douglas Herdson** douglas.herdson@btinternet.com
Comber is one of the smallest members of the grouper family (Serranidae) and is relatively common from southern Africa to the Mediterranean and Portugal (Lusitanian distribution). There is no doubt that the number of records of Comber have increased significantly in 2024. In a table of the records and seasonality of sightings published routinely in the SWME fish chapters; number range from 0 – 20 fish often with only one sighting a year. In 2024 they were so numerous and widespread that it is no longer relevant to keep individual records. Once only found in the summer, they seem to be around year-round now.

Plate 8.3. Comber juvenile, Firestone Bay, Plymouth Sound. Image: Paul Naylor.

Simon Thomas: On certain reefs at Land's End and off Looe they are now very numerous. Reefs with Comber have less Cuckoo Wrasse *Labrus mixtus* than they used to have, suggesting competition between these species. Paul Naylor photographed a juvenile (possibly the first for Britain and Ireland) in Plymouth Sound in November, which suggests breeding in the region.

Sea Bream – Sparids

Axillary (or Spanish) Sea Bream *Pagellus acarne* and **Blackspot** (**or Red**) **Bream** *P. bogaraveo* **Douglas Herdson & Matt Slater** matt.slater@cornwallwildlifetrust.org.uk

Axillary (or Spanish) Sea Bream *Pagellus acarne* were a very rare fish in British and Irish waters with less than twenty records prior to 2020 (11 from the 19th century). Over the next few years some juveniles started being caught by anglers off the south coast of Cornwall and Plymouth.

From June 2023, good numbers of small bream started being caught by anglers. Most were claimed to be Blackspot (or Red) sea bream *Pagellus bogaraveo*; however, some dispute arose as to whether they might be *P. acarne* and some were claimed to be Bogues *Boops boops*. In 2024 Seasearch divers and snorkellers were seeing large shoals of these small bream (of around 7 cm) all along Cornwall's south coast. They were seen in the Helford estuary, St Austell Bay (Porthpean, in particular,) Looe Bay and probably lots more places.

Plate 8.4. Juvenile bream, wreck of the James Egan Layne, Whitsand Bay, August 2024. Image: Matt Slater.

Whilst *P. bogaraveo* and *P. acarne* can be distinguished as adults by their markings – *P. bogaraveo* having a dark blotch at the origin of the lateral line and *P. acarne* having a black base to the pectoral fin, these features are generally missing in the juveniles. There are minor differences in eye size and snout length, but these can be difficult to determine. The two species can be identified by *P. acarne* having a yellow lining to the mouth, a dip in the dorsal fin (the first soft ray being longer than the last spiny ray) and having 3 spiny rays and 10 soft rays in the anal fin; while *P. bogaraveo* has 3 spines and 12 to 13 soft rays. But these features are hard to spot in the field.

Plate 8.5. Juvenile bream, Newquay Headland, September. Image: Keith Raven.

During the summer of 2024 Jessica Cramp of University of Plymouth operated baited webcams in various seagrass beds around Plymouth. These attracted astonishing numbers of small breams. In careful examination of some of this footage only Blackspot *P. bogaraveo* could be definitely identified. Hence, it would appear that whilst Bogue probably occur and some definite Axillary Bream have been caught; at least in the Plymouth area, the majority of these juvenile bream are Blackspot.

About fifty years ago Blackspot were the second commonest bream on the English coast, but subsequently became scarce, with both Gilthead and Couch's becoming commoner in coastal waters. There now appears to be a resurgence of the Blackspot.

Couch's Sea Bream (*Pagrus pagrus*)
Couch's Bream is now well established in the region with small juvenile bream seen at many places, including Porthpean Bay and Lantivet Bay, on the south coast of Cornwall; and being found in the Natural England fish survey. [Rob Hillman Lin Baldock].

Wrasse, Blennies & Gobies - Lin Baldock metacnephia@gmail.com **and Paul Naylor** paul@marinephoto.co.uk

There continue to be regular reports of **Baillon's wrasse** (*Symphodus bailloni*) in Dorset waters with records from Swanage Bay (Tina Scott on 5th May, Lin Baldock on 3rd July) as well as from Weymouth Bay (Lin Baldock on 17th July) and Newton's Cove, Weymouth (Lin Baldock on 16th July). Dorset is well known to be a stronghold for this species of wrasse.

The **fish louse *Aniclora*** continues to be recorded on many species of fish in Dorset waters , especially wrasse, the subjective impression being that there has been an increase in the levels of parasitism in recent years, most notably on fish associated with reefs well away from the original hotspots of Swanage Pier and seagrass beds in Portland Harbour. Under Swanage Pier the isopod was recorded as frequent on the SACFOR scale (Lin Baldock, 20th July). Host fish included Cuckoo Wrasse (*Labrus mixtus*), Rock Cook (*Centrolabrus exoletus*), Corkwing Wrasse (*Symphodus melops*) and Ballan Wrasse (*Labrus bergylta*).

Black-faced Blenny (*Tripterygion delaisi*) sightings were reported by Paul Naylor as seeming unusually numerous in 2024; in Wembury Bay (May to December), Swanage Pier (March) and Porthkerris (September). Courtship behaviour in Wembury Bay observed in May to June (as expected) but also on 12th August (late?). Lin Baldock sawa male on a reef 800m south of Kimmeridge Bay; an unusual sighting along Purbeck coast. Records of this species can be very observer-dependent, with PN considering his increase in sightings may be due to better appreciation of their preferred micro-habitat. Concern had been expressed in 2023 that this species seemed to have become less common.

Tompot Blenny (*Parablennius gattorugine*). PN's ongoing study of territories in Wembury Bay continue. First eggs seen 27th February (unusually with an 'inexperienced' male), no eggs remaining by 8th July, first settling young seen 26th July. Some long-held blenny territories now occupied by Montagu's Crabs and young Conger Eels. In December, raised sand level (higher than ever previously seen) against one of the studied Wembury reefs had engulfed blenny territories. Tompot Blennies were observed guarding eggs in Firestone Bay (Plymouth Sound) 17th April to 17th July.

Variable (Ringneck) Blenny (*Parablennius pilicornis*). Males guarding eggs observed in Firestone Bay in June by Keith Hiscock and PN, who also recorded significant male display and 'nest' cleaning activity there through June and July. KH noted their apparent absence in May and thought this (and other inshore fish sighting reductions in early 2024) could be due to excessive freshwater runoff from January to April. John Hepburn recorded Variable Blennies at

Mayflower Marina (Plymouth Sound) on RUV, including juveniles, and noted their territorial behaviour in 'seeing off' wrasse. Wembury Marine Centre received record of an observation there. PN reported male guarding eggs at Babbacombe 8th August, where Terry Griffiths and colleagues have been seeing them for several years. Doug Herdson noted one caught by Peter Hegg from a Plymouth shore mark on 11th June and ratified at a weight of 17 grams was a new BRFC record.

Gobies

Couch's Goby (*Gobius couchi*) was reported from a new location in Weymouth Bay, Dorset by Lin Baldock (17th July) at a depth of about 12m on clean rocky reef. It was also reported from Newton's Cove, Weymouth, a more typical sheltered, shallow (5m), silty site by Holger Schuhmann (16th July). This species is frequent in areas of Portland Harbour with Dorset records from Poole Bay to Weymouth. So far this species has not been recorded from Lyme Bay or further east around the Isle of Wight, or in the Solent.

Giant Goby (*Gobius cobitis*) was reported in various rock pools at Wembury by the Wembury Marine Centre through 2024, including on a night rockpool 'safari' in September. Jake Taylor-Bruce reported a pair of Giant Gobies "..*in one of the deep pools at Wembury which I believe are a mated pair*." It is likely that the same pair was seen by Lin Baldock on 13th September.

Doug Herdson passed on a report of a giant goby caught on rod and line (and released) at Hannafore just west of Looe, Cornwall. Neil Jones provided the following: "*from personal observations we would say giant gobies have become more common in the last 20 years, I try and record and measure them, I am hoping to record one of 30cm, as we get some big ones here,…"*. It should be noted that a licence is required to deliberately handle this goby which is a protected species under the Wildlife and Countryside Act.

Steven's Goby (*Gobius gasteveni*) were reported by Paul Naylor in Firestone Bay, Plymouth on 16 May when adults were showing territorial aggression, later in June they were found guarding eggs. Lin Baldock recorded numbers of juvenile Steven's gobies (to 2cm) on coarse shell gravel with maerl near the wreck of the Hera (Gerrans Bay, Cornwall) while on a fish survey run on behalf of Natural England (11 September).

Guillet's Goby (*Lebetus guilleti*) records from Newton's Cove, Weymouth Dorset on 16 July were provided by both Clive Le Cocq and Lin Baldock (different individuals).

Lin Baldock had a strong impression that small gobies in the genus *Pomatoschistus* were reduced in numbers in 2024 around Dorset. Juvenile individuals were very late to appear in the benthos for example during seahorse surveys at South Beach, Studland, Dorset "sand gobies" were rare on a visit on 8 July when larger number of individuals would have been expected and those present were unusually small for the time of year. Similarly painted gobies (*Pomatoschistus pictus*) were represented by low numbers of small individuals right through the diving season. As an aside similar observations were made on several visits to Scottish waters.

Grey Triggerfish (*Balistes capriscus*) – Doug Herdson Douglas.Herdson@btinternet.com
Divers and anglers reported a normal year for Grey Triggerfish in 2024, with similar numbers to recent years; the numbers varying from 10 – 77 reports.

Rare Species Records

Red Scorpionfish (*Scorpaena scrofa)* Douglas Herdson Douglas.Herdson@btinternet.com
This species is the commoner of the 2 species found in Britain and Ireland, but is still uncommon, with singles occurring every 3 or 4 years. In 2024, two were caught; one from Cornwall and one from Salcombe. [Clive Inch; Peter Davies]

Plate 8.6. *Scorpaena scrofa*, off Salcombe. Image: Clive Inch, FV Claire Louise via Pete Davies.

Plate 8.7. Saupe, off Salcombe Bar 2024 Image: Clive Inch, FV Claire Louise via Pete Davies.

Plate 8.8 Rivulated Rabbitfish (*Siganus rivulatus*). Image: Douglas Herdson.

Salema or Saupe (*Sarpa salpa)* – Douglas Herdson and Peter Davies
A Saupe was caught off Salcombe Bar 2024 by Clive Inch, of FV Claire Louise reported by via Pete Davies; This is possibly the 5th record for the U.K. DH.

Pandora (*Pagellus erythrinus)* - Simon Thomas
One fish caught off Penzance via Robin Chapman (Bite Adventures).

Spinefeet – Siganids Rivulated Rabbitfish (*Siganus rivulatus*) - Douglas Herdson
The strangest report of the year was of an intact fresh specimen of *Siganus rivulatus* found inside the belly flaps of a gutted Haddock. It was amongst a shipment of these fish sent from Brixham Fish Market to a merchant in Plymouth. This is an Indo-West Pacific species and Lessepsian migrant (a species which has migrated through the Suez Canal to the Eastern Mediterranean). The nearest previous record was from the Mediterranean coast of France.
[Nick Henry; Samuel Iglesias; Douglas Herdson; Sara Wordley.]

Other Notes

Fish Abundance - Keith Hiscock khis@mba.ac.uk
In making personal observations, listening to divers and anglers, Keith Hiscock believes that there were many less fish in inshore waters particularly off the south coast in 2024. Various sources broadly support this view – two examples give a sense of this.

'Karen Williams comments on the decline in fish numbers at Chesil Cove, Portland, and Dorset generally. 'When we dived there on 19th September 2024, it was difficult to find any fish or crustaceans to photograph. On nearly an hour-long dive we saw only 3 medium-sized ballan wrasse, 1 corkwing wrasse, 1 tiny juvenile pollack, 1 tiny pouting, no crustaceans. The only fish in any number was a shoal of sand eels; one mackerel (we only saw one) shot down and grabbed a sand eel. You would expect that if the large fish were absent there would be lots of smaller fish, but not so. Besides the sand eels, even the small fish, such as tompots and dragonets, were absent.'

Similar observations have also been supported by anglers for example, Mal Thomas. 'Due to very poor catches from waters that were so well known as brilliant waters to fish. Since we spoke I have tasked my committee and fish recorder to provide a chart of our regular caught species and the trends we are noticing.' He goes on to link this to inshore trawling and discussions with the IFCA.

If we are to move beyond anecdotal evidence we need think about and undertake systematic fish recording using a protocol covering both anglers and divers at defined sites at defined times of year.

Methodologies, Projects and Data

UK Marine Rare Fish Recording Scheme – Douglas Herdson - Douglas.Herdson@btinternet.com

SWME Annual Compilation of Observations Paul Naylor compiles observations for SWME sent in from multiple sources on each of the thematic topics that the SWME covers. The fish observations, and their connections, to other topics have been included in this report. Please send interesting records to him. paul@marinephoto.co.uk

Records from sea anglers – Simon Thomas compiles records from sea anglers. bluedogfishing.simon@aol.co.uk

University of Plymouth – Fish Intel Network and FISP Peter Davies Davies@plymouth.ac.uk
Angling for Sustainability https://www.pba.org.uk/_files/ugd/415250_1622cfb1c00e49f484b1c749b3c5f769.pdf
Pollack FISP https://www.pba.org.uk/_files/ugd/415250_1622cfb1c00e49f484b1c749b3c5f769.pdf

Data – Records & DASSH – Julie Bunt - julbun@mba.ac.uk

Natural England report on the use of eDNA to monitor inshore fish populations
https://publications.naturalengland.org.uk/file/6703751331840000

9. Turtles

Edited by: Douglas Herdson (douglas.herdson@btinternet.com)
With contributions from Rod Penrose

Conclusions

- The number of turtles reported in 2024 was about the average for the region.
- There was a higher than usual percentage of hardshell turtles, which was probably a 'carry over' on the conditions at the end of 2023.

Report

An average number marine turtles reported in 2024 (Table 9.1). A total of 37 were seen in British and Irish waters, with 14 in the greater south-west region. Of these, four were found around Cornwall, four in Devon (three North Devon), one from Dorset, two the Isles of Scilly, one in the Bristol Channel, one in Jersey and one in Alderney. A remarkable feature more widely is the occurrence of two Green Turtles (*Chelonia mydas*) in Ireland in September and December.

The south-west turtles consisted of seven Leatherback Turtles (*Dermochelys coriacea*), of which five were swimming and two stranded dead; four Loggerheads (*Caretta caretta*), one stranded alive and three dead on the beach; and finally, two Kemp's Ridley (*Lepidochelys kempii*) one stranded alive and one dead on the shore.

I would like to fully acknowledge the contributions of Rod Penrose in the process of compiling this section of the report.

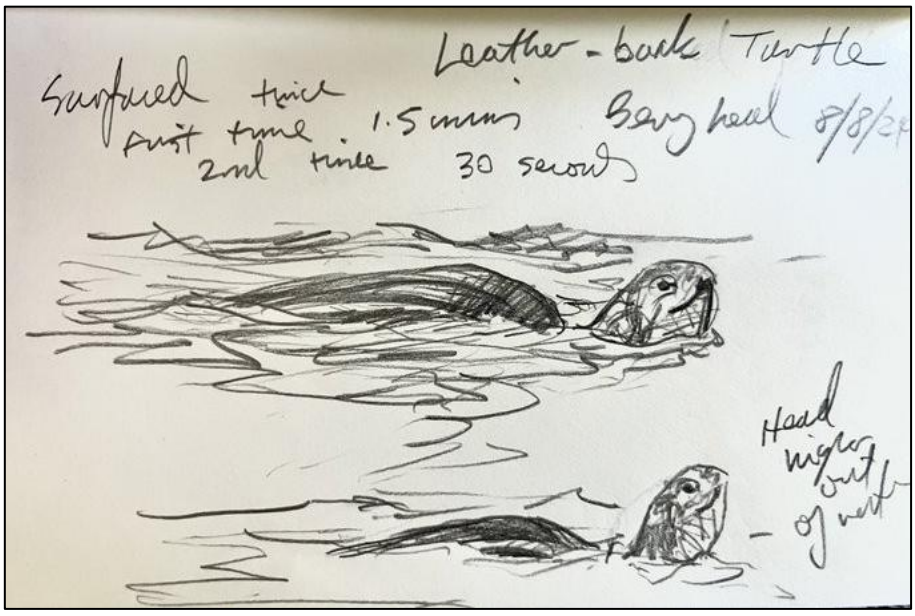


Plate 9.1. Leatherback Turtle, Berry Head, 8 August 2024. Image: Mike Langman.

The year was unusual in following the pattern of 2023 in having more reports of 'hardshell' (all marine turtles other than Leatherbacks), than of definite Leatherbacks. However, the numbers are similar suggesting a return to the more normal pattern with Leatherbacks being more frequent.

It is probable that the 'hardshells' were cold-shocked. This has happened before, with juveniles being stranded in the colder months of the year, those in early 2024 seemingly following on from those at the end of the year in 2023.

Table 9.1. Turtles reported in the south-west in 2024.

Date	Rec. No.	Species	Location	Status	Comments
5/01/2024	T2024/02	Loggerhead	Hartland Point	Stranded dead	Decomposed. Debbie St Croix
25/01/2024	T2024/04	Loggerhead	Archirondel Beach. Jersey	Stranded dead	Fresh. Dan Jarvis BDMLR

18/02/2024	T202 4/08	Kemp's ridley	Gunwalloe	Stranded dead	Decomposed. CWT MSN
9/04/2024	T202 4/15	Loggerhead	Millendreath, near Looe.	Stranded alive	Died next day. Dan Jarvis
9/04/2024	T202 4/16	Loggerhead	Kimmeridge	Stranded dead	Fresh juvenile. Keith Hiscock
26/06/2024	T202 4/17	Leatherback	off Stout Point, Bristol Channel	Alive	Brendan Godley, Professor of Conservation Science @ University of Exeter
08/08/2024	T202 4/20	Leatherback	Berry Head, Devon	Alive swimming	Mike Langman.
14/08/2025		Unidentified	Off Millcombe, Lundy	Alive swimming	Probably a Leatherback drifted north close-in. Thomas Weston, via Keith Hiscock.
18/08/2024	T202 4/21	Unidentified	Looe Bay, Cornwall	Alive swimming	Seen from vessel. BIMTR
19/09/2024	T202 4/23	Leatherback	Innisidgen, St Mary's, Scilly	Stranded dead	IoSBNHR
20/10/2024	T202 4/25	Leatherback	Crooklets Beach, Bude.	Stranded dead	Colin Ford
26/10/2024	T202 4/26	Leatherback	'The Ledge', Alderney	Alive swimming	Surfaced near anglers' boat. Dr Sarah Perry
1/11/2024		Leatherback	West of Wolf Rock, Scilly	Alive swimming	Seen from the Scillonian. Bob Dawson. IoSBNHR,
23/12/2024	T202 4/29	Kemp's Ridley	Westward Ho!, Devon	Stranded alive	Taken to Blue reef Aquarium, but died a couple of weeks later.

Table 9.2. Occurrence of Turtles, 2017 to 2024

	South-West England				Britain and Ireland		
	Leatherback	Other and unidentified*	Total		Leatherback	Other and unidentified*	Total
2024	7	7	14		12	25[2]	37
2023	6	16[1]	22		13	34[1]	47
2022	3	4	7		8	7	15
2021	3	5	8		19	14	33
2020	4	1	5		9	5	14
2019	13	1	14		13	5	18
2018	17/18	2	19/20		17	2	19
2017	8	5	13		28	9	37

*Many unidentified turtles were probably Leatherbacks; [1] All 'hardshell'; [2] Includes two Green Turtles (*Chelonia mydas*) found alive in Ireland.

Information from:
BDMLR - British Divers Marine Life Rescue
ERCCIS – Environment Record Centre for Cornwall and the Isles of Scilly
IoSBNHR – Isles of Scilly Birds and Natural History Review
IoSWT – Isles of Scilly Wildlife Trust
MCS – Marine Conservation Society
MSN – Cornwall Wildlife Trust, Marine Strandings Network
BIMTR - British & Irish Marine Turtle Strandings & Sightings

10. Marine and Coastal Birds South-West

Edited by: Alex Banks (alexnbanks@gmail.com) with contributions from Jay Cowen, Chris Goding, Mark Grantham, Hester Odgers, Joe Parker, Ruth Porter, Paul St Pierre and Scott Reid

Conclusions

- **No significant outbreak of Highly Pathogenic Avian Influenza was evident in breeding colonies in 2024**, though numbers of some tern species were down following impacts in 2022 and 2023.
- **Little terns at Chesil Beach** reached their **highest abundance in twenty years**, and the **third successive year of successful breeding productivity** at rates required to maintain the colony.
- Amongst the cliff nesters, recent trends held; **general increases in guillemots and razorbills**, and a **mixed picture for kittiwakes.**
- **Another good year for southern breeding seabird sightings**, with influxes of species such as Cory's and Great shearwaters in the thousands now the norm rather the exception.
- **A pair of eiders was confirmed breeding** in Cornwall – the first ever in the county and a most unusual record for southern England more widely.

Introduction

Plate 10.1. Remote monitoring equipment in the Isles of Scilly.

Regular seabird productivity monitoring continued at the Isles of Scilly (where pilot studies experimented with various camera set-ups to encourage more remote monitoring in future); Lundy and Straight Point (Devon); Looe and Mullion Islands, Trewavas Head, Porthmissen and Portreath (Cornwall); and Brownsea Island, Lodmoor, Abbotsbury and Chesil Beach (Dorset). Abundance monitoring also took place at Berry Head (Devon) and the Purbeck Cliffs (Dorset), as well as various smaller coastal areas in Devon and Cornwall.

In the non-breeding season, the long-running Wetland Bird Survey 'Core Count' scheme surveying birds mainly at roost on high tides, continued to cover the majority of important estuarine and coastal sites in the south-west. In winter 2023/24, Poole Harbour and the Exe, Kingsbridge, Fowey, Helford and Hayle Estuaries were surveyed at low tide.

At sea, observational data were collected as part of long-running programmes or schemes, including through PELTIC (boat-based) and POSEIDON (digital aerial survey) projects. In addition to the pelagic trips run every year by Scilly Pelagics, September 2024 saw the Challenger Expedition visit the edge of the continental shelf 160 – 200 nm from the Isles of Scilly to (successfully) find scarce southern-breeding seabirds, including Maderian storm-petrels, in UK waters.

Nesting seabirds

A summary of abundance and productivity records from across the south-west is shown in Tables 9.1 and 9.2. We are able to present select species trend information for comparison with previous years.

Manx shearwaters

Key breeding colonies: Lundy, Isles of Scilly

With no full island counts in 2024, the only data available were from the ongoing monitoring on St Agnes and Gugh, Isles of Scilly (Figure 10.1). The apparent check in numbers is likely an artefact of changes to the survey method, which relies upon audible responses from nesting burrows, rather than a genuine decline.

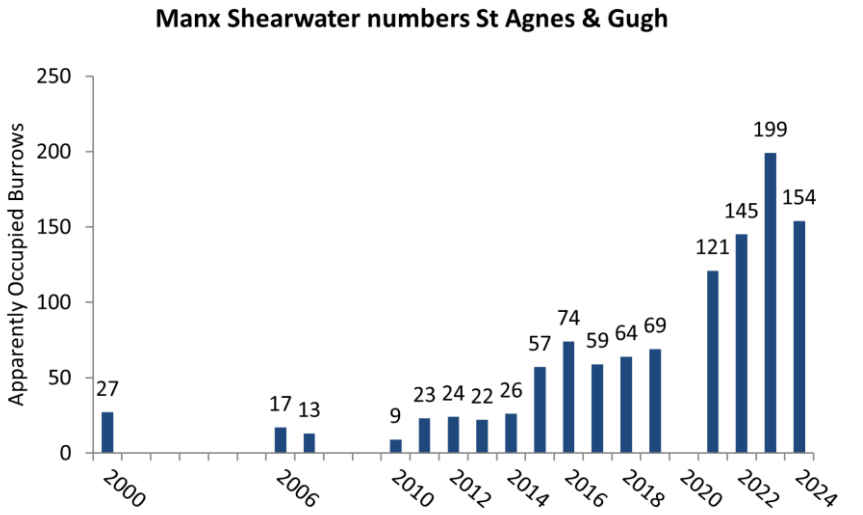


Figure 10.1. Manx shearwater Apparently Occupied Burrows, St Agnes & Gugh.

European storm petrels

Key breeding colonies: Lundy, Isles of Scilly

Round Island (Isles of Scilly) suffered rat incursion 2022 and storm petrels declined from 172 in 2015 to just 11 pairs thereafter. Rats were removed and abundance bounced back to 105 pairs in 2023, but rat signs were again found in 2024 and just 17 Apparently Occupied Sites were recorded this year. Proximity to St Helens is likely an issue in rats re-colonising Round Island.

Better news from St Agnes where there was no sign of cat predation which had been a problem for nesting storm petrels in the preceding years.

New breeding areas have been identified on Lundy, which will be surveyed in full in 2027.

Auks – guillemot, razorbill, puffin

Key colonies: Lundy, Isles of Scilly, Berry Head, West Exmoor Coast, Purbeck Cliffs

Guillemots

Guillemot numbers slightly declined at the Purbeck Cliffs (St Aldhems-Durlston Head) in 2023, possibly as a result of HPAI; 2024 abundance recovered to that of 2022, at 1,547 individuals. Berry Head's 931 individuals closely reflects the medium-term picture (ten-year average = 928). There were 6,318 birds at Jenny's Cove, Lundy, a 9% increase from 2023.

Productivity information from Lundy indicated a fairly average breeding season, with 88 chicks fledged from the 135 pairs observed at St Mark's Stone, a rate of 0.65 chicks per pair.

Razorbills

Trends in razorbills at the Purbeck Cliffs were similar to guillemots, with a return to 2022 abundances from a dip in 2023 (188 individuals in 2024 cf. 155 in 2023). Jenny's Cove, Lundy saw a 22% increase from 2023 to 1,170 individuals.

No productivity data were collected for razorbills.

Puffins

Breeding puffins remain relatively scarce in the South-West. The Purbeck Cliffs colony continues to cling on with just three birds (and no confirmed breeding) in 2024, featuring in a news story. Lundy is still witnessing increases; counts at Jenny's Cove showed an 8% gain since 2023 (615 birds recorded).

Productivity was monitored at Jenny's Cove, Lundy. 77 pufflings fledged from 139 burrows, at 0.46 chicks per pair. This is slightly below rates in recent years on the island.

Gulls – herring gull, lesser black-backed gull, great black-backed gull, black-headed gull, kittiwake

Key colonies: Lundy, Isles of Scilly, Poole Harbour, Steepholm, Looe Island, Mullion Cliff

Herring gulls, lesser black-backed gulls, great black-backed gulls

The main counts recorded in 2024 were from the Isles of Scilly. The lesser black-backed gull colony at Gugh remained stable at 423 pairs (ten-year average = 407), but the great black-backed gull colony at Annet showed further signs of decline, with 138 pairs in 2024; numbers had been above 200 pairs in the previous decade.

Black-headed gulls

Holton Bay, Poole Harbour, contains three low-lying islands supporting breeding black-headed gulls. Although it is difficult to monitor the islands consistently, the count of 3,174 pairs in 2024 is about 1,000 birds fewer than in 2018. It is possible that HPAI has contributed to this change as black-headed gulls were a common victim of the virus. Within the smaller colonies at Abbotsbury and Lodmoor, productivity was good, at 1.70 and 1.00 chicks per pair. In 2023, HPAI reduced breeding success to much lower levels.

Kittiwakes

Table 10.1. Kittiwake productivity (chicks per pair – CPP) in 2024.

	AON	CPP
Aztec Bay, Lundy	93	0.45
Straight Point	160	0.53
St Agnes & Gugh, IoS	22	0.64
Porthmissen	316	0.26
Portreath	250	0.00
Rinsey / Trewavas	22	0.05
Parc Trammel	163	1.08
	1026	**0.43**

A similar number of nests was monitored compared with 2023, but productivity was lower (0.53 chicks per pair in 2023) (Table 10.1). Jenny's Cove, Lundy, gained about 100 pairs in 2024 (286 cf. 183 in 2023), but without data from other colonies such as West Exmoor Coast & Woods it is difficult to know how much of the change is redistribution and how much is genuine increase.

<u>Terns – Sandwich tern, common tern, little tern</u>

Key colonies: Brownsea Island, Lodmoor, Radipole, Abbotsbury, Chesil Beach

Sandwich terns

Following the outbreak of HPAI amongst Sandwich terns breeding at Brownsea Island, Poole Harbour, in 2023, which severely impacted breeding success, 2024 was something of a return to normality. Numbers of breeding pairs reached 213; available data suggest >200 pairs is not common (Figure 10.2). Productivity was at 0.83 chicks per pair, which will be a relief to site managers after the disastrous 2023 season.

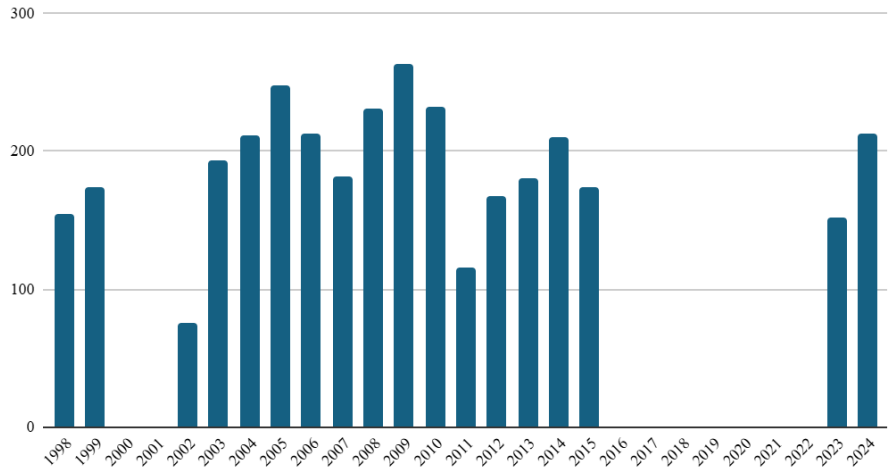


Figure 10.2. Sandwich tern AONs at Brownsea Island, Poole Harbour.

Common terns

Common terns also bounced back from the poor productivity associated with HPAI in 2023. At Abbotsbury and Lodmoor, productivity rates of 0.80 and 0.79 were recorded from the 40 and 19 pairs breeding. The picture at Brownsea Island was different – from 94 pairs, just 0.21 chicks per pair fledged, largely as a result from predation from great black-backed gulls.

Little terns

Another encouraging breeding season for little terns in Dorset. The estimate of 51 AONs is the greatest since 2004 (Figure 10.3). Further good news was that the estimated productivity of ~0.8 chicks per pair was the third successive year in which productivity has been above 0.7, testament to the hard work put in by the site managers and volunteers wardening the colony.

Additional interesting breeding record

In May 2024, a female eider duck with three ducklings was photographed (with one other female and three males) at Par, Cornwall. This is the first record of eider breeding in Cornwall, and extremely unusual for a species which has a UK breeding distribution largely confined to coasts north of the line between the Wash and the Mersey.

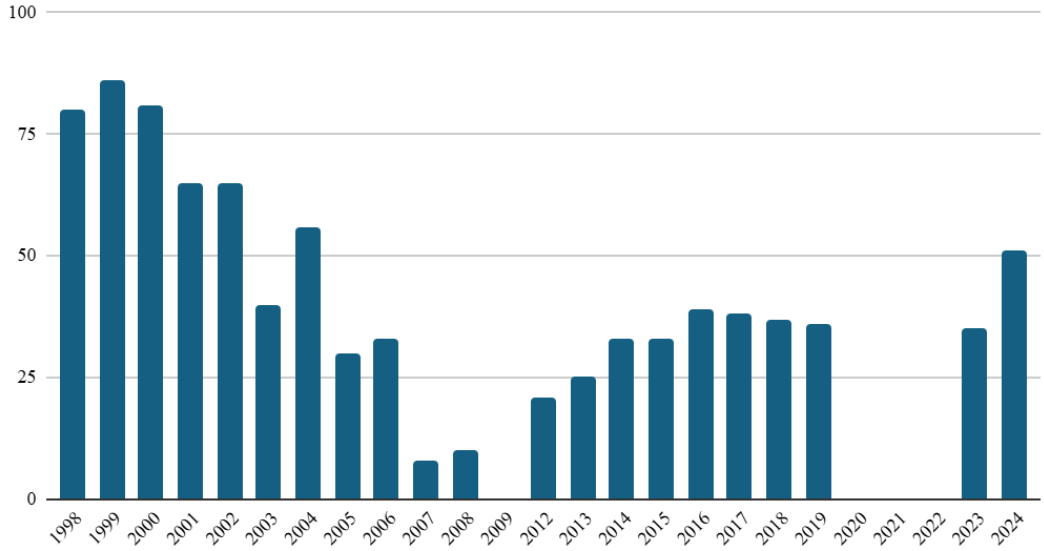


Figure 10.3. Little tern AONs at Chesil Beach.

Summary data for 2024 breeding season

Table 10.2. Count data for south-west counties held by SMP database for 2023. PU: Atlantic puffin; GU: common guillemot; CN: common tern; F.: Northern fulmar; GB: great black-backed gull; CA: great cormorant; HG: herring gull; KI: black-legged kittiwake; LB: lesser black-backed gull; MX: Manx shearwater; RA: razorbill; SA: European shag. CN, CA, GB, HG, BH, KI, LB SA – Apparently Occupied Nests; F. – Apparently Occupied Sites; GU, RA – individuals; PU – individuals on the sea; MX – Apparently Occupied Burrows.

	PU	BH	GU	CN	TM	F.	GB	CA	HG	KI	LB	MX	RA	SA
Cornwall	**2**		**566**			**225**	**154**	**131**	**639**	**791**	**4**		**247**	**237**
Chapel Porth to Perranporth	2		155			46	5	1	185	40	1		99	31
Gerrans Bay to Camels Cove SSSI						4	2		31					1
Godrevy Head to St Agnes SSSI			10			2	1		24	250			30	10
Hayle - Chapel Porth						14			37		2			18

Ligger Point to Porth			4			61	4		12					36		
Mullion Cliff to Predannack Cliff SSSI							69	73								
North Cornwall Coast			94			39			48	316			89			
Plymouth - Falmouth			286			25	12	7	51				23	87		
Trevelgue Head to Merope Rocks			17			34	1		251		1		6	54		
Looe Island							60	50								
Mount's Bay (Rinsey / Trewavas)										185						
Devon	**615**		**7249**			**97**	**4**		**25**	**458**			**1170**	**23**		
Babbacombe Bay						2										
Berry Head to Sharkham Point SSSI			931													
Plymouth to Berry Head Coastline							4		25					23		
Straight Point and Otterton Ledge to Big Picket Rock										172						
Jenny's Cove, Lundy	615		6318			95				286			1170			
Dorset	**3**	**3249**	**1547**	**153**		**11**	**5**	**15**	**50**	**5**			**188**	**23**	**213**	
Lodmoor and Radipole		45		19												
	PU	**BH**		**GU**	**CN**	**TM**	**F.**	**GB**	**CA**	**HG**	**KI**	**LB**	**MX**	**RA**	**SA**	
South Dorset Coast SSSI	3			1547			9	1		46	5			188	21	
Studland SSSI - Purbeck							2	4	15	4					2	
Poole Harbour SPA		3174			94											213
Abbotsbury		30			40											
Chesil Beach																
Isles of Scilly					**11**	**17**	**0**	**140**		**30**	**22**	**441**	**243**	**4**	**88**	
Isles of Scilly SPA					11	17	0	140		10	22	441	243	4	88	
St Mary's										20						
Grand Total	**620**	**3249**		**9362**	**164**	**17**	**333**	**303**	**146**	**744**	**1276**	**445**	**243**	**1609**	**371**	**213**

Table 10.3. Productivity data (chicks per pair) for south-west counties in 2022. Where >1 measure from a site, average is presented. Abbreviations are as in Table 10.2.

	PU	GU	F.	KI	CN	BH	TE	AF	HG	SA
Devon										
Lundy										
St Marks Stone		0.65								
Jenny's Cove	0.46									
Aztec Bay				0.45						
Gannet's Rock			0.73							
Straight Point				0.53						
Dorset										
Abbotsbury					0.80	1.70				
Lodmoor					0.79	1.00				
Chesil Beach								0.80		
Brownsea Island					0.21		0.83			
Isles of Scilly										
St Agnes & Gugh				0.64						
Hugh Town									1.35	
St Martin's			0.18							
Menawethan			0.11							
Cornwall										
Porthmissen			0.21	0.26						
Portreath				0.00						1.33
Trevelgue Head to Merope Rocks			0.49							1.69
Hayle - Chapel Porth			0.79						0.86	0.94
Rinsey / Trewavas				0.05						1.40
Parc Trammel				1.08						

Noteworthy sightings of non-breeding birds

Plate 10.2. Scopoli's Shearwater. Image: Scott Reid.

Cory's Shearwater – Although the high numbers of 2023 were not reached, still an 15,000 estimated total from Scilly Pelagics (cf. ~700 p.a. in 2017), with birds recorded into November. Also three counts >1,000 from Lizard Point.
Great Shearwater – Surpassed 2023 both at sea and from land-watches. From pelagic cruises, >15,000 birds were estimated, whilst the peak on land was 4,686 past Pendeen on 8th September. Prior to 2017, the annual totals on pelagic cruises peaked at 575 birds.
Scopoli's Shearwater – Only three UK records prior to 2023 but three from land in that year (cf. 26 at sea) and another two from land in 2024 (Penzance, very early in the season – 28th July). A further thirteen individuals were identified from photos taken on pelagic cruises, confirming the 2023 influx was not a one-off.
Wilson's storm-petrel – Prior to 2017, annual totals from pelagic cruises off Scilly peaked at 66. In 2024, records were smashed again as 400+ birds were recorded, including 100+ on one seven-hour pelagic cruise.

South polar skua – No records at sea prior to 2023; five individuals recorded in 2024 (three in 2023).
Maderian storm-petrel – between two and four individuals recorded on the Challenger Expedition to the shelf edge within UK waters!
Barolo shearwater – At least four birds recorded on the Challenger Expedition, as well as two single sightings from land (Mousehole, Cape Cornwall).
Yelkouan shearwater – two sightings from Pendeen.
And if records are accepted, two 'British firsts' could be registered from 2024 – single **pink-footed shearwater** and **Cape Verde shearwater** were submitted from Porthgwarra and Pendeen respectively.

11. Seals across the south-west

Edited by: Sue Sayer MBE (sue@sealresearchtrust.co.uk)
Authors: Sue Sayer MBE, Dan Jarvis, Anthea Hawtrey-Collier, James Barnett, Kate Williams, Joe Parker, Tara McEvoy-Wilding, Mel Broadhurst-Allen, Sarah Greenslade, Sarah Hodgson.

Interactions with other thematic topics

- Oceanography
- Offshore Wind
- Water Quality
- Licensing and Developments
- Fisheries and Aquaculture
- Plastics and Marine Litter
- Marine Protected Areas
- Seashore and Seabed

Conclusions: State of SW Marine Ecosystems Seal Indicators:

- **The range of migration:** Seals link Cornwall to the Isle of Man (450km north), NW Wales, SW and S Wales, SE Ireland, the Isles of Scilly, NW France, N France, S France (800km south), N and S Devon, Dorset, Belgium and Holland (650km east).
- **Seal population:** Undetermined as this is an open population across the entire Celtic Sea.
- **Grey seal demographics:** 66% were adults and most adults were males (57.5%). White coated pups under three weeks old represented 1% of all seals. 3% were south coast pups.
- **Harbour seals:** There were 72 harbour seal sightings with up to a max of three at 15 locations. Two young harbour seals made incredible journeys. After being released by the RSPCA West Hatch in South Devon, one (Kraken) swam 250km in less than 18 days and a second (Kelpie) swam 300km in less than 52 days up to the north coast of Cornwall (W Cornwall and Camel). No successfully weaned harbour seal pups were recorded.
- **Vagrant seal species:** Two species: Cornwall's first ever Ringed seal was recorded (a youngster that died) followed by a young Hooded seal in Falmouth harbour.
- **Entangled seals**: 82 unique entangled seals were identified (3%). six hooked seals recorded. A new issue of industrial plastic ring entanglement was recorded after the rescue of adult male 'Commuter' by BDMLR from an anti-foul paint tin seal.
- **Disturbance**: 160 serious disturbance incidents involved 930 seals (max 56 in a single disturbance incident). Looking at all levels of disturbance from level 1 (being woken up and alert) to level 3 (leaving the land to enter the sea, there were 322 seal disturbance incidents recorded on 8% of surveys impacting 2354 seals (6% of all seals recorded).
- **Rescued seals:** 78 pups admitted to BDMLR Hospital.
- **Tagged seals**: 164 different tagged seals (5%) identified.
- **Dead seals:** 246 dead seals were recorded by Cornwall Wildlife Trust's Marine Strandings Network. Almost half of which were white coated or moulted pups. Since 2016, the number of dead moulted pups has increased substantially. Four dead seals that were identified by SRT died aged approximately 5, 10, 13 and 14 years old, less than the average life expectancy of 25-30 years.
- **Postmortems:** 29 grey seals were examined: five adults, three juveniles, 17 moulters and four pre-moult pups. The primary conditions were: infectious disease (15), trauma (13) and Other (one).
- **2024 was not a normal year in the following respects:** Two vagrant species (Ringed and Hooded). Grey seals pups down by 10%, pupping even earlier than previously and less on south coast.
- **2024 was a normal year in the following respects:** Range of seal movements, seal abundance which appears stable, seal demographics, entangled and hooked seals, substantial ongoing serious disturbance, and tagged seal recording.

Seal data

Grey seals: On average ten seals were recorded, ranging from a minimum of no seals observed to a maximum of 454 seals counted during a single survey (down from 557 in 2021; 519 in 2022 and 458 in 2023). Of seals classified according to their age, 66% were adults and 34% juveniles, moulted pups or white coated pups (exactly the same percentage as recorded in 2023.) Only adults can be reliably sexed, so of all adults that SRT could confidently sex, 57.5% were males and 42.5% were females (similar to 56% males and 44% females recorded in 2021, 2022 and 2023) despite SRT's huge survey effort and datasets. Maternally dependent, white coat pups (WCPs) were recorded on 542 occasions at 43 different locations around the southwest. Most were recorded on the north coast, but WCPs were recorded at eight different sites on the south coast of Cornwall and Devon. WCPs represented just over 1% of all seals observed. Up to 2016, most pups were born in October followed by November. By 2022, most pups were born in September followed by August (but with only four more pups born in August than October). In 2024, most pups were born in September, but there were 54 more pups born in August compared to October. The pupping season continues to occur earlier, creating a temporal and spatial overlap with the peak tourist season, which is problematic as disturbance becomes more likely.

Plate 11.1 'Kraken', a Harbour/Common Seal. Image: Sue Sayer.

Harbour seals: There were 58 records with 72 harbour seal sightings (down from 85 in 2021). 47 records were single individuals up to a maximum of three individuals seen in South Devon. Harbour seals were recorded at 15 different locations (four north and 11 south coast) across Cornwall, South Devon and Dorset. Two young harbour seals made incredible journeys. After being released by the RSPCA West Hatch in South Devon, one (Kraken) swam 250km in less than 18 days and a second (Kelpie) swam 300km in 52 days up to the north coast of Cornwall (W Cornwall and Camel respectively).

Photo IDentification (PID): SRT's PID Hubs processed 116,253 photos in 2024 (up from 105,235 photos in 2023) into 1,427 survey albums. This enabled SRT to generate 11,694 seal identifications, (Up from 11,409 in 2023) of which 85% were re-identifications (which is surprisingly consistent compared to 84% in 2023 87% in 2022 and 2021 and 86% in 2020). This included a maximum of 80 different individual seal identifications in a single survey (which is substantially less than the 145 in 2023). We think this is because the big seal haul outs on the north coast now have fewer seals than previously. Each re-identification was confirmed by two experienced volunteers. Of all the seals re-identified in 2024, 36 have been identified for at least 20 years by the SRT PID Hub Network.

Key Observable Issues

Entangled Seals: SRT recorded entangled seals as 'currently entangled' or as 'ex-entangled' – the latter based on evidence of a healed wound and no visible entangling material. This can be harder to judge than might be imagined. Seals having experienced or still experiencing entanglement were recorded 719 times (3% of all seals observed) during 393 surveys up to a maximum of 14 different individuals in a single survey. In total 82 unique entangled seals were identified. A new entanglement issue that emerged in late 2021 continued to be observed in 2024 – that of seals being hooked in line mostly from our local sustainable inshore mackerel fishery. In 2024, six different seals were recorded as hooked, ranging from apparently single to multiple hooked seals.

Plate 11.2. A seal stampede at in North Cornwall. Image: Elizabeth Gordon.

Disturbance: From our routine data, serious level 3 disturbance was described as seals leaving the land by tombstoning (leaping from height) or in a stampede (rushing over sand/rocks) into the sea; crash diving at sea; displacement from sea areas where humans were present or seals being fed. There were 160 serious disturbance incidents. In total, level 3 disturbance affected a total of 930 seals in 2024. Whist this is an increase in the number of serious disturbance incidents from 2023, it is a decrease in the number of seals seriously disturbed. Looking at all levels of disturbance from level 1 (being woken up and alert) to level 3, there were 322 seal disturbance incidents on 8% of surveys impacting 2354 seals (6% of all seals recorded). This shows that disturbance is still a substantial issue that SRT and partners need to keep working on. Six of the 322 incidents had sufficient evidence (including identification of individuals responsible) to be reported to the relevant enforcement agencies (Cornwall Inshore Fisheries and Conservation Authority, Natural England, Marine Management Organisation and the Police as part of Operation Seabird). SRT organised three successful public Operation Seabird events in 2024 at St Agnes, St Ives and Falmouth to raise public awareness about best practice.

Injuring a seal offence: On 4th February, an incident was reported to the Marine Management Organisation of a seal being deliberately injured offshore by fishers on a fishing vessel. This was investigated by the Marine Management Organisation who conducted interviews with the people involved and the case was concluded with a written advisory letter. Given the evidence provided, this was the best outcome that we could have hoped for.

Photo identified ex rescue, rehabilitation and released seals by SRT: SRT 2024 data included 910 sightings of 164 different rear flipper tagged, rehabilitated seals (around 5% of all seals observed) from all around the southwest coast. The tagged seals recorded would have been released in north and south Devon or from the northwest and southwest Cornish coast but there were six notable exceptions. 'Sate', 'Christine' and 'Elio' were released in France; 'Crater', 'Drago' and 'Elora' were all released from Courtown in SE Ireland.) The longest identified, and so potentially longest surviving ex-rescued seals traced back to their rehabilitation records, were DP193 'Lewis' (an adult male released in 2001) and S123 'Puffa' (an adult female released in 2003).

Rescue, rehabilitation and release by British Marine Life Rescue (BDMLR)

Author: Dan Jarvis
Contact: dan@bdmlr.org.uk

Plate 11.3. A yearling Ringed Seal found in the Hayle Estuary: the first recorded for Cornwall. Image: Tash Murch.
.

The BDMLR Cornwall Seal Hospital received 78 grey seal pups for rehabilitation during the rescue season between August 2024 to April 2025. The season saw a marked decrease in rough sea and weather conditions and fewer severe storms compared with recent years, and this likely contributed significantly to the lower numbers of casualties received (noting as always that a small number of casualties were also received directly by the Cornish Seal Sanctuary). What was notable was that, of the casualties that did come in for care, a higher proportion than usual were suffering from especially poor health and were either euthanased or passed away. It is theorised that in seasons with regular storms, these animals would have mostly been killed off by the conditions before being found and reported. As the seas between August to mid-November especially were quite settled, pups were able to survive long enough until they were found and rescued instead. The season also saw the highest number of seals rescued during August than any other season previously, which fits with the phenology shift in the timing of the pupping season moving earlier. Valuable insights into pupping behaviour were also gathered from two pup watches that took place early in the season when pups were born on semi-accessible beaches where public disturbance was high and needed active management for the full weaning

period by a combination of BDMLR and SRT volunteers. Finally, two unique visitors from the Arctic were recorded - a yearling ringed seal in July/August in Hayle and a juvenile hooded seal in Falmouth. The ringed seal was the first of its species ever recorded in Cornwall but sadly died three days later from a sudden seizure. A postmortem examination by Cornwall Marine Pathology Team was unable to determine the cause.

Strandings Cornwall Wildlife Trust Marine Strandings Network (CWTMSN)
Author: Anthea Hawtrey-Collier and Sue Sayer MBE
Contact: strandings@cornwallwildlifetrust.org.uk

246 dead seals were stranded around the Cornish coast in 2024 which is less than the high of 2023 but still a significant increase on the previous ten-year average of 194. As seen in 2023 almost half of these were white coated or moulted pups under the age of one year old. Since 2016, the number of dead white coated pups has remained relatively stable, whilst the number of post weaned, moulted pups has increased substantially. A higher number of dead seals were recorded in every calendar month (compared to the 2003 to 2023 average) particularly in January and February and with the exception of July, when the same number were recorded compared to this longer term average. Three whitecoat pups were recorded in July and whitecoat deaths were seen in significant numbers from August 2024 and carried on through September and October indicating earlier than expected pupping activity.
Notable cases: A moulted pup on Marazion Beach 24/01/24 was found with features indicative of bycatch (recorded by George Deacon). A juvenile grey seal was recorded dead on Pentewan Beach 25th May by Sharon Trew showing features indicative of bycatch, this animal was submitted for postmortem examination which also found features of bycatch. A female moulted pup was euthanised by BDMLR vet when it was found on Mother Ivey's Bay with 300g of multifilament netting wrapped around its neck. The net had caused a significant, deep entanglement wound around the neck and impacted the feeding ability of this young animal. An ex-netted male adult grey seal was found on Porthgwarra 17th November and recorded by Andy Cowie. Known seal 'Praying Snoopy' was found and recorded by Emma Louise Gallagher on Deadman's Cove, Newquay. 'Daisy Ridley', a Cornish Seal Sanctuary 2024 release was found just two weeks post release dead in Newlyn Harbour. Male adult grey seal 'Hanging Eyes' was found dead on Carbis Bay Beach, recorded by Mick Dawton and sent for postmortem examination. Of note was an arctic ringed seal that was seen alive at Lelant Saltings, which subsequently died in situ and was recovered for postmortem examination.
Photo identified dead seals by SRT: SRT continue to partner with the CWTMSN and, in 2023, four dead seals were identified from their carcasses (3 males and 1 female). These were estimated to have died aged 5, 10, 13 and 14 years old, so well short of the average life expectancy of 25-30 years.

Postmortem Examinations
Author: James Barnett Cornwall Marine Pathology Team
Contact: jamesbarnettvet@gmail.com

Plate 11.4. A by-caught young seal. Image: Cornwall Wildlife Trust.

Twenty-nine grey seals were examined postmortem in 2024, including three animals found in 2023. This included five adults, three juveniles, 17 moulters and four pre-moult pups. The primary conditions found included 15 cases of infectious disease, 13 cases of trauma and one case that fell into neither category. Fourteen animals were found dead and the other 15 had died or been euthanased at rescue or during early attempted rehabilitation. Notable

cases included infection with *Mycoplasma phocimorsus* in two moulted pups: a *Mycoplasma* species that has only recently been reported in the literature in Scandinavia from people with septic arthritis following contact with seals ('seal finger') and, as far as we are aware, has not been detected previously in seals. An adult male grey seal had bronchopneumonia most likely caused by an alphacoronavirus and an adult female grey seal had an unusual presentation of ascarid nematode infestation, causing a necrotising and ulcerative glossitis. Four cases of fisheries bycatch were seen in pups, including two cases of inferred bycatch and two cases of entanglement, one of which involved monofilament net and the second hooks and fishing line. A moulted pup had abnormalities of both eyes and eye sockets, probably consistent with some form of developmental abnormality at a stage of gestation when the ocular structures and adjacent skull were forming. A juvenile ringed seal, estimated to be around one year of age and the first record for Cornwall, fitted and died four days after being first observed. Lesions were found in the cerebellum on histopathology but the precise aetiology of the seizures remains unknown.

North Devon Seal Report
Author: Kate Williams Seal Research Trust (SRT)
Contact: katew@cornwallsealgroup.co.uk
The North Devon team continued to survey throughout 2024 with surveys conducted on 52 days, mostly in the summer months when the seals arrive to haul out on the rocks. Seals weren't seen hauling out until the start of May 2024 despite the team trying to survey at low tide. Usually, they start hauling out in April but in 2023 it was as late as June. In 2024, numbers increased through June and July, peaking at 34 on 25/07/24. Counts in the summer months were mostly double figures, with single figures on just 5 surveys. The number of seals declined as usual from September as the females moved away to have their pups. 88% of the seals seen and recorded were adult females. Over 377 re-identifications of seals from the catalogue were made and 98 different seals were identified. 36 new seals were added to the catalogue during the year, meaning 62 seals that were already in the catalogue at the start of the year, were re-identified in 2024. This shows high site fidelity and long may that continue. Lots of regulars have returned year on year: of the top 10 regulars, eight were first identified in the years 2009 to 2014 (returners for ten to 15 years).

Lundy Seal Report
Author: Joe Parker and Tara McEvoy-Wilding Lundy Landmark Trust (LLT)
Contact: warden@lundyisland.co.uk
2024 on Lundy was another successful year for seal pups, with record numbers born around the island. Seventy-one pups were born, compared to 66 in 2023. However, the mortality rate was estimated to be around 36%, which is higher than previous years. This is likely to be due to the adverse weather we had during early September, which is peak pupping season on Lundy. The adverse weather, combined with some big spring tides, likely caused an increase in pup mortality. Our abundance monitoring was a success, with half of island surveys taking place once a week from the beginning of August to the end of October. The highest number of seals was recorded on 3rd September, where 207 seals were spotted. Sadly, we witnessed several disturbance events during 2024, most notably when a drone crashed into Brazen Ward, which is a popular haul out. The snorkeler who was flying the drone from a charter boat then swam over and climbed onto the rocks to retrieve the drone and flushed several seals into the sea. However, more positively since this event we have had discussions with the charter boat that had the snorkeler/ drone pilot on board and have agreed to create a 'no drones within the MPA' policy following feedback from skippers who said they would happily tell customers that they can't fly drones off their boats if the backing has come from us. We are also trying to tackle the issue of social media posts which idolise 'snorkelling with seals' as these posts are only making the activity more popular. We hope to raise awareness of the damaging nature of these social media posts by talking to both the person who posted the image or video and, if necessary, to the charter boat they came to the island on. Overall, we believe good progress has been made and are excited for the 2025 summer season, where we hope to continue having regular contact with local charters and to further increase our disturbance monitoring. Lastly, I'd like to say a huge thank you to Ben Long, who was our volunteer Seal Fieldworker for 2024! He did a fantastic job of population and productivity surveying during 2024 and has put us in a great place for a successful 2025 season.

Channel Isles Seal Report
Author: Mel Broadhurst-Allen Alderney Wildlife Trust
Contact: marine@alderneywildlife.org
Channel Islands: Several organisations across the Channel Islands actively record seals through the 'Channel Island Network'; a collaborate project which aims to assess seal abundance and distribution (primarily grey seals), headed by the Groupe Mammalogique Normand. Information from surveys completed during August was also passed onto Sea Mammal Research Unit (University of St Andrews), for annual population assessments. Seal sightings and other notable highlights, such as strandings for each island (Alderney, Guernsey and Jersey) are given below.
Alderney: Seal sightings and notable highlights: The Alderney Wildlife Trust (AWT) completed two boat-based marine mammal observation surveys (May and October) during 2024. These were completed within the island's Ramsar Site, which grey seals are known to frequent. Combined, a total number of 99, mostly adult grey seals, were recorded on these two surveys. They were hauled out on offshore rocks. Seal sightings and notable highlights: The AWT also collated 49 sightings of grey seal individuals recorded opportunistically by members of the public across Alderney. In general, sightings were of one or two individuals, with the majority of the records located at the north east of the island. BDMLR call outs: Only one young grey seal moulted pup was attended to on 8th March at Longis Bay. This individual was deemed healthy by on-island BDMLR medics and left to leave the bay naturally, which happened 24 hours later.
Guernsey: Seal sightings and notable highlights: Volunteers within the marine biology section of La Société Guernesiaise (an NGO based in Guernsey), completed three boat-based marine mammal observation surveys along the east coast of Guernsey. Surveys were undertaken across a number of offshore rocky islets, collectively known locally as 'the humps' area, which is within one of Guernsey's designated Ramsar Sites. Surveys were completed in three months: July, August and October. Combined, these surveys recorded a total number of 79 grey seal individuals. A high proportion of the sightings during each survey were of adult seals, with a small number of juveniles also observed. Two grey seal pups were spotted during the October survey. BDMLR call outs: A small number of live grey seal pups were attended by the GSPCA on Guernsey in 2024 and rescues were undertaken.

South Devon Seal Report
Author: Sarah Greenslade The Seal Project (TSP)
Contact: sarahthesealproject@gmail.com
TSP have been monitoring and recording the Grey and Common seals around South Devon since 2017. Our main survey location is not only a marina, but a DWT County Wildlife Site, making it crucial to record all sightings and activities. New young seals appear alongside the returning winter seals, though this is a haul out location with no easy access for the youngest seals. To haul out on a pontoon requires significant skill and propulsion, so juveniles have to find low lying girders to haul-out or move on to other locations along the coast. Over the winter, our largest haul-out site encountered significant storm damage, making some areas inaccessible to people. The seals took advantage of these new spaces, with a well-known female seal leading the way. Others followed her, including our famous 'Sammy,' who reappeared after being absent for two pupping seasons, and another adult female 'Starfish' who was almost always nearby. As human activity around our coastline increases, our seal pup numbers have decreased. Pregnant seals no longer have the space around our shores in which to have their pups without disturbance.
Rescue, Rehabilitation & Release: We've assisted the RSPCA with seal releases in South Devon. Whilst some haven't been seen since release, a few have been seen locally, and others have been sighted in Cornwall. BRX445, Yellow taggie 3125 Kraken, did all three! He was released on 15th February and seen further up-river a month later, yet two weeks later he was seen in West Cornwall. Our most frequently seen tagged seals were both rescued and released from the Cornish Seal Sanctuary in 2020 and 2021 respectively. Yellow SL131 Pippi Longstocking and green SL130 Basil, are seen at least annually.
2024 Highs and lows: We received a grant from the Devon Environment Foundation for our second remote access camera being used to monitor an inaccessible offshore location including recording seal numbers, disturbance and possible identifications with the help of a team of volunteers, who can monitor this site from their own homes. We witnessed the birth of a Common Seal pup in 2024, yet despite monitoring by ourselves, the Harbour Authority and the Navy, this pup was found dead at three weeks of age.

Plate 11.5. The red seal from a tin of anti-fouling paint. Image: Sarah Greenslade.

Entanglement Issues: A year on we are still having to say there is no change in the situation for BRX361 'Tangled'. We've known of her entanglement since March 2022 when it was clear entanglement was far from a recent issue. Whilst 'Tangled' otherwise thrives and grows, this life limiting injury gets worse. Ourselves, the BDMLR and Dart Harbour Authority are monitoring her regularly, but her haul outs only ever being on manmade structures aren't giving us options to help her. We'd seen a juvenile male seal hanging out with the other juvenile seals on our Christmas Day survey. Yet, within 24 hours, this seal went from 'free' to 'entangled'. On Boxing Day he had become a red 'festive banded' seal. This was a dangerous entanglement from a brand of marine anti fouling paint. We monitored him whilst he was in the area, but he soon moved on and there have been no sightings since. The saddest part was onlookers thought he was 'wearing a collar'. Photo Identification: TSP added around 50 new identifications to the South Devon catalogue in 2024 and have seen many seals return again and again. Our favourite seal is BRX139 Easter Bunny. He's now 4 years of age and thriving. As an ex-entangled seal keeps returning, showing off his sub-adult life skills. Adult female BRX96 Fingers Crossed spends most of her non pupping year here, often on her own girder.

Dorset Seal Report

Author: Sarah Hodgson Dorset Seal Project (DSP)
Contact: shodgson@dorsetwildlifetrust.org.uk

The Dorset Seal project was set up by Dorset Wildlife Trust (DWT) in 2014. By recording casual seal sightings data and photo identification work, we have been learning more about the grey and common seals that visit the Dorset coast. Alongside this research, DWT has been raising awareness of these iconic marine species and promoting codes of conduct to reduce anthropogenic impacts.

Seal sightings & species: During 2024, a total of 266 seal sightings were reported to DWT, a 23% increase on 2023. The data comes from casual sightings, so don't necessarily reflect changes in abundance. Grey Seals accounted for 63% of the sightings. 10% of the reports were Harbour Seals and the remaining 27% were recorded as species unknown. Seals were spotted along the Dorset coast throughout the year. However, most sightings were recorded during April, May and August. Fewer sightings were recorded during December and January.

Seal census: During 2024, the first ever Dorset-wide seal count was carried out as part of the SRT's autumn census. 44 volunteers gave up a combined 78 hours to conduct seal surveys along nearly the entire length of the Dorset coastline from Lyme Regis to Highcliffe. In total, 16 seals were observed. This information contributes to a wider dataset, helping to improve our understanding of these mobile marine mammals across the southwest region.

Photo identification: A female grey seal, 'Fiver' is a frequent visitor around the Weymouth and Portland area. She was spotted further east along the Purbeck coast for the first time. Since 2014, she has been recorded 66 times, but only ever around the Weymouth and Portland area. During the seal census, a juvenile grey seal was observed with circular lesions around its face and neck. Subsequent photos sent in by a member of the public showed that the condition was also affecting its front flippers, although it was seen feeding and appeared to be in an otherwise healthy condition. It has been recorded several times since but not hauled-out so it is difficult to fully assess its overall condition. **Key Issues:** Disturbance is one of the biggest issues that seals face in Dorset. This seems to particularly affect pups and younger seals that haul out in easily accessible and sometimes busy locations. A sub adult male grey seal was recorded hauled out at Durdle Door on and off over a period of weeks, coinciding with the Easter break. This is one busiest beaches in the region, so his behaviour attracted a lot of attention from visitors. At times they prevented him from hauling out, were getting too close or trying to touch him, and there were some reports of people throwing stones. These situations are very challenging to manage, requiring a huge amount of resources from BDMLR volunteers, the Lulworth Ranger team, HM Coastguard and even the Police stepping in to help. Cordons were set up, leaflets were distributed and funds were secured to install a couple of Watching Seals Well signs to promote best practice before people got to the beach. The seal was identified as 'Sammy', a habituated

seal who spent several months displaying similar behaviour in Weymouth in 2020-2021. Although he has been spotted regularly since, it was hoped that he had grown out of this behaviour.

Awareness raising: Paddlesports users are one of the groups most likely to encounter seals and we were keen to reach out to them to promote codes of conduct. SRT were kindly able to provide us with some watersports stickers for our campaign. Ahead of the summer school holidays, we emailed 30 paddlesport operators and activity providers across Dorset. In total 350 stickers were sent out to 6 providers. Although a low response, it was good engagement. One person who was contacted as part of the campaign directed a colleague to BDMLR when they encountered a young seal in distress.

Strandings and PMEs: A small Harbour/Common Seal pup was washed up on Chesil beach in January 2024. Upon investigation, we found that the pup had a tag on its rear flipper which was traced back to RSPCA East Winch in Norfolk. The pup was admitted to RSPCA East Winch in July weighing just 7kg. She was released in November at 35kg and would have travelled approximately 400 miles around the coast from The Wash to Chesil. Unfortunately, the tide took it back out to sea before it was recovered, so we won't know any further details. It's still fascinating to learn how far these animals can travel at such a young age – it would have only been around 6 months old.

Seal Research Trust Cornwall and Devon Seal Report

Author: Sue Sayer MBE and SRT's Volunteer Survey Team
Contact: sightings@cornwallsealgroup.co.uk

More detailed information can be found in SRT's 2024 Annual Report

Supporters

SRT were self-financing thanks to our public, private and voluntary funders. Substantial grants, legacies and donations were received from Flotilla Foundation, LUSH, Derek Bryan Gray, Carbis Bay Hotel, Bare Kind, MoonSeals, Aspects, Bowgie Inn, Mungo Lils on the Hill, Robie, Smartie Lids on the Beach, Our Only World, Polzeath Marine Conservation Group and the Seal Protection Action Group.

Communication, conservation actions and consultations

In 2024 SRT delivered 894 activities (including 401 UK and 73 globally) involving at least 38,099 beneficiaries. The year ended with 19,090 social media followers. Volunteers delivered 139 talks/workshops, 14 stalls/events, 164 field engagements, one six-month exhibition, eight school sessions, 18 Photo ID Project (PIP) day long surveys, 422 meetings, 30 reports, 12 SRT Seal Sessions, ten Seals newsletters, four Wild Seal Supporter updates, five new resources, 88 media coverage events. Working with partners, SRT helped prevent Planetary Technology getting a licence for their St Ives Bay Geoengineering experiment. SRT continue to pursue the goal of making seal disturbance illegal. 2024 campaigns were Disturbance, Flying Rings, Climate Change and Geoengineering. SRT used data to submit evidence to 54 policy and planning consultations. These were classified into five categories: Conservation (22); Developments (17); Fisheries and Aquaculture (three); Issues (eight) and Other (four).

Research reports

Reports including nine boat survey transect reports by Sarah Millward and Mike Taylor; and 12 Looe Island reports by Martin Gregory. SRT published an Annual Report for 2023, along with the SW Marine Ecosystems report on Seals 2023 by Sue Sayer. Sue input to the Cornwall Wildlife Trust Marine Strandings Network report for 2023 and Cornwall Birds 2022 report. Dr Mel Broadhurst compiled SRT's 2023 Census report. Kate Williams produced Hub reports for North Devon 2023 and Mounts Bay 2022. Two reports were written on seal disturbance for the Pentire and West Cornwall National Trust.

Projects

SRT continued to influence Planetary Technology's (PT's) Marine Geoengineering Project for St Ives Bay. This is a Carbon Dioxide Removal (CDR) Ocean Alkalinity Enhancement (OAE) experiment could set a global precedent for this industry. SRT had ongoing dialogue with South West Water, the Environment Agency, Marine Management Organisation and the Water Research Centre. A pivotal event took place on 15th March when the Cornwall Carbon Scrutiny Group met with eight of PT's staff and other stakeholders to discuss their Baseline Survey report. During this recorded meeting, PT's Chief Scientist admitted this wasn't really a baseline study, nor did PT have an appropriate

control site and that it was actually too hard, too costly in too challenging an environment to do a proper job! In April 2024, there was a second community protest held by Keep our Sea Chemical Free (KOSCF). SRT collaborated with Dr Ian Hendy from Portsmouth University and David Jones from Just One Ocean to plan and deliver two days of dive surveys across 4 transect sites in St Ives Bay. Thanks to the funding from the Flotilla Foundation these surveys will continue for 3 years. Cornwall FLOW deployed an FPOD hydromoth and camera to record cetacean and seal vocalisations. The year ended with the world premiere of the KOSCF Documentary by Senara Wilson Hodges. A summary of SRT's engagement and scrutiny of this project can be seen here. SRT continued to use Seb East's software 'Seal Detector' to auto extract seal images from survey photos ready for ID. Throughout 2024, SRT collaborated with Dan Schofield and Horace Lee from Oxford University's Visual Geometry Group to explore the possibility of developing a bespoke Seal Photo ID software application.

Surveys and Volunteers

In 2024 SRT received records from 260 different volunteers, from which we processed 4,332 discrete surveys (an average of 12 site specific surveys each and every day) from 314 different locations. 44 volunteers participated in 10 day long repeated boat survey transects and 27 volunteers completed eight Looe Island surveys. Our Sanctuaries at Sea Ranger, Sarah, coordinated our quarterly SW Seal Census completed in January, April, July and October. This is an amazing citizen science network team effort.

Acknowledgements

Author: Sue Sayer MBE SRT
Contact: sue@cornwallsealgroup.co.uk

This report is a testament to the huge amount of time and effort that goes into surveying seals across the southwest UK. This was an amazing collaboration between at least nine different organisations.
Each is independent, yet all rely on a large number of trained volunteers who are inspired to collect routine data in all weathers and sea conditions. Without volunteers this data collection would not be affordable or possible. Seals use a huge range of habitats across the southwest from remote wild coves and caves to hugely public anthropogenic structures. Thanks to this incredible network for giving seals a voice. Together these organisations have mitigated many issues seals now face in our increasingly changing world. Action now will ensure future generations of seals and people can co-exist.

12. Cetaceans

Edited by: Duncan Jones (duncoliver@yahoo.co.uk) Marine Discovery Penzance with Dan Jarvis, British Divers Marine Life Rescue; Joe Dennett, Cetacean Acoustic Trend Tracking Project; Rebecca Allen, Cornwall Wildlife Trust.

Conclusions

- The seas surrounding the South-West represent an important habitat for cetaceans.
- The data suggest a significant coastal shift in the distribution of common dolphins, although recorded pod sizes appear to be decreasing.
- Two of the datasets show a decline in effort-corrected sightings of harbour porpoises, while the third indicates a continued increase.
- All three datasets show an upward trend in effort-corrected sightings of Risso's dolphins, although this trend exhibits inter-annual fluctuations.
- Coastal bottlenose dolphins are no longer recorded in the western part of the region during the summer months. However, observations of the offshore ecotype of bottlenose dolphins are increasing, although one dataset reported no sightings of this species in 2024.
- Effort-corrected observations of rorqual whales, particularly minke whales, have increased over the past five years, with all three datasets reporting their highest sighting rates for this species in 2024.
- Humpback whales continue to be recorded in the region, particularly during the winter months.
- The notable increase in certain species within coastal waters has occurred since approximately 2014–2015. This represents a relatively short timescale for such marked ecological changes and warrants further investigation. The shift coincides with documented alterations in plankton community structure off the South-West coast, which are thought to be associated with changes in nutrient availability and the occurrence of extreme marine heatwaves currently affecting the region. These changes in plankton dynamics appear to be influencing the distribution of fish stocks, with increasing numbers of clupeid species, an important prey group for many cetaceans, being recorded.
- Understanding the underlying drivers of these ecological changes is essential. The increasing coastal presence of odontocetes also raises concerns about heightened exposure to human impacts and anthropogenic disturbances. Cornwall continues to report the highest rates of cetacean strandings in the UK, with bycatch remaining a significant contributing factor.

Introduction

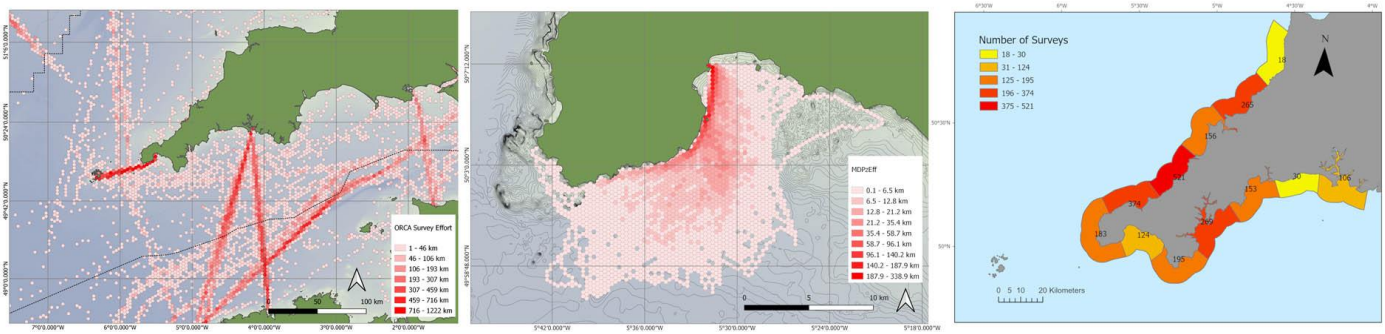


Figure 12.1. Data sources: ORCA (far left) shows the survey effort or ships track as kilometres effort per 500 metre grid cell. The sampling distance is represented out to 5km from the survey location. Marine Discovery Penzance (centre) this shows survey effort or ships track represented as kilometres searching at a 500 metre resolution. Seaquest SW (far right) shows observer searching effort by number of surveys.

The three main datasets used in this study are Seaquest Southwest (SQ) data, collected from around the Cornish coast between 2011 and 2024; Organisation Cetacea (ORCA) data, collected from cruise ships and ferries between 2011 and 2024; and Marine Discovery Penzance (MD) data, collected in Mount's Bay, Cornwall, over the same period. Together, these datasets provide an overview of cetacean observation trends in the south-west over the past decade, across different spatial scales (Figure 12.1).

However, data coverage remains skewed towards Cornwall, although the inclusion of ORCA data significantly improves spatial distribution. Additional data from Devon, Dorset, and Somerset would be beneficial—ideally in the

form of effort-corrected data. While incidental sightings can offer valuable insights, they are unsuitable for trend analysis due to the presence of numerous unaccounted-for nuisance variables.
This year, the PELTIC cruise dataset (a pelagic fish research survey conducted by the Centre for Environment, Fisheries and Aquaculture Science, CEFAS) was also examined. The dataset spans 2017 to 2024 and is gathered each October.

Odontocetes (Toothed Whales)

Harbour porpoise *Phocoena phocoena*

Plate 12.1. Surfacing Harbour Porpoise. Image: Marine Discovery Penzance.

The left plot in Figure 12.2 shows scaled trends in *P. phocoena* sightings per hour across three datasets (MD, SQ, and ORCA) from 2011 to 2024. All datasets show a general increase in sightings between 2011 and around 2017–2018, with SQ showing the most pronounced peak. Following this, both the SQ and ORCA datasets exhibit a clear decline through to 2024, while the MD dataset shows a more stable trend with a slight rise in recent years. Notably, there is convergence across all three datasets between 2016 and 2020, after which the trends diverge. These patterns may reflect real changes in porpoise presence, shifts in survey effort or methodology, or other environmental or anthropogenic influences, and warrant further investigation.

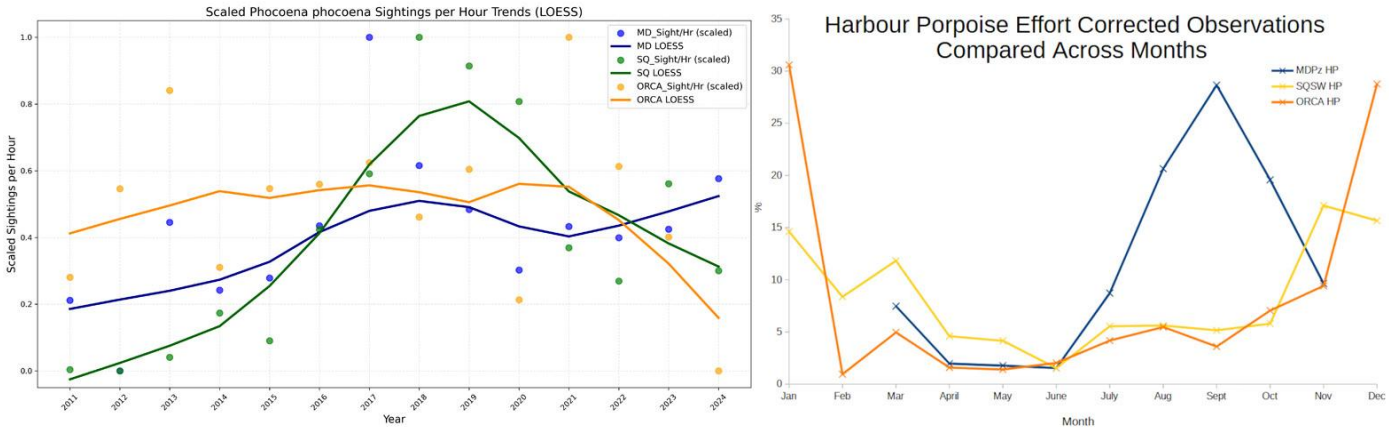


Figure 12.2. Effort-corrected sightings per hour of *P. phocoena* from three datasets—MD, SQ, and ORCA—over the years 2011 to 2024. Each dataset's sightings are scaled between 0 and 1 to enable direct comparison of trends, regardless of differences in raw sighting rates. The individual data points represent annual scaled values, while the LOESS smoothed curves illustrate the overall trends for each dataset. The right plot shows seasonal changes in presence in the three datasets is shown ORCA (orange), MD (blue) and SQ (yellow). The mean observations per unit effort for each month is calculated across the years. The percentage value each month contributes to the total is displayed for each dataset.

The right plot in Figure 12.2 compares effort-corrected harbour porpoise observations across months for the three datasets (MD, SQ, and ORCA). The MD dataset shows a pronounced seasonal peak in sightings from July to October, with the highest proportion in September. In contrast, the ORCA dataset shows strong peaks in winter months, particularly January and December, with consistently low values across spring and summer. The SQSW dataset exhibits a more even distribution throughout the year, though with slight increases in January, March, and November. These contrasting seasonal patterns may reflect differences in the spatial distribution of survey effort, methodologies, regional porpoise distributions, or environmental factors influencing porpoise presence and detectability.

Bottlenose dolphin *Tursiops truncatus*

Plate 12.2. A Bottlenose Dolphin breaches in Mount's Bay, Cornwall. Image: Hannah Wilson.

The MD dataset shows a general upward trend from 2011, peaking around 2018, followed by a noticeable decline through to 2024. The SQ dataset initially increases until around 2016, then gradually declines. The ORCA dataset reveals a different pattern, with moderate fluctuations until 2021, followed by a sharp increase through 2024. These differing trends suggest variability in *Tursiops truncatus* sightings among the datasets, potentially due to geographic or observational differences. The LOESS smoothing provides a clear visualization of these trends, helping to identify possible shifts in dolphin presence or detectability over time.

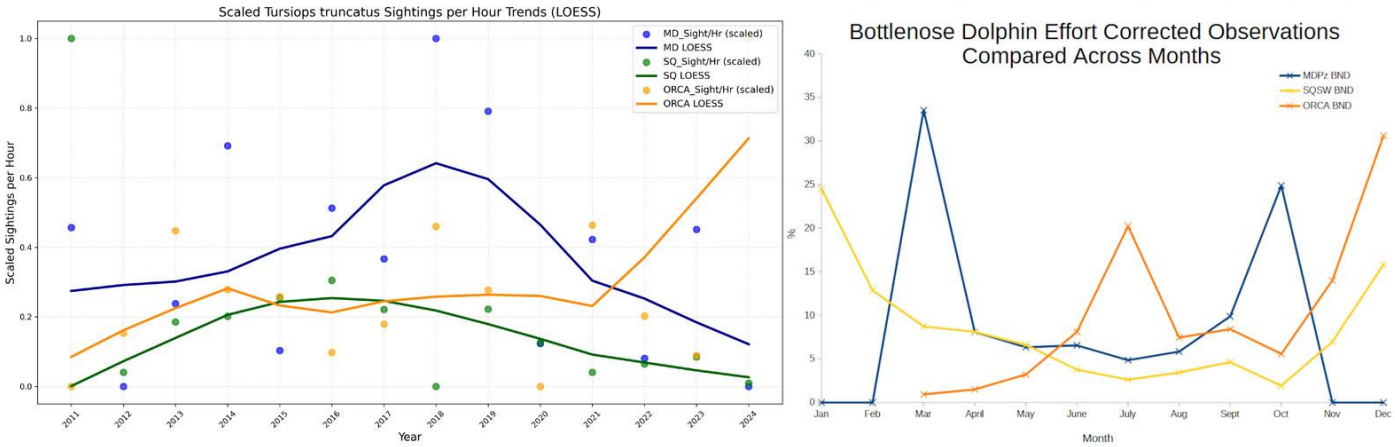


Figure 12.3. Plots of effort-corrected number of sightings and seasonal patterns for *T. truncatus*.

The left plot in Figure 12.3 displays effort-corrected sightings per hour of Bottlenose Dolphins from three datasets—MD, SQ, and ORCA—over the years 2011 to 2024. Each dataset's sightings are scaled between 0 and 1 to enable direct comparison of trends, regardless of differences in raw sighting rates. The individual data points represent annual scaled values, while the LOESS smoothed curves illustrate the overall trends for each dataset. The right plot shows seasonal changes in presence in the three datasets is shown ORCA (orange), MD (blue) and SQ (yellow). The mean observations per unit effort for each month is calculated across the years. The percentage value each month contributes to the total is displayed for each dataset.

The right plot in Figure 12.3 illustrates the seasonal patterns in effort-corrected observations of Bottlenose Dolphins across three datasets MD, SQ, and ORCA presented as percentages of total observations per month. The MD dataset shows distinct peaks in March and October, with very few or no observations during the winter months (November, and December). The SQ dataset is characterized by a high proportion of observations in January, followed by a gradual decline through the spring and summer, and a secondary increase in the late autumn months. The ORCA dataset displays a different pattern, with a pronounced peak in July and a sharp rise again in December, suggesting seasonal presence or detectability distinct from the other datasets.

These contrasting seasonal trends across datasets suggest spatial or methodological differences in survey effort or dolphin distribution. The presence of clear seasonal peaks in different months for each dataset indicates that bottlenose dolphin occurrence or visibility varies significantly by region or observational protocol.

Common dolphin *Delphinus delphis*

Plate 12.3. A Common Dolphin bow riding a netter as it passes Mousehole, Cornwall. Image: Marine Discovery Penzance.

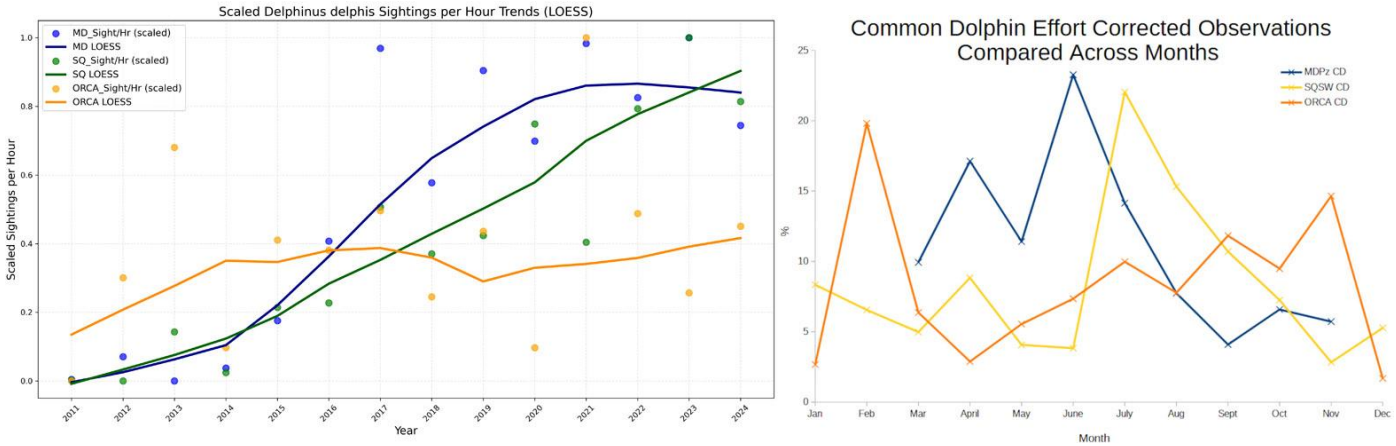


Figure 12.4. Trends in sightings of Common Dolphin *Delphinus delphis.*

The left plot in Figure 12.4 displays scaled trends of *D. delphis* from three datasets MD, SQ, and ORCA over the years 2011 to 2024. The MD dataset exhibits a steady increase in sightings from 2011, with a pronounced rise starting around 2015 and peaking around 2022, followed by a slight decline. The SQ dataset shows a similar upward trajectory, with consistent year-over-year increases and a continued rise through to 2024, suggesting a growing presence or detectability of common dolphins in the surveyed area. In contrast, the ORCA dataset displays a more modest and relatively flat trend, with a gentle increase up to around 2017, followed by a plateau and slight recovery after 2020. The differences in trends among the datasets likely reflect variations in geographic coverage, survey effort, or methodological factors, but the overall picture points to an increasing trend in *D. delphis* sightings in the MD and SQ datasets over the last decade.

The right plot in Figure 12.4 compares the seasonality of effort-corrected observations of Common Dolphins across three datasets: MD, SQ, and ORCA. Each dataset exhibits distinct seasonal patterns, with peaks in observations varying across months. The MD dataset sees the highest sightings in July, while SQ peaks in June and August, and ORCA shows notable peaks in February and December. The differences in seasonal trends across these datasets suggest variations in observation efforts, environmental factors, or possibly dolphin movement patterns. This comparative analysis provides valuable insight into the temporal distribution of dolphin sightings, useful for conservation planning and ecological research.

The left plot in Figure 12.4 displays effort-corrected sightings per hour of *Delphinus delphis* (Common Dolphin) from three datasets—MD, SQ, and ORCA—over the years 2011 to 2024. Each dataset's sightings are scaled between 0 and 1 to enable direct comparison of trends, regardless of differences in raw sighting rates. The individual data points represent annual scaled values, while the LOESS smoothed curves illustrate the overall trends for each dataset. The right plot shows seasonal changes in presence in the three datasets is shown ORCA (orange), MD (blue) and SQ (yellow). The mean observations per unit effort for each month is calculated across the years. The percentage value each month contributes to the total is displayed for each dataset.

Pod Size

This year, we examined the PELTIC cruise data, which includes cetacean observations. The data from this survey indicated a decrease in common dolphin pod sizes (Figure 12.5, left). The plot on the right shows the mean pod size recorded each year between 2011 and 2024 in the MD dataset, along with the percentage of pods containing more than 50 individuals. Specifically, the percentage of pods containing more than 50 individuals had decreased, and the mean pod size showed a slight downward trend, particularly over the past two years.

Count_Of_Pod_Size	2021	2023	2024
1-5	79	221	141
6-10	77	84	66
11-15	37	27	31
16-20	16	13	9
21-30	5	8	2
31-40	16	4	
41-50	3	1	2
51-60	2	1	
61-70	4		
71-80	1	1	
110	1		
120	2		
180	1		
200	1		
300	1		

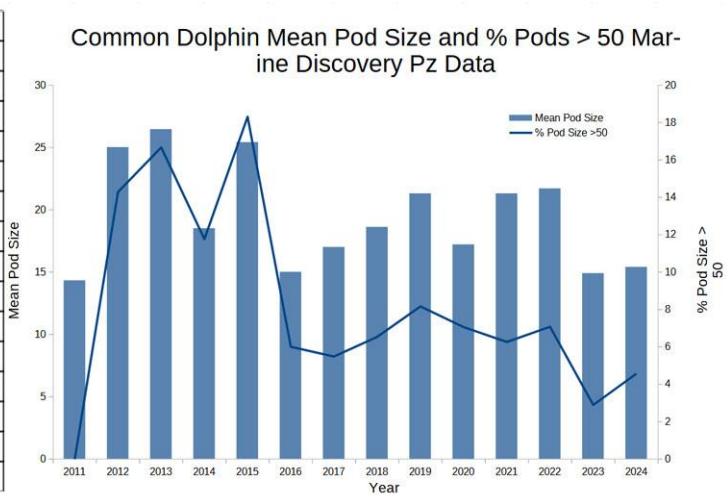


Figure 12.5. Counts of common dolphin pod sizes recorded during PELTIC Cruises in 2021, 2023, and 2024 and sizes of pods recorded by Marine Discovery Penzance.

Risso's dolphin *Grampus griseus*

Plate 12.4. A Risso's dolphin surfacing in Mount's Bay, Cornwall. Image: Marine Discovery Penzance.

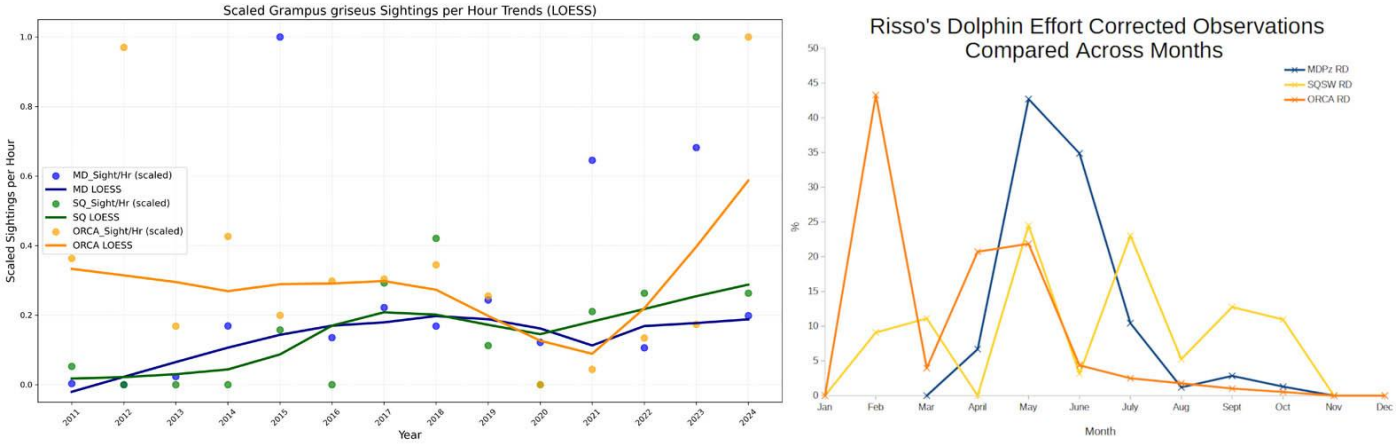


Figure 12.6. Trends in effort-corrected sightings of *Grampus griseus and seasonality of occurrence.* Individual data points in the sightings per hour represent annual scaled values. The right plot shows seasonal changes in presence in the three datasets is shown ORCA (orange), MD (blue) and SQ (yellow). The mean observations per unit effort for each month is calculated across the years. The percentage value each month contributes to the total is displayed for each dataset.

The left plot in Figure 12.6 displays scaled trends of sightings of *G. griseus* from three datasets MD, SQ, and ORCA over the years 2011 to 2024. Across all three datasets (MD, SQ, ORCA) the LOESS-smoothed curves share a broadly 'rise–fall–rise' pattern over the 2011–2024 window but differ in the timing and magnitude of their peaks and troughs. MD begins at a moderate level in 2011, dips slightly through 2013, then climbs to a mid-decade high around 2017–2018. After that it declines steadily to its lowest point in 2020 before reversing course and climbing back up for 2024. SQ starts near zero, increases more sharply than MD to reach its maximum also in the 2016–2018 period, then drops even more steeply through 2020. Since 2020 it has shown the strongest recovery of the three. ORCA is initially highest in 2011, undergoes a gradual decline to 2014–2015 before holding steady until 2018 and then plunges almost to zero by 2021. From that low it rebounds sharply to reach a new peak by 2024. In summary, while MD and SD share a similar mid-decade peak and 2020 trough followed by a modest recovery, ORCA exhibits a more pronounced drop in 2019–2021 and the strongest post-2021 resurgence.

All three datasets show a mid-decade peak and a trough around 2020 with ORCA standing-out for its dramatic drop and subsequent strong recovery. SQ also shows a notable recovery after 2020, while MD's changes are more moderate. This suggests that, despite some shared environmental or biological drivers, each region has experienced unique fluctuations in *G. griseus* trends over the past decade.

The right plot in Figure 12.6 compares the seasonality of effort-corrected observations of *G. griseus* across three datasets: MD, SQ, and ORCA. This plot shows distinct seasonal patterns of observations across three datasets. The ORCA dataset shows peak observations in February, these are offshore observations, which spatially correspond with known cuttlefish overwintering areas. It has a secondary peak in May, then declining through summer to very low levels in autumn and winter. The MD dataset exhibits a different pattern with highest observations in May and moderate levels in April, followed by a sharp decline through summer and minimal activity in winter months. The SQ dataset shows the most consistent year-round presence with peaks in May and July and generally maintaining 5-15% observation rates throughout most months. All three datasets show minimal activity during late fall and winter months (September-December), suggesting strong seasonal migration or behavioural patterns, though the timing and intensity of peak seasons varies considerably between datasets.

Cetacean Acoustic Trend Tracking – CATT Short Term Patterns

CATT brings together over 20 site years (3 calendar years) of acoustic data from the south-west.
It is early days for CATT long term aims but some short-term patterns are starting to emerge:

- The highest DPM/day (Detections Positive Minutes) recorded at a single site were Porpoises, 199.
- Average CATT DPM/day per site Dolphins ~17, Porpoises ~ 11.
- Diel patterns vary greatly. Most inshore sites show higher Dolphin activity at night

- Click based social activity seen for Dolphins and Porpoises
- > 20 long term offshore F-POD sites to be added to network during 2025 – 2026

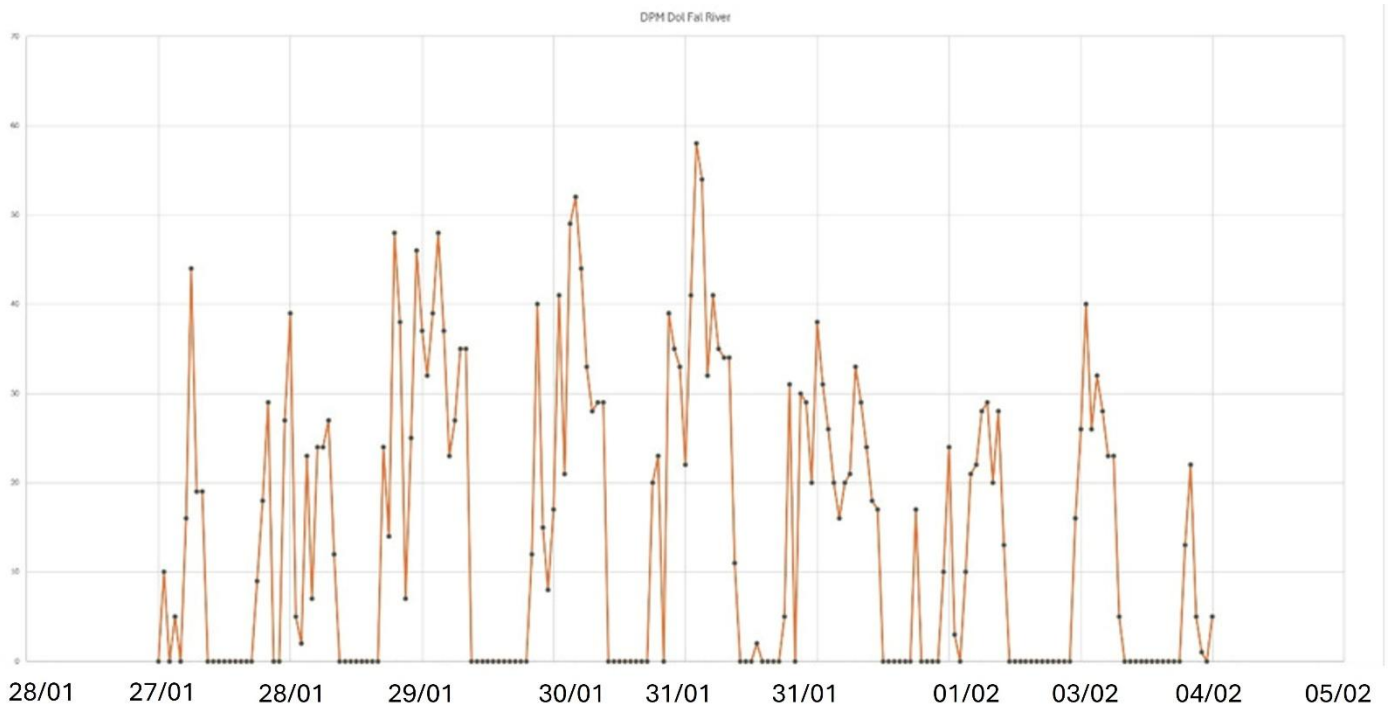


Figure 12.7. Common dolphin activity in the Fal River. There were very few 'detections' until the period between November - February. During this period dolphins were detected spending nearly every night in the river.

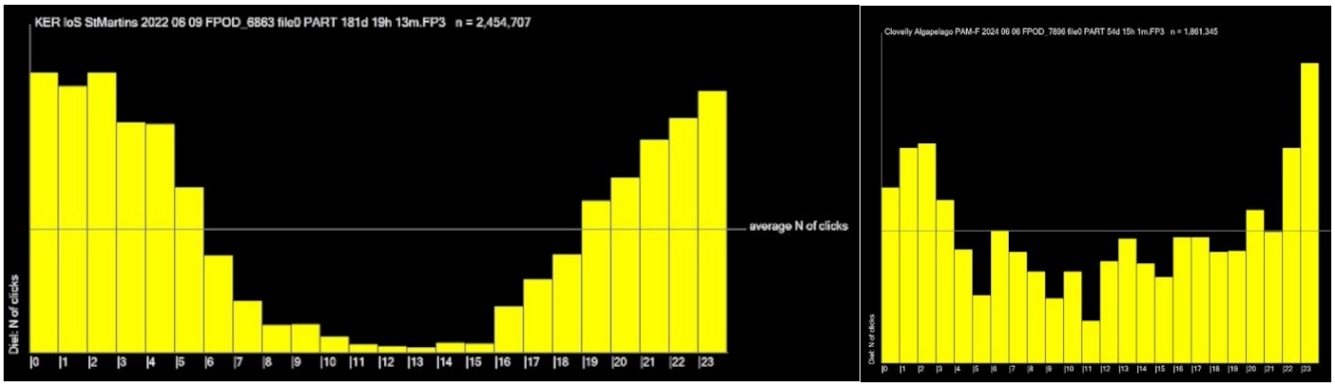


Figure 12.8. Average detections in each hour of a 24 hour period. Bar 0 on the left is midnight, 12 in middle is midday, 23 is the following midnight. The left plot shows the diel pattern in dolphin detections by the Isles of Scilly pod. The right plot shows the diel pattern in harbour porpoise detections by the Algapelago pod near Clovelly.

FileName	Water Depth	POD Depth	Location	DPM Dolphin	DPM Porpoise
DEV Algapelago PAM-CW 2024 06 06 54d	30	6	Sea Weed Farm Clovelly	37.29	**199**
DEV Algapelago PAM-F 2024 06 06 54d	30	6	Sea Weed Farm Clovelly	61.11	**178.8**
DEV Algapelago PAM-CS 2024 06 05 54d	30	6	Sea Weed Farm Clovelly	34.58	**145.6**
WAL CB4 2023 10 11 159d	24	22	Cardigan Bay New Quay	22.31	**115**
WAL Swansea Station72 2024 09 16 64d	35	32	Bristol Channel West channel mid	17.69	**87.79**
KER Rame Head 2022 11 11 44d	22	20	Rame Head	30.17	**83.44**
WAL Swansea Station72 2024 11 20 12d	35	32	Bristol Channel West channel mid	4.49	**83.09**
KER Fal River KHF Mussel Farm 2022 06 17 23d	4	2	Fal River KHF Oyster Farm	0	**0**
KER Fowey River 2024 09 30 66d	6	2	Lifeboat Pontoon - Bodinnick	0.53	**0**
KER St Austell Bay 2024 07 17 53d	20	4	3 Bays Marine Group site	0.53	**0**
SUS Kingmere CS 2022 11 16 21d	14	12	Kingmere Rocks MCZ	0.05	**0**
SUS Selsey 8 2022 03 14 141d	14	12	5.2km SE of Selsey Bill	0.52	**0**
WAL CB6b 2023 10 08 126d	44	42	Cardigan Bay Offshore	**150.3**	48.92
WAL CB6b 2024 02 13 23d	44	42	Cardigan Bay Offshore	**139.9**	69.8
KER Fal River KHF Mussel Farm 2024 01 07 31d	4	2	Fal River KHF Oyster Farm	**132.6**	0.1
WAL Skomer MCZ NRW 2023 10 09 165d	20	18	St Brides Bay	**131.1**	51.88
KER Newquay 2021 07 14 42d	20	18	Towan Head	**115.5**	5.98
KER Fal River KHF Mussel Farm 2022 05 13 29d	4	2	Fal River KHF Oyster Farm	**0**	0.03
SUS Selsey 4 2022 08 04 79d	20	18	7k South of Selsey Bill	**0**	0.04

FileName	Log Days	Log Years	Water Depth	POD Depth	Location
DEV West Tennants	**717**	**1.96**	25	23	Lyme Bay
KER Fal River KHF Mussel Farm	**591**	**1.62**	4	2	Trelissick
DEV ST DUNSTANS	**567**	**1.55**	25	23	Lyme Bay
SUS Selsey 4	**529**	**1.45**	20	18	Selsey Bill
CHI NOIRMONT	**428**	**1.17**	5	3	Jersey

Figure 12.9. Highest and lowest detection rates for dolphins and porpoises across the CATT network (upper table). The Fal River had the highest DPM and the lowest DPM for dolphins. This is due to the seasonal variation, which was previously mentioned. The Algapelago sites near Clovelly are close to each other so their detections may be the same pod of Porpoises. The lower table shows the longest CATT datasets for a single site.

Mysticetes

Minke Whale *Balaenoptera acutorostrata*

Plate 12.5. A juvenile Minke Whale surfacing in Mount's Bay, Cornwall. Image: Marine Discovery Penzance.

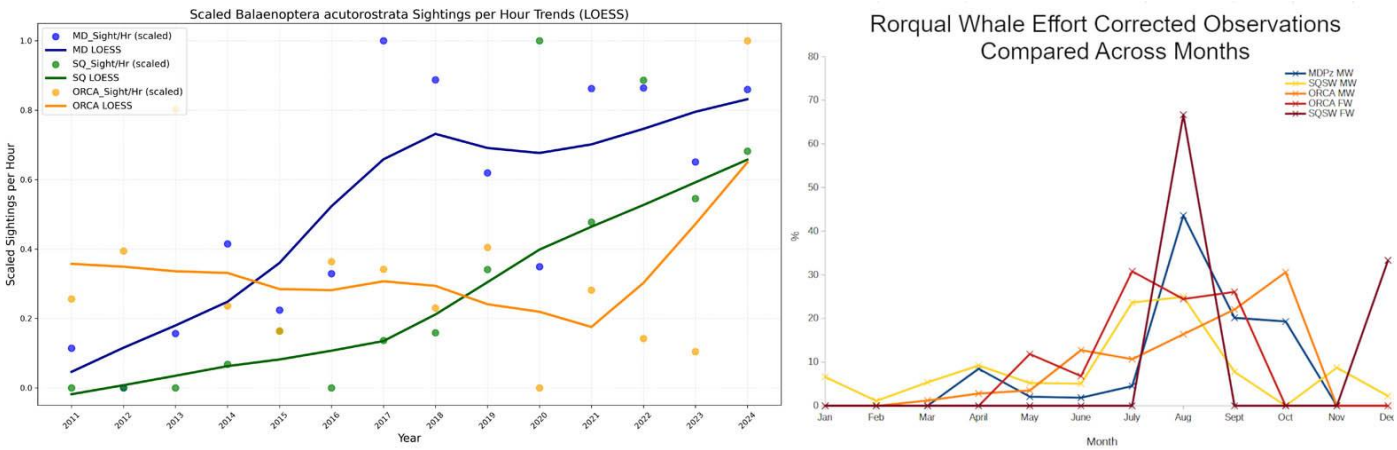


Figure 12.10. Effort-corrected sightings per hour of *B. acutorostrata* (left plot) from three datasets—MD, SQ, and ORCA—over the years 2011 to 2024 and (right plot) seasonal changes in presence of Fin Whales *(Balaenoptera physalus)* in the three datasets: ORCA (orange), MD (blue) and SQ (yellow).

The left plot in Figure 12.10 illustrates scaled trends in *B. acutorostrata* sightings per hour across three datasets MD, SQ, and ORCA spanning the years 2011 to 2024. All datasets are normalised between 0 and 1 to allow direct comparison of temporal patterns rather than absolute sighting rates. The MD dataset shows a steady increase in sightings from 2011, peaking around 2017–2018, with relatively high levels maintained thereafter and peaking in 2024. The SQ dataset also demonstrates a consistent upward trend throughout the period, particularly accelerating from 2018 onwards. In contrast, the ORCA dataset reveals a more variable pattern, with a general decline until around 2021 followed by a sharp increase in the last few years. Overall, while MD and SQ suggest a sustained or growing presence of Minke Whales in the observed areas, ORCA indicates a more fluctuating pattern with recent signs of recovery.

The right plot in Figure 12.10 presents the average seasonal distribution of FinWhale sightings per unit effort across three datasets MD, SQ, and ORCA over an eleven-year period, with monthly values expressed as a percentage of total annual sightings. Sightings are generally low from January through June across all datasets, with a marked increase beginning in July. The most pronounced peak occurs in August, particularly in the ORCA dataset, where sightings rise dramatically to nearly 75% of the annual total, suggesting a strong seasonal presence during late summer. MD and ORCA also show heightened activity in August, though to a lesser extent, followed by a decline into the autumn months. The SQ MW dataset indicates a more spread-out seasonal pattern with secondary peaks in October and April. These patterns suggest that rorqual whale presence is highly seasonal, with peak sightings concentrated in late summer, though there is some variability in timing and intensity between datasets.

Fin Whale *Balaenoptera physalus*

Plate 12.6. A Fin Whale surfacing in Mount's Bay. Image: Vieve Richardson

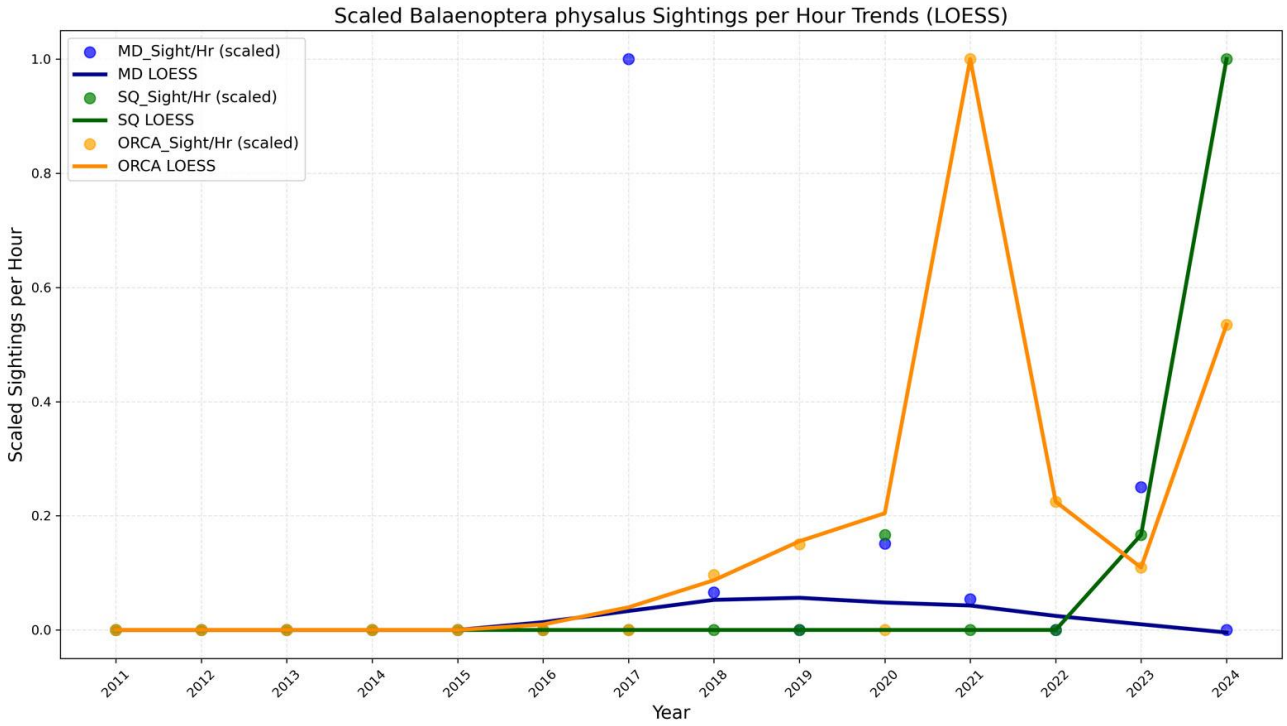


Figure 12.11 Scaled trends in Fin whale (*Balaenoptera physalus*) sightings per hour across three datasets—MD, SQ, and ORCA—between 2011 and 2024, with all data normalised from 0 to 1 to enable comparative analysis of temporal patterns. The individual data points represent annual scaled values, while the LOESS smoothed curves illustrate the overall trends for each dataset.

Sightings of Fin Whales in the MD dataset remain minimal throughout the period, peaking modestly around 2020 before declining again. The SQ dataset shows no sightings until a sharp rise beginning in 2023, culminating in a peak in 2024, suggesting a recent emergence or increased detectability in that area. The ORCA dataset reveals more variability, with a marked increase beginning around 2018, peaking dramatically in 2021, followed by a steep drop and then a secondary rise in 2024. Overall, the data indicate a generally low presence of Fin Whales until recent years, with significant increases observed from 2020 onwards in the ORCA and SQ datasets, possibly pointing to changing distribution patterns or improved detection effort.

Humpback Whale *Megaptera novaeangliae*

Plate 12.7. A juvenile Minke Whale surfacing in Mount's Bay, Cornwall. Image: Marine Discovery Penzance.

In recent years, sightings of humpback whales in the south-west have increased, with a notable number occurring during the winter months—an atypical period given their expected absence from northern feeding grounds at that time of year. Observations during the summer months have also been recorded. The central plot in Figure 12.12 presents sighting rates per 100 km from the MD dataset, with all records occurring during the summer, except for a single observation in March 2024. Within the ORCA dataset, humpback whales were recorded only in 2024.

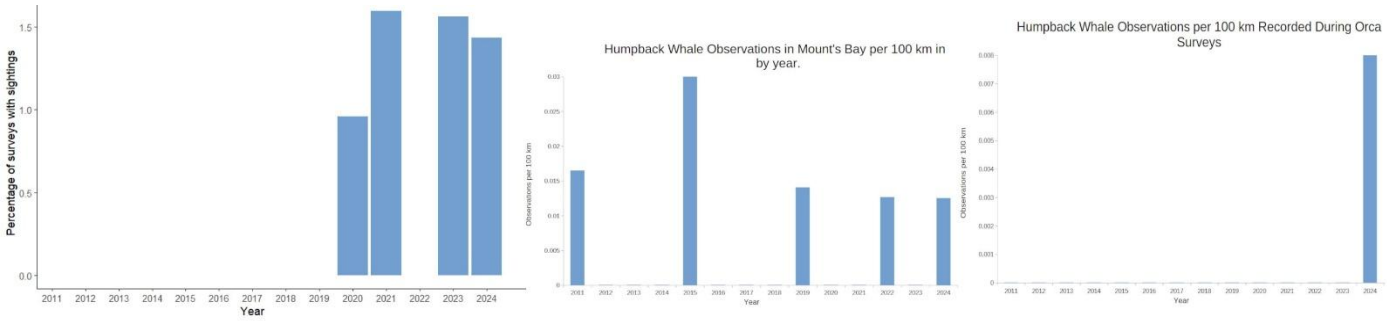


Figure 12.12. Humpback Whale observations recorded per SQsurvey. The middle plot shows observations recorded per 100km during MD surveys. The right shows observations recorded per 100km during ORCA surveys.

South-West UK humpback whale photo-identification catalogue

The south-west UK humpback whale catalogue, managed by Cornwall Wildlife Trust, was established in 2021 following a notable increase in sightings and repeat identifications of individual whales. By the end of 2024, the catalogue comprised 29 individual whales, including four new additions recorded during the year, and contained approximately 150 confirmed photo-identification records. In total, seven identified whales were recorded in 2024, contributing 32 photo-identification records.

It should be noted that photo-identification efforts have likely not documented all humpback whales visiting the south-west. The actual number of individuals is probably higher, either due to whales passing through undetected or a lack of available photographs or video footage for identification.

SWUK1 'Pi', who has visited south-west England every year since 2019, remained through winter until late January 2024. It was also unusually recorded on one occasion in October, before returning a few weeks later for the winter months once again.
SWUK24 'Ivy' was first identified in December 2023 and remained in the region until the end of March, making it the longest known visit by a Humpback Whale to south-west England. Unfortunately, Ivy was found entangled in fishing gear off Newlyn in late March but was successfully disentangled by the RNLI. This was the last sighting of this animal.
SWUK25 'Minstrel' was also first identified in December 2023 and was recorded a number of times through to early March. The movements of 'Minstrel' and 'Ivy' often overlapped; however they were never recorded in the same place on the same day. It appears very likely that they were frequently in contact with one another though.
SWUK26 'Humpy' was first recorded at the Isle of Man during January, followed by Pembrokeshire a few days later. This whale then arrived in Cornwall soon afterwards, making it the first Humpback whale known to link these three regions.
SWUK27 'Kiara' and SWUK28 'Kiwa' were both recorded on the same day in Falmouth Bay with a probable third, unidentified, whale. There were no further known records of these animals.
SWUK29 'Holan' was the last animal identified in 2024 at the Isles of Scilly, with SWUK1 in the vicinity.

Cetacean Strandings
The south-west region continues to report a high incidence of cetacean strandings, with Cornwall recording a particularly high rate. A substantial proportion of these strandings are attributed to bycatch (on average 26% of cetaceans which are assessed showed evidence of being by-caught). Strandings are generally more frequent during the winter months, with an especially high number recorded in March 2024 (Figure 12.13, right plot). Common dolphins constitute the majority of stranded individuals, likely reflecting their higher abundance in south-west waters. Harbour porpoises also represent a significant proportion of strandings in the region (Figure 12.13, left plot) although numbers have showed a decreasing trend over the last decade.

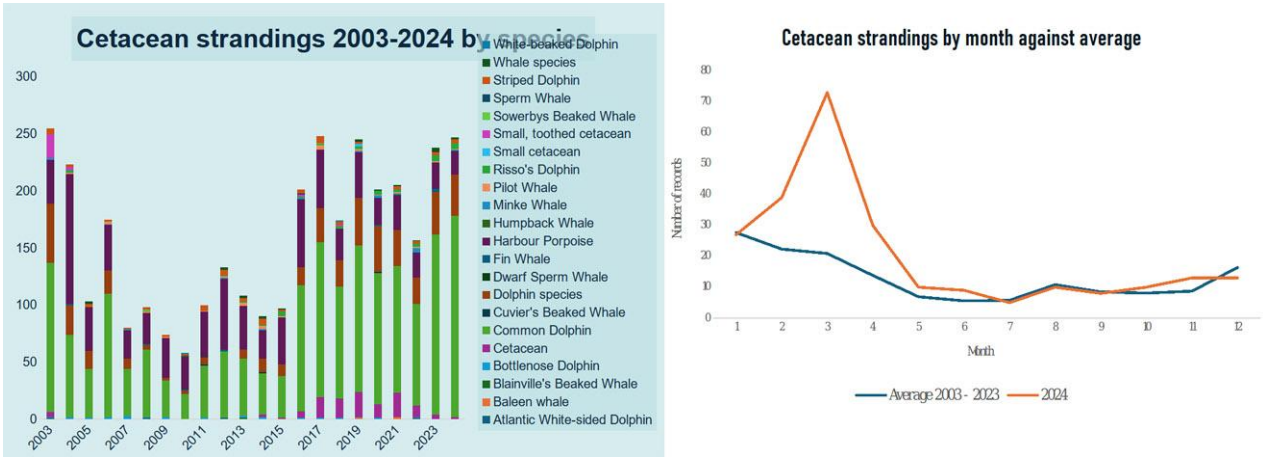


Figure 12.13. All cetacean strandings in Cornwall 2003-2024 (left plot). The right plot shows cetacean strandings by month. The blue line shows the mean of 2003-2023 and the orange line 2024 data only.

13. Fisheries

Edited by Libby West, Natural England (Libby.West@naturalengland.org.uk)

Introduction

The UK is moving to towards an Ecosystem-Based Approach to Fisheries Management, a central tenet of which is to fully acknowledge and integrate humans within environmental management, acknowledging both our impact on and reliance upon ecosystems. One of the primary ecosystem services provided by the marine environment is the provision of food and we are increasingly aware of the great social, economic and cultural importance of fisheries historically and today, particularly in the southwest of England. In the same way that measuring the status of a top predator can be indicative of the health of an ecosystem, the long-term sustainability (or otherwise) of fisheries can be a useful indicator as to the state of the ecosystem. However, marine foodwebs are complex and the abundance of fish populations and the numbers caught or landed by fishermen can be affected by several interacting factors. Any inference regarding the state of an ecosystem or the success of management based upon trends in fisheries catch or landings must therefore be cognisant of the complexity of both the environmental and human dimensions of fisheries.

In the Celtic Sea[1] more than 420,000 tons of fish and shellfish were landed annually between 2010 and 2020, primarily by French, Irish and UK fisheries. Vessels operating in the Celtic Sea use several demersal gears, including bottom trawls, beam trawls, gillnets, longlines and dredges, and pelagic gears, including mainly pelagic trawls (Hernvann and Gascuel 2020). There are important crustacean fisheries for brown crab, European lobster, spider crab and spiny lobster as well as Nephrops in the Celtic Deep and mollusc fisheries for King Scallop, Whelk and Cuttlefish. Demersal fisheries catch a diverse range of species including Hake, Cod, Haddock, Whiting, Ling, Sole, Megrim, Plaice, Turbot, Brill, Anglerfish, and a number of skate and ray species. Traditional pelagic fisheries for Herring, Sprat and Mackerel have declined, but pelagic fisheries for Horse Mackerel, Anchovy and Sardine remain or are increasing in importance.

Fisheries as an ecosystem indicator

Marine foodwebs, and the abundance of fish stocks are often driven by a complex mixture of factors including predation and fisheries pressure (known as top-down processes) and environmental and resource availability factors (known as bottom-up processes). These can include changes in the magnitude, spatial or temporal dynamics of biogeochemical processes, food availability, water temperature or other climatic factors. The interactions between bottom-up and top-down processes and can be complex and hard to disentangle, and will vary between species, locations and through time.

It might be expected that fisheries - usually measured by landings or catches – directly reflect the abundance of fish in the ecosystem. However, fisheries are also significantly affected by management (e.g. quotas or other caps on fishing effort, rules around discarding, minimum landings sizes and spatial restrictions), operating costs (especially fuel), market demand and access to onshore infrastructure.

Furthermore, as we try to understand the complex dynamics of south-west marine ecosystems we must bear in mind the shifting baseline, discussed in more detail in the next section.

[1] The Celtic Sea is generally used as shorthand to describe an area which includes the western English Channel, the Bristol Channel and the Celtic Sea or, more technically by ICES areas VIIe-j. This is distinct from the ICES Celtic Seas Ecoregion, which encompasses a much larger area and is described later.

South-west Fisheries in 2024

The 2024 Peltic survey recorded the second highest Sardine biomass in the history of the survey, at 410,861 tonnes. Sprat biomass was recorded at 67,314 tonnes, also the second highest since 2016. However, Anchovy biomass significantly declined to 13,112 tonnes, the lowest since 2013.

Analysis by the MMO suggests that some fisheries considered traditional in the southwest are declining. Although data is only presented from 2016 onwards, it appears that landings of several species important to the inshore sector are declining including Brown Crab, Mackerel, Pollack, Common Whelk and Lemon Sole. For some of these species (Brown Crab, Whelk and Lemon Sole), this could be due to increased pressure on non-quota stocks from the inshore fleet in response to a lack of opportunity. For others, such as Mackerel, this could be linked to environmental changes affecting the distribution and seasonality of stocks.

However, the longer-term view offered by the catch reconstructions simulated by Hernvann and Gascuel (2020) suggest that these more recent changes sit within an already significantly altered ecosystem. Hernvann and Gascuel (2020) reconstructed catches in the Celtic Sea between 1950 and 2015. In the Celtic Sea, the large fishing-induced biomass declined before 1970 when pelagic stocks - primarily Herring and Horse Mackerel were caught in very large numbers.

The authors suggest that the early reduction in large demersal fish abundance may have initiated a trophic cascade and that the drastic reduction in pelagic species such as Mackerel and horse Mackerel abundance may also lead to a progressive rebalancing between demersal and pelagic compartments. They also noted large changes in species productivity in the late 1980's which could have been caused by a hydroclimate-induced ecosystem shift but reported that the ecosystem appeared to be partially recovering from 2010 (Hernvann and Gascuel 2020).
Other issues of specific concern to fishermen in the south-west in 2024 included the ongoing zero Total Allowable Catch advice for Pollack shutting the fishery, and ongoing concerns around spatial squeeze, particularly in relation to the likely further development of floating offshore wind in the Celtic Sea. Concerns around the level of static gear and catches of Brown Crab and Lobster continued.

Emerging fisheries

Tuna
In 2024 the UK was allocated 66.15 tonnes of Bluefin Tuna quota. An English Catch and Release Recreational Fishery (CRRF) for Blue Fin Tuna (BFT) was opened for the first time in 2024. The fishery allows permitted vessels to be used to 'catch and release' BFT by rod and line, between the 3rd of August to the 31st December 2024. 93 vessels were granted permits, with permit numbers capped to ensure they were proportionate to the amount of quota available to cover incidental BFT mortalities. Fisheries were regulated and monitored by the MMO and data submitted data to the International Council for the Conservation of Atlantic Tuna (ICCAT). MMO data reports 3,359 Blue Fin Tuna were caught throughout the 2024 season, with an average of 3.3 Blue Fin Tuna per trip. The average length of the Blue Fin Tuna caught was 167.7cm, and the average estimated weight was 95.5kg. The majority (98.7%) of Blue Fin Tuna were released in a good to excellent condition. The reported mortality rate before release was 0.21% of all Blue Fin Tuna caught.

The UK also licensed 13 commercial fishing vessels with low-impact rod and reel gears, in accordance with the 2024 UK annual fishing plan endorsed by ICCAT. Thirty-nine tonnes of the quota to was available, split equally between licence holders, i.e. 3 tonnes per licence holder.

Crawfish
Crawfish landings increased from <30 tonnes to >110 tonnes between 2020 and 2024. The MMO increased the MCRS of crawfish and introduced a new seasonal closure to protect spawning crawfish between December 2024 to May 2025 to protect spawning crawfish.

Octopus
Reports of large numbers of common octopus have continued in 2024.

Environmental impacts of fishing

As one of the most exploited seas in Europe the Celtic Sea has undergone major changes in its structure and functioning since 1950. However, these changes are poorly known, and few stock assessments started before the 1980s in this area (Hernvann and Gascuel 2020). The most recent ICES ecosystem overview, published in 2024 reports that despite a decrease in fishing pressure from its peak in the late 1990s, fishing continues to be the main threat to ecosystem health in the Celtic Seas ecoregion. However, there has been a 35% reduction in two of its main pressures: physical seabed disturbance and species extraction.

ICES reports that across the ecoregion[2], the depth zone 0-200m is the most impacted by bottom fishing pressure. On average (including areas not trawled), the seabed in this depth zone was trawled 1.3 times in 2022. When evaluated at the c-square scale (0.05x0.05 degrees), 66% of grid cells in the 0-200 m zone are at least partly trawled, compared to 59% in the 200-800 m depth zone. 39% of the ecoregion is deeper than 800 m and this zone is not currently trawled.

The ICES ecoregion overview warns that climate change–induced cascading effects are likely to occur throughout the ecosystem with consequences for the spatial distribution of fisheries. More common octopus were spotted again in 2024, with evidence of them breeding in UK waters.

Policy development

In a UK assessment of the sustainability of the outcomes of fisheries negotiations for 2024 Celtic Sea Cod, Celtic Sea Herring, western Horse Mackerel, Nephrops, Pollock, western channel Sole, Mackerel and Whiting all failed to meet the assessment criteria (Gilmour et al. 2025). Haddock, hake, plaice, Bristol Channel and eastern Channel Sole, Undulate Ray, Plaice, and Small-eyed Ray stocks all passed the assessment criteria. Overall, in the UK, the number of stocks being managed sustainably is increasing each year.
The Defra Fisheries Management Plan process continued at pace in 2024. Defra describes FMPs as evidence-based action plans, developed in collaboration with the fishing sector and other stakeholders. FMPs are designed according to the specific needs of their stocks, fisheries and location. Therefore, FMPs vary in their content and format, however they have a common purpose; to deliver sustainable fisheries for current and future generations.
2024 saw the start of implementation of T1 and T2 Fisheries Management Plans (including Bass, Channel non-quota demersal, King Scallop, Crab and Lobster and Whelk FMPs). The first suite of FMP measures were included in a Statutory Instrument which included an increased MCRS for Crawfish and the introduction of new MCRS for Lemon Sole, Turbot, and Brill in the English waters of the Channel Sea. The SI also introduced a restriction on the engine power of vessels (greater than 221 Kw) using flyseining gear in the English Channel to help manage fishing effort on demersal non-quota species in inshore fishing grounds. Larger mesh sizes for fly seining gear were also introduced to allow smaller, juvenile fish can escape.

Longer-term environmental actions were also identified in T1 and T2 FMPs, including setting up the Benthic Impact Working Group to identify actions to progress towards UK MS GES targets for benthic habitats. FMPs also make commitments to better understanding and managing bycatch and considering the needs of predators and the role of commercial fish in foodwebs, where appropriate.

Five more FMPs were developed in 2024: skates and rays, Sprat, Queen Scallop, southern North Sea non-quota demersal and cockles. Draft FMPs and their strategic environmental assessments were published for consultation in late 2024. The final four Defra-led FMPs were also in the development stage (wrasses complex, seabreams, Celtic Sea and Western Channel demersal and Celtic Sea and Western Channel Pelagic).

[2] The Celtic Seas ecoregion covers the northwestern shelf seas of Europe including parts of the deeper eastern Atlantic Ocean and coastal seas. The ecoregion ranges from north of Shetland to Brittany in the south.

The evidence programme for FMPs was also launched in 2024 with Defra seeking a collaborative approach to evidence collection to fulfil the complex needs of the FMP programme.

Conclusion

Disentangling the respective effects of fishing and the environment is fundamental to improve our understanding of Celtic Sea ecosystem functioning and for providing insight to inform progress towards an ecosystem approach to fisheries management.
Southwest Marine Ecosystems plays an important role in bringing together transdisciplinary marine stakeholders whose collective knowledge is providing important insights which will prove fundamemtal in advancing our understanding of Celtic Sea ecosystem functioning.

References

Gilmour, F., Bell, E., O'Brien, CM. 2025. Assessing the sustainability of negotiated fisheries catch limits by the UK for 2025. Cefas project report for Defra. Assessing the sustainability of negotiated fisheries catch limits for the UK in 2025. Cefas project report for Defra. 32pp
Hernvann P-Y. and D. Gascuel (2020) Exploring the impacts of fishing and environment on the Celtic Sea ecosystem since 1950, Fisheries Research, 225: 105472.
ICES Fisheries Overviews, Celtic Seas ecoregion, Published 05 December 2024, ICES Advice 2024 – https://doi.org/10.17895/ices.advice.27879936
ICES Ecosystem Overviews, Celtic Seas ecoregion, Version 2, Published 13 May 2024, ICES Advice 2024 – https://doi.org/10.17895/ices.advice.25713033

14. Marine Protected Areas

Edited by: Carli Cocciardi (ccocciardi@devonwildlifetrust.org)

Contributors: Tom Barnfield, Jess Churchill-Bissett, Ryan Porteus-Ford, Kate Sugar, Liz Talbot, Ruth Williams.

Conclusions

- The South-West (Devon, Cornwall, and the Isles of Scilly) has 53 Marine Protected Areas, covering over 30% of the region's seas and forming a core part of England's inshore MPA network.
- Conservation advice for 98% of MPAs has been completed by Natural England, while condition assessments have been finalised for 23% of MPA features.
- MMO fisheries management measures under Stage 1 and 2 are in force across 17 offshore MPAs, with good compliance from the fishing sector; Stage 3 and 4 measures are still in development.
- The MMO has begun assessing the impact of recreational activities like anchoring, sailing, and diving at three South-West MPAs to better manage pressures on sensitive habitats.
- Between 2019 and 2024, the ReMEDIES project targeted restoration of sensitive habitats across three South-West MPAs through active and passive techniques alongside public awareness campaigns.
- The South-west seabed stores an estimated 35.8 million tonnes of organic carbon, with 32% of this blue carbon held within MPAs.
- There are strategic changes ahead, including the MPA Network Review and Offshore Wind compensation plans.
- Looking ahead, MPAs in the South-West must continue to adapt to dual priorities: conserving biodiversity and addressing climate change.

Overview of the MPA Network in the South-West

As of 2024, the South-West of England - here referring specifically to Devon, Cornwall, and the Isles of Scilly - is home to 53 Marine Protected Areas (MPAs). This network includes 10 Special Areas of Conservation (SACs), 37 Marine Conservation Zones (MCZs), 4 Special Protection Areas (SPAs), and 2 Ramsar Sites. These 53 MPAs represent nearly one-third of the total MPAs in England's inshore waters and cover over 30% of the region's sea area.

Site of Special Scientific Interest (SSSI) designations are not included in this count, even though some - such as Salcombe-Kingsbridge SSSI - extend into intertidal and subtidal areas and support important marine features.

These MPAs are part of broader national and international commitments to protect marine biodiversity, including the global 30x30 target agreed upon at the UN Biodiversity Summit in 2022, aiming to protect 30% of the world's oceans by 2030. However, achieving this goal is not simply about designating new areas but ensuring effective management of existing MPAs to meet conservation objectives and biodiversity targets.

Conservation advice and condition assessments

In 2024, Natural England made substantial progress in providing conservation advice for the south-west's inshore MPAs. With 98% of the advice completed, only one site (Braunton Burrows in North Devon) remains without finalized guidance. Advice aims to support the conservation objectives of each MPA and inform management decisions.

Progress on condition assessments has been slower, with 23% completed by the end of 2024. These assessments are essential for determining the condition of the designated features within the MPAs. With 288 features across 53 MPAs, this task is an ongoing process that requires continuous monitoring and the integration of best available data.

Marine management and compliance

Fisheries Management

The MMO had set a target to protect all English offshore MPAs from harmful fishing activity by 2024, with a phased approach to assessment and implementation:

- Stage 1 (implemented in June 2022) assessed the impacts of fishing in four MPAs with offshore elements, and management measures are now in force. Stage 1 measures, which focus on gear restrictions in specific sites such as the Canyons MCZ, have been in place for some time and have shown good levels of compliance. The Canyons remain challenging due to occasional incursions, but overall, adherence from the fishing industry has been strong.
- Stage 2 (implemented in March 2024) focused on the impacts of bottom towed gear on rock and reef features in 13 MPAs. These measures introduced a ban on bottom towed fishing gear in reef habitats. Compliance with Stage 2 has also been positive, with limited infringements and a high level of awareness and cooperation from fishers.
- Stage 3 is still ongoing and aims to address the remaining impacts of fishing on all seabed MPA features across 43 MPAs. This stage is critical for ensuring the protection of sensitive seabed habitats. At the time of writing, Stage 3 has not yet been approved. Although internal progress has been made, public consultation has not yet been announced.
- Stage 4 is focused on five MPAs designated for highly mobile species and work here is also ongoing. In the South-West, the focal site is the Bristol Channel and Approaches SAC, designated for Harbour Porpoise. Because different areas of the MPA fall within the jurisdictions of Cornwall IFCA, Devon & Severn IFCA, and the MMO, these authorities are currently working together to develop a holistic and coordinated approach to management of this complex, multi-stakeholder site.

Marine non-licensable activities

The MMO's work also encompasses the regulation of Marine Non-Licensable Activities (mNLAs), which are mostly recreational activities within 0–12 nautical miles. These include, but are not limited to, non-motorised watercraft, powerboating or sailing (with or without an engine), diving, and snorkelling. In 2024, the MMO began assessing the impact of mNLAs on MPAs, focusing initially on six priority sites across England. Three of these are located in the South-West:

- Fal and Helford SAC (in progress): Site screening is currently underway to understand the types of recreational activity and associated pressures. The primary concern is damage to sensitive habitats such as seagrass and maerl beds. The site already has a range of management measures in place, particularly to mitigate anchoring impacts.
- Plymouth Sound SAC (in progress): This site benefits from a strong local partnership and has several recreational management measures already established, including the use of Advanced Mooring Systems (AMS) in Cawsand Bay. The MMO is currently reviewing new evidence on the condition of designated features and the pressures resulting from recreational use.
- Isles of Scilly Complex SAC (not started): While assessment work has not yet begun, the MMO is actively seeking local insights to inform future evaluations. Education and outreach will be a central focus, particularly engaging visitors with best practices to protect sensitive marine habitats.

These efforts mark a strategic shift towards incorporating a broader spectrum of human activities into MPA management, reflecting the increasing importance of managing cumulative pressures on marine ecosystems.

Projects

Research continues to be a cornerstone of MPA management, with several innovative projects aimed at improving the health of marine ecosystems. The ReMEDIES project, a five-year EU LIFE-funded project led by Natural England with the Ocean Conservation Trust, Marine Conservation Society, Plymouth City Council, and the Royal Yachting Association, aimed to protect and restore sensitive habitats (such as seagrass and maerl beds) in MPAs where large areas of the seabed are in 'unfavourable' condition. This initiative, that came to an end in 2024, worked across three SACs in the South-West, including the Plymouth Sound and Estuaries SAC, Fal and Helford SAC, and the Isles of Scilly SAC.

The project pioneered innovative techniques for seagrass restoration, including Seed Broadcasting, Hydro Marine Seeding, and Seagrass Mat Technology. In addition to restoration, the project promoted the use of Advanced Mooring Systems (AMS) and installed Voluntary No Anchor Zones (VNAZs) to reduce the physical damage caused by anchoring.

One of the key outcomes of the ReMEDIES project has been a shift in attitudes towards anchoring in seagrass areas. A survey conducted in 2024 showed a significant increase in the number of recreational boaters who now understand the importance of avoiding anchoring in seagrass, with 47% of respondents stating that they believe it is 'never okay' to anchor in these sensitive habitats.

Blue carbon and MPAs

MPAs in the South-West play a crucial role in blue carbon sequestration - the capture and/or storage of carbon by coastal and marine habitats, including mudflats, seagrass, saltmarshes, and kelp forests.

The Blue Carbon Mapping Project, led by the Scottish Association for Marine Science (SAMS) on behalf of WWF, The Wildlife Trusts, and the RSPB, provides the first comprehensive estimate of carbon captured and stored in UK seabed habitats, including MPAs. The series of reports, published in September 2024, synthesises the best available data on coastal and marine habitats responsible for blue carbon storage and sequestration. This work covers four regional seas, with the South-West Marine Ecosystem area included within the Bristol Channel and Western Approaches.

Plate 14.1. 32% of the region's blue carbon is located within MPAs especially in sediments. Here muddy subtidal sediment (with Daisy Anemones) in the Lundy MPA and mudflats and saltmarsh in the Plymouth Sound and Estuaries MPA. Images: Keith Hiscock.

Findings show that the UK seabed contains an estimated 244 million tonnes of organic carbon within the upper 10 cm, with 98% stored in sediments predominantly composed of mud (https://www.sams.ac.uk/news/sams-news-blue-carbon.html). The English Channel and Western Approaches region (which includes the South-West) accounts for 35.8 million tonnes of this carbon stock. Although coastal vegetated habitats cover only about 1% of UK marine area, they store approximately 1.7% of the total seabed organic carbon. Within the English Channel and Western Approaches region, saltmarsh sediments store around 530,500 tonnes of organic carbon, while seagrass sediments

hold approximately 23,600 tonnes. Importantly, 32% of the region's blue carbon is located within MPAs, underscoring their significant contribution to carbon sequestration and climate mitigation.

Climate-smart MPAs

Beyond their vital role in carbon sequestration, MPAs in the South-West must also be evaluated through the lens of climate change resilience. As marine ecosystems face increasing pressures from shifting environmental conditions, understanding how these protected areas will perform under future climate scenarios is critical for effective management and conservation.

The MSPACE initiative is playing a key role in addressing this challenge by integrating climate change considerations into marine spatial planning.

The climate-smart MPA work under MSPACE is being led by Prof. Ana Queirós and was presented by Dr Liz Talbot at the 2025 SWME webinar; both are based at Plymouth Marine Laboratory. The project used spatial meta-analysis to identify and classify areas based on their projected ecological stability under future climate scenarios. These classifications include:

- Climate refugia: where the future ecosystem state is within the bounds of present-day variability.
- Climate hotspot: where the future ecosystem state is outside the bounds of present-day variability, and that change is consistent with expected climate change.
- Bright spot: where the future ecosystem state is outside the bounds of present-day variability, but that change is not consistent with expected climate change.

By identifying these zones, the current MPA network can be overlaid to evaluate how well MPAs are likely to perform under future conditions. For example, some MCZs, such as the Canyons and parts of the South-West Deeps, were found to overlap with benthic habitat refugia, suggesting that these areas may be resilient to climate change. The Canyons MCZ, designated for cold-water corals, appears to be well-placed to continue supporting these communities under climate change scenarios, at least from a temperature and circulation perspective.

This type of forward-looking analysis is critical for ensuring that MPAs remain effective in conserving biodiversity and ecosystem function under shifting environmental conditions. It also underscores the need to proactively incorporate climate adaptation into all stages of MPA planning and management.

Future direction

The future of MPAs in the South-West is shaped by several ongoing and upcoming initiatives. One of the key upcoming actions, announced by Minister Emma Hardy, is a wider review of the MPA network designed to strengthen its resilience to climate change while ensuring the UK meets its international commitment to protect 30% of its seas by 2030. This review will also explore ways to enhance biodiversity conservation, support food security, and provide greater certainty for the fishing industry regarding the future MPA network.

Additionally, the Offshore Wind Environmental Improvement Package (OWEIP), announced in January 2025, aims to designate new MPAs or extend existing ones to compensate for the ecological damage caused by offshore wind developments. This package is expected to accelerate offshore wind development while ensuring that environmental impacts are mitigated through strategic compensation measures.

15. Water Quality

Edited by: Eleanor Ward (eleanor.ward@devon.gov.uk)

Summary and Conclusions

- South West Water recorded the highest duration of monitored sewage spill events in England confirming that the frequency and duration of monitored storm overflow spills remain at unacceptably high levels.
- Major pollution incidents in Brixham and Exmouth underscore the fragility of existing water infrastructure and the need for accelerated investment and emergency preparedness.
- In 2024, 98% of designated bathing waters in Devon and Cornwall met the minimum standard of 'Sufficient', with 95% achieving the highest standards of 'Good' and 'Excellent'.
- The south-west received thirty-seven blue flag beach awards in 2024, including Westward Ho! beach which has won the award for more than twenty consecutive years.
- In 2024, Westcountry Rivers Trust celebrated three decades of restoring and protecting riverine habitats, with a continued focus on improving water quality through catchment-based approaches, pollution reduction, and community engagement.
- The Surfers Against Sewage (SAS) 'Million Mile Clean' initiative organised a total of 4,918 clean-up events, attended by 118,288 dedicated volunteers who removed over 81,000 kilograms of waste.

1. Introduction

Using available data, this chapter provides an overview of the state of water quality in the south-west of England in 2024.

In 2024, water quality across the region continued to be shaped by the combined pressures of climate change, extreme weather events, and human activity. While bathing water quality remained high overall, serious pollution incidents, including a cryptosporidiosis outbreak in drinking water in Brixham and a major sewage spill in Exmouth, highlighted ongoing vulnerabilities in water infrastructure and management. South West Water also recorded the highest duration of monitored sewage spills in England, underscoring the need for urgent and sustained action.

Poor water quality poses risks to public health, marine ecosystems, and the regional economy, particularly in sectors such as tourism, fisheries, and recreation. Addressing these challenges requires co-ordinated efforts across government, industry, and communities to reduce pollution, improve monitoring, and invest in long-term solutions.

This year's report provides a more robust comparison with 2023, thanks to improved consistency in the monitoring of Combined Sewage Overflows (CSOs). All CSOs in England have now been fitted with Event Duration Monitors (EDMs), ensuring comprehensive and standardised data collection. This full coverage has significantly enhanced the accuracy and comparability of year-on-year data, allowing for a clearer evaluation of pollution trends and the effectiveness of mitigation efforts.

This chapter aims to provide a clear understanding from the available data of the current state of water quality in the south-west, the key pressures and incidents of 2024, and the strategies being implemented to protect and restore the region's vital water resources.

The South-West River Basin District

The South-West River Basin District spans over 21,000 kilometres squared, covering Cornwall, Devon, Dorset, and parts of Somerset, Hampshire, and Wiltshire, including the Isles of Scilly and Lundy Island (Figure 1). This region contains approximately 735 water bodies, including rivers, lakes and surface waters, and a population of over 5.3 million people. The area features diverse wildlife and habitats, important freshwater and coastal ecosystems, and over half of England's designated bathing waters. The area includes a variety of interconnected water bodies, from rocky rivers to chalk streams.

Figure 15.1. The South-West River Basin District © Crown copyright and database rights. Ordnance Survey 2025.

1. The Wholescape Approach

To maintain high standards of water quality, a range of legal requirements exist at international, national, and local levels. The Water Framework Directive (WFD) plays a key role in safeguarding the ecological health of inland, transitional, and coastal waters.

The 'Wholescape Approach' offers a comprehensive method for managing water quality and environmental health. It emphasises an integrated understanding of catchment-scale processes, considering both natural and human factors. Instead of focusing on individual water bodies (such as rivers or lakes), the Wholescape Approach considers the entire catchment area: rivers, tributaries, groundwater, wetlands, and land use. Using wholescape approaches ensures an integrated understanding and management of water quality issues at a 'whole catchment' scale.

2. How do we measure water quality?

In England, water quality is measured by the Environment Agency in accordance with the WFD using the Wholescape Approach. A report is published every three years. To determine the 'overall status' of surface water bodies, water quality is determined using two categories: ecological and chemical (Figure 15.2).

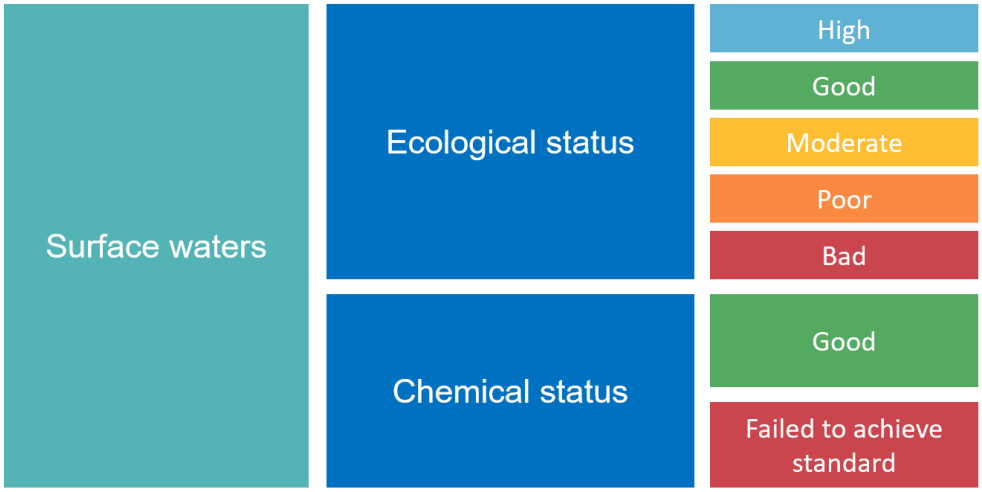


Figure 15.2. Assessment of ecological and chemical status of surface water bodies.

River Basin Management Plans (RBMPs) aim to protect and, where necessary, restore water bodies to reach good status, and to prevent deterioration. Rivers are divided into shorter stretches (referred to as river water bodies) to assess how the health of a river changes along its length. Often the headwaters of a river are healthier than the stretches downstream as pollution accumulates from various activities within the river's catchment

3.1 Ecological Status

Ecological status is assigned using vigorous water, habitat and biological quality tests. Failure of any one individual test leads to the whole water body failing to achieve 'good' or 'high' ecological status. This status is measured in five classes: 'bad' to 'high' (Table 15.1).

Table 15.1. Classification table for ecological status.

Classification	Description
High	Natural or almost natural state with no, or only minor evidence of distortion.
Good	Slight change from natural state as a result of human impact.
Moderate	Moderate change from natural state as a result of human impact.
Poor	Major change from natural state as a result of human activity.
Bad	Severe change from natural state as a result of human activity.

3.2 Chemical Status

Chemical status assessments use water sampling to determine the presence (or absence) of over 52 different chemical pollutants. Water bodies are classified as 'good' or 'failing'; good status can only be achieved when none of the recognised chemical pollutants exceed the agreed standard.

3.3 Overall Status

To reach good overall status, water bodies currently require both good ecological and good chemical status. This follows a 'one out, all out' approach, in which the lowest scoring ecological and/or chemical element determines whether a water body will pass or fail.

Plate 15.1. Testing water samples in the Blackdown Hills National Landscape.

3. Results

4.1 Surface water bodies

The most recent data available for water quality in the south-west is from the EA's Catchment Data Explorer. The EA undertook over 2000 ecological tests in approximately 423 water bodies in the south-west in 2022, the results of which are summarised in Figure 15.3 and Table 15.2. More recent data was not available for this year's chapter, however the next cycle of Environment Agency testing is due to commence in 2025.

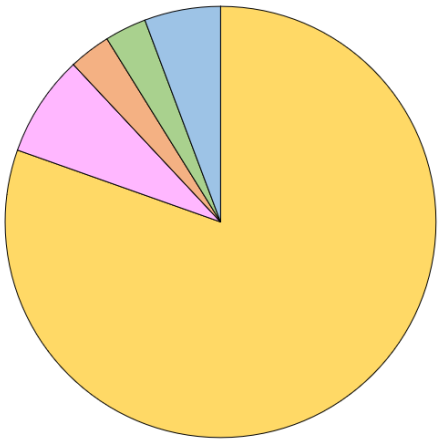


Figure 15.3 Types of water bodies in the south-west (2022).

Rivers, canals and surface waters Lakes Coastal Estuarine Groundwater

The Environment Agency's ecological tests include temperature, salinity, the presence of fish, phytoplankton and invertebrates and the total nitrogen and phosphorus concentrates in each water body. Over 76% of ecological tests resulted in 'good' or 'high' classifications, and approximately 9% resulted in a 'bad' or 'poor' classification.

Table 15.2 Environment Agency catchment water quality 2022 data for the south-west.

Classification	Number of ecological tests completed in the south-west in 2022
High	1318
Good	397

Moderate	335
Poor	178
Bad	23

The chemical status of all rivers, lakes, estuaries, and coastal waters in the south-west remains below the required standards, with no water body achieving good chemical status. As a result, no water body has achieved 'good' overall status since the current parameters of chemical testing were introduced in 2019. Four main global pollutants (uPBTs) are responsible for causing these failures under current testing standards.

4.2 Shellfish waters

Plate 15.2. Aerial view of the mouth of the Exe Estuary in Devon – a designated shellfish water in England. Image: Devon and Severn IFCA, 2011.

There are 30 designated shellfish waters in Devon and Cornwall; significantly more than any other region in England. In the most recent WFD classification (2022), 15 of these protected areas were rated as 'good', while the remaining half were rated 'moderate'. A compliance report showed that ten of these waters met the required bacterial standard, thirteen failed, and seven were unmonitored. Each protected shellfish water contains at least one harvesting bed with over six years of monitoring data, meeting the minimum requirement for a stable, long-term dataset. This data is used by the Environment Agency to identify pollution sources and support efforts to improve water quality in collaboration with local stakeholders.

4.3 Bathing waters

The Environment Agency monitors *Escherichia coli* and intestinal enterococci in the water of every designated bathing water in the UK, throughout the bathing season (15 May to 30 September). Table 15.3 shows the results from the latest bathing season in 2024 compared to 2023.

- In 2024, measurements were taken at 450 bathing waters in England, up from 423 bathing waters in 2023.
- In 2024, out of the 450 bathing waters measured in England, 413 (91.8 per cent) met at least the minimum standard of the Bathing Water Regulations.
- In 2024, 289 bathing waters in England (64.2 per cent) met the Excellent standard of the Bathing Water Regulations.
- In 2024, 37 bathing waters in England (8.2 per cent) did not meet the minimum standard and were classified as Poor.

Substantial improvements have been made to bathing water quality nationally: in the early 1990s, just 28% of bathing waters met the highest standards.

Table 15.3. Bathing Water Classification in England; 2023 and 2024.

Classification		**2023**	**2024**
Number assessed		423	450
Excellent	The highest, cleanest class	281	289
Good	Generally good water quality	99	95
Sufficient	The water quality meets the minimum standard	25	29
Poor	The water quality has not met minimum standard	18	37

In the south-west in 2024, 155 bathing waters were classified in Devon and Cornwall, including Croyde Bay in North Devon (Plate 15.3). Five of these were newly designated in 2024 and are located on the Dart and Erme estuaries in South Devon.

Plate 15.3. Croyde Bay in North Devon, image taken from Middlesborough Hill. Image: Image: Neville Stanikk.

In 2024, 98% of designated bathing waters in Devon and Cornwall met the minimum standard of 'Sufficient', with 95% meeting the highest standards of Good and Excellent (Table 4). Amongst these were Polzeath in Cornwall and Dawlish Warren in Devon. Steamer Quay (Dart Estuary), Coastguards Beach (Erme Estuary) and Porthluney beach did not meet the minimum water quality requirements and were classed as 'poor' quality.

Table 15.4 Bathing Water Classification in Devon and Cornwall: 2023 and 2024.

Classification		**2023**	**2024**
Excellent	The highest, cleanest class	123	127
Good	Generally good water quality	22	21
Sufficient	The water quality meets the minimum standard	4	4
Poor	The water quality has not met minimum standard	1	3

4.4 Blue Flag Beaches

The blue flag beach award is widely recognised across Europe as an indicator of good quality beaches. Water quality, environmental management and safety and services are all measured in beaches across the region. The blue flag certification process is conducted annually by local quality organisations.

In 2024, a total of 72 sites around the UK were awarded the Blue Flag award. In the south-west, 37 beaches received this award. Westward Ho! beach has won the award for more than twenty consecutive years.

4.5 Combined Sewer Overflows (CSOs) and Event Duration Monitoring (EDM)

In the UK sewage system, all wastewater is transported together in the same pipe to a sewage treatment works. During heavy rainfall, pipe capacity is often exceeded and the possibility of flooding increases. Combined Sewer Overflows (CSOs) were developed to allow diluted sewage to spill elsewhere and reduce the risk of raw sewage backing up into homes and businesses. CSOs are currently a necessary part of our sewage system, however in recent months there have been increasing concerns raised regarding the true environmental impact of these spills.

The Environment Agency has published its EDM data for 2024 showing the frequency and duration of spills from CSOs in England. EDM data was collected from 14,254 storm overflows in England during the calendar year of 2024. The data reveals that:

- An overall 2.9% decrease in the number of sewage spills compared to 2023.
- An increase of 0.2% in the number of hours during which overflows operated compared to 2023.
- The average number of spills per overflow was 31.8 compared to 33.1 in 2023 and 32.6 in 2020.
- 39% of storm overflows spilled less than 10 times in 2024 compared to 40.5% in 2023 and 40% in 2020.
- 12.5% of storm overflows did not spill at all in 2024 compared to 13.9% in 2023 and 13% in 2020.

The 2024 data suggests that the frequency and duration of monitored storm overflow spills remain at unacceptably high levels.

South-West

Table 15.5 shows data collated from the Event Duration Monitoring - Storm Overflows - Annual Returns for South West Water. In 2024, South West Water recorded the highest duration of monitored sewage spill events in England. Although the number of spills decreased by approximately 4% between 2023 and 2024, the total duration of sewage spills in the south-west region increased by approximately 3%.

Please note that this data does not reveal the volume of each spill relative to its duration.

Table 15.5. Storm overflow data: 2022, 2023 and 2024

Storm overflow	2022	2023	2024
Number of storm overflows with spill data	1,323	1,342	1,361
Number of spills	37,649	58,249	56,173
Average number of spills per overflow	28.5	43.4	41.3
Duration of spills (hours)	290,271	530,737	544,439
Average duration of spills (hours)	7.7	9.1	9.7

Rainfall remains to be the biggest contributing factor to storm overflow spills; however, water companies are still responsible for managing storm overflows in accordance with legal requirements.

4. What are the causes of poor water quality?

A number of factors contribute to poor water quality.

In rural areas, one of the main issues is agricultural runoff, which often carries pesticides, excess nutrients, and fertilisers into nearby watercourses. This can lead to nutrient enrichment, encouraging algal blooms and disrupting aquatic ecosystems. Additionally, soil compaction, caused by heavy machinery or livestock, reduces the soil's ability to absorb water. When soil becomes densely packed, it limits water infiltration, resulting in increased surface runoff. This runoff not only accelerates erosion but also transports pollutants directly into rivers, streams, and lakes.

In urban areas, water pollution is frequently linked to urban diffuse pollution. This occurs when rainwater washes contaminants, such as oil, heavy metals, and litter, from roads, pavements, and buildings into drainage systems and watercourses. Industrial discharges and pollution from marine vessels also contribute to the problem. The UN has warned that global freshwater demand will exceed supply by 40% by 2030. Increasing our extraction of fresh water and the treatment of wastewater places huge stresses on our already limited water resources and increases the need for energy-intensive water pumping, transportation and treatment.

Another growing concern is the presence of litter, plastics, and microplastics in rivers and coastal waters. These pollutants not only degrade water quality but also pose serious risks to aquatic life and can enter the food chain, affecting both wildlife and human health.

Climate change is becoming an increasing influence on water quality. A higher frequency of heavy rainfall events during the winter months is leading to an increase in surface runoff and sewer overflow spills. As global temperatures rise, harmful bacteria, such as *E. coli*, and algal blooms thrive in warm weather. Algal blooms reduce dissolved oxygen levels, killing fish and other wildlife and releasing toxins into other water bodies. Hotter summers will increase the frequency of dry spells and drought, compacting soils and allowing pollutants to flow freely into our rivers when it rains. It is clear that climate change will exacerbate the water quality pressures we face today, impacting both human health and the environment.

In 2024, the issue of Contaminants of Emerging Concern (CECs) received renewed focus across the UK. CECs encompass a broad range of substances, such as pharmaceuticals, personal care products, pesticides, and industrial chemicals. These contaminants are not yet fully regulated but are increasingly being detected in aquatic environments. In October 2024, the Royal Society of Chemistry's (RSC) released a position statement calling for urgent action to address the rising presence of CECs in the environment. The RSC highlighted the need for comprehensive monitoring across the UK, improved risk assessment methods, and the application of the "polluter pays" principle to help fund advanced wastewater treatment technologies.

Studies carried out in 2024 revealed the presence of multiple CECs in English rivers. One particular investigation identified 28 different contaminants in the River Chess and River Crane, with some concentrations exceeding 1,000 nanograms per litre. The findings raised concerns about the potential impacts on aquatic ecosystems and human health, particularly as many of these substances are not effectively removed by conventional wastewater treatment processes. The presence and management of CECs is an emerging issue that warrants local attention and proactive policy responses.

5. Pollution Incident Case Studies

In May 2024, Brixham in South Devon experienced a significant outbreak of cryptosporidiosis, a parasitic illness caused by contaminated drinking water. The outbreak led to over 100 confirmed cases and more than 1,000 suspected cases. The contamination was traced to a damaged air valve near cattle fields, allowing the parasite Cryptosporidium to enter the water supply. As a result, 17,000 properties were placed under a boil water notice, and bottled water stations were set up. The incident drew criticism for the speed of South West Water's response, and the company later issued compensation to affected residents, with total costs reaching £16 million.

Another water quality incident occurred in Exmouth in August 2024. The town experienced a major sewage spill after a burst sewer pipe near the Maer Lane wastewater treatment works. The incident led to raw sewage entering the sea, prompting 'no swim' warnings at Exmouth beach and causing significant public concern. South West Water responded by transporting sewage using up to 240 tanker loads per day through the town. The spill was described by local officials as an "historic new low", severely impacting both residents, local businesses and tourists. Although temporary measures, such as overland pipes, were introduced, the event sparked widespread criticism of the water company's infrastructure and crisis management response.

6. Action

7.1 The Water (Special Measures) Act

The Water (Special Measures) Act 2025, which was introduced as a bill in 2024, aims to significantly strengthen the regulatory framework governing water companies in the UK. Regulators, such as the Environment Agency, are granted new powers to take tougher and faster action against water companies whose activities are demonstrated to cause damage to the environment. The bill includes provisions for bringing criminal charges against persistent lawbreakers, including imprisonment for executives who obstruct investigations or fail to cooperate.

7.2 Local Nature Recovery Strategies

Local Nature Recovery Strategies (LNRS) aim to enhance water quality by implementing nature-based solutions such as creating wetlands, restoring peatlands, and planting trees and hedgerows. These strategies seek to reduce agricultural runoff, improve resilience to drought, and enhance biodiversity, collectively contributing to cleaner water bodies. By engaging local communities in conservation efforts, LNRS aim to foster stewardship and promote sustainable practices to protect water quality. Cornwall have now published their LNRS and Devon are approaching the formal consultation period.

7.3 South West Water

South West Water's Business Plan for 2025 to 2030 outlines a comprehensive strategy to improve water quality and environmental sustainability. The plan includes a £3.2 billion investment focused on upgrading water treatment works, reducing leakage, and creating a water grid to connect strategic reservoirs. Key initiatives include eliminating storm overflows at bathing waters, enhancing water resilience, and achieving net zero by 2030.

South West Water is a key partner in the South West Peatland Partnership. Their latest collaboration focused on restoring 240 hectares of peatland at the Tavy Head site in Dartmoor, where peat depths exceed six metres. Healthy peatlands naturally produce high-quality water with low pollutant and nutrient levels, reducing the need for intensive treatment. Peatland restoration methods include blocking artificial drainage channels with wooden or peat dams to retain moisture and creating pools to re-wet areas and support bog plant regeneration.

7.4 Environment Agency

In 2024, the Environment Agency conducted reef block surveys at Newlyn to monitor marine growth on innovative concrete units being trialled as a more nature-friendly form of coastal defence. These blocks aim to provide effective flood protection while encouraging colonisation by marine species and enhancing local biodiversity. See: **Our Intertidal Reef cubes undergo 5-year study to assess increased biodiversity - ARC Marine**

The Environment Agency is committed to increasing national water company inspections from approximately 900 to 4000 a year by the end of March 2025. This will include an increase in the number of 'unannounced' inspections. The next comprehensive update of classifications in all water bodies, as required in the WFD Regulations, will be in 2025. There will be no significant changes to the classification methodology and every water body will receive a classification.

The Environment Agency continues to deliver a wide range of partnership programmes and projects, working with organisations, communities, and landowners to improve water quality, flood management potential, biodiversity, and carbon sequestration capacity.

7.5 Westcountry Rivers Trust (WRT)

In 2024, Westcountry Rivers Trust celebrated three decades of commitment to restoring and protecting riverine habitats. In 30 years, they have raised over £10 million, engaged with 200 partners and improved 80 catchments. Westcounty Rivers Trust's Citizen Science Project helps to educate and engage individuals and communities with the marine environment. The aim of 'Westcountry C.S.I.' is to produce data that can be used to target work and identify degrading water bodies.

7.6 Other organisations

In 2024, other local groups and organisations played a crucial role in actively challenging poor water quality in the south-west. The Surfers Against Sewage (SAS) Million Mile Clean initiative inspired extraordinary community participation. A total of 4,918 clean-up events were held, attended by 118,288 dedicated volunteers who removed over 81,000 kilograms of waste. This initiative was part of a broader movement led by SAS to combat pollution and protect UK waters, including campaigns against sewage discharges, plastic pollution, and the push for official bathing water status in local swim spots.

8. Acknowledgements

We would like to thank the Environment Agency for their input into this year's research and for providing some of the data in this chapter.

16. Marine Planning

Edited by: Mae Van Loef (mae.vanloef@marinemanagement.org.uk) and Ellie Hoad (with a summary description of Wildlife Licensing developments by Sarah Errington and Hope Armstrong, an update on Wind Development from the Strategic Renewables Unit provided by Oliver Goldsmith, Marine Licensing data provided by Jamie Short, and MSPACE contributions written by Sian McGuinness).

Conclusions

This report emphasises the work that was ongoing in the Marine Management Organisation (MMO) in 2024.

- Marine planning in the south-west is essential to manage the increasing demands on marine space. The vision for the South West Marine Plan will be achieved through objectives derived from high-level marine objectives (HLMOs) set out in the UK Marine Policy Statement.
- In 2024 the MMO marine planning team held over 400 meetings with stakeholders nationally, 20% of which were held with stakeholders in the South West Marine Plan area. This engagement contributes towards the effective use of the South West Marine Plan.
- In 2024, the MMO published 10 new evidence projects, featuring targeted studies and case examples from the south-west, including specific research within the Lyme Bay area.
- In 2024 there were a total of 43 licence applications in the South West Marine Plan areas, of these, four were rejected, two were withdrawn, 16 were approved and 21 were in progress at the end of 2024.
- In 2024, nine wildlife licences were issued or renewed in the South West Marine Plan area - seven for scientific and educational activities, and two supporting offshore wind and nuclear energy projects.
- The Celtic Sea holds the potential for 12GW of floating offshore wind, with up to 10GW leased by 2030. 426MW has been leased across five demonstration projects - two of which are due for commissioning in 2026/2027. The Crown Estate's Leasing Round 5 will see a further 4.5GW leased across three Project Development Areas, with awards expected in summer 2025.

Marine Plan

Marine Planning Context

As the marine environment becomes progressively busy and the demand for resources increases, strategic management needs to be in place.

Marine planning ensures that: the right activities happen at the right time and in the right way, placing sustainable development at the centre of all decisions.

Marine plans provide policy and spatial guidance for each marine plan area, promoting co-existence of suitable activities to account for the multidimensional boundaries of the marine environment.

The marine plans are statutory and are prepared in accordance with the requirements set out under the Marine and Coastal Access Act (MCAA) 2009 and the UK Marine Policy Statement. Marine plans are applied through the decisions made by public authorities. Decisions that these authorities make need to be in line with section 58(1) and section 58(3) of MCAA.

Section 58(1) states that "a public authority must make any authorisation or enforcement decision in accordance with the appropriate marine policy documents, unless relevant considerations indicate otherwise". Section 58(3) requires all public authorities making other decisions which are not authorisation or enforcement, but can still affect the marine area, to "have regard to" the Marine Policy Statement and marine plans.

South West Marine Plan

The South West Marine Plan was one of four marine plans developed concurrently between 2016 and 2021. The South West Marine Plan covers the English inshore and offshore waters between the Severn Estuary border with Wales and the River Dart in Devon. The south west inshore marine plan area spans approximately 2,000 km of coastline and covers a total sea area of 16,000km^2. The south west offshore marine plan area covers a vast expanse of 68,000km^2 and extends from 12 nautical miles to the outer limit of the UK Exclusive Economic Zone (Figure16.1). As a result, this makes the south-west region the largest among England's marine plan areas.

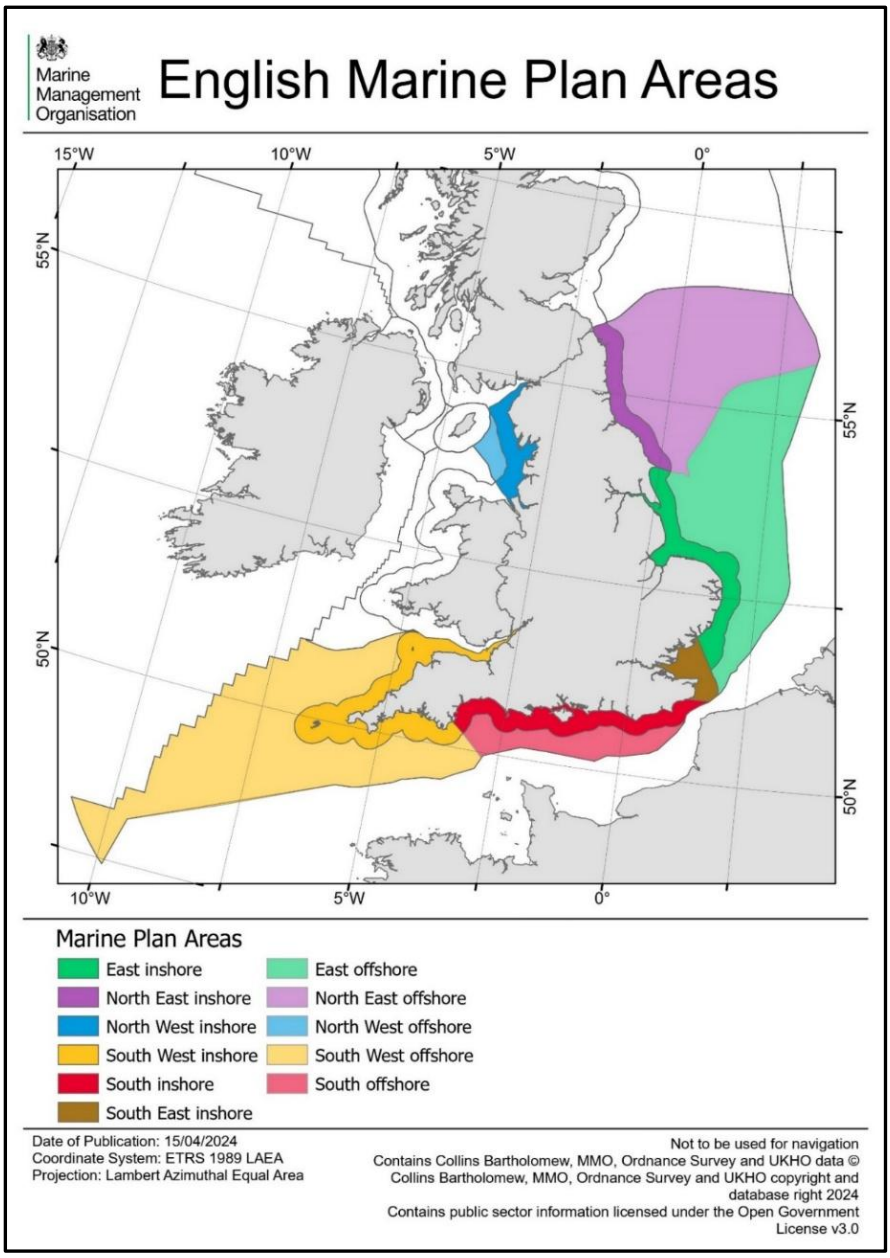


Figure 16.1. Marine *P*lan *Areas* in English Waters.

High Level Marine Objectives:

The vision for the South West Marine Plan will be achieved through the marine plan objectives (Table 16.1). Relevant High Level Marine Objectives (HLMOs) set out in the UK Marine Policy Statement are used as the plan objectives. The HLMOs encompass the full scope of sustainable development, integrating principles of a sustainable marine economy, a strong, healthy, and just society, and living within environmental limits. The objectives have been shaped by extensive engagement with stakeholders and government throughout the planning process, incorporating lessons learned from earlier marine plans.

The objectives are further tailored to the south west marine plan areas through the policies that will apply to individual decisions made in the south west plan areas, and the evidence base that supports implementation. These objectives establish a critical link between the issues faced in the marine plan areas, the envisioned future for these areas, and the policies developed to realise this vision.

Policies:

There are 55 policies within the South West Marine Plan. These policies cover economic, environmental and social policies to encompass all aspects of the marine area which help to deliver the HLMOs.

Table 16.1. Objectives of the South West Marine Plan.

Achieving a sustainable marine economy	
1	Infrastructure is in place to support and promote safe, profitable and efficient marine businesses.
2	The marine environment and its resources are used to maximise sustainable activity, prosperity and opportunities for all, now and in the future.
3	Marine businesses are taking long-term strategic decisions and managing risks effectively. They are competitive and operating efficiently.
4	Marine businesses are acting in a way which respects environmental limits and is socially responsible. This is rewarded in the market place.
Ensuring a strong, healthy and just society	
5	People appreciate the diversity of the marine environment, its seascapes, its natural and cultural heritage and its resources and can act responsibly.
6	The use of the marine environment is benefiting society as a whole, contributing to resilient and cohesive communities that can adapt to coastal erosion and flood risk, as well as contributing to physical and mental wellbeing.
7	The coast, seas, oceans and their resources are safe to use.
8	The marine environment plays an important role in mitigating climate change.
9	There is equitable access for those who want to use and enjoy the coast, seas and their wide range of resources and assets and recognition that for some island and peripheral communities the sea plays a significant role in their community.
10	Use of the marine environment will recognise, and integrate with, defence priorities, including the strengthening of international peace and stability and the defence of the United Kingdom and its interests.
Living within environmental limits	
11	Biodiversity is protected, conserved and, where appropriate, recovered, and loss has been halted.
12	Healthy marine and coastal habitats occur across their natural range and are able to support strong, biodiverse biological communities and the functioning of healthy, resilient and adaptable marine ecosystems.
13	Our oceans support viable populations of representative, rare, vulnerable, and valued species.

South West Marine Plan Development

England's marine plans, including the South West Marine Plan are developed using the marine planning cycle (Figure 16.2), which is similar to the process used for developing land-use plans.

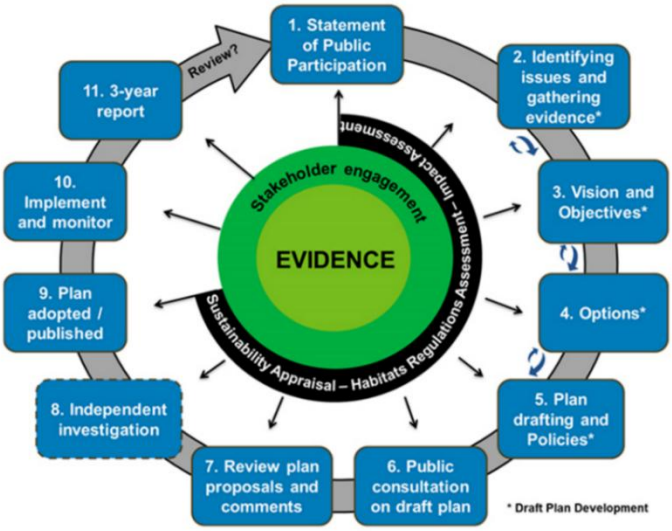


Figure 16. 2. Marine plan development cycle.

As the South West Marine Plan is adopted, implementation and monitoring (stage 10 in Figure 16.2) are ongoing. These final stages feed into the Three-year progress report (stage 11 in Figure 16.2), the last stage in the development cycle. National and regional implementation sessions are held by MMO to help stakeholders utilise the marine plans effectively. The use of the plan and plan policies is monitored through a series of indicators, and the results inform the Three-year Report.

Following the adoption of the South West Marine Plan in 2021, the first Three-year progress report for the South West Marine Plan was originally due in 2024, but is now expected to be published in 2025. However, a summary of the latest Monitoring Surveys that informed the report is already available.

Marine Planning Engagement in the South West

Implementation refers to the practical use of marine plans by decision-makers to guide activities in marine areas. The marine planning team supports this process by actively engaging with a broad range of stakeholders, attending regular meetings, hosting workshops, and providing training and guidance, to ensure that marine plans are effectively understood and applied.

In 2024 the marine planning team at the MMO held over 400 meetings with stakeholders nationally, 20% of which were held with stakeholders in the south west marine plan area. The graph below provides a snapshot of the types of meetings the MMO is attending with stakeholders with across the south west marine plan area.

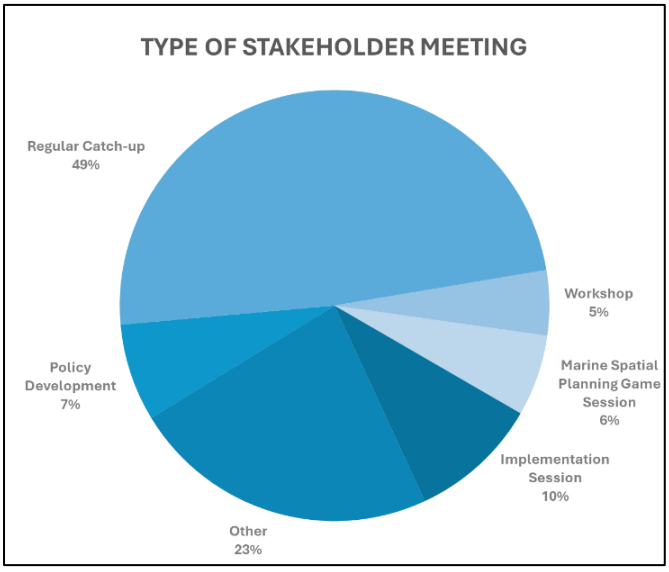


Figure 16.3. Breakdown of marine planning engagement in the South West in 2024. Engagements that fall into 'Other' can include introductory meetings and preparatory discussions ahead of workshop delivery.

This engagement brings together a diverse range of stakeholders including local authorities, government agencies, environmental groups, and industry stakeholders to align policy, share data, guide sustainable development, and respond to emerging marine and coastal issues.

In 2024, in addition to regular engagement with local stakeholders, the marine planning team delivered marine plan-use sessions, based on the recommended outcomes from the MMO1333: Identifying opportunities to enhance effectiveness of marine plan use engagement report.

This resulted in seven in-person sessions and 12 online sessions, which covered the following topics: Marine Plan Policy Assessment, Marine and Land-use Planning, Guidance and Resources, Environment Agency training.

Nationally, these sessions attracted 454 participants. Of these, one in-person session was held in the South West Marine Plan area, with 19 participants in attendance.

Alongside this work, the MMO has published four new guidance documents and updated three others to assist decision-makers, details can be viewed here.

If you're interested in engaging with the marine planning team or arranging a marine plan-use session for your organisation, please contact the marine planning team at planning@marinemanagement.org.uk or reach out to your local marine planner, contact details are provided below.

Evidence Projects

The MMO commissions several evidence projects each year. These projects aim to inform the MMO's approach to protecting and enhancing our marine environment and supporting UK economic growth by enabling sustainable marine activities and development. Evidence underpins all plan development and processes, ensuring decisions taken in the preparation of adopted marine plans are evidence-based, while evidence is also used in monitoring plan implementation and effectiveness. Although the evidence projects typically have a broad geographical scope, reflecting the MMO's role as a national regulator, recent initiatives have included focused studies and case examples from the south west area, including specific work within the Lyme Bay region.

Table 16.2 shows a list of evidence projects completed during 2024. All published and ongoing evidence projects can be found on the evidence projects register, while the partnership projects the MMO is currently involved with can be found here. Topics addressed by ongoing projects reflect the MMOs current priorities, while the reports themselves often contain recommendations regarding priorities for future work in specific topics. Additionally the MMO has a publicly-available evidence needs register available online at Evidence requirements - GOV.UK.

Table 16.2. Evidence Projects completed in 2024.

Title	Description
Evaluation of conservation byelaws {MMO1347}	A project to design and implement a comprehensive evaluation framework of the 3-year Marine Protected Area Fisheries and Conservation Strategy.
Socio-economic Baseline for the east marine plan areas {MMO1381}	This project seeks to provide a socio-economic baseline review of the marine sectors and coastal communities of the east marine plan areas, to inform the next iteration of the East Marine Plan and manage the resources and activities in the area.
Spatial distribution of under 12m fishing activity and sensitivity to offshore wind development in the east marine plan areas {MMO1382}	This project responds to an evidence gap on the lack of high spatial resolution fishing activity data for the under-12-meter (<12m) fleet. It focuses on the east marine plan areas given the upcoming replacement of the East Marine Plan and the need to understand the spatial distribution of activities occurring in the areas.
Impact evaluation framework for Lyme Bay fisheries management measures {MMO1414}	This project seeks to collect baseline data and develop evaluation framework to be used for future evaluations in assessing the impacts of the Lyme Bay fisheries new management measures.
Identifying opportunities to enhance effectiveness of marine plan use engagement {MMO1333}	This project seeks an assessment of current practice effectiveness to identify opportunities to enhance marine plan implementation support.

Fisher Engagement Capacity Needs {MMO1383}	This project seeks to improve the way MMO engages with the fishing industry by analysing the barriers to engagement with the government through a behavioural approach.
Fisher to Fisher Engagement {MMO1389}	This project seeks to understand the existing structures in the UK fishing sector and how to overcome barriers to fisher-to-fisher engagement, in order for the MMO to increase participatory capacity and move towards improved representation of the inshore sector in fisheries management.
Exploring the challenges, opportunities and barriers to local decision making in the context of marine planning {MMO1375}	This project explores the potential for nested, multi-level marine plans in England. It looks at previous and current examples of local decision-making and sets out a roadmap for delivery of a local marine plan pilot.
Process evaluation for the development of Lyme Bay fisheries management measures {MMO1406}	This project is a process evaluation for the development of Lyme Bay fisheries management measures for ICES Area 7.e sole, looking specifically at engagement and how these measures were developed.
Social and Economic Impact Assessments for commercial Fisheries Management Decisions {MMO1384}	This study reviewed a range of Impact Assessments relevant to commercial fisheries and developed a template and guidance for MMO to undertake social and economic impact assessments for fisheries decision-making.

If you are interested in submitting evidence or working with the MMO on any future projects, please contact the evidence team at planningevidence@marinemanagement.org.uk.

Marine Planning Information and Requests

Your local marine planners are available for any questions you might have about the South West Marine Plan or marine planning in general.

Please contact:

- Ellie Hoad (northern extent – Bude, Cornwall – Severn Estuary border with Wales): ellie.hoad@marinemanagement.org.uk, ellie.hoad@marinemanagement.org.uk, 07385115251
- Mae van Loef (southern extent – River Dart, Devon – Bude, Cornwall): mae.vanloef@marinemanagement.org.uk, mae.vanloef@marinemanagement.org.uk, 07780216820

If you would like to receive regular updates about marine planning and subscribe to the MMO's marine planning newsletter, please sign up to the MMO mailing list.

Marine Licensing in the South West:

The marine licence process is plan led and requires that proponents complete a marine plan policy assessment to show they have considered the marine plans in their licensing application. This process is described in the following video: Marine Plan Policy Assessment in decision-making. Figure 16.4 shows what licenses were granted in the south west marine plan area in 2024.

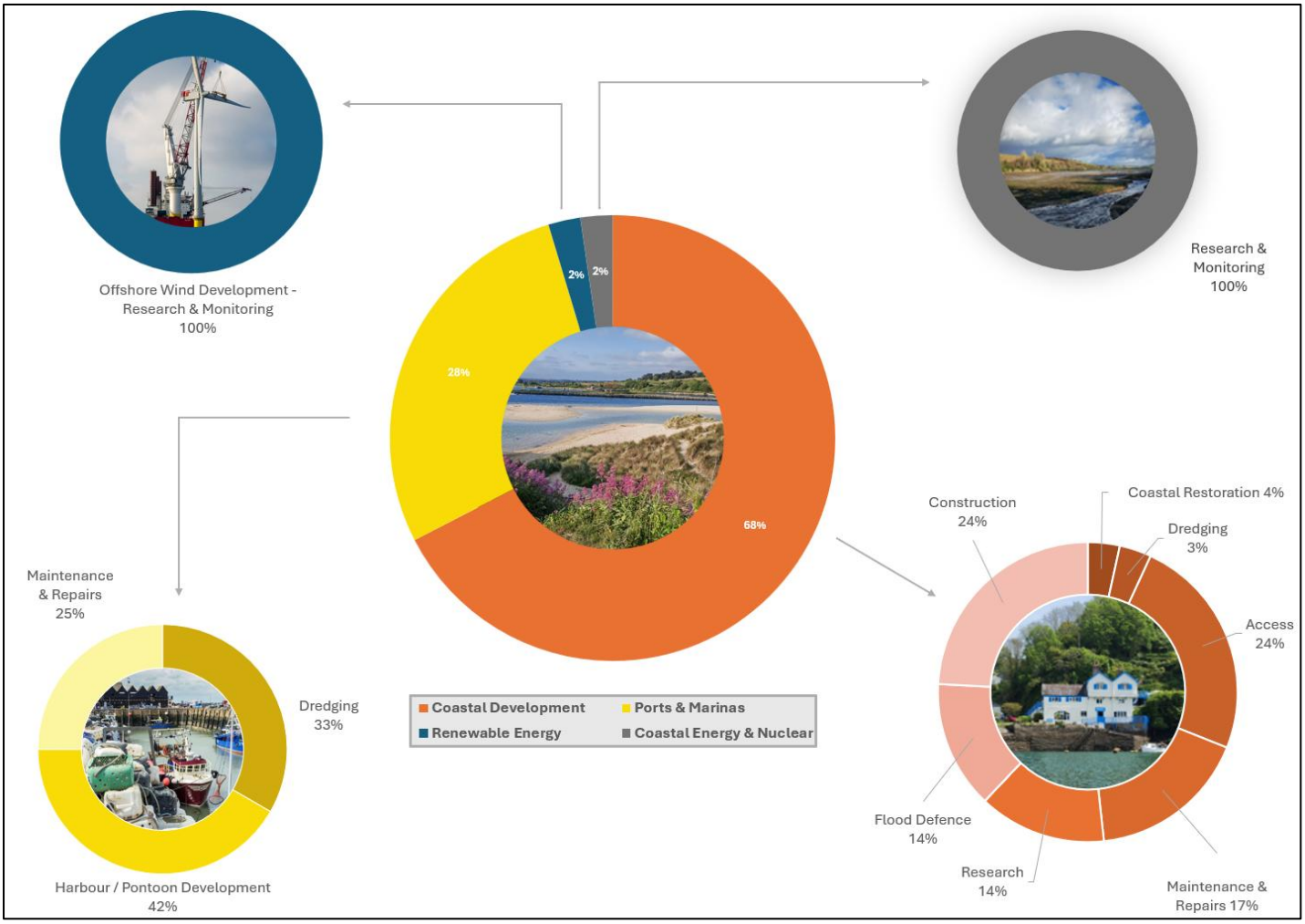


Figure 16.4. Licence applications in the South West Marine Plan in 2024.

As seen in Figure 16.4, there was a total of 43 licence applications in 2024, grouped into four main sectors: Coastal Development, Ports and Marinas, Coastal Energy & Defence, and Renewable Energy. It is worth noting that dredging occurs within both Coastal Development sectors for coastal resilience and flood defence purposes and within Ports and Marinas for capital and maintenance dredging purposes.

Of the 43 applications, four were rejected, two were withdrawn, 16 were approved and 21 were in progress at the end of 2024 (see Figure 16.5).

Wildlife Licensing

The MMO is responsible for wildlife licensing of activity in English territorial seas. Natural England is responsible for wildlife licensing in other parts of England. Please see MMO's website for further information on marine species and wildlife protection. Wildlife licenses are only issued for specific purposes which are set out in legislation. For example, a provision under the Wildlife and Countryside Act 1981 allows licenses to be granted for scientific or educational purposes.

The online public register holds up to date information on applications for marine licenses and the decisions made. For queries around specific licenses contact the Marine Licence Business Support Team at marine.consents@marinemanagement.org.uk.

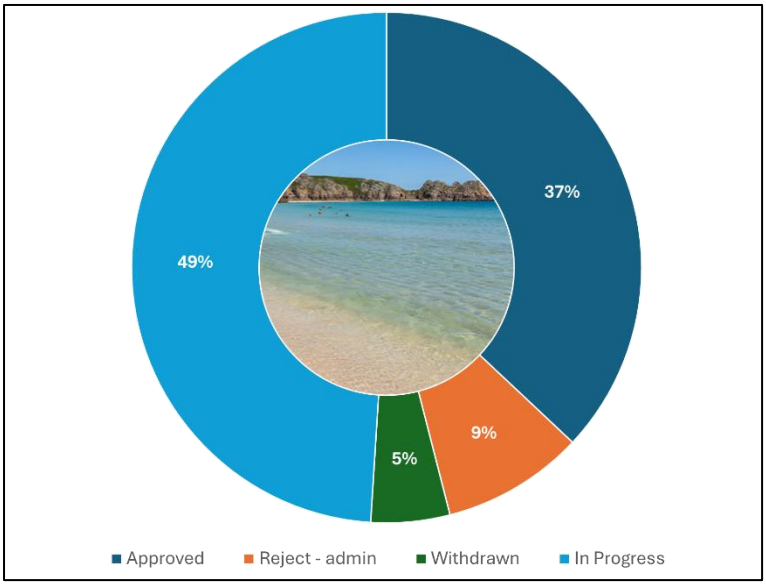


Figure 16.5. *Licence decision status as of the end of 2024 calendar year.*

South West Marine Plan Area – 2024 Wildlife Licence Summary

In 2024, nine wildlife licences were granted or renewed in the south west marine plan area. Seven wildlife licences were granted for science and educational purposes in relation to seahorse surveys, bird ringing, and trialling of bycatch mitigation devices. One wildlife licence was renewed for geophysical surveys to support future offshore wind development, and one wildlife licence was renewed for the development of a nuclear energy project.

Strategic Renewables Unit Offshore Wind Development

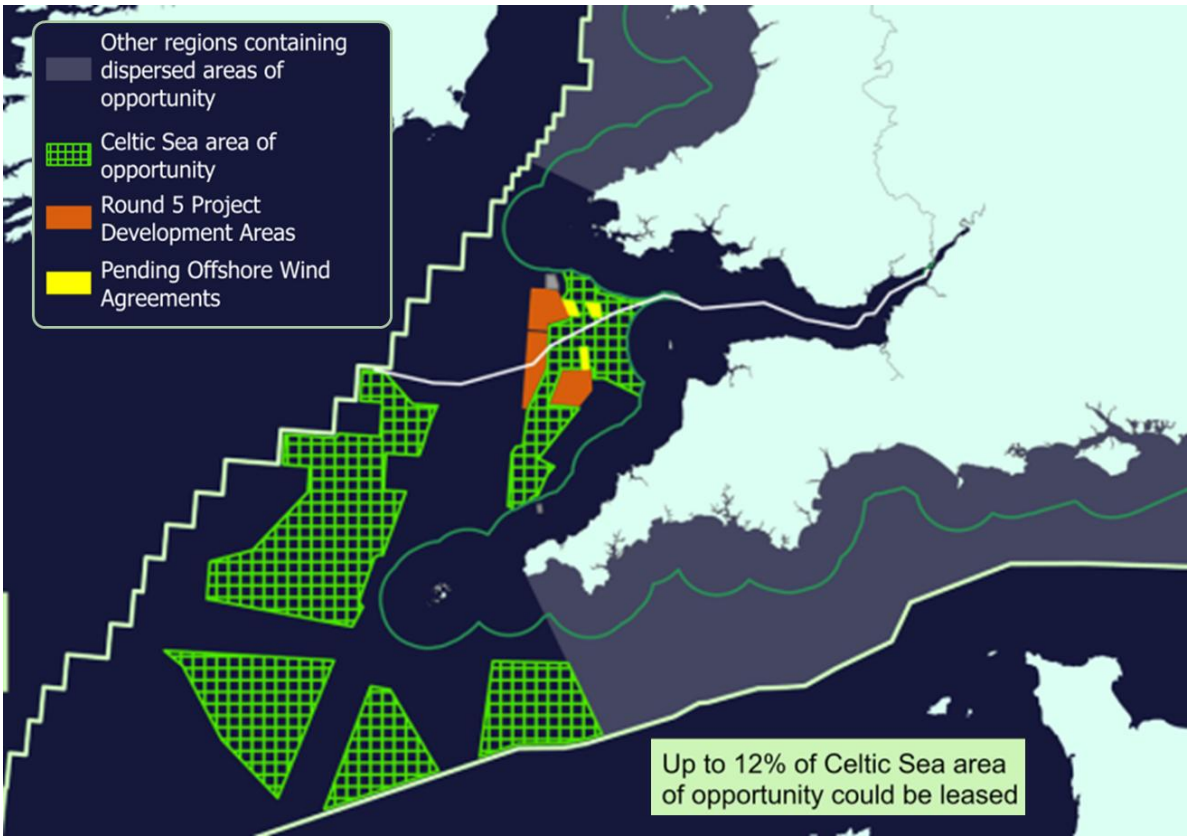


Figure 16.63. Adapted figure from the Crown Estate's future of offshore wind report.

The acceleration of offshore wind is key to meeting our net zero commitments, the 2024 "Clean Power 2030 Action Plan[3]" highlights that between 43 and 50GW of offshore wind could be installed in UK waters by 2030.

The development of floating offshore wind represents a breakthrough in offshore wind technology. Unlike traditional fixed-bottom turbines, floating turbines can be deployed in waters over 60 metres deep. This innovation

[3] Clean Power 2030: Action Plan: A new era of clean electricity

opens the Celtic Sea to commercial-scale offshore wind deployment for the first time. The Crown Estate's (TCE) "Future of Offshore Wind[4]" report identifies the Celtic Sea as holding a spatial potential for 12GW of offshore wind.

Five demonstration projects totalling 426MW have already secured site leases, two have consents in place, Twin Hub, located at the old Wave Hub site near St. Ives, Cornwall, and Erebus located 45km off the South West Coast of Pembrokeshire, Wales, both due for commissioning between 2026 and 2027. The remaining three demonstration sites, Llŷr 1, Llŷr 2, and White Cross are yet to be consented, despite this, the developers are targeting operation by 2026/2027.

Full scale commercial floating offshore wind will come to the South West through TCE's Offshore Wind Leasing Round 5. The leasing round has allocated three Project Development Areas (PDAs) for tender, with each area housing up to 1.5GW of potential capacity within the Celtic Sea. The tender process for these areas is currently underway and set to be awarded in Summer 2025. Of the three areas, one is situated wholly in English waters, another wholly in Welsh waters, with the final area crossing both regions.

TCE's report states that up to 10GW of capacity could be leased by 2030 and has identified "areas of opportunity" where this capacity could be located, shown in green in Figure **16.63**16.6. Up to 12% of the areas could be leased for offshore wind development. The English Channel is included among the "other areas of dispersed opportunity," meaning that while deployment in this region is possible, it is likely to occur on a smaller scale than in the Celtic Sea.

[4] 1742378325-future-offshore-wind-2024.pdf

17. Marine Developments

Editors: Dan Barrios-O'Neill (dan.barrios-oneill@cornwallwildlifetrusrt.org), Bob Earll, Keith Hiscock, Jenny Wright, Paul Naylor, Sue Sayer, Carli Cocciardi, and Lissa Batey

Headline Conclusions

- **Desalination:** Proposals for a desalination plant in St Austell Bay raised concerns about the ecological impacts of significant hypersaline discharge on the area's extensive maerl and seagrass beds. Current data gaps, particularly for maerl, warrant a precautionary approach.
- **Seaweed farming:** Seaweed aquaculture can provide ecosystem benefits, but poorly assessed proposals at Port Quin highlight the need for robust baseline data, clear mitigation plans, and sensitive siting. Key risks include benthic impacts from extensive moorings and potential entanglement of marine megafauna.
- **Nuclear power:** The primary ecological risk associated with the Hinkley Point C development remains fish mortality through cooling intake entrainment and impingement. Effective mitigation depends on the combined function of low-velocity heads, fish return systems, and a functional acoustic deterrent.

Introduction

This chapter gives an overview of a selection of prospective and in-operation marine infrastructure developments in the south-west for 2024. Our focus is on known or potential ecological impacts (positive and negative) associated with developments, rather than on policy or planning implications. We will, however, direct readers towards any ongoing consultations and associated resources where relevant. Our intention is not to exhaustively assess all marine developments in the South-West, and we will endeavour to update assessments wherever new evidence becomes available.

1. St Austell Bay Desalination Plant, Phases I and II (South West Water)

Background and context: Periods of acute water scarcity are expected to increase in the UK due to climate change and rising demand. Proposed solutions include demand restrictions, reducing leakage, and expanding storage. While desalination is common globally, it's rare in the UK, with plants ranging from 400,000 L/d in the Isles of Scilly to 150,000,000 L/d on the Thames. In 2023, South West Water proposed a new plant at Par Docks, St Austell Bay. The original plan—60,000,000 L/d seawater intake yielding 20,000,000 L/d freshwater—was shelved. A smaller phase 1 (7,500,000 L/d intake, 2,500,000 L/d freshwater) was proposed in 2024, using existing wastewater infrastructure for discharge. Unlike phase 1, a larger phase 2 would likely need a dedicated discharge pipe and result in hypersaline discharge into the bay. As the time of writing, the MMO has rejected test drilling for the dedicated discharge pipe.

St Austell Bay is home to one of the UK's largest known beds of seagrass (*Zostera marina*) which covers an area of approximately 900 acres (364 hectares) to a depth of around 12 m. It is also an area with extensive maerl and maerl matrix habitat, albeit with much of it in poor condition. The operations of any proposed plant would inevitably overlap with both of these nationally important habitats in the Bay.

Known or potential ecological impacts

Negative: *Seawater abstraction*, at the rates associated with this development, will impact plankton, and possibly nekton, directly through impingement and entrainment at the site of abstraction. However, direct or modelled estimates for impacts at these rates are lacking. The abstraction rates associated with nuclear power plants are typically two orders of magnitude higher, and have been tied to fish mortality rates of ~40-70 tons/yr (An assessment of the effect of the Sizewell power stations on fish populations | Hydroécologie Appliquée (Paris)). A linear relationship between abstraction rate and fish mortality is unlikely but, with some uncertainty, abstraction impacts on fish should be minimal, particularly with phase 1.

The negative impacts of *hypersaline desalination plant discharges* are widely studied in arid regions, but there is limited evidence relating to impacts on UK-specific species assemblages. Seagrasses (*Posidonia* spp. and *Zostera*

spp.) are notably well studied, with one study demonstrating impacts including high epiphyte loading, necrosis, and a reduction in structural carbohydrates, albeit with no overall decline in coverage (Impact of the brine from a desalination plant on a shallow seagrass (Posidonia oceanica) meadow - ScienceDirect). A review of hypersalinity impacts suggests consistently lower growth rates, leaf loss, reduced root growth, limited nutrient uptake, and reduced photosynthetic rates (Advances in understanding multilevel responses of seagrasses to hypersalinity - ScienceDirect). Evidence of wider impacts on benthic assemblages has also been established—including for polychaetes, echinoderms, crustaceans, molluscs, corals, protozoans, and bacteria—typically relating to osmotic stress, reduced growth, and survivorship (Impacts of Desalination Brine Discharge on Benthic Ecosystems | Environmental Science & Technology).

The *construction of any pipelines* associated with a plant would be expected to result in localised impacts from noise and sedimentation, as well as a small direct loss of habitat (either temporary or permanent depending on burial).

Positive: Some evidence suggests hypersaline stress can positively affect vegetative reproduction in seagrasses, and hypersaline treatments are used to control fungal growth on seeds in seagrass restoration programmes, however seed germination rates are negatively impacted by hypersalinity in the field (Advances in understanding multilevel responses of seagrasses to hypersalinity - ScienceDirect)

Unknowns: Membrane-based desalination relies on *chemical treatments* including antiscalants, coagulants, and acids to maintain operations. There is limited information on any ecological impacts that could arise for their use. Little is known about the impacts of these chemical additives on marine organisms, and most UK-relevant species remain poorly studied. Importantly, impacts on maerl are entirely unknown, though a precautionary view would be that maerl is highly sensitive to poor water quality and to physical disturbance and therefore would likely be negatively impacted by hypersaline conditions in St Austell Bay. On the other hand, *Phymatolithon calcareum* and *Lithothamnion coralloides* are known to be tolerant of at least 40 PSU (SENSITIVITY OF BENTHIC COMMUNITIES IN THE HUMBER AND OUTER WASH REGION). China clay waste deposits in St Austell Bay, and their resuspension, is an additional consideration with this development site, but any associated impacts are unclear.

Relevant policy and planning information

South West Water's information

MMO cases:

EIA/2024/00020

MLA/2024/00129

2. Port Quin Seaweed Aquaculture (Biome Algae and Camel Fish Ltd)

Background and context: Biome Algae and Camel Fish Ltd submitted applications in 2023 for two large-scale seaweed aquaculture sites in Port Quin Bay, North Cornwall, requesting 50-year marine licenses. In response to widespread community and stakeholder opposition, the Marine Management Organisation (MMO) reopened the consultation in early 2024, following feedback that there had been insufficient engagement and inadequate environmental assessment. A second consultation round was conducted in November 2024, following the applicant's further information responses (FIRs). Despite these additions, both proposals received significant objection and have since been either withdrawn or refused.

Concerns focused on the lack of clear ecological baseline data, insufficient mitigation planning, risk to sensitive species and habitats, and the way the consultation was handled. The site is within proximity of ecologically important and designated areas, including haul-out sites for grey seals and foraging areas for seabirds.

Known or potential ecological impacts

Negative: *Seabed impacts.* The proposed use of dozens of eco-blocks to anchor mooring lines could potentially affect benthic habitats, including sensitive species such as pink sea fans. The total footprint and habitat sensitivity at the site remain uncertain due to design redactions and a lack of baseline seabed surveys.

Exposure and site resilience. The open nature of Port Quin Bay presents engineering challenges, with the site exposed to large swells. While the applicants maintain that their system is designed for such conditions, detailed assessments have not been made publicly available for review. The risk of lost lines, and associated entanglement issues could be high.

Mobile species. The bay is used by marine mammals such as grey seals, dolphins, and porpoises, with occasional sightings of humpback whales. Although the risk of entanglement is generally lower with seaweed aquaculture, as compared to the likes of gillnets and pot lines, limited detail on the proprietary design (given the highly exposed nature of the site) makes it difficult to assess species-specific risks.

Seabird foraging and vessel disturbance. The farms are located away from breeding sites but may lead to rerouted vessel traffic near sensitive seabird colonies. This potential indirect impact has not been fully assessed in the information provided.

Positive: If well-designed and located, seaweed farms could provide a range of ecosystem services, including nutrient uptake, protection from fishing gear, potential carbon sequestration (assuming export to sediments) and local habitat provision. Compared to other forms of marine extraction or development, seaweed farming is widely considered to have relatively low environmental impact, particularly in terms of emissions, resource use, and overall disturbance. Benefits can only accrue where other extractive activities decline in-kind, both locally and regionally.

Unknowns: *Baseline data and site characterisation.* Beyond limited *ad hoc* records from Seasearch surveys, the absence of site-specific field surveys—particularly for seabed habitats, hydrodynamics, and local fauna—makes it difficult to fully assess likely impacts or determine potential for any biodiversity net gain.

Relevant policy and planning information

MMO cases:

MLA/2023/00307 (Camel Fish Ltd)

MLA/2023/00308 (Biome Algae)

3. Lyme Bay Offshore Mussel Farm (Offshore Shellfish Ltd)

Background and context: Established in 2013, the Lyme Bay Mussel Farm is the UK's first large-scale offshore rope-grown mussel operation. Managed by Offshore Shellfish Ltd, the farm is situated 3–6 miles off the South Devon coast and, upon full development, is projected to span 15.4 km² across three sites, producing up to 10,000 tonnes of mussels annually. The site lies partly within the Lyme Bay Marine Protected Area (MPA), which has prohibited bottom-towed fishing since 2008, and partly outside this area, where trawling still occurs. Long-term ecological monitoring by the University of Plymouth has been integral to assessing the farm's environmental impact.

Known or potential ecological impacts

Negative: *Seabed Alteration.* The accumulation of mussel shells and organic matter beneath the farm has transformed the seabed from muddy sediment to mussel-dominated biotopes. The baseline seabed condition is heavily impacted by trawling, and many impacts relative to this are demonstrably positive. However, any historic bivalve beds in this area would not have been *Mytilus edulis*, but likely *Ostrea edulis*, with the latter potentially supporting more diverse epifaunal communities in the long term.

Scaling Concerns. Plans to expand the farm raise concerns about exceeding the site's carrying capacity, potentially leading to reduced mussel growth rates and increased disease prevalence. There is currently no evidence for these issues however, and the open, deeper water context in which the mussels are farmed likely mitigate any carrying capacity concerns.

Marine Debris. The use of plastic materials in farm infrastructure poses a risk of litter and debris entering the marine environment, and the potential for entanglements with marine megafauna remains, though there are no reported issues with this site over many years of operation.

Positive: *Habitat restoration and enhanced biodiversity.* The re-establishment of shellfish reefs in areas where they had been absent for up to 150 years has, irrespective of the species responsible, provided protection and new habitat structure in an otherwise degraded area. The structure provided by seabed mussel clumps attracts a variety of marine life, including commercially important species such as European lobsters, brown crabs, and various fish species.

Fish Aggregation Device (FAD) effect. The physical structures of the farm provide shelter and feeding opportunities for fish species including sea bass and pollack. Notably, Atlantic horse mackerel populations increased by over 300% within four years of farm operation. However, the aggregating effect for all mobile species—both benthic and pelagic—is not the same as population enhancement per se.

Unknowns: *Scale-dependent impacts.* The relationship between farm scale and ecological impact remains uncertain. While current operations appear sustainable, significant expansion could alter local ecosystems in unforeseen ways.

Long-term ecosystem effects. The full extent of the farm's long-term impact on local marine ecosystems, including potential changes in species composition and nutrient dynamics, is not yet fully understood.

Relevant policy and planning Information

Case ref: 34324/090204/3

Licence ref: 34324/10/0/CON, L/2012/00439/3

The University of Plymouth's Applied Marine Ecosystems Research Unit (aMER) continue to monitor and assess the farm's ecological impacts.

4. Hinkley Point C Nuclear Power Station (EDF Energy)

Background and context: Hinkley Point C (HPC) is a major nuclear power project under construction in Somerset which, once completed, will supply approximately 7% of the nation's electricity. There are a range of concerns regarding the potential ecological impacts of such a large infrastructure project, but the main issue is the plant's cooling system and associated seawater intake. The system requires a seawater intake of 134 m^3 seawater/s—exceeding the average flow of all UK rivers, except the Tay. This scale of this abstraction has the potential to entrain significant quantities of marine life.

Originally, HPC's Development Consent Order (DCO) and Environmental Permit mandated a suite of three mitigation measures for abstraction: (1) low-velocity intake heads; (2) a fish recovery and return system, and; (3) an Acoustic Fish Deterrent (AFD). In 2017, EDF sought to remove the AFD requirement, citing safety risks to divers during installation and maintenance. Although the Environment Agency (EA) later agreed to remove the AFD condition from the permit, the DCO still mandates its inclusion. Consequently, EDF paused plans for compensatory saltmarsh creation and is now pursuing a new AFD technology utilising ceramic transducers that can be maintained without diver intervention.

Known or potential ecological impacts

Negative: *Fish Entrainment and Impingement.* Without an effective trio of deterrents—which act synergistically to mitigate impacts—HPC's intake system could result in the loss of up to 182 million fish annually, including species such as sprat, herring, shad, salmon, and eel. (Evidence for impingement of many tones of invertebrates exists for other power plants.) Critically, some species are unlikely to avoid the intake without an AFD and are subsequently unlikely to survive the fish return system. However, most published studies suggest population level impacts on fish from intake mortality are negligible.

Thermal Pollution. The discharge of warm water may alter energy transfer through local food webs, increasing the metabolic rates of ectotherms, and potentially facilitating the establishment of non-native species.

Chemical Discharges. Permitted releases of substances like hydrazine, though regulated, pose potential risks to marine life.

Construction Impacts. Activities may cause noise pollution and sedimentation, affecting benthic habitats, though the sediment load in this area is typically quite high.

Unknowns: The long-term efficacy of the new AFD technology remains to be seen, particularly given the scale of HPC's intake. The EA's original permit recognised that there would be unavoidable negative impacts even with all mitigation measures in place.

Relevant policy and planning information

Responses to HPC DCO

Environmental Permit EPR/HP3228XT

18. Marine Plastic Pollution

Edited by: Rachel Yates (rachel@sas.org.uk) Senior Communities Manager, Surfers Against Sewage

Conclusions

- Plastic pollution is as prevalent as ever on the south-west coastline. A snapshot of evidence gathered by local coastal clean-ups shows at least 22,500 kg of pollution was removed by volunteers, whose time was worth over £435,000. The top plastic pollution items recovered were ghost gear and pollution stemming from single use plastic consumption.
- The impact of this pollution is all permeating. Plastic has been found in the deepest part of the ocean and on the highest mountain peaks. It's in water, soil and air. It's in our bodies. Research claims humans eat a credit card's worth of plastic a week. Marine wildlife is ingesting plastic, and entanglement is claiming lives. With plastic production set to soar in the next five years, the problem is only going to get worse.
- But there are opportunities to influence and drive change.
- An evidence-led approach, based in academic research, robust data collection and impact case studies, will tell the true story of plastic pollution in the south-west. From which we can work to help create the system change we need to see.

Introduction

The South-West Marine Ecosystems Report has covered marine plastic pollution for around eight years. Initially led by the Cornwall Plastic Pollution Coalition (CPPC) and pulled together statistics on the amount of plastic removed from the Cornish coastline, categorisation of that pollution where it was available, and the amount of volunteer time dedicated.

Over the last three years Exeter University has supported this work through the involvement of Sarah Nelms, Zara Botterell and Dan Wilson. With changes to the team at the university and also at the CPPC, a new Community of Practice is now being formed.

The Community of Practice

The aim of the Community of Practice (CoP) is to focus on measures that help minimise and reduce plastic pollution and its impact in the south-west.

We are made up of a number of organisations that cover the whole south-west and to date include Clean Cornwall, the Cornish Plastic Pollution Coalition, Cornwall Wildlife Trust, Dorset Council, Exeter Uni, Litter Free Dorset, Marine Conservation Society, Marine Management Organisation and Surfers Against Sewage (SAS).

As a new Community of Practice, we are still growing and looking at how we want to work together. But there are five core areas that we look at each year:

- Quantity – the amount of plastic pollution on the south-west coastline
- Itemisation – what items of plastic pollution are being found on the coastline
- Impact – what is the impact of that pollution on ecosystems and communities
- Action – what action can be taken or is needed to tackle the issue effectively
- Research – new research from or involving the south-west that can help us better understand the issue and drive evidence led change

Snapshot of 2024

The statistics for 2024 provide a snapshot of, rather than a comprehensive report on, the state of the ocean round the south-west in terms of plastic pollution. This is due to the changes in the group and the timescale available to collate data. It also reflects the opportunity to expand the group and review how we collate and present evidence, which will be outlined throughout this report.

Table 18.1 show what we are seeing across the south-west coastline as a whole. These statistics are provided by the national organisations who are working in the area and who have established systems for recording volunteer efforts on the coastline.

Many of the people and groups who are out cleaning-up the south-west coastline are registering their cleans with national organisations, which means they are a good source of unduplicated data if we use these as south-west only statistics for 2024.

Table 18.1. Overall quantities and effort in the south-west.

Overall SW	***cleans/surveys***	***KG***	***vols***	***time hrs***	***items***	***% plastic***
Surfers Against Sewage	659	10,856	14,084	31,648		
Marine Conservation Society	145	838	2,261	2,745	35, 868	85
Waterhaul	28	1,293		179		
Keep Britain Tidy	116	9,576	2,019			
TOTAL SW	**948**	**22,563**	**4,280**	**34,572**		

Table 18.2 gives an example of what smaller groups are removing from the south-west coastline in county areas. Many of the volunteer groups undertaking this work and submitting evidence to the example organisations below, will also have registered and submitted to one of the national organisations above. At the moment there is no way of knowing which statistics are duplicated, so they've been presented separately.

Table 18.2. Quantities – individual area examples.

Cornwall	***cleans/surveys***	***KG***	***vols***	***time hrs***	***items***	***% plastic***
Clean Cornwall		1570	2678	5356		
Devon						
Earth Action North Devon	71	3519	3785	7570		
Dorset						
Dorset Council		139	199	398		

Itemisation

Not all organisations who submitted results for this year's report itemise what they collect. Those who do, do not record evidence and items in the same way. In the next section, the benefits of a data review are explored. In terms of 2024, we are able to give examples of itemisation statistics from the Marine Conservation Society, Surfers Against Sewage and Waterhaul. All three organisations monitor different aspects of the plastic pollution crisis, so the information below provides a good indication of the scope of items being collected.

Microplastics are not included in the 2024 snapshot. The issue of micro and nano plastics has been emerging over a number of years and is now gaining momentum as more academic research becomes available. These findings are gaining more traction in the public domain, due to the growing evidence and concern on the impact on human health. As an increasingly emerging issue this is an area that we expect to see reflected in itemisation stats and impact case studies in future reports.

In terms of our 2024 itemisation examples; the Marine Conservation Society equips volunteers to undertake a Beachwatch Survey each time they clean a stretch of coastline. You can see the full UK wide report here: Beachwatch 2024 Results | Marine Conservation Society

Summed-up 2024 results showed the top five 'offenders' were:

1. Plastic Pieces/Polystyrene
2. Plastic Packaging
3. Cigarette Butts
4. Plastic Caps/Lids
5. Angling Line

Surfers against Sewage equip volunteers to collect evidence of the brands they find that are polluting the coastline to support campaigns to end plastic pollution at source. The UK wide Brand Audit published in 2024 named the Dirty Dozen – so the top 12 polluters – who were responsible for 70% of the plastic pollution being taken off the coastline. You can break the results down for the south west region and also see the other items recovered such as disposable vapes and ghost gear in the full report here >> Surfers Against Sewage • Brand Audit 2023 - The Plastic Pollution Crisis

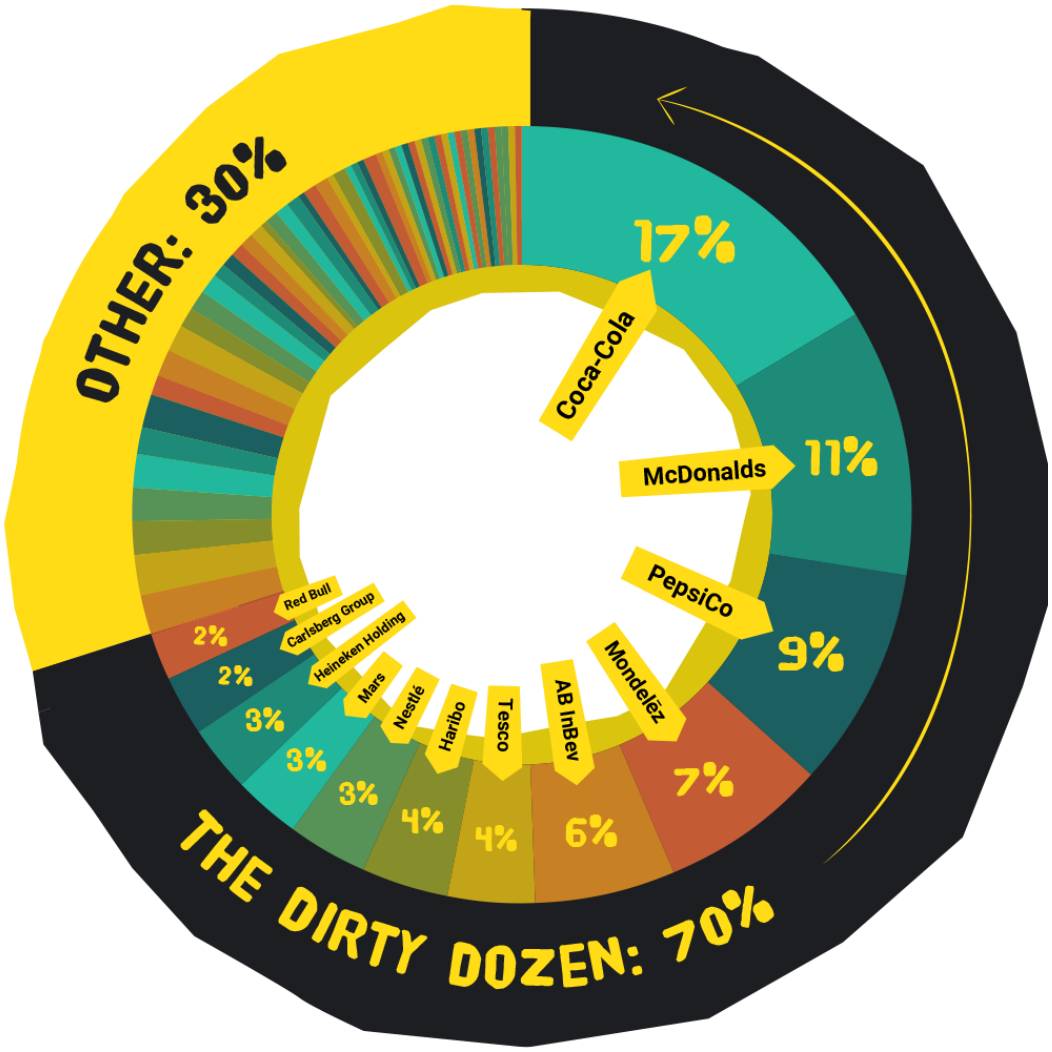


Figure 18.1. SAS brand audit results.

Waterhaul recover tonnes of ghost fishing gear from around the south-west coastline during the year. They break this down in terms of the materials and found that in 2024 507kg was Polypropylene and 786kg was High Density Polyethylene.

Impact

Plastic Pollution has a devastating impact on all ecosystems. Plastic is found not just in the ocean, but in rivers, soil, the air we breathe. Emerging research is only just starting to get a handle on the true extent of pollution from plastic and the impacts for human, wildlife and planetary health. There are a host of case studies from around the south west on the direct impact of this tide of pollution. From entanglement to digestion, marine wildlife bears the brunt. Coastal communities also bear the brunt, including the cost of clean-up. We have picked two case studies highlighting the impact on wildlife and communities.

Case Study One: Entanglement

Cornwall Wildlife Trust/Marine Strandings Network

Plate 18.1. A seal pup with long term entanglement in a plastic trawl net. Image: British Divers Marine Life Rescue

Plate 18.2. The seal pup after removal of the trawl net. Image: British Divers Marine Life Rescue

Plates 18.1 and 18.2 show a female Atlantic Grey Seal pup found at Mother Ivy's Bay. She was live stranded but humanely euthanised after assessment by British Divers Marine Life Rescue medics. She was in very poor and deteriorating condition, hyperthermic and hyperglyceamic. The post-mortem examination was conducted by Dr James Barnett for Marine Strandings. The trawl net had caused a significant, deep entanglement wound encircling the pup's neck which would have had a significant impact on the pup's ability to swim, dive and feed. There were signs of malnourishment and significant wear to the nails of the fore flippers and trauma to the webbing on one fore flipper, likely to be the result of the pup attempting to free itself. Bacteriology results also raise the possibility of a terminal septicaemia.

Case Study Two: Serious Pollution Incident

Plate 18.3. One of the medicine bottles washed-up near Falmouth in November. Image: Surfers Against Sewage/Plastic Free Falmouth.

Plate 18.4. A cluster of medical debris washed-up near Falmouth in November. Image: Surfers Against Sewage/Plastic Free Falmouth.

A serious plastic pollution incident was reported on Falmouth's beaches and surrounding areas in November 2024. Hundreds of plastic tubes and medicine bottles were washed-up, thought to have been lost at sea in a shipping container spill over a decade ago. They'd resurfaced after the Autumn storms, a striking reminder of plastic pollution's lasting impact. Plastic Free Falmouth led some of the clean up and said: "The community response has been incredible. People are heading out to clean up, and local groups are taking action—we're lucky to have such a strong network of ocean defenders."

The incident was reported to HM Coastguard via the local Marine Rescue Coordination Centre. Volunteers fed-back the difficulty in being able to report the incident, highlighting a lack of clarity on who to report to and how. They also reported that there wasn't a framework in place to help pay for the cost of clean-up, because the work was being done by volunteers.

Further action

The 2024 snapshot gives a tiny reflection of what is a colossal problem. So, what do we do? Evidence is crucial, action vital. As the Community of Practice grows and develops, using what we know about the state of the ocean in the south-west will help us create a voice for change.

What this looks like is an important conversation for the group, as we look ahead to the coming few years. To give an idea of what it could look like, we have highlighted examples of current opportunities for change and impact.

Right now, there are two key policies that form the bedrock of creating upstream solutions to plastic pollution. A Deposit Return Scheme (DRS) and Extended Producer Responsibility (EPR)

Deposit Return Scheme: DRS encourages the reuse and recycling of drinks containers. We pay a deposit for the container of the drink we buy and we get that deposit back when we return it.

Extended Producer Responsibility: EPR is an approach that fully embraces the 'Polluter Pays' principal. Producers need to report on what packaging they use, pay for its environmental cost throughout its life-cycle (from resource extraction to disposal), and it incentivises business to design products for reuse and repair.

Over the past seven years, governments across the UK have been promising to deliver both DRS and EPR. In 2024, the incoming Labour government said moving towards a circular economy was one of its top three commitments. Both DRS and EPR are the foundations of this move.

So, there are opportunities for us as a cohort of ocean activists to use our expertise and evidence to push for meaningful action. By ensuring DRS and EPR are delivered as promised and with no further delay, to help put the foundations of a new circular economy in place. We can do that by showing evidence of the need for change through the plastic pollution that washes up on the south-west coastline, its wide-ranging impact, and showing the mandate for change from the public.

Research

There were some key pieces of research published in 2024. The first by the Norwegian University of Science and Technology in Trondheim, saw nearly 1000 people in Cornwall interviewed about plastic pollution in terms of perceptions and behaviours. It highlighted the potential for targeted interventions on plastic pollution: https://www.frontiersin.org/journals/sustainability/articles/10.3389/frsus.2024.1287462/full

The School of Geography, Earth and Environmental Sciences at the University of Plymouth published a piece on the Biomonitoring of Microplastics in Plymouth Sound: https://www.sciencedirect.com/science/article/pii/S0269749124005153#fig1

The team also published 'Microplastic Transport in Sand Dune Systems at Braunton Burrows': https://www.sciencedirect.com/science/article/pii/S0048969723071632

Researchers from Plymouth Marine Laboratory, The University of Exeter, the Applied Ecology Research Group at Anglia Ruskin University, Cambridge and Marine Biological Association based in Plymouth assessed the risk from land derived plastic pollution across the Atlantic, finding a number of high risk areas, including the UK: https://www.sciencedirect.com/science/article/pii/S0048969724014219?via%3Dihub#f0010

How the Community of Practice Works

We're entering a new chapter with the new Community of Practice on Marine Plastic Pollution. How will we work going forwards? We're still working that out, but key conversations so far have involved

1. Data collection and consolidation, how can we make our data count? Are there ways we can streamline and link up the way we collect data so it is more robust and gives a fuller and more accurate picture on plastic pollution on the south west coast. That's in terms of quantity and types of plastic, where it is being found and how it is being dealt with. We can then work towards creating baseline stats so we can track changes year on year, monitoring the impact of localised action as well as national policy change.
2. Widening data collection from the Cornish coast to the whole south-west coast, in line with the catchment of the South-West Marine Ecosystems report.
3. The inclusion of new groups and organisations to increase evidence, knowledge and impact.
4. A renewed focus on action. Once we have monitored and reported on plastic pollution on the coastline – what then? How do we use our work and evidence to create the system change we need to see to stop it at source. For good.
5. Thematic interactions. Plastic pollution will be having an impact on all aspects of the marine ecosystem in the south west, and therefore most other sections of this report. How can we better communicate and cross reference between our areas of expertise, to build a more comprehensive picture of plastic's devastating effects on the ocean

There are five ways people can help.

- If you are part of an organisation or have expertise in this area – join the community!
- Recommend new members to us
- Share your impact stories and research on plastic pollution with us

- Join in with local and national action to end plastic pollution
- Become collaborative changemakers in your community

It's important to end our report for 2024 with a huge thankyou to Delia Webb and Claire Wallerstein at the Cornish Plastic Pollution Coalition, who have dedicated years of volunteer time to fighting plastic pollution, supporting local groups and delivering schools' work to help create a better future. Also, to the team at Exeter University who have been supporting in latter years. And to Katie at Cornwall Wildlife Trust, who has been supporting the transition to ensure all that hard work and momentum isn't lost. We're proud to take on the baton.

19. Seabed litter removal (a footnote)

Keith Hiscock (khis@mba.ac.uk)

The subject of removal of debris from the seabed has not been fully included in the South-West Marine Ecosystems 2024 Annual Report. This footnote is to draw attention to the good work being done by organisations that are removing often very substantial amounts of discarded fishing gear, sunken debris (including especially tyres) etc. from the seabed and improving The State of South-West Seas.

Plate 19.1. Removing lost and discarded Fishing gear from the seabed. Image: Fathoms Free.

Plate 19.2. The 1000 Tyres Project (Stonehouse Creek, Plymouth Sound). Image: The SHIPS Project CIC.