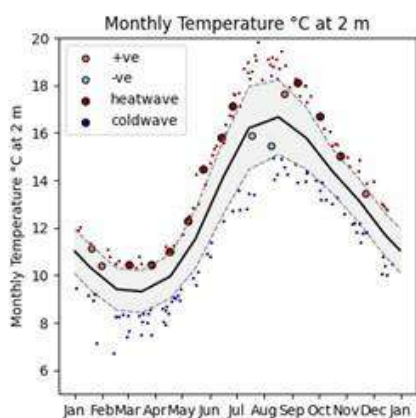


# ***South-West Marine Ecosystems (The State of South-West Seas) Report for 2023***

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



Temperature time-series and anomaly analysis at Station E1 south of the Eddystone reefs. The solid line shows mean monthly temperatures (period 1903 – 2023). Large symbols are 2023.



Pelagic colonial seasquirts, *Salpa fusiformis*, were abundant in places off the south coast in late August. Image: David Hamilton.



Hatched eggs of (a now dead female) *Octopus vulgaris* at Porthkerris on 26<sup>th</sup> September. Image: David Roberts/Kennack Diving.



A European Sturgeon (*Acipenser sturio*) caught SE of Exmouth in September. (A very rare fish fairly frequently being caught off south-west coasts.) Image: Andy Giles.



The south-west UK humpback whale photo-identification catalogue now contains 25 animals. This is 'SWUK8 Snowy': identified twice at the Isles of Scilly during January. Image: Martin Goodey.



Eco-moorings. One of several designs that keep damaging chains off the seabed and are becoming more popular. Image: Ocean Conservation Trust.

**Edited by Keith Hiscock and Bob Earll**

**Lead section editors:**

**Tim Smyth; Bob Earll; Angus Atkinson and Jeanette Sanders; Keith Hiscock, Douglas Herdson; Alex Banks, Paul StPierre, Mark Grantham and Ruth Porter; Sue Sayer, Gareth Richards and Dan Jarvis; Dan Jarvis, Duncan Jones; Libby West; Carli Cocciardi; Eleanor Ward; Mae Van Loef and Ellie Hoad; Daniel Wilson.**

## South-West Marine Ecosystems (The State of South-West Seas) in 2023

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## 1. Aim and objectives of the South-West Marine Ecosystems webinars, conference and reports

Bob Earll

In preparation for the 2022 SWME programme the steering group agreed a revised and more concise aim. *'The aim of the SWME model is to enable an annual report on the state of south-west seas and to build the social capital among organisations, networks and individuals active within this region.'*

The objectives of SWME were updated for the 2021 report and are as follows:

- 1. Communication & Networking** Through the annual conferences, [webinars](#), [website](#) and social media mailings, to build social capital to provide a networking opportunities for a wide cross section of people to meet, exchange views and build networks for the south-west's marine ecosystems.
- 2. Audience** To encourage collaboration between citizen scientists, researchers, scientists, managers, policy-makers and the public and to provide active support for existing networks enabling and building citizen science projects.
- 3. Regional resonance** To encourage links between researchers on science projects throughout the region's seas including the English Channel, Bristol Channel, Celtic Seas and the wider Atlantic Ocean.
- 4. The State of the South-West Seas** To report on the state of south-west ecosystems annually with a report covering a number of topics on **natural systems**: oceanography, plankton, seabed and seashore, fish, seals, marine and coastal birds, cetaceans, and **management topics**: MPAs, water quality, plastics, fisheries. This reporting will build on the use of a wide array of current indicators.
- 5. Ecology of marine species** To promote citizen science recording and research studies that focus on the ecology of marine species, planktonic, benthic and 'mobile' species (fish, birds, mammals, turtles) and the ecosystem that supports them. To understand the status of populations of marine species in the region's seas and how they are responding to environmental and anthropogenic pressures. To enable stories to be told about the ecology of our common species, their distribution, movements and numbers, and importantly to highlight the gaps in our knowledge.
- 6. Management of south-west marine ecosystems** To encourage strong relationships between policy makers and scientists; to promote science and the evidence base that underpins management of human activities in the coastal and marine environment with a view to supporting and promoting the health of south west's marine ecosystems.
- 7. Marine Education and Outreach** To highlight marine education and outreach programmes in the south-west. To support the development of new programmes that promote marine management and make use of marine science. To promote good practice in environmental education, interpretation, signage and outreach.

...and to come together to celebrate being part of the South-West Marine Ecosystem.

## 2. Introduction to the 2023 report

Keith Hiscock and Bob Earll

### Introduction

This is the tenth in the series of annual reports on the observations of species, ecology ecosystems and management for a specific year. For reporting on 2023, we benefitted from a strong series of webinars during March 2024 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 April 2024. It remained, however, for the editors of separate sections of this report to draw-together events and news through the year, helped my monthly collations of observations by Paul Naylor. The webinars 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) 2024. South-west Marine Ecosystems Report for 2023. *Marine Biological Association of the UK, Plymouth*. DOI: <https://doi.org/10.17031/gsnng-8y47>

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

*Thanks to the section 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 2023 continues the expanded number of sections 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. We have trialled a 'Community of Practice' approach for the 2023 report by having a formal meeting of the most frequent contributors for one of the topics to check that the relevant section is as complete as possible and interpreted to identify, where possible, the 'why, how and when' of observations. 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 sections occupy different lengths and have different approaches to how information is presented. We are tightening the editorial guidance (for 2024) to section editors to try to make section lengths more similar and more readable: especially to provide a narrative that can be widely understood and passed-on. The character of each section relies greatly on the type of information being collected and the history of study for the topic – so expect some uneven-ness.

Sharp-eyed readers will notice that vernacular (common) names of species are first-letter capitalised in some sections and are in lower case in others. This inconsistency is an artefact of the topic 'culture' that particular authors live in. If there is an accepted international and cross-discipline standard, we will use it (but don't hold your breath).

### 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.

### **'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

In the past year, we have worked to develop a more consistent structure to what we are doing. In March 2023, Keith Hiscock gave a presentation on 'Change, what change?' to the Porcupine Marine Natural History Society conference (PMNHS) in Bangor. The [subsequent article](#) provides a vocabulary for change and describes different sorts of change – including emphasising the persistence that often exists in the character of marine communities and species. We promote the 'SWME model' wherever we can and featured in an article ('Networks for Nature') in the April edition of *The Marine Biologist* magazine.

### **What next?**

During 2023, with financial backing of the Defra sponsored marine Natural Capital Ecosystem Assessment - Land Seas Interface Programme we have begun to explore whether the SWME Model can be applied to another English region. The east coast planning region was chosen and 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 also has 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 editor.

### 3. Summary of conclusions

**Oceanography.** The year started with relatively warm conditions throughout the water column with temperatures around 9.5 °C off Plymouth. This cooled to the minimum recorded temperature (for 2023) in mid-March of 9.3 °C. June 2023 was noteworthy in that sea surface temperatures were 2 – 3 °C above the long-term (1991-2020) mean in the Celtic Sea and 1 – 2 °C above the long-term mean in the western English Channel. By late June off Plymouth, surface waters were around 17.8°C and, at depths below 30 m, around 13.9 °C; both associated with a sustained meteorological (and marine) heat wave. Contact: Tim Smyth [tism@pml.ac.uk](mailto:tism@pml.ac.uk)

**Storms.** The patterns of storms in the spring of 2023 were unremarkable but were more normal in the autumn of 2023 and in the winter of 2023 to 2024. There were very few named storms in the January – April period of 2023. The impact on natural systems, species and habitats was on the unremarkable side of normal, but seal pups and juveniles were seriously affected by the autumn storms in 2023. Contact: [bob@bobearll.co.uk](mailto:bob@bobearll.co.uk)

**Plankton.** There were unusual reports in terms of numbers and geographic extent of both salps (colonial seasquirts) and hydrozoan 'Crystal Jellyfish' *Aequorea* sp(p) in late summer in the English Channel. Whilst blooms of both have previously been recorded, they have not been concurrently reported at so many different locations. Sightings of true jellyfish in 2023 revealed similar patterns to those seen in previous years with barrel jellyfish making a return, having been only rarely reported in 2022. Contact: Angus Atkinson (for general plankton): [aat@pml.ac.uk](mailto:aat@pml.ac.uk) and Jeanette Sanders (for observations of jellyfish): [sea@seadreameducation.com](mailto:sea@seadreameducation.com) ;  South Devon Jellyfish Survey

**Seashore and seabed marine life.** There were no increases in extent or abundance of warm water species that might suggest significant climate change effects although a record of eggs of a Common ('Mediterranean') Octopus suggests that they are breeding in our waters. There were declines in the occurrence and abundance of some species including, conspicuously for divers, of cold-water Plumose Anemones in inshore areas. Contact: Keith Hiscock [khis@mba.ac.uk](mailto:khis@mba.ac.uk)

**Fish. Sharks.** On 1<sup>st</sup> May, a c. 293 cm subadult female Smalltooth Sand Tiger Shark was found floating dead off Lyme Regis. The observation followed one found stranded in Hampshire and about 320 km north of any previous record. **Bony fish.** The recent pattern of changes continues with several less familiar species becoming more established around south-west England: these include variable blennies, combers and axillary sea breams. Contacts: Douglas Herdson [Douglas.Herdson@btinternet.com](mailto:Douglas.Herdson@btinternet.com) and Simon Thomas (sharks and rays) [patsmithdatabase@gmail.com](mailto:patsmithdatabase@gmail.com)

**Reptiles.** 2023 saw the most turtles recorded in the south-west area for nine years. The majority of the reports were of juvenile Loggerhead or Kemp's Ridley turtles most of which were 'cold shocked'. Contact: Douglas Herdson [Douglas.Herdson@btinternet.com](mailto:Douglas.Herdson@btinternet.com).

**Marine and coastal birds.** 2023 saw continued increases in burrow-nesting seabirds and auks: both continuing to benefit from rat eradication on Scilly and Lundy. HPAI ('bird flu') badly affected terns and black-headed gulls in Dorset, but there was good news for sea-watchers with thousands of southern-breeding shearwaters flooding into the south-west in late summer. This included an estimated 16,000 Cory's shearwaters in one day off Scilly. Contact: Alex Banks [alexbanks@gmail.com](mailto:alexbanks@gmail.com)

**Seals.** More seals were recorded dead across Cornwall in 2023 than born (half the dead seals were less than a year old) The largest seal disturbance on record and caused directly by people, saw 250 seals stampede off two adjacent SSSI beaches resulting in an enforcement letter from Natural England. Contact: Sue Sayer - [sue@cornwallsealgroup.co.uk](mailto:sue@cornwallsealgroup.co.uk)

**Whales, dolphins & porpoises.** There continued to be high numbers of cetaceans inshore in 2023. Since 2015 there have been marked increases in many cetacean species in inshore waters. There is limited ongoing research investigating this shift and cetacean research in the UK continues to be poorly funded. Contact: Duncan Jones [duncoliver@yahoo.co.uk](mailto:duncoliver@yahoo.co.uk) (toothed whales and dolphins) and Dan Jarvis (Baleen Whales) - [dan@bdmlr.org.uk](mailto:dan@bdmlr.org.uk)

**Fisheries.** In 2023, the landings of many traditional fisheries such as brown crab and mackerel continued to decline, whilst landings for other species such as crawfish and spurdog increased as a result of stock recovery. Analysis undertaken by the MMO showed an overall reduction in the quantities of fish and shellfish landed in the south-west since 2016. It is likely that climate change will continue to benefit some species, such as black seabream, red mullet and anchovy and to result in declines of some other species, such as lemon sole, Atlantic cod, haddock and megrim. Contact: [Libby.West@naturalengland.org.uk](mailto:Libby.West@naturalengland.org.uk)

**Marine protected areas.** Currently 81% of MPAs within the IFCA Devon and Severn area are closed to bottom-towed gear, compared to 75% in the Isles of Scilly and 40% in Cornwall. The MMO is responsible for introducing fisheries management measures to all offshore MPAs by the end of 2024. There is an increasing recognition of the need to adopt a whole site approach to MPA management for effective marine nature recovery. Contact: Carli Cocciardi [ccocciardi@devonwildlifetrust.org](mailto:ccocciardi@devonwildlifetrust.org)

**Water quality.** The year 2023 was the sixth wettest on record contributing to a higher percentage of sewage overflow spills. One hundred percent of storm overflows have now, however, been fitted with event duration monitoring devices which will allow complete coverage, real-time data and targeted improvements. Contact: [Eleanor.Ward@devon.gov.uk](mailto:Eleanor.Ward@devon.gov.uk)

**Marine planning.** ‘The Marine Planning Monitoring Surveys 2023 Two-Page Summary Report revealed that, overall, the MMO South West Marine Plan remains widely utilized by a diverse array of stakeholders for decision-making and supporting development proposals. Policies related to biodiversity and heritage are among the most frequently applied. The development of floating offshore wind turbines represents a significant technological advancement and demonstration projects are anticipated to be operational within the next few years, with further commercial deployments in the pipeline. Contact: Mae van Loef [mae.vanloef@marinemanagement.org.uk](mailto:mae.vanloef@marinemanagement.org.uk) and Ellie Hoad [ellie.hoad@marinemanagement.org.uk](mailto:ellie.hoad@marinemanagement.org.uk).’

**Marine plastics.** Excellent volunteer work continues in the southwest to remove plastics from the marine environment. Analysis of debris from coastal cleans in 2023 by the Clean Ocean Sailing (COS) organisation also highlighted high density polyethylene (HDPE), plastic bottles and nets and ropes to be the most commonly removed debris. Contact: Dan Wilson [d.wilson@exeter.ac.uk](mailto:d.wilson@exeter.ac.uk); and Delia Webb [deliawebb@btinternet.com](mailto:deliawebb@btinternet.com)

## 4. Oceanography Background Conditions – Western Channel Observatory

Tim Smyth ([tism@pml.ac.uk](mailto:tism@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 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 – 2023

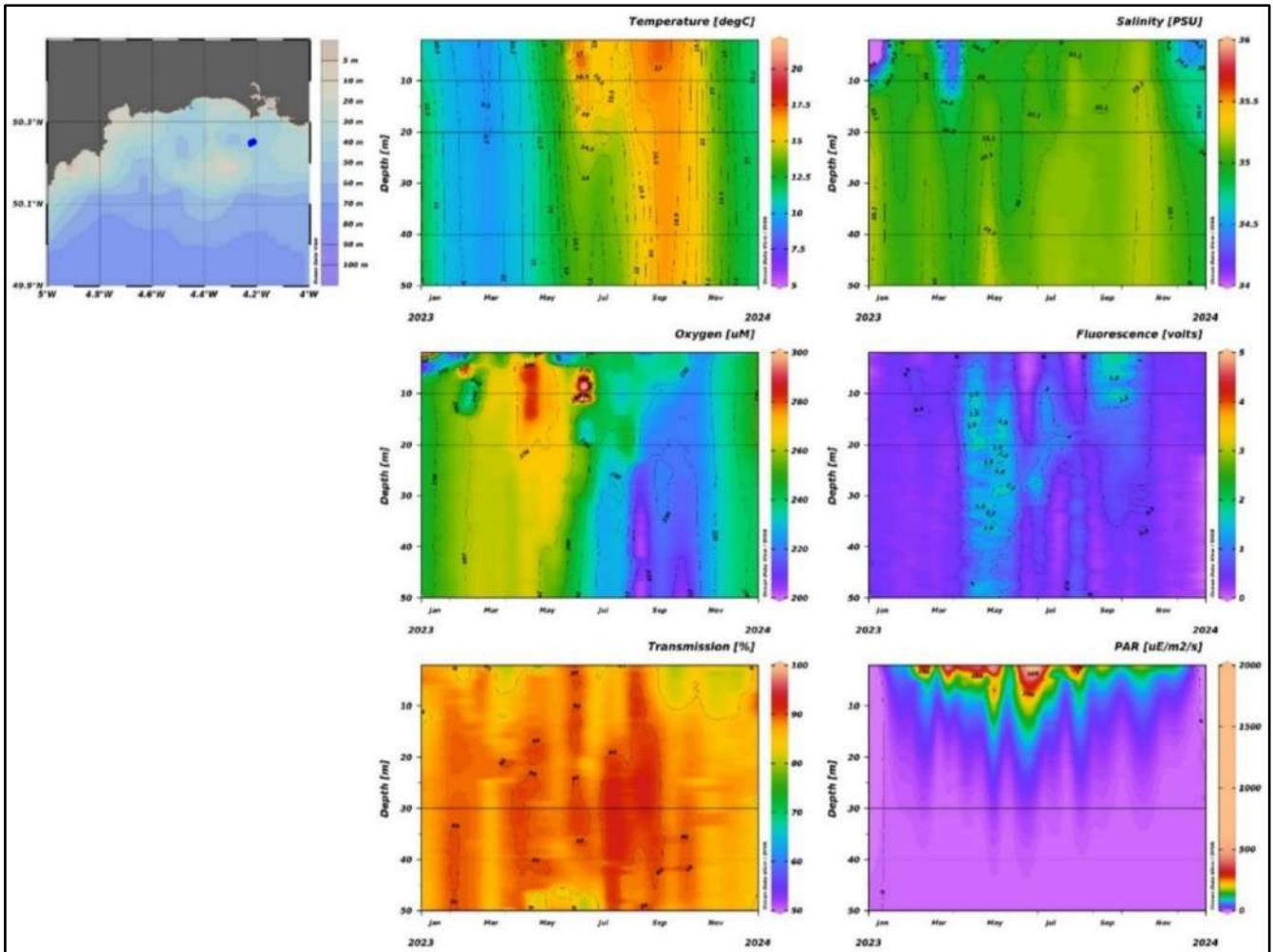
Vertical profiles for multiple parameters are taken using the RV Plymouth Quest sampling CTD rosette on a weekly basis at station L4. Records are at fine enough resolution to observe the start of the thermal stratification of the water column in spring (typically April) and the breakdown in autumn (typically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

From Figure 4.2 (temperature) it can be seen that the year started with relatively warm conditions throughout the water column (well mixed, apart from fresher water intrusions at the surface) with temperatures around 9.5 °C. This cooled to the minimum recorded temperature (for 2023) in mid-March of 9.3 °C. Stratification became established in late April / early May, with the maximum stratified state (unusually) in late-June (briefly: surface around 17.8°C; depths below 30 m around 13.9 °C), this associated with the sustained meteorological (and marine) heat wave.

Stratification was gradually eroded in mid-October and the water column finally became mixed in late October (15.6 °C throughout). This late breakdown in stratification likely linked to the early autumn heatwave during September.

Several freshening events (see Figure 4.2 - salinity) were observed in 2023 as a decrease in salinity below the background value of 35.2 PSU. These were particularly marked in January, March-April and November-December 2023 (these latter events likely linked to named storms Ciaran, Debi, Elin, Fergus, Gerrit). 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.

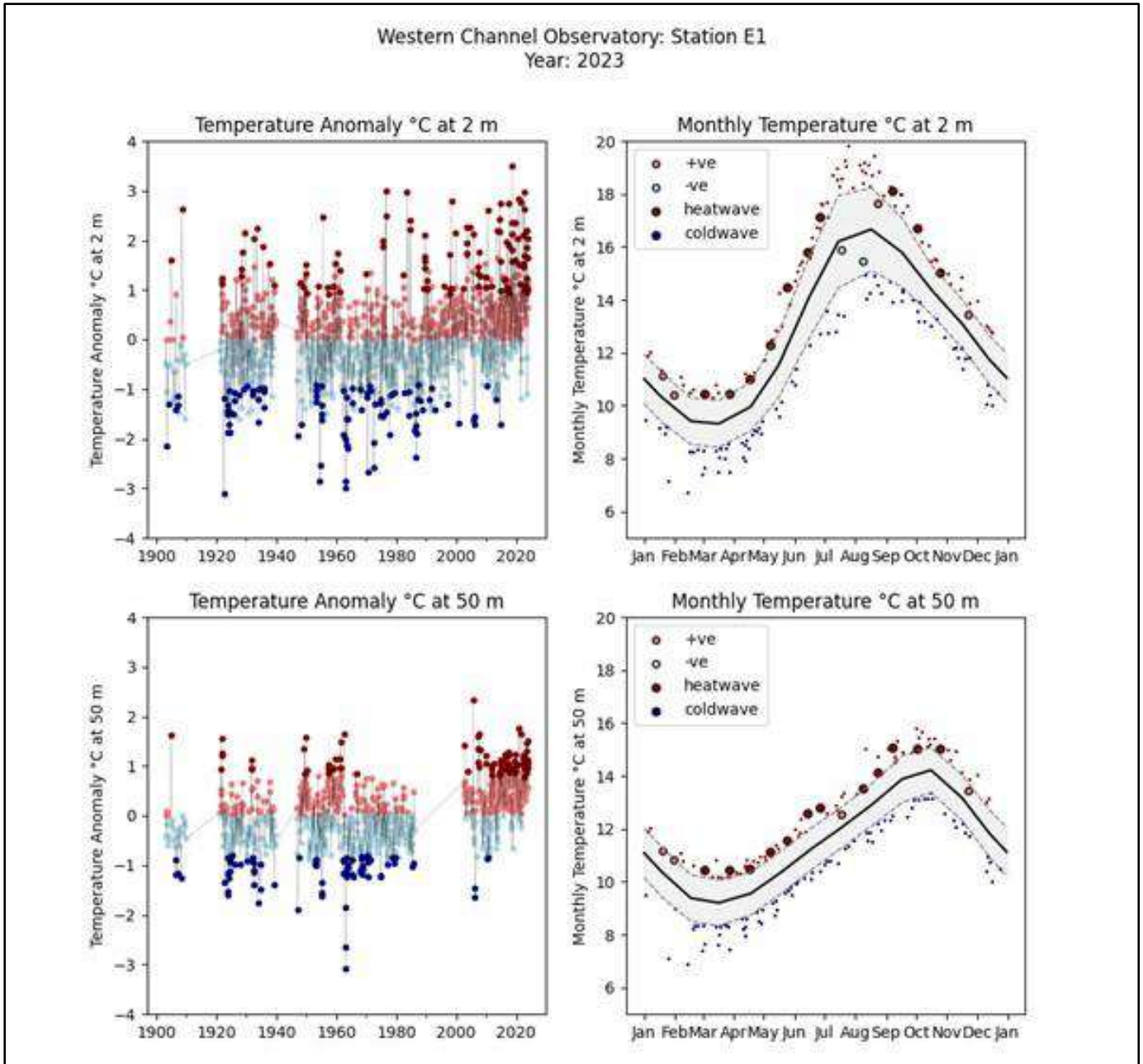




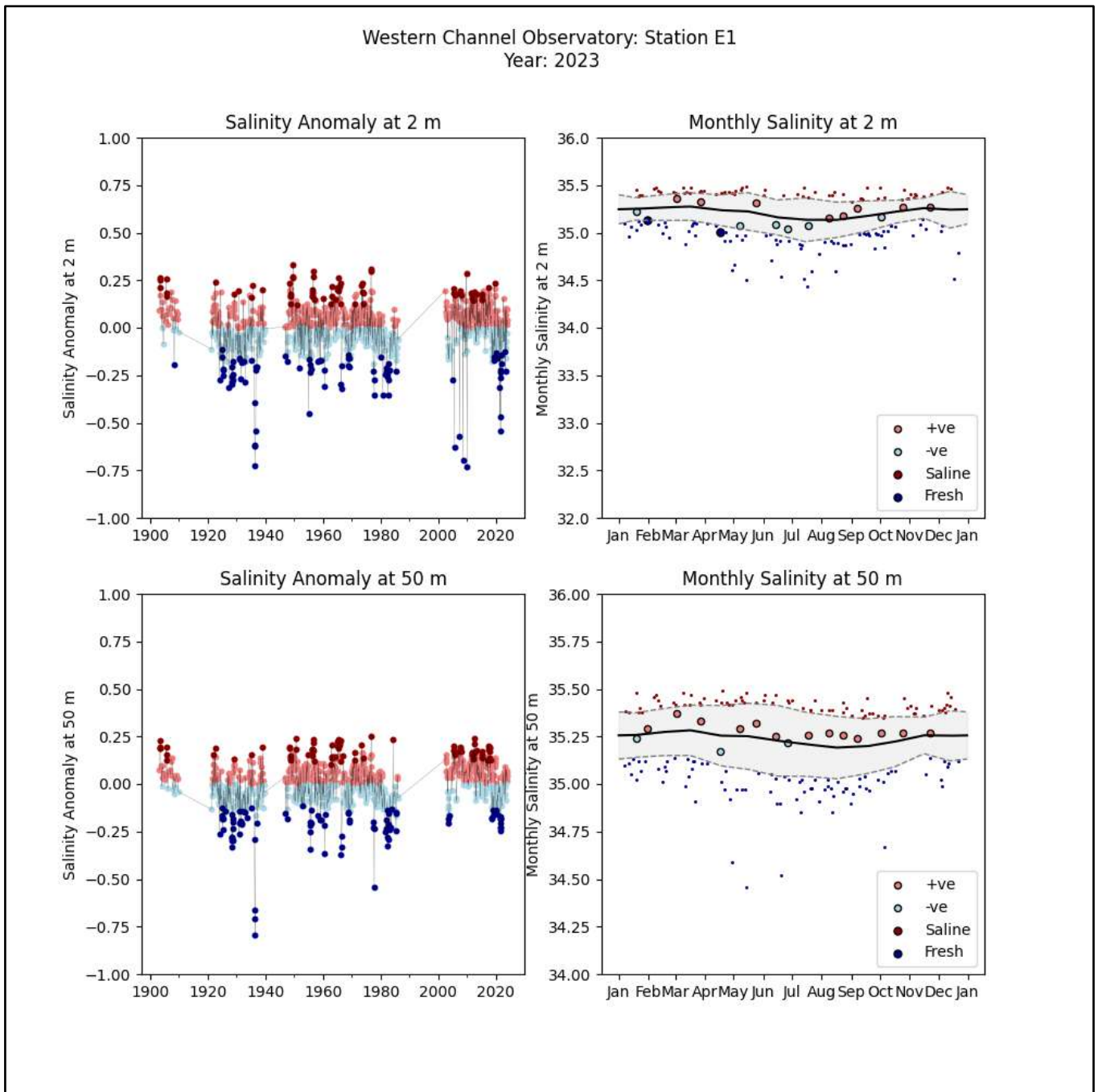
**Figure 4.2.** Conditions throughout the water column at station L4 during 2023 from individual profiles taken using a rosette sampler with multi-parameter “CTD”, deployed from the RV Plymouth Quest.

Figure 4.3 (below) 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 2023 above average and only reached a minimum temperature of just below 10.4°C in late January (although no sampling was possible during February). The spring and early summer posted temperatures consistently at or above the 90<sup>th</sup> centile, which can be categorised as a Marine Heat Wave (MHW). The distinct atmospheric heatwave events late May / June and again in early September were reflected in the oceanographic conditions, with the particularly noteworthy MHW during June being widespread across the entire Northwest European Shelf with some of the highest temperature recorded for this time of year. It is likely that this particular MHW event was driven by clear skies and light winds coupled with neap tides and long daylight hours. July and August were dominated by unsettled weather, indeed there were only two named storms by the UK and Irish meteorological services during the 2022/23 season (Antoni – 5<sup>th</sup> August 2023; Betty 18 – 19 August 2023) and unusually these being the summer rather than the winter. This is reflected in surface temperatures being below the average for these two months. Temperatures at the surface bounced back during September (coinciding with the meteorological heatwave) and resumed their > 90<sup>th</sup> centile at the surface pattern for almost the rest of the year. Temperature at 50 m depth, relatively well insulated from the surface insolation driven surface layer, were at or above the 90<sup>th</sup> centile for the most part of the year.



**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 – 2023), with dashed lines giving the 10<sup>th</sup> (lower) and 90<sup>th</sup> (upper) centiles, with the grey region being within this envelope. Large symbols represent individual observations (n=16) made by the RV Plymouth Quest during 2023. Dark red points represent data outside above 90<sup>th</sup> centile and dark blue below 10<sup>th</sup> centile. Record temperatures for given dates of any year during series represented by small points if outside the 10 – 90<sup>th</sup> centile. A Marine Heat Wave is defined as a temperature above the 90<sup>th</sup> centile.

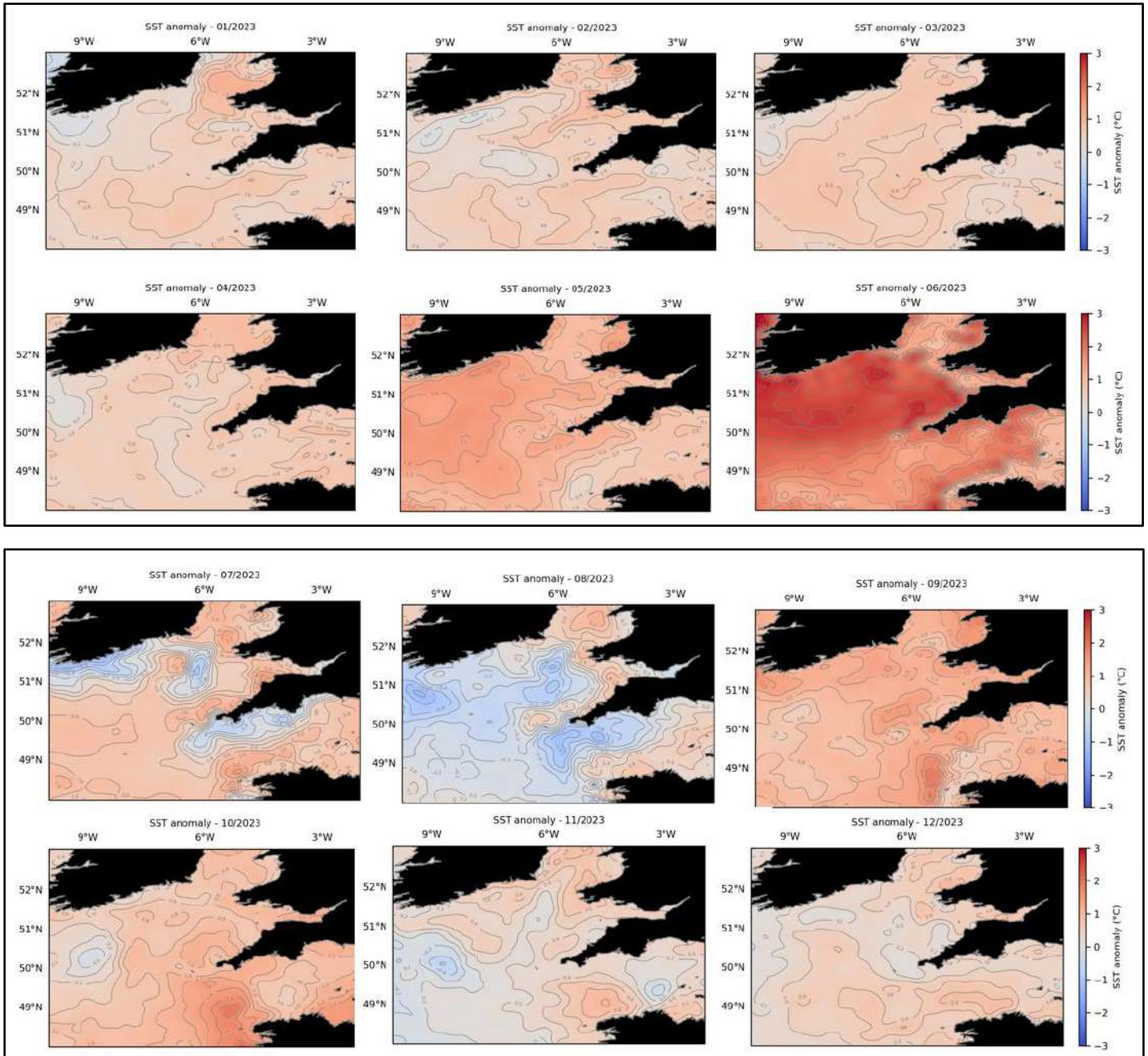


**Figure 4.4.** E1 salinity time-series and anomaly analysis (Left panels at surface and 50m) with light red points showing positive and light blue negative anomalies. Right panels: Solid lines show mean monthly salinities (period 1903 – 2023), with dashed lines giving the 10<sup>th</sup> (lower) and 90<sup>th</sup> (upper) centiles, with the grey region being within this envelope. Large symbols represent individual observations (n=16) made by the RV Plymouth Quest during 2023. Dark red points represent data outside above 90<sup>th</sup> centile and dark blue below 10<sup>th</sup> centile. Record salinities for given dates of any year during series represented by small points if outside the 10 – 90<sup>th</sup> centile.

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

For almost the entire duration of 2023 the waters were around the long-term mean salinity throughout the water column apart from late January and May.

Western English Channel / Celtic Sea as a whole



**Figure 4.5.** Sea-surface Temperature (SST) monthly anomalies during 2023 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 2023 from the 1991 – 2020 mean. June 2023 is noteworthy in that anomalies are 2 – 3 °C above the long-term mean in the Celtic Sea and 1 – 2 °C above the long-term mean in the western English Channel (reflected in the analysis for E1 – Figure 4.3). Positive anomalies generally dominate during 2023, although negative anomalies are particularly apparent around the SW coastline during July and more widespread during August (1°C below) which corresponds to the unsettled weather during those two summer months.

**Appendix**

[A summary of storm events is now included in Section 5.]

**UK Met Office Climatological summaries**

Winter (December – February 2022/23):

[https://www.metoffice.gov.uk/binaries/content/assets/metofficegovuk/pdf/weather/learn-about/uk-past-events/summaries/uk\\_monthly\\_climate\\_summary\\_winter\\_2023.pdf](https://www.metoffice.gov.uk/binaries/content/assets/metofficegovuk/pdf/weather/learn-about/uk-past-events/summaries/uk_monthly_climate_summary_winter_2023.pdf)

Spring (March – May 2023):

[https://www.metoffice.gov.uk/binaries/content/assets/metofficegovuk/pdf/weather/learn-about/uk-past-events/summaries/uk\\_monthly\\_climate\\_summary\\_spring\\_2023.pdf](https://www.metoffice.gov.uk/binaries/content/assets/metofficegovuk/pdf/weather/learn-about/uk-past-events/summaries/uk_monthly_climate_summary_spring_2023.pdf)

Summer (June – August 2023):

[https://www.metoffice.gov.uk/binaries/content/assets/metofficegovuk/pdf/weather/learn-about/uk-past-events/summaries/uk\\_monthly\\_climate\\_summary\\_summer\\_2023.pdf](https://www.metoffice.gov.uk/binaries/content/assets/metofficegovuk/pdf/weather/learn-about/uk-past-events/summaries/uk_monthly_climate_summary_summer_2023.pdf)

Autumn (September - November 2023):

[https://www.metoffice.gov.uk/binaries/content/assets/metofficegovuk/pdf/weather/learn-about/uk-past-events/summaries/uk\\_climate\\_summary\\_autumn\\_2023.pdf](https://www.metoffice.gov.uk/binaries/content/assets/metofficegovuk/pdf/weather/learn-about/uk-past-events/summaries/uk_climate_summary_autumn_2023.pdf)

Winter (December – February 2023/2024):

[https://www.metoffice.gov.uk/binaries/content/assets/metofficegovuk/pdf/weather/learn-about/uk-past-events/summaries/uk\\_climate\\_summary\\_winter\\_2024.pdf](https://www.metoffice.gov.uk/binaries/content/assets/metofficegovuk/pdf/weather/learn-about/uk-past-events/summaries/uk_climate_summary_winter_2024.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 2023 and in the winter of 2023-2024

Bob Earll [bob@bobearll.co.uk](mailto: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](mailto: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, Sue Sayer, Dan Jarvis, Duncan Jones and Paul Naylor.

### Conclusions

The patterns of storms in the spring of 2023 were unremarkable but were more *normal* in the autumn of 2023 and in the winter of 2023 to 2024. There were very few named storms in the January – April period of 2023. The impact on natural systems, species and habitats was on the unremarkable side of normal, but seal pups and juveniles were seriously affected by the autumn storms.

### 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 impact 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. This note covers 2023 and because the way we view the impacts of the winter storms spans the winter months of 2023 and 2024. Assessing the impact of storms is complicated, but *extreme* storms have both significant consequences for society and natural systems, and they have a high media profile.

When storms do produce significant events the marine and coastal community do record these events and so lack of records does give a sense of 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.

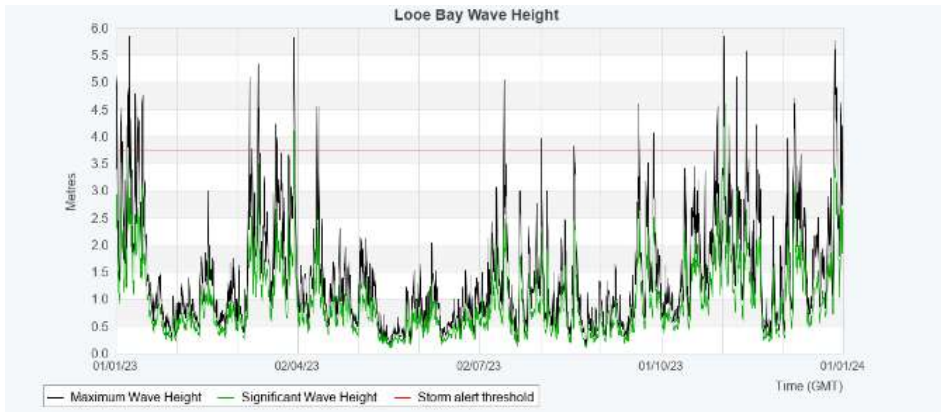
### Named Storms 2023 – 2024

Storm naming became confusing as all the other national meteorological agencies have adopted the practice. See [https://en.wikipedia.org/wiki/2023-24\\_European\\_windstorm\\_season](https://en.wikipedia.org/wiki/2023-24_European_windstorm_season)) and UK / Ireland storms: (<https://www.metoffice.gov.uk/weather/warnings-and-advice/uk-storm-centre/index>).

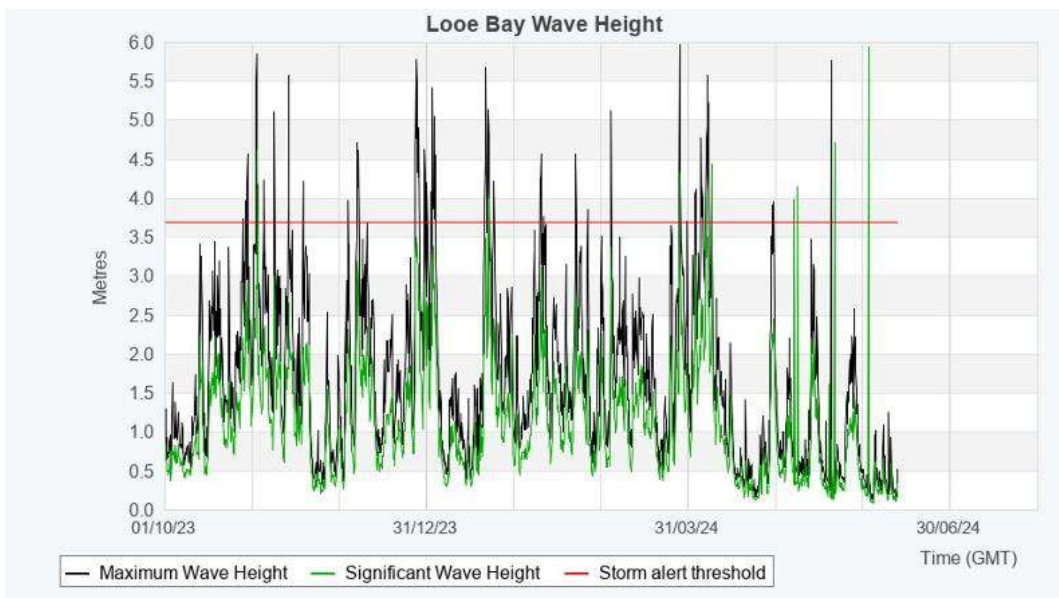
There was only one named storm in the ‘winter - spring’ period of Jan – April 2023: storm Mathis.

- [Mathis 31<sup>st</sup> March 2023](#)
- Antoni (5 August 2023)
- Betty (18 – 19 August 2023)
- Agnes (27 – 28 September 2023); less impact than Ellen & Francis in August 2020)
- Babet (18 – 21 October 2023)
- Ciaran (1 – 2 November 2023)
- Debi (13 November 2023)
- Elin (9 December 2023)
- Fergus (10 December 2023)
- Gerrit (27 – 28 December 2023)
- Henk (2 January 2024)
- Isha (21 – 22 January 2024)
- Jocelyn (23 – 24 January 2024)
- [Kathleen](#) (6-7<sup>th</sup> April)

## South-West Marine Ecosystems in 2023 (The State of South-West Seas)



**Figure 5.1.** Wave heights – Looe Bay – in 2023 prepared by the Channel Coastal Observatory. See <https://coastalmonitoring.org/realtimedata/?chart=98&tab=waves>



**Figure 5.2.** Wave heights in Looe Bay Winter 2023-2024.

Katherine Bewsher Coastal Project Support and Engagement Officer – Anglian Coastal Monitoring Programme  
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### Storms and weather

There were only two named storms in the spring of 2023, but the autumn saw a series of named storms and there was a steady, normal, pattern of storms throughout the winter of 2023-24 (Figure 5. 2) including many named storms. None of these storms produced the extreme impacts on natural systems seen in 2013-2014 for example.

Stormier conditions and inclement weather do have the effect of reducing observations by those who are in or on the sea. Paul Naylor remarked, 'March 2023 seems to have been a very stormy month and I can't remember doing as few dives in a March before [normally busy time due to fish egg laying etc]. Keith Hiscock described December 2023 as, 'an appalling month of weather'. Duncan Jones commented, 'From July onwards in 2023 we typically had higher sea states and in the late summer into autumn this increased and in to winter we seemed to have storm after storm passing through including a high number of named storms. High sea states make cetaceans difficult to detect so this

could have caused a decrease in sightings. In bad weather there are also less people out looking. Boats are not out on the water and less people visit the coast. Higher sea states hinder observers of cetaceans on ferries and cruise ships reducing their detection rates.’ The effect of extreme events – rainfall prompting coastal rock falls, or rain bomb/hailstorms flushing seals from beaches are also weather events to be factored into climate change considerations.

### Effects on species

**Plankton.** There were no extreme storm effects on planktonic communities in 2023 comparable with 2013-14 (Atkinson, et al 2021 <https://doi.org/10.1002/lno.11613>). Storms do bring a succession of gelatinous plankton onto the beaches, and this is reflected in the seasonality of observations of the by-the-wind sailor *Vellella* and Portuguese man o’war *Physalia* (see Sanders, Section 6). There are a host of oceanic species which are routinely washed up on south-west shores after storms (see Hiscock Section 7), including species which have come across the Atlantic on plastics and other debris.

**Seabed and seashore.** Keith Hiscock didn’t receive any reports of major wash-outs of shallow benthic species in 2023.

**Seabirds.** Alex Banks similarly hadn’t received any records for bird wrecks in 2023.

**Seals.** Dan Jarvis (British Divers Marine Life Rescue) reported ‘We certainly had a very tough and busy season for seal casualties particularly between October to December 2023 and undoubtedly some of this can be linked back to storm activity (including times when it was rough but not enough to make for a named storm). If I had to put it on the scale to cover that time period I would suggest it was leaning towards extreme - but noting that we did not have any one-off extreme events like in October 2017 when there was massive mortality and casualties. Therefore the ‘extreme’ description is more due to a prolonged period of regular/repeated storminess that sustained a consistently high rate of casualty reporting and hospitalisation.

We admitted 89 pups to the BDMLR Cornwall Seal Hospital between September to December, which is the most we have ever had for that time period. However, taken in the full context of the seal rescue season until May 2024, the latter half of the season was surprisingly less dramatic with fewer casualties than average and therefore makes the overall season look like ‘just’ a busy one, not a record.’

Sue Sayer commented on the autumn of 2023: ‘Given timings and frequency of storms after 21/10/23 it seems likely that both white coats, but particularly moulted pups were most affected by the storms. The Cornwall Wildlife Trust (CWT) Marine Strandings Network data show just how many pups died in 2023, approx. 120 of the 301 dead seals recorded – second only to 2021. Approx half of dead seals in 2023 were white coats and moulted pups. More seals appear to be dying in Cornwall than born! This reinforces the observation that seal pups are particularly vulnerable to storm impacts.

### South-West Storms in context


Extreme storm events can have major consequences both in terms of socio-economics and natural systems. We can refer to storms that are widely reported in the media such as for [storm Emma in 2018 which washed away 400m](#) of the Slapton road and when the railway [embankment was washed away at Dawlish](#) in 2014. Angus Atkinson and colleagues (2021, <https://doi.org/10.1002/lno.11613>) described the effect of the 2013-14 storms as “a one in a hundred year event”, on plankton communities. ‘*The extreme storms in winter 2013/2014 caused high metazoan mortality, steep size-spectral slopes, and reduced plankton biomass. However, recovery was within months, demonstrating an inbuilt resilience of the system.*’ [Effects on seashore and nearshore marine life](#): Keith Hiscock compiled a report on the impact of the [2013-2014 storms of the nearshore marine](#) life which highlighted the range of species which can be affected. Most of the winter storms in the south-west come from that direction but in February 2021 [storm Darcy](#) from the east accompanied by very cold weather caused significant sediment movements and a major washout of deeper burrowing benthic species of bivalves, *Ensis* and *Cerastoderma* on the beaches of the south coast of Devon and Dorset.



## 6. Plankton

**Editors:** Angus Atkinson, Andrea McEvoy, Claire Widdicombe, Amanda Beesley, Glen Tarran, Jeanette Sanders, Keith Hiscock

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Jeanette Sanders (for observations of gelatinous/stranded zooplankton): [sea@seadreameducation.com](mailto:sea@seadreameducation.com);  South Devon Jellyfish Survey

### Headline conclusions

- Exceptionally high numbers of filter-feeding salps were recorded during late summer, representing a rapidly increasing trend in the last few years along the southern coasts of the SW peninsula. This increase may in part be attributable to the ability of salps to feed on very small 'pico' particles. Temperature is unlikely to be the main reason for this change as the species found occurs in cold and warm waters.
- A higher-than-average year for some jellyfish (e.g. barrel and especially crystal) but unremarkable overall for most jellyfish, Ctenophores and surface-dwelling *Physalia physalis* and *Velella velella* washed in after storms
- Long-term monitoring shows 2023 as the continuation of a widespread, long-term, mainly summer decline in key elements of the food web (i.e. larger phytoplankton and copepods) as reported in previous years.

### Introduction

This chapter is divided into phytoplankton and zooplankton sections and uses data from three sources. These comprise: the monthly records submitted to SWME and kindly compiled by Paul Naylor; the citizen science observations that form the South West jellyfish survey, which are compiled, presented and analysed by author Jeanette Sanders; and the observations at the Western Channel Observatory WCO south of Plymouth (described in Section 4). At the time of writing these WCO data are still being quality controlled and only salp data are provided in quantitative form.

### PHYTOPLANKTON

#### Western Channel Observatory phytoplankton report

Typical seasonal patterns in phytoplankton succession were seen at the WCO's two sites, L4 & E1, during 2023. However, an early spring bloom was observed in February, when high pressure and sunny conditions enabled a diverse diatom community and colonies of *Phaeocystis* to flourish. This is unusual and was also recorded in the eastern English Channel along the French coast. The spring bloom proper, consisting of high numbers and diversity of colonial diatoms and *Phaeocystis*, occurred in April and lasted through to May. Dinoflagellates, including low numbers of the HAB genus *Alexandrium*, appeared to thrive during the marine heatwave event in June. Summer months were characterised by the usual 'needle plankton' i.e. pennate diatoms as well as dinoflagellates that prefer warmer temperatures. Several different species of coccolithophores were observed in October before the start of the winter storms in November.

#### Summary of submitted and 'harvested' phytoplankton observations

Observations made by rockpoolers, divers and others have been maintained through the year and are collated here.

The 'May Water' bloom of *Phaeocystis* appeared to start at the Eddystone in very early May but did not materialise into the usual 'thick' brown globules anywhere, apparently, in much of the south-west. However, divers reported a

dense bloom in Torbay. Otherwise, there was minor evidence of mucus strings and 'milkyness' (notable reports from Christine Ingram, Paul Naylor and Matt Slater).

The Archive for Marine Species and Habitats Data (DASSH) noted reports of *Noctiluca scintillans* in St Austell Bay, Cornwall during the higher temperatures in June.

## ZOOPLANKTON

### Summary of submitted and 'harvested' zooplankton observations

For broader context, the Marine Conservation Society produced a UK wide report showing that between the 1st October 2022 and 30th September 2023 jellyfish sightings increased by 32% across the UK but [we do not know the reasons for the increased sightings](#). Barrel jellyfish were the most common, but comb jellies and crystal jellyfish were also reported. As some species have preferences for different parts of the UK it can be difficult to make direct comparisons of these results with the south-west sightings reported below. For a context of these 2023 observations in the south-west, relative to those spanning the period 2019-2022, please see the following section "South West Jellyfish Survey".

Species that live (but do not actively swim) at the sea surface and including species attached to floating material are described as 'neuston' or 'ocean drifters'. They may be seen at the sea surface and are often recorded when they wash-up on the shore. They include hydrozoan 'jellyfish' but not scyphozoan jellyfish. Those species that have been recorded washed-up on the shore are described in 'Seashore and Seabed' (Section 7). Records described in South West Jellyfish Survey (and include, for context, observations from areas of south-west Britain outside of the remit for SWME) below are, however, a combination of standings and 'live' sightings.

### June 2023

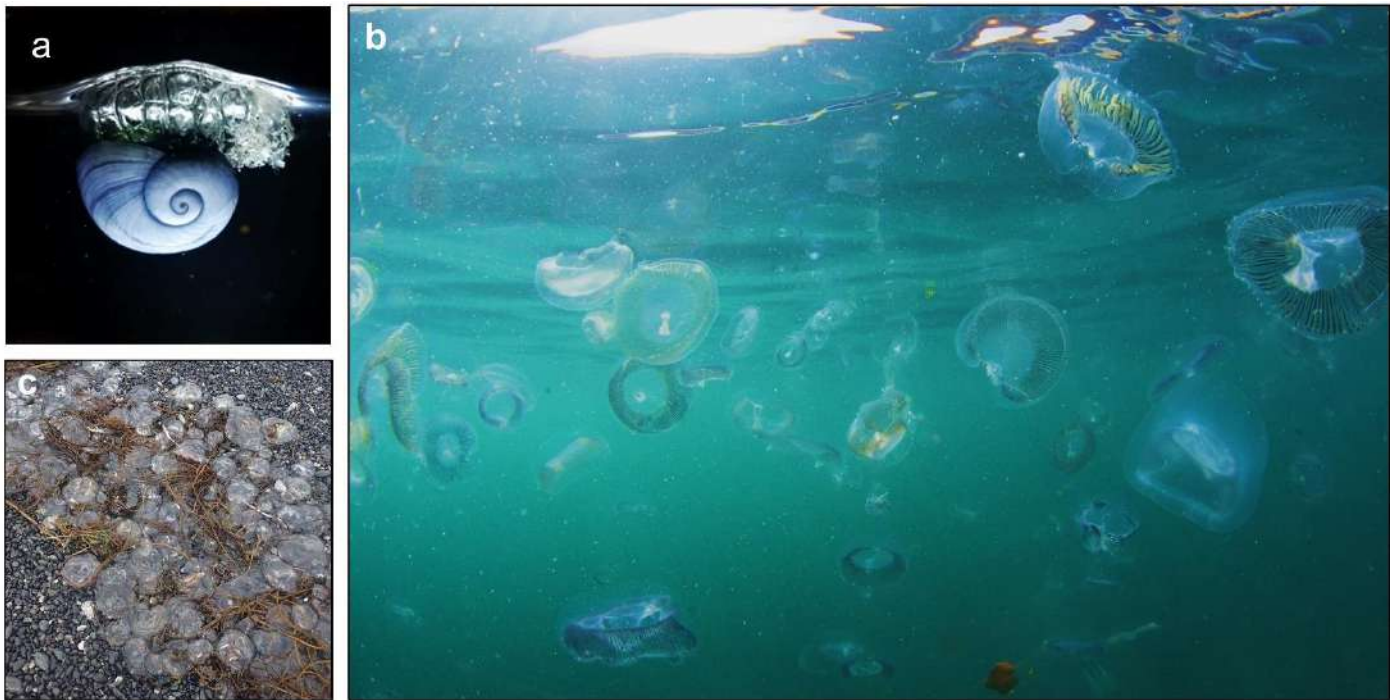
Theo Vickers reported blooms of huge compass jellyfish off the Isle of White this week. Compass jellies are a visually spectacular species and iconic of the coastal seas of the NE Atlantic in early summer! Juvenile fish present amongst tentacles too!

### July 2023

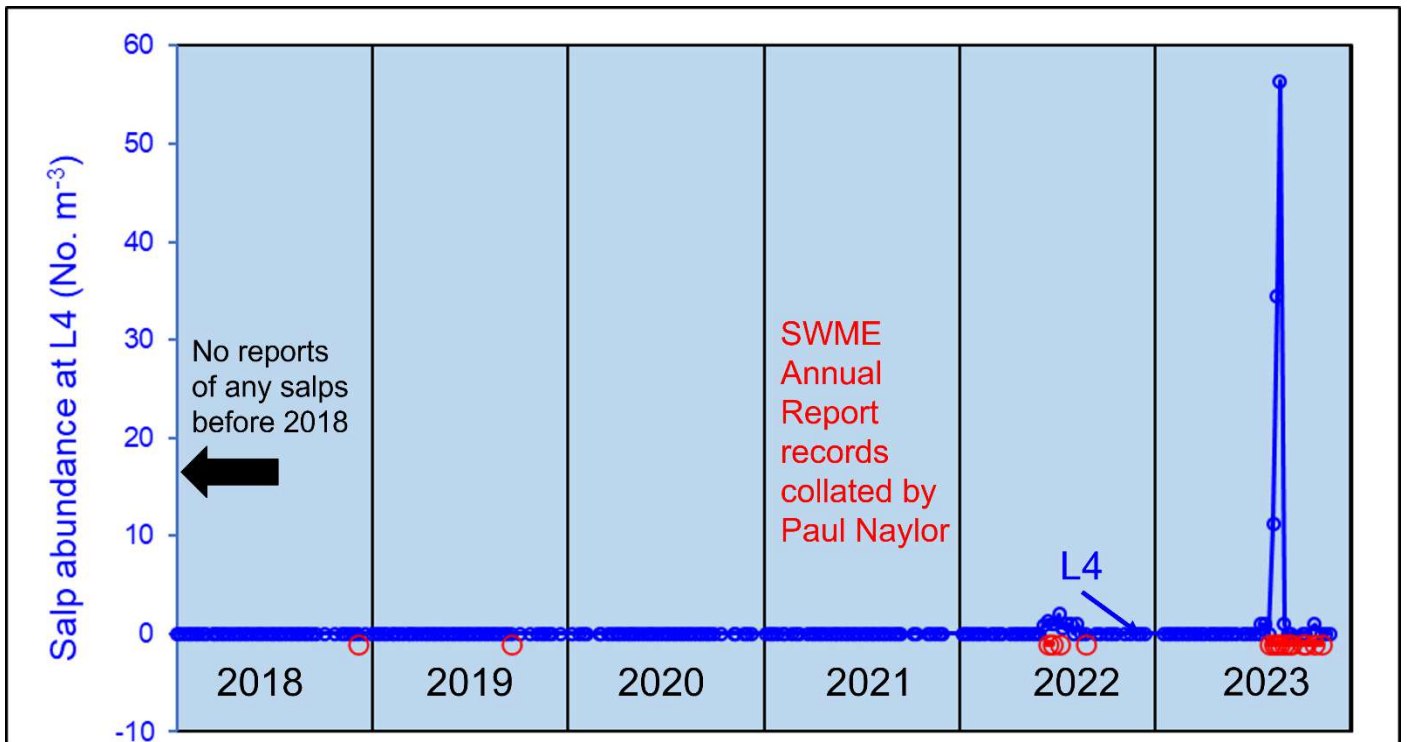
Barrel jellyfish were observed (by Matt Slater) off Holywell Beach on 26<sup>th</sup> July.

### August-September 2023

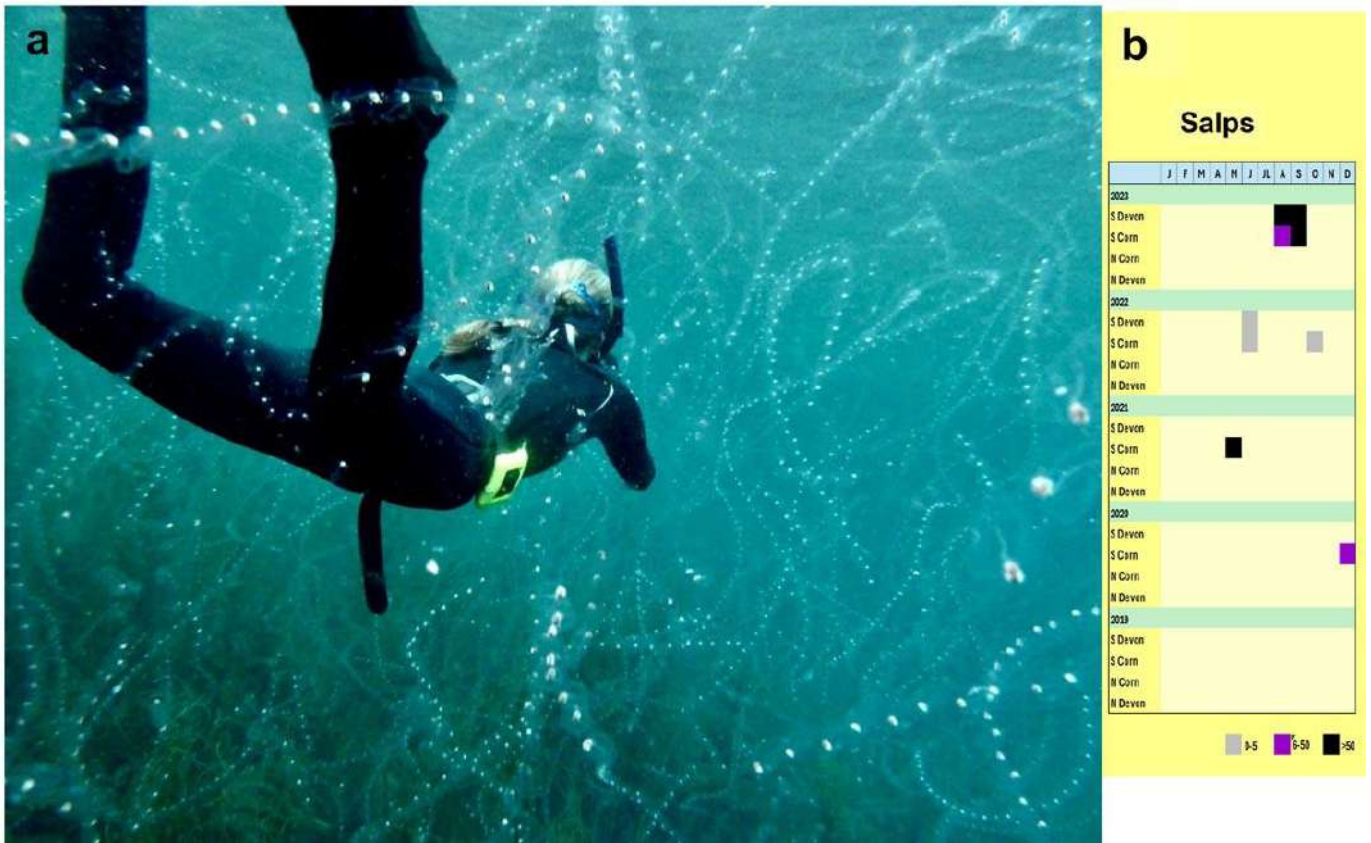
There were several separate observations from off south Devon and Cornwall of very large numbers of salps *Salpa fusiformis* in the water column towards the end of August and into early September. They included out of Plymouth (PML surveys), at the Plymouth Sound Dropoff (Catherine Gill), at Porthcurno on The Lizard Peninsula and at The Longships off West Cornwall (Matt Slater). Context is important and reference to the [Plymouth Marine Fauna \(1957\)](#) helps give that context: "*Salpa fusiformis* Cuvier [Berrill, 1950, p. 293] Aggregated form at surface, N. of Eddystone, Aug. 1901 (R.A.T.): Stations E. 1, L.4, common, 9.7.25; L.4, 4.9.25 (M.V.L.): abundant, invading Sound and Hamoaze, 1917; abundant, aggregate and solitary forms, off Eddystone, Aug.-Oct. 1932 (Russell and Hastings, 1933)".



**Figure 6.1** a Image of the holoplanktonic gastropod (sea snail) *Janthina janthina*. Image courtesy of Nikki Banfield 'Barefoot photographer', Isles of Scilly, 15<sup>th</sup> January 2023, b,c Crystal jellies (*Aequorea* spp.) sometimes with *Salpa fusiformis*. Photos: Matt Slater, Porthkerris, reported last week of August to first week of September.



**Figure 6.2.** Time series of abundance of salps from the weekly sampling at the Plymouth L4 monitoring site (see Section 4) and occurrence records (non-quantitative data presented here as red circles) harvested from the SWME annual reports. The carbon mass data for salps have not yet been estimated and compared to that of the other dominant zooplankton but we estimate that it could dominate the carbon in the weeks when they reach maximum abundance.



**Figure 6.3 a.** Extremely high abundances of salps photographed at Porthkerris (Lizard Peninsula) in August 2023. Image: David Hamilton, Cornwall Underwater. **b** 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.

In late August and early September, large (dinner plate size) *Aequorea* sp. (hydrozoan jellyfish) including in large numbers feeding (“stuffing themselves”) on salps off the Plymouth Sound Dropoff (Catherine Gill). Two seen and photo’d off Whitsand and Cawsand Bay on 3<sup>rd</sup> September provisionally identified by KH as *Aequorea coerulescens*. Also being seen in Lizard area of south Cornwall and in the [Channel Isles](#). *Aequorea coerulescens* is very similar in appearance to *A. forskalea* which is more likely (also identified as *A. forskalea* by Steve Trehwella). *A. vitrina* is a likely identification for the transparent ones.



*Aequorea forskalea* Fig 2 umbrella margin David Conway 260923

*Aequorea pensilis* Fig 1 16 mm wide umbrella margin David Conway 260923

*Aequorea vitrina* Fig 3 Tentacles David Conway\_260923

**Plate 6.4.** Identification of *Aequoria* spp. Images: David Conway.

Matt Slater (Cornwall Wildlife Trust) notes: Dr Paul Gainey has been helping me identify the species of the large bloom of *Aequorea* sp. Crystal Jellies found around the Cornish coast in early September (6<sup>th</sup> – 12<sup>th</sup>) that were

particularly densely accumulating in Falmouth Bay around Porthkerris. Images were sent to David Conway of the MBA who inspected the images and explained that the best way to identify to species level is to look at the radial canals (the vertical lines inside the animal when looking from the side) and the area where they meet the tentacles below. He has identified the species as *Aequorea forskalia* as the ratio of radial canals to tentacles is 1:1.

In other species the ratio is different so in *Aequorea vitrina* it is 1:2 or 3 (i.e. one radial canal to two or three tentacles). *Aequorea pencillis* is 3:1 (i.e. three radial canals to one tentacle) and *Aequorea macrodactla* is 3:1.

KH notes: a specimen of the likely *A. forskalea* was collected by MBA Sepia (research vessel) and DNA analysed by the Darwin Tree-of-Life Team at the MBA. It transpired that there was no reference DNA information available.

There are very few records of *A. forskalea* in UK waters but there have been a handful around the Cornish coast- the bloom that was witnessed in September is unprecedented: a word not to use lightly! KH checked information in [Russell's volume on medusae](#) and inspected records in the [Plymouth Marine Fauna \(1957\)](#) where only *A. pensilus* was reported as 'abundant' on one occasion.

### Salps: why have they increased in recent years?

Summing -up the year for observations around the coast, the clear stand-out feature was the high numbers of salps from July onwards. These were recorded quantitatively at L4 and shown in Figure 6.2a, alongside the citizen science reports. Both show the remarkable increase over the last few years, reaching unprecedented densities (Figure 6.3). At the SW Marine Ecosystems Conference, Angus Atkinson presented an analysis of the traits which led to some species increasing or decreasing over the 35-year span of regular sampling at the Plymouth L4 site. The general tendency was for taxa that were filter feeders, able to filter out tiny (i.e. less the 2 micron "pico"-size) particles from the water were being advantaged and were tending to increase at the site. Salps are in this category and other increasing taxa are doliolids (cousins of salps) and appendicularians, both with broadly similar feeding habits which include retention of very small particles. Work is ongoing to understand whether the heatwave reported earlier in the 2023 summer favoured rapid reproduction of salps and an increase later in that year. The L4 salps were identified as *Salpa fusiformis* (a widely distributed species in both cold and warm waters), so there is not a simple, temperature-based, explanation for the increase, for example in a warm water species being pushed up into the West Country from the south as the isotherms move north under warming. Whether there is a positive predator-prey type of dynamic relationship between crystal jellyfish and salps is worth exploring.

**October – November 2023.** The DASSH team at the MBA report a lot of sightings of the Portuguese Man O' War and By-the-Wind Sailors before and after recent storms. Also, a 'handful' of observations of Portuguese Man O'War in Dorset (Julie Hatcher). Nick Pope records *Veleva* and *Physalia* in frequent numbers off Looe 8-9 Oct.



**Plate 6.5.** *Phronima sedentaria*. Image: Scott Reid.

Scott Reid (from the 'Isles of Scilly Notice Board') notes "A 'monstrous' discovery on Porthcressa yesterday - a female *Phronima sedentaria* (aka 'the monster in a barrel'), a rarely seen marine amphipod crustacean which I've been in search of for years!! The females parasitise salps, cutting in to them from one end before devouring their host from the inside. They then cut down what remains of the gelatinous tunic to construct a barrel-like vessel, where she will eventually give birth to, and raise, up to 600 young! Some sources suggest that the appearance and ecology of *P. sedentaria* was the inspiration behind the title creature in Ridley Scott's 1979 film 'Alien', or possibly the 'mother alien' in the 1986 sequel 'Aliens'." *Phronima sedentaria* also turned up at

Sennen Cove whilst Steve Trehwella notes: "last month one washed up on the Scillies [Micky Luv found and sent to

Steve Trehwella who posted on 13<sup>th</sup> November] and hit ITV news. A few years ago they turned up in numbers at Sennen Cove then the Scillies, not found too often though”. David Fenwick also posts on 13<sup>th</sup> November and refers to ‘yesterday’.

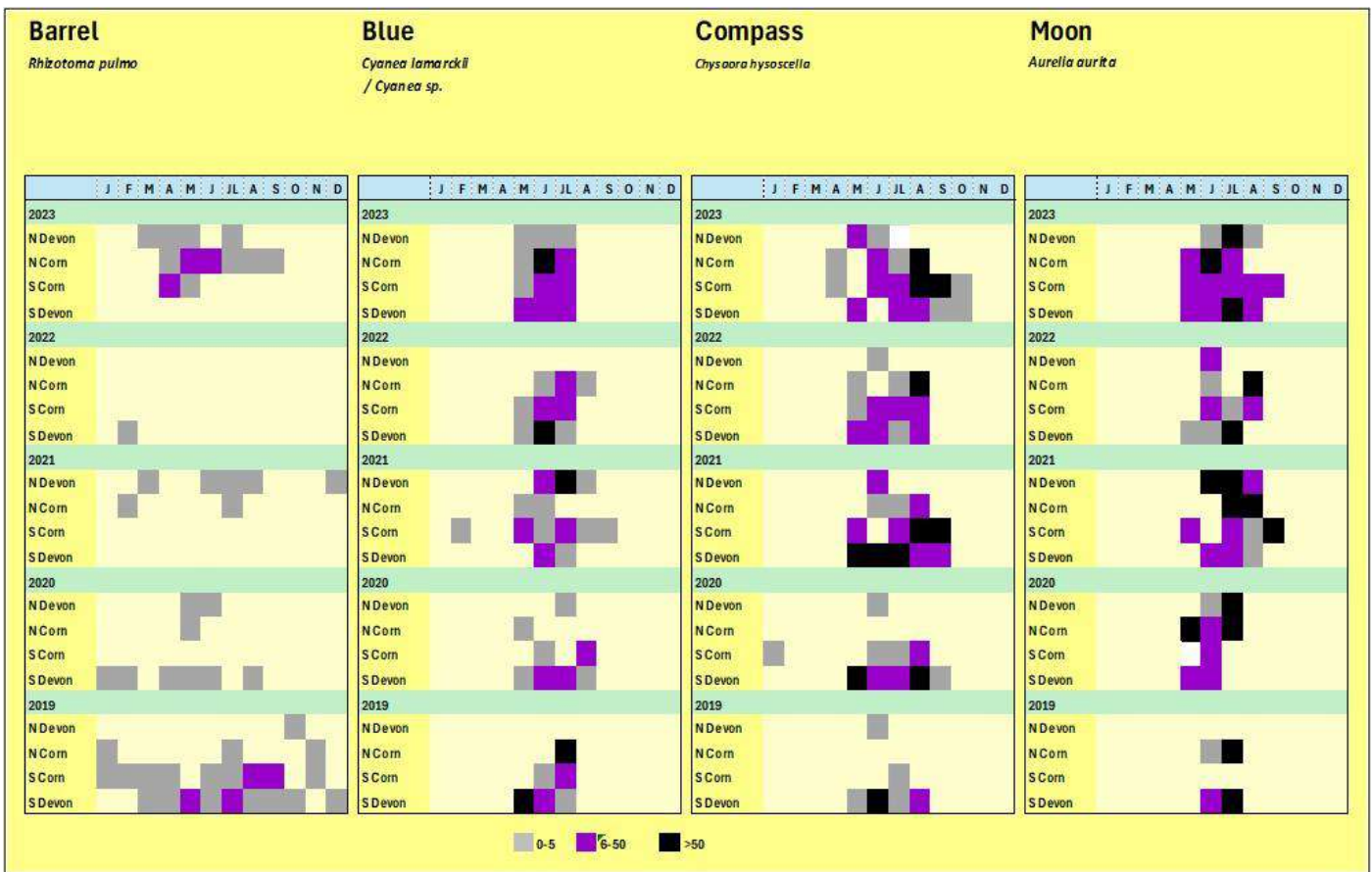
**December 2023.** A few by-the-wind sailors that were observed late December at Wembury Point and Tregantle.

**South West Jellyfish Survey**

This is a citizen science project: sightings of jellyfish / ‘jellies’ from around SW England reported by email ([sea@seadreameducation.com](mailto:sea@seadreameducation.com)) or by uploading details to a [Facebook page](#).

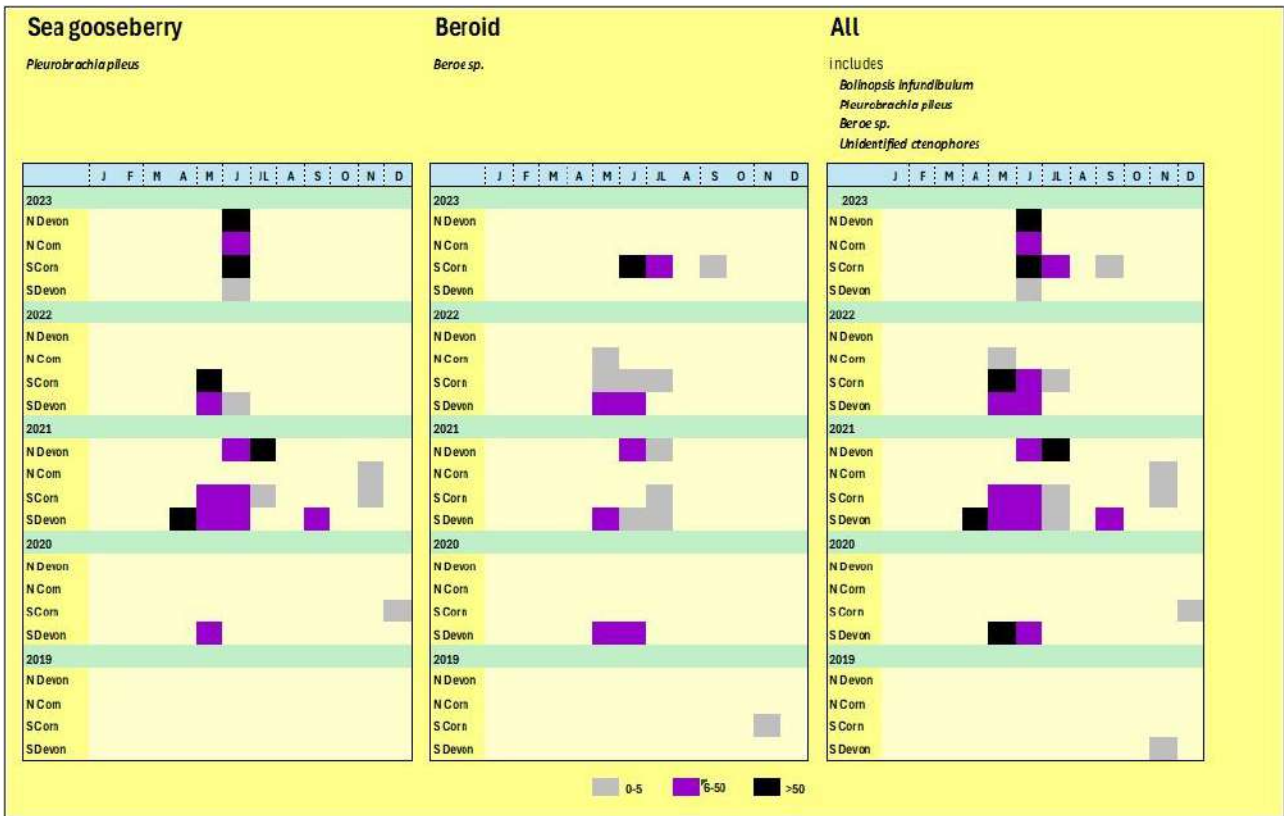
Sightings are included in analysis if they have (i) date (ii) location and (iii) species (ideally with photo but accept expert comments).

Figure 6.3b illustrates the abundance of salps by region. The figure shows the sharp increase in 2023 parallels that shown in Figure 6.2, as well as a very interesting additional feature. These late-summer sightings were mainly on the south coasts of Cornwall and Devon and not on the north. The fact that they were not seen on the north coasts could be due to relatively less observer effort here, but this is unlikely because other gelatinous taxa covered in this SW Jellyfish Survey (Figures 6.4-7) were very well recorded on both north and south coasts.

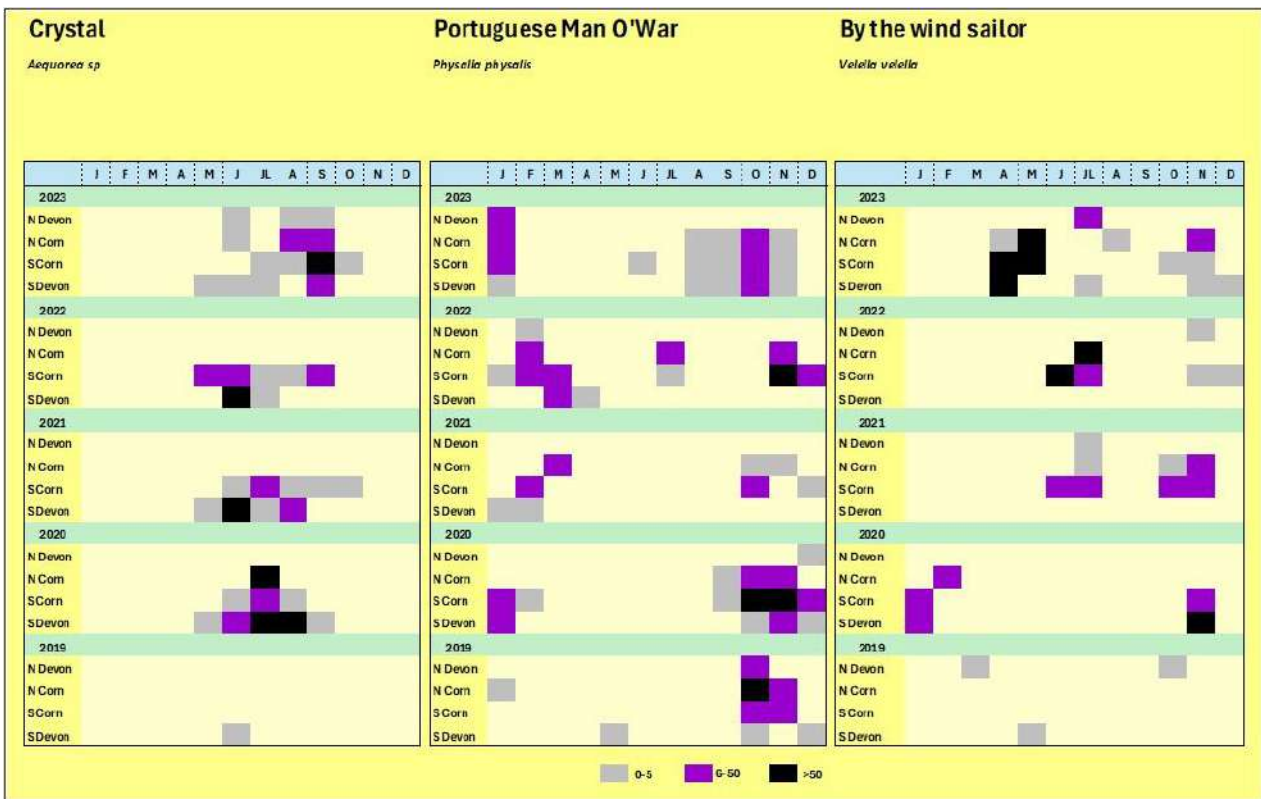


**Figure 6.4.** SW Jellyfish Survey. Records of abundance of the common and more easily identifiable jellyfish by subregion, month and year. Please see SWME Report for 2022 for counting method and a description of survey and its strengths and limitations. Colours reflect max number reported by any single sighting in that month: lightest grey = max 5; purple = max between 6 and 50; Black = max >50.

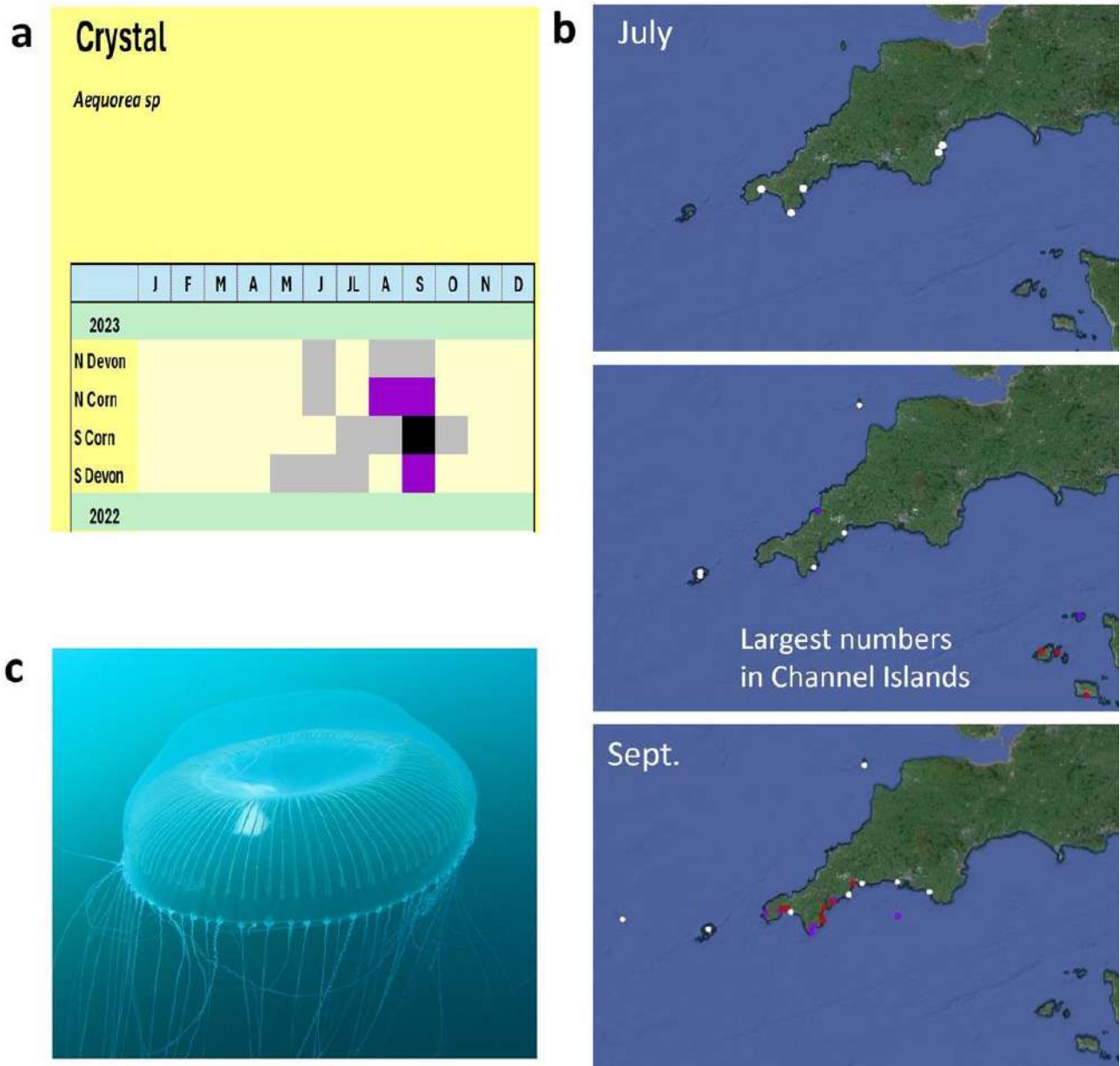
South-West Marine Ecosystems in 2023 (The State of South-West Seas)



**Figure 6.5.** 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.



**Figure 6.6.** 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.



**Figure 6.7.** More detail on the records of crystal jellyfish SW Jellyfish Survey. **a.** 2023 records. Please note: the highest abundance records, shown in black on the region/month/year plots are coloured red on the maps in panel **b.** **c** Crystal jellyfish identified as *Aequorea forskalea* with the help of Dave Conway (see monthly reports). Photo kindly provided my Matt Slater, from Porthkerris.

For the true jellyfish, 2023 was an unremarkable year for the more common and easily identified species (Figure 6.4). It was not a remarkable year for them, but records, particularly of barrel jellyfish, were higher than those in the last couple of years. Ctenophore recordings were also broadly similar to those in the last couple of years (Figure 6.5) as were the ocean drifters *Physalia physalis* and *Verella verella*, albeit with noticeably high numbers of the latter in late spring (Figure 6.6). There was much interest in crystal jellyfish *Aequorea* sp. and its identification this year (see preceding citizen science monthly reports). This year seemed a particularly good for them, notable by high numbers observed separately in multiple locations (Figure 6.7). There are a few historic records of large blooms but they do not seem to have been as extensive or long lived; similar blooms have not been recorded in the south-west in recent years.

Comb jellies continue to do well, having been barely reported before 2020 although sightings in 2023 were slightly later in the year than in previous years.



## 7. The Seashore and Seabed

Edited by: Keith Hiscock

The exercise of gathering information benefited from the collation of monthly observations undertaken by Paul Naylor and from the establishment of a '**Seashore and Seabed Community of Practice**' that met online on 16<sup>th</sup> February: Matt Slater (Cornwall Wildlife Trust); Toby Sherwin and Mike Puleston (The Shores of South Devon); Lin Baldock (Dorset); Julie Hatcher (Dorset Wildlife Trust); Steve Trehwella; Paul Naylor (Wembury MCA etc.); Charlotte Cumming; Paula Ferris (North Devon Coastwise); Robin Shrubsole (North Devon Coastwise); Ben Holt (The Rockpool Project); Isobel (Izzy) Allsop (Isles of Scilly). Others in the group unable to attend the meeting on 16<sup>th</sup> February but contributing comments: Chris Webb (Devon Seasearch); Esther Hughes and Angie Gall (Natural England); Mark Ward (Somerset Wildlife Trust) Carli Cocciardi (Devon Wildlife Trust); Coral Smith (Wembury Marine Centre).

Contact: [khis@mba.ac.uk](mailto:khis@mba.ac.uk)

**Records of non-native species are included in a separate section below.**

**Records of fish species associated with seabed habitats are included in the section on fish.**

### Conclusions

- Observations through the year have recorded the 'usual' range of events such as wash-outs of species, strandings of oceanic species, a small number of NE Atlantic marine species new to Britain being found. **'Nothing unusual' for 'events'**.
- Notable high abundances or 'increases' included that paddle worm (*Eulalia* sp(p)) egg masses were high at Wembury and in Dorset at least in February; continued higher abundances of Montagu's Crab *Xantho hydrophilus* all along the coast; continued increase in geographical extent and abundance of *Sabellaria alveolata*. **Some increases in extent and abundance especially of warmer water species.**
- Seagrass (*Nanozostera* (was *Zostera*) *noletii*) seems to be increasing in extent and abundance on intertidal flats in several inlets. In Plymouth Sound, sonar surveys have revealed that some areas of *Zostera marina* have increased in extent. Around 'Advanced moorings' (that reduce seabed scour) density has increased in places. **Seagrass species expanding in extent and abundance.**
- There is no increase of warm water species that might suggest significant climate change effects although the continued expansion of distribution and abundance of St Piron's Crab *Clibinarius erythropus* and Montagu's Crab *Xantho hydrophilus* are notable presence of significant numbers of Common Octopus, *Octopus vulgaris*, and especially the finding of a female with eggs may be significant. **'Slight increase' in extent and abundance of warm water species.**
- The observation of (hatched) eggs of a Common Octopus (*Octopus vulgaris*) confirm breeding of this warmer water species in south-west England.
- Conditions seem to be favourable for the reef building Honeycomb Worm *Sabellaria alveolata* with range extensions reported. Also, reports of recruitment at Lundy of the nationally rare (but much-declined) Sunset Coral *Leptopsammia pruvoti* suggest some increases in abundance of 'valued' species. **Some 'valued' species have increased in abundance.**
- The cold-water Plumose Anemone *Metridium senile* has declined in abundance (over about the previous five years) seemingly all around inshore areas of mainland south-west England.
- 2023 was the eighth successive year that there was no significant 'outburst' of athecate hydroids in Firestone Bay, Plymouth Sound during spring. The most conspicuous of those hydroids were *Ectopleura larynx*, *Tubularia indivisa*, *Garveia nutans* and often *Corymorpha nutans*.

- There were no additional (for the UK) non-native species reported in the south-west in 2023. However, the abundance and extent of distribution of many of those already here seems to have increased in 2023. Overall, a **'Negative assessment' for non-native species**.

Where repeat surveys have been undertaken that compare with surveys undertaken decades ago, the marine life present is often very similar. An example is a survey in September 2023 of 'Kitchings Gulley' near the entrance to the Yealm where much was as described in 1934 and the taxonomic groups of species that were dominant were the same but some of those species were different to the early 1930s.

### Introduction

As always, a great many of the observations and images included here have been harvested from social media postings. Observations of unusual species and/or abundances and/or behaviour and/or time of events will have been missed as they were not reported – send your observations to the chapter editor or to a reporting scheme including Seasearch and [www.dassh.ac.uk/dassh.enquiries@mba.ac.uk](http://www.dassh.ac.uk/dassh.enquiries@mba.ac.uk).

For the first time in this section, a comment is made where repeat surveys have been undertaken at a location described several decades ago.

### 'Events': wash-outs and strandings

**Algae** (Non-native algae are in the 'Non-native species' section)

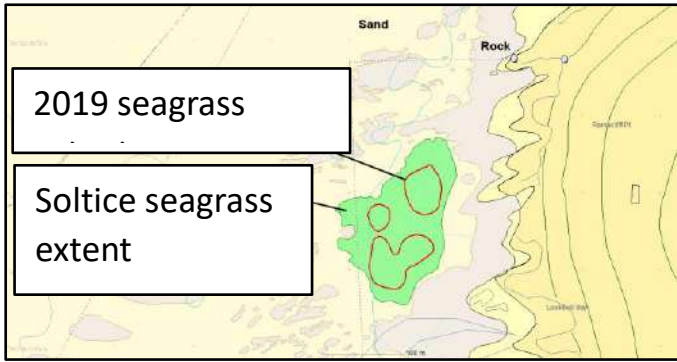


**Plate 7.1.** *Xiphosiphonia ardreana* (identified by Christine Maggs) at The Hen (North Cornwall, out of Padstow) on 22<sup>nd</sup> June. Known to be very common in exactly the 'right' habitat (sandy rocks). Registered in fourteen 10 km squares on NBN which is interpreted as 'Nationally Scarce'. Image: Keith Hiscock.



**Plate 7.2.** Bizarre rather than rare: The iridescent seaweed *Chondria coerulescens* present on the shore along the north side of the Yealm on 9<sup>th</sup> September. The alga has been sampled in 2021 from Beggar's Island in the Tamar on 18<sup>th</sup> May. Professor Juliet Brodie observes: It's widespread along the south coast of England. Margot Minju Arnould-Pétré (NHM) explains: the structural colour (giving iridescence) is caused by intra-cellular lipidic photonic crystals (more specifically called 'opalescent photonic crystals'): lipid spheres organised into periodic lattices, causing the constructive and destructive interference of the light.

**Seagrass**



**Plate 7.3.** Possible increase in extent of *Zostera marina* at Leekbed Bay on the east side of Plymouth Sound. From: Holt, P. 2024. Mapping Subtidal Seagrass and Seabed Type Using Solstice MAS in Plymouth Sound. Sonardyne International Ltd.

Work continued to cultivate and plant-out *Zostera marina* seedlings in Plymouth Sound with some success including that, in the vicinity of introduced seedlings, more natural colonisation had occurred. Recovery of *Z. marina* in what had been areas scoured by mooring chains has been noted in Cawsand Bay where Advanced Moorings have

been installed including both screwed moorings and adding floats to keep chains off the seabed. Research continues into colonisation and likely increases in extent of seagrass – named as *Nanozostera* (was *Zostera*) *moltei* - on tidal flats in the Tamar, Exe, Fal and Kingsbridge estuaries. However, there are identity issues to address regarding which species are being studied including uncertainties in genetic barcoding. Sonar surveys [currently in draft] of seagrass extent in Plymouth Sound suggests expansion of extent (or previously incomplete survey) in some areas.

In the Isles of Scilly, surveys led by James Bull and Emma Kenyon in partnership with [Project Seagrass](#) contributed to baseline monitoring for the NE-funded ReMEDIES project. The work assessed condition of seagrass at five beds across the islands. It drew upon the experience, survey methodology, and results of a long-term (28 years) eelgrass monitoring programme on Scilly as well as reference to work undertaken in the 1980s commissioned by the (then) Nature Conservancy Council. A report of the 2023 surveys is awaiting sign-off by NE but the synthesis of the 2023 findings indicates a generally stable picture of extensive eelgrass in excellent condition across Scilly. There were concerning declines at Higher Town Bay but cause for cautious optimism at Old Grimsby Harbour where a previous substantial decline has been recorded.

**Cnidaria (hydroids, anemones, corals but not including planktonic forms – see 'Plankton')**

2023 was the eighth successive year that there was no significant ‘outburst’ of athecate hydroids in Plymouth Sound during spring. The most conspicuous of those hydroids are *Ectopleura larynx*, *Tubularia indivisa*, *Garveia nutans* and often *Corymorpha nutans*.



**Plate 7.4.** The port side propellor shaft bracket on ex-HMS Scylla on (left) 9<sup>th</sup> April 2011 and (right) 5<sup>th</sup> October 2023. Images: Keith Hiscock.

Plumose Anemones (*Metridium senile*) have declined enormously in abundance (likely over 2020-23) off inshore areas on mainland Devon and Cornwall at least. For instance, in a Seasearch dive survey off Longships Reef, Land’s End SAC– only one plumose anemone was found whereas, in previous surveys, large areas were seen dominated by this species (Matt Slater). There is no sign of decline in the Isles of Scilly (Isobel Allsop and Allen Murray) and, viewing images, Plumose Anemones are still abundant on protruding parts of deep (70-100m) wrecks off South Devon and Cornwall.

Likely 1 May – Maggs Ashton reports high numbers of very small *Leptopsammia pruvoti* corals on the Knoll Pins monitoring sites: significant because of the stark decline in abundance this southern nationally rare species at Lundy since the mid-1980s.

### Polychaeta



**Plate 7.5.** A new species of *Myxicola* has been described [that is found in the south-west]: *Myxicola polychroma* sp. nov. is distinguished through a combination of non-differentially coloured radiole tips, long, fine pinnulae that terminate below the lower margin of the basal membrane, large, fleshy, triangular radiolar appendages that arise centrally, interramal eyespots, dense, fine notochaetae and uncini with upper teeth 0.6–0.8 × length of the main fang. See: [Darbyshire \(2023\)](#). Image: Lin Baldock.

Honeycomb worm (*Sabellaria alveolata*) reefs appear to be increasing in geographical extent and abundance along south-facing coasts at least. Steve Trehwella reports a new colony at Osmington Mills (east of Portland) – “the furthest east we know of in Dorset and definitely a new colony”.

### Crustacea (Non-native crustacean species are in the 'Non-native species' section)

*Xantho hydrophilus* (Furrowed or Montagu's Crab) continued to show an increase in numbers across the south-west including during Dorset Wildlife Trust surveys over the past three years with increases in abundance year-on-year. On 3<sup>rd</sup> February, a male *Xantho hydrophilus* was found beneath Swanage Pier - this seems the furthest east in Dorset it has been found. Paul Naylor reports: I've been seeing more sublittorally while diving and snorkelling - very common in rocky crevices down to about 5 meters below chart datum. Matt Slater reports that he doesn't recall seeing them as a child.

Some observations of more (than usual) small blue lobsters (*Homarus gammarus*) at Wembury at least (Paul Naylor/Devon Wildlife Trust).

Shore crabs (*Carcinus maenas*) have been reported by several 'rockpoolers' as less abundant than usual in 2023. John Hepburn reports: “A great dearth of squabbling crabs on CrabCam during Ocean Discoverability [in September] 2022 and 2023 seem to have been bad years for shore crabs on the seabed below the outer pontoons of Plymouth Yacht Haven.”

Moulting aggregations of Spiny Spider Crabs (*Maja brachydactyla*) continued to occur in 2023 with a massive one noted by Matt Slater off St Ives.



**Plate 7.6.** Sponge crabs *Dromia personata* may be becoming more abundant (observations by fishermen and divers). Paul Naylor finds two in one dive on 23<sup>rd</sup> November at Eastern King Point in Plymouth Sound and observes “both extremely well camouflaged by their 'hat' in among other sponges”. This image is from 21<sup>st</sup> November 2018 but a crab with the same 'hat' was seen in 2023. Image: Keith Hiscock.

### Crawfish (*Palinurus elephas*)



**Plate 7.7.** Continued settlement illustrated by the finding of a very small individual on 17<sup>th</sup> August 6nm SW of Lizard Point. Image: Colin Trundle, Cornwall IFCA

Very similar observations of Spiny Lobsters *Palinurus elephas* compared to 2022 (after their 're-appearance' in many areas in about 2014). Divers continue to see very small individuals through to mainly moderate-sized individuals but fishermen report very few with eggs.

Terry Griffiths reports that Anemone Shrimps (*Perriclymenes sagittifer*) are now to be found (associated with *Anemonia viridis*) along the Torbay coast. First recorded in Britain in 2007 and at Babbacombe in 2015.

Slipper lobster (*Scyllarus arctus*)



**Plate 7.8.** Slipper lobster at The Bizzies, Falmouth Bay. Image: Sean Dixon.

There were five records of slipper lobsters *Scyllarus arctus* in 2023. It is the sort of species that occurrences may be ascribed to warming seas but it has been recorded in British waters since 1758. Records maintained by Doug Herdson report, for the south-west of England, 37 individuals over the period 1999 to 2020. Nevertheless, numbers may be rising on the west coast of Ireland (Niall Duffey on 6<sup>th</sup> September 2019 in 'The Skipper'). The records were of live individuals at The Bizzies (Falmouth Bay) (John Yarrow and Sean Dixon), a cast recorded and collected at Hilsea Point Rock east of Plymouth Sound by Olivia Langmead and two were photographed in a horizontal fissure at Black Head, Cornwall on 17<sup>th</sup> June (Kirsty Andrews).

Crinoid shrimp *Hippolyte prideauxiana*



**Plate 7.9.** The crinoid shrimp *Hippolyte prideauxiana* photographed at Oddicombe, Torbay. Image: Dan Bolt.

*Hippolyte prideauxiana* was reported associated with *Antedon bifida* in June in the Isles of Scilly by Isobel Allsop (identified by Chris Webb) and at Oddicombe in early December (photographed by Dan Bolt, reported by Terry Griffiths). The Plymouth Marine Fauna notes: "Bantham (type locality): Plymouth (A.M.N. and T.S.): Yealm Estuary, not uncommon (R.A.T.) Breeding: July (R.A.T.): July-Aug., hatched from egg (M.V.L.)". The species has been expanding its known distribution northwards including to Orkney and Shetland ([Shucksmith 2014](#)) A species to look-out for.

St Piran's or Hairy-handed Hermit Crab *Clibanarius erythropus*

St Piran's hermit crabs were more common than Common Hermit Crabs (at Wembury anyway) and found in large 'communities' within a single rockpool (DWT).

[Crustaceans associated with floating material are mentioned later.]

**Mollusca**

Cephalopods (octopus, cuttlefish and squid)



**Plate 7.10.** A 'squadron' of young cuttlefish at Porthkerris on 29<sup>th</sup> July. Image: Kirsty Andrews.

There were several observations (as in 2022) of large numbers of juvenile cuttlefish in late summer to early autumn.



**Plate 7.11.** *Octopus vulgaris* with (hatched) eggs and the female dead below at Porthkerris on 26<sup>th</sup> September. Image: David Roberts/Kennack Diving.

Sightings of Common Octopus (*Octopus vulgaris*) continued in 2023 from the Isles of Scilly and along the coast of south Devon to Dorset at least. Possibly less than in 2022 and Jamie Altenberg (Mylor Creek Shellfish Company) indicates (in late May) that fishermen were catching many less common octopus in 2023 although Plymouth fish market records show large catches of 'octopus'. Most notably, a female with eggs was observed in a deep fissure at Porthkerris. No other sightings report eggs.

### Other Molluscs



**Plate 7.12.** A stranded Crystal Jelly being eaten by perhaps *Pruvotfolia pselliotes* – recorded from nine 10 km squares south Cornwall to Dorset on the NBN Atlas so 'Nationally Scarce'. Reported by Matt Slater. Image: Charlotte Cumming.

There were no new British records for nudibranch seaslug species but recent 'unusuals', *Babakina andoni* and *Discodoris rosi*, were seen at more locations than in 2022. *D. rosi* is especially notable as it is easily identified and being seen at more locations in the south-west and has also been reported from Pembrokeshire. Rob Durrant found one (appx 3cm long) during an exploration of the lower shore at Greencliff, Abbotsham, North Devon (SS400268) on 2<sup>nd</sup> September.

### **Echinoderms**

Cushion stars (*Asterina gibbosa*) are reported as increasing at Wembury year on year.

### **Non-native species**

There were no additional (for the UK) non-native species reported in the south-west in 2023 (John Bishop). However, the abundance and extent of distribution of many of those already here seems to have increased in 2023.



**Plate 7. 13.** *Antithanionella ternifolia* associated with *Zostera marina* and *Sabella pavonina* in Cawsand Bay on 24<sup>th</sup> August. Image: Keith Hiscock.

The filamentous red alga *Antithanionella ternifolia* is widely distributed in the south-west (records are off south facing coasts of Dorset, Devon and Cornwall, in the Isles of Scilly and at Lundy. It was noted in the *Zostera marina* beds in Leekbed Bay in the 2021 report. In 2023, it was also recorded in Cawsand Bay (on *Z. marina*), in Veryan Bay (south Cornwall) on seagrass and on maerl in Falmouth Harbour (Matt Slater).

Julie Hatcher reports (11<sup>th</sup> June) that the extraordinary Snakelocks Anemone bed at Kimmeridge has been smothered by the non-native seaweed Bonnemaision's Hook Weed *Bonnemaisionia hookeri*). In 2022, the tetrasporophyte (*Trailliella*) stage had been observed smothering coralline algae.



**Plate 7.14.** Wakame *Undaria pinnatifida* attached to maerl in Falmouth Bay especially giving rise to concern that the kelp may 'lift' the maerl and lead to its displacement. Image: Matt Slater.



**Plate 7.15.** Occasional surveys of the abundance of Pacific Oysters (*Magallana gigas*) along the Noss Mayo side of the Yealm, revealed a large settlement of oysters in 2023. Here on 2<sup>nd</sup> July. Image: Nigel Mortimer.



**Plate 7.16.** The carpet sea squirt *Didemnum vexillum* is now present in Poole Bay (previously 'marinas only') Lin Baldock (July). Image: Lin Baldock.



**Plate 7.17.** Monitoring transect in the NW Rat Island Cave at Lundy on 3<sup>rd</sup> August with Red Ripple Bryozoan *Watersipora subatra* (the dark patch at '10 o'clock' in the image). Image: Keith Hiscock.

Red Ripple Bryozoan *Watersipora subatra* was found at more locations and had increased in abundance including (specifically mentioned) at Lundy and at Trefusis Point.

There was a marked increase in Devil's tongue weed at Wembury (Devon Wildlife Trust)

A lot of Creeping Seasquirt *Perophora japonica* was observed growing on seaweeds in Helford River (Matt Slater). It seems that *Perophora japonica* 'appears and disappears' from locations all along the south coast.

**Strandings [not including free-living ocean drifters ('jellyfish' including *Physalia physalia* and *Velella velella*) but including stalked barnacles and Violet Sea Snails]**

There were many reports of strandings that included marine life through the year such as goose barnacles attached to a variety of substrata but especially fishing floats and plastic containers including bait boxes. Goose barnacles provide a habitat for cryptic species such as Columbus Crabs and various other crustaceans such as the isopod *Idotea metallica* and amphipod *Caprella andreae* whilst plastics may be colonised by hydroids, bryozoans, molluscs and barnacles especially. 'Curiosities' include seeds (such as sea beans) that have drifted across the Atlantic.

## 'Events'



**Plate 7.18.** In early August, Pink Sea Fans *Eunicella verrucosa* in Dorset were observed festooned with mucus. This situation is believed to be due to mucus produced by the non-native diatom *Coscinodiscus walesii*. In previous years very similar events had been seen off Plymouth but earlier in the year. Image: Lin Baldock.

Several (maybe a dozen or more) Portuguese man o'war stranded along the Dorset Coast as far east as Worbarrow Bay in Jan.

A few species of ocean drifters washed ashore at Chesil Cove including:

- a *Fiona pinnata* seaslug (first record for Dorset);
- several Columbus crabs;
- lots of *Idotea metallica* (pelagic isopod);
- the most Scotty baitpots (from North America) we've ever seen in one go - upwards of 40 spread over several beaches;
- several exotic species of bivalve including the zig zag scallop;
- several clusters of thimble jellyfish tubes attached to litter.

(Steve Trehwella)

## Repeat surveys



**Plate 7.19.** Paul Naylor in 'Kitching's Gulley' The site, where diving was used for the first time in British waters for marine ecological studies in 1931/2, was revisited by Keith Hiscock and Paul Naylor in on 18<sup>th</sup> August. Image: Keith Hiscock.

At Kitching's Gulley in Wembury Bay, the character (an ascidian - sponge community) of the dominant species on vertical and overhanging surfaces and on the rock slope (thong weed, kelps and coralline algae) were the same as in 1931/2. However, *Dendrodoa grossularia* (not *Distomus variolosus*) seemed to have become the dominant ascidian on vertical surfaces in the gulley and almost complete absence of *Polycarpa ?scuba* in the gulley when it had been recorded in large amounts in the (nearby) Tomb Rock gulley in Sept 2022 and *P. pomaria* had been recorded in Kitching's Gulley in Forster 1958. *Halichondria panicea* was a few small patches in 2023 (as reported in Forster 1958) but was reported as a characteristic species in 1931/2. *Didemnum maculosum* var. *dentatum* was recorded as common in 2023 but unlikely present in 1931/2 – it is a variety that has puzzled observers for many years until recently. The brief study in 2023 cannot duplicate the systematic sampling and analysis of the resulting samples published in the 1934 paper. However, it seems likely that differences between 1931/2, Forster's observations in the 1950s and the 2023 study are natural variability.

Many of the types of change that feature in South-West Marine Ecosystems reports were catalogued in [Hiscock, 2023](#).



## 8. Fish and reptiles

Edited by Douglas Herdson, Lin Baldock and Simon Thomas

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### Fish

#### Conclusions

- A dead Sand Tiger Shark was found off Lyme Regis, one of three records of the species in the British Isles in 2023 and the first year in which the species has been recorded off British and Irish shores.
- Once again, the number of reports of Basking Sharks and Oceanic Sunfish were low.
- The estimated stocks of Anchovy around the Channel and south-west and in the Celtic Sea were by far the highest in recent times.
- The flyingfish were surprisingly abundant off the French Atlantic coast and this was reflected in our coastal waters. One found stranded in west Wales was a Blackwing Flyingfish, a species never before seen in British, Irish or French Atlantic waters.
- Seahorses were widespread throughout the year. Chris and Chloe Brown carried out an outstanding study of Spiny Seahorses in Studland Bay.
- Anglers started catching small Axillary Sea Bream, a species of which less than a dozen had been recorded previously.

#### Elasmobranchs

On 1<sup>st</sup> May, a c. 293 cm subadult female Smalltooth Sand Tiger Shark (*Odontaspis ferox*) was found floating dead off Lyme Regis. That observation was preceded by a large (c. 275 cm) individual beached alive in Hampshire but found dead the next day: [the first record of the species in British waters](#). There was also a 433 cm adult female stranded at Kilmore Quay, Wexford, Ireland. [Barry Trevett, E Stephan; Rob Deauville; David Curnick.]

#### Common Thresher (*Alopias vulpinus*)

There were two threshers reported from the area last year, although many more were sighted by skippers participating in the CHART Bluefin tuna program. A thresher was captured on Paul Woodman's boat, Bee Cool on the 5<sup>th</sup> of July and another reported by Gerry Rogers on Dream Catcher 2 during November 2023. The species appear to be a regular visitor to the waters of the western English Channel, especially during the autumn months of the years when the pilchard shoals arrive. [Simon Thomas]

#### Basking Shark (*Cetorhinus maximus*)

Following the recent pattern there were few Basking Sharks reported in 2023, but they were seen throughout the area. The first was in St Ives harbour in March, and several were seen around Porthkerris in April, and individuals off Scilly in May and Lundy in August. The final one of the year was seen heading south off Berry Head in November. A large (8 m) male was found floating dead just outside Mevagissey Harbour, at the beginning of May.

[Keith Hiscock; Abby Crosby; Stuart Philpott, Scuba Diver Magazine; the Mellowdew family, Shaun Barnes & Darren Dowding, via Keith Hiscock; Mike Langman.]

#### Porbeagle (*Lamna nasus*)

There were 97 Porbeagle sharks reported in the SW last year, with the vast majority consisting of year 0 and year 1 fish. Curiously these fish were mainly found in an area from south of Looe to the Lizard and the species was largely absent from areas off Plymouth and Penzance, although two 25 kg fish were reported from south of Start Point in early November. [Simon Thomas]

**Nursehound (*Scyliorhinus stellaris*)**

In December 2014 there were 38 eggcases in a gully at Wembury Point; thereafter until 2021 there were 13 - 26, falling to 9 in December 2022. This was possibly due to strong winds, but also perhaps to change of laying preference from gully to SW end of the bay.

**Blue Shark (*Prionace glauca*)**

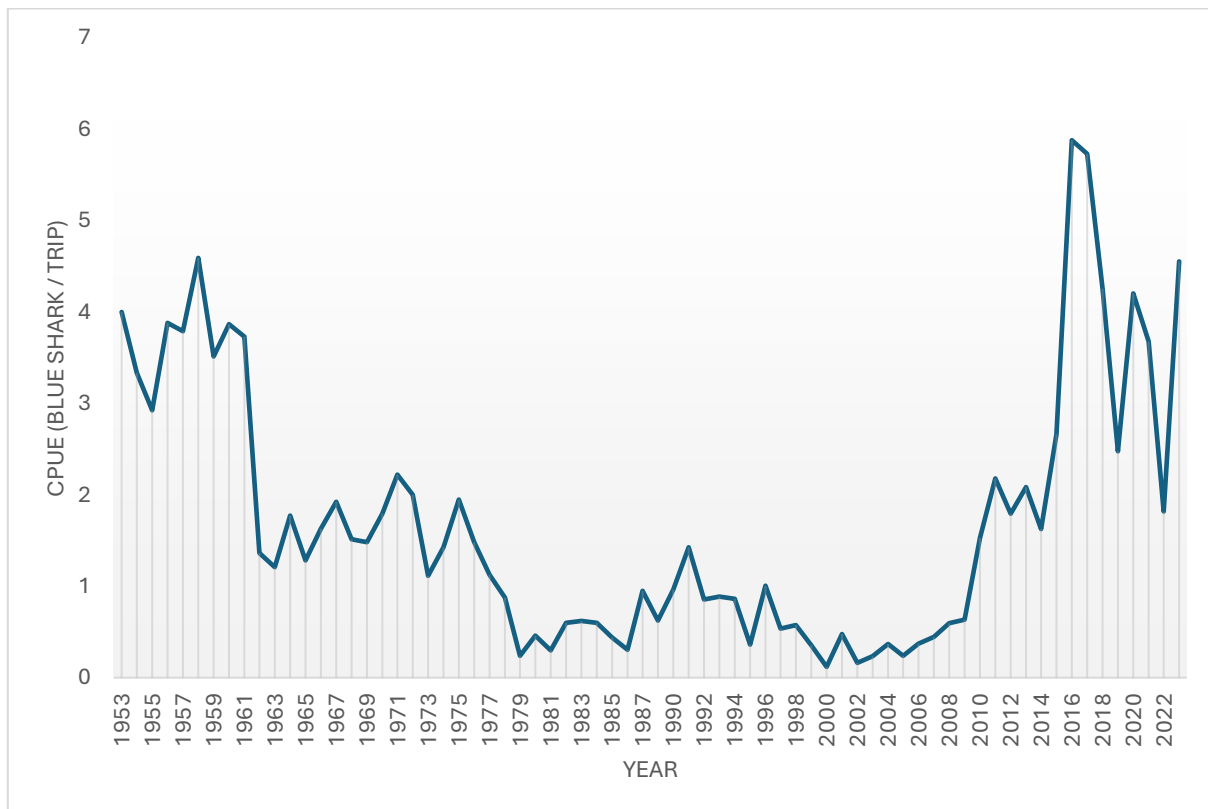
On 29th April 2023, a Blue Shark briefly stranded in shallows at Porthmeor beach, St Ives and was refloated by RNLI lifeguards.

2033 blue sharks were caught by angling vessels from the Western English Channel, Catch Per Unit Effort (PUE) increased from 1.81 fish/ trip in 2022 to 4.55 fish/ trip in 2023. Generally, there were fewer large fish recorded last year and only 6 males were recorded from 1043 fish captured from Looe. The exception was a 3.1 metre male fish captured on Dave Uren’s boat Mirage on 29<sup>th</sup> August 2-23, which was estimated to weigh (according to length/ weight conversion) around 150 kg.

The first of the season for the Isles of Scilly was caught by Bishop’s Rock in mid-June and one was fitted with a satellite tag a month later.

Unusually cold-water conditions and patchy algae blooms reduced catches by over 50% from areas west of the Lizard.

Finally, on 22nd December 2023 a juvenile male stranded on incoming tide at Towan beach, Portscatho, and washed back out again. [Simon Thomas; Paul Whittaker; Joe Pender; Dan Jarvis.]



**Figure 8.3.** Catch Per Unit Effort (blue sharks per trip) from Looe, Plymouth and Falmouth in 2023.

**Marbled Electric Ray (*Torpedo marmorata*)**



**Plate 8.1.** *Torpedo marmorata*, Ecrehous, 6 miles NE of Jersey. Image: Nicolas Jouault.

A Marbled Electric Ray was found dead in Jersey in April; and a live one with two leeches attached was seen in Guernsey in September. [Tom House; Nicolas Jouault.]

**White Skate (*Rostroraja alba*)**

Towards the end of the year there were several reports of anglers catching at least three White Skate at Slapton and Chesil Beach, but these could not be confirmed. [David Horrill.]

**Blue Skate (*Dipturus batis*)**

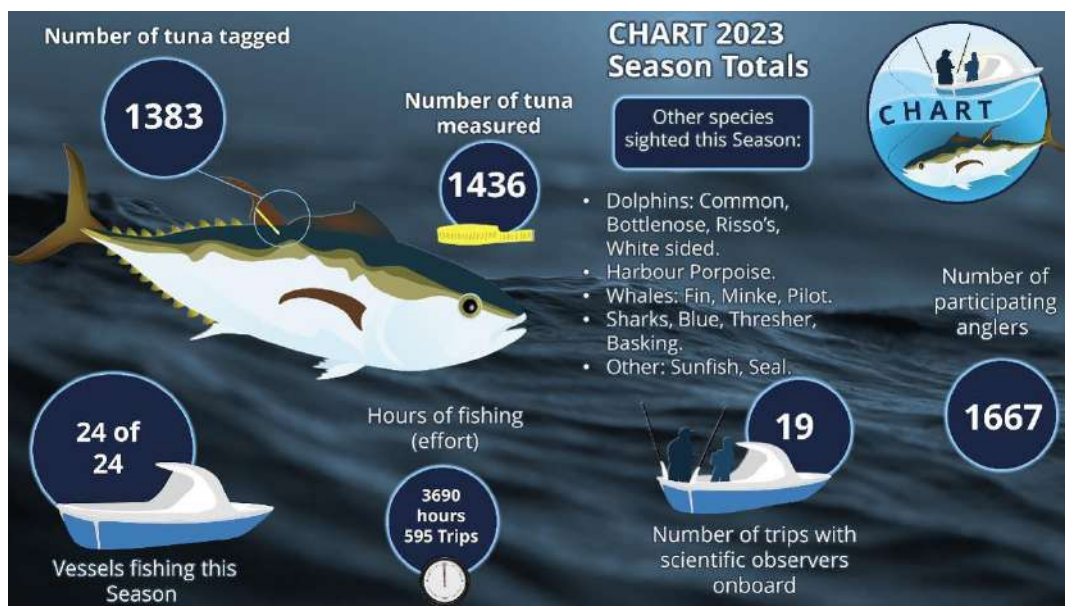


**Plate 8.2.** Blue Skate eggcase, *Dipturus batis*, Newquay. Size: 13 cm long without horns, 18 cm long with horns and about 7.3 cm wide. Image: Tracey Williams.

A medium sized Blue Skate was caught off Weymouth in April, and an eggcase was found on the shore at Newquay in July. In early winter Blue Skate were being caught by anglers off Chesil, Plymouth and Porlock (Somerset). [David Horrill, Ross Parham, Tracey Williams.]

**Pelagic Species**

Tunas



**Figure 8.2.** Atlantic Bluefin Tuna (*Thunnus thynnus*) continue to be common from July to the end of the year.

The CEFAS/CHART programme spaghetti tagged 1383. This is about 300 more than 2022, despite having 90 less anglers and 300 less hours at sea.

The Thunnus UK programme has now satellite or acoustically tagged 154 ABTs and tracked them for 18,398 days in the Channel, Biscay, the North Atlantic and the Mediterranean. One was eaten by an Orca (complete with tag).

The UK government has now set a total commercial quota set of 40 tonnes of tuna, which means about 400 fish can be caught between July and December when they are in British waters. [The Times; CHART; Thunnus UK]

### Bonitos

A 1.8 kg Bonito (*Sarda sarda*) was caught by an angler off north Devon in the summer. Quite a few of these small tunas up to 2.8 kg were landed into Newlyn in November. [Laurence Hartwell; [Richard Kirby](#).]

### Clupeids

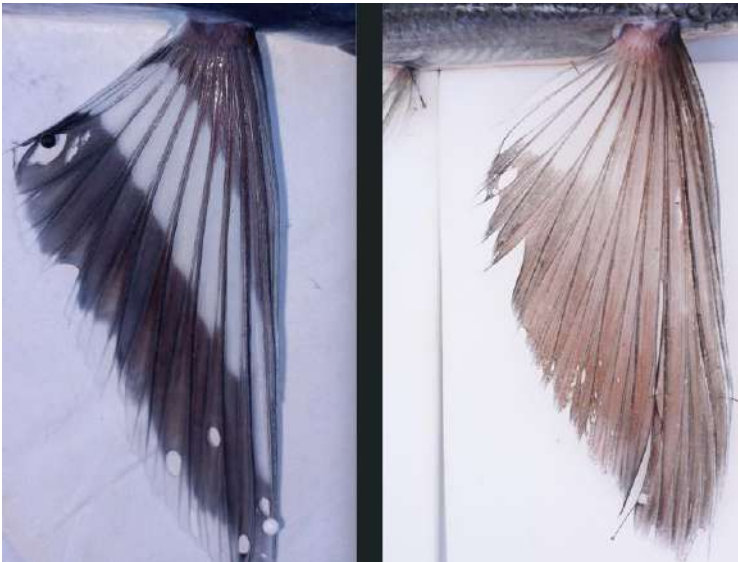
A shad (*Alosa* sp.) was caught off Seaton Beach (East Devon) in July. [James Trevett; John Sherlock.]

### Anchovy

The CEFAS/PELTIC pelagic survey in October found that the biomass of Northern Anchovy (*Engraulis encrasicolus*) in 2023 was 243,392 t, approximately five times the previous highest estimate (2021), continuing an increasing trend. While some of the highest densities were found in the Eddystone Bay, anchovy was widespread throughout the survey area, including in the Bristol Channel. As was observed in 2019 and 2020, in 2023 again large numbers of surface and mid-water schools of juvenile anchovy were found off the Brittany coast, from the Isle of Ouessant in the west to the Channel Islands in the east of the survey. These fish are most likely Bay of Biscay fish moving into the Channel.

The Irish Celtic Sea Herring Acoustic Survey (CSHAS) 2023 found similar results for anchovies in the Celtic Sea.

### Flyingfish (Exocoetidae)



**Plate 8.3.** *Cheilopogon furcatus* (left) versus *C. heterurus*. Image: Sam Iglesias.

A number of flying fish have been reported over the years, but seemingly more in the last few years. It is assumed that most of these are Atlantic Flyingfish *Cheilopogon heterurus*. [There is also one UK record of *Cheilopogon pinnatibarbatulus* (Bennett's Flyingfish).]

Large numbers were seen off the Atlantic coast of France, all *C. heterurus* except for one of a new species for the area the Spotfin Flyingfish *Cheilopogon furcatus*.

Flyingfish were also more common than usual in Britain with two groups, one of up to a hundred, seen in Cawsand Bay. It would be assumed that these were all *Cheilopogon heterurus*. However, one was found stranded in good condition on the beach at New Quay, Ceredigion. This was a Blackwing Flyingfish, *Hirundichthys rondeleti*, which is a new species for Britain, Ireland and the Atlantic coast of France. This fish is now in the National Museum of Wales. [Joan Edwards; Samuel Iglesias; Oliver, Abigail and Richard Taberner.]

## Sunfish

Very few reports of Ocean Sunfish (*Mola mola*) were received this year. In the Isles of Scilly there were 32 sighted (an increase on 2022) from June to October. They were also seen off south west Cornwall, Salcombe, Brixham and Ilfracombe. [Chris Lovell-Healy; Josh Symes; S Duke; Chris Blackmore; Isles of Scilly Bird and Natural History Review]

## **Demersal Species**

### European Sturgeon



**Plate 8.4.** *Acipenser sturio*, south-east of Exmouth. Image: Andy Giles.

A medium sized European Sturgeon (*Acipenser sturio*) was caught south-east of Exmouth in September. Ten or more records of sturgeon have been made from off our coast in the last few years making this very rare fish 'fairly frequent' locally.

### Eels Anguilliformes

#### *Conger (Conger conger)*

Something I have noticed recently is the unusual number of very small conger eels in reef crevices. Difficult to tell length because the whole body is not visible but I would guess around 20-25cm, and no fatter than a heavy-duty marker pen. They have previously been around Wembury but I saw two at Brixham in August. Also in August, a local angler reported catching a totally unprecedented number of congers in the Yealm. These have been much bigger than the youngsters I have been seeing and so do not fit the idea of a single unusually large batch of larvae coming in from the deep Atlantic breeding grounds because of a current anomaly. Perhaps there have been two or more such events?

#### *European Eel (Anguilla anguilla)*

In May, large numbers of glass eels (juvenile European Eels) were found in numerous intertidal sites around the Isles of Scilly. There are clearly a number of freshwater sites that eels are trying to enter and it should have implications for considering future management of the various culverts and flap valves around the Islands. It is obvious that there

is certainly scope to enhance upstream and downstream eel migration at some of these sites. [Robert Hurrell; Paul Naylor.]

### Dories

**Plate 8.5.** a gravid John Dory. Image: Simon Thomas.

In August a number of large John Dories (*Zeus faber*) approaching 3 kg were caught south-west of Plymouth. Some were gravid (full of ripe roe), which would suggest very close to spawning, and that this could be a spawning area.

[Simon Thomas]



## Seahorses



**Plate 8.5 and 6.** A male Spiny Seahorse in Wytch Channel, Poole Harbour in July (left) and a Short-snouted Seahorse in Poole Bay in June (right). Images: Lin Baldock.

Both species of seahorse have been recorded along the length of our south coast throughout the year. The vast majority were seen around Dorset, with a scattering in Cornwall and only two from Devon.

### Spiny seahorse (*Hippocampus guttulatus*)

An adult male Spiny Seahorse was spotted in Portland Harbour in January - unusual to see them at that time of year but showed us that they are there year-round. They have been found in winter before but not January.

*H. guttulatus* was located both within the Fal and Helford SAC.

A broody male and a female were photographed in Poole Harbour in July.

Chris and Chloe Brown's (licensed) study in Studland Bay has shown that individual *H. guttulatus* can be recognised by the pattern of spots around the head region. Using the information on recognisable individuals and the Lincoln Index (Individuals are captured, marked, released back into the population and recaptured to give a population estimate) they calculated a population of 57 for the Bay. They also observed and filmed aggressive behaviours in males for the attention of a female.

### Short snouted seahorse (*Hippocampus hippocampus*)

A female seen in a tidal pool during spring low tide at the mouth of Frogmore Creek, Kingsbridge in January.

In about 15m depth on cobbles off Ballard Down, Swanage, one was seen curled into an *Aequipecten* shell, miles from any seagrass and very little in the way of seaweeds anywhere.

During a survey of the seabed anchor scars left by cruise ships in Poole Bay, Dorset Seasearch divers recorded an astonishing seven short-snouted seahorses on one dive! Whilst we know that Dorset is a hotspot for both our British seahorse species, to see seven on one dive is extraordinary.

A tiny [skeletal] 2cm *H. hippocampus* washed up at Kimmeridge at the beginning of June - hard to tell where it lived but maybe they are in the bay.

### Unidentified Seahorses (*Hippocampus* sp.)

*Hippocampus* sp. of about 6 cm seen at the surface Venerick's Cove, near Prawle Point in June.

Seahorses are regular and increasing in Poole Harbour throughout the year. It is thought possible that they are feeding on the abundant invasive non-native Skeleton Shrimp *Caprella mutica*. [Roger Herbert; Nigel Mortimer; Matt Slater; Lin Baldock; Sean Dixon; Julie Hatcher; Guy Baker; [Steve Trehwella](#); Andrew Powell; Chris and Chloe Brown]

Scorpaenidae and Cottidae



**Plate 8.7.** Bluemouth (*Helicolenus dactylopterus*), off Looe. Image: Andy Giles.  
A Bluemouth (*Helicolenus dactylopterus*) was caught in 60 m depth, south of Looe in March. These are generally found in depths of 200 m or more.



**Plate 8.8.** Norway Bullhead (*Micrenophrys lilljeborgii*), Bude, Cornwall. Image: Charlotte Cumming  
A juvenile Norway Bullhead (*Micrenophrys lilljeborgii*) was found in the intertidal at Bude, north Cornwall in June. This species is rarely recorded intertidally but, despite its name, it does have a wide southerly distribution with records from the Channel Islands and western Brittany on the south side of the English Channel and east to Poole Bay on the English south coast. [Andy Giles, Lin Baldock; Charlotte Cumming]

Serranids



**Plate 8.9.** Comber *Serranus cabrilla*, Inner Drop-off, Plymouth Sound. Image: P. Hewitt.

The Comber (*Serranus cabrilla*) is one of the smallest members of the groupers which is relatively common from southern Africa to the Mediterranean. However, until recently it was an uncommon fish in British waters, only occurring occasionally. It has become more frequent in the last few years. In 2023 fewer (eight) were reported than in 2022 (20), but from a wider area, namely Weymouth to Penzance, and mainly in the first part of the year. This pattern suggests that the species is starting to become established and the reduction in reports could signify that anglers are becoming familiar with them.

South-West Marine Ecosystems in 2023 (The State of South-West Seas)

**Table 8.1** Combers *Serranus cabrilla* in the south-west during 2023

Date	Location	Comments
March 2023	Off Weymouth	
March 2023	6 miles off Looe	Caught by FV Swiftsure, in 60 m of water. Andy Giles.
5/05/2023	About 3 miles west of the Eddystone	Simon Thomas.
Early May 2023	Off Penzance	100m wreck. Kieren Faisey, Unleashed Fishing Charters.
13/06/2023	The Dodman ground	<a href="#">Huntress Charters</a> , Jamie.
June 2023	Off Penzance	70m reef. Kieren Faisey, Unleashed Fishing Charters.
21/07/2023	about 10 miles SE of Start Point	<a href="#">Matthew Forrester</a> .
21/07/2023	about 40 miles SSW of Start Point, on a wreck known as	Owen Malia skipper of <a href="#">Outlaw Charters</a> , Simon Thomas.

Numbers by month (2003 to 2023)	
Jan	
Feb	
Mar	2
Apr	
May	3
June	7
July	10-12
Aug	4
Sept	8
Oct	2
Nov	1
Dec	
Unknown	
<b>TOTAL</b>	<b>37 - 39</b>

Numbers by year (2003 to 2023)	
2003	1
2007	1
2015	1
2019	1
2020	4
2021	3
2022	20
2023	8
<b>Total</b>	<b>39</b>

[Andy Giles; Simon Thomas; Kieren Faisey; [Huntress Charters](#); [Matthew Forrester](#); Owen Malia]

Carangids

Two Pilot Fish (*Naucrates ductor*) were caught in the Celtic Deeps in September. Each fish was found associated with a Blue Shark, as is the usual situation. [Julie Bunt: DASSH.]



### Sparids

The once rare Couch's Sea Bream (*Pagrus pagrus*) is now well established in the region with small juvenile bream seen on dives in St Austell Bay in October. Several large ones were caught south of Penzance in March and others were found in St Mary's Bay, Scilly, in September.

An angler caught two Bogues (*Boops boops*) off Plymouth in June 2023.

From June to November anglers were catching small sea breams, which were proving hard to identify and provoking a lot of discussion. They were often pinkish and had a dark lateral line. However, the conclusion is that these were Axillary (or Spanish) Sea Bream (*Pagellus acarne*), a species previously considered very rare in Britain. This was confirmed by several European ichthyologists. They were captured from Poole to West Cornwall, but predominantly off Plymouth and the Eddystone. [Trevor Sutch; Keiren Faisey; Becky Gill; Ricky Pender; Robert Hurrell; Karl Bird; Adam Kirby; Ray Evans; Rafael Bañón Díaz, Samuel Iglesias.]

### Wrasse

A Scale-rayed Wrasse (*Acantholabrus pailloni*) was seen on a baited remote underwater video system (BRUV) by Owen Exeter from a site on the Seven Stones, Isles of Scilly. Owen is doing a PhD at the University of Exeter in partnership with the Isles of Scilly IFCA using BRUVs to assess the ecological value of, and threats to, marine protected areas in the Isles of Scilly. This wrasse is typically a deep-water species with few records for Britain. Of eight records on the NBN Atlas four were made between 1986 and 2016 with the other four being museum records dating back to 1860. [Owen Exeter; Lin Baldock.]

### Blennies



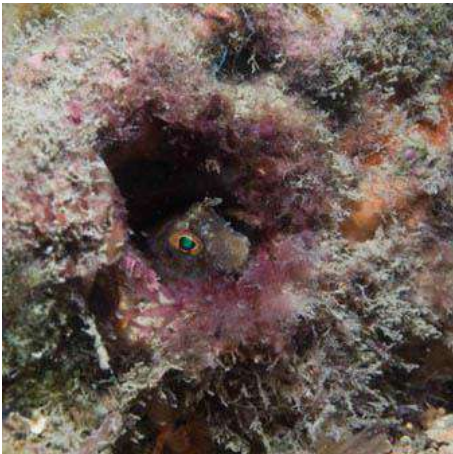
**Plate 8.10.** Black-faced Blenny (male, left, female, right), Heybrook Bay, 12th June. Image: Bozena Johnson

The Black-faced Blenny (*Tripterygion delaisi*) was reported to be absent from its usual Devon sites in 2022. We have had one report of this species from Devon: Heybrook Bay, South Hams (Bozena Johnson, July), and there have been two from Cornwall: Helford (Keith Raven, 1<sup>st</sup> July) and Tolland Bay between Looe and Polperro (Jenny Kent 2<sup>nd</sup> October). There have been a number of Dorset records through the year from Swanage Pier (January, and August. Mike Markey and Steve Trehwella), Portland Harbour (March, July. Mike Markey, Lin Baldock) as well as on a reef out in Weymouth Bay (November, Mike Markey). From the Dorset point of view, this blenny is now so common at popular dive sites such as Swanage Pier and the Portland Harbour wrecks it could be that it is not reported as being unusual. It is difficult to distinguish between absent and simply not noticed or reported.

They were, however, relatively common at the Ecrehous, which is some 6 miles off Jersey (Nicolas Jouault).

Paul Naylor recorded the earliest ever Tompot Blenny (*Parablennius gattorugine*) eggs in his Wembury Bay study area on 14<sup>th</sup> February, the earliest previous record was 24<sup>th</sup> February 2018 and that was very much an outlier with first sightings typically mid-March. Both instances of February eggs have been with 'veteran' males in at least their 4<sup>th</sup> breeding season. Paul also reported male Tompot Blennies guarding eggs at Firestone Bay in May, as expected. Paul recognised two male individuals on the Wembury Bay reef who had reached their seventh year of residency; only one male and one female had reached this landmark previously.

It is interesting that there are increasing numbers of reports of Tompot Blennies from Scottish locations: for example, recently from Loch Sunart by Peter Bardsley in October. Evidence of climate change impacting both distribution and breeding season?



**Plate 8.11.** Butterfly blenny (*Blennius ocellaris*) in rock crevice, Weymouth Bay, Dorset. Image: Lin Baldock

In Dorset, homes in Common Whelk shells (*Buccinum undatum*) for the Butterfly Blenny (*Blennius ocellaris*) are in short supply because the local fishery removes any whelks in shells over 45mm. It was therefore interesting to find a small Butterfly Blenny guarding eggs in a very small hole in rock in Weymouth Bay. It is more usual to find them in shells, small bottles or even the curves of a colony of the Potato Crisp Byrozoan (*Pentapora foliacea*).

In July, Lin Baldock recorded a Variable Blenny (*Parablennius pilicornis*) on a *Sabellaria spinulosa* reef in Poole Bay in June; the most easterly record for this species to date. There are well established breeding populations in Lyme Bay and Weymouth Bay (Lulworth Banks) with records for 2023 from sites in Lyme Bay in July, August and September. Paul Naylor reported these blennies guarding eggs in Firestone Bay, Plymouth Sound in May. A Cornish record was made from Silver Steps, Falmouth by Mickey Luv in September. Is the species extending its range both east and west along the English Channel coast?

### Gobies

Couch's Goby (*Gobius couchi*) was photographed in Portland Harbour by Steve Trehwella in July. It is rare to get reports of this goby, although it is common in easily accessible parts of the harbour.



**Plate 8.12.** Couch's Goby (*Gobius couchi*) Portland Harbour. Image: Steve Trehwella.

A Giant Goby (*Gobius cobitis*) was reported by John Hepburn from intertidal pools at Wembury in June. In the Isles of Scilly, it was seen in Cove Veau on St Agnes in April and May by Lucy McRobert and Steve Brayshaw.



**Plate 8.13.** Guillet's Goby, Weymouth Bay. Image: Lin Baldock.

Guillet's Goby (*Lebetus guilleti*) was recorded by Lin Baldock from Weymouth Bay, Dorset in September. Two individuals were found as photo by-catch in two of 130 images taken more-or-less haphazardly during the dive. If each image is assumed to cover an area of about 900cm<sup>2</sup> this equates to approximately 10m<sup>2</sup> over the whole dive. Hence this small goby was as common at this site as the Two-spotted Clingfish (*Diplocogaster bimaculata*), which is approximately the same size, estimated by the same method.

A Steven's Goby (*Gobius gasteveni*) was caught by an angler about a mile south of the Plymouth Breakwater and reported by Karl Bird. A second angler, Liam Faisey, commented that he had caught individuals in Plymouth Sound off Mountbatten in the past. This goby is known to be well established in Firestone Bay, among boulders inside the Breakwater and on mixed ground around the Mewstone. There is now an official British record weight for a rod caught specimen of this goby. The British Record Fish Committee ratified the claim from Steve Clements who caught the fish at Stonehouse, Plymouth in September. The fish weighed in at nine grams.

Lin Baldock reported a good population of Steven's Goby in July on the maerl bed at the Inner Bizzies just east of Falmouth among slabby, slatey rock. Paul Naylor reported males of the species guarding eggs in Firestone Bay in early May.

### Flatfish



**Plate 8.14.** A Megrim, Mount Batten, Plymouth Sound, Frankie Costello

In January a 500g Megrim (*Lepidorhombus whiffiagonis*) was caught from the Mount Batten Breakwater, Plymouth Sound, by young Jaqueline Costello. Megrim are a relatively common deep water offshore fish but are very rarely found inshore.

Matt Slater photographed a Norwegian Topknot (*Zeugopterus norvegicus*) on a maerl survey near the wreck of the Caroni River in Falmouth Bay. This is an unusual southerly record from diving depths for this species although there are English south coast diver records as far east as Lyme Bay. It appears to be more common in deeper water in the southern part of its range.

A Thor's Scaldfish (*Arnoglossus thori*), was photographed in the East Narrows, Falmouth, in May 2023. Common Scaldfish (*Arnoglossus laterna*) and Imperial Scaldfish (*Arnoglossus imperialis*) were caught by anglers off Penzance. [Matt Slater; John Blackwell; Frankie Costello; Keiren Faisey]

Triggerfish



**Plate 8.15.** Two Triggerfish in Firestone Bay, Plymouth Sound. One is vigorously digging-out likely a 'den'. Image: Keith Hiscock.

There were many fewer reports of Grey Triggerfish (*Balistes capriscus*) in 2023 than last year, but probably slightly above the average. They were seen from Chesil Beach to the Isles of Scilly. In January, as is usual, they were found dead on shores (14 reports in 2023).

Grey Triggerfish were first seen in Firestone Bay, Plymouth Sound on 11<sup>th</sup> July and up to eight were to be found there until early December. In mid-July two were watched digging, possibly making a den or nest, but no further behaviour of this nature was recorded. In December, when the sea temperature was 12.1°C, three were observed at the location in Firestone Bay, two swimming about as 'normal' and one dozing against a rock face (Keith Hiscock). On 24<sup>th</sup> December, none could be found (Steve Porter).

Triggerfish were also seen in Salcombe, Whitsand Bay and, in November, at Porth Mellon, St Mary's, Isles of Scilly.

Number of sightings of Trigger Fish by year (from SWME annual reports):

2014 – few	2016 – 21	2018 – 18	2020 -10	222 – 77
2015 - few	2017 - 14	2019 - 23	2021 - 38	2013 - 38

[Nick Collins; Keith Hiscock; Craig Pinder; Tracey Williams; Steve Trehwella; Steve Porter; Martin Palmer; Simon Nicholls; Emma Kenyon]

Pufferfish

An Oceanic Pufferfish (*Lagocephalus lagocephalus*) was found on the shore at Praa Sands in South Cornwall at the end of August. The Oceanic Pufferfish is the commoner of the two species of pufferfish that have been recorded in the UK. They turn up every few years, singly or in small numbers, often in autumn: the previous one being at Donderry in October 2021. [Robin Chapman.]



Fish Parasites

**Plate 8.16.** Two-spotted Goby (*Pomatoschistus flavescens*), Portland Harbour with attached parasitic isopod. Image: Lin Baldock.

A 'plague' of the parasitic isopod *Anilocra* sp. on a range of fish species under Swanage Pier was noted in September. It was recorded from Corkwing Wrasse (*Symphodus melops*), Ballan Wrasse (*Labrus bergylta*), Painted Gobies (*Pomatoschistus pictus*) and Two-spotted Gobies (*Pomatoschistus flavescens*). The larger individuals were attached to larger wrasse. It is

interesting to note that on the small gobies the isopod attached low down on the body behind the pectoral fin, while on the wrasse species they are typically attached high on the head just behind the eye.

### Thirty years of Bass study

The Cornwall Bass Investigations Group are a group of volunteer citizen scientists who conduct juvenile bass surveys on the Helford, Fal and Camel estuaries in Cornwall. These surveys were the brainchild of Dr Pamela Tompsett of the Helford Marine Conservation Group (HMCG), and Donovan Kelley MBE. They were started on the Helford by Derek Goodwin MBE in 1994, with surveys on the Fal commencing in 2000. Limited surveys on the Camel began on a trial basis in 2021. Derek led the group until 2021, at which time he handed over the reins to Robin Bradley, while still maintaining an advisory role. The group has close links to both the HMCG and the Bass Anglers' Sportfishing Society. The purpose of the surveys is to provide an assessment of the strength of each successive year class and its growth, and to monitor any adverse effects on survival of bass during their first winter caused by prolonged very cold spells. The data we produce provides additional evidence for monitoring bass stock levels. The surveys provide a valuable long-term time series of data, which has been used in scientific research papers on the environmental and biological drivers of bass recruitment.

The work is fascinating and great fun! Anybody with an interest in fish (not just bass - we see lots of other fish), fishing or conservation, will enjoy the surveys, which take place in some beautiful surroundings. There is no obligation, or minimum number of surveys you should do - just volunteer for any that are convenient for you. If you're interested let Robin Bradley know via email: [bradley4ne@btinternet.com](mailto:bradley4ne@btinternet.com)

### Hinkley Point C: Millions of fish under threat after permit change

Campaigners say tonnes of fish could be sucked into Hinkley Point C's cooling system if an acoustic fish deterrent is not installed.

The Environment Agency (EA) [has removed a requirement for EDF to install the deterrent](#), which the company said could be dangerous to maintain.

Environmental groups say millions of fish could be killed per year.

The EA said it was confined to looking at water discharge activity, which did not deal with the entrapment of fish. A final decision on whether EDF will have to install an acoustic fish deterrent (AFD) will be made by the Secretary of State for Environment later this year.

The reactor cooling system tunnels will take in 132,000 litres of water per second from the Severn Estuary to cool the plant's two nuclear reactors.

An AFD would use underwater sound to cause most species of fish to swim away.

[Louis Inglis, BBC News]

## **Turtles**

**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; MSN – Cornwall Wildlife Trust, Marine Strandings Network; MTR - British Isles & Republic of Ireland Marine Turtle Strandings & Sightings.

### **Conclusions**

- The most turtles recorded in the area for nine years.
- While the numbers of Leatherback Turtles were in line with those of recent years, those of 'hardshell' turtles were amongst the highest.

- The majority of the reports were of juvenile Loggerhead or Kemp’s Ridley turtles. Most of these appeared to be ‘cold shocked’.

## Report

2023 was an exceptional year with more marine turtles reported than for nine years. A total of 47 were seen in British and Irish waters, with 22 in the greater south-west region. Of these, eleven were found around Cornwall, five in Devon (four North Devon), two each from Dorset and the Isles of Scilly, one in Jersey and one in Guernsey.

These consisted of six Leatherback Turtles (*Dermochelys coriacea*), of which five were swimming and one stranded dead; fourteen Loggerheads (*Caretta caretta*), two alive and swimming, eight stranded alive and two dead on the beach; and finally, two Kemp’s Ridley (*Lepidochelys kempii*) dead on the shore.

The year was exceptional in having more reports of ‘hardshell’ (all marine turtles other than Leatherbacks), than of Leatherbacks. In fact, it was the highest number of live strandings of hard-shelled species in Britain and Ireland yet recorded.

All of the ‘hardshells’ were juvenile, including some very small animals of around 15 cm or under 800g. These appear to have been cold-stunned, having been carried by ocean currents into areas which became too cold to sustain their active life style. This has happened before, with juveniles being stranded in the colder months of the year, but what is most unusual is that in 2023 there were these strandings at both the beginning and the end of the year. It has been suggested that this may be coupled with the highest ocean surface temperature ever recorded (Penrose and Westfield. 2024).

Fortunately, over 50% of hardshell turtles taken in alive for rehabilitation do survive.

One ocean-travelling Columbus Crab *Planes minutus* was found under the carapace of one Loggerhead.

Two Loggerheads had large clusters of goose barnacles (*Lepas* sp.) attached to the rear of their carapace. These can be a serious encumbrance to the turtle, and in 2022 the mass of barnacles on one loggerhead were about 50% of the weight of the turtle. This does raise the question of whether the presence of the barnacles increases the probability of the turtle stranding, or whether barnacles are more likely to attach to already unhealthy turtles which have a higher probability of stranding regardless.

R.S. Penrose and M.J.B. Westfield. April 2024. *British & Irish Marine Turtle Strandings & Sightings Annual Report 2023*.



**Plate 8.17.** Dead young Loggerhead, Chesil Cove, January 2023. Image: Craig Pinder.



**Plate 8.18.** Juvenile Loggerhead, Hayle, November. 2023. Image: Dan Jarvis.

South-West Marine Ecosystems in 2023 (The State of South-West Seas)

**Table 8.2.** Turtles reported in the south-west in 2023.

Date	Record no.	Turtle species	Location	Status	Comment
1/01/2023	T2023/01	Loggerhead	Just off the Wra rocks at Pendeen Watch	Alive, swimming	Swimming. Observed through binoculars and telescope.
10/01/2023	T2023/04	Loggerhead	Chesil Beach, Dorset	Stranded dead	Very small juvenile. Craig Pinder; Julie Hatcher, Dorset Wildlife Trust. Collected for necropsy by CSIP
12/01/2023	T2023/05	Loggerhead	Gugh, St Agnes, Isles of Scilly	Stranded dead	Dead on Gugh Bar - washed off again by tide. Lucy McRobert. MSN, Dan Jarvis.
13/01/2023	T2023/06	Loggerhead	Perranporth beach, Cornwall	Stranded alive	Juvenile, cold shocked (1618g). With <i>Planes minutus</i> crab. Rehabilitated at Blue Reef Aquarium. Tracey Williams.
25/01/2023	T2023/46	Kemp's Ridley	Saunton sands, Devon	Stranded dead	Recovered for pm. Rob Deaville CSIP/ZSL.
3/02/2023	T2023/11	Loggerhead	Widemouth Bay, Bude, Cornwall	Stranded alive	Juvenile, cold shocked (1458g). Rehabilitated at Blue Reef Aquarium. Claire Thorne
3/02/2023	T2023/12	Loggerhead	Perranporth beach, Cornwall	Stranded alive	Juvenile, cold shocked (777g). Rehabilitated at Blue Reef Aquarium. Tony Wilson
27/02/2023	T2023/17	Loggerhead	30 metres off May's rock, Veryan Bay, South Cornwall	Alive swimming	Small, probably loggerhead. Not seen again. Dan Jarvis.
03/04/2023	T2023/18	Loggerhead	St Ouens Bay, Jersey	Stranded dead	BDMLR
15/04/2023	T2023/19	Loggerhead	Saunton Sands, North Devon	Live stranding	Returned to the sea. Rod Penrose. BIMTR
11/08/23	T2023/21	Leatherback	Outer Poole Patch, Dorset	Alive, swimming	BIMTR
25/08/2023	T2023/29	Leatherback	South of Mousehole, Cornwall	Alive, swimming	Seen from RMS Scillonian
07/09/2023	T2023/24	Leatherback	Off Falmouth	Alive, swimming	BIMTR
5/10/2023	T2023/26	Leatherback	Off Start Point, SX 83 37	Alive, swimming	It came to the surface for air and could clearly see ridges down the side of his back. Michael Brooking (ASA. Crinkle)
16/10/2023 <sup>1</sup>	None assigned	Turtle sp.	Crow Sound, Isles of Scilly		Probably Leatherback. Rik Addison.
17/10/2023 <sup>1</sup>	T2023/47	Leatherback	St Martin's Flats, Isles of Scilly	Presumably alive and swimming	From the boat Higher Town Quay/St. Martin's to St. Mary's, discovered by another birder and seen by ca. 10 persons; the boat was turned around, but the turtle could not be relocated; huge, carapace and head seen, which was held above the water, one flipper seen briefly above the water too; distance ca. 80-100 m; no photos. Michael & Kerstin Schmitz. IoSBNHR
4/11/2023	T2023/30	Leatherback	Penhale Sands, Perran Beach, North Cornwall	Stranded dead	1.5m partially decayed. Jason Halford, The Watering Hole and Dan Jarvis BDMLR
6/11/2023	T2023/31	Loggerhead	Chouet Bay, Guernsey	Stranded alive	Juvenile (885 g) with around 20 goose barnacles attached to rear of carapace. Taken to Guernsey SPCA. Michael and Michaela Le Page.
10/11/2023	T2023/32	Loggerhead	Hayle Beach, Cornwall	Stranded alive	Juvenile (1595g). With large number of goose barnacles attached to rear of carapace. Rehabilitated at Blue Reef Aquarium. Dan Jarvis, BDMLR.
20/11/2023	T2023/33	Loggerhead	Westward Ho! North Devon	Stranded alive	Juvenile. Taken for rehabilitation at Blue Reef Aquarium. Dan Jarvis, BDMLR.
27/11/2023	T2023/34	Loggerhead	Daymer Bay, Padstow	Stranded dead	Taken to be examined by Cornwall Marine Pathology Team/CSIP
22.12.2023	T2023/39	Loggerhead	Putsborough Sands, Woolacombe, North Devon	Stranded alive	Juvenile (1105g). Taken for rehabilitation at Blue Reef Aquarium. Dan Jarvis, BDMLR.
30/12/2023	T2023/41	Kemp's Ridley	Bude, Cornwall	Stranded dead	Examined on beach by Debbie Destecroix. Samples collected for Rob Deaville ZSL. MSN

ERCCIS – Environment Record Centre for Cornwall and the Isles of Scilly

MSN – Cornwall Wildlife Trust, Marine Strandings Network

IoSWT – Isles of Scilly Wildlife Trust

IoSBNHR – Isles of Scilly Bird and Natural History Review

BIMTR - British & Irish Marine Turtle Strandings & Sightings

BDMLR – British Divers Marine Life Rescue

South-West Marine Ecosystems in 2023 (The State of South-West Seas)

**Table 8.3.** Occurrence of Turtles 2017 to 2023.

	South West England				Britain and Ireland		
	Leatherback	Other and unidentified*	Total		Leatherback	Other and unidentified*	Total
2023	6	16 <sup>1</sup>	22		13	34 <sup>1</sup>	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

<sup>1</sup> All 'hardshell'

**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

MTR - British Isles & Republic of Ireland Marine Turtle Strandings & Sightings



## 9. Marine and Coastal Birds South-West

Edited by Alex Banks, with contributions from Richard Archer, Jay Cowen, Mark Grantham, Vickie Heaney, Paul St Pierre, Ruth Porter and Joe Turner

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### Conclusions

- **Highly Pathogenic Avian Influenza impacted breeding seabirds in Dorset**, with at least 600 casualties and poor productivity for black-headed gulls, common and Sandwich terns.
- However, **little terns at Chesil Beach had another productive year**, with 35 pairs averaging 1.3 chicks fledged.
- **Burrow-nesters continue to increase** on Scilly and Lundy, with Manx shearwaters and European storm petrels at the highest level for decades following rat eradication.
- **Auks are also still increasing across the region**, with numbers of puffins, guillemots and razorbills at a high this century; productivity in 2023 was also reasonable where monitored.
- In contrast, most **natural-nesting gulls are showing evidence of decline** (albeit against a backdrop of urban expansion for herring and lesser black-backed gulls).
- **Kittiwake productivity was generally very low** although it was marginally better at Lundy and Trewavas Head.
- **A bonanza year for tropical and southern breeding seabirds**, with rarities including individual red-footed and brown boobies on Scilly, and three records of Scopoli's shearwater; additionally, thousands of great and Cory's shearwaters were recorded, including 16,000 Cory's off Scilly and 6,500 off Porthgwarra.

### Introduction

There were whole-island seabird counts of both Lundy and the Isles of Scilly in 2023. Regular seabird productivity monitoring at the Isles of Scilly; Lundy and Straight Point (Devon); Looe and Mullion Islands, Trewavas Head, Porthmissen and Portreath (Cornwall); Brownsea Island, Lodmoor, Abbotsbury and Chesil Beach (Dorset) continued in 2023. Abundance monitoring also took place at Steepholm (Somerset), the West Exmoor Coast and Berry Head (Devon), and the Purbeck Cliffs (Dorset).

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 2022/23, the Helford, Kingsbridge, Fowey and Hayle Estuaries were surveyed at low tide.

Data collected across the south-west in 2023 fed into a major report on Highly Pathogenic Avian Influenza impacts in UK seabirds, published in early 2024 ([Tremlett et al. 2024](#)).

Sea-watchers and pelagic tour operators were kept busy in summer 2023 following an unprecedented influx of shearwaters from southerly Atlantic and Mediterranean breeding colonies.

Richard Archer has summarised information on breeding terns and gulls in Dorset, included as Annex 1.

### Nesting seabirds

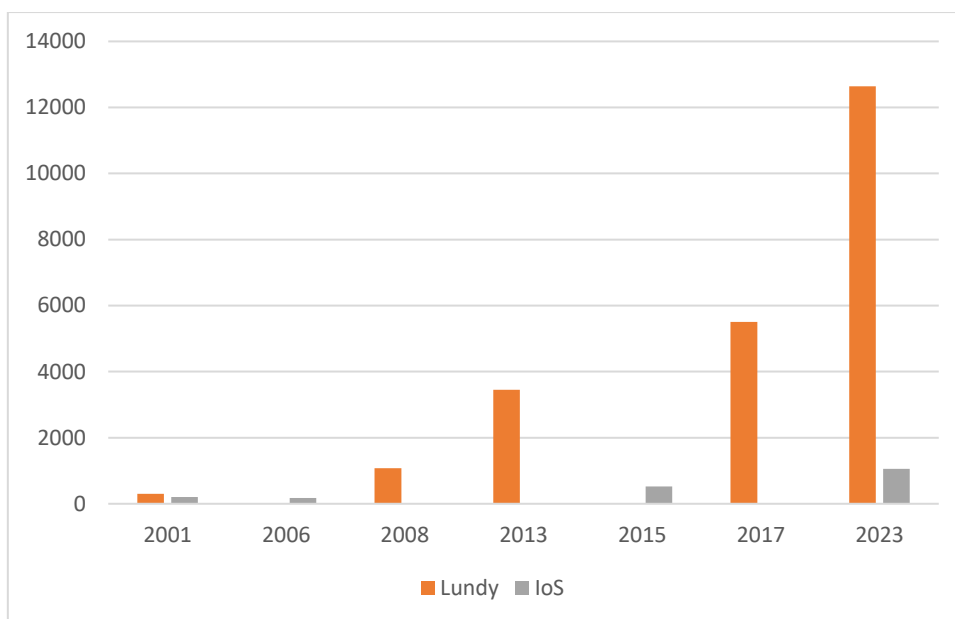
A summary of abundance and productivity records from across the south-west is shown in Tables 9.1 and 9.2. We are able to start presenting select species trend information for comparison with previous years.

#### Manx shearwaters

Key breeding colonies: Lundy, Isles of Scilly

## South-West Marine Ecosystems in 2023 (The State of South-West Seas)

Since 2000, numbers of breeding Manx shearwaters have increased by more than 4000% on Lundy, and by more than 400% on the Isles of Scilly. Both populations have benefitted from rat eradication and likely from spillover from the booming breeding colony on the Pembrokeshire islands of Skomer and Skokholm (Figure 9.1).



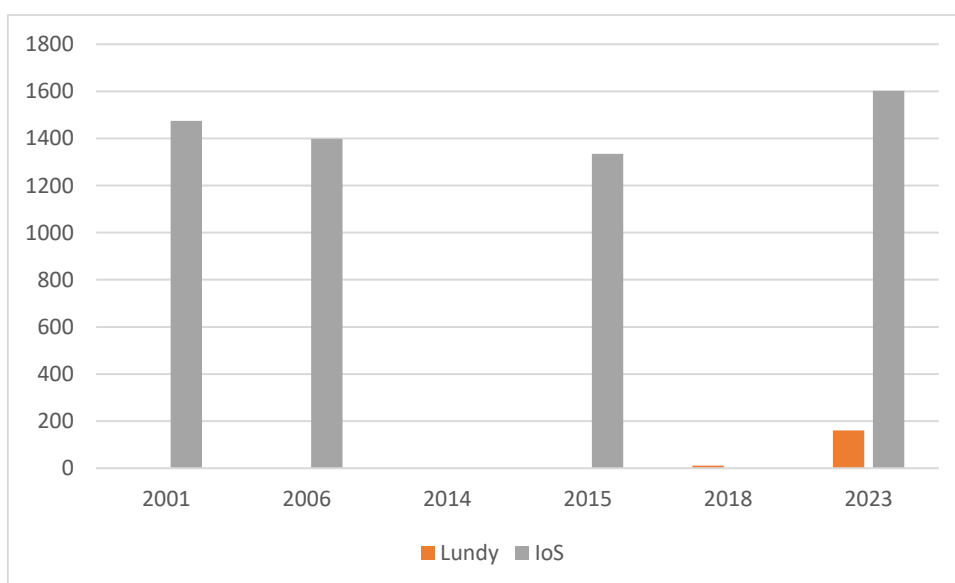
**Figure 9.1.** Manx shearwater Apparently Occupied Burrows, Lundy and Isles of Scilly (IoS)

Productivity was measured at Lundy, with 10 chicks fledged from 13 monitored burrows at Old Light – 0.77 chicks per pair.

### European storm petrels

Key breeding colonies: Lundy, Isles of Scilly

Storm petrel numbers at the key colonies within the Isles of Scilly have recovered from their dip over the last twenty years and are now 9% greater than in 2001; 14 islands within the archipelago remain occupied. At Lundy, since the first post-rat eradication breeding record in 2014, the population has increased to 161 (Figure 9.2).



**Figure 9.2.** Storm petrel Apparently Occupied Sites, Lundy and Isles of Scilly (IoS).

No productivity information was available for 2023.

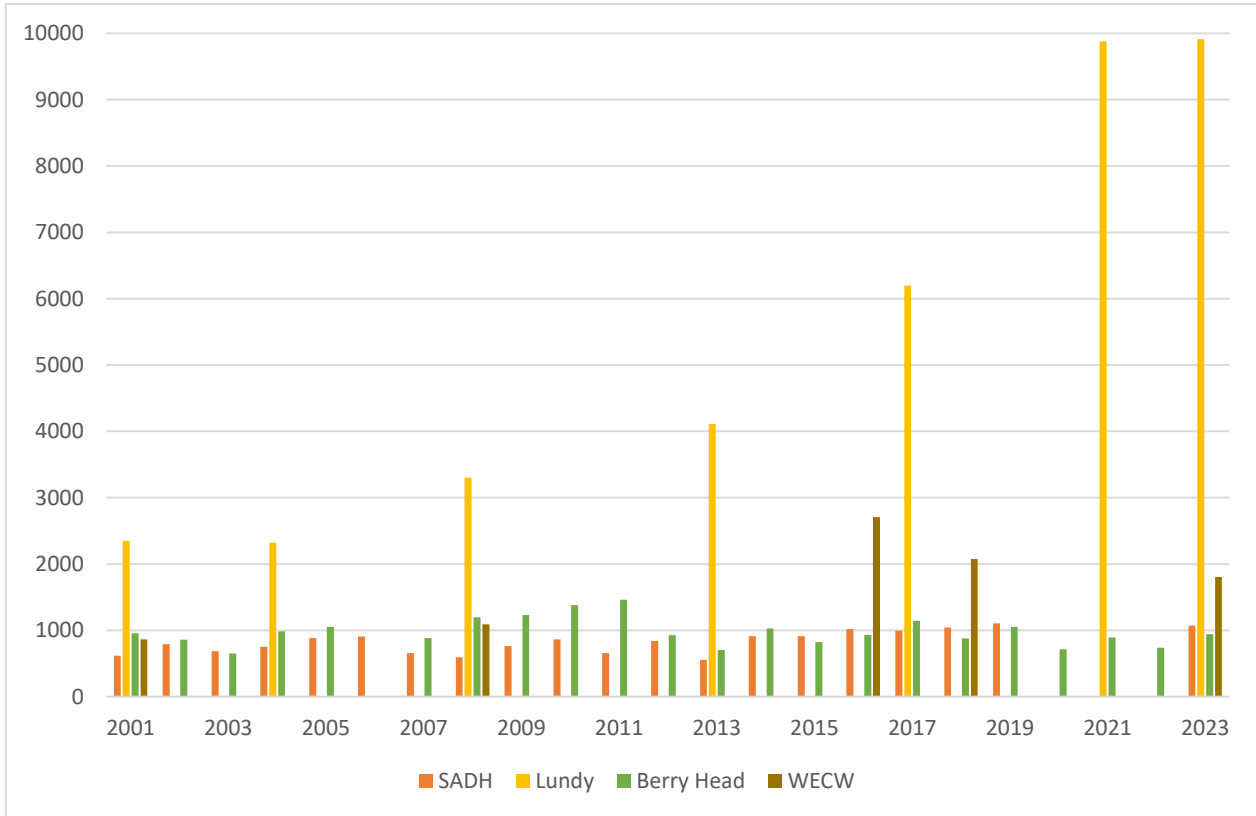
### Auks – guillemot, razorbill, puffin

## South-West Marine Ecosystems in 2023 (The State of South-West Seas)

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

### Guillemots

Generally speaking, guillemot numbers are broadly stable over time at the Purbeck Cliffs (St Aldhems-Durlston Head), Berry Head and West Exmoor Coast breeding colonies. However, at Lundy, numbers have increased, although they are still nowhere near the estimates of 19,000 in 1939 (Figure 9.3). 2023 suggested some plateauing at Lundy, whilst, on the Isles of Scilly, numbers neared 500 – an increase of about 150% since 2001.



**Figure 9.3.** Counts of guillemot individuals at St Aldhem’s – Durlston Head (SADH), Lundy, Berry Head and West Exmoor Coast & Woods (WECW).

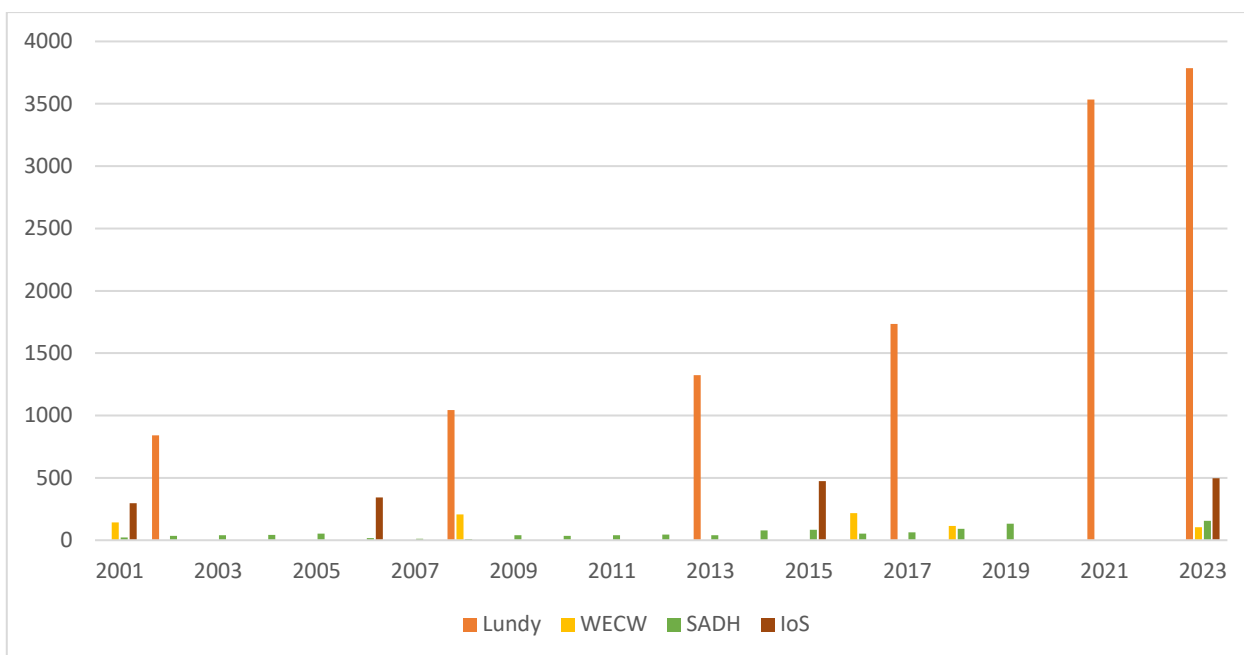
Productivity information from Lundy indicated a fairly average breeding season, with 47 chicks fledged from the 64 pairs observed at St Mark’s Stone, a rate of 0.73 chicks per pair.

### Razorbills

Razorbill trends are largely in keeping with those for guillemots, with similar increasing patterns at the Isles of Scilly (~500 pairs) and a plateau in the increase on Lundy; 3,785 razorbills were recorded on the island in 2023 (Figure 9.4). This 350% increase since the early 2000s is hugely encouraging, although there is some distance to go to reach the 10,500 estimated in 1939.

No productivity data were collected for razorbills.

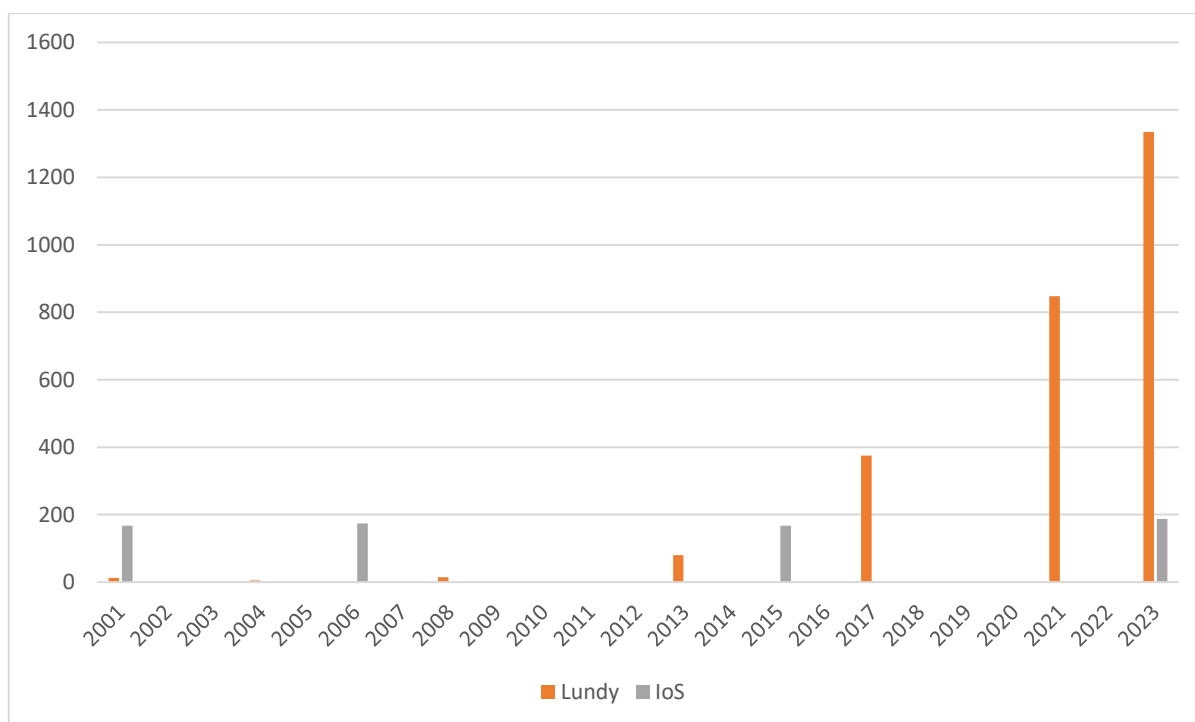
## South-West Marine Ecosystems in 2023 (The State of South-West Seas)



**Figure 9.4.** Counts of razorbill individuals at St Aldhem’s – Durlston Head (SADH), Lundy, Isles of Scilly (IoS) and West Exmoor Coast & Woods (WECW).

### Puffins

Breeding puffins remain relatively scarce in the South-West. The Purbeck Cliffs colony is clinging on with eight birds in 2023. Isles of Scilly numbers remain relatively stable (187 birds in 2023), whereas Lundy is still witnessing increases; from near local extinction in 2004 (five birds), 1,335 were counted in 2023 (Figure 9.5).



**Figure 9.5.** Counts of puffin individuals at Lundy and Isles of Scilly (IoS).

Productivity was monitored at Jenny’s Cove, Lundy. 179 pufflings fledged from 264 burrows, at 0.68 chicks per pair. This is comparable with recent years on the island.

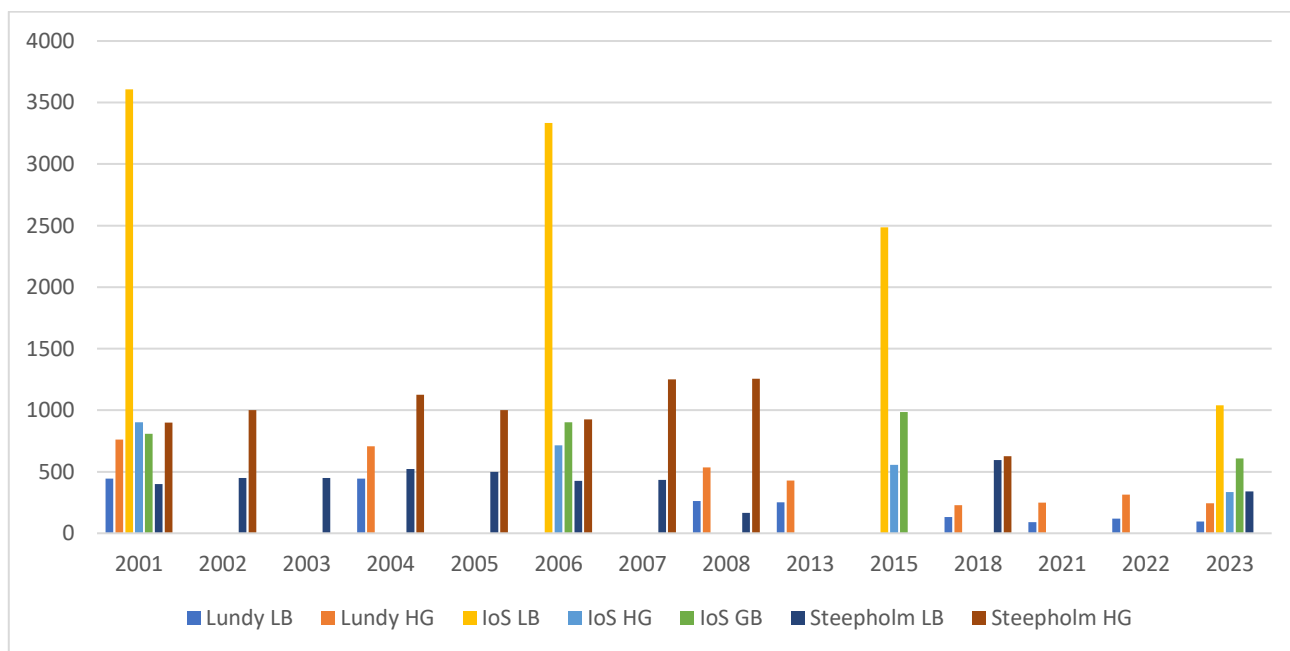
Gulls – herring gull, lesser black-backed gull, great black-backed gull, black-headed gull, kittiwake

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

Burnell *et al.* (2023) confirms the changing picture with herring and lesser black-backed gulls, alluded to in recent SWME reports, with abundance in urban areas now exceeding that in natural nesting locations. Declines in these species should therefore be viewed against the backdrop of both increasing abundance and range expansion into urban nesting sites.

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

All of the main colonies monitored in 2023 showed evidence of decline in the three large gull species. Most pronounced was the reduction in abundance on the Isles of Scilly, which is classified as a Special Protection Area in part for its lesser and great black-backed gulls; compared with 2001, they have declined by 71% and 25% respectively.



**Figure 9.6.** Lesser black-backed gull (LB), herring gull (HG) and great black-backed gull (GB) Apparently Occupied Nests at main South-West colonies.

No productivity data were available for 2023.

*Black-headed gulls*

Holton Bay, Poole Harbour, contains three low-lying islands supporting breeding black-headed gulls. The 2023 survey estimated 4,313 pairs, up 38% since 2016. Some of this increase is likely due to recent restrictions on licensed egg collection from the islands.

At Brownsea Island, 0.57 chicks per pair were fledged from the 214 nests monitored. At nearby Lodmoor, productivity was virtually zero. Both colonies were impacted by avian influenza, with chick mortality especially high.

*Kittiwakes*

**Table 9.1.** Kittiwake productivity (chicks per pair – CPP) in 2023

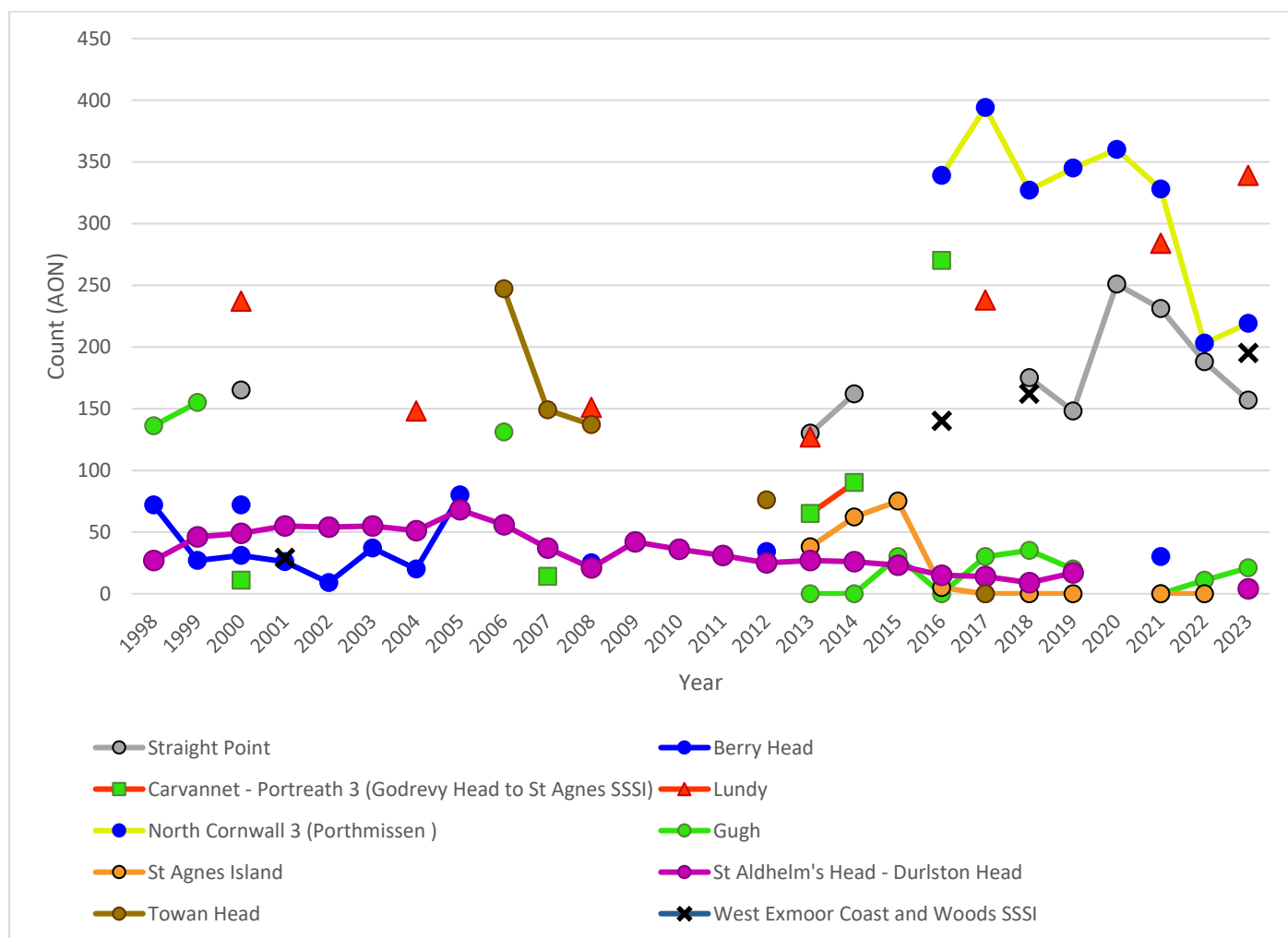
	AON	CPP
Purbeck Cliffs	4	-
Straight Point	157	0.15

## South-West Marine Ecosystems in 2023 (The State of South-West Seas)

West Exmoor	195	-
Gugh	21	0
St Agnes	0	0
Trewavas Head	100	1.20
Portreath	155	0
Porthmissen	219	0.71
Lundy	339	1.12
	<b>1,190</b>	<b>0.53</b>

In common with most breeding sites across the UK, kittiwakes are generally not faring well in the South-West (Figure 9.7). 2023 did provide some evidence of encouraging up-turns in abundance at Lundy and West Exmoor Coast, but at the colonies in Dorset, Cornwall and Isles of Scilly the picture was mostly bleak.

Productivity varied: the reasonable year at Lundy and Trewavas Head was tempered by total (or near total) failure at Gugh, Portreath and Straight Point (Table 9.1).

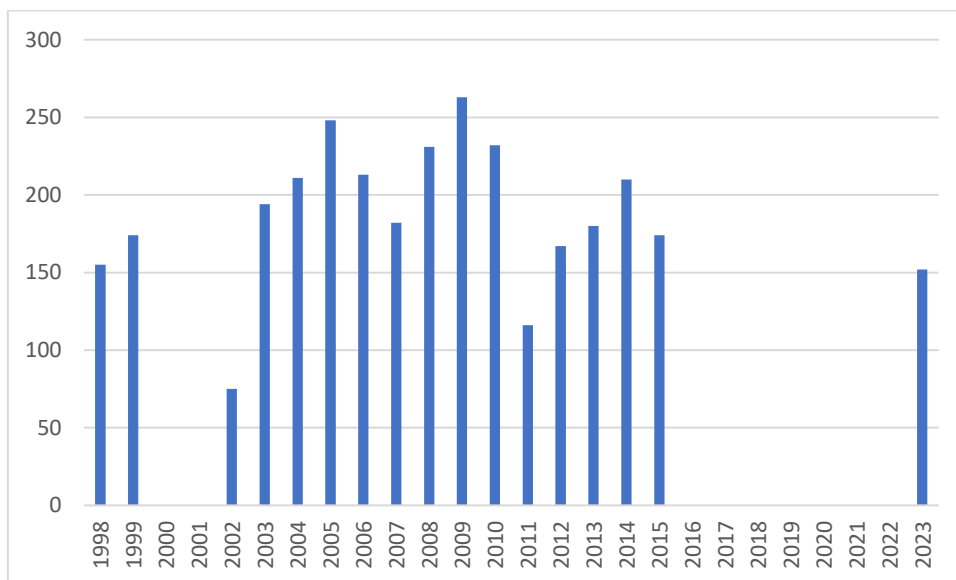


**Figure 9.7.** Kittiwake Apparently Occupied Nests in south-west breeding colonies.

Terns – Sandwich tern, common tern, little tern

*Sandwich terns*

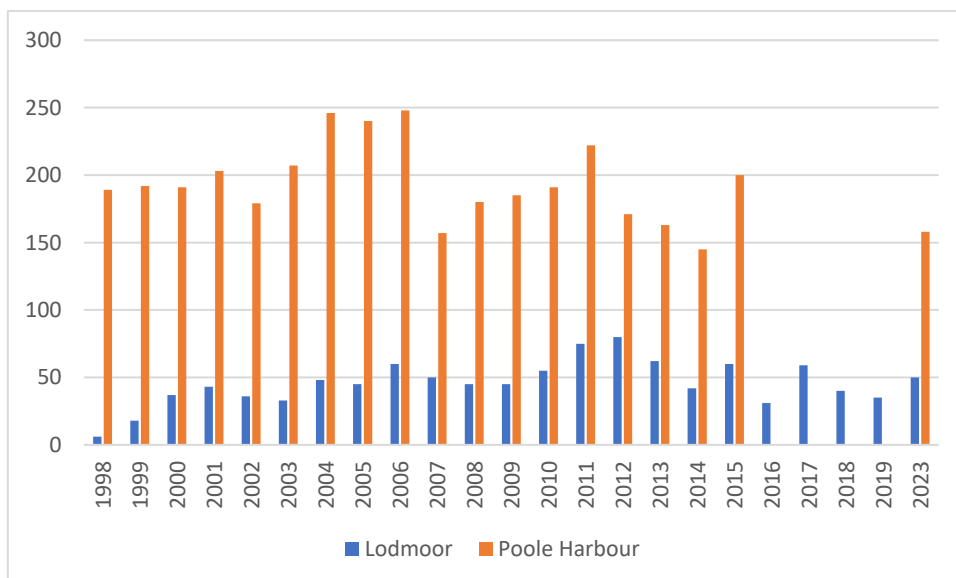
Sandwich terns breeding at Brownsea Island, Poole Harbour, were impacted by HPAI in 2023. Whilst the count of breeding adults was within ‘normal’ range (Figure 9.8), if somewhat unexceptional, productivity suffered. Only 26 chicks fledged at an average of just 0.17 chicks per pair, and wardens of the site had the heartbreaking task of collecting and removing hundreds of dead birds from the colony.



**Figure 9.8.** Sandwich tern AONs at Brownsea Island, Poole Harbour.

*Common terns*

Common terns were also affected by HPAI in 2023, with outbreaks at the Lodmoor and Abbotsbury colonies. As with Sandwich terns, numbers of breeding adults were slightly down but not unusually so (Figure 9.9), but productivity was poor. Chicks per pair at Lodmoor (0.02), Abbotsbury (0.17) and Poole Harbour (0.39) were all much lower than the national average.



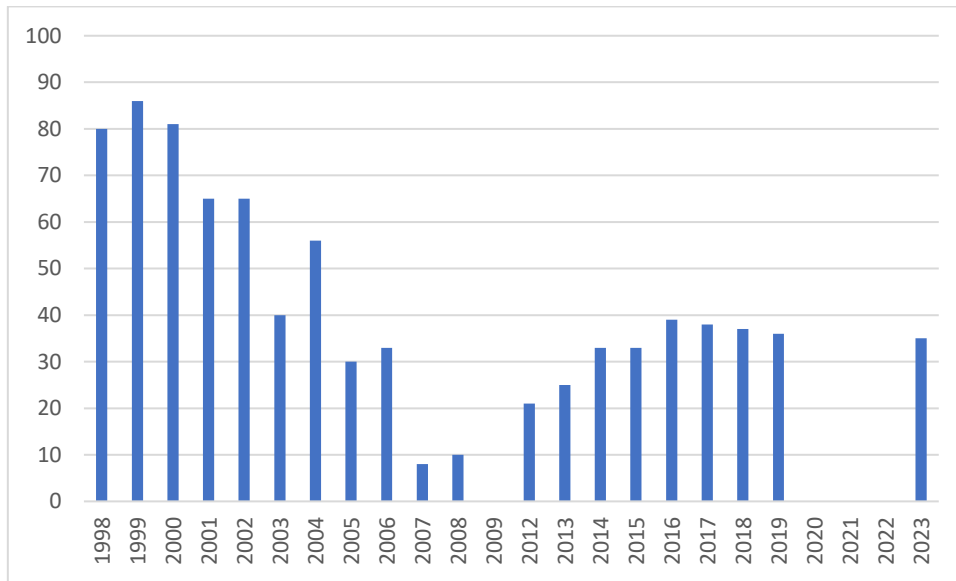
**Figure 9.9.** Common tern AONs in 2023.

*Little terns*

Little terns have thus far not been affected by HPAI but fencing and wardening is necessary to control impacts from predation. In 2023, kestrel predation was absent and the hedgehog and fox fences enabled the 35 nesting pairs to

## South-West Marine Ecosystems in 2023 (The State of South-West Seas)

produce 45 chicks at a rate of 1.29 per pair. More productive years will be necessary if the colony is ever to return to the size it achieved in the late 1990s (Figure 9.10).



**Figure 9.10.** Little tern AONs at Chesil Beach.

### Summary data for 2023 breeding season

**Table 9.2.** 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	C N	TM	F.	G B	CA	HG	KI	LB	MX	RA	SA	Tota l
<b>Cornwall</b>			<b>826</b>			<b>142</b>	<b>98</b>	<b>22</b>	<b>239</b>	<b>219</b>	<b>1</b>		<b>153</b>	<b>7</b>	<b>180</b>
Chapel Porth to Perranporth			24			15	1		2				7	3	52
Gerrans Bay to Camels Cove SSSI						1	2		17					3	23
Godrevy Head to St Agnes SSSI						13	1		14				3	28	59
Hayle - Chapel Porth Mullion Cliff to Predannack Cliff SSSI									6						6
North Cornwall Coast			102			68			69	219			58		516
South Cornwall Coast and Gull Rock			298			2	17	22	19				17	40	415
Trevelgue Head to Merope Rocks						22	2		103					26	153
West Penwith			402			21	11		9		1		68	7	519
	<b>133</b>		<b>116</b>									<b>126</b>	<b>388</b>	<b>12</b>	<b>312</b>
<b>Devon</b>	<b>5</b>		<b>15</b>		<b>161</b>	<b>348</b>	<b>35</b>	<b>1</b>	<b>317</b>	<b>650</b>	<b>96</b>	<b>38</b>	<b>8</b>	<b>8</b>	<b>12</b>
Berry Head			943												943
Butter Cove						7		1	7						15
Bolt Tail, Soar Mill Cove							3		18					16	37
	133		991									126	378	11	288
Lundy	5		2		161	243	32		244	339	96	38	5	0	95



South-West Marine Ecosystems in 2023 (The State of South-West Seas)

Straight Point										157					157
West Exmoor Coast and Woods SSSI			760			98			48	154		103	2		116
					<b>110</b>								<b>12</b>	<b>306</b>	
<b>Isles of Scilly</b>	<b>84</b>	<b>0</b>	<b>403</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>27</b>	<b>0</b>	<b>21</b>	<b>467</b>	<b>648</b>	<b>183</b>	<b>8</b>	<b>5</b>
					105									11	261
Isles of Scilly SPA	80		343	0	3			27		21	464	426	81	6	1
Bryher				0							1	22			23
Guther's Island											1			7	8
Men-a-Vaur Island	4		60		17								100	1	182
Menawethan Island														4	4
St Agnes Island					34							115	2		151
St Martin's Island										1	22				23
St Mary's												63			63
		<b>356</b>	<b>107</b>												<b>497</b>
<b>Dorset</b>	<b>8</b>	<b>8</b>	<b>1</b>	<b>50</b>		<b>28</b>	<b>4</b>	<b>15</b>	<b>48</b>	<b>4</b>			<b>155</b>	<b>22</b>	<b>3</b>
Lodmoor				50											50
		356													356
Poole Harbour SPA		8													8
St Aldhelm's Head - Durlston Head	8		107												131
			1			21	1		34	4			155	22	6
Ballard Cliffs						7	3	15	14						39
<b>Somerset</b>	<b>0</b>	<b>9</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>85</b>	<b>0</b>	<b>0</b>	<b>340</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>434</b>
Avalon Marshes		9						45							54
Steeptolm								40			340				380
	<b>285</b>	<b>715</b>	<b>278</b>	<b>10</b>	<b>253</b>	<b>103</b>	<b>27</b>	<b>30</b>	<b>120</b>	<b>178</b>	<b>180</b>	<b>265</b>	<b>875</b>	<b>77</b>	<b>829</b>
<b>Grand total</b>	<b>4</b>	<b>4</b>	<b>30</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>4</b>	<b>0</b>	<b>8</b>	<b>8</b>	<b>8</b>	<b>72</b>	<b>8</b>	<b>0</b>	<b>82</b>

**Table 9.2.** Productivity data (chicks per pair) for south west counties in 2022. Where >1 measure from a site, average is presented. Green cells show rates exceeding national average values, red below national averages, orange at (or very near) average values (Horswill & Robinson 2015). Abbreviations are as in Table 10.1.

	PU	GU	F.	KI	CN	BH	TE	AF	MX
<b>Devon</b>									
Lundy									
St Marks Stone		0.73							
Jenny's Cove	0.68								
Aztec Bay				1.12					
Gannet's Rock			0.42						
Old Light									0.77
Straight Point				0.15					
<b>Dorset</b>									
Abbotsbury					0.17	0.07			
Lodmoor					0.02				
Chesil Beach								1.29	

## South-West Marine Ecosystems in 2023 (The State of South-West Seas)

Brownsea Island	0.39	0.53	0.17
<b>Isles of Scilly</b>			
St Agnes & Gugh	0.00		
<b>Cornwall</b>			
Porthmissen	0.71		
Trewavas Head	1.20		
Portreath	0.00		

### Noteworthy sightings of non-breeding birds

Following the relatively high numbers of southern-breeding shearwaters in 2022, 2023 smashed all records. Birders flocked to the Isles of Scilly to join pelagic cruises in late summer, with amazing records from Cornwall too.

**Cory's Shearwater** – Exceptional autumn counts, peaking at 6,500 past Porthgwarra on 30<sup>th</sup> July (previous best YEAR was 1,715 in 2008); Figure x. 16,000 were also recorded in an individual seawatch off Scilly.

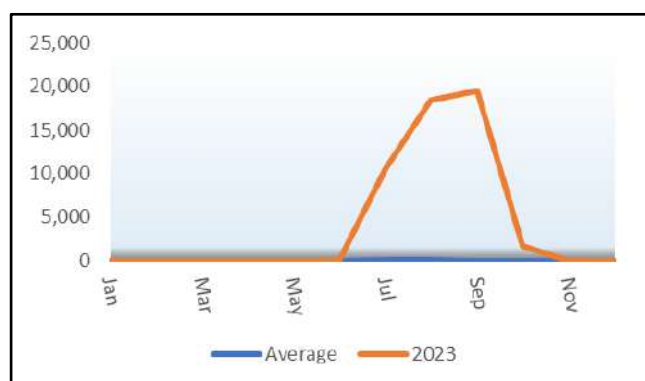


Figure 9.11. Cory's shearwater counts, Cornwall, 2023.

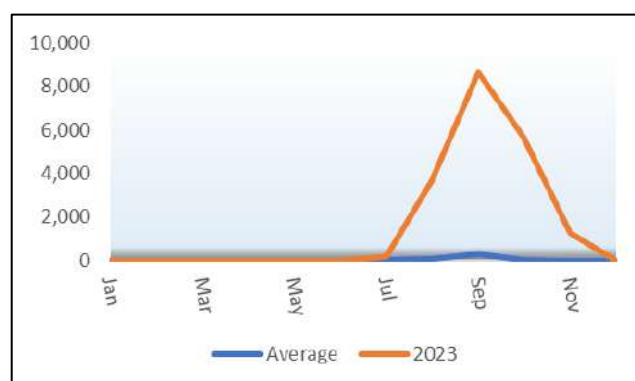


Figure 9.12. Great shearwater counts, Cornwall, 2023.

**Great Shearwater** – Exceptional run of high counts, peaking at 1,794 past Porthgwarra on 31<sup>st</sup> August (Figure 9.12).

**Scopoli's Shearwater** – Three reports of this exceptional national rarity, on 8<sup>th</sup>, 28<sup>th</sup> and 30<sup>th</sup> July (three UK records prior to 2023); birds usually leave the Med post-breeding in late October.

There was some speculation that drought conditions in mainland Europe could have contributed to these patterns, with birds forced to forage further north than usual – perhaps as a result of prey changes linked to reduced nutrient loads from river systems.

Additionally, individual red-footed and brown boobies were recorded on the Bishop Rock, Isles of Scilly in summer 2023. These birds are tropical breeders; brown boobies have been increasingly sighted in UK waters in recent years, but this was only the second ever red-footed booby sighting in the UK.

### References

Burnell, D. et al. 2023. *Seabirds Count*. Lynx Edicions, Barcelona.

Horswill, C. & Robinson R. A. 2015. Review of seabird demographic rates and density dependence. *JNCC Report No. 552*. Joint Nature Conservation Committee, Peterborough.

Tremlett, C.J., Morley, N. & Wilson, L.J. 2024. UK seabird colony counts in 2023 following the 2021-22 outbreak of Highly Pathogenic Avian Influenza. *RSPB Conservation Science Research Report 76*.

## Annex 1

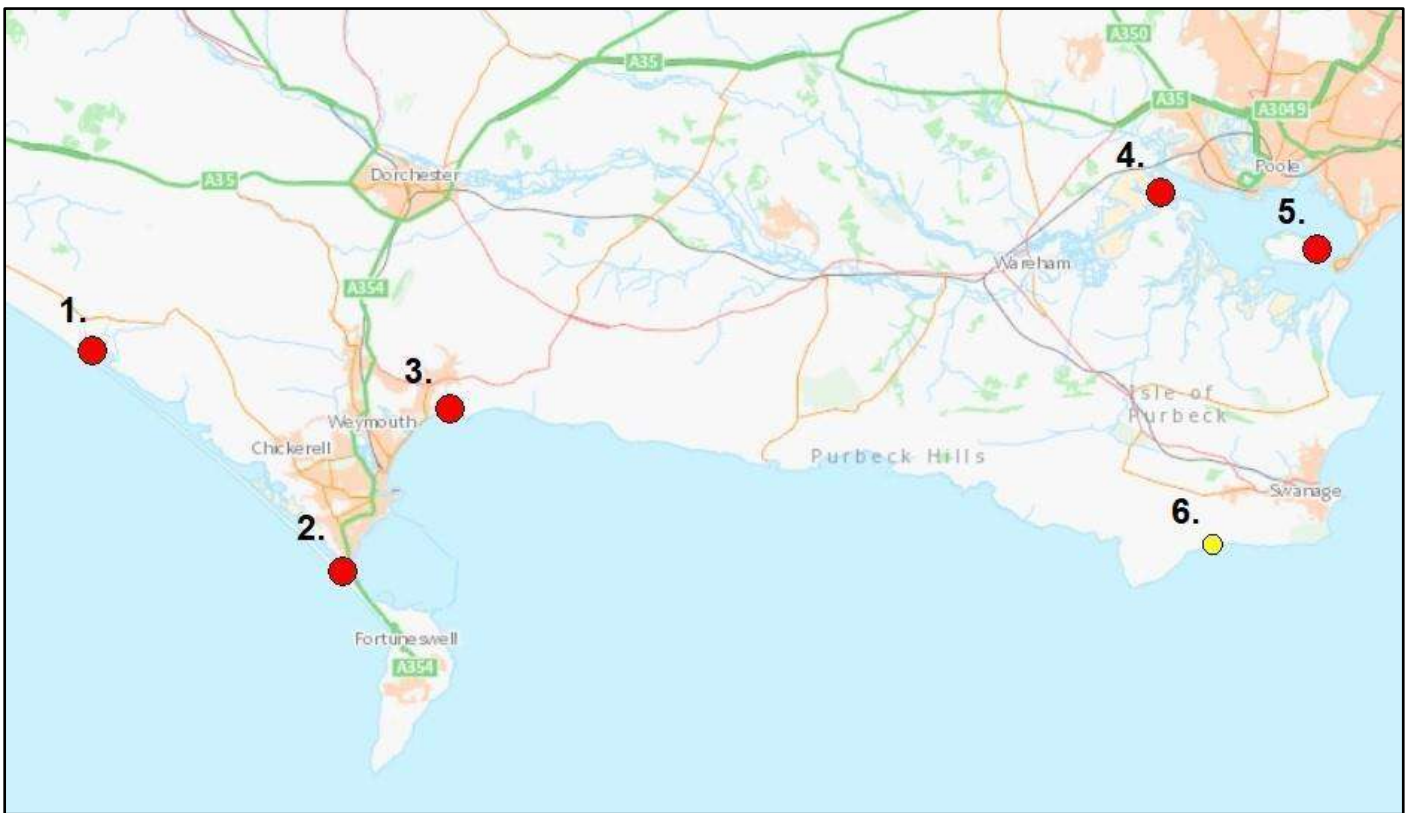
### DORSET BREEDING TERNS AND GULLS

Richard Archer.

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#### Introduction

Dorset is currently the only county in south-west England with breeding Sandwich, common and little tern and Mediterranean gull. Poole Harbour Special Protection Area (SPA) qualifying species include breeding Sandwich and common tern and Mediterranean gull. Chesil Beach & the Fleet SPA qualifying species include breeding little tern.



**Figure 9.13.** Key seabird breeding sites in Dorset 2023. 1. – Abbotsbury, 2. – Chesil Beach, 3. – Lodmoor, 4. – Poole Harbour Spartina islands, 5. – Brownsea Island, 6. – Durlston to St Aldhelm’s Head (cliff-nesting species).

#### Brownsea Island in 2023

Breeding seabirds on Brownsea were severely impacted by HPAI (avian flu) in 2023. This spread quickly once the island’s Sandwich tern colony settled in mid-June. The reserve was then shut to the public for six weeks, during which time over 600 dead birds were collected and disposed of. Most of the casualties were Sandwich tern and black-headed gull chicks, although some adults died, including those of other gull species. Common terns typically settle a couple of weeks after the Sandwich terns, and were also impacted by bird flu, although they seem to have been marginally more productive, possibly because the colony was more dispersed.

In consequence, 2023 was a very poor breeding season for seabirds on Brownsea, with productivity very low. The further impacts of bird flu will no doubt become apparent in 2024. In summary:

## South-West Marine Ecosystems in 2023 (The State of South-West Seas)

- 152 pairs of Sandwich terns fledged 26 chicks
- 158 pairs of common terns fledged 62 chicks
- 216 pairs of black-headed gulls fledged 15 chicks
- One pair of Mediterranean gulls fledged no chicks
- 11 pairs of great black-backed gull fledged 6 chicks
- One pair of herring gulls fledged no chicks

### Poole Harbour *Spartina* islands



**Plate 9.1.** The three *Spartina* islands located in Holton Bay, north of RSPB Arne, circled above. Image: RSPB.

Birds of Poole Harbour carried out a breeding gull survey of Poole Harbour in 2023. This was the first full survey since 2016. [The report](#) is available on the Birds of Poole Harbour website. It provides useful information about the current and historic status of the five breeding gull species found across Poole Harbour and the adjacent urban areas. In summary:

Mediterranean gull - Poole Harbour is one of key UK breeding site for this species, and 'Med gull' is a qualifying species of the SPA. 278 nests were counted on the Holton Bay *Spartina* islands in 2023, with a single pair on Brownsea lagoon. This total is 79% higher than the previous highest count of 155 pairs in 2018 and 631% higher than the count achieved in the 2016 breeding gull survey. The colony is clearly thriving, helped no doubt by cessation of egg harvesting on the islands, although sea level rise remains a significant and ongoing threat.

Black-headed gull – the breeding population for the Harbour has increased by 38% since 2016, to an estimated 4,313 pairs, with the majority nesting on the three Holton Bay *Spartina* islands (3,568 nests) and a new colony of at least 470 pairs established in the Brownsea lagoon reedbeds – these are apparently additional to the count of 216 breeding pairs counted on the breeding islands in Brownsea lagoon. Despite the increase in breeding on the *Spartina* islands, the picture there is far from rosy. The small south-east island in the cluster had 1,400 pairs of black-headed gulls in 2008 but no longer supports any; similarly, the larger north-west island has experienced a decline in numbers since 2018, and both trends seem to be linked to more frequent tidal inundation as a result of sea level rise. Only the main island is maintaining population growth. There is no productivity data for the *Spartina* island colonies nor does the report provide an assessment of any avian flu impacts. However, given the logistical difficulties in accessing the islands, it is useful to have an updated estimate of the breeding population.

The 2023 gull survey also provided the following breeding estimates for other gull species for the urban areas of Poole and adjacent non-urban areas: herring gull (872 pairs), great black-backed gull (42 pairs) and lesser black-backed gull (79 pairs).

### RSPB Lodmoor

The common tern and black-headed gull breeding islands were also badly hit by avian flu in 2023. It was pitiful to see sick birds showing the characteristic symptoms of avian flu - shivering with drooping wings and closed eyes. Although an estimated 50 pairs of common terns attempted to breed, only a single chick was known to have fledged, although it almost certainly succumbed to the flu before leaving Lodmoor. There were no systematic counts of black-headed gulls this year, although several chicks are known to have fledged and left the colony before HPAI hit it, but a large number of dead adults and chicks were observed on the breeding islands.

### **Chesil Beach Little Tern Recovery Project**

2023 was a second consecutive year of good productivity, thanks largely to the hard work of staff, volunteers and local partners in managing the site, and the absence (after several years) of a persistent male kestrel. At least 35 pairs nested at the colony, producing 40+ fledged chicks. As in 2022, there was no sign of HPAI in the colony – generally little tern colonies across the UK seem to have escaped the ravages of avian flu, perhaps because they nest in much lower densities than other tern species.

A hedgehog barrier fence was installed at the Chesil colony in 2023, erected to keep hedgehogs from getting trapped on the inner electric fence. There was some helpful publicity about this through BBC online - [Hedgehog fence aids recovery of threatened seabirds - BBC News](#)).

### **Abbotsbury**

As with Brownsea and Lodmoor, HPAI took its toll on breeding tern and gulls in 2023:

- Common tern – at least 100 pairs settled initially but were then hit by presumed HPAI. All the chicks from these nests died as did many adults. About 10 new nests fledged around 20 chicks.
- Black-headed gull – around 30 pairs black-headed gulls settled initially but they were then also hit by presumed HPAI. All the chicks from these nests died as did many adults. One late nest fledged two chicks.

### **Status and trends for Dorset breeding terns**

The table below provides a summary of the short-term trends in the breeding populations of key tern and gull populations in Dorset since 2020. Most breeding tern populations appear to be stable, or at least they will have been prior to avian flu. The Chesil little tern population, having increased to about 50 breeding pairs in 2020, has experienced a short-term decline largely due to kestrel predation. Following the disappearance of a persistent male kestrel, the colony has had two productive seasons in 2022 and 2023, and it is hoped that the population will recover. The introduction of a common tern raft at Abbotsbury by the Chesil & Fleet Nature Reserve has helped reinforce Dorset's coastal common tern population, alongside the ongoing availability of the two tern islands at RSPB Lodmoor. Given the status of the common tern population as a qualifying feature of the Poole Harbour SPA, perhaps greater recognition should be given to the wider population at Chesil and Weymouth?

Amongst our coastal gull populations, the rapid expansion of Mediterranean gull is clearly apparent. The impacts of HPAI on this species in Poole Harbour is unclear, however the continued increase in the Dorset breeding population of this charismatic gull species can be anticipated provided suitable habitat is maintained. Similarly, Dorset's coastal black-headed gull breeding population remains robust, with evidence of significant population increases in recent years.

HPAI is currently the biggest ongoing threat to Dorset breeding tern and gull populations and it remains to be seen how persistent the flu is and what impact it has, and continues to have, on these species. We can anticipate a significant decline in the adult breeding population of Sandwich and common terns in 2024, possibly alongside that of black-headed gulls.

The most significant longer-term threat in Poole Harbour is sea level rise, leading to more frequent inundation of the *Spartina* islands. In addition, the long-term future of Brownsea Island lagoon remains in doubt as the continued maintenance of the lagoon sea wall becomes increasingly untenable. It is critical that replacement habitat for both the lagoon and the *Spartina* islands is found, preferably within Poole Harbour itself, although opportunities may be limited. The developing Arne Moors Scheme is likely to provide a number of new lagoon islands for breeding terns and gulls, although whether species such as Sandwich tern would use them remains unclear. Given the importance of Sandwich tern, common tern and Mediterranean gull as Poole Harbour SPA qualifying species, the need to find alternative breeding sites is urgent.

All our Dorset breeding tern populations are conservation-dependent and both Sandwich and little terns are now confined to single breeding sites, which makes them very vulnerable to impacts such as sea level rise, human

## South-West Marine Ecosystems in 2023 (The State of South-West Seas)

disturbance and HPAI. It is critical that we continue to seek to conserve our Dorset breeding seabird populations within a wider south coast context, locally centred on the Solent area. There is good work being done in the wider Solent to maintain and restore coastal wetland habitat for many of these tern and gull populations, especially along the Lymington-Keyhaven coast, in Langstone and Christchurch Harbours and at RSPB Medmerry and Pagham Harbour.

**Table 9.3.** Recent trends of Dorset’s key tern and gull populations.

	SPA			Estimated breeding pairs				Trend 2020-23	Qv Qualifying Population
	Designation & update year	Qualifying population (pairs)	Data source	2020	2021	2022	2023		
Poole Harbour SPA	1999 & 2017								
Sandwich tern		181 (1.6% GB)	SYM 2010-14	241	57	227	152	Stable/slight decline	Approaching
Common tern		178 (1.8% GB)	SYM 2010-14	164	174	156	158	Probably stable	Approaching
Mediterranean gull		64 (10% GB)	2015	155	109	N/C	278	Increasing	Significantly higher
Black-headed gull Brownssea				227	193	217	470	Harbour population stable at c. 4,313 pairs	
Black-headed gull <i>Spartina</i> islands				4415	3706	N/C	3,568	Decline, loss of pairs on smaller islands	
Chesil Beach & The Fleet SPA	1985 & 2017								
Little tern		54 (2.5% GB)	SYM 1980-84	50	48	43	35+	Moderate decline	Approaching but significantly lower than 1998 population of 100 pairs
Common tern				55	25	100	100	Big increase	
Black-headed gull				15-20	25	25	30	Stable	
Lodmoor									
Common tern				45	50	64	50	Stable	
Black-headed gull				20	N/C	N/C	N/C	?	

### CLIFF-NESTING SEABIRDS

Footprint Ecology carried out annual monitoring of cliffs between Old Harry Rocks and St Aldhelm’s Head, where counts have been carried out since the mid-1960s. The Dorset cliffs hold only a small number of relatively widespread species including fulmar, cormorant, shag, herring gull, great black-backed gull, kittiwake, guillemot, razorbill and a very small number of puffins. Most of these populations have been in long-term decline and the 2023 survey confirmed this continuing trend for most species.

The breeding guillemot population remains the largest, with over 1,100 individuals counted on the breeding ledges in 2023, and the puffin population is the smallest with no birds observed during the survey (although up to 8 were reported on different occasions and 3 pairs may be breeding). Species such as razorbill, guillemot, and puffin are thought to have been considerably more abundant in the first half of the 20th century, while fulmar colonised, and kittiwake increased markedly, during the second half of the 20th century before declining. Results from the 2023 monitoring show that:

- The guillemot population declined noticeably from the 2022 peak of 1,652 individual birds, but nonetheless remained high at 1,071 (similar to the 2021 count). All sub-populations declined except at Crab Hole where there was an increase in the number of birds present on the ledges.
- The razorbill population likewise declined from the 2022 peak of 194 birds but remained higher than 2021, with 155 individuals counted. There was an increase at Blackers Hole and Funnel/Reform.

## South-West Marine Ecosystems in 2023 (The State of South-West Seas)

- 2023 saw a continued decline in number of herring gulls, although the population fluctuates quite widely. The population is current at 37% of the peak count since systematic recording began and 12% of the highest count in 1969.
- The very small great black-backed gull population reached its lowest level since recording began 13 years ago, with just 4 apparently occupied sites.
- For fulmar, 2023 saw a continuation of the increase seen in 2022, following the lowest count in 2021. Numbers are now at around 60% of the peak count since systematic recording began for this species in 2010. Breeding fulmar is now present in just 3 of the 6 sites where it has regularly been recorded previously.
- The number of cormorant nests at Ballard Down was the lowest since the expansion of the 1980s (possibly attributable in part to the late survey date) and nests were noticeably scattered.
- Shag numbers declined and are currently at the bottom end of recent fluctuations at less than 15% of the maximum count in 1992, with notable declines in the western section between Crab Hole and Buttery Corner (St. Aldhelm's)
- There was a decrease in kittiwake nests to the lowest count (4), following a slight increase between 2019 and 2021. The population has declined by 99% since a high point in 1982 and is in a precarious state.
- Although no puffin were counted during the survey, observations from the cliff suggest that the tiny puffin population remains stable. The National Trust with its partners are currently investigating puffin breeding activity on these cliffs. There is some evidence of rodent activity which might help explain the decline in the breeding population on this part of the coast.

## 10. Seals Across the South-West

Editor: Sue Sayer MBE

Contact: [sue@cornwallsealgroup.co.uk](mailto:sue@cornwallsealgroup.co.uk)

**Authors:** Sue Sayer MBE, Dan Jarvis, Anthea Hawtrey-Collier, James Barnett, Gareth Richards, Vanessa Lloyd, Kate Williams, Joe Parker, Katrina Davis, Mel Broadhurst-Allen, Sarah Greenslade, Sarah Hodgson and John Arnott.

### **Conclusions: State of SW Marine Ecosystems Seal Indicators: Cornwall**

- **The range or sphere of migration:** Seals now 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.
- **Cornwall seal demographics:** 66% of seals were adults and most adults were males (56%). White coated pups under three weeks old represented 1% of all seals. Ghost had her 20<sup>th</sup> pup in 21 years. 6% were south coast pups (down from 10% in 2022). A grey seal pup was born seven miles up a south Devon river and a second was born up a river in the Solent around 31/12/23. This pup had a Sea Eagle stood next to it.
- **Harbour seal pups:** None were confirmed to be successfully weaned in Cornwall in 2023, but five harbour seal pups were rescued by British Divers Marine Life Rescue (BDMLR) from Cornwall, Devon and Dorset. Two harbour seals pups successfully weaned in south Devon, including one on a pontoon.
- **Vagrant seal species:** None were recorded across the SW in 2023.
- **Entangled seals:** Eighty-one unique entangled seals were recorded in 2023 (down from 124 in 2022 and 134 in 2021). This sounds like good news, but perhaps a lot of the previous entangled seals have died. Entangled seals still represented 2% of all seals observed (so a higher percentage than pups being born). One plastic flying ringed seal (Wings), and one paint tin plastic sealed seal (LP798) were identified. Wings was successfully rescued by BDMLR. 13 seals were recorded entangled in fishing hooks in 2023 (down from 24 in 2022). This could be down to the poor mackerel season in 2023.
- **Disturbance:** In total, serious level 3 disturbance affected a total of 1,328 seals in 2023, from a minimum of one seal per incident to maximum stampede of 87 plus 163 seals (250 in total), as two men walked across two adjacent beaches full of seals. This occurred within one of Cornwall's three Sites of Special Scientific Interest, where seals are a monitored feature. As a result, SRT were delighted that Natural England followed this up by sending the offenders an enforcement letter.
- **Tagged seals:** 126 different tagged seals were recorded back in the wild in 2023, around 2% of all seals observed. BDMLR's Seal Pup Hospital in Cornwall admitted 114 seals, an increase on 2022.
- **Dead seals:** 301 dead seals were recorded by Cornwall Wildlife Trust's Marine Strandings Network approximately half of which were white coated or moulted pups. Six dead seals were identified by SRT – three adult females, one adult male, one sub adult male and one juvenile (including two ex-rehabilitated seals).
- **Postmortems:** 39 grey seals were post mortemed by James Barnett and the Cornwall Marine Pathology Team with 18 trauma, 14 infectious disease cases, as well as three 'other' causes, and four seals where their cause of death could not be established.
- **This was not a normal year in the following respects:** Grey seals pupping up rivers in South Devon and Dorset; harbour seal pups and dead seals – highest number on record.
- **This 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 recordings.

More detailed information can be found in SRT's [2023 Annual Report](#)



### Seals Research Trust (SRT) Activity

SRT are now self-financing thanks to our public, private and voluntary funders. In 2023 SRT delivered 740 activities (including 245 UK and 80 globally) involving 29,183 beneficiaries. Natural England commissioned two reports from SRT in 2023. In 2023 SRT received records from 252 volunteers, from which the team were able to process 4,567 discrete surveys (an average of 13 site specific surveys each and every day) from 328 different locations. SRT's Sanctuaries at Sea Ranger, Sarah, coordinated quarterly SW Seal Censuses. Thank you to all our amazing volunteers who took part and made these possible.

### Seal data

#### Grey seals *Halichoerus grypus*

On average 9.2 seals were recorded, ranging from a minimum of no seals observed to a maximum of 458 seals counted during a single survey (down from 557 in 2021 and 519 in 2022). Of seals that were able to be classified according to age, 66% were adults and 34% juveniles, moulted pups or white coated pups. Only adults can be reliably sexed, so of all adults that could confidently be sexed, 56% were males and 44% females, which is exactly the same proportion as recorded in 2021 and 2022, despite a huge survey effort and dataset. White-coated, maternally dependent, grey seal pups (WCPs) were recorded on 581 occasions at 39 different locations around the southwest. Most were recorded on the north coast, but there were 32 sightings of WCPs at 11 different sites on the south coast of Cornwall and Devon. WCPs represented just over 1% of all seals observed.



**Plate 10.1.** Ex-rescue, rehabbed and released adult female LP111 Snowdrop with her 2023 pup. Image: Seal Research Trust (SRT).

In 2022, most pups were born in September followed by August (but with only four more pups born in August than October). In 2023, most pups were born in September, but there were 23 more pups born across the southwest in August compared to October. Pupping season has moved substantially earlier, creating a temporal and spatial overlap with the peak tourist season, which is problematic.

#### Harbour seals *Phoca vitulina*

SRT observations included 25 records with 44 harbour seal sightings (down from 85 in 2021 and 29 records in 2022). Twelve records were single individuals up to a maximum of four individuals seen on 04/02/23 in South Devon. Harbour seals were recorded at eight different locations all at south coast locations across Cornwall, Devon and the Solent.

### Photo ID (PID)

SRT PID Hubs continue to be highly productive, processing an incredible 105,235 photos in 2023 into 1,899 survey albums (including 416 from 2021 and 2022). This enabled SRT to generate a total of 11,409 seal identifications, of which 84% were re-identifications (this is surprisingly consistent compared to 87% in 2021/22 and 86% in 2020). Of all the seals re-identified in 2023, 34 have been identified for at least 20 years by the SRT network.

### Key Issues

#### Entangled Seals

SRT record 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 732 times (2% of all seals observed) during 407 surveys up to a maximum of 15 different individuals in a single survey – recorded on 19/01/23 at West Cornwall by Kate Hockley. Ten or more different entangled seals were recorded three times, all at West Cornwall, during the year. In total 81 unique entangled seals were identified from SRT catalogues. A new entanglement issue that emerged in late 2021 continued to be observed in 2022 – that of seals being hooked on lines mostly from the local sustainable inshore mackerel fishery. In 2023 13 different seals were recorded as hooked, ranging from apparently single or multiple hooked adult seals to moulted pups in need of rescue. One definitively bycaught seal was reported to SRT in 2023. This juvenile female was found in St Ives Harbour in unfortunate circumstances. She died after becoming entangled in loose gear wrapped around a fishing boat's propellor before the skipper could only release the gear at low tide.

#### Disturbance

From SRT's routine data (not effort corrected), serious level three disturbance is 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 156 serious disturbance incidents reported. In total, level three disturbance affected a shocking total of 1,362 seals in 2023. This ranged from a minimum of one seal in 51 incidents to a maximum of 87 plus 163 seals (250 in total) stampeding from two adjacent beaches into the sea at West Cornwall East on 17<sup>th</sup> December. This was caused by two men accessing the beaches sequentially.



**Plate 10.2.** Major disturbance incident West Cornwall East on 17<sup>th</sup> December. Image: SRT.

Where appropriate, disturbance incidents are routinely followed up by members of SRT's newly formed volunteer Conservation Team. Case studies of disturbance and data continue to be shared with various statutory agencies, including the Cornwall Inshore Fisheries and Conservation Authority, Natural England, Operation Seabird and DEFRA. Throughout 2023 SRT continued to fund and distribute the Defra-endorsed Seal Alliance 'Watching Seals Well' leaflets and 'Give Seals Space' signs across the UK. SRT were delighted when, in May 2023, Defra launched their new [Marine and Coastal Wildlife Code](#) (a recommendation of SRT's 2022 People Protecting Precious Places research report). SRT were asked to deliver the online and live press coverage for the launch of this national code.

#### **Photo identified ex rescue, rehabilitation and released seals by SRT**

SRT 2023 data included 732 sightings of 126 different rear flipper tagged, ex-rehabilitated seals (around 2% of all seals observed) from all around our southwest coast. Most of these tagged seals would have been released in North Devon or from the northwest/southwest Cornish coast, but there were three notable exceptions. 'Sate' and 'Christine' were released in France and 'Crater' was released from Courtown in SE Ireland. The longest ID'd, so potentially longest surviving, ex-rescued seals are DP193 'Lewis' (an adult male released in 2001) and S123 'Puffa' (an adult female released in 2003). Lewis' IDs are fascinating, as he has defected from the north to the south coast of Cornwall.



#### **Rescue, Rehabilitation and Release**

**Author:** Dan Jarvis BDMLR

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The BDMLR seal hospital in Cornwall received 114 seal pups for rehabilitation during the rescue season from August 2023 to April 2024. It is noted that the first half of the season was marked out as being an especially bad period for callouts and admissions that surpassed previous records for those months, partly due to the effects of storms and rough sea conditions. The latter half of the season was more average and thus when looked at overall, the season may give the impression that it was simply a busier than average period, when the detailed data shows that there were some exceptional occurrences in 2023.

As with the previous rescue season there seemed to be fewer than usual incidents involving direct intentional disturbance towards lone pups on beaches. This hopefully continues to be an indicator of public educational messaging success via individual organisations and collaborative efforts including Cornwall Marine and Coastal Code Group, Seal Alliance and Operation Seabird.



**Plate 10.3.** BDMLR Hospital removing hooks from grey seal moulted pup. Image: BDMLR.

**Strandings Cornwall Wildlife Trust Marine Strandings Network**

Author: Anthea Hawtrey-Collier and Sue Sayer MBE

Contact: [strandings@cornwallwildlifetrust.org.uk](mailto:strandings@cornwallwildlifetrust.org.uk)



Three hundred and one dead seals were stranded around the Cornish coast in 2023, which is the highest number since records began in 2000. Almost half of these were white coated or moulted pups under the age of one year old. Since 2016, the number of white coated dead 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 2022 average) with the exception of July, when the same number were recorded compared to this longer-term average).

**Notable cases**

A moulted pup at Vault Beach on 13/01/23 died with features indicative of bycatch recorded by Sharon Trew. A juvenile grey seal bycaught in St Ives Harbour on 13/10/23 when a fishing vessel's gill net became wrapped around its propellor. In these extraordinary circumstances, the juvenile got entangled and died before the net could be retrieved at low tide (also mentioned in 'Entangled Seals' above).



**Plate 10.4.** St Ives Harbour bycaught seal. CWTMSN.

An entangled adult grey seal was recorded at Godrevy Point on 09/10/23 by Sue Sayer with a deep laceration still embedded with gill net and rope.

**Photo identified dead seals by SRT**

Two dead tagged seals were recorded: Two ex-rehabilitated seals were recorded dead in 2023. Jonesy was recorded by Nathaniel Barry at Perranporth on 03/10/23 having been released from the Cornish Seal Sanctuary in 2018. Jonesy's last live identification had been a year earlier at West Cornwall. Wasabi was rescued on 16/10/22 in Wales, released on 13/01/23 at Kennack Sands. He was last identified by SRT on the Roseland 15/04/23 by Kerston Hartmann and 15 days later was found dead at Porthoustock. Four additional dead seals were identified by SRT from their unique fur patterns. These were adult male Alien Watermark who was identified between 28/12/17 and 01/12/22 at West Cornwall by 17 different SRT volunteers, before being recorded dead on the south coast in Mounts Bay on 08/02/23 by Constance Morris. Adult female Three bars was identified by SRT between 24/02/21 and 13/12/21 in St Ives Bay and at West Cornwall by four different SRT volunteers, before being recorded dead at Carbis

Bay by Dan Jarvis. Adult female Tulip placeholder was identified 102 times between 30/08/12 and 09/01/23 at three south coast locations from the Roseland to Mounts Bay by 24 different SRT volunteers. She was recorded dead at St Michael’s Mount on 14/06/23. Finally adult female Swims (a pupping mum) had been identified by SRT 111 times between 25/11/07 and 31/08/23 at six north coast sites by 42 different SRT volunteers. When she washed up dead at Perranporth on 19/11/23, SRT put her story together which revealed the development of her tracking back infection that presumably contributed to her death.



S340	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Total
Jan						2	1				1			1	1	7
Feb				1		3						1			2	8
Mar	1				1	1	1		1		1	1	2	1		10
Apr					2										2	5
May							1							1	2	4
Jun				1							1	1	1	2	2	9
Jul			1	1	1	1	1		1		1	4	4	1	1	16
Aug	1			1		1	1	1		1	2	3	4		2	17
Sep						1			1	1	2	1				6
Oct									1	7				1		9
Nov			1		2	1		1	1		1		2	1		10
Dec			1		2	2	1	1	2		1					10
Total	2	0	2	4	8	13	7	4	5	9	9	12	16	7	13	111

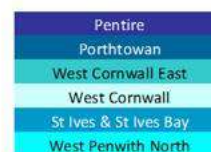


Plate 10.5. Swims identified in 2023 showing her nasty tracking infection. Number of monthly IDs. SRT.

**Post Mortem Examinations**

**Author:** James Barnett Cornwall Marine Pathology Team

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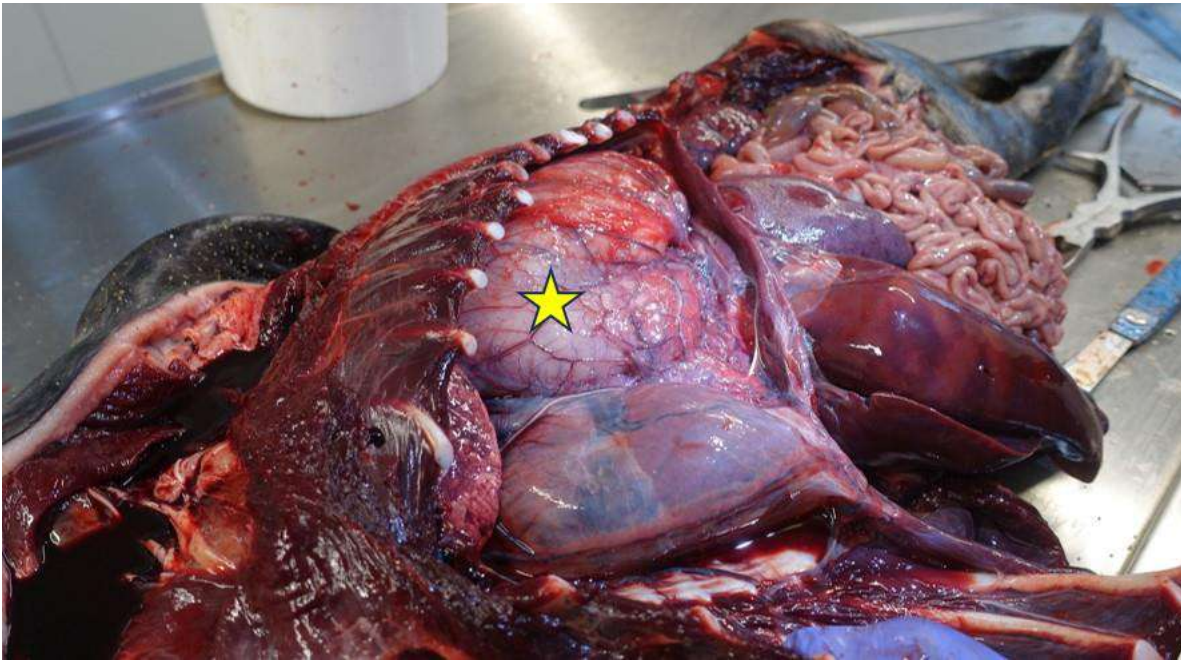
Thirty-nine seals were examined post-mortem in 2023, including five animals found in 2022.

Age: two adults, one juvenile, 32 moulters and four pre-moult pups. Primary conditions found: trauma (18), infectious (14), others (3), not established (4).

Ten animals were found dead, the other 29 had died or been euthanased at rescue or during early attempted rehabilitation.

**Notable cases:**

The main findings in moulted seal pups included seven cases of traumatic injury with secondary infection of the flippers, including suppurative arthritis, open infected phalangeal fractures and soft tissue infections, and six cases of parasitic bronchopneumonia associated with the lungworm, *Otostrongylus circumlitus*. There were also two cases of bilateral suppurative mandibular lymphadenitis, two cases of necrotising infections of the lips and gums with osteomyelitis of underlying bone and two cases of traumatic hiatus hernia.



**Plate 10.6** Traumatic hiatus hernia. Star marks stomach has moved through diaphragm prior to death by CMPT.

There was also one known case of bycatch in a pup caught in nets overhanging the sides of a trawler in St Ives harbour (mentioned previously).

In two pre-moult pups, the sequelae to umbilical infection had led to the death of the animal, with peritonitis occurring in one pup and intra-abdominal haemorrhage following rupture of inflamed umbilical blood vessels (vasculitis) occurring in the second. The other two cases were of *Pseudomonas aeruginosa* septicaemia and suppurative arthritis.

In one adult, the primary finding was of osteomyelitis secondary to a fractured, infected canine. In the second adult and the juvenile seal, the post-mortem findings were inconclusive.

The Gower Seal Group collects information along the south Wales coast west of Swansea. That information provides context to south-west England but is not south-west England and so the SWME Report Editor has included it in Annex 1 for the 2023 report.

### **Somerset Seal Report**

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### **Seal Sightings and Notable Highlights**

All seal sightings were collated as part of a Regional Coordinator volunteer role covering north Somerset. A total of 80 land-based effort surveys were completed in 2023 which yielded 11 sightings of grey seal individuals at Hurlstone Point from March to October. There were also a total of three casual sightings of grey seal individuals recorded from Doniford Bay and Hurlstone Point.

### **Strandings**

For 2023, one live grey seal was recorded hauled out near the slipway in Watchet in November. The young pup had a cut on its head and was subsequently transferred to the Cornish Seal Sanctuary.

## Research reports and projects

Land based effort surveys were completed every month at a different location to help boost sightings data with the aim to provide a clearer picture of the abundance and distribution of marine mammals along Somerset's coast. Details of events and annual reports are on Somerset Wildlife Trust website.

### North Devon Seal Report

**Author:** Kate Williams Seal Research Trust (SRT)

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Surveys continued at the same North Devon seal haul out for the 13th year. Survey effort was good with 61 surveys being carried out through the year, focused particularly on the summer months when the number of seals is highest.

Seals weren't seen hauling out until the start of June despite the team trying to survey at low tide. Usually, they start hauling out in April. Numbers increased through June and July, peaking at 24 on 9<sup>th</sup> September. Counts in the summer months could be quite variable, sometimes double figures, sometimes single. In previous years, numbers have dropped through September and increased again in October, this was not the case in 2023. Counts were often double figures throughout September and up to mid-October.



**Plate 10.7.** North Devon haul-out of pregnant adult females. Image: SRT.

Photos were analysed to ascertain the age and sex of the seals that were recorded. 89% of the seals seen and recorded were adult females. In addition, seals were identified by their fur patterns with reference to a Photo ID catalogue of photos taken since 2010. Over 343 re-identifications of seals from the catalogue were made in 2023: 101 unique seals were identified; 37 new seals were added to the catalogue during the year; 64 seals that were already in the catalogue at the start of the year were seen in 2023.

The analysis of the age and sex of the seals shows us that it is an important resting site for pregnant adult female seals. The photo ID of the seals, seen and recorded, tells us that there are seals that regularly use the site year on year.

## Lundy Seal Report

**Author:** Head Warden, Joe Parker, Lundy Landmark Trust (LLT)

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Lundy is suitable habitat for Atlantic grey seals, and functions as an important pupping site. Due to its significance, Atlantic grey seals are a feature of the island's SSSI designation. Conservation, surveys and engagement are all run by the Island's conservation team and seasonal volunteers.

During the 2023 season, seal surveys along the north and east sides of the island were conducted from the cliffs at least once a week, depending on weather conditions. Two whole island surveys were conducted using a RIB, allowing areas not visible from the cliffs to be surveyed. The LLT team hope to conduct more RIB surveys in 2024 when the island's RIB returns, which has been out of action for several years. Seals were observed in the highest numbers at Brazen Ward, Threequarter Wall Bay and Mousehole and Trap. These areas are less subject to harsh conditions with multiple haul out areas at both spring and neap tides with feature cave areas to shelter in. The highest seal count from a cliff survey was on 15<sup>th</sup> August with 230 individuals recorded. Pup checks were carried out as often as possible, with a total of 66 pups born, and an 8% mortality rate. This is fantastic number of pups and a much lower mortality rate than the previous season, which was estimated to be around 18% owing to unfavourable weathering conditions. The first pup recorded was on 15<sup>th</sup> August at Miller's Cake on the southeast end of the island, and the last pup recorded on 24<sup>th</sup> October.



**Plate 10.8.** Almost weaned grey seal pup on Lundy being fed by its mother. Image: LLT.

During the 2023 season, LLT were able to provide a weekly talk on the Atlantic grey seals of Lundy thanks to Nicola Dunkin, our Volunteer Seal Assistant Warden. This included information on the ecology of grey seals, the significance of Lundy for them and information on seal disturbance and how to 'watch seals well'. More informal engagement also took place on seal surveys when talking to visitors about what the team were up to.





**Plate 10.9.** Beach closed.

Disturbance of hauled out seals continues to be an issue, with seals regularly flushed from rocks due to disturbance from tourist and dive boats. As most of Lundy's coastline is comprised of rocky shores rather than beaches, the majority of pups born where recorded on White's beach, Millers Cake and the Landing Bay beach. Pups on the Landing Bay beach were particularly vulnerable to disturbance on days where the Oldenburg (the Island's ship) came in, as there was a high footfall of day trippers who wanted to photograph the pups. This was mitigated by cordoning off areas closest to the beach, with signage and, when possible, by having a volunteer stationed at peak footfall times to politely move people on.

Disturbance from yacht tenders also raised concerns as they came from the sea, so were unable to read signage until they had landed. One particularly concerning incident occurred on 16<sup>th</sup> August where a yacht tender landed on Ladies beach specifically to photograph a white coat pup, causing distress. LLT hope to work more closely with yachts and other recreational boat users during the 2024 season to prevent incidences like this occurring.

LLT would like to say a huge thank you to Nicola Dunkin for her hard work and dedication to Lundy's seals during the 2023 season and for compiling Lundy's annual seal report.

### **Isles of Scilly Seal Report**

Authors: Sue Sayer SRT with input from Katrina Davis Oxford University  
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Katrina Davis from Oxford University completed a second drone-based survey across 11 islands in the Isles of Scilly's Western Rocks, Eastern Isles and Norrards over three days in September 2023. SRT are grateful that this data was shared for this report. A total of 664 seals were recorded in 2023 of which 8% were unspecified pups (white coated and / or moulted) and 13% of which were in the sea. Pup numbers were down to 53% of the number counted in 2022. One of the islands (on the Western Rocks) hosted 90% of all the pups recorded. This, despite there not having been a major storm prior to the survey, as the first recorded storm in 2023 was Storm Agnes between 17/09 and 28/09/23 – a week after the survey. Storm Agnes will likely have impacted the survival of a substantial number of pups recorded during the survey, given the low-lying nature of this island.

Two key islands (one in the Western Rocks and one on the Eastern Isles) accounted for the 77% of all the seals recorded in 2023, showing how vital this habitat is for grey seals in the Isles of Scilly archipelago.

Previous SRT surveys between 2008 and 2017 on the Isles of Scilly show considerable interannual and intra-annual variation with a minimum count of 331 seals (2010) and a maximum count of 763 seals (2010). 2023's count was within this range.

### **Channel Isles Seal Report**

Author: Dr Mel Broadhurst-Allen Alderney Wildlife Trust  
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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. Seal sightings and other notable highlights for each island (Alderney, Guernsey and Jersey) are given below.

In addition to these works, collectively, the above bodies supported a MSc research student from the University of Exeter to assess Channel Islands seal records. The research project identified that peak seal abundance differed temporally between each island and gave recommendations for further seal surveying effort.

## **Alderney**

### **Seal sightings and notable highlights**

The Alderney Wildlife Trust (AWT) completed six boat-based marine mammal observation surveys during 2023. These were completed within the island's Ramsar Site, where grey seals are known to habit. From these surveys, a total number of 143 grey seal sightings were recorded, which primarily comprised of adult females. The size of the count varied during 2023, ranging from two to 37 individuals, with the majority hauled out on offshore rocks.

The most notable highlight of 2023 was the observation of four grey seal pups, a first for the AWT (there are very limited records of grey seal pups on Alderney)! In November (23/11/23), AWT staff provisionally landed on Burhou, an offshore islet which is an important site for breeding seabirds. The original aim was to complete an intertidal species assessment of the islet. Upon arrival, staff spotted the pups happily resting sporadically across the islet with adults nearby in the surf. AWT staff abandoned the survey and left the pups to rest. AWT also collates sightings from members of the public, for which 42 grey seal sightings throughout 2023 were submitted to the AWT.



**Plate 10.10.** Channel Isles pup named Kevin looking fat and healthy. Image: AWT.

## **Strandings**

For 2023, one dead grey seal adult was found washed up on Alderney (2<sup>nd</sup> March). Another notable highlight was a live grey seal pup (again a new record!) resting on a man-made causeway during November (25<sup>th</sup> November). In collaboration with on-island BDMLR volunteers, the pup was monitored regularly for several days before it disappeared. Members of the public kindly kept away and named it Kevin.

## **Guernsey**

### **Seal sightings and notable highlights**

The States of Guernsey, Agriculture, Countryside and Land Management Services undertake the boat-based marine mammal observation surveys across Guernsey. For 2023, one survey was completed within the island's Ramsar Site. Information from this survey totalled 22 grey seal sightings.

## **Jersey**

### **Seal sightings and notable highlights**

Several organisations across Jersey record and collate seal information including Jersey Marine Conservation, BDMLR (Jersey) and the States of Jersey Marine Resources Team. Jersey Marine Conservation completed seven boat-based surveys in 2023 at key offshore sites across Jersey including the Minquiérs, Pater Noster and Écrehous. Collectively, a total number of 45 grey seal individuals were spotted which comprised of 34 adults and 14 pups. Through the recording app Epicollect, the States of Jersey Marine Resources Team Photo identified approximately seven seal individuals, throughout Channel Islands waters.

### Strandings

The Jersey based BDMLR group also completed grey seal surveys (results unavailable at this time but taken during a survey at Écrehous), with their main focus on rescuing several live and dead seals during 2023. A total number of seven live seals (six grey seals and one harbour seal) were rescued (two adults, one weaner and four pups), with three dead grey seals (one adult and two pups) also found.



Plate 10.11. Seals hauled out on Écrehous. BDMLR.

### South Devon Seal Report

**Author:** Sarah Greenslade The Seal Project (TSP)

**Contact:** sarahthesealproject@gmail.com



TSP, monitors and records seals around South Devon, as well as attempting to identify each seal, raising awareness and educating locally about these amazing creatures, knowing our seals and their quirks. TSP are fortunate to have the support of SRT, Seal Alliance, MDL Marinas, local councils, Torbay Harbor & Dart Harbour Authorities and local business and communities, and all the amazing likeminded groups that are friends.

### Consultation and engagement

Through regular river surveys, TSP became friends with owners of a very prominent property on the river – and as a result TSP have a combined flood and security camera which is also a seal survey camera. This has proved to be amazing in so many ways. Over the winter this property overlooks pontoons favoured by both grey and harbour seals, including taggies, ex-entangled, well known and up-and-coming beachmasters. This has been an amazing collaboration which has also ensured flood monitoring can be responded to, a scenario that is not going to improve.



**Plate 10.12.** Grey seals (one entangled) and harbour seal mum and pup on pontoons. TSP.

TSP regularly see adult male harbour seals, and a number of grey seals haul out there, including a well-known mum BRX26 Parallel Dangles (known since 2017), and an ex entangled seal BRX282 (known since 2013). All resting intelligently on these manmade structures.

#### **Notable Events**

2023's high point was finding out that TSP's survey work had made an impact. Devon Wildlife Trust gave their first County Wildlife Status to a manmade structure! This was for TSP's work recording seals on the protective barrier around MDL's Brixham Marina. This protects the boats from the elements but is also increasingly a winter haul out location for grey seals, and TSP have been monitoring and recording here for several years. Brixham Marina is TSP's biggest haul out location in South Devon so keeping this as a safe space for seals to return to year on year is incredibly important. There are plans in 2024/25 to replace this structure, and though these may not be ideal, MDL are having to consider the seals, and TSP will do their best to ensure seals are adequately considered.



**Plate 9.13.** MDL Breakwater to be made more seal friendly when replaced. TSP.

TSP held many talks and presentations, and Devon County show has already been a great platform for future talks and engagements, even resulting in a collaborative competition for our new logo with Stover School in Newton Abbot.

#### **Key issues**

2023 wasn't the best start for surveying. Constant heavy rain meant no seals – seals do not like sharp bits of water hitting them, so over the winter of 22/23 very few successful surveys were had, and during the 2023 summer, when

the sun was shining this generally meant a nasty easterly well and high seas, so very few boat surveys were undertaken.

TSP have had two harbour seals pup up the river in 2023. One mum and pup hauled out for some time on Ministry of Defence pontoons. One of their staff members asked to name the pup, so it was called 'Nella' after his newborn granddaughter.

One of TSP's females, GEF7 Startled Rabbit and pup suffered considerable distress a few miles along the coast, when campers arrived by boat onto the beach she'd pupped on and remained there for a few days. As a nervous mum she didn't feed her pup, so TSP and BDMLR kept a close eye. Eventually the campers left and mum and pup were reunited and the pup fed, but it could have been so different. Requests for help were hampered by the divide between the low and high water mark, and who owns what. It's very complex, yet it shouldn't have been this difficult to ensure that a life was kept safe.

### Unusual moments

TSP's most unusual event had to be a female grey seal pupping seven miles inland up a river. Thankfully she picked the perfect location at the end of a private estate on which to do this. They were well monitored, and well protected. TSP did manage to identify the female and think this was most likely her first pregnancy. But amazing choice of location - why pup out on tidal beaches encountering high stormy seas when you could chill out on a calm river? Let's see if she does the same in 2024.

TSP also saw an entangled seal BRX361 Tangled, in this river, who is also known to frequent the coast between Torbay and Salcombe. Her last recorded sighting was March 2024. TSP have known her for over two years now, and her entanglement with a rubber banding is increasingly impacting on her, yet she remains incredibly active. Let's hope there is an opportunity to help her soon.

During the year TSP took part in the Devon Marine Strandings Network course. TSP's Director became a volunteer at RSPCA West Hatch, so covering all bases with the seals, from pup monitoring, rescues, rehabs, identifications to deceased seals and marine strandings. It's all incredibly important to inform all TSP do, enabling continued engagement with both locals and tourists alike to keep our seals safe.

### Rescue Rehab and Release

Towards the end of 2023 TSP assisted the RSPCA in releasing a couple of harbour seals, one being Brie who was rescued in Shaldon, South Devon in August (Red Taggie 80658). To date TSP have assisted the RSPCA in four releases since December 2023, with re-sightings in both South Devon and Cornwall.



**Plate 10.14.** Harbour seal pup prior to release in South Devon. TSP.

TSP love everything they do and working alongside so many other key groups adds to the knowledge and experience the group thrives on. TSP continue to do all they can, and daily meet amazing people who want to help. Sometimes TSP think all the hours of stress and work go unnoticed, but a chance encounter, a chat with someone on the beach, a message received, makes everyone realise why TSP volunteers are all so keen to do everything possible to help.

Unfortunately within TSP's home ground we had a few call outs and three resulted in seals being put to sleep. One was purely down to lack of space and weight being an issue, but assisting a vet whilst this was done on two occasions was stressful. Knowing one was purely down to lack of space and mileage was awful. There is no logic to some scenarios, yet TSP will all keep doing everything to help.

## Dorset Seal Report

**Author:** Sarah Hodgson Dorset Seal Project (DSP)

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The Dorset Seal Project was set up by Dorset Wildlife Trust (DWT) in 2014. By recording casual seal sightings data and photo identification work, DSP have been learning more about the grey and harbour 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 2023, a total of 216 seal sightings were reported to DWT, a small increase of 4% on 2022. The data comes from casual sightings where effort may differ from year to year so shouldn't be used to draw any conclusions about changes in abundance.

Grey seals accounted for 62% of the sightings. 19% of seals recorded were harbour seals and the remaining 19% were not identified to species. Seals were spotted along the Dorset coast throughout the year; however, most sightings were recorded between March-April and July-October.

## Photo ID

17 seals were added to the Dorset seal photo ID catalogue in 2023 (10 grey / 7 harbour) bringing the total to 126 seals. Of the seals already featured in the catalogue, there were 30 re-identifications of 16 individuals. The first seal added to the catalogue is the most regular visitor along the Dorset coast having been sighted a total of 61 times including five times during 2023.



**Plate 10.15.** DOR131 (left) and DOR129 (right). Image: DWP.

### Key Issues

Disturbance is one of the biggest issues that seals face in Dorset. Twelve percent of sightings that are reported indicate some form of disturbance or interaction with a seal. Disturbance from land-based sources was the highest (31%), followed by kayakers (27%). Other sources include swimmers, fishing boats, paddleboarders, coastering groups, divers, rowers and surfers.

It should be noted that this information is not being collected in a consistent manner so actual incidents may be higher. It is also not clear what the outcome was although no severe disturbance events were reported to DWT.

### Awareness

Last year DSP volunteers attended two local community events with a display about the DSP to raise awareness of seals in Dorset, the threats they face and what people can do to help.

DWT hosted an online seal talk which 227 members signed up for. The talk was recorded and has subsequently been viewed a further 68 times.

In June, BBC's Springwatch featured an item about the DSP. During the episode they shared the story of one particular seal, Bonnemine, which originated from Mont St Michel in France in 2007 but DSP know from their Photo ID work that this seal is still regularly sighted in Poole Harbour today.

### Strandings and PMEs

DWT received reports of ten dead seals along the Dorset coast in 2023. Eight were grey seals, two weren't identifiable. There were no obvious signs of entanglement or trauma however, none of the carcasses were retrieved for post-mortem examinations so the cause of death is unknown.



**Plate 10.16.** Dead harbour seal in Dorset. DSP.

In January this year, a small harbour seal pup washed up on Chesil. Upon investigation, it was 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 her back out to sea before she was recovered, so unfortunately, no more will be known about this seal. It's still fascinating to learn how far these animals can travel at such a young age – she would have only been around 6 months old.

#### **SUMMARY: SWME AREA**

**Author:** Sue Sayer MBE Seal Research Trust

**Contact:** [sue@cornwallsealgroup.co.uk](mailto:sue@cornwallsealgroup.co.uk)

This report is a testament to the huge amount of time and effort that goes into surveying seals across a region such as the southwest UK. This has been an amazing collaboration between at least 12 different public and voluntary organisations that has resulted in a wealth of knowledge about southwest seals in 2023.

Each organisation is independent, but all are dependent on a large number of trained volunteers who are inspired to collect routine data in all weathers and sea conditions to make this possible. Without volunteers this data collection would not be affordable or possible.

The photos alone reveal the huge range of habitats that grey and harbour seals use across the southwest. Volunteers may begin by surveying seals, but many progress onto sharing the knowledge and evidence gained with their local community, visitors and statutory agencies operating at local to regional and national level.

Thanks to this incredible network for giving seals a voice. Together these organisations have mitigated many of the issues seals now face in our increasingly changing world. There is little doubt that without the Southwest Marine Ecosystems network seals would be a much worse state than they are now. At this crucial time action now will ensure future generations of seals and people can co-exist. Thank you all!

#### **ANNEX 1 REPORTS FROM OUTSIDE THE SWME REPORTING AREA (CONTEXTUAL OBSERVATIONS)**

##### **Solent Seal Report**

**Author:** John Arnott Solent Seal Project (SSP) and Sue Sayer MBE SRT

**Contact:** [john.arnott@uwclub.net](mailto:john.arnott@uwclub.net)

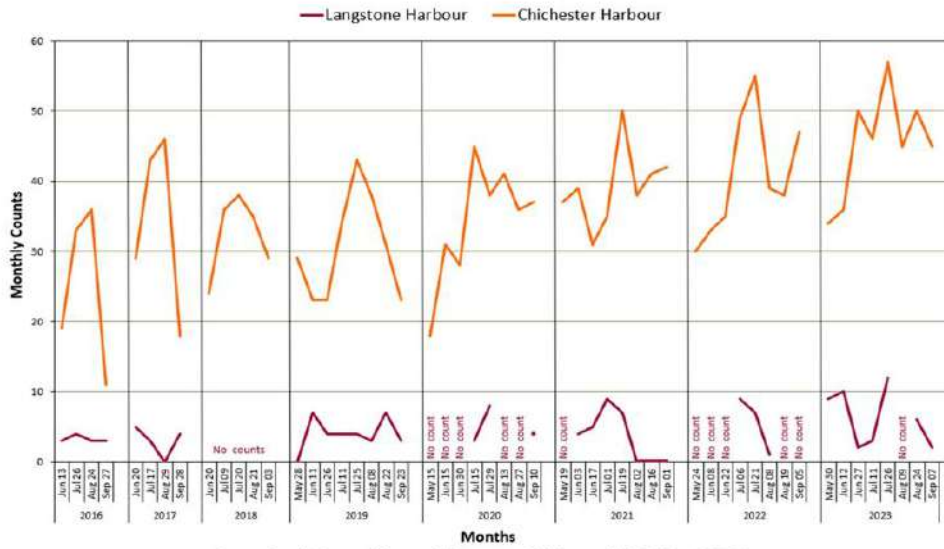
Seal counts in Chichester Harbour (West Sussex), Langstone Harbour (Hampshire) and Newtown NNR (Isle of Wight) took place every two weeks from late spring to early autumn, 30th May to 7th September. They were conducted by boat in Chichester and Langstone Harbours as the haul outs are difficult for the SSP to observe fully from the shoreline. In Newtown NNR surveys were conducted from a shoreside hide. The counts were coordinated with staff from Chichester Harbour Conservancy and Langstone Harbour Board and (with a nearly complete set of counts for the first time) volunteers at Newtown NNR. Initiated in 2016, the main aim is to monitor the small resident breeding population of harbour seals in the Solent area. A peak count of 73 harbour seals was recorded on 26<sup>th</sup> July with a minimum of 43 on 30<sup>th</sup> May. Harbour seal pups first appeared during the last few days of June and a peak count of six was recorded on 11<sup>th</sup> July. Grey seals visit the haul outs but do not breed in the count areas owing to the lack of beaches above the tideline that are remote from public rights of way. Grey seal numbers peaked at 30 on 7th September with a minimum of 14 on 12<sup>th</sup> June.

Over the three days of the August Bank Holiday a shore-based survey of watercraft visiting the main haul out in Chichester Harbour was carried out. During a total observation period of 14 hours and 26 minutes, 45 watercraft visited the seals with a total of 172 people (ranging from one on a pedalo to 13 on a tour boat). Average visit duration was 13 minutes and 40 seconds (ranging from 2 minutes for a yacht to 2 hours and 51 minutes for the pedalo). The numbers of seals disturbed by each visit and the level of disturbance were recorded, with the greatest levels of disturbance (seals moving towards water/away from craft or entering the water) being associated with private RIBs and motorboats.

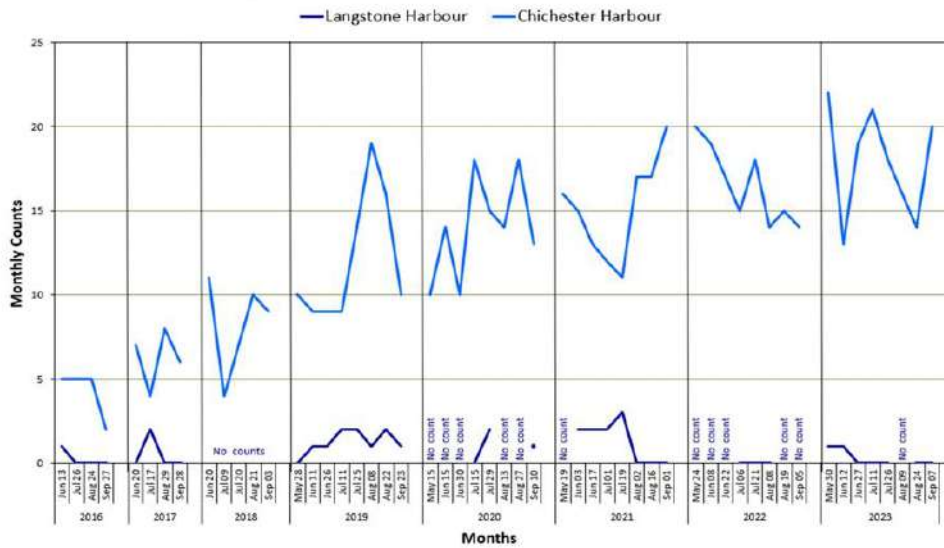


South-West Marine Ecosystems in 2023 (The State of South-West Seas)

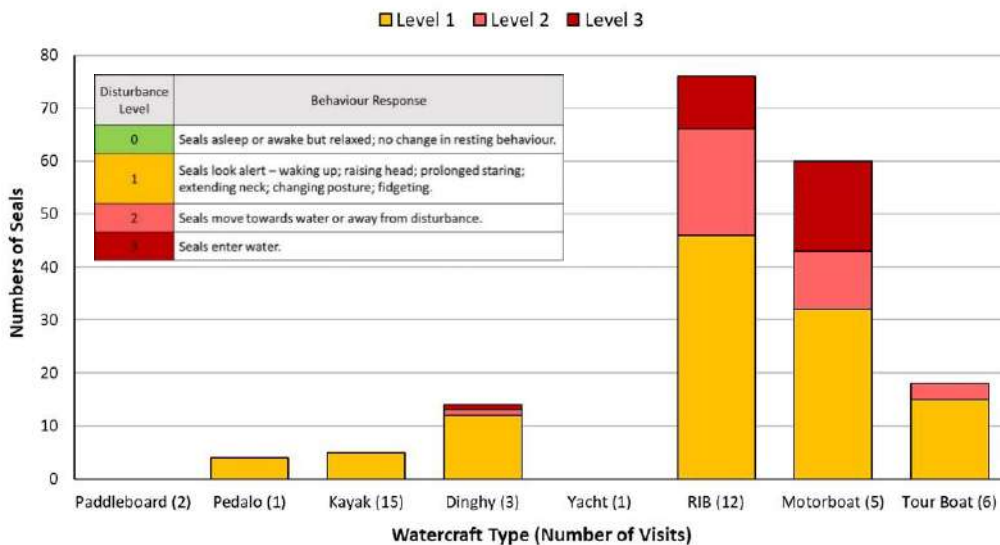
**Common Seal Coordinated Counts (all ages) 2016 - 2023**



**Grey Seal Coordinated Counts (all ages) 2016 - 2023**



**Disturbance Levels 1 - 3 By Watercraft Type**



## **Gower Seal Report**

**Author:** Gareth Richards Gower Seal Group (GSG) with Gower National Trust

**Contact:** gareth.richards6@virginmedia.com



### **Area of Operation**

Gower Peninsula is situated near Swansea on the South Wales coastline. Designated in 1956 as the UK's first ever Area of Outstanding Natural Beauty (AONB), Gower extends south-west into the Bristol Channel and Celtic Sea. Much of the coastline is designated as Sites of Special Scientific Interest (SSSI) with many sensitive seal haul out sites situated within these areas. Unfortunately, none of these SSSI's include protection for any species of seal within its notifications.

The sole surveyor, Gareth Richards, has conducted photographic identification at one sensitive haul out site on behalf of Gower National Trust since September 2019. Although the entire coastline of Gower has seals present, sightings are intermittent, therefore Gareth focusses his work at one main survey site.

Gower photographic catalogues support SRT's ongoing southwest England/Celtic Sea seal survey database. This data is used to inform/influence relevant organisations locally and nationally.

### **Seal species (including Out of Habitat Species) sightings and news**

Gower's seals are primarily the Atlantic grey seal (AGS) species although unusually in October 2021, a local British Divers Marine Life Rescue (BDMLR) medic tended to a Harbour seal pup found alone on a local beach. The pup was assessed as healthy and released; a very uncommon visitor to Gower. No further sightings of Harbour seals have been made since that time.

A limited number of surveys have been conducted due to the surveyor's availability, site access, extreme weather and for site safety reasons (rockfalls and topography). Three surveys took place between 23<sup>rd</sup> March and 29<sup>th</sup> January 2024 recording a total of 46 seals of which 78% were on land. 83% were adults and of these adults, 63% were females and 37% males. One red tagged seal was observed but no identification could be made via the tag as the number was not visible or by subsequent pelage marking search. To date, Gower catalogue contains just over 200 North Atlantic grey seals visiting the site with 199 identified and catalogued with approximately 30 having no discernible pelage markings.

### **Key Issues – normal and emerging**

Disturbance events were commonplace throughout this period. GSG's main disturbance events occur from the seaward side with kayak, SUP, jet ski and pleasure boat users getting far too close resulting in resting seals being flushed into the sea. The use of drones has significantly increased in the area and their use within the haul out areas has resulted in resting seals being woken by the constant drone of these UAV's. The National Trust (NT) has a national policy of no drone flying on or over their properties. Enforcement of this policy is not being undertaken. On Gower, it is intended to educate and inform the public of the effects and dangers of drone flying to the public and wildlife. It has been agreed that signage and a media campaign working alongside a small group of volunteer staff will be used to promote the non-use of drones on NT land.

Entanglement in ghost netting continues to be a concern with one long-term visiting male seal being observed within 2023. Ghost netting is regularly recovered by local groups and Gower National Trust during beach cleans. GSG are pleased that all discarded fishing net is now collected and recycled by Odyssey Innovation of Cornwall. The report author had introduced Gower National Trust to Odyssey Innovation in the southwest of England and this partnership has proved successful.

This year, has seen an increase in dead white coat pups on Gower beaches with 11 being found and reported by members of the public to the Marine Strandings Network (Wales)

### **Rescue, rehabilitation and release**

October 2023 was a very busy time for BDMLR Medic call outs with varying successes. The ongoing unavailability of places at rehabilitation centres has been a real problem during this recent period as Gower's nearest centre (RSPCA West Hatch, Somerset) has suffered reduced capacity and staffing problems. The lack of places at any wildlife centres has resulted in very difficult decisions being made when pups in need of rehabilitation have been found. It was hoped that 2023/2024 would have seen RSPCA West Hatch increasing capacity of available places but this has not come to fruition. Only two seals were rehabilitated in this period receiving treatment at the BDMLR Cornwall Hospital and the Cornish Seal Sanctuary.

### **Engagements, communications, conservation actions and consultations**

Continuing a local campaign to eradicate the use of flying rings on Gower has been a priority with retailers and users being targeted. GSG have continued efforts with dog grooming businesses for staff to have direct conversations with clients on these popular dog toys. GSG's current strategy involves concentrating on the many caravan and camping parks on Gower that sell these items. GSG have engaged many of the site owners and now regularly give outdoor presentations to their clientele during the summer months.

These presentations display the damage flying rings cause seals resulting in site owners withdrawing sales of flying rings and one handing over all his stock.

This same action at another site, prompted ITV (Wales) Coast and Country to produce a programme on flying rings and the authors attempts to eradicate their use.

A robust UK Seal Alliance 'Watching Seals Well' leaflet and signage campaign has been adopted by GSG supported by Gower National Trust, National Coastwatch Institution, local shops, cafes and hotels. Over 52 presentations have been delivered by GSG to inform and educate the public and a successful Mini and Junior Seal Ambassador Schools Programme has been implemented. The introduction of Operation Seabird locally is gathering momentum with several organisations planning future events during 2024 to minimise disturbance to all marine wildlife. This work has undoubtedly helped to increase public understanding of anthropogenic influences on seals and other local wildlife however there is still much progress to be made.

### **Research reports and projects**

Overall, the seal numbers on Gower have remained constant with a greater number of females than males visiting these shores. An increase in dead seals being found coincides with challenging and changing sea conditions during the latter part of 2023. Rougher sea conditions are certainly taking its toll on smaller seals which seems to be replicated in other UK regions.

The author was instrumental in the creation of the Swansea Local Nature Recovery Action Plan through his membership of the Swansea Local Nature Partnership. This can be viewed at [Swansea Local Nature Recovery Action Plan - Swansea](#).

### **Conclusion**

Finally, GSG are proud to be active members of the UK Seal Alliance Executive, Welsh Mammal Strategy Group and SRT based in Cornwall. Gower's transient seals connect us to the southwest of England and GSG is grateful for the support of this important network and the unfailing support of Sue Sayer MBE and members of SRT. These networks are crucial to creating workable strategies with like-minded people. Sharing information, good and bad practices, challenges, specific areas of concern in an open and honest environment is the key to continuing success.

## 11. Cetaceans: Baleen whales (Mysticetes)

Edited by Dan Jarvis, British Divers Marine Life Rescue/Cornwall Wildlife Trust

Contact: dan@ bdmrl.org.uk

Data contributed by Cornwall Wildlife Trust, Environmental Records Centre for Cornwall and the Isles of Scilly, Marine Discovery Penzance, Padstow Sea Safaris, Newquay Sea Safaris, AK Wildlife Cruises, Organisation Cetacea, Durlston Marine Project, Isles of Scilly Bird and Natural History Review, Happywhale, Scottish Humpback ID Facebook group, British Divers Marine Life Rescue, Cornwall Marine Pathology Team and South-West Marine Ecosystems compiled observations.

### Summary conclusions.

- 2023 was a good year for minke whales. They were mainly seen around the western half of Cornwall, though the previously identified trend of a peak in spring did not happen, which may be a concern if food availability was the reason. However, the trend for a peak in summer continued to be upheld.
- Sei whales were entirely absent during the year, which is unsurprising given their historical lack of known presence in the region.
- Fin whale reports were exceptionally high, especially in summer, and were present mainly along the south Cornish coast and the south and east areas of the Isles of Scilly. These peaks coincide with minke (summer) and humpback (winter) whale peaks respectively, appearing to indicate that these are important seasons and habitats for fin whales in this region.
- Humpback whale sightings were very high in 2023 compared with previous years. More of the sightings came from Cornwall during 2023 rather than the Isles of Scilly. The majority of records were from the far west of Cornwall along the north coast. For the Isles of Scilly the evidence continues to support that the habitats of the south and east areas of the archipelago are important.
- The south-west UK humpback whale photo-identification catalogue now contains 25 animals, with 12 being added in 2023. 10 additions came from sightings during the year, one animal was reidentified, and the remaining contribution was a historical record. Thirty-one photo-identifications of catalogued animals were made in 2023, mainly from south-west England, but also from sightings outside of the region including Scotland, Ireland and Cape Verde, which is a known breeding ground.

### Overall sightings

Sightings data were influenced heavily by where reporting effort is highest. This mainly comes from boat operators in Mount's Bay, Falmouth Bay, Newquay Bay and Padstow Bay, as well as routine land-based surveys and *ad hoc* sea watches carried out by Cornwall Wildlife Trust's Seaquest Southwest scheme where sightings are collated by the Environmental Records Centre for Cornwall and Scilly (ERCCIS). As such this provides a picture where baleen whale activity could be perceived as high but may not actually be the case were there to be similar levels of effort data available from other areas. Therefore, it must be noted that the conclusions presented here are skewed by data gaps. Across the SWME reports the only consistent comparable dataset available has been that of ERCCIS, with inconsistent but growing contributions from other organisations that make it difficult to have a fully comparable report each year at present. Efforts are being made in the background to address this.

From the comparable ERCCIS data, there were exactly the same number of overall sightings of baleen whales in 2023 compared with 2022, and thus remains above the historical average for minke, fin and humpback whales (Figure 11.1).

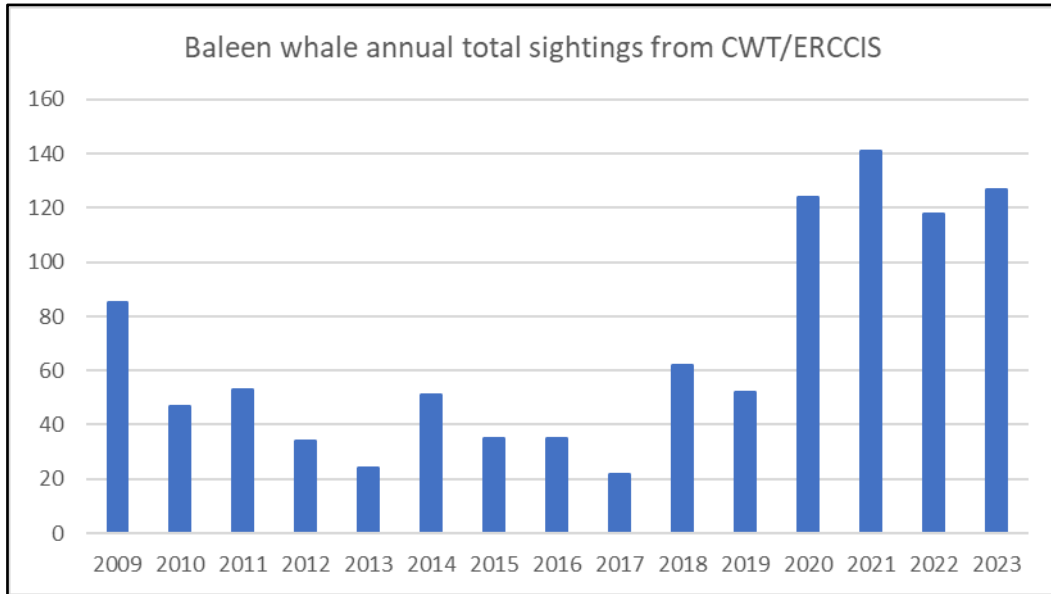


Figure 11.1. baleen whale sightings annual sightings totals from CWT/ERCCIS data.

Broken down by species however, it can be seen that minke whales experienced a notable drop in sightings after three exceptional years. It is unclear why there was such a notable decrease in sightings for this species at present, however this was compensated by an uptick in fin and humpback whale reports (Figure 11.2).

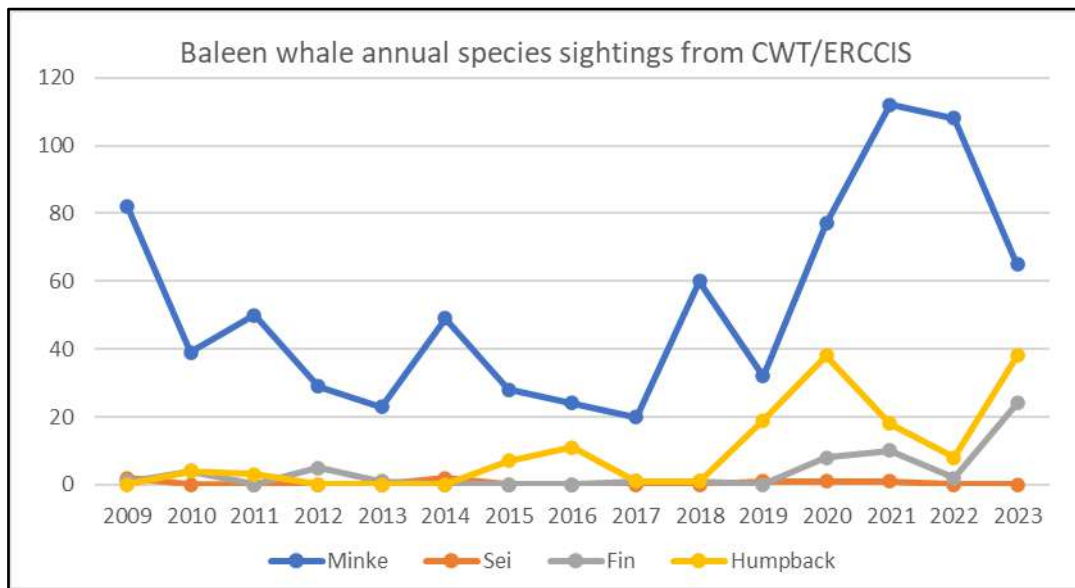
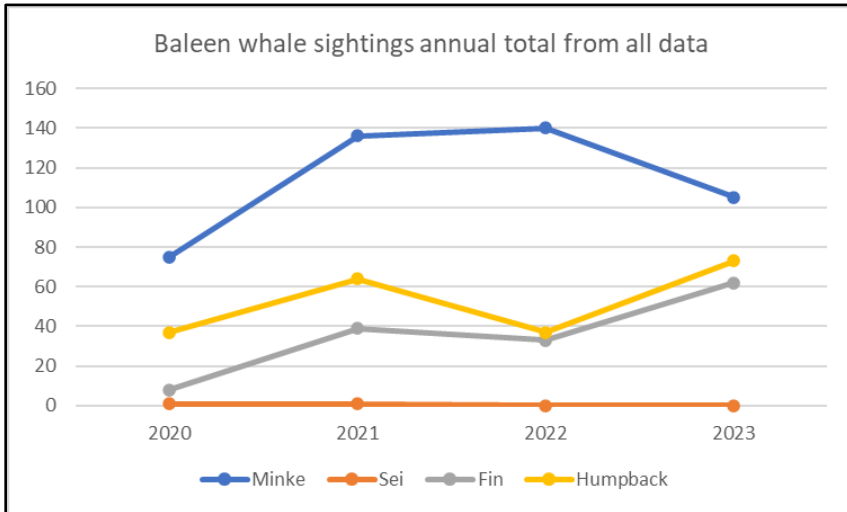


Figure 11.2. baleen whale monthly sightings totals from CWT/ERCCIS data.

Adding the data available from other sources and relatively comparable previous SWME reports, the chart below is beginning to form a wider baseline of this information. Interestingly, fin and humpback whale sightings currently appear to consistently mirror each other, which could suggest that they share similar behavioural reasons for visiting this region (Figure 11.3).

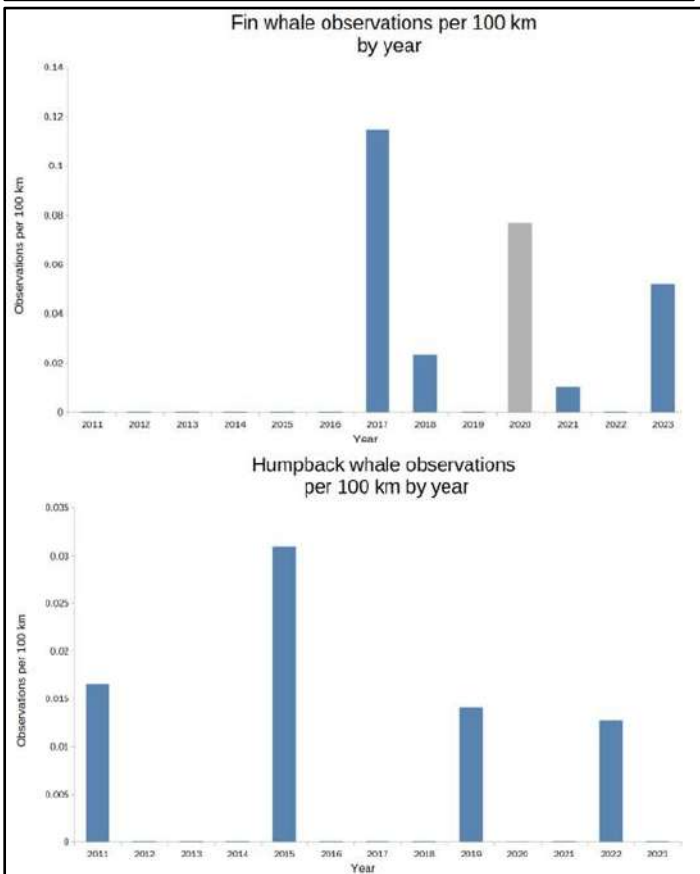
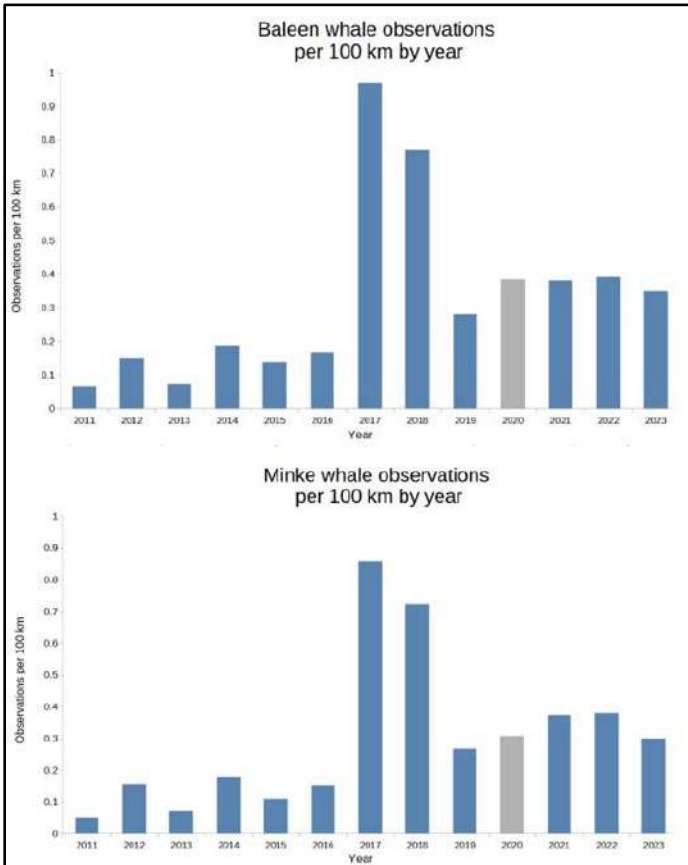
## South-West Marine Ecosystems in 2023 (The State of South-West Seas)



**Figure 11.3.** Baleen whale sightings recorded from all available data sources.

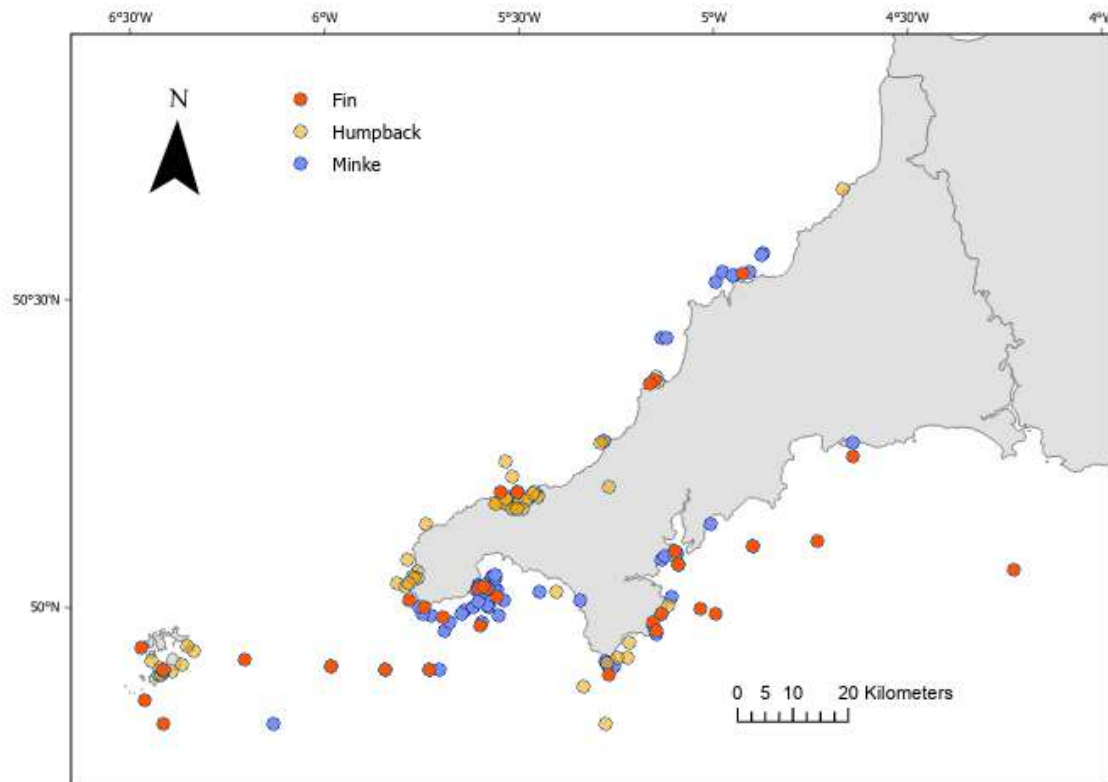
For effort-correct survey data only, which covers a longer time period, a different picture emerges. Surveys in 2017 and 2018 had good success with records, with the preceding years somewhat more sparse. Meanwhile, the following years have shown a more consistent level of observations. Clearly, incidental sightings (particularly of humpbacks) drive the overall number of reports across all data sources compared with surveys only (Figure 11.4).

## South-West Marine Ecosystems in 2023 (The State of South-West Seas)



**Figure 11.4.** a) effort-correct survey data for all species from all available survey data sources; b) effort-correct survey data for minke whale from all available survey data sources; c) effort-correct survey data for fin whales from all available survey data sources; d) effort-correct survey data for humpback whales from all available survey data sources.

The distribution of sightings tended to focus more to the south and west of Cornwall, with more sporadic sightings on the north coast and coinciding largely with the months of operation of the tour boats that contribute their data to ERCCIS, which is generally Easter to October (Figure 11.5).



**Figure 11.5.** baleen whale sightings distribution in 2023 from CWT/ERCCIS data.

When combined with all other available data, sightings of fin and humpback whales are more centred around the Isles of Scilly, potentially marking this out as a key habitat in all of south-west England especially given most records are ad hoc land-based sightings rather than boat operators or organised surveys. Minke whales are predominantly observed around the Cornish mainland, with occasional sightings in other parts of the region.



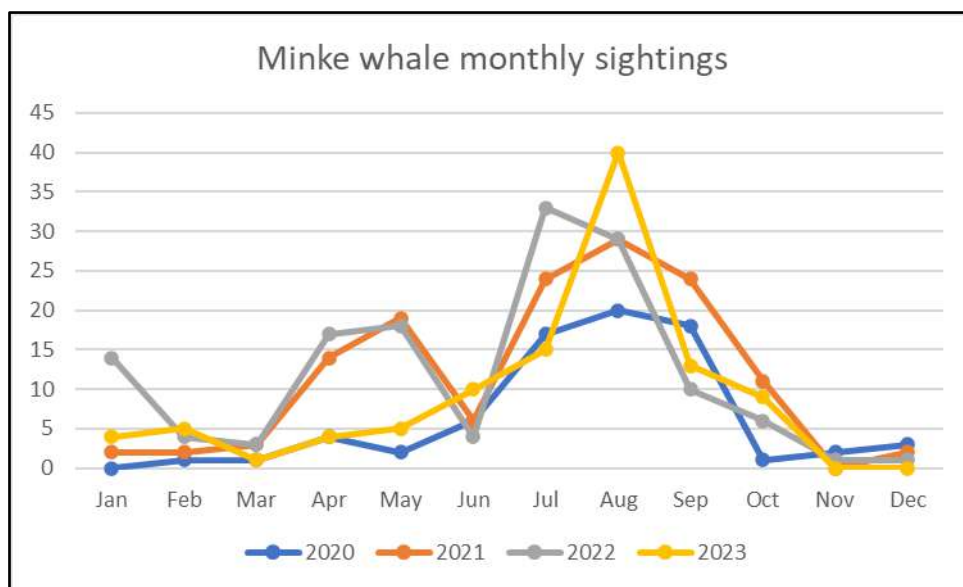
**Minke whale (*Balaenoptera acutorostrata*)**



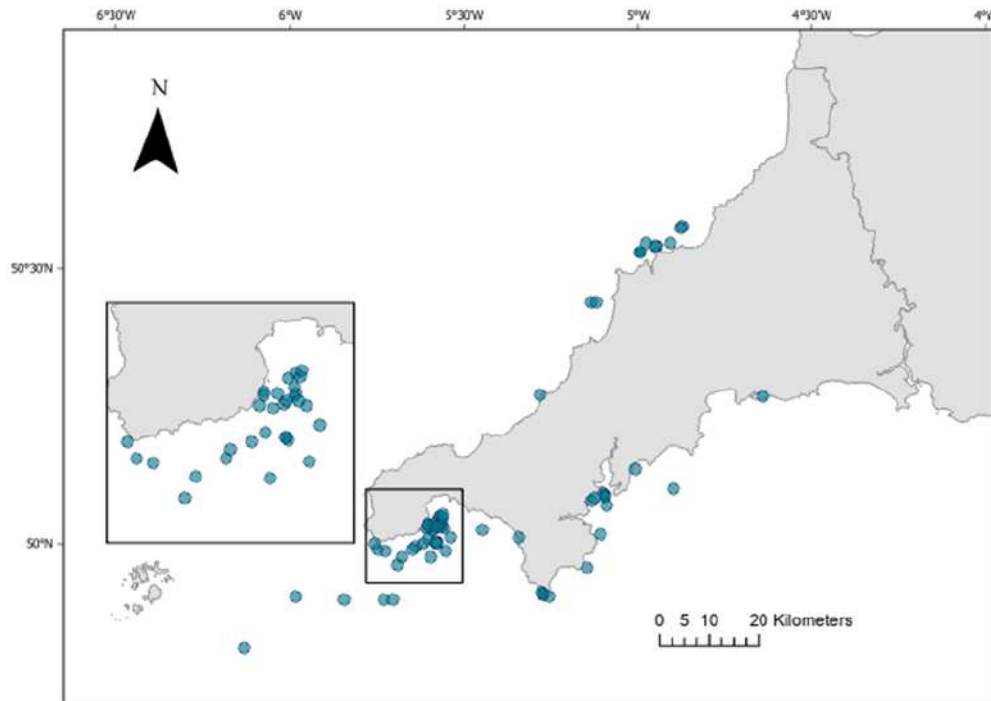
**Plate 11.1.** Minke whale off Padstow. Image: Nathaniel Barry.

There were 65 sightings of minke whales reported to CWT/ERCCIS in 2023. In combination with other sources of data the overall sightings figure increases to 105, which when compared to the 140 records in 2022 appears notable. The emerging trend in sightings seasonality associated with spring and particularly late summer that has been identified in previous SWME reports is not consistent in 2023, with an apparent failure of the spring peak that has contributed to most of the decline in sightings. It should be mentioned that the lack of peak in 2020 is likely due to Covid lockdowns. However, the summer peak has reached a new pinnacle so the trend is at least partially supported, although it is marked by being a notably shorter timescale confined largely to August. (Figure 11.6).

Peak months for minke whale sightings across all data were August (n=40), July (n=15) and September (n=13). It should be noted that these months coincide with the main working period for the boat trip operators that contribute data, however this does not explain why June is usually much lower in sightings relative to the other months surrounding it as effort is high during this time. The data otherwise appear to indicate that summer is a productive feeding time for this species around south-west England, whereas at other times of the year there is less reason for them to visit here and they go elsewhere instead.



**Figure 11.6.** minke whale monthly sightings 2020 – 2023 across all data.



**Figure 11.7.** Minke whale sightings in 2023 from CWT/ERCCIS data.

Locations of sightings (Figure 11.7) were fairly widespread around the western half of the region from Padstow Bay around to Fal Bay on the mainland, and the eastern side of Scilly sharing in the large majority of sightings. Sporadic sightings occurred at Gerrans Bay, Lantivet Bay and then one sighting each off Berry Head, Devon and Tilly Whim, Dorset. Sightings appear to cluster mainly in the area from Mount's Bay crossing to Scilly. This distribution generally reflects trends from previous years and is again skewed by consistent boat operator data recording in these places. In 2022 all sightings were of single animals, however in 2023 there were some reports of pairs, a group of three off Porthgwarra in January, and a group of six at the Eastern Isles at Scilly during July.

There were no strandings of minke whales in south-west England during 2023.

#### **Sei whale (*Balaenoptera borealis*).**

There were no sightings or strandings of sei whales in south-west England during 2023 (Figure 10.8). For comparison there was one sighting each in July 2020 and 2021, which illustrates they are currently a very rare visitor to the region at least in the coastal waters where the large majority of cetacean observations are made, though misidentification with fin whales may be an occasional issue.

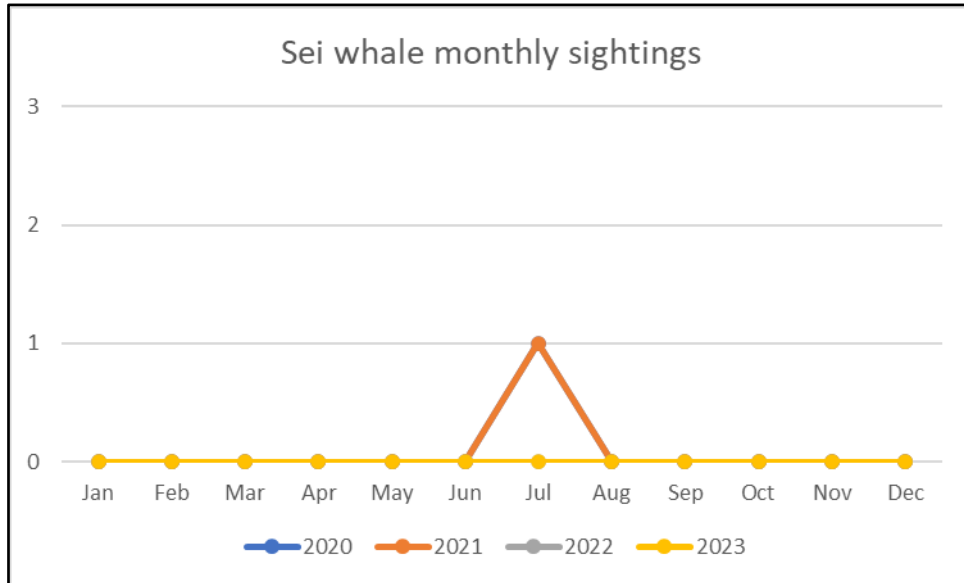


Figure 11.8. sei whale monthly sightings 2020-2023 across all data.

**Fin whale (*Balaenoptera physalus*).**

A record 24 sightings of fin whales were logged by CWT/ERCCIS in 2023 (10 in 2021 was the previous record). This record is replicated in the overall dataset with 62 sightings (39 in 2021 was the previous record). Therefore 2023 can be proclaimed as the best year on record for fin whales by a noteworthy measure.

Sightings peaked hugely during August (n=18), June (n=8) and July (n=7), which has not normally been such an eventful time of year for them except in July 2022. Clearly there was a significant contributing factor to their presence during these months that is usually only characterised with a small peak. Attention should be drawn to this having a close comparison with the large minke whale sightings peak mentioned above.

Outside of this anomaly, sightings during the usual peak in winter were consistent with previous years with January (n=8) and February (n=6) leading the way (Figure 11.8). As has been noted in past SWME reports, the winter peak coincides strongly with humpback presence, while the summer peak coincides with peak minke whale presence. This appears to indicate that fin whales use south-west England seasonally, for feeding opportunities with other similar species when prey availability is presumably high (Figure11.9).

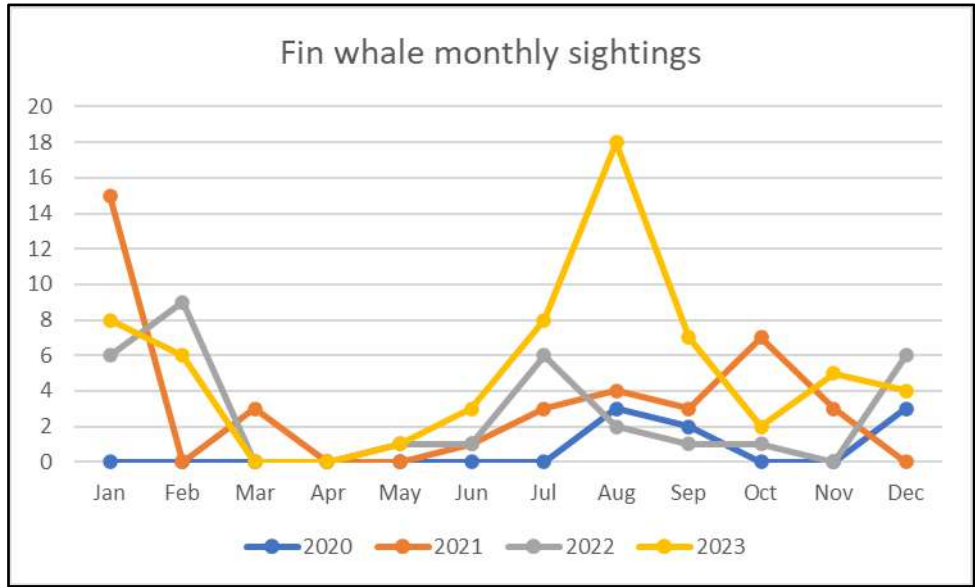


Figure 11.9. Fin whale monthly sightings 2020-2023 across all data.

Geographically, the spread of sightings in 2023 came largely from the far west of the region at the Isles of Scilly and south coast of Cornwall (Figure 11.10). In particular, the south and east areas of Scilly were notably favoured as suggested in previous reports, while in Cornwall the records came from Land’s End, Porthgwarra, Mount’s Bay, Lizard Point, Falmouth Bay and Veryan Bay. Other sporadic sightings came from St Ives Bay, Newquay Bay, Padstow Bay, Fowey and Rame Head. This is mostly consistent with previous years and despite the high observer effort from boat operators, they do not correlate strongly with their area of operation.

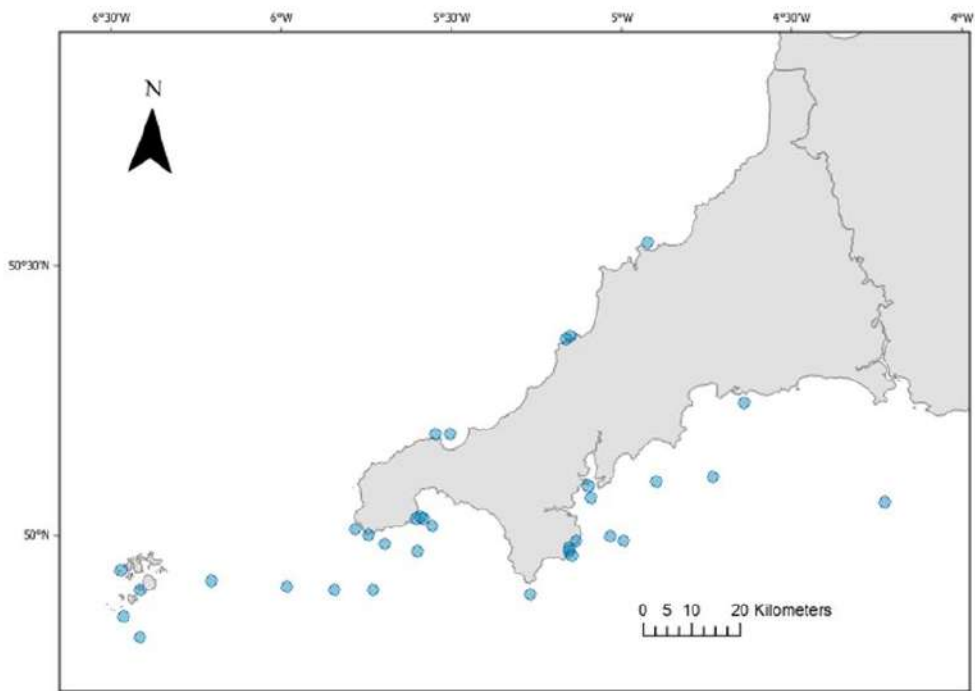


Figure 11.10. Fin whale sightings in 2023 from CWT/ERCIS data.

There were occasional groups of fin whales observed in 2023, in particular around Scilly during winter where pairs were sometimes seen, and then in Fal Bay during August where groups of two and three were seen. Most exceptionally, groups of two, three then six were seen in one day from an offshore survey vessel.



**Plate 11.2.** fin whale off Mousehole. Image: Tash Murch.

2023 was also exceptional for fin whale strandings with four in total, three of which were live strandings. The first was in January at Perranuthnoe, where the animal stranded alive in stormy conditions on rocks and died fairly quickly. During summer a decomposed animal came ashore at St Loy. This was followed by a live stranding at the bottom of high cliffs near Lynton in North Devon, which also did not survive for long. Finally in November a fin whale seen alive close in off Newquay late one evening was found deceased on Fistrall beach the next morning, having apparently stranded alive

during the night and passed away. A post mortem examination was able to be carried out on this one, revealing it to be a female in poor nutritional condition with cataracts and signs of an infection.



**Plate 11.3.** fin whale live stranding at Perranuthnoe. Image: Dan Jarvis.

#### **Humpback whale (*Megaptera novaeangliae*).**

There were 38 sightings of humpback whales reported to CWT/ERCCIS in 2023, compared with eight in 2022. This appears to demonstrate a large increase, however in 2020 there were also 38 reports received and thus is equals the previous record. Overall including all data sources, 2023 was in fact a record year for humpback whale reports with 73, surpassing the previous record of 64 in 2021.

It should be noted that many of the records reported here are sightings of the same few animals moving between locations over a period of days or weeks, as some remained around the coast for extended periods of time. Reports peaked in winter, consistent with previous years, led by December (n=29), January (n=21) and February (n=14). Sporadic observations at other times of the year were also reported (Figure 11.11). This upholds the trend set since 2019 that south-west England is becoming an important habitat for overwintering humpback whales.

The rapid increase in humpback whale presence in recent years around south-west England follows a similar pattern seen in other areas such as the south and west coasts of Ireland and parts of Scotland. Theories amongst researchers include that this is possibly due to the recovery of the Atlantic population post-whaling moratorium; but potentially also climate change impacts altering their behaviour due prey distribution, including animals opting not to make their full migration due to a lack of resources.

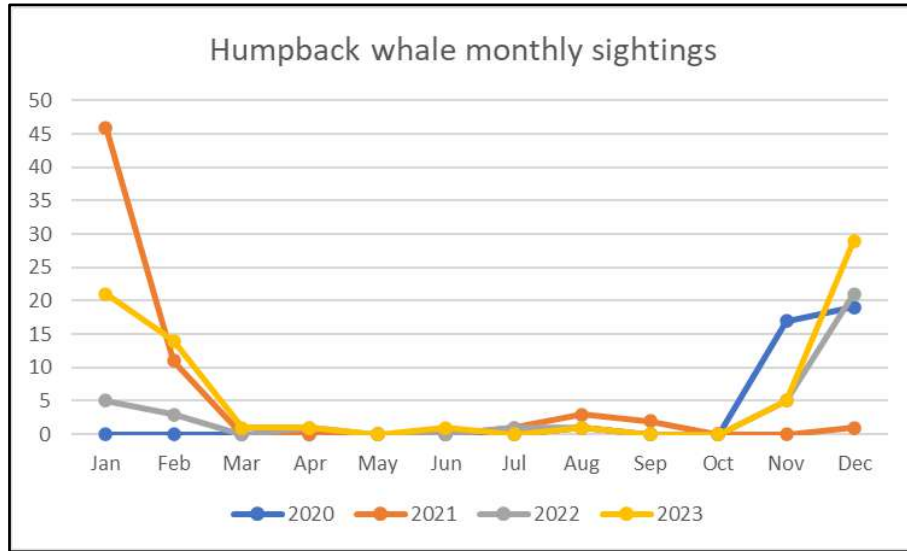


Figure 11.11. humpback whale monthly sightings 2020-2023 across all data.

The distribution of reports around the region were almost entirely from the western half as with previous years, with particular hotspots in St Ives Bay, Land’s End area and the south and east areas of the Isles of Scilly (Figure 11.12). Other sightings came from the western side of Scilly, Crackington Haven, Pentire Head, Pendeen, Whitsand Bay, Land’s End, Porthleven, Lizard Point, Manacles Reef and Falmouth Bay. This largely fits with the general pattern in distribution over the last few years, with certain locations being especially favoured. For example, there were repeated sightings over a number of days in St Ives Bay of one to two animals feeding and breaching during the Christmas period, indicating this area was an especially good feeding ground at that point in time.

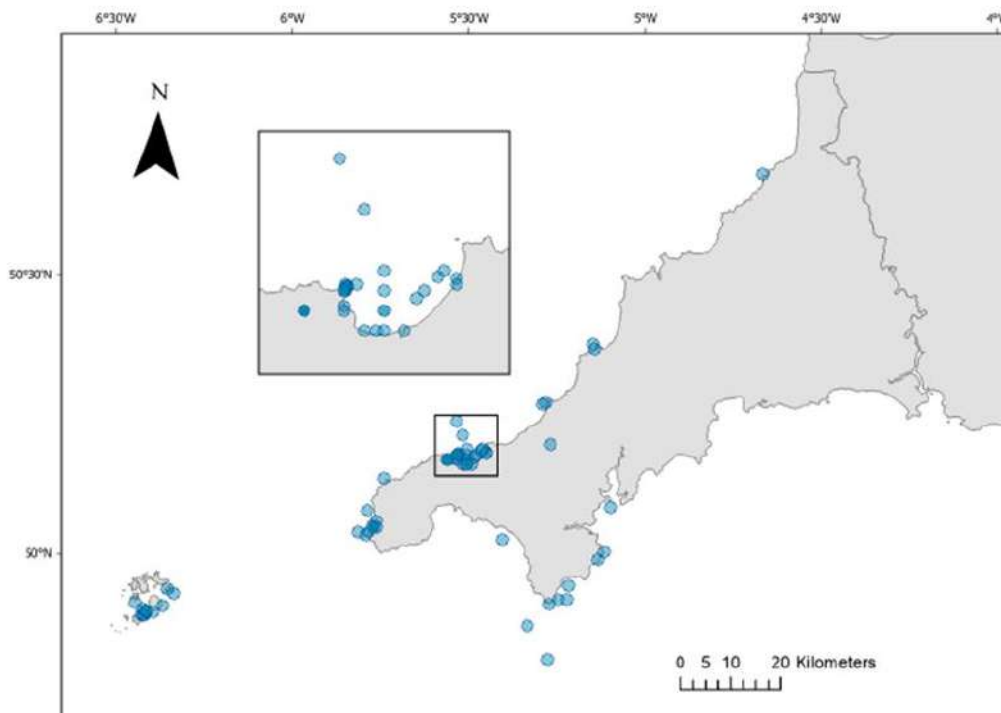


Figure 11.12. humpback whale sightings in 2023 from CWT/ERCCIS data.



**Plate 11.4.** humpback whale off Newquay. Image: Terry Carne.

Most sightings in 2023 were of individual animals, however sometimes pairs were observed in St Ives Bay and at Scilly. From photo-identification it has been possible to recognise individual animals and from this it is known that 11 different whales visited south-west England through 2023. It is highly likely this figure is higher as there are some whales known to have been sighted but no images suitable for identification were available. This is where caution should be noted in assuming one whale sighting should be linked to another in a relatively small temporal and geographic range. This is

exemplified by a sighting of a lone whale in June in Falmouth Bay, followed by another sighting a week later in a similar area. A casual observer may be inclined to presume that these were two sightings of the same whale, however through photo-identification it has been confirmed that these were in fact two different whales. This is not the first time such circumstances have occurred and therefore represents the importance of not making assumptions about the number of whales that may be present and linking sightings purely through geography and timing.

In the 2021 SWME report the first ever repeat photo-identifications of humpback whales in south-west England were presented, mainly from animals seen between 2019-2021. An identification catalogue has since been set up via CWT/ERCCIS and has grown from six animals in 2021 to 25 by the end of 2023, with 12 additions in 2023 alone (two historical and 10 new animals).

Including sightings outside of this region, there were 31 photo-identifications made in 2023 either by the CWT humpback whale identification catalogue, the Scottish humpback whale catalogue or through online platform Happywhale, as follows.

SWUK1 Pi: this whale has been sighted in south-west England every year since 2019 and is the only animal so far to show annual site fidelity, except in winter 2021-22. Pi was last sighted in early February and returned in mid-December to the Isles of Scilly. Previously sightings have been linked to Ireland and Scotland.

SWUK6 Morvil: although there were no sightings of this whale in south-west England in 2023, it was identified in Cape Verde for the first time and Ireland. This represents the first record of a humpback whale linking this region to the Cape Verde breeding ground.



**Plate 11.5.** Humpback whale identification photo of SWUK8 Snowy at the Isles of Scilly. Image: Martin Goodey.

SWUK8 Snowy: this whale was identified twice at the Isles of Scilly during January.

SWUK9 Sennan: observed several times over the course of 12 days moving from St Ives Bay to Land's End and back again in late January to early February.

SWUK10 Zawn Pyg: first seen on the same date as SWUK9 in the Land's End area, but photo-identification proved it to clearly be a different animal. It was resighted after more than a month's absence near Lamorna.

## South-West Marine Ecosystems in 2023 (The State of South-West Seas)

SWUK19 Nala: originally sighted in Fal Bay during June, this whale was subsequently identified on three occasions in Scotland a few weeks later.

SWUK20 Molly Gray: this was the second Falmouth Bay whale in June as mentioned in the example in the previous section. Interestingly it was seen twice on the same day in different locations but displaying seemingly aggressive behaviour towards two vessels, approaching from a distance to very close up while repeatedly slapping its pectoral fins on the surface. Neither vessel had interacted with the whale previously and it was the one that initiated the engagement.

SWUK21 Colin: a breaching whale was photographed off Pentire Head and could not be matched to the other two visiting whales in June, therefore is catalogued as a different whale until potential future evidence reveals otherwise.

SWUK22 Arrow: while outside the geographical extent of SWME, a new addition to the regional catalogue came from the Channel Islands in July. A second, smaller animal was also sighted accompanying it but could not be photographed for identification.

SWUK23 ??: currently unnamed as there is a possibility it is SWUK24 or SWUK25 whales that were subsequently identified but thus far cannot be matched due to lack of photos to directly compare matching body parts. This whale was photographed breaching in December off Cape Cornwall.

SWUK24 Ivy: identified in St Ives Bay during December.

SWUK25 Minstrel: identified at both Newquay and St Ives Bays during December.

The editor would like to put a call out to anyone with humpback whale photos from south-west England to please send them in to [dan@bdmlr.org.uk](mailto:dan@bdmlr.org.uk) so that they can be added to the south west UK catalogue and help further our understanding of these animals in our waters and beyond.



## 12. Cetaceans: Toothed whales and dolphins (Odontocetes)

Edited by: Duncan Jones Marine Discovery Penzance

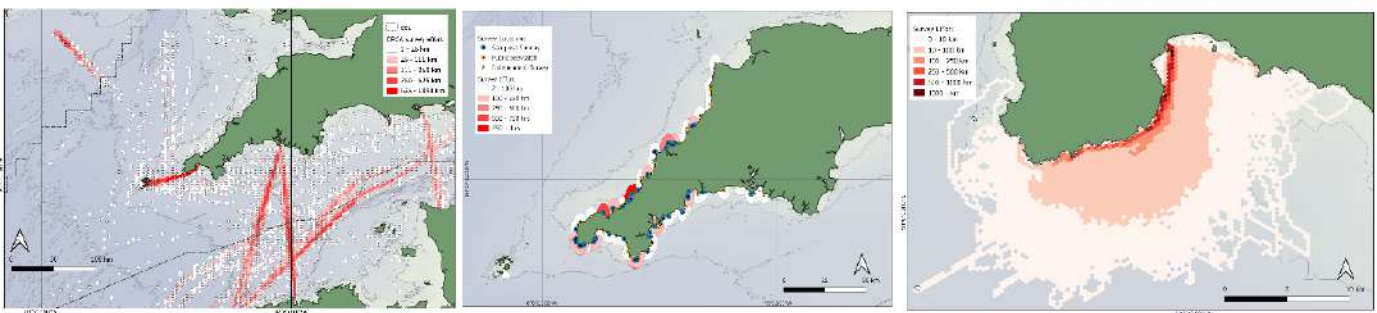
Contact: duncoliver@yahoo.co.uk

### Conclusions

- The seas around south-west England are an important habitat for Odontocetes. The data suggests there has been a significant coastal shift for common dolphins, harbour porpoises, and Risso’s dolphins. It also indicates that offshore variant bottlenose dolphins are increasingly visiting coastal waters.
- The inshore pod of bottlenose dolphins, previously recorded as resident to south-west waters, has moved east, with their range now appearing to centre around Brighton on the south coast.
- The significant increase of certain species in coastal waters has occurred over the last seven years. This is an extremely short time scale for such a marked change and warrants further investigation. It is important to identify the drivers behind this shift and understand how it fits into the wider picture of the south-west continental shelf and the Bay of Biscay in order to consider the conservation implications.
- Cetacean research is under-prioritised and underfunded in the UK.

### Introduction

In 2023, it has finally been possible to use effort-corrected data in this report. The three main datasets used are Seaquest Southwest data collected from the coast between 2010 and 2022, Organisation Cetacea (ORCA) data collected from cruise ships and ferries between 2011 and 2023, and Marine Discovery Penzance (MDP) data collected in Mount’s Bay, Cornwall between 2011 and 2023. These three datasets provide an overview of cetacean observation trends in the south-west over the last decade at different spatial scales (Figure 12.1). However, data coverage remains skewed towards Cornwall, although the inclusion of ORCA data greatly improves spatial coverage. It would still be beneficial to have more data from Devon, Dorset, and Somerset. However, this should be in the form of effort-corrected data. Incidental sightings can provide some information, but they are inappropriate for trend analysis because there are too many unaccounted-for nuisance variables within the datasets.



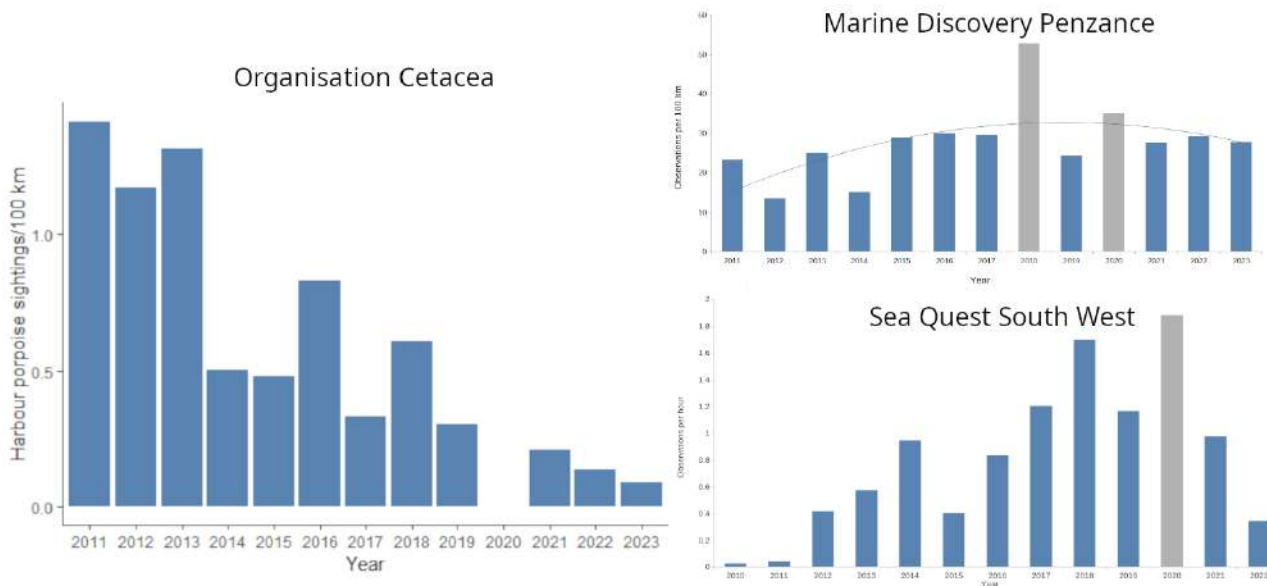
**Figure 12.1.** Data sources: ORCA (far left) showing the survey effort or ships track as kilometres effort per 500 metre grid cell; Seaquest Southwest (centre) this shows observer searching effort in hours and survey type. The sampling distance is represented out to 5km from the survey location, and Marine Discovery Penzance (far right) showing survey effort or ships track represented as kilometres searching at a 500 metre resolution.

**Harbour porpoise *Phocoena phocoena***



**Plate 12.1.** Harbour porpoise in Mount’s Bay taken in 2023 by Marine Discovery Penzance

Harbour porpoises show varying trends across different datasets (Figure 12.2), highlighting the importance of considering how environmental conditions can affect detections when assessing trends. The ORCA dataset shows a declining trend in sightings, whereas the MDP dataset shows increasing observations with some strong fluctuations. The 2018 peak in the MDP data, shown in grey, can be explained by the weather that year, which affected the seasonal distribution of survey effort. There was greater survey effort at Sea State 3 and below in late summer and autumn, when there are more porpoises in the area, and less survey effort in spring, when there are typically fewer porpoises. This led to a comparatively high sighting rate. If this anomaly were removed, there would be a notable increase from 2015 onwards.



**Figure 12.2.** Number of harbour porpoises recorded per 100 km by Organisation Cetacea left, Marine Discovery Penzance top right (observations per 100km at sea state 3 and below) and per hour by Sea Quest South West bottom right.

The mean sighting rate from 2011-2014 was 19 per 100 km, whereas from 2015 to 2023, it was 32 per 100 km. The Seaquest data shows a general increase, although the sighting rate was notably lower in 2022. It was not possible to filter the Seaquest data by sea state, so it is unclear whether the fluctuations in this dataset are linked to actual

changes in porpoise presence or changes in detection rates due to increased sea states during observations. The ORCA dataset contains much more offshore data. The differences in the datasets suggest the possibility of a coastal shift of harbour porpoises.

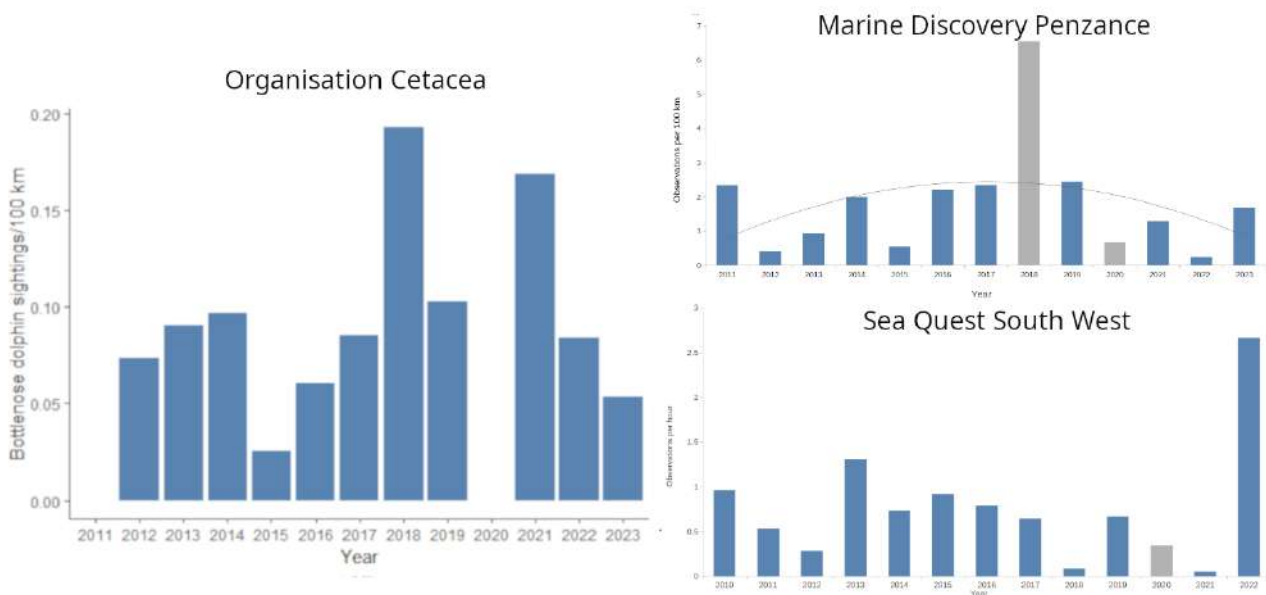
**Bottlenose dolphin *Tursiops truncatus***



**Plate 12.2.** Bottlenose dolphins photographed in Mount’s Bay in 2023 by Marine Discovery Penzance.

The three datasets show large fluctuations in bottlenose dolphin observations. The 2018 anomaly in the MDP data could relate to the fluctuations in weather conditions impacting the seasonal distribution of survey effort discussed in the harbour porpoise section. However, the ORCA data set also shows a high peak for 2018. Typically, in the coastal waters of the south-west, the bottlenose dolphins encountered used to be the inshore variant. In recent years the resident south coast population (inshore variants) have been consistently recorded further east. This group of dolphins have shifted their range and the population is

now centred in the eastern channel around Brighton. In the south-west, the bottlenose dolphins encountered are now offshore animals. These offshore animals are typically found in much larger pods of up to 100s of animals. An encounter with one of these pods in a year can greatly upwardly skew the detection rate for that year. This would account for the fluctuations in observation rates. The increasing encounters with offshore animals seen in the Seaquest and MDP datasets suggests these animals are more frequently visiting waters closer to the coast.



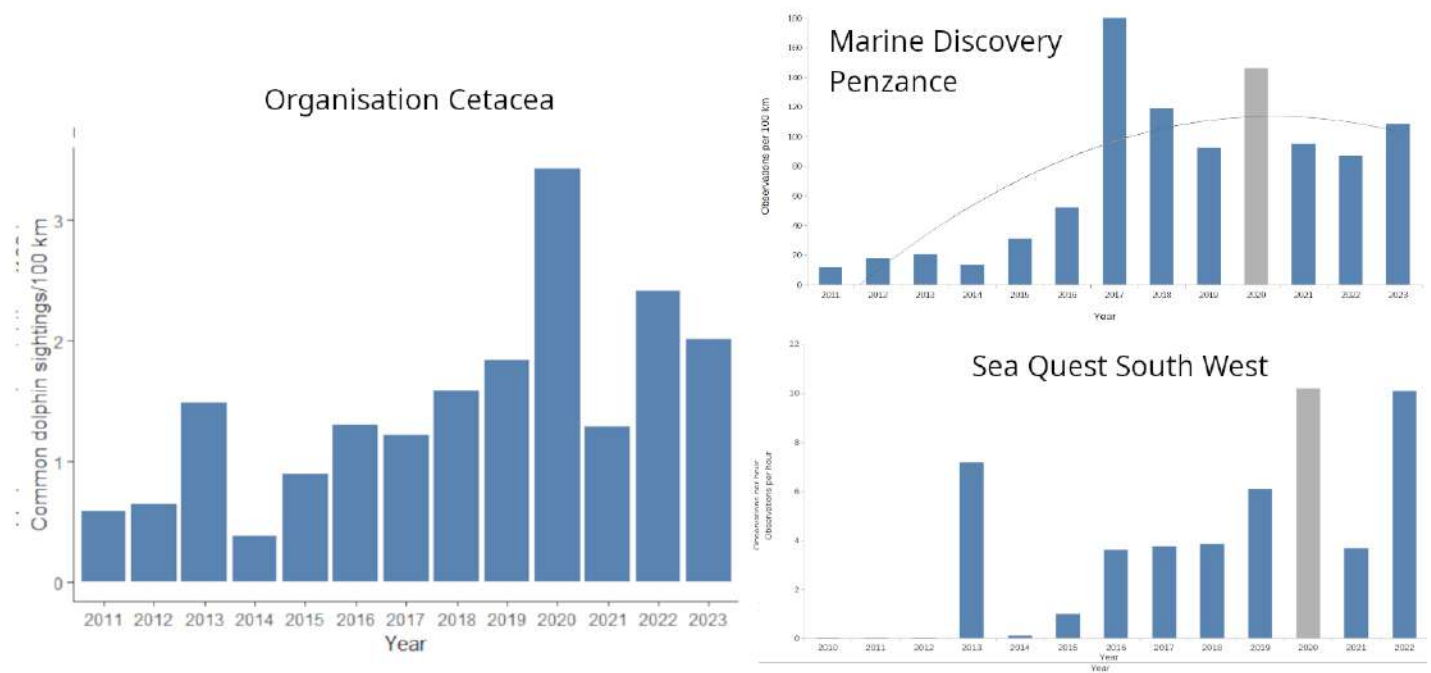
**Figure 12.3.** Number of bottlenose dolphins recorded per 100 km by Organisation Cetacea left, Marine Discovery Penzance top right (observations per 100km at sea state 4 and below) and per hour by Seaquest Southwest bottom right.

**Common dolphin *Delphinus delphis***



**Plate 12.3.** A common dolphin photographed in Mount’s Bay in 2023 by Marine Discovery Penzance.

The three datasets all show a significant increase in common dolphin sightings in south-west waters. The MDP dataset shows a notable increase since 2017, and the Seaquest dataset shows a notable increase since 2016. The ORCA data shows a steadier observation rate, with increases in recent years. The ORCA data shows a much higher sighting rate in 2020, the year of the COVID-19 pandemic when ORCA surveys were restricted to cruise ships on routes in coastal waters around the UK. The increased observation rate in coastal waters shown in the ORCA data, along with the increase in sightings in the coastal datasets, suggests an inshore shift of common dolphins in the south-west.



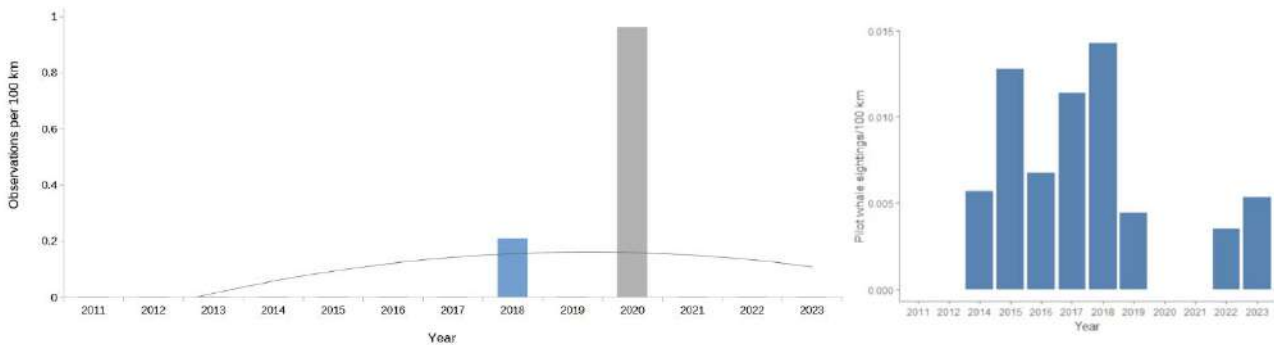
**Figure 12.4.** Number of common dolphins recorded per 100 km by Organisation Cetacea left, Marine Discovery Penzance top right (observations per 100km at sea state 4 and below) and per hour by Seaquest Southwest bottom right.

**Pilot whales *Globicephala melas***



**Plate 12.4.** Pilot whales photographed off the south-west UK in 2023 by Organisation Cetacea Surveyors.

There are only two years with records of pilot whales in the MDP data and no records in the SeaQuest data. This suggests that pilot whales typically occur in areas further offshore than these two datasets cover. The ORCA data records this species more consistently and shows a decreasing rate of observations over the last decade.



**Figure 12.5.** Number of pilot whales recorded per 100 km by Organisation Cetacea right and Marine Discovery Penzance left.

**Risso’s dolphin *Grampus griseus***

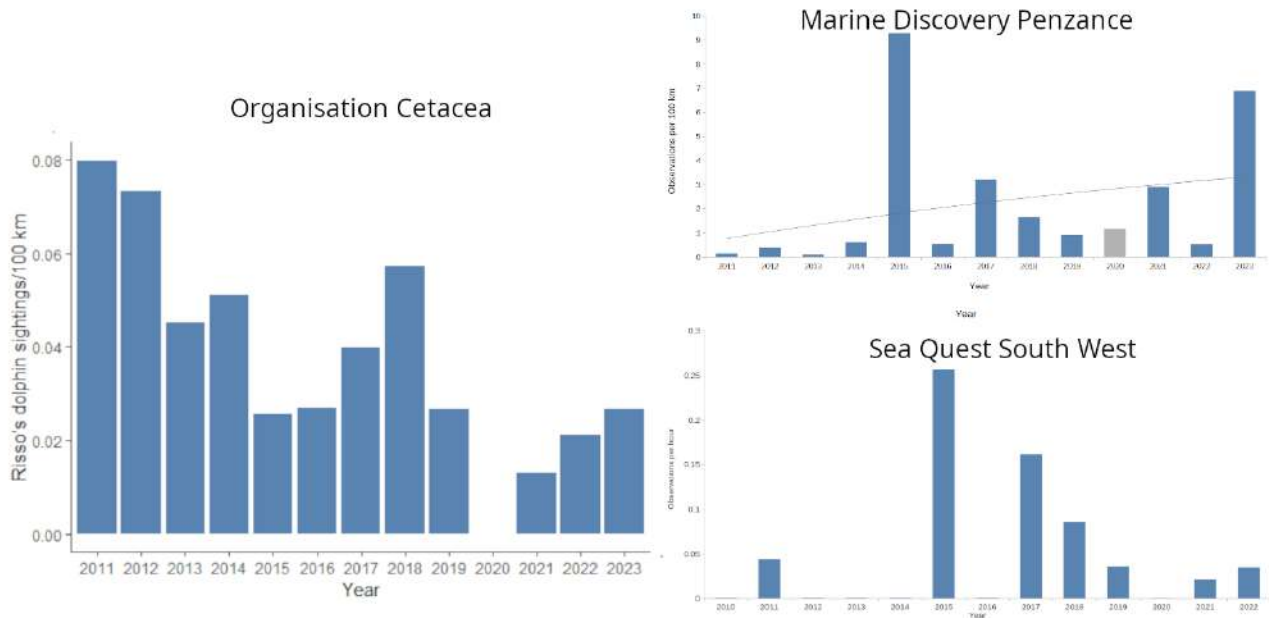


**Plate 12.5.** A Risso’s dolphin photographed in Mount’s Bay in 2023 by Marine Discovery Penzance.

Both the MDP and Seaquest datasets show fluctuations in Risso’s dolphin sightings. Typically, odd years show higher sighting rates, particularly in the MDP dataset, although 2019 is an exception. The Seaquest dataset also has a high sighting rate in 2018 and lower rates in 2019 and 2021. In these two datasets, it appears that Risso’s dolphin presence might be linked to cuttlefish (*Sepia officinalis*) moving inshore to spawn. Sightings rates increase in the MDP dataset when cuttlefish are inshore spawning, and the dolphins are observed feeding on cuttlefish at these times. The ORCA dataset shows a decline in observations over the past decade. The changes in the three datasets possibly suggest an inshore movement of this species.

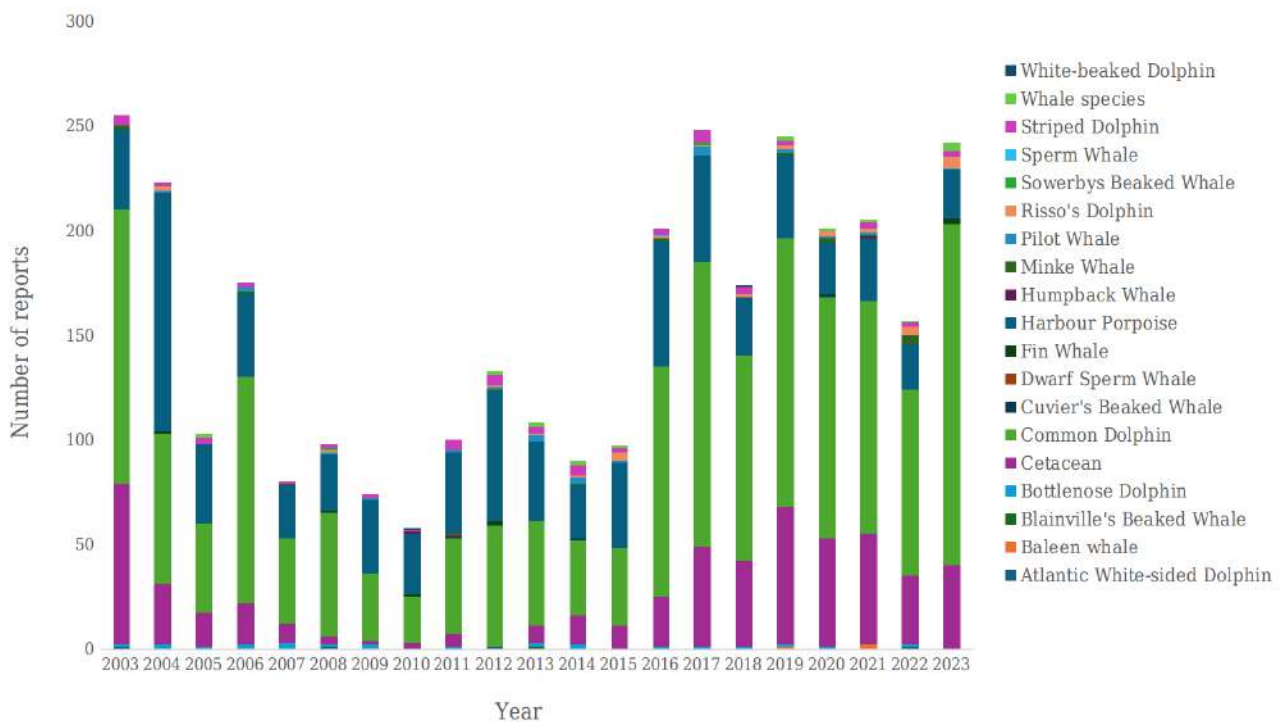
## South-West Marine Ecosystems in 2023 (The State of South-West Seas)

Risso's dolphins feed on cephalopods, so the distribution of various cephalopod species can impact their distribution, not just cuttlefish. However, in the south-west, Risso's dolphins seem to show a strong link to cuttlefish, particularly when they are inshore. The ORCA data also show Risso's dolphin records spatially correlating with locations traditionally considered overwintering areas for cuttlefish.



**Figure 12.6.** Number of Risso's dolphins recorded per 100 km by Organisation Cetacea left, Marine Discovery Penzance top right (observations per 100km at sea state 4 and below) and per hour by Seaquest Southwest bottom right.

### Cetacean strandings in Cornwall



**Figure 12.7.** Cetacean strandings in Cornwall data provided by Marine Strandings network and Cornwall Wildlife Trust.

Stranded animals are those washed ashore both alive and dead. The sole data source is for strandings of cetaceans is Cornwall Wildlife Trusts Marine Strandings Network. In future it would be useful to receive data from other areas of the south-west in order to have a more complete representation of strandings. Cornwall remains a recognised hotspot for cetacean strandings and there has been a noticeable increase of common dolphin strandings over the last 10 years of the dataset. This is probably due to the inshore movement of this species recorded in the other datasets. Strandings of other species remain comparatively high.

### **The future**

The data used in this report indicates significant increases in certain species of Odontocetes in the coastal waters of the south-west. Further, more detailed studies are necessary to understand these observations and how they fit within the larger picture of the south-west continental shelf and the wider Bay of Biscay. If there has been an inshore movement of species, this could represent a range retraction for multiple species, leading to greater competition for fewer resources. Additionally, it would mean increased overlap between important cetacean habitats and anthropogenic activity, which has implications for management. Funded research investigating cetacean distributions around UK shores is limited. To truly understand if, how, and why cetacean distributions are changing, more funded research is necessary.

Expanding the data collection beyond Cornwall could offer a more comprehensive understanding of cetacean strandings in the south-west region. It's crucial for conservation efforts and scientific research to have access to data from multiple areas to identify trends, patterns, and potential causes of strandings.

The observed increase in common dolphin strandings over the past decade is concerning and may indicate shifts in habitat use, changes in environmental conditions, or other factors affecting the population. Combining this information with data from other sources could help in pinpointing the reasons behind these changes and formulating appropriate conservation measures.

Moreover, while Cornwall is recognized as a hotspot for cetacean strandings, it's essential to monitor other areas as well to gain a more holistic view of the situation. This broader perspective could reveal regional variations in stranding frequency, species composition, and contributing factors.

Collaborating with other UK organizations and networks across the south-west region to share data and insights would enhance the effectiveness of monitoring and conservation efforts for marine mammals.

## 13. Fisheries

Edited by Libby West, Natural England,

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Dr Libby West, Principal Officer, Natural England

### Fisheries and SW marine ecosystems

The UK is moving 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 UK. 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.

Marine foodwebs, and the abundance of individual fish populations are often driven by a complex mixture of factors (Figure 13.1) 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 - reflect the abundance of fish in the ecosystem. However, in reality, fisheries are also now 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 even access to processing facilities for different species.

### Was 2023 a Normal Year for Fisheries?

Bearing this complex picture in mind, the Southwest Marine Ecosystem Fisheries Report considers a number of elements – forage fish and foodwebs, fisheries and sustainability trends in the southwest and policy and management development.

#### *Forage fish and foodwebs of southwest marine ecosystems in 2023*

Forage fish are usually small, low trophic-level fish which are found in large, age-specific shoals in midwater. They display large natural fluctuations in biomass, are important prey species for marine predators. There are often complex interactions between different forage fish species. The Peltic survey is a multi-method pelagic fish survey taking place annually in October in the southwest UK utilising acoustic surveys, mid-water trawls, surveys of apex predators, a ferrybox (an automated biogeochemical surface water sampler), ichthyoplankton and mesozooplankton sampling and, CTDs. This allows for a unique snapshot of pelagic ecosystems and foodwebs in the SWME region.

In 2023 the findings of the Peltic survey reported warmer waters, by up to two degrees compared to average, which was particularly pronounced in western parts of the survey.



Highest densities of sardine were found around Lands' End to south of the Lizard. The highest ever biomass of sardine were recorded estimated at ~450,000 tonnes, with lots of 0-group fish.

The highest recorded abundance of anchovy of ~240,00 tonnes was also recorded in 2023. It is now thought that the expanding northern population is mixing with Bay of Biscay population.

Hotspots of sprat were found in Lyme Bay, around the Eddystone, in the Bristol Channel and in Cardigan Bay. 2023 was also a good year for sprat with a biomass of ~61,000 tonnes. 0-group fish were particularly abundant, which has caused a large decrease in the commercial fishery which relies on older fish.

In terms of predators, shearwaters and tuna were both noted to be very abundant. Such abundance across forage fish stocks suggests that foodwebs are relatively healthy in the southwest, although our knowledge of the dynamics of these populations and their relation to bottom-up and top-down processes is still relatively new in the channel and Celtic Seas.

### Fisheries trends in 2023

Analysis undertaken by the MMO showed an overall reduction in the quantities of fish and shellfish landed since 2016 by 17.8% for ICES areas 7 e-g. Inflation adjusted value of landings in ICES areas 7e-g were valued at ~£125,000,000 in 2023. This a significant dip compared to highs (within the dataset) of ~£170,000,000 in 2017.

The analysis suggests that some fisheries considered traditional in the southwest are declining. Although data is only presented for 2016 -2023 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.

Bass has seen a steady increase in landings since 2016, however landings in the southwest showed a 40t drop in 2022 compared to 2021, this does not follow the UK-level uptake which still shows a steady increase continuing into 2023. Sole landings also increased between 2016 and 2022 but 2023 saw the first decrease in landings during this time period.

The effects of changing management regimes can clearly be seen in scallop landing trends. Since 2021 there has been a significant increase in Scallop landings as a result of leaving the CFP which means that effort days don't apply to the French area of ICES area 7e. It is thought landings may be stabilising, at around 8000 tonnes, which might be the 'new normal' for this fishery, however, 2023 had a decrease compared to the previous years.

Stock recovery and changes in the marine environment are reflected in emerging or returning fisheries. Increases in landings of undulate rays and spurdog can be linked to increases in available quota. Crawfish has seen a year-on-year increase in landings thought to be linked in part to a natural increase in population abundance following improved recruitment.

A highly regulated commercial fishery for bluefin tuna commenced in 2023. Thirteen vessels are part of the scheme, with catch limits. There is a 115cm nose to fork Minimum Conservation Reference Size and a minimum weight of 30kg. All catches have to be reported prior to landing and no baiting or chumming is currently allowed. Prior to the pre-election period the MMO are progressing legislation for a permitted recreational fishery. There is also a bycatch fishery, where one fish per trip can be landed for vessels fishing gill nets, trawls and ring nets only.

The Cornwall Good Seafood Guide continues to play an important part in assessing local fisheries against sustainability criteria.

## South-West Marine Ecosystems in 2023 (The State of South-West Seas)

In 2023 Improvements in ratings occurred for a number of elasmobranch species including cuckoo ray, small-eyed ray, and thornback ray (except in the Western Channel) and spurdog. Improved ratings for bass and brill also reflected improvements in stock health.

Ratings for several species declined either due to concerns over-fishing pressure and/ or declining abundance (dover sole, pollack, cod). The poor health of some stocks also resulted in reduced ratings for other species, for example trawl-caught haddocks whose rating was reduced due to concerns over levels of cod and whiting bycatch.

### Developments in fisheries policy and management in 2023

The OSPAR quality status report, published in 2023 highlighted the continued fisheries pressures facing the marine environment in the Celtic Sea, including bycatch of sensitive species, disturbance to benthic environments and reduction in prey for marine predators. However, there is also an increasing understanding of the importance of fishing to local communities and economies. A number of major developments in fisheries and environmental policy are likely to shape the future of fisheries in the southwest over the coming years.

In 2023 Defra published the first five Fisheries Management Plans – those for crab & lobster (including crawfish), whelk, king scallop, channel non-quota demersal and the southern North Sea mixed flatfish. This marked a significant development in the post-Brexit fisheries framework. The FMPs each undertake a Strategic Environmental Assessment and thus provide a formal link between fisheries activities and the UK Marine Strategy for the first time since the UK MS regulations were published in 2010.

The first Environmental Improvement Plan was also published in 2023, renewing commitment Joint Fisheries Statement commitments to implement an ecosystem-based approach to fisheries management.

The Environmental Targets (Biodiversity) (England) Regulations were published in 2023 in an aim to halt species decline. The aggregated target includes several marine fish species.

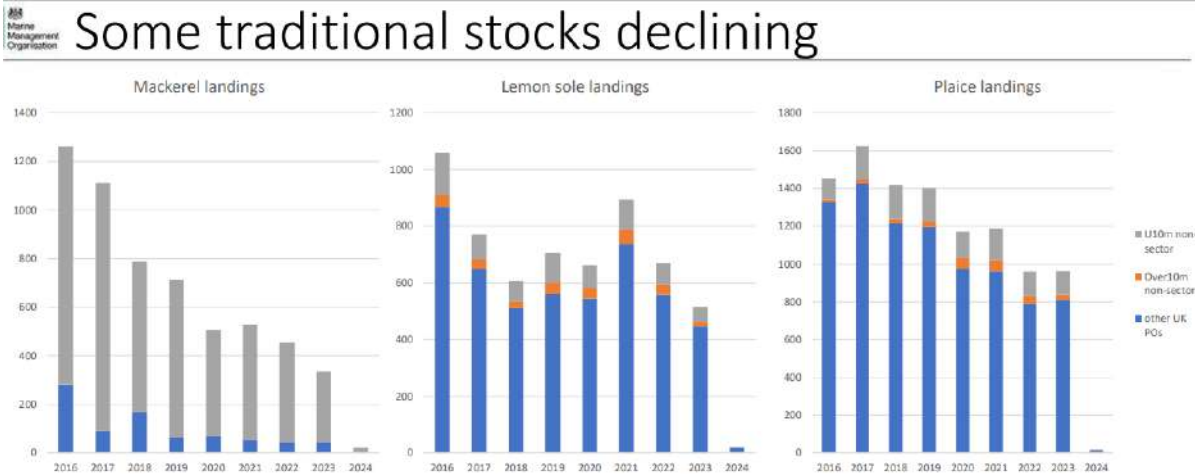
The first three Highly Protected Marine Areas were designated in 2023, they were: Allonby Bay, North-East Farnes Deep and Dolphin Head. HPMAs will protect all species and habitats and associated ecosystem processes within the site boundary, including the seabed and water column.

### What is in store for fisheries in the Southwest in 2024?

It is likely that climate change will continue to benefit some species, such as black seabream, red mullet and anchovy and to result in declines of some other species, such as lemon sole, Atlantic cod, haddock and megrim.

Several additional FMPs are expected for the southwest, subject to the new government's direction. Published FMPs are moving into an implementation phase. A Statutory Instrument to formalise the requirement for iVMS on <12m vessels was expected in 2024.

The development of floating offshore wind planned for the southwest of the UK is likely to generate much interest and concern from the fishing industry and coastal communities.



**New normal?**

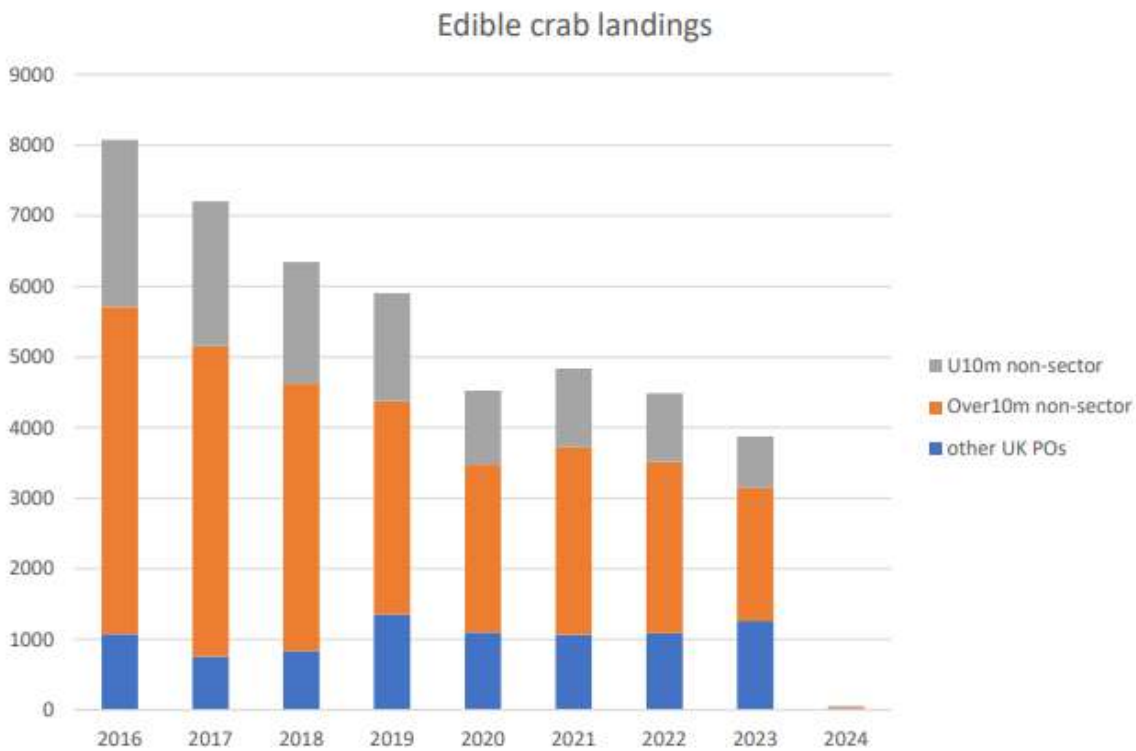


Figure 14.1. Some landing figures relevant to change.

## 14. Marine Protected Areas

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### Conclusions

- In the SWME area we currently have 51 Marine Protected Areas (10 Special Areas of Conservation, 4 Special Protection Areas, 37 Marine Conservation Zones) of which 47 have formal Conservation Advice Packages which have been published.
- Inshore MPAs are managed by the local IFCA. Currently 81% of MPAs within the Devon and Severn area are closed to bottom-towed gear, compared to 75% in the Isles of Scilly and 40% in Cornwall.
- The MMO is responsible for introducing fisheries management measures to all offshore MPAs by the end of 2024. In March 2023, bottom-towed fishing gear was banned on rocky and biogenic reef habitat in 13 MPAs, 6 of which are in the south-west area.
- There is an increasing recognition of the need to adopt a whole site approach to MPA management for effective marine nature recovery.
- Long-term monitoring and research are key for effective, science-led management measures.
- Early engagement with local stakeholders and the fishing industry are essential for the success of MPAs management measures.

### Fisheries management in offshore marine protected areas (MPAs) - 2023 update.

*Cheryl Yarham – Marine Management Organisation*

In 2020, the UK Fisheries Act gave MMO the powers to make byelaws to manage fishing for the purpose of conserving marine species and habitats. Consequently, the MMO has agreed an ambitious target to introduce fisheries management measures to all offshore MPAs (where required) by the end of 2024. This work has been divided into stages to allow efficient management of the project's workload, and to prioritise protection of the most sensitive habitats and species from the most damaging types of fishing activity.

Stage 1 sites were selected as a representative spread of designations and features, including sensitive features requiring urgent management. Stage 1 protects just over 13,500 km<sup>2</sup> of valuable marine habitats from damaging fishing activity. The byelaw came into force in 2022. Two of these sites are within the South-West marine area: the Canyons MCZ, and South Dorset MCZ.

Stage 2 saw the creation of the Marine Protected Areas Bottom Towed Fishing Gear Byelaw 2023 to protect valuable marine habitats and species in 13 English offshore MPAs. These sites were selected because they are home to rocky and biogenic reef habitats which are especially sensitive to the impacts of bottom towed fishing gears such as dredges and trawls. From 22<sup>nd</sup> March 2023 the use of bottom towed fishing gear was prohibited inside specified areas within these MPAs, protecting an area of almost 4,000 km<sup>2</sup> from damaging fishing activity. Six of the 13 sites sit within the south-west area and are: Land's End and Cape Bank MPA, Cape Bank MPA, East of Haig Fras MPA, Haig Fras MPA, South of Celtic Deep MPA and, Hartland Point to Tintagel MPA.

Stage 3 covers all remaining interactions between fishing gear and designated seabed features within MPAs not already assessed in Stages 1 and 2. A call for evidence was launched on 17<sup>th</sup> January 2023 and ran to 28<sup>th</sup> March 2023, to obtain further evidence on the interactions of fishing gear and MPA seabed features. The additional

information provided was compiled using a systematic approach and assembled within the Stage 3 Fishing Gear MPA Impacts Evidence documents. These documents are used to inform MPA site assessments alongside site specific activity data and biotope sensitivity information.

Stage 4 focuses on 5 MPAs that are designated for highly mobile marine species. A call for evidence seeking additional information to support the stage 4 assessments and management of fishing in offshore MPA opened on 5<sup>th</sup> December 2023 and closed on 13 February 2024. The stage 4 team are currently reviewing the evidence to inform the MMO MPA fisheries assessment and working with Statutory Nature Conservation bodies (Natural England and JNCC) and NGOs to develop these.

#### Marine non-licensable activities

MMO is responsible for managing the impacts of marine non-licensable activities (mNLA) in MPAs between 0 and 12 nautical miles (nm) in English waters. Natural England is responsible for assessing the condition of the features of MPAs.

Marine non-licensable activities (mNLA) are those which do not require a marine licence (as defined by section 66 of the Marine and Coastal Access Act 2009) but exclude fishing.

These are mostly recreational activities on water which include, but are not limited to: non-motorised watercraft, for example kayaks, windsurfing, dinghies; powerboating or sailing with or without an engine. Anchoring and mooring, launching and recovery, and diving and snorkelling are also included within the definition of marine non-licensable activities.

To determine whether or not a mNLA requires management, MMO will undertake a site-level assessment of mNLA impacts on the MPAs designated features. MMO have prioritised MPAs with condition assessments that have designated features that have been assessed as being in unfavourable condition as a result of mNLA. There are 6 priority sites, 3 of which fall into the south west area; Fal and Helford SAC, Isles of Scilly Complex SAC and Plymouth Sound and Estuaries SAC.

#### Highly Protected Marine Areas (HPMAs)

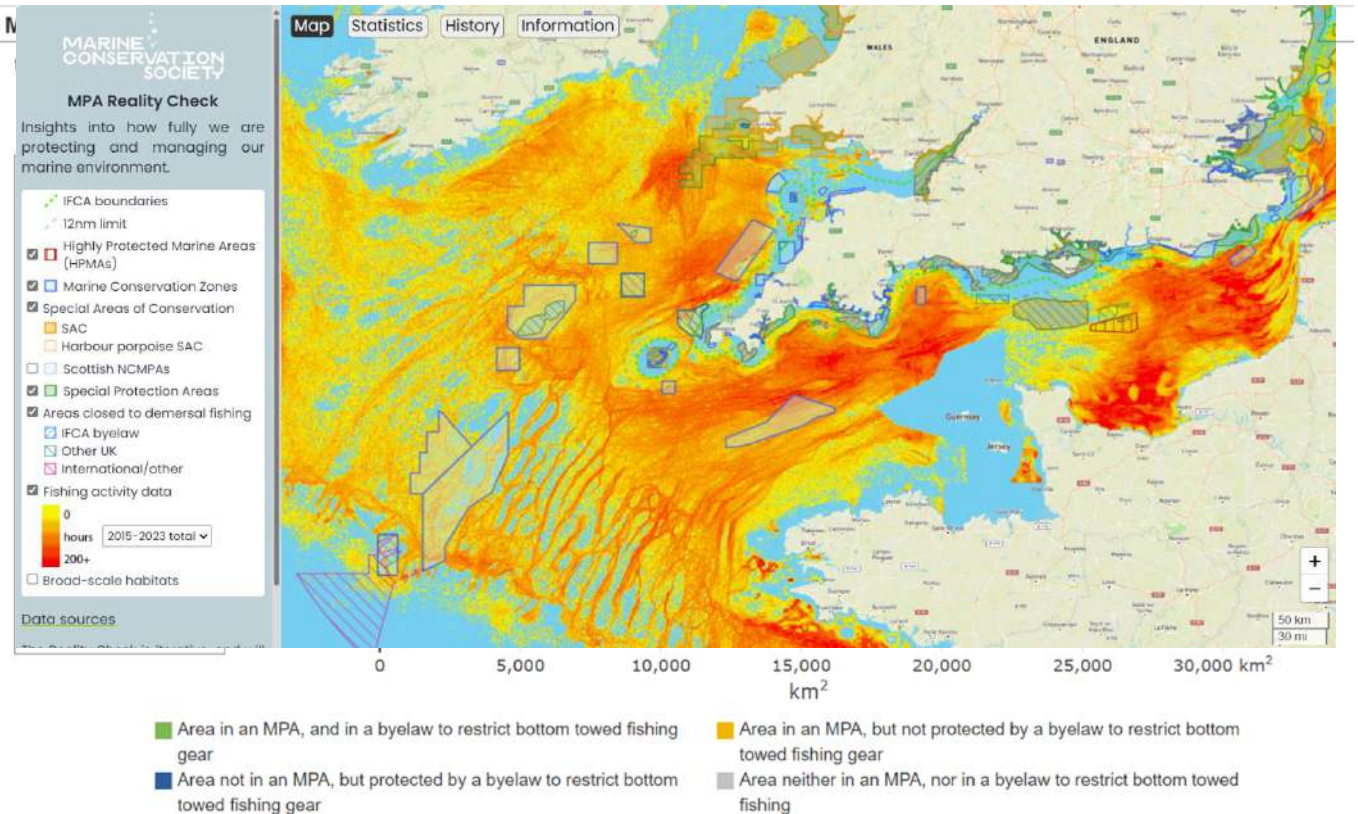
No locations within the SWME area were designated in the first tranche of HPMAs in 2023. The Secretary of State has requested that Defra explores the potential for additional sites for consideration for a second tranche during 2024.

### **MPA Reality Check**

*Jean-Luc Solandt – Marine Conservation Society*

The MPA Reality Check is a tool for monitoring ongoing fisheries management measures nationally, specifically focusing on MPAs and their progress over the years. The MPA Reality Check website features interactive layers where users can explore different MPAs, their habitats, and fishing efforts, particularly focusing on benthic habitats and bottom-towed fishing gear. One of the main aims of this is to help practitioners gain a better understanding of the status and progress of their MPAs.

## South-West Marine Ecosystems in 2023 (The State of South-West Seas)



**Figure 14.1.** Bottom trawling activity of vessels >15m in and around UK MPAs in offshore and nearshore areas (this is an underestimate of trawling activity, as it does not take account of smaller vessel activity). Data is intensity of fishing combined for 2015-2023 data for all fleets. Image is taken from the MPA reality check (<https://mpa-reality-check.org/>).

In England, inshore MPAs managed by the Inshore Fisheries and Conservation Authorities (IFCAs) cover approximately 14,500 km<sup>2</sup>, with about 4,600 km<sup>2</sup> closed to bottom-towed fishing gear. This coverage has increased by around 1% since last year due to new management measures at Beachy Head East MCZ. Regional data from the South West showcases differing levels of MPA protection against bottom-towed fishing gear: 81% of MPAs within the Devon and Severn area are closed to bottom-towed gear, compared to 75% in the Isles of Scilly and 40% in Cornwall (Figure 14.2).

Initially, regulatory measures primarily targeted the safeguarding of key habitats such as reefs, maerl, and seagrass, often overlooking sedimentary areas. However, significant strides have been made in the South West, particularly in Devon, towards the protection and enhancement of mixed reef sediment communities. Examples include the protection of extensive areas such as the Start Point to Eddystone Reef MPA from bottom-towed gear.

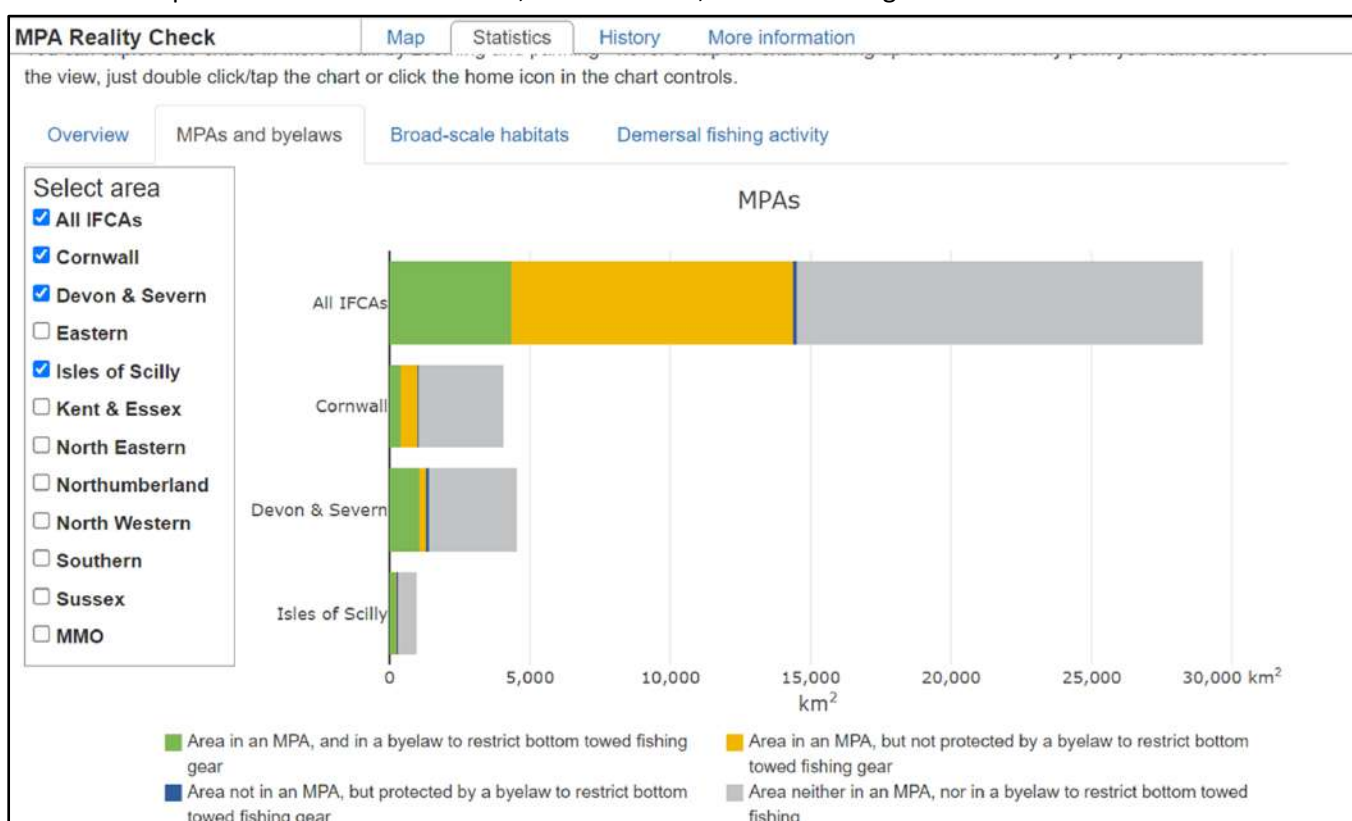
Challenges remain, particularly in Cornwall, where the north coast MPAs have not seen significant regulation due to natural barriers to trawling. However, ongoing advocacy aims to implement protective measures to anticipate future changes in fishing practices.

The management of offshore MPAs overseen by the MMO has also been progressive, shifting more towards a whole-site approach, with Stage 3 looking at impacts of fishing on all seabed MPA features. During this stage there is the potential to see the closure of over 13,000 km<sup>2</sup> of South West offshore sites to bottom-towed gear, signifying a significant leap forward in MPA protection.

### Marine Condition Assessments update

Adele Morgan – Natural England

This year, Natural England’s Devon, Cornwall and Isles of Scilly Team have undertaken Condition Assessments for features of the Axe Estuary Marine Conservation Zone (MCZ), Bideford to Foreland Point MCZ, The Manacles MCZ, and Tamar Estuary Sites MCZ. The assessments will provide crucial insights into the condition of designated features, informing whether the Conservation Objectives are being achieved and identifying any additional monitoring and management measures that may be necessary. This work will underpin our advice to marine regulators and fisheries managers, aiding the achievement of a well-managed MPA network and facilitating the identification of priorities for Nature Recovery. Furthermore, it will contribute to gauging the tangible progress towards the Environmental Improvement Plan 2023 and The Environmental Targets (Marine Protected Areas) Regulations 2023. Notably, the latter includes a specific target stipulating that 70% of all MPA protected features should be in favourable condition by the end of 2042, with an interim target of 48% of MPA features to be achieved by 2028. The target also requires that all other protected features should be, at a minimum, in a ‘recovering’ condition.



**Figure 14.2.** Extent of bylaws restricting bottom towed fishing gear across IFCA districts, including Cornwall, Devon & Severn, and Isles of Scilly.

Of the 51 Marine Protected Areas, encompassing Special Areas of Conservation, Special Protection Areas and Marine Conservation Zones located in Devon, Cornwall and the Isles of Scilly, 47 have formal Conservation Advice Packages which have been published. The remaining four packages will be drafted through collaborative efforts between Natural England and JNCC in the near future.

During the current fiscal year (2023/24), a total of 22 features within four MPAs have undergone assessment. In 2022/23, 20 features were assessed in six MPAs, in comparison to eight features in two MPAs in 2021/22 and 7

features in two MPAs between 2018 and 2021. Collectively, these efforts have resulted in the completion of assessments of 57 features across 14 MPAs.

## **Seas the Moment: A Call to Action for Protecting Our Seas**

*Carli Cocciardi – Devon Wildlife Trust*

As the General Election approached, the Wildlife Trusts, both at national and regional level, advocated for nature and climate to be high on every candidate's agenda. The Wildlife Trust's aim was to ensure that elected representatives prioritise action for the recovery of nature. One of the UK government's commitments is the 30x30 target, aiming to conserve and protect 30% of land and sea by 2030. However, despite the approaching deadline, we remain far from achieving this goal. A well-managed network of Marine Protected Areas (MPAs) is essential to achieve our marine target.

Some of the Wildlife Trust key advocacy points for effective MPA management included:

### Ecosystem-Based Approach to MPA Management

Most MPAs are currently managed to protect specific features, but a more holistic approach is needed. This involves safeguarding entire sites from harmful activities. Marine species and habitats are interconnected, necessitating comprehensive protection measures.

### Ban on Bottom Towed Gear in MPAs

Despite its known destructive impact, bottom towed gear is still allowed in many MPAs. This gear is highly damaging to marine habitats and species, including soft sediments that are often excluded from bottom-towed gear bans.

### MPA Recovery Plan

The Wildlife Trusts' review of UK MPAs revealed that only 15.27% of MPAs in England are in favourable condition. Many sites are degraded, and some have been irreversibly damaged. An action plan is needed to restore these areas, identifying obstacles to recovery and implementing effective management strategies.

### More Highly Protected Marine Areas (HPMAs) and No Take Zones (NTZs)

While three new HPMAs were established in 2023, more are needed. These sites play a critical role in evaluating the effectiveness of these protections and their environmental and socioeconomic benefits. Studies, such as those on the Lundy No Take Zone, indicate positive impacts both on the marine environments and the fishing industry.

## **Marine nature recovery in South-West England**

### **Eddystone reef: A project to illustrate how 'whole site' management of MPAs is necessary for full biodiversity recovery**

*Jean-Luc Solandt – Marine Conservation Society*

In 2013, the Marine Conservation Society (MCS) started working with Cornwall IFCA and University of Exeter to survey the seabed in sediment areas in 50m depth of water around the Eddystone reef SAC for invertebrates using high-res drop-down camera. The site was protected from mobile bottom fishing in January 2014. Hundreds of photos were taken over a variety of habitats including reef, sediment veneers and sediment plains. Surveys carried out until 2019 showed an increased number of sessile invertebrate species such as soft corals, hydroids, bryozoans and sponges in areas away from bottom towed gears. It highlighted the need to take account of a 'whole site'



approach to SAC management to ensure site integrity is maintained. It also illustrated the impact of working between the public (e.g. IFCA) and private sectors (funder) and charities (MCS).

The work was supported by The PigShed Trust and Princess Yachts.

Papers:

<https://onlinelibrary.wiley.com/doi/full/10.1002/aqc.3412> - The aspects of governance and management that led to this approach of mutually beneficial collaborative scientific research.

[https://publicationslist.org/data/m.j.witt/ref-149/Pikesley\\_2021\\_MarPol.pdf](https://publicationslist.org/data/m.j.witt/ref-149/Pikesley_2021_MarPol.pdf) - the ecological findings of the project.

### **All on board: The importance of local buy-in to maintaining the relevance of MPAs (using the Lundy MPA as an example)**

*Robert Irving – Marine biologist and Hon. Secretary to the Lundy MPA Advisory Group*



Figure 14.3. Celebrating the 50th anniversary of marine conservation at Lundy, with a birthday cake inspired by the sunset cup coral. Artwork by Bob Foster-Smith

In 2022 we celebrated 50 years of marine conservation at Lundy. From 1972 until 1986, the area of sea around the island, including the foreshore and extending to 1 km offshore, became the first voluntary marine nature reserve in the country. A slightly larger area was designated a statutory Marine Nature Reserve in 1986, and the country's first No Take Zone was set up in 2003 off the island's east coast, covering an area of just less than 4 km<sup>2</sup>. Since 2015, the term 'Marine Protected Area' has been used to encompass the island's

various marine designations.

What we've found over this 50-year period is the importance of recognising the active support of all those who have some interest in the waters around the island, be they fishermen, divers, marine biologists, marine archaeologists, yachtspeople, anglers or others. These groups are all represented on an Advisory Group which holds meetings twice a year.

Over the years, the meetings of this Advisory Group have provided individuals and groups with an opportunity to express opinions, raise concerns, engage in discussions and agree on ways forward. As a consequence, trust has been built between parties with a resulting sense of collective ownership of the MPA. This is demonstrated, for instance, by occasional reports received by the island's Warden of possible infringements of the No Take Zone – an obvious example of protection by those who care.

Finally, it would be remiss not to acknowledge the moving force behind the creation of the MPA at Lundy, Keith Hiscock, who remains very much involved with its management to this day.

### **Lessons from Lyme Bay (UK) to inform policy, management, and monitoring of Marine Protected Areas**

*Chloe Renn – University of Plymouth*

Marine Protected Areas (MPAs) show potential for enhancing ecosystem resilience and reversing habitat and population declines, though their effectiveness varies by context. Partially protected areas offer a balance between

ecological recovery and the social needs of local communities, but their success is dependent on multiple factors. The recent review ([Renn et al., 2024](#)) summarizes 15 years of marine conservation research and impact in Lyme Bay, southwest UK, providing a model for the future adoption of partially protected MPAs. The findings from the UK's longest integrated socioecological monitoring MPA showed the significance of a whole-site management approach in Lyme Bay's success. The outcomes covered the evolution from research to improved monitoring and ambitious policy, featuring novel discoveries, ongoing challenges, and methodological advancements. What started as a dedicated group of community members in Lyme Bay has grown into an immense collaboration between fishers, scientists, NGOs, and regulators, and their combined efforts have sent ripple effects of positive change across the globe.

### **A fine line: Decisions for MPA management in the Isles of Scilly**

*Tom Hooper – Isles of Scilly IFCA*

In 2019, the Isles of Scilly IFCA began reviewing their Fishing Gear Permit Bylaw, focusing on its goals for industry, science, and the marine environment. Discussions about static and mobile gear options were held iteratively within a Byelaw Working Group. Many Scillonian fishermen expressed a desire to maintain a viable and sustainable mobile gear fishery.

As part of the review, the University of Plymouth conducted habitat surveys, revealing that areas mapped as sediment were actually thin layers of sediment over more sensitive reef habitats. Fishing activity data, primarily from participatory mapping and some OLEX data, categorised potting intensity and otter trawling into high, moderate, and low pressures, aiding in seabed habitat condition assessment.

Additionally, a natural capital assessment by the University of Plymouth examined how different fisheries management scenarios impact ecosystem services. Three scenarios were considered: increased scallop dredge activity, otter trawl activity over sensitive habitats, and otter trawl activity across all habitats.

The review resulted in a 168 km<sup>2</sup> expansion of bottom-towed gear closures, covering 45% of the district (Figure 4). A new area will be used for a bottom towed gear fishery, and it will be possible to study how the ecology changes as this fishery takes place.

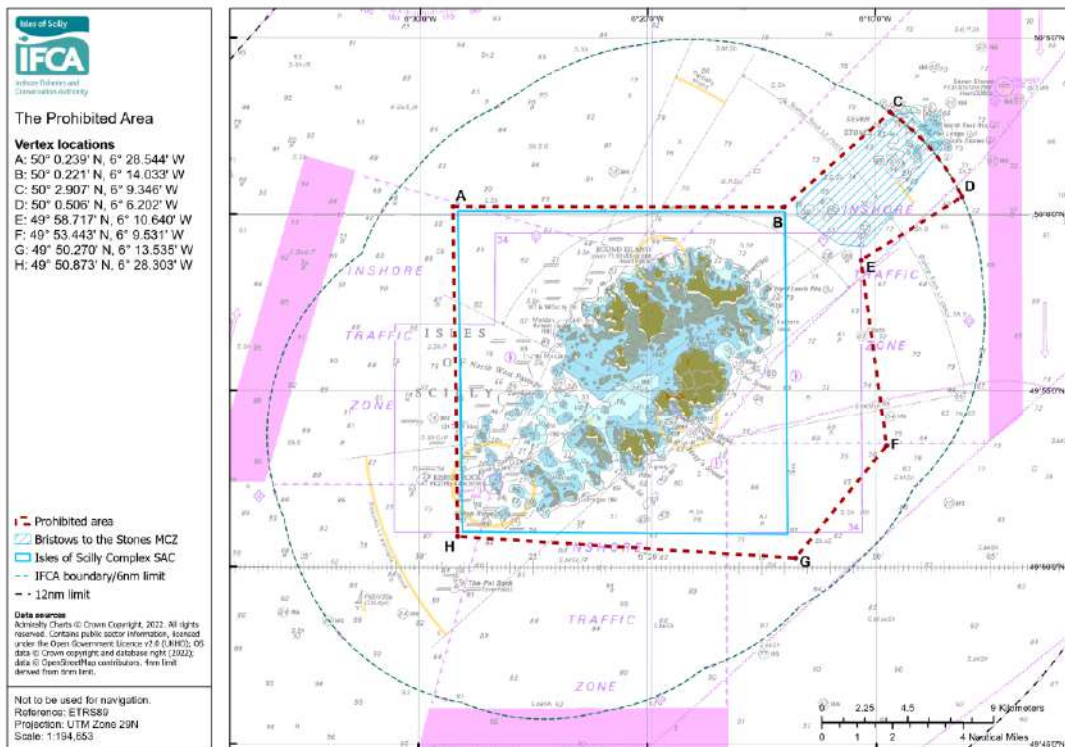


Figure 14.4: New bottom-towed gear closure in the Isles of Scilly.

The review undertaken by the Isles of Scilly IFCA underscores the complexity of decision-making amidst uncertainty, emphasizing the role of research and the significance of Marine Protected Areas (MPAs) in guiding decisions. It illustrates IFCA's commitment to evidence-based decision-making and their ability to define spatial measures aligned with legislative goals. This review highlights the interplay between science, policy, and stakeholder interests in sustainable marine management.

### National Strategy Supporting Marine Nature Recovery – What can Local Nature Recovery Strategies do for our seas?

Abigail Crosby – Cornwall Council

Government remains largely off track to meet its environmental ambitions both on land and at sea. Our Cornwall State of Nature report also presents worrying trends including unsustainable fishing, bycatch and entanglement and pollution. A Local Nature Recovery Strategy (LNRS) is a short-term strategy, resulting from the Environment Act, that will lay out how we can take steps to reverse the concerning forecast and reach our goal that 30% of Cornwall and the Isles of Scilly are well-managed for nature by 2030.

LNRS are new system of spatial strategies for nature, locally led, collaborative and evidence based, which will plan, map, and help drive more action and investment in nature's recovery. What is key is LNRS only extends to the low water mark within planning catchment and does not include the marine area, but as stated in statutory guidance provided by Defra; 'Coastal responsible authorities should consider how to factor in neighbouring marine areas and plans in their strategies. Linking local nature recovery strategies and marine spatial planning would help to identify land management changes that could benefit the estuarine or marine zone. For example, by improving the quality of water leaving river systems or managing coastal erosion risks. Cornwall Council, the relevant authority leading the

Cornwall and Isles of Scilly LNRS, are committed to including marine where feasible in the statutory document to represent the importance of the marine environment for our region.

Ensuring a strong and bold marine thread through Cornwall and the Isles of Scilly's LNRS via a voluntary marine extension is essential to create coordination across our region and strengthen partnerships, focus efforts and resources on the most effective projects, and to ensure true success of nature recovery in our region in the years to come. We also know that protecting and restoring our marine environment is important to Cornwall's communities and residents, as demonstrated from the LNRS public and strategic surveys where 'marine' was the second highest mentioned habitat for the region (online survey and map total 2,759).

There are challenges for incorporating marine into our LNRS, such as a lack of national consistency and guidance and considerable uncertainty about the adequacy of available spatial data in the marine environment, however there are also multiple opportunities via a series of commitments from government such as the marine Natural Capital and Ecosystem Assessment Programme and the Marine Net Gain consultation.

In addition to these national developments, in Cornwall we have a series of local programmes that are contributing to our marine evidence base and providing a strong movement for successful marine recovery in the coming years. These include the Cornwall and Isles of Scilly Marine and Coastal Partnership, Cornwall Councils Motion for the Ocean, and our plethora of marine conservation delivery projects on the ground. We believe we can bring these initiatives together for a valuable and meaningful marine extension to the LNRS and will continue developing our marine nature recovery framework over the following year in partnership with our region's leading marine managers and conservation leaders.

### **The Helford Voluntary No Anchor Zone - 25 years of Community Cooperation.**

*Susan Scott – Cornwall Council*



**Figure 14.5.** Marker buoys indicating the Helford Voluntary No Anchor Zone.

The Voluntary Helford No Anchor Zone protects an area of seagrass in a very popular sheltered bay off three beaches in the Helford. The story begins in 1999, with concern from the local Helford community from the anticipated yachts coming down to the Helford to watch the eclipse. The concept, management and funding have always been shared, coordinated in the main by the Helford Marine Conservation Group advisory committee and Helford River Moorings. Recently the zone has been expanded to reflect the growth of the seagrass bed. Seabed friendly markers are used to carry the marker buoys and those marker buoys increased from three to five (Figure 5). The EU Life Recreation Remedies Project guided the expansion process and the Fal and Helford Estuary Officer's S106 recreation mitigation fund part funded the new buoys and

S106 continues to fund annual maintenance.

You will find the zone marked on navigation charts, helpful for visiting yachtsmen. Anyone who misses the signage and charts and ends up in the zone is politely asked to move by members of the community. A real sense of ownership is felt over this area and other water users enjoy the free space. There is a seasonal 6 knot speed limit that reduces danger, noise and nuisance from vessels.

The site is regularly monitored for effectiveness and there is clear data to show that the zone works and has become increasingly more effective with the addition of two more buoys. Condition assessments of the seagrass show an increase in size and density too and although there are other factors at play, water quality and climate, there is no doubt that the reduction in vessels in and out of this area has improved the condition of the bed. This is such an exciting area for marine fauna that we anticipate more and higher tech surveys to provide data on the species density. Anticipating that it will be higher in biodiversity than beds in busier areas of the Fal and Helford complex.

However successful this VNAZ has been it is important to remember to do the groundwork. Stakeholder engagement is key to success. Monitor first, is there a problem with anchoring or is it only an occasional few? If the zone is established what are the alternatives for vessels? Navigational safety is essential. Is the problem being pushed elsewhere by creation of this zone, perhaps to a more vulnerable site?

## 15. Water Quality

**Edited by:** Eleanor Ward

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### Summary and conclusions

- There was increased encouragement through community engagement and action to improve our water quality.
- One hundred percent 100% of storm overflows are now fitted with event duration monitoring devices in 2023.
- One hundred and sixty-one 161 bathing waters in the south-west achieved 'excellent' classification in 2023.
- The south-west received thirty-seven blue flag beach awards in 2023, including Westward Ho! beach which has won the award for more than twenty consecutive years.
- The south-west experienced a 34% increase in rainfall in 2023, directly contributing to poor water quality.
- The number of sewage overflow spills in the south-west increased by approximately 55% between 2022 and 2023, and the duration of those spills increased by approximately 83%.
- The presence of uPBTs (ubiquitous, persistent, bioaccumulative and toxic substances) in the UK has resulted in no water bodies achieving 'good' overall status.

#### 15.1. Introduction

This chapter provides an overview of the state of water quality in the south-west of England in 2023.

In 2023, significant weather events, climate change and human activity continued to have a major impact on water quality, leading to increased sewage overflow spills and changes in the ecological and chemical status of water bodies. Despite these challenges, progress was made in monitoring and reducing the adverse impacts of storm overflows, improving bathing water quality, and engaging communities in water quality initiatives.

Poor water quality directly affects people, wildlife and landscapes, as well as having direct negative consequences for the local economy, including fisheries and tourism. With a variety of influences affecting water quality, it is imperative that organisations and communities work together to address water quality issues and ensure sustainable action and improvements are undertaken.

This chapter aims to provide a broad understanding of the current state of water quality in the south-west of England, the challenges faced, and the strategies employed to address these issues. It underscores the importance of collaborative efforts and sustainable practices in ensuring the improved health of our water resources.

#### 15.2. The Wholescape Approach

To achieve a good standard of water quality, international, national and local statutory requirements are in place. The Water Framework Directive (WFD) focuses on ensuring good health of our inland, transitional and coastal waters.

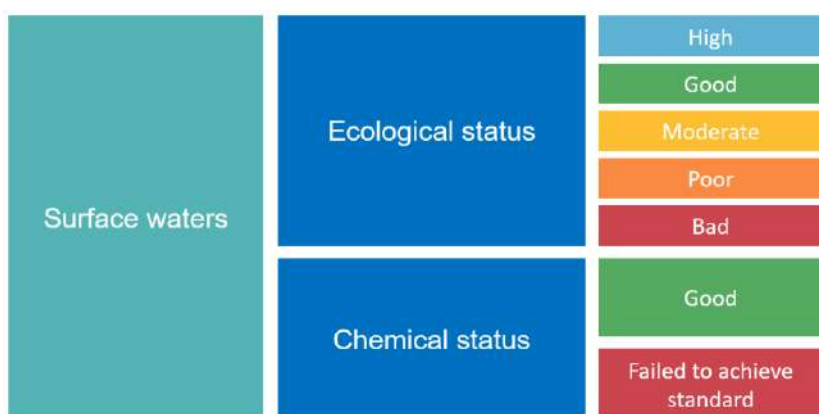
The '[Wholescape Approach](#)' is a holistic strategy for managing water quality and environmental health. It emphasises an integrated understanding of catchment-scale processes, considering both natural and human factors. Instead of focusing on individual water bodies (such as rivers or lakes), the 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.

#### 15.3. How do we measure water quality?

In England, water quality is measured by the Environment Agency (EA) in accordance with the [Water Framework Directive \(WFD\)](#) using a Wholesale 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 15.1).

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.

### Ecological Status



**Figure 15.1.** [Assessment of ecological and chemical status of surface water bodies.](#)

[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.

### 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.

### 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.

## 15.4. Results

### Surface water bodies

## South-West Marine Ecosystems in 2023 (The State of South-West Seas)

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 Table 2. More recent data was not available for this year's chapter.

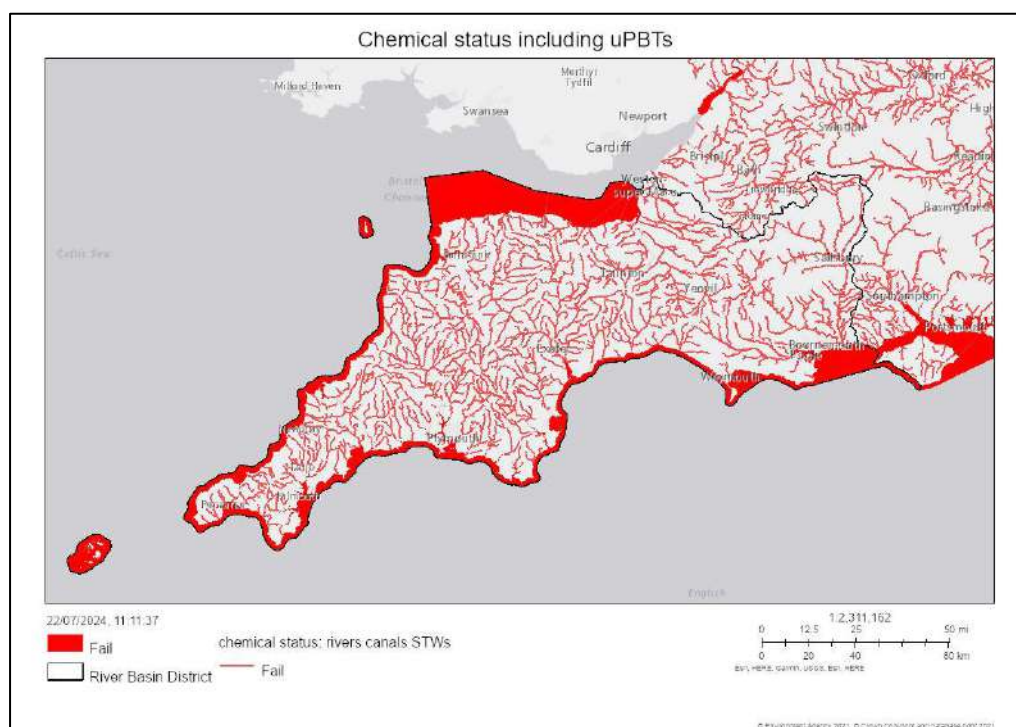
The EA's ecological tests include temperature, salinity, the presence of fish, phytoplankton and invertebrates and the total nitrogen and phosphorus concentrates in each water body. Over 76% of ecological tests resulted in 'good' or 'high' classifications, and approximately 9% resulted in a 'bad' or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

**Table 15.2.** [EA 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 our rivers, lakes, estuaries and coastal waters, both regionally and nationally, remains at 0% good 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.

Figures 15.2 and 15.3 show how influential these global pollutants are in EAs chemical status tests.



**Figure 15.2.** EA chemical status of rivers, canals, estuaries and coastal waters including uPBT testing ([EA 2021](#)).



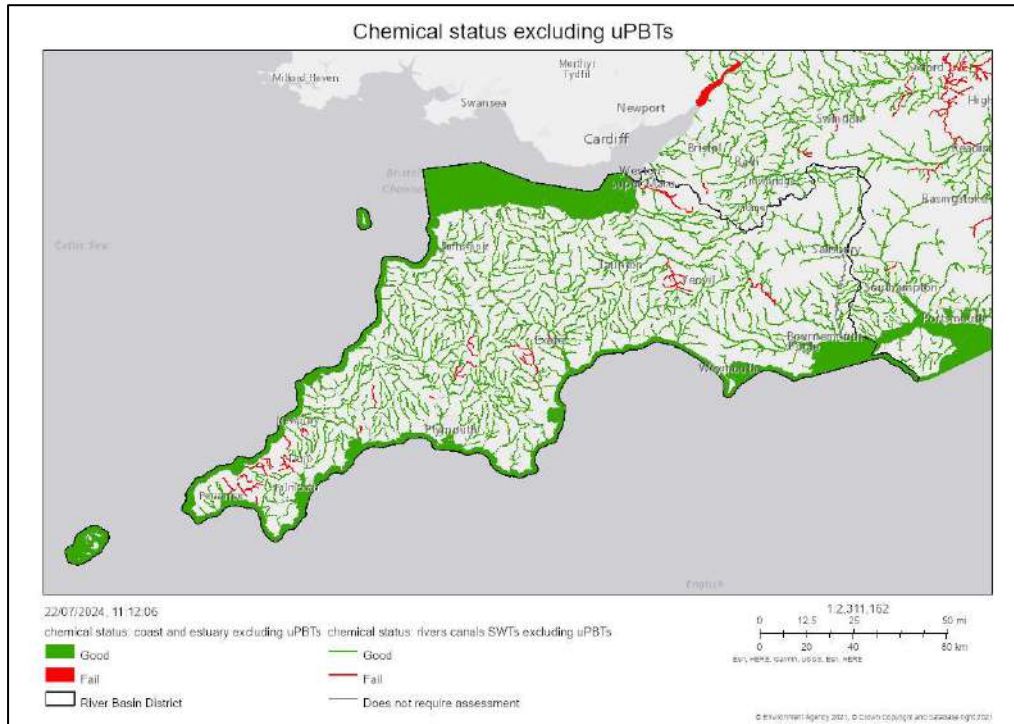


Figure 15.3. EA chemical status of rivers, canals, estuaries and coastal waters excluding uPBT testing (EA 2021).

### Bathing waters

#### UK

The EA 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 2023 compared to 2022.

- In 2023, out of the 423 bathing waters measured in England, 405 (95.7 per cent) met at least the minimum standard of the Bathing Water Regulations.
- In 2023, 281 bathing waters in England (66.4 per cent) met the Excellent standard of the Bathing Water Regulations
- In 2023, 18 bathing waters in England (4.3 per cent) did not meet the minimum standard and were classified as Poor.

Table 15.3. Bathing Water Classification in England; 2022 and 2023.

Classification		2022	2023
Number assessed		419	423
Excellent	The highest, cleanest class	302	281
Good	Generally good water quality	87	99
Sufficient	The water quality meets the minimum standard	18	25
Poor	The water quality has not met minimum standard	12	18

#### South-West

In 2023, [205 bathing waters were classified](#) in the south-west of England. The data reveals that in 2023, 161 bathing waters achieved ‘excellent’ classification, the highest and cleanest category (Table 15.4). Amongst these were Polzeath in North Cornwall and Exmouth in East Devon. Dunster beach in Somerset, and Porthluney beach in Cornwall did not meet the minimum water quality requirements and were classed as ‘poor’ quality.

**Table 15.4.** [Bathing Water Classification in the south-west of England](#); 2022 and 2023.

Classification		2022	2023
Excellent	The highest, cleanest class	162	161
Good	Generally good water quality	30	26
Sufficient	The water quality meets the minimum standard	3	7
Poor	The water quality has not met minimum standard	1	2
No classification		9	9

### 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 2023, a total of [77 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.

### Combined Sewer Overflows and Event Duration Monitoring

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.

2023 was an extraordinary year for weather, both in the region and in the UK. According to the [Met Office](#), the UK saw 11% more rain than average overall, making it the 6th wettest year since its records began in 1836. In particular, the south-west experienced a 34% increase in rainfall compared to 2022. As a result, over [16,000 spills](#) were recorded during named storms or yellow weather warnings, a significant increase from previous years. 2020 data is also included in this chapter to allow comparison between years of similar rainfall data and, therefore, Event Duration Monitoring (EDM) data.

### UK

The Environment Agency has published its [EDM data](#) for 2023 showing the frequency and duration of spills from storm overflows in England.

One hundred percent of storm overflows across England’s water network have now been fitted with monitoring devices, meeting the required target set by the Government for 2023. The EA has stated that: “England is now a world leader in the number of storm overflows monitored”. EDM data was collected from [14,318 storm overflows](#) in England during the calendar year of 2023. The data reveals that:

- There was a 54% increase in the number of sewage spills, from 301,091 in 2022 to 464,056 in 2023.

- The average number of spills per overflow was 33 compared to 23 in 2022 and 32.6 in 2020.
- 40% of storm overflows spilled less than 10 times in 2023 compared to 48% in 2022 and 40% in 2020.
- 13.9% of storm overflows did not spill at all in 2023 compared to 18% in 2022 and 13% in 2020.

### South-West

Table 15.5 shows data collated from the South West Water [EDM annual report 2023](#). The number of spills increased by approximately 55% between 2022 and 2023, and the duration of spills in the south-west increased by approximately 83%. Please note that this data does not reveal the volume of each spill relative to its duration.

**Table 15.5.** [Storm overflow data: 2020, 2022 and 2023](#) (Results are based on high frequency enhanced data).

Storm overflow	2020	2022	2023
Number of storm overflows with spill data	1032	1,323	1,342
Number of spills	41,588	37,649	58,249
Average number of spills per overflow	40.3	28.5	43.4
Duration of spills (hours)	372,124	290,271	530,737
Average duration of spills (hours)	8.9	7.7	9.1

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.

### **15.5. What are the causes of poor water quality?**

A number of factors contribute to poor water quality. In rural areas, agricultural runoff enters our water ways, often containing pesticides, nutrients and fertilisers. Soil compaction occurs when soil particles are densely packed, reducing pore spaces and limiting the movement of air and water within the soil. Water cannot percolate through these soils which leads to increased surface run-off, carrying pollutants directly into our rivers and water bodies.

In urban areas, surface run-off is often referred to as ‘urban diffuse pollution’. This may also be caused by industrial discharges or in the marine environment from boats. The [UN](#) has stated 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. The presence of litter, plastics and microplastics in our rivers and waterways also negatively affects water quality in the UK.

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.

### **15.6. Action**

#### **Storm Overflows Discharge Reduction Plan**

In the [Environment Act 2021](#), the government placed a legally binding duty on water companies to progressively reduce the adverse impacts of discharges from storm overflows. In September 2023, the UK Government updated their [Storm Overflows Discharge Reduction Plan](#) to include all coastal and estuarine sites. The revised version of the document requires Marine Protected Areas (MPAs) and Shellfish Water Protected Areas to be prioritised for early action to reduce sewage outflows. In the plan, the UK Government confirms a £60 billion capital investment over the next 25 years; the biggest infrastructure programme in water company history.

The following targets have been set by the government to revolutionise our sewer system:

- By 2035, water companies will have: improved all storm overflows discharging near every designated bathing water area; and improved 75% of storm overflows discharging into or near high priority sites.
- By 2045, water companies will have improved all remaining storm overflows discharging into or near high priority sites.
- By 2050, no storm overflows will be permitted to operate outside of unusually heavy rainfall or to cause any adverse ecological harm.

### **Water Company Fines**

- In 2023, South West Water was fined over £2 million as a result of water pollution in Devon and Cornwall. The charges relate to incidents at sewage treatment works and pumping stations at Crediton and Kilmington in Devon and Lostwithiel, Torpoint and Watergate Bay in Cornwall.

### **South West Water**

- South West Water launched their [WaterFit](#) scheme in 2022 to protect and enhance the South West's water for future generations. In 2023, they launched '[WaterFit Live](#)', an interactive map with real-time storm overflow, and investment information for the south-west's coastal communities. In 2024, WaterFit Live will show real-time data for all 1,600 south-west overflows, including into rivers.
- Between 2025 and 2030 [South West Water](#) will invest £760 million across the region to reduce the use and impact of overflows further. This is part of their plan to spend £3.5 billion to address all overflows by 2040, a decade ahead of current government targets.
- South West Water have developed a [Green First Framework](#) which requires engineers to consider nature-based solutions and sustainable drainage measures to address water management problems.

### **Environment Agency**

- The EA has 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.

### **Westcountry Rivers Trust (WRT)**

- Westcountry 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. Between 2021 and 2023, volunteers have increased from 302 to 594 and samples have also increased from 2993 to 6343.
- Westcountry Rivers Trust have collaborated with South West Water, University of Exeter, Devon Wildlife Trust and other partners on a project titled '[Upstream Thinking](#)'. Its aim is to monitor catchments and identify areas where nature-based solutions can be applied, e.g. fencing to keep cattle out of rivers, slurry management and ponds to store excess rainfall.

### **Other organisations**

In 2023, other local groups and organisations played a crucial role in actively challenging poor water quality in the south-west. In particular, Surfers Against Sewage engaged with coastal communities, surfers, and beachgoers to raise awareness about water quality issues. They organized beach clean-ups, educational workshops, and campaigns to empower individuals to take action. By fostering a sense of responsibility and community ownership, they encouraged people to report pollution incidents, monitor water quality, and advocate for cleaner seas.

#### **15.7. Acknowledgements**

We would like to thank Nicola Rogers from the Westcountry Rivers Trust, and Nick Paling from South West Water, 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 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).

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### Conclusions

This report emphasises the work that was ongoing in the Marine Management Organisation (MMO) and relevant to south-west England in 2023.

- 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.
- A detailed monitoring approach has been developed to measure the effectiveness of the policies of the South West Marine Plan. Every three years, a report is compiled and laid before Parliament to report on the effect and effectiveness of the plan.
- The Marine Planning Monitoring Surveys 2023 Two-Page Summary Report published in February 2024 found that overall, the marine plans continue to be used by a range of stakeholders in both decision-making and in supporting development or submissions of proposals.
- In 2023 there were a total of 37 marine licence applications in the south-west marine plan areas, of these, two were rejected, eight were withdrawn, 11 were approved and 16 were in progress at the end of 2023.
- The MMO oversees the wildlife licensing process in English waters, ensuring that activities comply with relevant legislation and do not harm protected species, with licenses granted only for specific purposes and subject to rigorous review and conditions. In 2023, six wildlife licenses were granted or renewed in the south west marine plan area for science and educational purposes.
- The development of floating offshore wind turbines represents a significant technological advancement, enabling the harnessing of wind resources in deeper waters. The planned deployments in the Celtic Sea will substantially contribute to the 2050 net-zero emissions targets. Demonstration projects are anticipated to be operational within the next few years, with further commercial deployments in the pipeline.

### 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.*

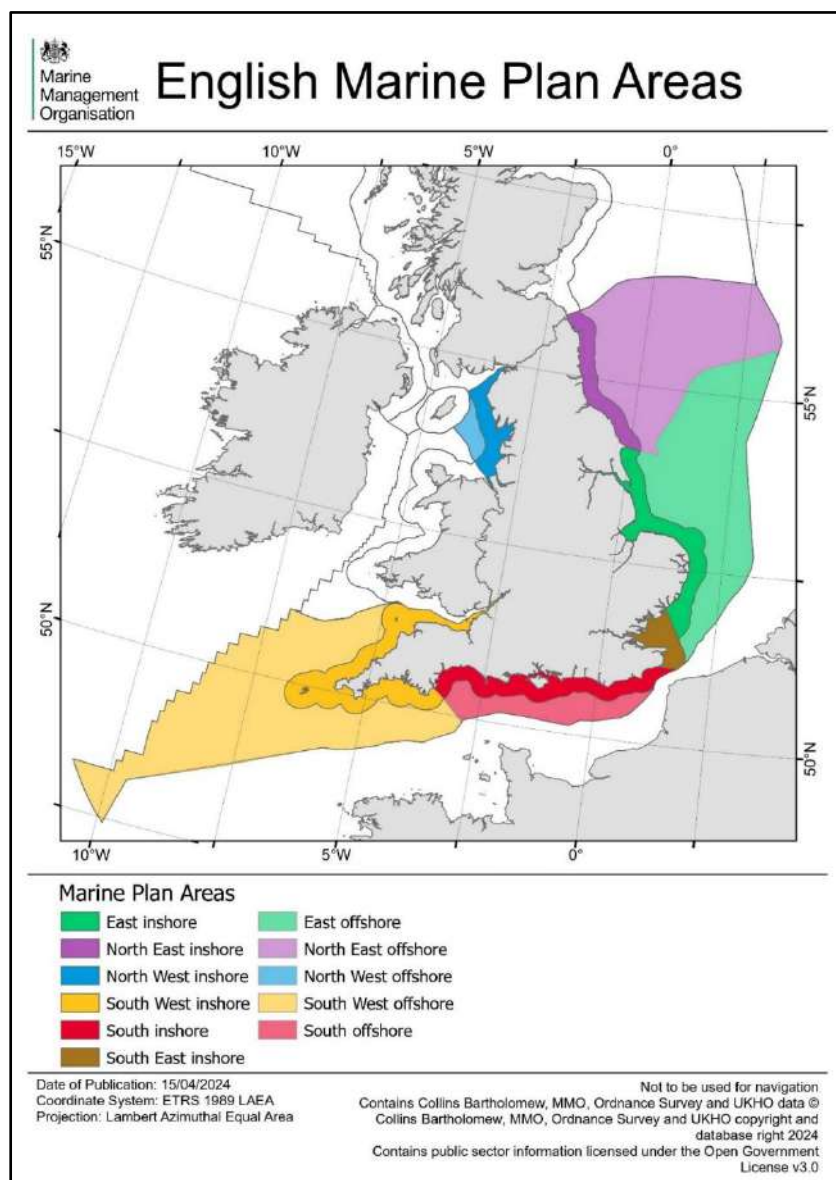
Marine plans provide policy and spatial guidance for each marine plan area, promoting co-existence of suitable activities to account for the multidimensional boundaries of the marine environment.

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



**Figure 16.1.** Marine Plans in English Waters.

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<sup>2</sup>. The south-west offshore marine plan area covers a vast expanse of 68,000km<sup>2</sup> and extends from 12 nautical miles to the outer limit of the UK Exclusive Economic Zone (Figure 16.1). As a result, this makes the south-west region the largest among England’s marine plan areas.

#### 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 topics 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 marketplace.
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 terrestrial plans.

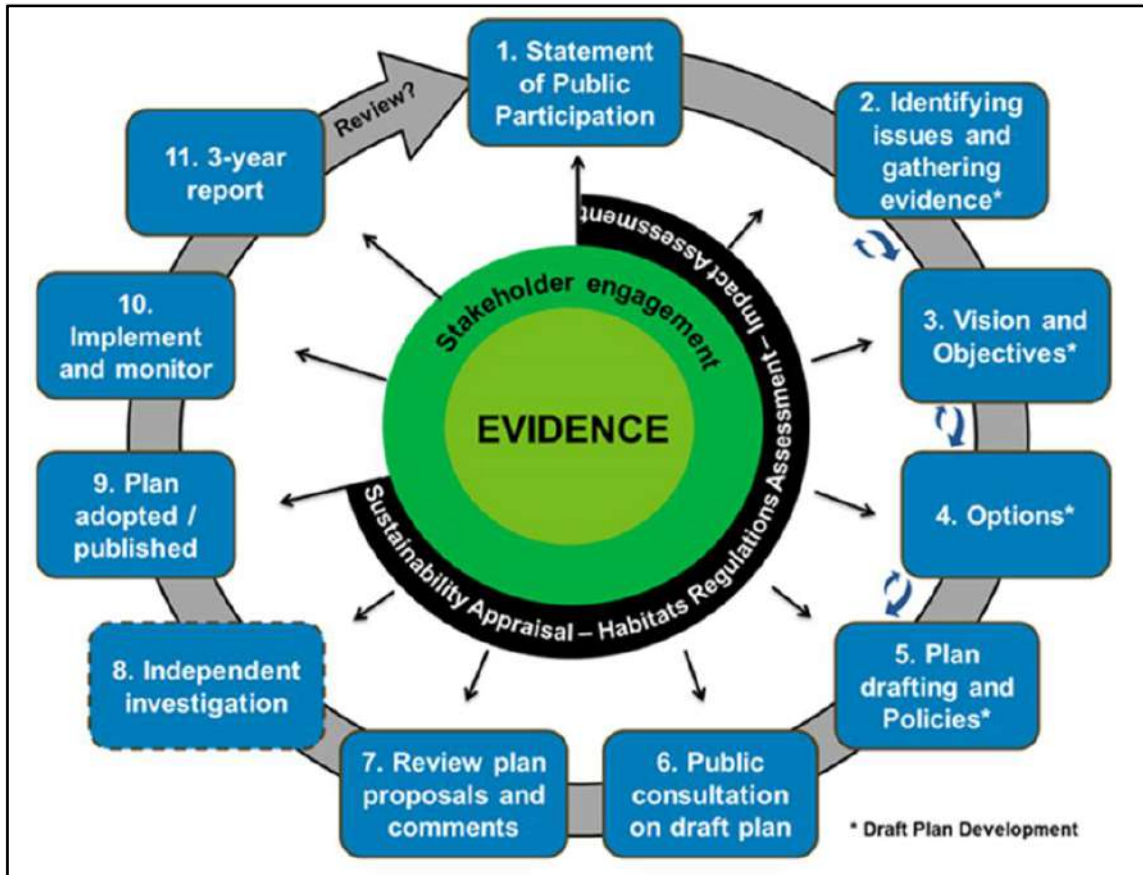


Figure 16.2. Marine plan development cycle.

As the South West Marine Plan is adopted, implementation and monitoring (stage 10 in Figure 16.2., above) are ongoing. This stage also feeds into the Three-Year report (stage 11 in Figure 16.2). National and regional implementation sessions are held by MMO to help stakeholders utilize 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, the last stage development cycle.

Following the inception of the South West Marine Plan in 2021, the first three-yearly progress report for the South West Marine Plan is due to be published in 2024.

#### Marine Plan Monitoring & Reporting:

The MMO has a legal requirement to monitor the marine plans under [Section 54](#) and [Section 61](#) of MCAA 2009. Marine plan monitoring is necessary to understand the effectiveness of different policies within all marine plans, including the south west. The monitoring of the marine plans includes the use of monitoring indicators and monitoring surveys.

#### Monitoring indicators

The MMO uses a range of data to assess plan and policy outcomes. For example, one indicator draws on information from the [National Biodiversity Network](#) and the [National Biodiversity Network atlas](#) to measure the policy outcomes

for the South West Marine Plan's invasive species policies, SW-INNS-1 and SW-INNS-2, which aim to prevent and manage the spread of invasive non-native species in the marine environment:

- SW-INNS-1 aims to avoid or minimise damage to the marine area from the introduction or transport of invasive non-native species (INNS). Proposals that do not put in place appropriate measures to avoid or minimise significant adverse impacts that would arise through the introduction and transport of invasive non-native species will not be supported.
- SW-INNS-2 aims to avoid or minimise the introduction and spread of marine invasive non-native species by encouraging public authorities with relevant functions throughout the south west to implement adequate biosecurity measures, increase awareness of invasive non-native species and provide suitable guidance to help reduce their adverse impacts on the marine environment, which could include the eradication of existing invasive species.

Therefore, this indicator assesses invasive species policy outcomes by understanding if there has been a change to invasive species found in the south west marine plan area in the three-year period.

Further details on the requirement to report are outlined in the [Approach to Monitoring](#) document for the North East, North West, South East and South West Marine Plans. This provides a comprehensive framework for evaluating the impact and effectiveness of marine plans, detailing the development and application of indicators to measure progress towards policy objectives and contributions to High-Level Marine Objectives (HLMOs).

### **Monitoring Surveys**

In progress towards the development of the Three Yearly Reports, yearly surveys are conducted which provide a stakeholder perspective on the use of marine plans, the plan policies and perceived outcomes.

The findings of the [2023 Survey Analysis Report](#) are outlined below.

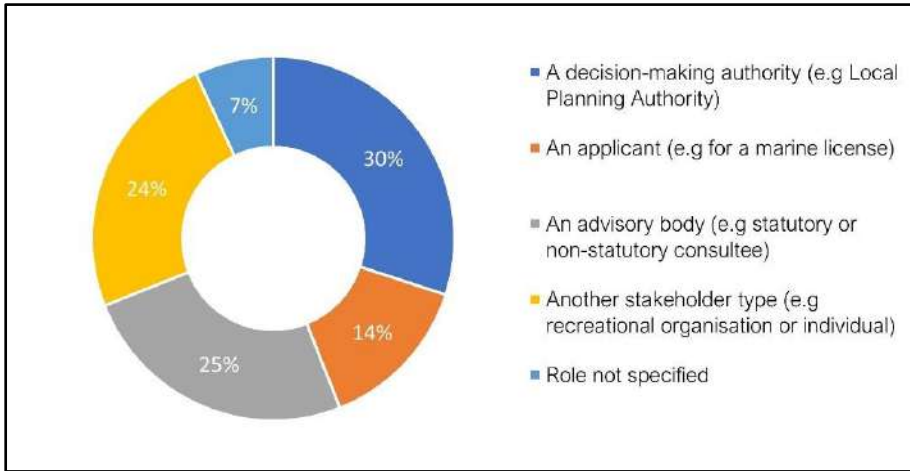
### **Introduction and methodology:**

Surveys were run between 9<sup>th</sup> May to 30<sup>th</sup> June 2023 for the North East, North West, East, South, South East, and South West Marine Plans. The surveys had some minor amendments from previous years to introduce new questions where there were monitoring gaps, and to streamline the surveys. The surveys were followed by focus groups with selected stakeholders throughout August 2023. Focus groups addressed themes brought up in surveys and sought further insight on plan use and plan effectiveness. A similar format and communications plan was followed to the 2022 surveys. Surveys were promoted through direct email to our stakeholder contact list, social media posts, the marine planning newsletter, the Communications and Management for Sustainability newsletter, coastal planner stakeholder engagement, and email signatures throughout the organisation.

### **Report results:**

Across all marine plan areas, 143 responses to the survey were received. Of these responses, 39% were from decision-making authorities, a 10% increase from 2022. Proponents made up 15% of respondents, with 19% indicating they were advisory bodies, and 18% responding as another stakeholder type. Respondents could select multiple roles in which they were responding to the survey, e.g., both decision-maker and applicant. Respondents did not have to answer every question and some questions were only shown based on answers to previous questions. There was a small overall increase of 6% in the number of responses from 2022 surveys. In both 2022 and 2023, surveys were conducted in all marine plan areas, and the same communications plan was followed. Most survey respondents found out about the survey via direct email, with other communications such as meetings with MMO coastal planners, internal emails and social media making up small numbers of respondents. Responses generally indicated that decision-makers and proponents used the marine plans, with most respondents using the marine plans in authorisation and enforcement decisions in some cases (35%), in the majority of cases (18%) and in

all cases (14%) across all marine plan areas. Most respondents also reported using marine plans in other decisions in some cases (35%), in all cases (13%) and in the majority of cases (8%).



**Figure 16.3.** 2023 Stakeholder Input to all marine plan area surveys.

Across the North East, North West, South East and South West Marine Plan surveys, biodiversity and heritage policies were used most frequently by respondents in their decision-making. The most frequently cited as not being used by respondents in decision-making were aggregates, and oil and gas policies.

Focus groups were held with 50 stakeholders across all marine plan areas, including two national sessions, with attendance at each session ranging from two to nine participants. Participants in the focus groups reported some use of marine plans in their work, and similarly to the survey respondents, most did not specify policies they used, although biodiversity and climate change policies were most frequently cited by stakeholders across sectors represented at the sessions. Participants highlighted the different application of the plans in each of the marine plan areas, with more use of environmental policies discussed with stakeholders in the south west marine plan area. The national focus groups noted the need for increased awareness and use of the marine plans, and Explore Marine Plans, particularly by terrestrial planning authorities. The national focus groups also noted an increase in proposals for aquaculture developments and using nature-based solutions. Across focus groups it was noted that often individuals are aware of and use the marine plans, but not all relevant teams across an organisation are.

**Conclusions and recommendations:**

Detailed analysis of the survey and focus group data feeds into reporting on the marine plans to understand plan use and policy effects. The survey response rate was similar to previous years, with some variation in specific plan areas or with types of stakeholders providing responses. Based on previous feedback and feedback from focus groups, the time of year the surveys are run does not seem to have a notable impact on response rates in any given year.

Overall, the marine plans continue to be used by a range of stakeholders in both decision-making and in supporting development or submissions of proposals. Some plan and policy effects have been observed but, as noted by respondents, it is difficult for respondents to determine if this is as a direct result of the marine plans.

**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. Figure 16.4 illustrates the types of licences that were applied for in 2023 in the south-west and Figure 16.5 shows what licences were granted in the south west marine plan area in 2023.

As seen in Figure 16.4 there was a total of 37 licence applications in 2023, grouped into five main sectors: Aggregates and Cables, Coastal Development, Coastal Energy & Nuclear, Ports and Marinas and Renewable Energy.

South-West Marine Ecosystems in 2023 (The State of South-West Seas)

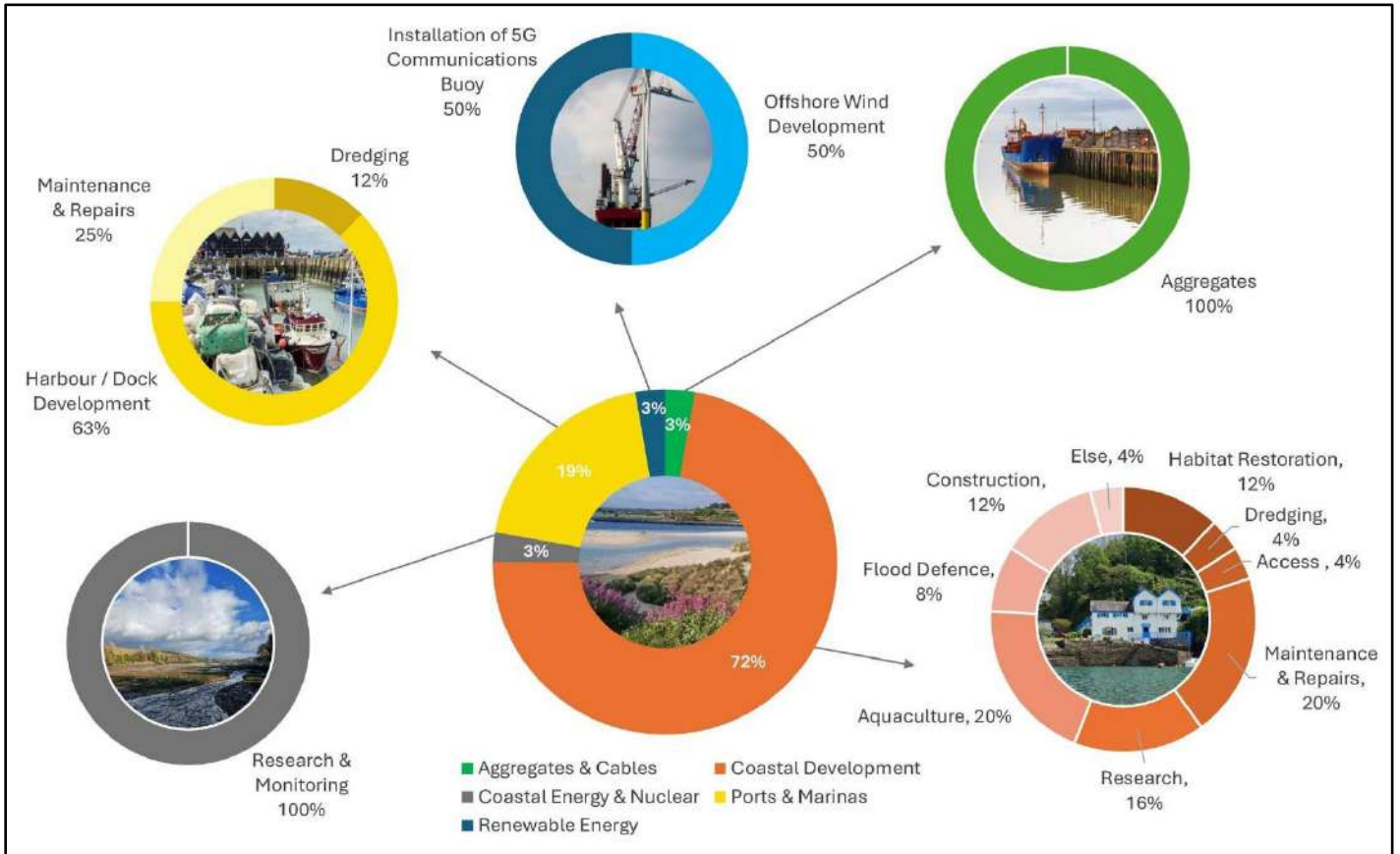


Figure 16.4. Licence requests in the South West Marine Plan area in 2023.

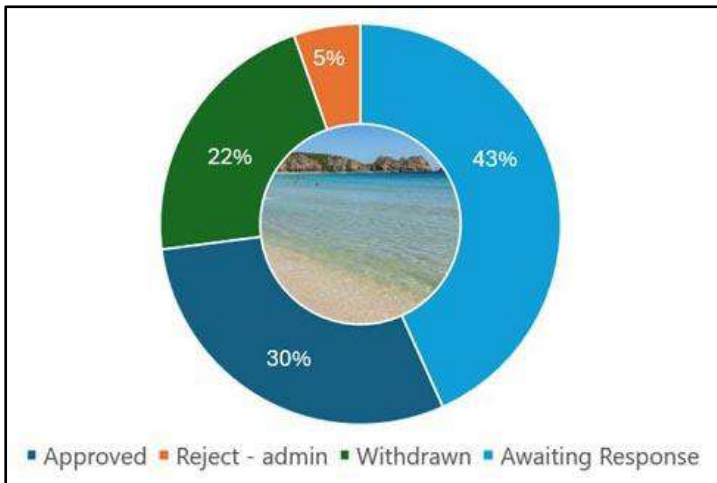


Figure 16.5. Licence decision status as of the end of the 2023 calendar year.

Of the 37 applications, two were rejected, eight were withdrawn, 11 were approved and 16 were in progress at the end of 2023.

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](mailto:marine.consents@marinemanagement.org.uk).

**Wildlife Licencing**

The MMO is responsible for wildlife licencing of activity in English territorial seas. Natural England is responsible for wildlife licencing 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.

In 2023, six wildlife licenses were granted or renewed in the south west marine plan area for science and educational purposes in relation to the short snouted seahorse and spiny seahorse. One new wildlife licence was granted in the south west marine plan area for geophysical surveys to support future offshore wind development.

### **Future of Marine Planning**

Marine planning is a dynamic field with many upcoming developments. Among these are the following advancements relevant to the south west marine area.

### **Second Generation of Marine Plans**

Based on the findings of the East Marine Plans most recent [Three-Year report](#), the MMO and Secretary of State for Environment, Food and Rural Affairs (Defra) concluded that there is compelling evidence to suggest that the East Marine Plans should be replaced to incorporate changes in local and national contexts that have occurred since its inception. The new East Marine Plan is anticipated to be the first of a second generation of marine plans for English waters.

The MMO is exploring how to make English marine plans more climate-smart, which includes investigating the incorporation of climate change projections. The MMO intends to utilise a range of evidence to inform climate-smart marine plans, including the outputs from the Marine Climate Change Impacts Partnership (MCCIP) funded project, Marine Spatial Planning Addressing Climate Effects (MSPACE). This ongoing work, including climate-smart strategies and comprehensive evidence use, will inform future updates and enhancements to the South West Marine Plan. You can view progress to the East Marine Plan and understand more about the process of replacing Marine Plans on the [marine planning webpages](#).

### **Strategic Renewables Unit Offshore Wind Development**

The development of floating offshore wind substructures represents a major breakthrough in offshore wind technology. Unlike traditional fixed-bottom turbines, floating turbines can be deployed in waters over 60 meters deep. This innovation opens the Celtic Sea to commercial-scale offshore wind deployment for the first time. The Celtic Sea, with its large untapped wind resources, will play a major role in meeting our commitments to Net Zero by 2050. There are currently two phases of floating offshore wind being deployed in the Celtic Sea: the deployment of five demonstration projects totalling 426MW and full scale commercial deployment totalling up to 4.5GW. Of the demonstration projects two already have consents in place, Twin Hub, located at the old Wave Hub site near St. Ives, Cornwall, and Erebus located 45km off of the South West Coast of Pembrokeshire, Wales, both due for commissioning by 2026. The three other 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 the Crown Estate'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.

The approach to planning offshore wind export cables is evolving significantly. For the Round 5 PDAs, National Grid Electricity System Operator (ESO) are currently carrying out an assessment of different options for cable routes and any required onshore infrastructure and will produce a holistic recommendation which balances consideration of economic, environmental and community factors.

The acceleration of offshore wind is key to meeting our net zero commitments and in 2022 the government set out an ambition to deliver 50GW of offshore wind by 2030 with 5GW coming from floating offshore wind. This increase

in deployment must maintain our existing levels of marine environmental protection and minimise impacts to other marine users and industries.

### **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](mailto: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](mailto:Mae.vanLoef@marinemanagement.org.uk), Mae.vanLoef@marinemanagement.org.uk, 07780216820

If you would like to receive regular updates about marine planning and be subscribed to the MMO's marine planning newsletter, please sign up to the [MMO mailing list](#).

## 17. Marine Plastics

**Edited by:** Dr Daniel Wilson

**Contact:** d.wilson@exeter.ac.uk

### Summary/conclusions

- A big thank you to all volunteers tackling plastic pollution across the south-west! Beach and coastal clean ups, for example, are an incredibly important and impactful way of reducing plastic pollution in our oceans. Every bottle, old buoy, fragment of box or broken net removed from our shorelines prevents 1000's of microplastics entering the marine environment!
- In 2023, the Clean Ocean Sailing team collected 24,033 individual pieces of debris weighing 6,046 kg from 42 locations around Cornwall. The most common debris retrieved was High Density Polyethylene (HDPE).
- **Requests:** Please get in touch if you have any data on animal interactions with plastic, beach clean data or south-west relevant publications you would like SWME to record or highlight.

### The work of the Cornish Plastic Pollution Coalition (CPPC)



The Cornish Plastic Pollution Coalition comprises over 50 environmental organisations, local marine conservation groups, beach cleaning groups and marine science experts, collectively representing tens of thousands of people in Cornwall and beyond. The main areas of work of the CPPC are:

- To raise awareness of the issue of marine litter and plastic pollution around our coastline by working with community groups, interested schools, and other organisations who wish to engage with the CPPC.
- To informally improve information exchange and coordination between organisations and volunteers involved in marine litter and plastic pollution in

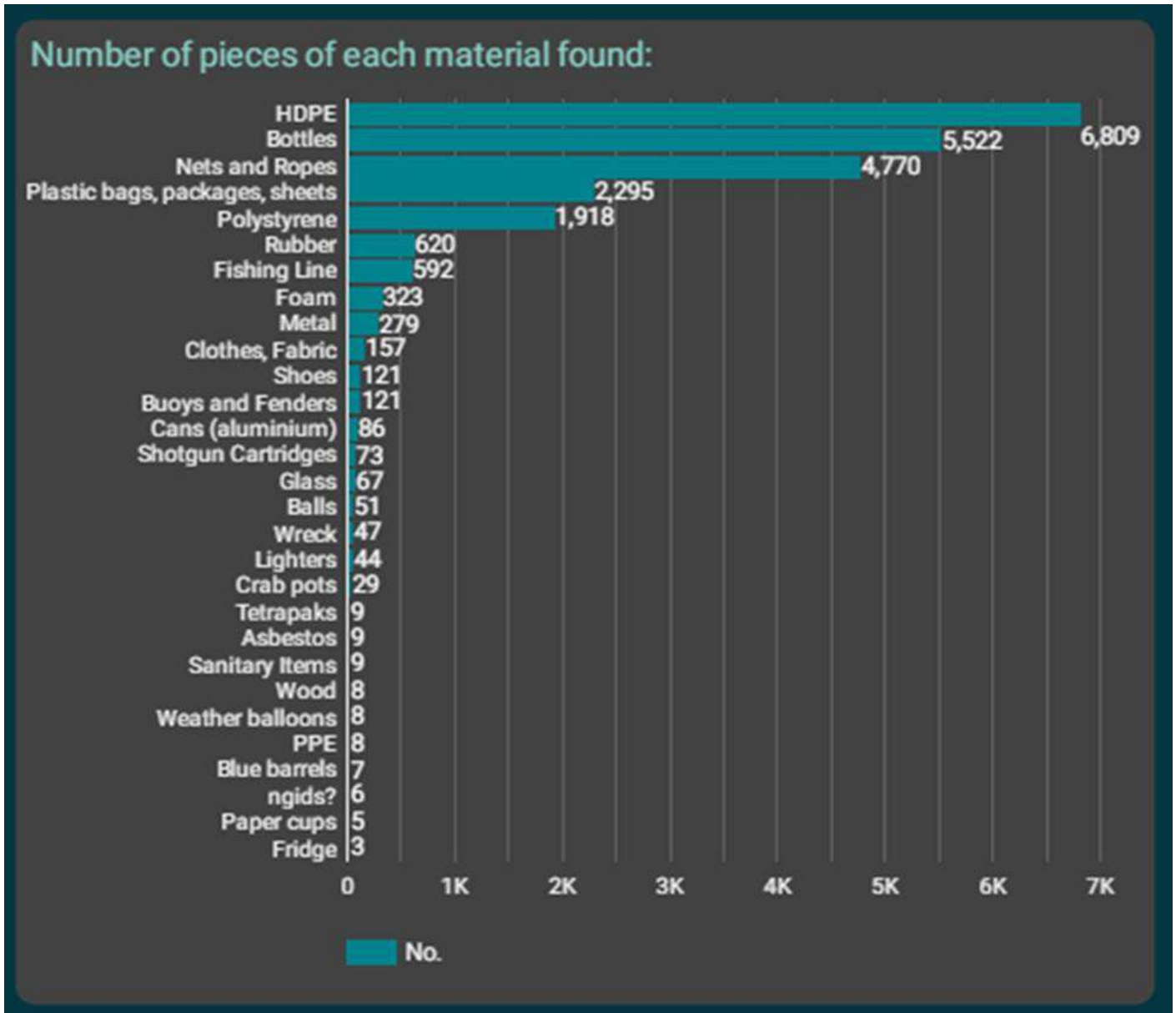
Cornwall.

- To specifically highlight the issue of balloon debris in Cornwall.
- To raise the issue of marine litter and plastic pollution with identified businesses and organisations and try to persuade them to change their practices to more environmentally friendly methods / products.
- You can get in contact with the CPPC, via their website: [www.cppccornwall.org.uk](http://www.cppccornwall.org.uk).

In 2022 data from the Cornwall Plastic Pollution Coalition revealed that **33,962.6 hrs** were contributed to environmental work in Cornwall undertaken by **61,358** volunteers. This equated to an economic value of **£353,890** with **138,667.6 kg** or **138.7 tonnes** of debris removed and recycled or disposed of. The data for 2023 is currently being collected and processed and we look forward to presenting this next year.

### Plastic pollution in Cornwall in 2023: Clean Ocean Sailing case study

Clean Ocean Sailing (COS) are a Cornwall based charity that aim to clean our coasts and oceans sustainably using their 113-year-old sailing boat The Annette. In 2023, over **1,404** volunteer hours, the COS team collected **6,046 kg** of debris from 42 locations around Cornwall. As shown in Figure 1, all **24,033 pieces** of debris were categorised, with High Density Polyethylene (HDPE), bottles and nets and rope being the top three categories of debris recovered.



**Figure 17.1:** Breakdown of the type of debris recovered by the COS team in 2023. This graphic was prepared by Helen Frost using data collected by Clean Ocean Sailing, who are supported by the Matthew Good Foundation, Sea-Changers and the National Lottery Community Fund.

**Beach/Litter cleans from outside of Cornwall (2023)**

- In 2023, Torbay Cleaner Coasts Initiative removed **1,745 kg** of litter from beaches in the Torbay area with almost **200 volunteers** taking part.
- Over the course of 2023, Me and the Plastic Sea removed **626 dog poo bags** from coastal locations in South Devon, with an additional **177 hours** of litter picking volunteering across the year.
- Bi-monthly beach cleans in 2023, organised by Plastic Free North Devon, mobilised over **400** volunteers to remove **1,265 kg** of waste from Saunton beach.



- We are looking to expand this section further and capture many more of the beach clean/litter picking activities in the south-west. Please do get in contact if you have some data that you would be happy to share in the 2024 report.

### The south-west plastic pollution volunteer shout out!

Here is a small selection of some of the success stories from those tackling plastic pollution in the south-west in 2023!

- There was widespread media coverage of Clean Ocean Sailing's 'Cecil' the VW Campervan who reached 900,000 miles on the clock and is still helping clean up beaches in the south-west.  
<https://www.theguardian.com/environment/2024/apr/17/52-year-old-cecil-the-campervan-still-helping-clear-uk-coast-of-plastic>
- Tracey Williams, put together the 'Adrift: Lost at sea' exhibition at the Royal Cornwall Museum that documented the story of LEGO lost from the Tokio Express container ship off Land's End in 1997.  
<https://www.bbc.co.uk/news/uk-england-cornwall-66187273>
- Volunteers from Plastic Free Exmouth cleared a record 1,300 kg of waste from Exmouth beach in 2023.  
<https://www.bbc.co.uk/news/articles/cjqp48z1vkpo>

We are keen to continue to expand this section of the report, so if you have a volunteer success story you would like us to include in the 2024 report please get in touch!

### Interactions with other thematic topics

As discussed at the 2024 SWME conference, there are a large number of interactions between the different SMWE thematic topics. These interactions include:

- The key role of **Oceanography** in the transport of plastic pollution both locally within the south-west and from further afield.
- **Fish, Seals, Cetaceans** and **Marine and Coastal Birds** are negatively impacted by the ingestion of microplastic and through entanglement within macroplastic.
- The ingestion of microplastic by fish has potential implications for the **fisheries industry**. Also, as described in this report, nets from the fishing industry make up a substantial proportion of plastic waste found on coastlines in the south-west.

### Marine plastic pollution research in the south-west

Researchers based, both in the south-west and further afield have published research on plastic pollution in the region in 2023. Below is a selection of that research.

Booth, H., Ma, W. and Karakuş, O. (2023) 'High-precision density mapping of marine debris and floating plastics via satellite imagery', *Scientific Reports*, 13(1), p. 6822. Available at: <https://doi.org/10.1038/s41598-023-33612-2>.

Clark, L. et al. (2023) 'Using citizen science to understand floating plastic debris distribution and abundance: A case study from the North Cornish coast (United Kingdom)', *Marine Pollution Bulletin*, 194, p. 115314. Available at: <https://doi.org/10.1016/j.marpolbul.2023.115314>.

Correa-Cano, M.E. et al. (2023) 'Quantification of Plastics in Agriculture and Fisheries at a Regional Scale: A Case Study of South West England', *Recycling*, 8(6), p. 99. Available at: <https://doi.org/10.3390/recycling8060099>.

Higgins, C. and Turner, A. (2023) 'Microplastics in surface coastal waters around Plymouth, UK, and the contribution of boating and shipping activities', *Science of The Total Environment*, 893, p. 164695. Available at: <https://doi.org/10.1016/j.scitotenv.2023.164695>.

Idies, Y. and Mössner, S. (2023) 'Environmental movements in a material world. A relational perspective on single-use plastic in Penzance, UK', *Frontiers in Sustainable Cities*, 5, p. 1156815. Available at: <https://doi.org/10.3389/frsc.2023.1156815>.

Kyriakoudes, Giannis and Turner, Andrew, Microplastics in the Coastal Atmosphere of Southwest England and Their Scavenging by Rainfall. Available at <http://dx.doi.org/10.2139/ssrn.4340981>

Mengo, E. et al. (2023) 'Fishers' views and experiences on abandoned, lost or otherwise discarded fishing gear and end-of-life gear in England and France', *Marine Pollution Bulletin*, 194, p. 115372. Available at: <https://doi.org/10.1016/j.marpolbul.2023.115372>.

Sullivan, E. et al. (2023) 'In situ correlation between microplastic and suspended particulate matter concentrations in river-estuary systems support proxies for satellite-derived estimates of microplastic flux', *Marine Pollution Bulletin*, 196, p. 115529. Available at: <https://doi.org/10.1016/j.marpolbul.2023.115529>.

Turner, Andrew and Higgins, Chloé, Microplastics in Surface Waters Around Plymouth, UK: Differential Sources and Transport of Fibres and Fragments. Available at SSRN: <https://ssrn.com/abstract=4332431> or <http://dx.doi.org/10.2139/ssrn.4332431>

### **Global plastic pollution research from scientists based in the south-west**

The southwest is a hub for research into plastic pollution around the world. Scientists from the south-west have been involved in the global plastics treaty, where the UN has a mandate to negotiate a legally binding agreement on plastic pollution that would aim to end plastic pollution and address the full life-cycle of plastics. The following is a small selection of global research outputs from scientists based at universities and research institutes in the south-west.

Carney Almroth, B. et al. (2023) 'Chemical simplification and tracking in plastics', *Science*, 382(6670), pp. 525–525. Available at: <https://doi.org/10.1126/science.adk9846>.

Cole, M. et al. (2023) 'Mussel power: Scoping a nature-based solution to microplastic debris', *Journal of Hazardous Materials*, 453, p. 131392. Available at: <https://doi.org/10.1016/j.jhazmat.2023.131392>.

Emberson-Marl, H. et al. (2023) 'Microplastics in the Arctic: a transect through the Barents Sea', *Frontiers in Marine Science*, 10. Available at: <https://doi.org/10.3389/fmars.2023.1241829>.

Napper, I.E. and Thompson, R.C. (2023) 'Plastics and the Environment', *Annual Review of Environment and Resources*, 48(Volume 48, 2023), pp. 55–79. Available at: <https://doi.org/10.1146/annurev-environ-112522-072642>.

Omeyer, L.C.M. et al. (2023) 'Interactions between marine megafauna and plastic pollution in Southeast Asia', *Science of The Total Environment*, 874, p. 162502. Available at: <https://doi.org/10.1016/j.scitotenv.2023.162502>.

Rowlands, E. et al. (2023) 'Vertical flux of microplastic, a case study in the Southern Ocean, South Georgia', *Marine Pollution Bulletin*, 193, p. 115117. Available at: <https://doi.org/10.1016/j.marpolbul.2023.115117>.