

***South-West Marine Ecosystems
(the state of south-west seas)
Report for 2020***



High abundances. Exceptionally widespread bloom of coccolithophores in June and early July, which developed after a period of very warm, dry, settled, sunny weather. 25th June.



Unusual finds. Salps washed-up in the Isles of Scilly on 13th September. Image: Andy Wrayford.



Firsts. The amphipod *Quadrimaera* sp. recorded in Mount's Bay, Cornwall for the first time in Britain by David Fenwick. Image: David Fenwick.



Look out for more? Otter at Plymouth Yacht Haven Quay (Plym Estuary) on 13th March. Image: Barry Rankine.

Edited by Keith Hiscock and Bob Earll

Lead section editors:

**Tim Smyth, Angus Atkinson, Keith Hiscock, Doug Herdson,
Sue Sayer, Alex Banks, Dan Jarvis, Duncan Jones, Tom Hooper & Delia Webb**

1. Objectives of the South-West Marine Ecosystems Conference

The objectives of SWME were updated following delegate feedback from SWME 2017 conference and are as follows:

1. **Networking** Through the conferences, website and mailings, to provide a networking opportunity for a wide cross section of people to meet, exchange views and build networks for the south-west's marine ecosystems in order to:

- Provide active support for existing networks enabling and building citizen science projects;
- To encourage collaboration between users, researchers/scientists and managers'/policy makers;
- Encourage links between researchers on science projects throughout the region's seas (e.g. the English Channel, Bristol Channel, Celtic Seas and the wider Atlantic Ocean).

2. **Annual Events & Recording** To use the annual conference to record observation on ecological and oceanographic events of the previous year that have affected the south west marine ecosystems and to make the linkages between environmental and biological phenomena. To publish these observations annually. To promote the recording of observations through the year and ongoing regional and national marine recording projects through the SWME website.

3. **Ecology of marine species** To promote 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.

4. **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.

5. **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.

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3. Objectives of the South-West Marine Ecosystems Reports

Why produce the South-West Marine Ecosystems Annual Report?

The overall purpose of the report supports the objectives of the conference*: collecting observations, supporting recording and science, helping to build networks and providing feedback to everyone involved in order to make a difference in protecting and managing our marine environment. A detailed breakdown of reasons includes:

1. **Describing ‘normal’ patterns of events** e.g. the oceanographic and planktonic systems
2. **Marking major events and their effects** e.g. the major winter storms of 2013-14.
3. **Highlighting significant ecological and population changes** including:
 - **Trends** e.g. the increase in seabirds on islands after rat control and blooms of barrel jellyfish.
 - **Good years & bad years – relative status - trends** For species like jellyfish e.g. basking sharks, sunfish, bottlenose dolphins
 - **Noting new records for the south-west**
 - **Recording recovery** e.g. recruitment of spiny lobsters (crawfish) after an absence of c. 40 years.
4. **Highlighting Remarkable sightings** e.g. Bowhead whale, Cornwall in 2016 or the Dalmatian pelican in 2019.
5. **Acting to focus interest** Publishing provides a focus for further research, year on year e.g. tuna, spiny lobster, bottlenose dolphins.
6. **Posing questions and exploring interactions – making the links** between environmental, species, habitat and management changes
7. **Telling stories about what we know and providing access – education & outreach**
8. **Making a difference – managing human activities** e.g. wildlife entanglement, fisheries for crawfish or wrasse, the spatial allocation for developments or protected areas, acting on plastics.

* The conference that would have been held in April 2021 to report on 2020 was converted (because of Covid-19 restrictions) into a series of webinars during February and March hosted by the Marine Biological Association, Exeter University (Penrhyn campus) and the University of Plymouth. The webinars increased contacts by 500+. Those webinars can be accessed on <https://www.youtube.com/channel/UCojA2OkFX0fM-oq7bVTofhQ>

The past SWME annual reports (for 2014, 2015, 2016, 2017 and 2018) illustrate these points and can be accessed from the SWME website <http://swmecsystems.co.uk/annual-reports>.

South-West Marine Ecosystems Report for 2019

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

4. Introduction

Editors: Keith Hiscock & Bob Earll

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This is the seventh in the series of annual reports on the observations of species, ecology and ecosystems for a specific year. Collating observation for 2020 has been a very different task to previous years without the benefit of the annual conference. We have relied on the records kept by editors of the different sections. We have also been able also been able to draw on the inputs of a wider range of speakers presenting at the webinars as well as harvested from postings on social media, published papers and news including in CMS Marine News.

Section editors have also presented the webinars and invited additional speakers on specific topics relevant to 2020.

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

Hiscock, K., & Earll, R. (eds) 2021. South-west Marine Ecosystems Report for 2020. *Marine Biological Association of the UK, Plymouth*. DOI: <https://doi.org/10.17031/p2hc-rg17>.

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.

The development of the SWME report

It is great to see the editors of the chapters bringing in a wide range of people to help and support their preparation and the webinar programme. 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. It goes to show how citizen science 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 Covid-19 pandemic and how it affected SWME activities

The Covid-19 Pandemic struck in March 2020 which meant that the SWME 2020 conference that would have taken place in April 2020 had to be cancelled. In the autumn of 2020 a SWME steering committee was formed to explore what options existed for conferences in 2021. It was decided to run a webinar programme in the early part of 2021 with individual webinars covering all the main chapters of the SWME Report. The chapter editors took the lead in formulating the programme for each webinar and Exeter University, Plymouth University and the Marine Biological Association provided the technical support for this programme. The report chapters webinars can be accessed on the SWME YouTube channel <https://www.youtube.com/channel/UCojA2OkFX0fM-oq7bVTofhQ>. This webinar programme proved to be very successful and audiences ranging from 100-300 attended the different webinars. We now have over 1250 contacts on the SWME mailing list and over 500 new contacts took part in the webinar process. The webinars enabled a wide variety of contributors (40+) to present and for there to be greater focus on the groups in question whether it was seals, fish or seabirds.

The Impact of Covid-19 on the coastal and marine environment

The Covid-19 pandemic had a profound effect on many areas of life during 2020 including on how we work in the marine environment and the public are using it. The points below highlight a number of the main issues.

Work and observation in the coastal and marine environment. During the initial phase of lock-down (March – June) there was a mixed picture of impacts on the way the pandemic affected working and observing the marine environment. The one-a-day exercise rule enabled people lucky enough to live by the sea to visit and observe. Plymouth Marine Laboratory were able to continue survey cruises as normal (Tim Smyth writes) with special ministerial dispensation covering long-term scientific activities. Group diving was suspended until early June and organised Seasearch survey trips were cancelled. However, Charlotte Bolton writes, the Seasearch programme supported volunteer survey effort especially by encouraging participants to go to less-recorded places and/or use snorkelling to investigate the shallow intertidal where there is less data. Overall, Seasearch received almost 60% of the number of forms (compared to 2019) but the aggregated survey time (underwater) was only down by ca. 30% (again compared to 2019), possibly reflecting a longer time in the water when shallow. The impact of restriction on cetacean surveying was quite complex, Duncan Jones writes. Some people had more time to be out and about on the coast and some less. Boat surveying was certainly reduced as were casual sightings from experienced observers.

Staycations and disturbance. At the start of lockdown there was much less recreational activity and doubtless less disturbance. When lockdown was relaxed in the summer more people took their holidays in the south-west and there are reports of increased levels of disturbance for coastal species like birds and seals. With regards to cetaceans, Duncan Jones writes that there was a large increase in disturbance. Once restrictions began to lift there were lots of people out on the water in leisure craft, kayaks and paddleboards. Many people were holidaying in the UK, which meant increased numbers at the coast and boat tour companies increased their fleets and or hours on the water to accommodate demand. This led to an increase in boat activity and increased pressure on animals. Similar comments apply to seals and Sue Sayer writes: from January to July, disturbance for seals was down across the board but August was the worst August on record. There were seals occupying sites where they had not been recorded - possibly recolonising? There were two new haul outs on the south coast – we believe this was due to people NOT using the coast path above the haul outs.

The importance of baseline recordings of impacts has come into its own in terms of measuring the impact of greater disturbance and the management measures that are needed to counter this.

Understanding 'dispersal', 'migration' and 'connectivity'

Mobile species, including planktonic larvae of otherwise sessile or sedentary species that 'move' may 'use' the water column to go considerable distances. This can include recruitment of warmer water species such as the arrival of ringnecked blennies (*Parablennius pilicornis*) first reported in Britain in 2008 and previously thought to be restricted to the Mediterranean, the Atlantic coast of Africa and southern Spain. The work undertaken by Tom Vance on movement of sea bass demonstrates how fish species can go long distances (the Dart estuary to Milford Haven) and, for a pod of bottlenose dolphins (work by the South West Bottlenose Consortium with Shauna Corr) travelling between North Devon and Sussex. Seal photo identification work by the Cornwall Seal Group Research Trust continues to demonstrate how far our seals swim and how much they depend on joined up and protected coastal habitat. The work being undertaken on tuna shows how a high mobile species can move between the south-west out into the mid-Atlantic and into the Mediterranean to breed. More understanding is needed of connectivity in seabed species and those (fish) species that are territorial – perhaps they have much more localised populations and may need to be protected where they are.

Making the links and interpreting change

The SWME report is based on a very traditional model with difference chapters covering the major subjects. A next step is to make the links within reported events in a section and between sections. We know that many of the things

we are observing are very closely interlinked and this is illustrated by many points made in this and previous reports. For instance:

- Weather and extreme events are one of the main drivers of what we see in variable abundances of species and unusual occurrences. For instance, strandings of oceanic species and seal mortality on the beaches linked to storms.
- Storm activity in January and September brought substantial strandings of gelatinous or neustonic macroplankton, for example salps stranded on the Isles of Scilly in September. More common than salps were both Portuguese men o'war (*Physalia physalis*) and by-the-wind sailors (*Velella velella*).
- In July and August, plankton samples were black with the small pelagic mollusc *Limacina retroversa*. The previous large peak occurred in 2012. At the end of July/ beginning of August, the microscope analysis suggests there may have been an influx of oceanic water because of species present. *Aglantha digitale*, *Liriope tetraphylla*, *Limacina retroversa* and *Subeucalanus* sp. which are all open-water species.
- Black-faced blennies were no longer seen at sites in the inner part of Plymouth Sound and the suggestion was made that variable/ringneck blennies (that use the same habitat) may have chased them away – more observations needed!
- Seal disturbance (from routine data), disturbance was down this year, perhaps as a result of the Covid-19 pandemic, perhaps as a result of the Covid-19 pandemic.

There is 'detective' work to be done. For instance:

- The observation (by Lin Baldock) of the furthest east (recent) record of the warm-water seaweed *Bifurcaria bifurcata* at St Aldhelm's Head, Dorset could easily have been interpreted as the result of recent seawater warming. However, to give context to the observation, Lin draws attention to the 19th century collections of this species from Durlston Bay near Swanage (about 7 km further east) made by Edward Morell Holmes in 1898.
- Cornwall Mammal Group have just completed an 18-month project: "Otters are increasingly reported from coastal and estuarine locations and this is a return to behaviour reported in many older records such as Carew in 1602 and Couch in 1838 when otters were considered a marine species that occasionally used rivers.
- The peacock's tail alga *Padina pavonica* (which occurred much more widely in the 19th century than today) was abundant in several south coast locations in 2020. Was there a link to warmer weather?

Perhaps you have a view on possible links between events and species abundances or between the relative abundance of different species that may be interacting. Let us know.

Population trends – up and down

Year on year it is now possible to see some major trends reported in the SWME annual reports in a variety of data on certain species:

- In three cases, the blue fin tuna, St Piron's crab and crawfish, records confirm that they have gone from being absent or exceptionally rare (crawfish in certain areas) to consistently present in recent years.
- The Pacific oyster (*Magallana gigas*) populations have significantly increased over the last few years including in some inlets in Cornwall – here to stay.
- Moulting aggregations of spider crabs *Maja brachydactyla* were recorded for the first time at Lundy in July and August at the Landing Bay. Are there more aggregations inshore around the south-west in recent years than, say, ten years ago?
- The more frequent sightings of common octopus *Octopus vulgaris* in 2018 and 2019 did not persist into 2020. Why do such episodic events occur?
- Basking sharks, which had been a regular summer visitor until about 2012, continued to be rarely seen in 2020.

- There were some jellyfish 'blooms' but the large Jellyfish *Rhizostoma octopus* was again only seen in small numbers in 2020 compared to the few years prior to 2019 when there were 'super-blooms'.
- Phenology shifts appear to be taking place in the southwest grey seal population. Peak haul out season was earlier, moving from April in 2013/14 to March (for 5 years) to February (for 2 years) and even January and December (for 1 year each). Likewise, the pupping season, that used to peak in October, has moved to September for the last 2 years and is shorter and more compressed than it used to be.

One worrying trend is highlighted in the report on plankton:

- A long-term, summer decline in NE Atlantic phytoplankton of a size suitable for the biomass-dominant copepod zooplankton to eat, and a concomitant summer decline in copepods, has been established. Work is ongoing to understand the mechanisms for these worrying trends.

It sometimes takes a couple of years (or so) for observers to realise that a usually regular (probably seasonal) event hasn't 'occurred' for some years – let the relevant section editor know if you come to such a conclusion.

'Stand-out' observations – new novel and exceptional events

The main plankton event of note was the exceptionally widespread bloom of coccolithophores in June and early July, which developed after a period of very warm, dry, settled, sunny weather.

The very high abundance of Observations in 2020 mainly suggest 'steady-as-it-goes' with the unusual (in recent years) high numbers of spiny lobster recruits, re-occurrence of St Piron's crab, shoals of bluefin tuna, occasional common octopus and high abundances of cephalopods in general continuing. Equally important is to note continuing low numbers of grey trigger fish and apparent reduced extent and/or abundance of black-faced blennies and ring-necked blennies. The new(ish) fishery for wrasse continued.

'Normality'

Whilst it is a common human trait to pick out new, novel or exceptional observations what the SWME report also highlights is how year on year records give us sense of what is 'normal'. We seem programmed to notice change.

Take the kelps for example. They are clearly a 'normal' part of our shallow marine habitats. They are routinely seen by diving biologists but what if climate change actually changes the balance of the population structure on our rocky sublittoral habitats as has happened in regions of California or Australia? Recordings of 'normal' things are actually remarkably helpful.

Managing human activities in the south west marine ecosystems

The insights we are gaining are also important in the way we view, inform and manage our activities in the marine environment.

- The bycatch of common dolphins and strandings because of the pelagic bass fishery continues to be a major concern.
- The recovery of next seabirds on Lundy and the Scilly Isles continues apace.
- The report on Highly Marine Protected Areas was published in 2020 but action to implement recommendations is stalled.

We hope you enjoy reading this report. The past year has been a challenge but the SWME community has responded really well and spurred us to develop the SWME idea, not least in terms of the idea of a state of the seas report for the south-west. The widespread range of observations on the natural environment often prompt new research initiatives and management action, and the SWME report provides fills a real gap in providing an annual snapshot of the state of the south-west's seas. We will look forward to hearing from you and seeing you for SWME in 2021.

5. Oceanography background conditions – Western Channel Observatory

Tim Smyth

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Figure 6.1. 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. 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. These long series are complemented by hourly measurements made at autonomous buoys situated at both stations. These can elucidate changes not captured by the routine weekly sampling.

Overall conditions for the year – 2020

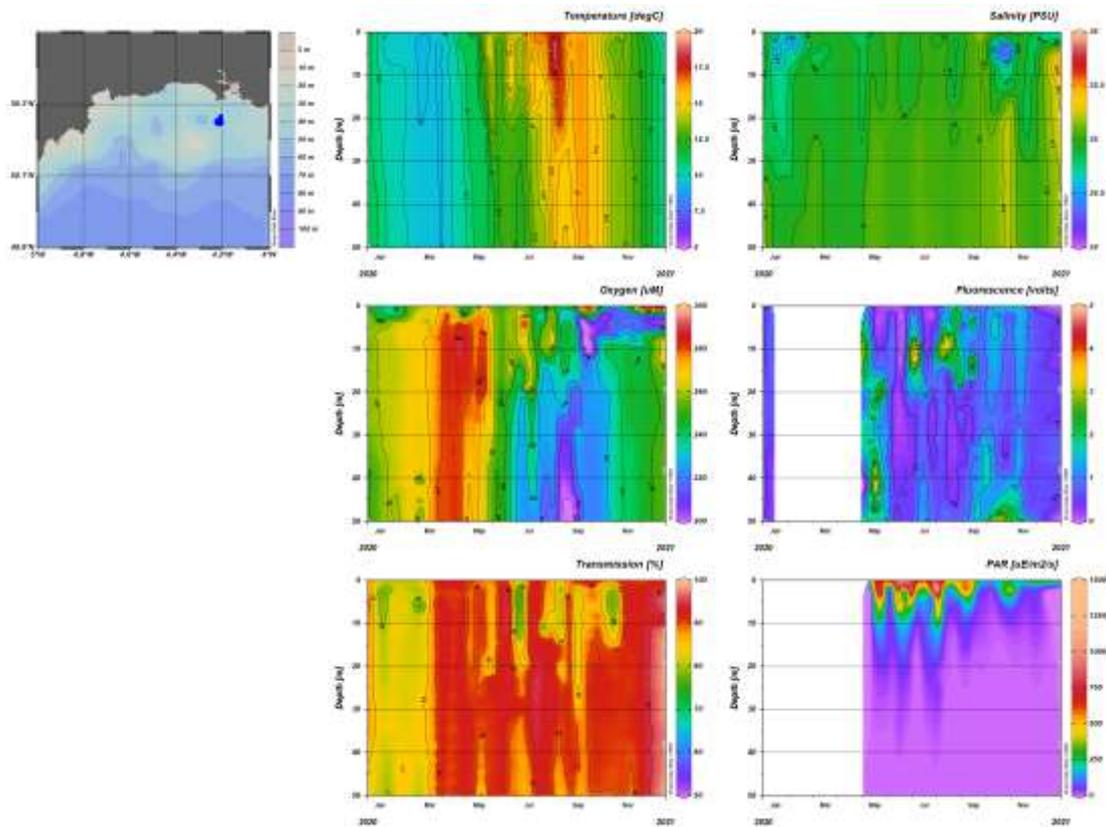


Figure 6.2. Conditions throughout the water column at station L4 during 2020 from individual profiles taken using a rosette sampler with multi-parameter “CTD”, deployed from the RV Plymouth Quest.

South-West Marine Ecosystems in 2020

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

The year started with relatively warm conditions throughout the water column (well mixed) with temperatures around 11 °C. This cooled to the minimum recorded temperature (for 2020) in early February of <9.5 °C. Stratification became established during April, with the maximum stratified state in July and August (surface around 17.5 °C; depths below 20 m around 14 °C). Spring 2020 was notable for being sunny and dry; early summer 2020 particularly dull with lower than average air temperatures. This was mirrored in the oceanographic conditions with a warm start to the stratified period, followed by a more 'mixed' picture. A notable late summer heatwave in August pushed sea-surface water temperatures to just above 19 °C on the 17th. Stratification was eroded after this point and finally became mixed in late September / early October (16 °C throughout the water column).

Several surface freshening events (see salinity plot) were observed in 2020 as a decrease in salinity below the background value of 35.2 PSU. These were particularly marked in January, February and October 2020 and associated with named storms Brendan (13 January), Ciara (8/9 February), Dennis (15 February) and Aiden (31 October). The freshening events 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.

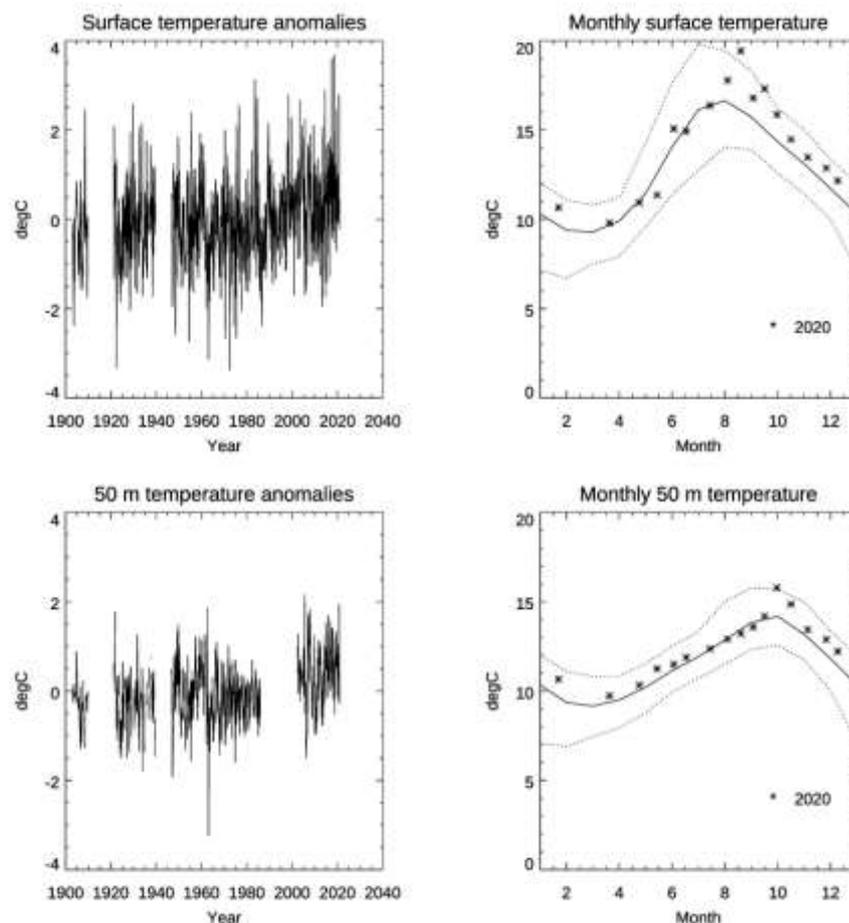


Figure 6.3. E1 temperature time-series and anomaly analysis. Solid lines show mean monthly temperatures, with dashed lines giving the standard deviation around the mean. Asterisks represent individual observations (18) made by the RV Plymouth Quest.

Figure 6.3 shows the temperature time-series anomalies made at station E1, which is one of the longest hydrographic series in the world.

At the surface, E1 started 2020 slightly above average and only reached a minimum temperature of just below 10 °C. The spring and early summer posted temperatures around the long-term mean (at the surface) but some heat during the late summer manifested as temperatures in excess of 19 °C during August. At 50m, temperatures were above the series mean for the first half of the year; around average for the summer months until the breakdown in stratification vented warmer temperatures throughout the water column. The autumn and early winter were slightly above the long-term mean.

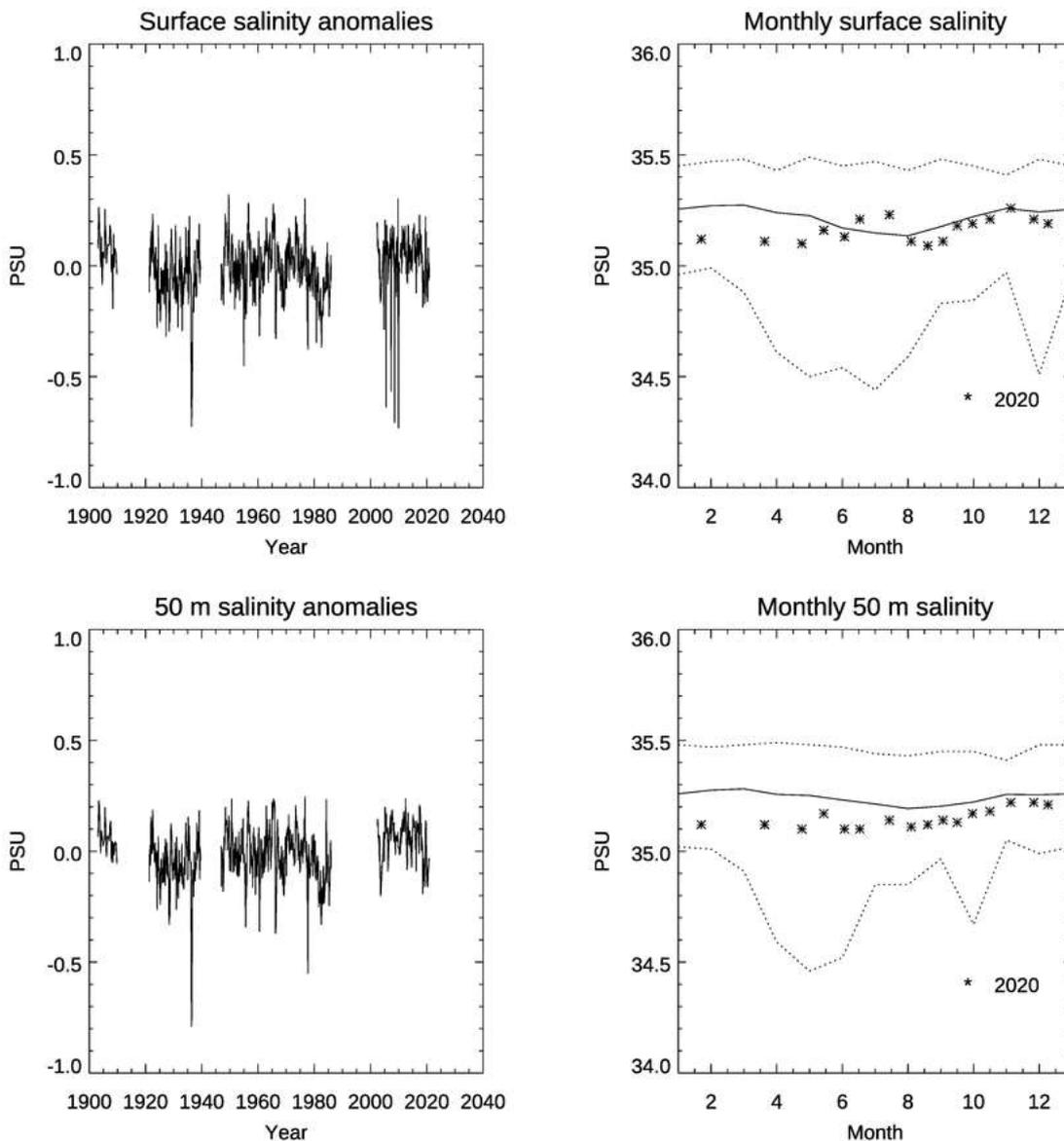


Figure 6.4. E1 salinity time-series and anomaly analysis. Solid lines show mean salinity, with dashed lines giving the standard deviation around the mean. Asterisks represent individual observations (18) made by the RV Plymouth Quest.

Figure 6.4 shows the salinity time-series made using the CTD profiler at station E1.

For almost the entire duration of 2020 the waters were below the long-term mean salinity throughout the water column apart from the early summer at the surface.

6. Plankton Observations 2020

Editors: Angus Atkinson, Andrea McEvoy, Claire Widdicombe, Amanda Beesley, Keith Hiscock, Peter Miller and Daniel Clewley

Contact: Angus Atkinson aat@pml.ac.uk

This section comprises a summary of results from the weekly plankton monitoring at the Plymouth L4 site, 13 km SSW of Plymouth <http://www.westernchannelobservatory.org.uk/>, as well as other observations from across the West Country. It describes first the phytoplankton and then the zooplankton.

The main plankton event of note was the exceptionally widespread bloom of coccolithophores in June and early July, which developed after a period of very warm, dry, settled, sunny weather. At the Plymouth L4 monitoring site 13 km SSW of Plymouth <http://www.westernchannelobservatory.org.uk/>, phytoplankton biomass was overall low overall, part of an ongoing, long-term declining trend which is particularly prevalent in the summer months. Among the zooplankton, storms early and late in the year brought a regularly observed influx of Portuguese man o'war and by-the-wind sailors which were washed up on beaches all along the West Country. However, despite low numbers of visitors to the beaches for part of the year due to covid-restrictions, there was no clear evidence that jellyfish numbers were exceptionally high, for instance as compared to 2015. Below we describe first the phytoplankton and then the zooplankton.

Phytoplankton

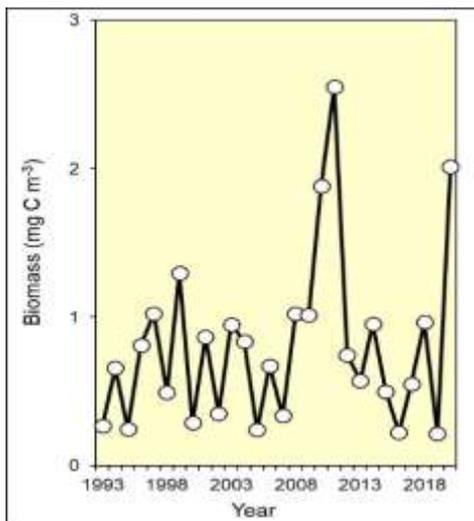


Figure 7.1. Long-term, weekly resolution monitoring at the Plymouth L4 station provides temporal context for the observations in 2020. This plot of coccolithophore biomass at 10 m depth is based on 1184 sampling timepoints (1992-2020). It shows the enormous year-to-year variability in the coccolithophore bloom. In most years they form a minor component of the plankton, but years such as 2011 and 2020 are an exception. Data courtesy of Claire Widdicombe.

Phytoplankton in 2020: the longer-term context. The weekly plankton monitoring of L4, 13 km SSW of Plymouth (see Section 5) has been ongoing for 30 years, providing valuable longer-term context. Unlike much field work last year, this core sampling was given authorisation to continue throughout the lockdown, with adequate precautions put in place. The phytoplankton community in 2020 was notable for several reasons. The spring bloom started in late March, around the same time as the first lock-down, and was dominated by diatoms first and then *Phaeocystis* – the reverse from 2019 – but in terms of abundance and biomass the main peak occurred in summer. Again, this contrasts with the picture in 2019 when we saw the classic spring and autumn bloom scenario. The *Emiliania huxleyi* bloom (first sampled at E1 on 16th June and later at L4) was unprecedented in abundance (see Plate 7.1a and text box) and made the news around the south west. There then followed a bloom of *Karenia mikimotoi* which may or may not have led to the beach closing at Mothecombe and a slick observed around Plymouth Hoe. The autumn period was relatively quiet in terms of phytoplankton biomass. It was interesting to note that the new diatom *Plagiolema distortum* (known as the 'Pringle' due to its shape) and the rarely seen *Asteromphalus sarcophagus* reappeared in the autumn and winter samples.

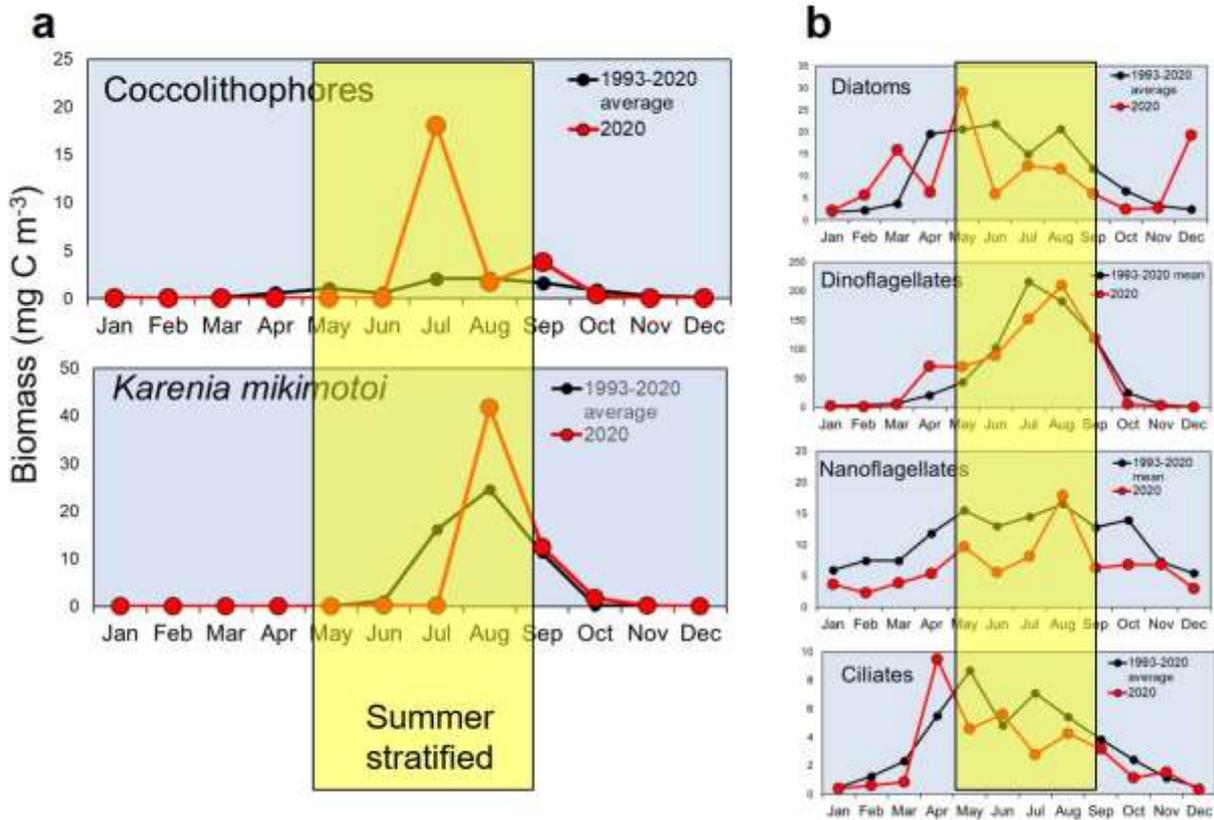


Figure 7.2. More detailed portrayal of the seasonal progression of the protists at L4, compared to the long-term mean. **a** Several taxa, for instance coccolithophores and the potentially-harmful dinoflagellate *Karenia mikimotoi*, were abundant during the warmer, stratified months (yellow bar). **b** In these stratified months, most of the dominant protist taxa were overall lower in biomass as compared to the long term mean. Data courtesy of Claire Widdicombe.

Phytoplankton in 2020. Figure 7.2b shows that several of the biomass dominant taxa, such as nanoflagellates and diatoms, were rather lower in 2020 than the long-term mean during the warm, summer stratified period. Plotting total protist biomass at 10m depth at the L4 site shows 2020 as part of a longer term downwards trend (Figure 7.3). This decline at the base of the pelagic food web demands some research attention as to its causes, since it is manifested by cells that are of optimal size for zooplankton to eat and which are of high nutritional quality. Recent work by (Schmidt *et al.* 2020 Global Change Biology doi: 10.1111/gcb.15161) has examined this issue in more detail. They found a wider (NE Atlantic) scale, long-term, summer decline in the phytoplankton of a size suitable for the biomass-dominant copepod zooplankton to eat, and a concomitant summer decline in copepods. Work is ongoing to understand the mechanisms for these worrying trends.

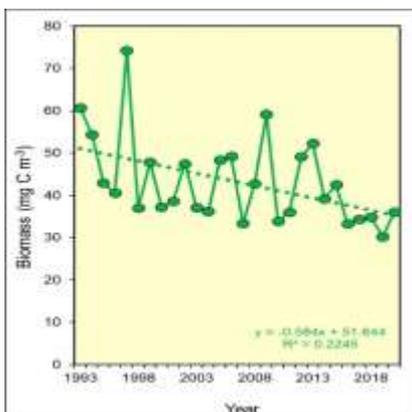


Figure 7.3. Time series of protists (here defined as all single celled organisms >4 μm captured in water bottle samples at 10 m depth). This plot is the 1992-2020 time series of total biomass, based on 250 taxa enumerated across 1184 sampling time points. Data points are annual means for each sampling year. The plot shows that 2020 forms part of an ongoing downward trend that is reflected in downwards trends in its key constituent taxa, namely nanoflagellates, dinoflagellates and diatoms. Data courtesy of Claire Widdicombe.

2020: year of the massive coccolithophore bloom

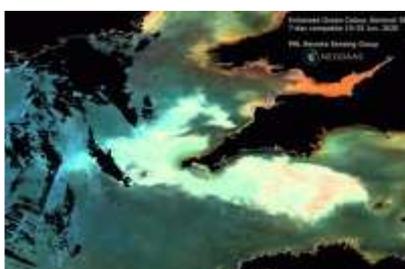
2020 was not an exceptional year for plankton, in that their overall seasonal cycles of plankton varying within their natural (wide) ranges of variability. One exception, however was a group of calcite-forming small phytoplankton, the coccolithophores, which formed massive and extensive early summer blooms in the west Country. They disappeared as quickly as they arrived, in July. These mixotrophic cells are eaten by metazoan grazers, despite being often around the lower size limit for easy capture by copepods. However, like humans they are susceptible to viral attack and the dynamics of their blooms, important in the ocean's carbonate cycle, is a major study area. The following Figures capture the dynamics of the 2020 bloom and its longer-term context.



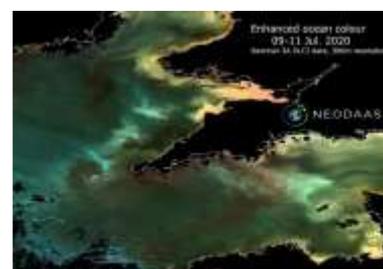
Plate 7.1A (left) Coccolithophore blooms were a major and unusual feature of the South West plankton during summer 2020. These colour-enhanced satellite images from 23rd June 2020 show the extent of this massive bloom, mainly confined to the more stratified, well-lit waters offshore. Bloom-forming coccolithophores such as *Emeliana huxleyi* are comprised of beautifully ornamented calcareous plates (liths), which provide good reflectance for satellite imagery. **B** (right) Satellite imagery can provide excellent spatial resolution: here, on an enlarged inset are ships impacting on the micro-scale structure of the bloom. Copernicus Sentinel 2B satellite images courtesy of NEODAAS (Plymouth Marine Laboratory).



2 June



19-25 June



9-11 July

Plate 7.2. Colour-enhanced satellite images showing the rapid evolution and subsequent demise of the coccolithophore bloom, indicated by the bright white/pale turquoise colours. At its peak the bloom encroached inshore in several areas, for example around the Isles of Scilly (see Plate 7.3). This colour enhancement provides clues to the identity of the plankton, providing insights on the development of potentially harmful algal blooms. Images courtesy of NEODAAS (Plymouth Marine Laboratory).



Plate 7.3. The coccolithophore bloom provided some spectacular pale turquoise colouring to seascapes around the Isles of Scilly, captured in an informative blog: <https://www.ios-wildlifetrust.org.uk/blog/into-the-blue>. Photo courtesy of Nikki Banfield: Isles of Scilly Wildlife Trust.



Plate 7.4. Patches of ?*Noctiluca* near Looe on 23rd July. Image: Austin d'Luke.



Plate 7.5. 'Sea sparkle' (?*Noctiluca scintillans*) in the Helford on 18th August. Image posted by Hugo Tagholm but source unknown.

Several blooms have been recorded in 2020 along the SW coastline, noteworthy being 'sea sparkle' - dense patches of the large dinoflagellate *Noctiluca scintillans* which can cause bioluminescence some quotes from records are below:

- *Noctiluca* on surface at Hand Deepes on 19th July. Observation from Plymouth Sound Divers Facebook page.
- *Noctiluca* patches out of Falmouth on 22nd July. Images from Mark Milburn.
- Patches of what was almost certainly *Noctiluca scintillans* off south Cornwall including near Looe on 23rd July (Austin D'Luke).
- Hugo Tagholm, Helford River on 18th August: "The ocean was like a universe of stars tonight - incredible swim in the bioluminescence of the Helford. Every movement created an explosion of sparks & light".

There were also reports from Nigel Mortimer of a red tide event in Salcombe Harbour: "The current red-tide event first became evident on about the 15th July this year but has really bloomed over the last couple of weeks or so with the waters of Frogmore, Bowcombe and Kingsbridge Creeks being a very dark coffee colour as they were 'pistoned' up by the high tides.....I did take a sample from Newbridge Quay at the end of last week I am reasonably confident that the bloom is (or was, these blooms can change) very dominated by the *Prorocentrum micans* species of dinoflagellate...."

Zooplankton



Plate 7.6a. A. an unusual appendicularian species in the 2020 catches at L4 was *Fritillaria pellucida*. **Plate 7.6b.** the more frequent genus at L4 is *Oikopleura* sp. Photos: Andrea McEvoy.

While zooplankton sampling at L4 continued with collection of 82 samples in 2020, their analysis has been slowed by COVID issues, so we will report 2020 time-trends in next year's SWME report. Our observations during L4 sample analysis included an unusual species of appendicularian in May (Plate 7.6). This species is associated with influxes of oceanic warmer waters.

Appendicularia secrete mucus houses to help filter out smaller particles than accessible to most other zooplankton, enabling them to grow extremely fast for an organism of their size.

July brought large numbers of another efficient filter feeder, *Limacina retroversa* in the live L4 samples. The samples were black with these small pelagic molluscs, with large numbers recorded from July to August. The previous large peak occurred in 2012. At the end of July/ beginning of August, the microscope analysis suggests there may have been an influx of oceanic water because of species present. *Aglantha digitale*, *Liriope tetraphylla*, *Limacina retroversa* and *Subeucalanus* sp. are all open-water species. Also on 3rd August there was a huge number of CV *Calanus helgolandicus* in the live sample.

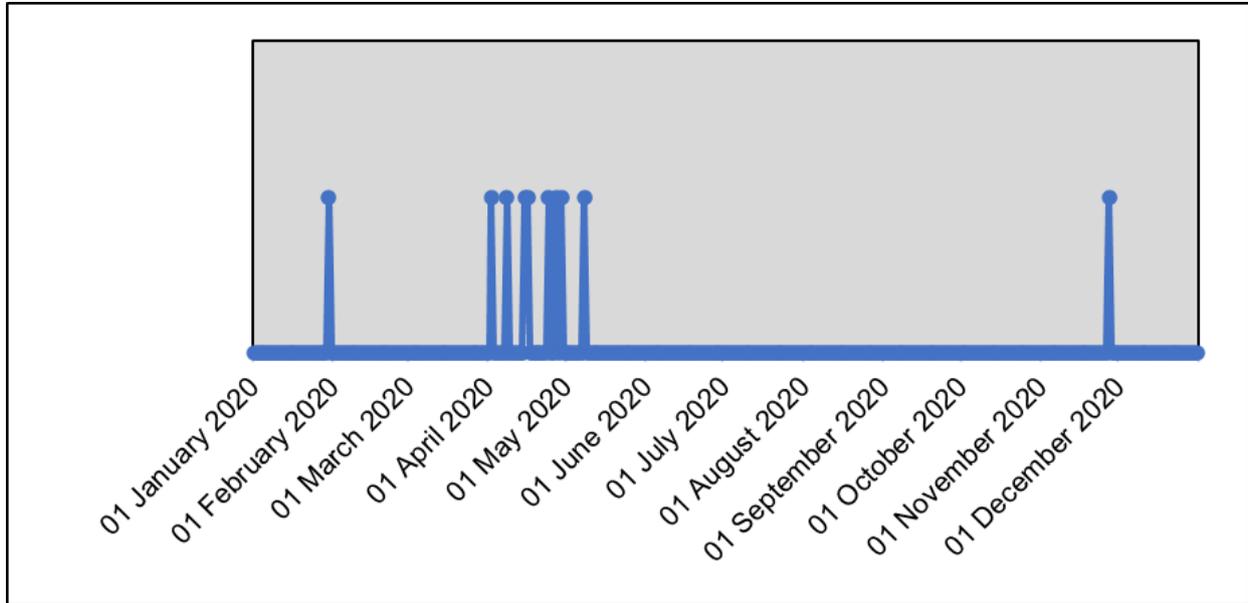


Figure 7.4. Regular observations of large plankton, poorly sampled by conventional methods, provide valuable information on year-to-year trends and seasonal occurrence. This plot is one example, showing a cluster of observations of the Barrel jellyfish, *Rhizostoma pulmo* on Lundy, provided by the warden, Dean Jones.

Observations of jellyfish, either stranded or in the water, were not prominent in records submitted in 2020, and this is unlikely to reflect solely the COVID restrictions since there was a general return to the beaches in the summer. However, Keith Hiscock reports that it seems a ‘good year’ for *Aequorea* spp. Of particular value are sustained observations, since they provide insights into timing, for example of barrel jellyfish (Figure 7.4).



Plate 7.7. Salps, identified as *Soestria zonaria*, washed up on St Martins, Isles of Scilly, on 13 September 2020. Image: Andy Wrayford.



Plate 7.8. Portuguese man o' war, *Physalia physalis*, washed up in Whitsand Bay, Cornwall. Image: Keith Hiscock

Storm activity in January and September brought substantial strandings of gelatinous or neustonic macroplankton, for example salps stranded on the Isles of Scilly in September (Plate 7.7). More common than salps were both Portuguese men o' war (*Physalia physalis*: Plate 7.8) and By-the-wind sailors (*Velevella velevella*), both of which were reported as being washed up around the West Country, particularly after the storms early and late in the year. Chronological records received and collated by Richard White are copied verbatim below, but this picture of

South-West Marine Ecosystems in 2020

seasonality must be tempered by the fact that beachcombing was curtailed during lockdown. For a picture of seasonality based on the Lundy observations by Dean Jones, *Physalia physalis* records were in January, October and November, while *Verella vellela* were in August only.

12th January – smallish *Physalia* being washed-up at Start Point and Prawle (Dave Bailey/ The Shores of South Devon)

15th January - Loads of little Portuguese man o'war washed up on beaches around Start Point and Prawle. (Dave Bailey/The shores of South Devon)

16th January - loads of *Verella* and a few *Physalia* washed-up at Cawsand by Storm Brendan.

16th January - Wembury - *Physalia* c. 50 mm long.

16th January - Kimmeridge – by-the-wind sailors' skeletons a few very small *Physalia*, goose barnacles.

16th January. Loads of by-the-wind sailors and a few *Physalia* washed into Cawsand Bay by Storm Brendan (Rame Peninsula Beach Care).

9th February. Large numbers of *Verella* on the strandline in the Isles of Scilly – result of Storm Chiara (Nikki Banfield)

10th February - a few smallish (c. 50 mm long) *Physalia* at Wembury on 10 Feb. One of many postings along the south coast probably 12th January onwards. No 'new' ones on the tide at Wembury on 16th January. A few *Verella* mixed in.

19th February. Julie Hatcher reports *Verella* skeletons, small *Physalia* and goose barnacles washed-up at Kimmeridge.

(*Physalia* and *Verella* being washed up as far east as Brighton in late February.)

27th July – Northcott Mouth near Bude – *Verella* ashore (Graeme Crowder).

Portugese man o' war on Perranporth beach (Cathy Turtle)

Late October - more *Physalia* washed-up in North Cornwall.

End of October - *Physalia* being washed-up in the Tamar entrance and on south Devon and Dorset beaches as far east as Chesil end of October.

Portugese man o' war (*Physalia physalia*) continued to wash-up in smallish numbers all along the SW coast and as far away as North Wales and Brighton. Low numbers of by-the-wind sailors *Verella vellela* also being reported. (Keith Hiscock)

2nd November - *Verella vellela* on Tregantle Beach, SE Cornwall (Keith Hiscock)

2nd November - hundreds of Portugese man o' war at Sennen (Lynne Colliver).

22nd November - counted 54 of these [*Physalia*] amazing looking animals on a short beach walk today, along with by-the-wind-sailors and various egg cases. (Charlotte Marshall).

8th December - Tiny salps, sea gooseberry and *Verella* being washed-up in Sennen Cove. (Julie Hatcher).

7. The Seashore and Seabed

Edited by Keith Hiscock

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Overview

The shores and seabed of south-west England are usually well-studied through the year and always turn-up notable occurrences of species (including, sometimes, new records for Britain), range extensions (whether of native or non-native species), timings of reproductive events and sometimes high abundances through to absences of expected species etc. Overall, seashore and seabed marine life in 2020 was much as in 2019 although observations in 2020 were curtailed by Covid-19 restrictions. The observations noted here are identified as unusual occurrences, abundances, trends and range extensions especially.

Records of non-native species are included in that section below.

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

Algae



Plate 8.1. *Padina pavonica* at Corbyn Head. Image: Mike Puleston/The Shores of South Devon



Plate 8.2. *Bifurcaria bifurcata* at St Aldhelm's Head. Image: Lin Baldock

07th July. May be more *Padina pavonica* about in 2020 (seems large decrease since Victorian times). Mike Puleston reports from near Corbyn Head and Keith Hiscock had observed at Lyme Regis in June. "Very healthy and extensive" at Kimmeridge: monitoring plan for it there being developed (Julie Hatcher).

2nd August. *Bifurcaria bifurcata* in the subtidal fringe at St Aldhelm's Head, Dorset. Slowly moving Dorset records eastwards to catch up with the 19th century collections of this species from Durlston Bay near Swanage made by Edward Morell Holmes in 1898. Lin Baldock.

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

There has been discussion during late autumn amongst various diving photographers about much lower abundance of plumose anemones this year (may have been declining several years). KH points to significant decline on *Scylla* (although still there – the anemones that is). May be a decline in anemones generally?

Crustacea (Non-native crustacean species in 'Non-native species' section)

***Clibanarius erythropus*, St Piran's hermit crab.** Continues to be widely present in Cornwall after returning / being 'rediscovered' there in 2016. Reported from Wembury on 6th and 7th April in 2019 (John Hepburn) and from Burgh Island in Bigbury Bay in 2020 (Steve Hawkins).

Crawfish (*Palinurus elephas*)

Recovery of crawfish populations demonstrated using occupancy models. Angus Jackson, Seasearch

Occupancy modelling using Bayesian statistics is a relatively new technique that can be applied to the sorts of data collected by citizen scientists. These models estimate the proportion of grid cells occupied by a species for a given area. The method is used broadly for terrestrial and freshwater species (e.g. in the State of Nature report published every 3 years) but as yet, for very few marine species. The State of Nature report does not include population trends for any benthic marine species.

After catastrophic declines in the 1970s, there has been a resurgence of crawfish in Cornwall and South Devon since 2014. Using citizen science records from the Seasearch programme, the Sparta occupancy model (developed by the Centre for Ecology and Hydrology) was used to provide robust evidence about the extent of changes in occupancy by crawfish in south-west England.

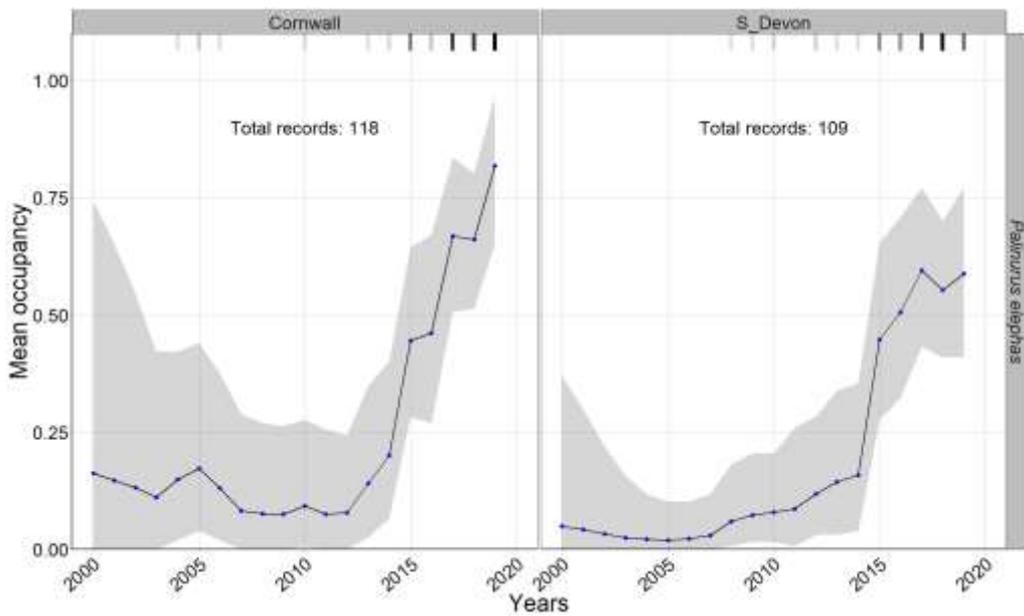


Figure 8.1. Estimated proportions of sites occupied by crawfish from 2000 to 2019 in Cornwall and South Devon. The points represent mean occurrence and the grey ribbon gives an indication of confidence in the estimate (wider ribbon infers less confidence). The presence of markers along the top of each grid shows whether or not records were present in each year, where the darkness of the mark is correlated with the number of records in that year.

The number of records and occupancy of sites has increased rapidly since 2014, although these appear to have levelled off more recently in south Devon. On some reefs, up to 20 crawfish can be seen on a single dive (record by M Slater). Populations of other large crustaceans like brown crab or lobster have generally remained steady over this time and have not shown similar increases.

- Records of distribution of species collected by volunteers, when collected over large areas and long time-periods (e.g. Seasearch) can be used to provide really useful output such as trends for how the distribution of benthic species are changing.
- Other datasets or information about population trends are often simply not available.
- We are now very certain that crawfish have had a remarkable recovery in inshore waters in southwest England.
- This recovery may be spreading further east, but data are not yet sufficient for the models to work.
- NB – Seasearch records are only for diveable depths. Trends may differ in deeper waters or where divers do not venture.
- Occupancy models should be used to support future management, particularly where species are targeted by fisheries or conservation.



Plate 8.3. A young crawfish in the boiler of the Persier wreck in Bigbury Bay on 5th December. Boiler holes are about 50 mm across. Image: Peter Messenger.

Geographical range eastwards of crawfish may be extending and now found west of Portland on Landrail wreck (Mike Markey) and Rick Ayrton reports 'loads of crawfish on the wreck if the Anworth west of Portland Bill'. Anecdotal reports of crawfish (most likely on deep wrecks) east of Portland: Mike Markey.

Julie Hatcher reports individuals present in shallow water at Chesil Cove.

Fisheries data to May 2020 indicates declining catches since 2016 in Devon (information from Devon & Severn IFCA) but maybe 'Covid19 effect' in part in 2020.

Still mostly undersize (<110mm carapace length) individuals being caught.

No berried crawfish caught on the Skerries Bank (monitoring location) in past two years

Large catches of Langouste rose (*Palinurus mauritanicus*) in deep water south-western approaches and landed at Newlyn 24th August by 'Joy of Ladrum'. ('through the gaps' blog). Ben Rowse/Paul Semmens.

The amphipod *Quadrinemaera* sp. recorded in Mount's Bay, Cornwall for the first time in Britain by David Fenwick. See the cover picture.



Plate 8.4. 26th January. Northern stone crabs, *Lithodes maja*, caught in deep water west of the Isles of Scilly – why not? – it's cold down there. Ben Rowse / Paul Semmens. Image: David Fenwick



Plate 8.5. Increasing numbers of Montagu's (aka 'furrowed') crabs [*Xantho hydrophilus*] at Kimmeridge. Steve Trehwella reports: found a berried female a few years ago while diving in the bay and, since then, we have started to find them on the shore on big tides, although I've not seen them at other sites here yet. <https://www.youtube.com/watch?v=Bfa-P-xG8sA>. Image: Wembury Marine Centre.

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Plate 8.6. 20th August. David Fenwick writes (on 26th August): I've just had an amphipod of the genus *Ptilohyale* confirmed by Sabrina Lo Brutto. Given there is no *Ptilohyale* species in the UK that I am aware of I feel the likely the species is *P. littoralis* a non-native species. More specimens are needed for the record to be accepted. The specimen was found in a *Laminaria hyperborea* holdfast that washed-up during stormy weather at Long Rock, Penzance, Cornwall, UK. Nearest records (of *P. littoralis*) are from Brittany. Image: David Fenwick.



Plate 8.7 and 8.8. Vast numbers of sea spiders (most likely a *Nymphon* sp.) in Portland harbour this winter, most were free swimming in mid water, but when the light trap (right-hand image) was left out for an hour, thousands arrived. Images: Steve Trehwella.



Plate 8.9. The spiny spider crab aggregation photographed from the jetty at Lundy on 18th August. Image: Keith Hiscock.



Plate 8.10. Cast-off shells at low water on the south side of the Landing Bay on 18th August. Image: Keith Hiscock.

Moulting aggregations of spider crabs *Maja brachydactyla* were recorded for the first time at Lundy in July and August at the Landing Bay. Estimated over a thousand individuals below the jetty and the strandline covered in shells on 18th August (Keith Hiscock). However, further enquiries discovered a video by Mark Lavington of a large aggregation north of Gannets' Rock on the NE coast in 2017. The 2020 event included crabs ready to moult grouped into gullies and soft (recently moulted crabs) present intertidally. Are there more aggregations inshore in recent years than, say, ten years ago?

Also known from Babbacombe, Churlston and North Cornwall, in south-west England.

Mollusca

7th February – wash-outs of necklace shell egg masses at Whitsand Bay (Lynne Bracegirdle).

27th February. Two green ormer shells found on Portreath Beach (Frances Geall). Keep looking for live ones!

Cephalopods (octopus and cuttlefish)



Plate 8.11. Dead common octopus *Octopus vulgaris* at Wembury Point. Image: John Hepburn



Plate 8.12. Curled octopus *Elodne cirrhosa* near Falmouth. Image: Mike Etheridge



Plate 8.13. Cuttlefish *Sepia officinalis* at Babbacombe. Image: Keith Hiscock

Many less (only two: John Hepburn & Tamsyn Mann/Emma Neilson) reports of common octopus compared to 2018 and 2019.

Reports of the northern or curled octopus continue to suggest more frequent occurrence all along the south coast in the past, say, three years. (Various reports and frequent images posted on Facebook).

High abundance of cuttlefish off Babbacombe Beach – most likely because of no/reduced potting for cuttlefish just offshore. (Terry Griffiths)

Molluscs



Plate 8.14 and 8.15. Celtic sea slug *Onchidella celtica* found for the first time on Lundy by Rosie Ellis (Assistant Warden). Nearest previous recorded location: Croyde. Images: Keith Hiscock.



Plate 8.16. *Janolus hyalinus* (a rare nudibranch) reported from North Cornwall in September. Caroline Cumming.



Plate 8.17. *Pruvotfolia pselliotes* (a nudibranch) in Poole Bay – a huge range extension eastwards. Mike Markey.



Plate 8.18. A new species of nudibranch separated from *Polycera quadrilineata*: *Polycera norvegica* recorded by Mike Markey from off Hive Beach Burton Bradstock. See: Journal of the Marine Biological Association of the United Kingdom. DOI: 10.1017/s0025315420000612, pp. 1-20.



Plate 8.19. *Placida cremoniana* (a saccoglossan) was found by Shannon Moran on 13th November 2020 at Silver Steps on Pendennis Point, Falmouth. The Sea Slug Forum notes: " Originally described from Naples, the Mediterranean species has been identified with this animal from the western Pacific. It is a strange distribution and the identity needs further investigation." Only about 3 mm long. Feeds on filamentous green algae. Image: Matt Slater

Non-native species



Plate 8.20. *Cordylophora caspia*. Image: Keith Hiscock



Plate 8.21. *Hydroides ezoensis*. Image: John Bishop



Plate 8.22, *Watersipora subatra*. Image: Keith Hiscock



Plate 8.23. *Antithamnionella spirographidis*. Image: Christine Wood

From John Bishop and Christine Wood (<https://www.mba.ac.uk/fellows/bishop-group-associate-fellow>): No newly established species recorded and little change in status of existing ones but survey work much reduced in 2020 and limited to areas in the Plymouth region.

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- The upper estuary/freshwater hydroid *Cordylophora caspia* recorded in the Plym estuary. Known in the Tamar, so not a big jump.
- The serpulid *Hydroides ezoensis* was found on the shore at Oreston. We have seen it sparingly on local boats, pontoons and potting gear for some years, this the first time on the shore.
- A couple of non-native species becoming increasingly frequent on local [Plymouth] shores, the bryozoans *Watersipora subatra* and the red alga *Antithamnionella spirographidis*.



Plate 8.24. 22nd August Asian shore crab (*Hemigrapsus sanguineus*) at Osmington Weymouth – Steve Trehwella. Until 2020 this species hadn't been recorded in the UK apart from two isolated individuals in 2014 from Wales and Kent – Christine Wood. Image: Steve Trehwella.



Plate 8.25. From Paula Ferris: North Devon shores have a high density of *Caulacanthus okamurae* (red pom-pom weed) and (from Christine Wood): high densities at Batten Bay in Plymouth Sound. Image: Keith Hiscock

From Keith Hiscock: a much lower abundance of *Sargassum muticum* at Lundy and no *Asparagopsis armata* (harpoon weed stage) seen in rockpools at Lundy in August but more systematic observations needed.



Plate 8.26. *Grateloupia turuturu* in the tidal channel at Shaldon Bridge, Teign Estuary. Image: Mike Puleston/The Shores of South Devon.

Mike Puleston reports: I have been monitoring Devil's Tongue Weed (*Grateloupia turuturu*) at Shaldon since first finding it there in 2019. I recorded it twice in 2020 in (no earlier visits due to lockdown) September/November 2020. There was a high abundance under Shaldon bridge on mussel reefs and on the Newton Abbot upstream side of the bridge which I hadn't observed earlier. I think it is rapidly increasing in area and abundance at this site.

Pacific oysters *Magallana gigas*



Plate 8.27. 12th July – one Pacific oyster at the end of the jetty on Lundy. [Subsequent searches in 2021 confirmed the presence of Pacific oysters – this image on 12th April 2021 from Rat Island of an individual that most likely settled there in 2020.] The nearest known Pacific oyster populations to Lundy are at Westward Ho! on the North Devon mainland. Image: Dean Jones

Assessment of extent and increase/decrease of Pacific oysters together with other non-native spp. is needed. Nigel Mortimer writes: "The local Estuaries Partnership role has been to engage local volunteers to help survey and map the population density of Pacific oysters along our shores and trial whether their culling could be an effective method of their managed control. The data from our many surveys have been analysed by Natural England staff and the project is presently being written up as a formal report to Defra proposing the continued support of local volunteers. Unfortunately, in places where the Pacific oyster numbers have formed physical reefs of the animals, their effective management will require other methods of their removal that are yet to be fully considered – other such sites presently include manmade seawalls. As part of their report, Natural England are looking for a short written testimony explaining if and how Pacific oysters have negatively impacted yourselves, your business/es and the general public."

Pacific Oyster studies in Cornwall and Devon in 2020

The two year EU EMFF funded Pacific Oyster project led by NE and delivered by Cornwall Wildlife Trust and South Devon ANOB reached an end in summer 2020.

Volunteer groups were trained to carry out surveys and control work.

Total number of Surveys: 166

Total number of oysters culled: 150,387

Findings of the project are being published and are currently being peer reviewed.

The overall finding is that the extent of Pacific oysters in the South-West is far larger than realized

The report includes:

- Detailed oyster density maps;
- Recommendations on future action;
- Improving market for feral pacific oysters;
- Demonstration trial – creating soil conditioner.

Culling Pacific oysters that are growing on rocky shores has been proven to be effective in some areas. Control of oysters on softer shores is more difficult using volunteers but in these areas the eventual formation of reefs presents a large change in the nature of the intertidal habitat, potentially threatening protected features of SAC's and other MPA's

To date Pacific oysters appear to be only colonizing the intertidal in Devon and Cornwall but there is concern that they (as has happened in other areas such as the Waddensea) may eventually colonise the subtidal.

The project has investigated novel commercial uses for Pacific oysters- food use is one option but currently the demand is not high and there are few areas which have shellfish classification for Pacific oysters.

There are many potential non-food uses, the protein can be heat treated and removed and the shells can be ground up and used for many things including aggregate, soil conditioner and lime alternative.

Volunteer groups in Cornwall are continuing to carry out surveys and are culling within the Fal SAC and the Fowey estuary, particularly within key targeted areas.

Pacific oyster in low densities have recently been found on the North Coast at Newquay Harbour and in North Devon (including Lundy) and Somerset.

Matt Slater, Cornwall Wildlife Trust



Plate 8.28. Surveying Pacific oysters in Cornwall. Image provided by Matt Slater.



Plate 8.29. Pacific oysters in the Fowey north of Boddinick. Image provided by Matt Slater.

Strandings [not including free-living ocean drifters ('jellyfish' including *Physalia physalia* and *Veleva veleva*) but including stalked barnacles]

'Usual' strandings of stalked barnacles (especially January and September and large numbers of buoy barnacles reported at the end of August and on Lundy at the end of October). Some gooseneck barnacles with associated Columbus crabs. Some sea beans also found washed-up in Cornwall. A 'normal' winter.



Plate 8.30. Log with gooseneck barnacles *Lepas anatifera* and *Teredo navalis* borings. Bovisand Beach, Plymouth Sound. 15th November. Image: Keith Hiscock

Miscellaneous

Ex-HMS *Scylla*

Ex-HMS *Scylla* (sunk March 2004) continues to inform our understanding of settlement and succession showing sporadic change in colonising species. In 2020:

- Visual domination of the reef by feather stars (*Antedon bifida*) and dead mans' fingers (*Alcyonium digitatum*) continued to increase although *Antedon* was displaced by mussel settlement in places.
- *Metridium senile* was no longer abundant in previous locations;
- Dense settlement of mussels, *Mytilus* sp., up to about 8mm length in August to October and being eaten by starfish, *Asterias rubens*, on upward facing surfaces;
- *Pentapora foliacea* (previously common) not seen in June and October;

- Pink sea fans (*Eunicella verrucosa*) now an established part of the reef community with similar densities and size of individuals to wrecks in the area.
- The reef holding-up well although the roof of the bridge has collapsed.

Keith Hiscock



Plate 8.31. Changes on ex-HMS *Scylla*. Images: Keith Hiscock

Otters



Plate 8.32. Otter at Plymouth Yacht Haven Quay (Plym Estuary) on 13th March. Image: Barry Rankine



Plate 8.33. Otter at Plymouth Yacht Haven Quay (Plym Estuary) on 13th March. Image: Barry Rankine



Plate 8.34. Otter at Plymouth Yacht Haven (Plym Estuary) on 2nd December. Image: Ben Morgan

Otters were reported in marine habitats in the outer reaches of the Plym estuary and Cattewater (Plymouth) and since at least 4th April 2016 (Plymouth Yacht Haven Marina). In 2019: "I saw two in close company 'porpoising' across Hooe Lake early morning on 6th May" (John Bishop). In 2020, reported sightings on 13th March at Plymouth Yacht Haven (Barry Rankine); and 2nd December on pontoons at Plymouth Yacht Haven (Ben Morgan) in 2020.

Cornwall Mammal Group have just completed an 18-month project: "Otters are increasingly reported from coastal and estuarine locations and this is a return to behaviour reported in many older records such as Carew in 1602 and

Couch in 1838 when otters were considered a marine species that occasionally used rivers.” Dave Groves, Cornwall Mammal Group. [See: Groves, D. & Smith., R.J. (2021) The diet of Eurasian otters (*Lutra lutra*) around the coastal fringe of Cornwall. *Mammal Communications* 7: 11-16, London.]

Additionally, in 2020, there were two records near Mousehole, one in June and one in November. In 2018 there was a record of an otter swimming and searching amongst seaweed in Carrick Roads. The area around Mount’s Bay appears to be a hotspot for them. Laura Fox, Cornwall Wildlife Trust & The Environmental Records Centre for Cornwall and the Isles of Scilly.

Seasearch in 2020

The 2020 dataset overall comprised 67 surveys with 787 survey events, and contains 30,065 taxon records and 2248 biotope/habitat records.

All of the data is made available on the National Biodiversity Network Atlas, where Seasearch is the second-largest provider of marine data (after the Joint Nature Conservation Committee) with a total of 786,482 taxon records (not all to species level) and has now surpassed the original Marine Nature Conservation Review records that included early (mainly 1970s onwards) surveys and those undertaken by the MNCR and Natural England teams (1987-1998) (593,311 records). Charlotte Bolton.

CONCLUSIONS

Range extensions of species native to the North East Atlantic continue but for mixed reasons. The increased abundance (frequency of sightings) for common octopus seem to have died away – rather like the outbursts in 1900 and 1950 but not on the same scale.

- Records of range extensions, species new to Britain, episodic events, ‘recovery’, ‘disappearances’, trends etc. give context when interpreting the results of monitoring or of (often ‘press-worthy’) events.
- But, there needs to be a way of preserving the sorts of observations in SW Marine Ecosystems reports so that those observations can be found and objective interpretation can be undertaken into the distant future.
- DASSH, the UK archive for marine species and habitat data based at the Marine Biological Association, is actively developing a mechanism to capture species observations and integrate them into marine biodiversity data infrastructure.
- We need to encourage organisations that fund that sort of work to fund it.

8. Fish and Reptiles

Edited by Douglas Herdson

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Fish

Overview

2020 was a strange and frustrating year when due to Covid-19 restrictions most of us could not get down to the shore or out to sea or even down to the fish market for much of the year. Diving and angling opportunities were limited, and, when possible, mostly local. This is reflected by the scarcity of records of fish, which made it difficult to assess the true abundance of species.

However, the South West has an amazing ichthyofauna; with the smallest and largest North East Atlantic fish, and some of the rarest.

Basking shark and triggerfish reports were down, but sunfish were up. Rare fish record included a sailfin roughshark, a sailfin dory, a record white sea bream, an imperial blackfish and the first confirmed record of an Atlantic croaker for Britain and Ireland.

The numbers of seahorses in Studland Bay were the highest recorded, but fell away when lockdown restrictions were eased. The increased abundance of bluefin tuna made it inevitable that some would find their way to strange places, but paddle-boarders in the Exe Estuary were amazed to encounter one.

Agnaths: Lamprey



Plate 8.1 and 8.2. A sea lamprey caught in the lower Tamar Estuary. Image: Lewis Hicks.

In late January, a Whiting (*Merlangius merlangus*) was caught at Pottery Quay in the lower Tamar Estuary; with a small 20 cm Sea Lamprey (*Petromyzon marinus*) attached.

In early November, a small sea lamprey (15 cm) fell from the hull of a yacht that was being craned out of the water in Saltash. In December a whiting was caught near Saltash with two small lampreys attach to its belly.

These lampreys breed around the tidal limit of the Tamar and Tiddy rivers, and after four years as a filter-feeding larval stage in the river, become parasitic, and head out to sea in the December-January period.

In April, an adult (with a damaged head) of about 55 cm was captured about 30 miles south of Land's End. It was fresh so presumably the head was damaged during the process of being caught – either in net predation, or damaged by the net or machinery.

[Robert Hurrell; Dave Curno, Angie Gall, Simon Toms; David Stevens.]

Elasmobranchs

Thresher shark



Plate 8.3. A small thresher shark breaching off the Ore Stone in Torbay on 9th June. Image: Rob Hughes / Devon Sea Safari

In early June a small (2m) Thresher Shark (*Alopias vulpinus*) was photographed breaching in Torbay.

On 21st July, one breached three times offshore from Jenny's Cove, Lundy.

By August there were good numbers around the Isle of Wight (which appears to be a centre of abundance), including one caught and released of an estimated 100kg. On the same day, another large one was hooked but escaped off Plymouth. More were seen off Plymouth a week later. In October a thresher thought to be over 280kg caught and released over St Catherine's Deep, south of Isle of Wight. (This exceeds the current UK rod-caught record of around 146 kg. The largest was a female of 510 kg landed Newlyn in 2007)

[Rob Hughes, Devon Sea Safari; Dean Jones and Zoë Barton; Crusader Charters; Simon Thomas; Angling News; Douglas Herdson]

Basking Sharks

Basking sharks (*Cetorhinus maximus*) are an endangered species and their numbers continue to decline from former maxima of over 400. In 2019 fewer than thirty were recorded in the south west, and in 2020 around twenty four. However, as with so many species it is impossible to distinguish between a decline in the population and decreases in observations.

April was an outstanding month, the first being seen off the Lizard on 11th, the next day two were seen off the Isles of Scilly. In all in April eighteen were recorded around Cornwall, including some large individuals; one being estimated at 8 to 9 metres. On 14th, surprisingly, two were seen in Torbay, one in Torquay Marina and the other in Brixham Harbour. At the end of the month large basking shark circled near a boat in Plymouth Sound.

From May to September a further seven basking sharks were seen around Cornwall, the last off Levant on 29th September.



Plate 8.4. Juvenile basking shark washed-up at Porthoustock Beach. Image: Mark Milburn.

On 26th November, a juvenile basking shark was found washed up on Porthoustock Beach, on the Lizard. It showed probable marks of rope entanglement. One rope mark was quite deep around the tail fin.

[Atlantic Adventures, Environment Record Centre for Cornwall and the Isles of Scilly (ERCCIS); Isles of Scilly Birds and Natural History Review (IOSBNHR); Mark Criddle/RNLI Torbay; Torquay Watersports; Barry Toms; Mark Milburn.]

Porbeagle

The first report of a porbeagle shark (*Lamna nasus*) for the year was on 23rd April, 12 miles off Cobo Bay in Guernsey; where a large mature female 2.4 m, circled fishing boat.

South-West Marine Ecosystems in 2020

Numbers built up in July and between 23rd and 3rd August four were recorded off the Isles of Scilly. In mid-August several were reported off Plymouth, including at least one pup. Several juveniles were caught by boats out of Looe.

[Lauren Eyles; IOSBNHR; Crusader Charters; Simon Thomas]

Blue Sharks

Blue Sharks (*Prionace nasus*) were noticeably fewer 2019, but appeared again in large numbers including a number of very young fish.

An angling charter boat out of Penzance caught and released 1,400 blue sharks during its 2020 season. Off Plymouth, another charter vessel had good catches, with a single angler catching 33 blue sharks (and a small porbeagle) in one day.

They were first reported from the Isles of Scilly where nine were encountered between 13th July and 17th August. They were seen off Falmouth on 29th July and the Lizard on 4th August.

By 10th August they were common off Plymouth with one being seen near the Eddystone Rocks. This continued for the next three weeks.

Until recently the shark stocks around the south west were nearly all females, but notably this year and last there were numbers of large males and also young of the year pups.

[IOSBNHR; Crusader Charters; Simon Thomas, David Morgan; Sound Diving; Keiren Faisey, Lo Kie Adventures; Rupert Kirkwood]

Sailfin Roughshark

A scallop dredger fishing off the Channel Islands towards the end of August brought up a Sailfin Roughshark (*Oxynotus paradoxus*). This is a bottom living shark of the lower continental slope, normally living between 350 and 600 metres, rarely being found as shallow as 90 m.

[Chris Barrett; Marc Dando.]

Other Sharks

An unusual leucistic Tope (*Galeorhinus galeus*) was caught and released off the Isle of Wight.

A study was published showing that small sharks do ingest plastic. Morgan, E. *et al.* (2021) *Plastic Ingestion by the Small-spotted Catshark (Scyliorhinus canicula) from the South West Coast of the United Kingdom. Bulletin of Environmental Contamination and Toxicology* 106:910–915.

Some of the strandings of small sharks, including small-spotted catsharks and Starry Smoothhounds (*Mustelus asterias*), may have been the result fishing or angling discards.

A decomposing tiger shark (*Galeocerdo cuvier*) jaw was found in a Devon garden. Its origin is unknown, it looked fleshy, so the likelihood of it being a discarded souvenir is low.

[Portsmouth News; Ellana Morgan; Marine Strandings Network, Cornwall Wildlife Trust; Jack Sewell.]

Skates and Rays

One angler celebrated New Year by casting a line baited with sandeel in the early hours off Chesil Beach. His reward was a 3.4kg Blue Skate (*Dipturus batis*). Skates are rare in the south west but a handful of blue skates have been caught at Chesil.



Plate 8.5. A Shagreen ray stranded at Chesil Cove. Image: David Sellers

The remains of a ray found stranded (by David Sellers on 7th December) at Chesil Cove, was identified as a Shagreen Ray (*Leucoraja fullonica*). In the English Channel this tends to be a western species and is seldom noted in Dorset.

An electric ray (*Torpedo* sp.) was seen in Bouley Bay, Jersey, in September.

Also in September, a Common Stingray (*Dasyatis pastinaca*) was observed at Herm.

[Hookpoint Fishing Magazine; Charlotte Bolton; David Sellars; Tom Andrews/Seasearch; Matt Gurney. [Matt Gurney](#)]

Pelagic Species

Large Pelagic Fish

Atlantic Bluefin Tuna



Plate 8.6. Dolphins, tuna and manx shearwaters, halfway to the Eddystone on 12th August. Image: Rupert Kirkwood



Plate 8.7. Bluefin Tuna, late summer. Image: Rupert Kirkwood

Atlantic Bluefin Tuna (*Thunnus thynnus*) were once again abundant off the Isles of Scilly, Cornwall and west Devon.

Their occurrence start later than most years, but then went on until the end of the year.

After an isolated report from St Mary's (IoS) on 14th June, the numbers built up from 24th July onwards.

Around Scilly there were a further 18 reports, mainly in August and September of ones and twos, but on one occasion exceeding 40. The last tuna sighting of the year

was of two or more off Peninnis Head, Isles of Scilly on 31st December.

The CEFAS PELTIC sampling cruise in October observed a total of 118 bluefin tuna in 43 encounters on the survey transects. They were widespread around the Isles of Scilly and the northern side of the English Channel. Although

there were more sightings than 2019, the numbers were still well below those in 2017 and 2018. This year many of the encounters also appeared to be single animals and there were only one or two encounters with sizable feeding frenzies.

The first Cornish sighting was one jumping in St Ives Bay on 25th June. ERCCIS recorded 305 reports from Cornwall of up to 50 tuna between 24th July and 28th November. Notable observations include one taking a bass from a shore angler's line and one of an estimated 140 kg breaching off Falmouth with a garfish in its mouth. One was seen off Falmouth on 7th December. There were a good number on the north coast this year, often in shallow water and mainly feeding on pilchards.

They appeared off Plymouth in the first week of August, and on 11th a kayaker found himself in the midst of a shoal of 50 to 100 tuna, between three and six miles offshore, out towards the Eddystone. From September through to November large groups were seen offshore of Wembury.

Along the South Devon coast they were observed from 11th September until 3rd December, off Berry Head and other headlands, with three seen to breach in the vicinity of a Minke Whale in Bigbury Bay. A two metre bluefin tuna carcass was spotted floating off the Torbay coast.

One of the most surprising sightings was of a large tuna swimming around paddle boarders in the shallow waters of the Exe Estuary above Exmouth.

There were two sightings of large fish breaching off Lundy in late September and mid-October which were assumed to be bluefin tuna.

There were two reports of large tuna inshore in Guernsey in August; in the harbour and in La Bette Bay. While in September a large shoal was photographed further offshore.

[IOSBNHR; CEFAS PELTIC 20; ERCCIS; Henry Gilbey; John Locker; Simon Thomas; Rupert Kirkwood; Rob Hughes/Devon Sea Safari; Peter Goodman; Mike Langman; Chris Marcol; David Smallshires; Debby Mason; Kurisu Oranda; Derek Johnson/Trihard; Dawlish Warren Recording Group; Dean Jones; Jeff Harris; Ryan Le Cheminant; John Ovenden; Mark Deeble, and many other observers.]

Other tunas



Plate 8.8. An Albacore Tuna (*Thunnus alalunga*) was found stranded alive but with an injured pectoral fin at Lundy Bay, North Cornwall on 8th August. Image: James Ashby

In June and July small numbers of Atlantic bonito (*Sarda sarda*) were coming onto the Plymouth Fish Market fairly regularly. Whist in October two bonitos were caught in Lyme Bay.

[James Ashby; Douglas Herdson; CEFAS PELTIC 20]

Billfish

On 14th August a birdwatcher at Portgwarra reported a Sailfish off the Runnelstone. The following day an experienced angler had a good view of a billfish of over 3 metres swim close to the rocks where he was fishing. He initially thought it might be a swordfish, but it was reported as a sailfish.

However, as there has only ever been one confirmed record of a Atlantic Sailfish (*Istiophorus albicans*) (the Yealm in 1928), it seems more likely that this fish was in fact a Swordfish (*Xiphias gladius*).

There was a further report of a sailfish seen off Porthchapel, by a birdwatcher on 29th September.

[M Elliot; R. Archer and Peter Maddern.]

Small Pelagic Fish



Plate 8.9. Massive shoal of 'whitebait' at Babbacombe on 2nd July. Image: Charlotte Bolton.



Plate 8.10. Every gully stacked full of great balls of bait between Penlee Point and Rame Head on 21st July. Image: Dave Peake

'Whitebait'

At the beginning of July a massive shoal of small fish was seen just below the surface at Babbacombe, Torbay. The fish generally could not be identified, but one was a young Herring (*Clupea harengus*).

Later in the month every gully was stacked full of 'Great balls of bait' in an area between Penlee Point and Rame Head, SE Cornwall.

[Charlotte Bolton; David John Peake]

CEFAS Pelagic 2020

The ninth autumn PELTIC survey studying the pelagic ecosystem of the western English Channel and Celtic Sea took place in October.

Sprat (*Sprattus sprattus*) dominated in the usual two main areas of Lyme Bay and the Bristol Channel. This year sprat was found further west in the Bristol Channel and more inshore along the north Cornish Coast. Like previous surveys, Bristol Channel Sprat were smaller (mean of 7.5-8 cm) than those in Lyme Bay (10.5-11cm).

Sardines (*Sardina pilchardus*) were again the most abundant small pelagic fish species in the PELTIC survey with a total biomass slightly down from 2019 but the second highest in the time series. Although widely distributed, the core of the sardine distribution was located further west than in previous years with the highest densities found southwest of the Cornish Peninsula. Sardine here comprised of fish from across the length spectrum, from 8-8.5 cm modal length up to fish larger than 23 cm. Most sardine were between 0 and 2 years old with decreasing numbers at older ages to a maximum of 7 years old.

The anchovy (*Engraulis encrasicolus*) biomass in PELTIC doubled from last year for the total area. Although widespread, anchovy hotspots were in Lyme Bay, off the Eddystone Bay and in the Bristol Channel. Their size showed a peak at 10 cm modal length and smaller numbers of larger fish at 15.5 cm. These one-year-old fish with modal length of 15 cm were found to be most widespread in the survey area with higher numbers near the Isles of Scilly and the western English Channel. The largest anchovy specimens were found off the southwest coast of Cornwall.

Horse mackerel (*Trachurus trachurus*) was widespread, although typically in deeper waters of the survey area. The total biomass was mainly made up of juvenile fish with modal length of 8-9 cm (age 0). Larger fish with mean modal length of 24 cm were caught in the Bristol Channel and had an age range of 2 to 5 years old.

Inshore anchovies were caught small quantities of up to 50kg most weeks in the early months of the year. In October a ring-netter operating out of Mevagissey captured 10 ton of anchovies, but generally landing only smaller quantities, which unusually only fetched a low price.

In February a large number of sardines were washed up on a beach near Gunwalloe in Mount's Bay. This was due to a fishing vessel getting into difficulties and cutting its net away.

The occurrence of mackerel (*Scomber scombrus*) in inshore waters was very variable, presumably due to the schools following the movements of prey fish. There were good sized ones at Rame Head in April; in June they started to be caught from Mount Batten jetty in reasonable numbers; in July lots of mackerel were being caught by anglers in Cornwall; by September they were patchy around SW Cornwall and St Ives and very few were being caught in inshore waters off Swanage. However, there were good catches in Guernsey and in November there were reasonable numbers and size of mackerel off the Newquay rocks.

In September, Garfish (*Belone belone*) were common off Chesil Beach, some up to almost 1 kg.

In August, a large horse mackerel of 1.6kg was caught by an angler off Plymouth.

[Jodie PTA; Lee West; Matt Bird; Chris Bird; Peter Goodman; Shane Rouffignac; Roger Marsh; Macauley Tulie; Shane Pretorius; Jason Upham; Robert Hurrell.]

Sunfish



Plate 8.11. Sunfish (*Mola mola*) photographed in summer 2020. Image: Rupert Kirkwood

Reports of Sunfish (*Mola mola*) were an increase on last year, when there were about 65.

Cornwall Wildlife Trust's records centre ERCCIS received 105 sunfish reports from 23rd May at Towan Head to 20th October off Padstow, mainly of single fish but also in groups of up to four. Other observers reported higher numbers, the tall ship *Pelican of London* saw 40-50 in the space of a few hours on 16th August - often in aggregations of up to 8-10, north east of the Scillies and offshore up the north Cornwall coast. On 23rd August 64 were reported from the Island at St Ives.

There were 18 reports of one to four sunfish off Scilly between 19th July and 29th August.

In August the sunfish numbers were fairly high off Plymouth, with sightings from the Eddystone Rocks to Berry Head. Previously on 26th June one was seen off Old Harry Rocks, Dorset.

In the Channel Islands, there was one off the Pea Stacks, Guernsey and another off Alderney on 24th June and 16th August respectively.

A grey seal was filmed preying on a sunfish at Deep Point, St Mary's (IoS) on 27th July

[ERCCIS; Rohan Holt; P. Nason; Martin Goodey; Simon Thomas; Crusader Charters; Sound Diving; Lin Baldock; Guernsey Wildlife; Daniel Jurkiewicz; Simon Thurgood; Marine Discovery and a number of others.]

Demersal Fish

Atlantic Sturgeon

A one metre long European Sturgeon (*Acipenser sturio*) was caught by a commercial fishing vessel just off Berry Head on 10th August and quickly released.

Due to escapes from domestic and commercial establishment several species of sturgeon, but this one was confirmed as *A. sturio*.

The European sturgeon is a critically endangered species (IUCN Red List, 2021) with a single breeding population in the Gironde Rive, France. From the developing database, Brixham is not just of interest as a port of landing. Some of the past landings there have specified areas of capture close to Brixham, e.g. Start Bay, off Berry Head, off Start Point, Lyme Bay etc. There are enough reports now from these locations and others to start to speculating marine aggregation areas, presumably associated with suitable feeding substrata?

[Gary Cooper; Russell Cooper; Steve Colclough]

Sea Trout

There was no spring spate of sea trout (*Salmo trutta*) going into the estuaries this year in April to June: Still getting an autumn spate.

[Peter Goodman]

Pearlsides

In January one Pearlside (*Maurolicus muelleri*) was found on Scilly.

[Robert Hurrell]

Gadoids

January and February proved to be productive months for anglers fishing in the Bristol Channel. Boats out of Minehead caught good numbers of Cod (*Gadus morhua*) including one of 4.6 kg. There were also Haddock (*Melanogrammus aeglefinus*) with one of the larger ones weighing 1.9 kg.

Whilst Pollack (*Pollachius pollachius*) are common around the south west, the closely related Saithe or Coalfish (*Pollachius virens*) are uncommon two were caught off the Cornish coast in September and November.

[Bristol Channel Fishing News; Oban Jones; Mark Griffiths.]

Anglerfish



Plate 8.12. Anglerfish in a rockpool at Peppercombe Beach. Image: Uri Frigeri.

The angler (*Lophius piscatorius*) is an important commercial fish found from shallow water to depths greater than 500 m. It is extremely unusual to find a live specimen on the shore. However, on 20th April a small (c. 25 cm) one was found in sandy pool among rocks on Peppercombe Beach, North Devon.

[Robert Enever]

Sailfin Dory



Plate 8.13. Sailfin dory (*Zenopsis conchifer*). Caught by F.V. Saxon Spirit on 14th July. Image: Nick Eggar.

A sailfin or silver dory (*Zenopsis conchifer*) was caught about 40 miles south of Plymouth, near the Pentille wreck. This is the thirteenth record of this southern species in Britain, and the second in the Plymouth area.

[Louis Portmann; Nick Eggar]

Seahorses



Plate 8.14. A pair of *Hippocampus guttulatus*, Studland Bay in 2020. Image: Neil Garrick-Maidment / Seahorse Trust.

The first short-snouted seahorses (*Hippocampus hippocampus*) recorded in 2020 were six encountered during ongoing regular sampling in Southampton Water in mid-April. On 5th May a heavily pregnant male was filmed at Sandbanks, Poole Harbour. Over the rest of the season a further five were reported from Dorset. Similarly, five were found around the Isle of Wight. In May, a small male was seen at Babbacombe, in Devon, and a pair in Southampton Water.

The Seahorse Trust's national database contains records of 53 spiny seahorses (*Hippocampus guttulatus*) in Dorset and one from the Isle of Wight. This is a considerable increase on recent years.

A mature female was found washed up in tangled in fishing line at Sandbanks on 6th May. It was released and swam away. Two were sighted during Seasearch surveys on the east coast of Portland in July.

The majority were discovered at Studland Bay, which has recently been designated as a Marine Conservation Zone, between 22nd May and 20th June. During a survey dive in May, 16 spiny seahorses were seen and, on another in June, 21 were observed. Over this period 46 individual animals were identified. However, the observations were all in the 'Lockdown' period. When regulations were eased up to 400 vessels per day were observed anchoring in this area and very few seahorses could be found. It is intended that Ecomoorings will soon be installed, which it is hoped will reduce the disturbance.

An unidentified seahorse was found stranded and returned to the sea at Sidmouth, Devon, in May. Another indeterminate one was found at the Isle of Wight.

The last spiny seahorse was seen at Studland 12th October.

[Terry Griffiths, The Seahorse Trust; Neil Garrick-Maidment; Robin Somes; Steve Higgins; Deb Thereb; Daniel Wronski; Amy Tiffin; Danielle Agnew; Charlotte Bolton; Lin Baldock (the last four all Seasearch).]

Bass and relatives

Bass (*Dicentrarchus labrax*) is an important commercial fish, and a special target species for many anglers. However, on 2nd January 75-100 bass were found dumped in the outer harbour at Hayle. These may have been caught by a vessel with insufficient quota to land them.

On 24th February an angler captured a bass of 10 kg in the Bristol Channel. The British rod-caught record for bass is 9.00 kg, but this fish was not eligible for a record as it was returned alive.

Thousands of bass were feeding on tiny sandeels, in Guernsey in May, and showed no interest in any bait presented. Meanwhile very few bass were caught off Dawlish, but this was thought to be due to local factors.



Plate 8.15. A comber, *Serranus cabrilla*, South Devon, 29th September. Image: David Stevens

The comber (*Serranus cabrilla*) is one of the smallest members of the grouper family and the only one regularly found in the British Isles. Usually two or three are recorded over a space of around four years, but in 2020 four were reported. Two were brought up as by-catch in lobster pots off North Cornwall in May and June. One was caught by an angler off Guernsey in August. Another of 22 cm was in a

trawl 30 miles south of Prawle Point, Devon.

[Chris Bird; Bristol Channel Fishing; Sea Angling News; [Paris Broe-Bougourd](#); Dawlish Warren Recording Group; Ben Lowe; Richard Seager; David Stevens.]

Jacks and Trevallies

In August, a large horse mackerel (*Trachurus trachurus*) of 1.6 kg was caught by an angler off Plymouth.

A pilot fish (*Naucrates ductor*) was caught on the F.V. Ygraine in August, and another in a gill-net north west of Cornwall in early September.

[Robert Hurrell; Madalein Bradshaw/MMO; Paul Murphy/MMO; Beccy Marie.]

Sea Breams

When angling resumed in mid-May, anglers were catching fair numbers and good sized gilthead sea bream (*Sparus aurata*) until at least mid August off South Devon and the west of Cornwall. In August higher than usual numbers of sea bream were landed to Plymouth Fish Market, including two large giltheads on 28th August.

From mid-June to mid-August black sea breams (*Spondylisoma cantharus*) were fairly common off the Dorset coast, with two at Torbay in the first half of August.

Thirteen red sea bream (*Pagellus bogaraveo*) were caught at a location in Cornwall at the beginning of September.

At the beginning of June, anglers on a charter boat out of Penzance caught numerous Couch's bream (*Pagrus pagrus*), including two over 2.2 kg. This once rare fish is now widely distributed in the south west and Channel Islands, with juveniles being seen in the eel grass beds of Les Ecrehours, Jersey, in October, along with small red mullet (*Mullus surmuletus*).

A large 40 cm bogue (*Boops boops*) was caught in a gill-net for red mullet in Mount's Bay, in early November.

A white sea bream (*Diplodus sargus*) of around 1 kg was caught towards the end of October off Cornwall. Whilst this species is relatively common and breeds in the Channel Islands, this is believed to be the fourth caught in England and takes the Cornish shore record.



Plate 8.16. A Ray's bream, Cornwall, 10th June. Image: Nippers Shellfish.

Ray's bream (*Brama brama*) may occur in large numbers for a few years, especially in the North Sea, but are uncommon in the south west. One was landed in Plymouth in early June, this follows one last September.

[Sea Angling News; Simon Wells; Penzance & Cornwall Fishing; Colin Banfield; Alison Pessell/PTA; Chesil Beach Anglers; Lin Baldock*; Mike Markey*; Nick Owen*; Mark Harrison*; Matt Doggett*; Martin Openshaw*; Charlotte Bolton*; Tamsyn Mann*; Wayne Belcher; Keiren Faisey/Lo-Kie Adventures; Nicolas Jouault; Jeroen Van Der Kooij;

Simon Toms; Robert Hurrell; Nippers shellfish. (*Seasearch)]

Atlantic Croaker



Plate 8.17. An Atlantic croaker *Micropogonias undulatus*, Plymouth, 7th October. Image: Douglas Herdson.

On 7th October a sciaenid fish was captured in a trawl 1.5 miles south of the Mewstone, Wembury, south west Devon. When examined it was found to be an Atlantic croaker (*Micropogonias undulatus*), the first confirmed occurrence of this species in Britain and Ireland. A photograph of a previously unidentified fish from Plymouth Fish Market in September 2011, was reviewed and appears to be the same species.

The Atlantic croaker, is an excellent foodfish, and commercial species in the Western Atlantic from New England to Argentina.

It has never been found in France nor Spain. However, there have been small number reported in the estuaries of Belgium and the Netherlands. It had been assumed that these populations had originated from eggs or larvae transported across the Atlantic in the ballast water of commercial vessels. Hence, the source of the present specimen is intriguing. It will be going into the national collection at the Natural History Museum; where it would be fascinating if chemical or genetic studies could show whether this fish has arrived from the American or the Low Countries stocks.

[Richard Chapman; Andy Giles; Nick Eggar; Douglas Herdson.]

Baillon's wrasse

Until recently, Baillon's wrasse (*Symphodus bailloni*) was often confused with the much commoner and widespread corkwing wrasse (*Symphodus melops*). Careful observation, especially by some Seasearch recorders, has extended the known distribution to Devon and the Channel Islands. However, under 2020's restrictive conditions there were only nine reports in July and September. All were from the Dorset coast between Portland and Swanage.

[Charlotte Bolton; Lin Baldock; Clive Webb; Christine Grosart (all Seasearch).]

Blennies

Montagu's blenny (*Coryphoblennius galerita*).is a small blenny typical of south west coasts. It tended to be localised in its distribution, but are now commoner and more widespread.



Plate 8.18. A variable or ringneck blenny on a wreck in eastern Lyme Bay on 1st September. Image: Mike Markey.

Since they were first discovered in Britain in 2007 near Plymouth, variable or ringneck blennies (*Parablennius pilicornis*) have greatly extended their range. While still centred in Devon, they have now been found in Lyme Bay, Chesil Cove and as far east as the Lulworth Ledges. After being observed in Guernsey last year, in 2020 they were found in Sark. The only Cornish records this year were from the wreck of the James Eagan Layne in Whitsand Bay. Their centres of abundance continue to be Plymouth Sound and Babbacombe, with the dark breeding males seen attending

eggs in both sites. Several juveniles were observed in Chesil Cove in October.

Paul Naylor observed interesting breeding behaviour in August “I recently saw a spawning male (the very dark colouration) ‘hosting’ a standard pattern individual (presume female) and a striped one jumped in to join them and make a trio! Is the striped form a ‘satellite’ of some kind or a not very sneaky sneaker?”

Black-faced blennies (*Tripterygion delaisi*) were not seen at Babbacombe, nor at Firestone for the last couple of years at least, but numbers could be found at Porthkerris.

[Alex Tattershall; Keith Hiscock; Martin Palmer; ERCCIS; Terry Griffiths; Paul Naylor; Sue Daly; Ron Lee; Sandra Dawe; Tamsyn Mann; Mike Markey; Nick Owen; Jeremy Pierce and others.]

Gobies

The largest British goby, the giant goby (*Gobius cobitis*) was observed at Wembury, and for the first time at the adjacent Heybrook Bay, as well as Pendennis Point in Cornwall and in Alderney.

Guillet’s goby (*Lebetus guilleti*) is thought to be the smallest species of fish in the North East Atlantic. A female of this smallest British goby was photographed in Lyme Bay.

The uncommon Steven’s goby (*Gobius gasteveni*) was seen near a mussel farm in St Austell Bay.

Seasearch surveyors recorded Couch’s goby (*Gobius couchi*) at four sites around Portland.

[John Hepburn; John Williams; Shannon Moran/Seasearch; Justin Hart/Seasearch; Nick Owen; James Gregory; Fiona Crouch; Charlotte Bolton; Lin Baldock.]

Blackfish

On 3rd September an imperial blackfish (*Schedophilus ovalis*) was landed to Plymouth Fish Market, having been caught in a gill-net to the north west of Cornwall. According to my records this is only the fifth imperial blackfish to be landed in Britain, and two of those are possibly from Irish waters.

[Madalein Bradshaw/MMO; Paul Murphy/MMO.]

Triggerfish

Records of triggerfish in 2020 were very sparse, but once again, it is difficult to distinguish the effects of reduced maritime and coastal activity from a low occurrence of the grey triggerfish (*Balistes capriscus*) in our waters.

On 12th January, one was filmed swimming around but on its back and side by Brixham Breakwater.

In early August, one was found on shingle in the Yealm estuary and swam away when placed in the water. An angler caught one off Chesil Beach at the beginning of September.



Plate 8.19. A trigger fish *Balistes capriscus* stranded on the shore in the Yealm on 1st August. Image: Jon Rundle.



Plate 8.20. A washed-up dead trigger fish at Kimmeridge on 14th December. Image: Julie Hatcher.

The first to be found dead on the shore was on St Martin's, Isles of Scilly at the beginning of November. From late November until the end of the year a further six were found at Kimmeridge, Woolacombe and on Cornish shores.

[Mike Langman; Jonathan Rundle; Kevin Duddridge; Amy Brocklehurst; David Jenkins; Tracey Williams; Julie Hatcher; Niki Willows; ERCCIS and IOSBNHR.]

Turtles

Up until March of +2021, the United Kingdom the British & Irish Marine Turtle Strandings & Sightings Annual Report had only received reports of eight marine turtles, two of these in the south west. Subsequently two further reports of turtles were acquired from the Isles of Scilly.

This number of reports is the lowest for many years. See Table 1.

A recent paper (Botterell *et al.*, 2020*) showed a decline in records of Leatherback Turtles (*Dermochelys coriacea*) over the last two decades; and fewer Loggerhead Turtles (*Caretta caretta*) since 2010.

However, it is possible that the Covid-19 outbreak and ensuing regulations in 2020 led to decreased water-borne activity and consequently less reporting.

In our area the first one was a hardshell turtle found stranded alive entangled in fishing gear at Budleigh Salterton on 10th April, it was cut out and released. A photograph was taken but it was so poor it could only be identified as a hardshell (i.e. Loggerhead, Ridley or Green).

During the summer, two Leatherbacks were seen swimming near the Isles of Scilly. And finally, in October the decomposing remains of a Leatherback were found on Bryher (Scilly). See Table 2.

[Rod Penrose; British Isles & Republic of Ireland Marine Turtle Strandings & Sightings; Isles of Scilly Bird and Natural History Annual Review; John Higginson; Viv Jackson; Lucy McRobert.]

*Botterell ZLR, Penrose R, Witt MJ, Godley BJ (2020). Long-term insights into marine turtle sightings, strandings and captures around the UK and Ireland (1910–2018). *Journal of the Marine Biological Association of the United Kingdom* 1–9. <https://doi.org/10.1017/S0025315420000843>

South-West Marine Ecosystems in 2020

Table 8.1. Occurrence of Turtles 2017 to 2020

	South West England				Britain and Ireland		
	Leatherback	Other and unidentified	Total		Leatherback	Other and unidentified	Total
2020	3	1	4				8
2019	13	1	14		13	5	18
2018	17/18	2	19/20		17	1	18
2017	8	5	13		28	9	37

Table 8.2. Turtles in the South West 2020

Date	Record no.	Turtle species	Location	Status	Comment
10/04/2020	T	'Hardshell'	Budleigh Salterton, East Devon	Stranded alive	Stranded entangled in fishing gear. Cut out and released. MTR
18/06/2020		Leatherback	Off Peninnis Head, St Mary's, Isles of Scilly	Alive swimming	John Higginson IoSBNHR
11/08/2020		Leatherback	3.5 miles north of St Martin's, Isles of Scilly	Alive swimming	Viv Jackson IoSBNHR
21/10/2020	T	Leatherback	Bryher, Isles of Scilly	Stranded dead	Very decomposed remains. Lucy McRobert and MTR

MSN – Cornwall Wildlife Trust, Marine Strandings Network

IoSBNHR – Isles of Scilly Birds and Natural History Review

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

9. Marine and Coastal Birds

Edited by Alex Banks

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Introduction

As with monitoring of other marine ecosystem components, the global Covid-19 pandemic disrupted much activity, including the planned final year of the national breeding seabird census, Seabirds Count. However, where possible, some data were collected, including a random sample of 308 1 km squares in urban locations across England (including the south west).

Nesting seabirds

A summary of abundance and productivity records from across the south west is shown in Tables 9.1 and 9.2. Additionally, regional experts provide a breakdown of the 2020 breeding season in the sections below.

Table 9.1. Count data for south west counties held by SMP database for 2020. GU: common guillemot; CN: common tern; TE: Sandwich tern; AF: little tern; F.: Northern fulmar; GB: great black-backed gull; CA: great cormorant; HG: herring gull; BH: black-headed gull; KI: black-legged kittiwake; RA: razorbill; SA: European shag. CN, TE, AF, CA, GB, HG, BH, KI, SA – Apparently Occupied Nests; F. – Apparently Occupied Sites; GU, RA – individuals.

	GU	CN	TE	AF	F.	GB	CA	HG	BH	KI	RA	SA	Total
Cornwall	124				216	2	7	176		530	7	28	1090
Carvannet - Portreath 3					62					530		16	608
Dollar Rock								17					17
Helford River 1					11	1	1	16					29
North Cliffs 1	102						6				1		109
Stem - Mawgan Porth					32			36					68
Treyarnon - Merope	22				12			28			6	12	80
Zacrys - Watergate					99	1		79					179
Devon										251			251
Straight Point										251			251
Dorset		264	241	50					4520				5075
Abbotsbury		55											55
Lodmoor		45							20				65
Chesil Beach				50									50
Poole Harbour													
Brownsea Island		164	241										405
Gigger's Island									Ca. 4500				4500
Grand Total	124	264	241	50	216	2	7	176	4520	781	7	28	6416

South-West Marine Ecosystems in 2020

Table 9.2. Productivity data (chicks per pair) for south west counties held by SMP database for 2020. 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). No data for storm petrel. Abbreviations are as in Table 9.1.

	PU	GU	F.	KI	CN	BH	TE	AF
Devon								
Lundy								
St Marks Stone		0.76						
Jenny's Cove	0.51							
Aztec Bay				0.67				
¾ Wall Buttress				0.64				
Gannet's Rock			0.47					
Straight Point				0.43				
Dorset								
Abbotsbury					1.6			
Lodmoor					2.0	3.0		
Chesil Beach								0.60
Brownsea Island					0.8		0.67	

Isles of Scilly

Vickie Heaney, Seabird Ecologist, Isles of Scilly Wildlife Trust

As elsewhere, Covid-19 severely restricted fieldwork options in 2020 and very limited counts were completed. Diurnal playback surveys for storm petrel in July at the sample study sites on St Agnes and Gugh recorded three and 11 Apparently Occupied Sites (AOS) respectively (two & 11 in 2019). Evening surveys of these sites in August and September recorded nine chicks cheeping from AOSs on Gugh (seven in 2019) indicating the continued success of this new breeding site for storm petrels in Scilly since rat removal in 2013/14. Issues with cat predation were again encountered on St Agnes in 2020 and measures are being taken to try and address this.

Other observations and notes from across the archipelago:

- Manx shearwater: successful fledging from St Agnes and Gugh but numbers of chicks encountered (31 total) were down from previous years (45 in 2019) – probably due to peak fledging coinciding with a full moon and a long run of clear skies
- Herring gulls: 19 large chicks from 10 confirmed nests on the rooftops of Hugh Town, St. Mary's
- Kittiwakes: 15 fully built nests on the east side of Gugh, already failed by first week July – no successful breeding in Scilly 2020
- Common terns: reports of ≤ 10 birds settling on Rosevean – two birds seen but no sign of nests or food carrying mid-July – no successful breeding in Scilly 2020
- Lesser black-backed gulls: Successful breeding recorded at the Gugh sub-colony with 100+ chicks mid-July
- Puffins: large counts of rafting birds recorded in mid-July (pre-departure gatherings coincided with calm weather and lots of locals boating)
- Great black-backed gulls: several potential botulism deaths recorded on St Mary's in June & July
- The Isles of Scilly Special Protection Area (SPA) was extended to include 13,000 ha of marine waters around the islands, and to include shag and great black-backed gulls as 'features' – Defra announcement 18 November.



Plate 9.1. Manx shearwater chick, Troytown St Agnes 8th Sept 2020. Image: Vickie Heaney



Plate 9.2. Storm petrel chick, Burnt Island remote camera, 24th August 2020. Image: Vickie Heaney

Cornwall

Mark Grantham, Chairman, Cornwall Bird Watching & Preservation Society

Max count of 17 puffins around The Mouls in summer 2020.

No records from Looe Island in 2020.

An incomplete count of Mullion Island revealed 59 great black-backed gull nests and 53 – 57 cormorant nests (the greatest number since regular monitoring began in 2013, despite being a partial count). GBBG appeared to show very poor productivity (approx. 0.10 chicks per pair fledging), although this has been a recent trend at this site.

Now only three kittiwake colonies remain in Cornwall (cf 13 in 2000). Porthmissen: 360 AONs, minimum 134 chicks; Western Cove, Portreath: 250 AONs. Of 148 monitored nests, 43 failed, 66 fledged young and 39 had an unknown outcome; Trewavas Head: main sites failed completely, but smaller sub-colony managed to raise chicks from 11 of 40 nests. Evidence of within-season interchange with French colonies from rings. Peregrine predation an issue.

Lundy

Dean Woodfin Jones, Lundy Warden

Table 9.3. Productivity results on Lundy 2020. Previous years data shown here in parenthesis (shown as 2019, 2018).

Species	Apparently Occupied Nests / Sites	Number of chicks fledged	Productivity value
Fulmar	36 (31,33)	17 (15,13)	0.47 (0.48,0.39)
Kittiwake	152 (132,106)	101 (77,49)	0.66 (0.59,0.46)
Guillemot	217 (205,192)	165 (141,125)	0.76 (0.69,0.65)
Puffin	261 (250,235)	133 (127,129)	0.51 (0.51,0.55)

South-West Marine Ecosystems in 2020

A full wrap around the island coast on June 16th produced counts of 191 fulmar, 111 shag, 8252 guillemots, 2177 razorbills, 400 puffins, 242 kittiwakes, 602 herring gulls, 145 lesser black-backed gulls and 62 great black-backed gulls. Counts include birds rafting immediately offshore.

Despite 'lockdown' preventing the Conservation Team from getting any volunteers over to help out with seabird studies in 2020, productivity monitoring was carried out as usual with the help of a small number of islanders on a voluntary basis. The productivity of guillemot, puffin, kittiwake and fulmar were surveyed from a total of five sites on Lundy in 2020 (Table 9.1).

Results show another decent year for the St Mark's Stone guillemots with the highest number of chicks managing to fledge from this site in the eight years of monitoring. From observations throughout the season, the level of predation seemed to be rather low at St Mark's, perhaps due to the continued loss of the island breeding herring and lesser black-backed gulls (e.g. 229 pairs of herring gulls were counted in 2018, down 533 pairs since 2000), which may be one of the reasons for this higher productivity value.

A colour-ringed guillemot (Red White: 0114), originally ringed as a nestling on Skomer on 08th July 2013, was once again re-sighted in Jenny's Cove. Here the bird managed to successfully raise a chick to fledgling this year - it is rare for guillemots to breed elsewhere than their natal colony (Tim Birkhead pers. comm.).

Puffin productivity was similar to 2019, with around half of the 261 occupied burrows managing to fledge chicks. To note this is an estimate of productivity as this species is notoriously difficult to monitor accurately.

Kittiwakes had another poor year for productivity but better than that of the last few years. Strong SW winds at the beginning of the egg laying period saw a loss of a number of the more exposed nests low down in each colony. There was no real evidence that birds were struggling to find food throughout the season, particularly when comparing both monitoring sites (Aztec Bay and Three-quarter Wall Buttress), though there were some instances of siblicide noted from both sites in 2020, which inevitably led to the reduction in number of potential fledged birds within a number of nests. Unfortunately, 2020 saw further loss of breeding birds in Three-quarter Wall Buttress site (only 28 nests in 2020), a site which held 123 nests in 2008.

The Gannets' Rock fulmars had an average year for productivity with 17 chicks managing to fledge from 36 occupied sites.

Come July, a superb effort to ring European storm petrels at the North End was made and then in later months Manx shearwater pulli. More details of this can be seen in the report from Tony Taylor (Lundy Field Society). Large rafts of Manx shearwater were recorded offshore periodically at the end of the summer, e.g. 4000 birds on July 7th.

A full island cliff nesting seabird census is due to be carried out by RSPB on June 2021.

Mainland Devon

Ruth Porter, Marine Ornithologist, Natural England

It was a poor breeding season for the kittiwakes at Straight Point, Exmouth. Although numbers of kittiwakes breeding appear to have increased since 2000 (251 AONs in 2020 cf 155 in 2000), productivity was lower than in recent years at 0.43 chicks per pair with widespread failure of nests across the colony. Possibility of peregrine predation as an individual was seen associating with a disused raven nest within the colony, and kittiwakes appeared more successful where nests were in more inaccessible locations.

Dorset

Richard Archer, Conservation Officer, RSPB

Abbotsbury: Common terns – 55 pairs with 1.6 chicks per pair. Unusually, one pair of common terns raised and fledged an abandoned Mediterranean gull chick.

South-West Marine Ecosystems in 2020

Lodmoor: Common terns – 45 pairs with 2 chicks per pair fledging (very high!), partly due to RSPB management measures reducing herring gull predation. 20 pairs of black-headed gulls with incredible productivity of 3 chicks per pair.

Chesil Beach: Little terns – 50 pairs (highest since 100 in 1998). 2020 saw problems with a hedgehog predated 93 eggs, but 0.6 chicks per pair still possible through re-laying. Kestrels supplementary fed to reduce predation.

Poole Harbour: Sandwich terns (Brownsea Lagoon) – 241 pairs in 2020 with 0.67 chicks per pair fledging. Common terns (Brownsea Lagoon) – 164 pairs in 2020 with 0.8 chicks per pair fledging. Mediterranean gull (Gigger's Island) – 155 AONs in 2018 (no data 2020). Black-headed gulls – approx. 4,500 pairs on Gigger's Island with productivity thought to be good.

Roof-nesting gulls

Survey effort in 2020, covering 308 1 km squares in Cornwall, Devon, Dorset and Somerset, was part of a plan to estimate numbers of roof-nesting gulls, funded by Defra and Natural England, and completed by BL Ecology and JNCC. These data will feed into wider analyses for Seabirds Count, using correction factors to adjust for imperfect detection of nests, developed by the Seabird Monitoring Programme. Early indications from uncorrected data suggest that, perhaps unsurprisingly, Cornwall supports comfortably the highest density of roof-nesting herring gulls in England, with Devon also supporting densities in the top five of English counties. Lesser black-backed gulls were also recorded in all south west counties, but at much lower densities than in other counties, and in much lower densities than herring gulls were recorded nesting on roof-tops.

Noteworthy sightings of non-breeding seabirds received

Cornwall

Max count of red-throated divers was 32 off Seaton, 2 March; last bird off Falmouth 24 May, first returning bird on 20 September. Max count of black-throated divers was 24 in Falmouth Bay (usually 40 – 50 +), January; last bird off Coverack 7 June, first returning bird on 12 July in Mount's Bay (very early). Max count of great northern divers was 43 in Mount's Bay, 17 January. One white-billed diver past Cape Cornwall on 27 February. Regular returning Pacific diver – 12th winter – on 25 November off Marazion. A juvenile seen on 6 December in Mount's Bay.

Max counts of most shearwaters was lower than usual (lack of observation because of covid restrictions?), including Balearic shearwater (158) past Coverack on 30 September. One Barolo shearwater off Pendeen, 14 July. Four separate reports of brown boobies, cf 2019. Out of season great shearwater sighted at Pendeen, 10 February.

Occasional sightings of Bonaparte's gull (Camel Estuary) and regularly returning ring-billed gull (Hayle Estuary). One unverified report of Ross's gull, Portscatho, 1 January. Large count of 618 Mediterranean gulls on Camel Estuary, 8 August.

Incidental sightings of American herring gull, Caspian gull, yellow-legged gull, Caspian tern, roseate tern (possibly not British origin, as not ringed).

Apparent trend in recent years for unusual 'double peak' of Arctic skua passage, one in April and one in June.

17 individual sightings from 13 sites of Wilson's petrel. One band-rumped (Madeiran) storm petrel off Pendeen 21, 22 August. Two sightings of black-browed albatross (Pendeen, 19 August; Porthcurno, 2 September).

Unexceptional numbers of most auks, but notably high numbers of puffin (1072, Porthgwarra, 17 March – approx. double typical number expected).

Eight grey phalaropes off Pendeen (10 and 31 October) related to storms pushing birds closer to shore – one snatched by a peregrine.

Lundy

The year started off well with record counts of Red-throated divers foraging and roosting offshore along the east coast in January (max 28 birds on January 24th). This month also saw some good counts of kittiwake throughout (max. 2770 on Jan 29th) as well as good numbers of Mediterranean Gull on days (max 14 on 25th), a species which has become much more common around Lundy in recent years. Cliff-nesting seabirds were seen on breeding ledges periodically throughout the winter months, e.g. 228 Fulmar and 1277 Guillemot on January 18th and two great northern divers spent part of the winter offshore also.

Other winter highlights include two little gulls (the 8th and 9th Lundy records), a number of glaucous gulls throughout and a single black-throated diver on January 23rd. The first Manx shearwaters were seen offshore on February 16th and the first puffin arrived on the cliffs in Jenny's Cove on March 11th.

Additional birding highlights from the rest of the year include a first-year bridled tern and an adult Sabine's gull together offshore on August 26th. Like elsewhere in North Devon, Lundy saw an influx of juvenile yellow-legged gulls at the end of August. Lundy's seventh great crested grebe was photographed offshore from Rat Island on August 7th (Jamie Dunning), only one record of two Balearic shearwaters on the August 20th (a poor year for this species) and a single Pomarine skua was noted offshore on September 24th.

A juvenile white-tailed sea eagle from the Isle of Wight re-introduction scheme spent a few hours on the island on October 16th (Tim Davis & Tim Jones); this is the first white-tailed eagle to visit Lundy for 140 years! A high count of 29 Mediterranean gulls was noted offshore on October 20th and at least one juvenile Iceland gull visited the island on a number of dates in both October and November.

Similar to 2019, 2020 saw a number of unseasonal Manx shearwater sightings along the east coast with two birds on December 11th and 16th and four birds on December 20th.

Updates on Lundy's bird sightings can be found on the Lundybird blog: <http://lundybirds.blogspot.com/>

Mainland Devon

Eleven Balearic shearwaters with over 100 Manx shearwaters, ten gannets and 50 common dolphins, half a mile off Longpoint Quarry, Labrador Bay, 3 August. (Robert Hughes).

Reference:

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

Summary

Where monitoring of breeding colonies was possible, tern species showed a fairly productive year, usually as a result of conservation management. Kittiwakes showed average or worse than average productivity, which is a concern for the south west's dwindling kittiwake colonies. Guillemots showed good productivity on Lundy, but puffins did not – although this species is notoriously difficult to monitor accurately.

Sightings in the non-breeding season were affected by the reduced effort resulting from covid-19 restrictions, with numbers of most shearwater species lower than usual. Occasional rarities were recorded, including two brown boobies (see 2019 SWME report), various scarce gulls and terns, a rare band-rumped storm petrel, and a black-browed albatross.

10. Seals across the South West

Seals in the southwest UK during 2020 written and collated by Sue Sayer from Cornwall Seal Group Research Trust (CSGRT)

sightings@cornwallsealgroup.co.uk



Plate 10.1. Grey seals relaxing on a newly identified seal haul out in Dorset (taken from distance using a superzoom camera). Image: Sarah Hodgson

Introduction

This report has been produced to review the events of 2020 in relation to seal sightings, advocacy and action. Key to this has been the input from other regions around the southwest compiled thanks to the following different authors:

- Channel Isles Alderney: Dr Mel Broadhurst-Allen, Alderney Wildlife Trust
- Dorset: Sarah Hodgson of Dorset Wildlife Trust
- North Devon: Mainland - Kate Williams with data collected by Dave Jenkins
- North Devon: Lundy - Kate Williams with data collected by the Lundy Island Conservation Team
- Somerset: Vanessa Lloyd, Sea Watch Foundation

All the authors represent their teams of volunteers who are to be commended for a fantastic and ongoing collaborative effort despite the COVID-19 pandemic.

Seal species in the southwest

Common seals:

CSGRT had 82 reports of 118 common seal sightings

Grey seals:

All other records were grey seals.

Advocacy for seals by the Cornwall Seal Group Research Trust



Plate 10.2. Fifteen fascinating facts about grey seals.

We began 2020 with four paid rangers. At the start of 2020, our Rangers and activities were funded by The People’s Postcode Lottery (Postcode Local Trust), Heritage Lottery Fund, Heritage Emergency Fund, Natural England, TEVI, LUSH Cosmetics, TESCO Bags of Help, Seal Protection Action Group, Polzeath Marine Conservation Group, Three Bays Wildlife, Animal Friends, Aspects Holidays, Fourth Element, Mungo Lils on the Hill, Rowes Cornish Bakers, The Bowgie Inn, SeaChangers, Waterhaul, The University of Exeter and our incredible volunteer fundraising efforts and donations. However, during 2020, funding ran out and COVID-19 made finance challenging. As a result, we ran our first ever Crowdfunder Appeal. Thanks to everyone’s huge generosity and a lot of hard work by our team, we surpassed our target and raised a total of £21,963.

In 2020, our part time Rangers were:

- Amazement and Discovery/Photo ID Ranger (Marion Beaulieu)
- Creativity and Activity Ranger (Emily Pollitt)
- Retail Ranger (Joe Gray)
- Sanctuaries at Sea Ranger (Sarah Millward)
- Seal Research Ranger (Katie Bellman)

Emily moved on to pastures new and we were joined by Joe. All our rangers are thankfully funded until end of Feb 2022 by the Heritage Lottery Green Recovery Challenge Fund. We also welcomed lots of new hub and administrative volunteers and several key volunteers:

- Photo ID coordinator – Kate Williams, who organises our ID work and responds to all emails sent into the sightings@cornwallsealgroup.co.uk email account
- Data Manager and Wild Seal Supporter Scheme Coordinator – Karen Gaudern. Karen digitises the majority of survey albums generated each month and ensures our Wild Seal Supporter and Adoption Scheme runs like clockwork
- Treasurer – Lesley Fitt, a passionate advocate for marine conservation.

Going forward, we hope to sustain our Rangers by increasing our self-generated funding streams through our online shop (gifts and clothing), our Wild Seal Supporter and Adoption Scheme, and private / corporate donations. Huge thanks to everyone who has contributed to this incredible achievement.

Fibre broadband at CSGRT HQ helped us access our IT network remotely and share seal stories online a bit faster. This helped us to deliver 53 free talks, 14 free events and 53 free online training workshops for our volunteers directly engaging with 8652+ beneficiaries from all age groups. This shared our learning about the southwest's globally rare, speciality species and how best to help them at work, rest and play. In return, Mevagissey Museum won a Cornwall Heritage Innovation Award for their partnership with us and our *Septimus* exhibition and CSGRT got a mention in the House of Lords.

The COVID-19 pandemic forced us out of our comfort zones to learn new skills that enabled us to move our conservation work online to new audiences further afield. Our news went around the world via our four global partners, website and social media – our Facebook page has 6,141 followers (up 30%); our Instagram page has 2671 followers (up 84%); our Twitter account has 893 followers and we set up a new CSGRT YouTube channel in May 2020. Our online talks, training and videos had 4,440 views in 2020. Incredibly our Lucky bunting rescue video on our old YouTube channel had 836,970 views - mostly in India!

Southwest regional seal data summary

Thanks to an incredible 365 volunteers, we were able to process a total of 4,438 survey 'events' in 2020 (that's over 12 each and every day with the Lizard team managing daily surveys for yet another year!) Working within government COVID-19 guidelines these included six boat Photo ID Project transects and two of our quarterly seal censuses. Sadly, we had a big miss this year, as we were unable to do any of our Looe Photo ID Project surveys down to a combination of COVID-19, weather and sea conditions. It is a good job Assistant Warden Claire Lewis keeps routine records for us year-round. Our surveys covered a total of 280 different seal locations. This was down on 2019, but not really surprising considering the COVID-19 pandemic. On average nine seals were recorded per survey from a minimum of zero to a maximum of 596. Overall, of the seals that we could accurately age and sex, 73% were adults and 27% juveniles. Of the adults we could confidently sex, 57% were male and 43% female.

Our community based volunteer Photo ID Hubs processed a truly remarkable 139,704 photos in 2020 and generated a total of 12,162 seal identifications of which 86% were re-identifications. This included our new maximum of 122 different individual seal identifications in a single survey that were confirmed by two experienced volunteers. Of all the seals re-identified, seven were seals we first added to our catalogues back in 2000 (four males and three females).

Entanglement

777 observations of entangled seals were recorded up to a maximum of 19 entangled (current or ex) on a single survey. 94 different entangled seals were identified on 492 occasions.

Disturbance

From our routine data (not effort-corrected), disturbance was down this year, perhaps as a result of the Covid-19 pandemic. Serious level 3 disturbance incidents dropped from 141 to 64 and seals affected from 614 to 192 during lockdown between February and July inclusive. Things then deteriorated with August being our worst August on record for the number of seals affected (150 seals). In total, we recorded 221 different disturbance incidents (of which 156 were serious level 3) with 1,319 individual seal reactions (of which 946 were serious level 3), all of which were likely to impact seal metabolisms and physiology.

Post release monitoring or rescues and rehabilitated seals

On a more positive note, there were 790 sightings of ex-rehabilitated tagged seals up to a maximum of 12 on one survey. In total 121 different individual tagged seals were identified post release back to the wild. These had been released from the Gower in southwest Wales to the north, Combe Martin to the northeast, the Isles of Scilly to the west, Lizard to the south and Sidmouth to the east.

Reports

All this data provided CSGRT with a robust evidence base from which we wrote 15 reports including four for publication (a 'Post release monitoring' paper for Marine Mammal Science currently in review, our 'Grey Seal pupping sites in Cornwall 2019/2020' for Natural England, the 'Human Activity and Seal Interactions' report for the Cornwall Marine and Coastal Code Group and we edited the Southwest Marine Ecosystems Seal Report.)

Policy and conservation

CSGRT used the evidence collated to give seals a voice in 36 public consultation submissions, as wide ranging as the Southwest Marine Spatial Plan, the Responsible Fishing Port Scheme, the Southwest Coast Path, OCR's Natural History GCSE, Fishing Fixed Net Byelaws, the AONB Management Plan, Cornwall's Marine Nature Recovery Priorities and amending the Conservation of Seals Act with a range of statutory agencies coordinated by DEFRA. This was the biggest conservation gain for seals in CSGRT's 20-year history, as amendments in 2020 to the Conservation of Seals Act will (in March 2021) outlaw the taking, injuring and killing by any means of seals in the UK.

CSGRT represented seals at the two Seal Network UK meetings chaired by DEFRA online in March and November 2020 and hosted a socially distanced visit by Vicky Bendall, the DEFRA Seals and Seabirds Policy Advisor.

Sue Sayer chaired the newly formed Seal Alliance's Disturbance Working Group which held eight meetings from April 2020 building upon informal links to share expertise in the hope of being able to standardise advice and messaging going forward. CSGRT were invited to represent seals on the National Steering Group for a new statutory organisation aimed at reducing wildlife bycatch – Clean Catch UK led by DEFRA.

At the start of lockdown, CSGRT approached Natural England to review the Aire Point to Carrick Du Site of Special Scientific Interest and seals have been confirmed as a monitored species across this protected area. This is now the third SSSI in Cornwall where seals are features of interest and well protected legally even from disturbance.

We partnered with Perran Sands Holiday Park to design a large sign about seals and our new banners were put up by the National Trust on the Roseland and the Bowgie Inn. CSGRT agreed pupping signs that were erected temporarily on the Lizard (by Natural England) and the Roseland (by the National Trust and volunteers) to reduce disturbance. We partnered with British Divers Marine Life Rescue in a pup watch at Pentire where signs were also designed, agreed and put up by the National Trust along with new clifftop fencing to protect 'Lucky bunting' and her pup 'Little flag' from clifftop footfall and disturbance. The Roseland haul out had fencing too. CSGRT also created advisory signs for Dorset and Carbis Bay where juvenile grey seals had been actively engaging with swimmers. Thank you to all the volunteers who participated in this valuable ambassadorial work.

Lockdown impacted our ability to communicate with our supporters and the public, so CSGRT transformed our operational procedures, set up a new remotely accessible IT network and went online. Our supporters benefitted, as newsletter subscribers (<http://eepurl.com/dHdy3j>) were able to access new virtual monthly meetings. We held an incredible 341 conference calls and meetings with volunteers, partner organisations, business networks and statutory agencies. CSGRT's 20th birthday was celebrated with a virtual conference attended by 700+ people. Incredibly, Covid-19 has changed our charity and seal conservation for the better forever.

As in previous years we continued to share evidence, information and advice with four global partners – World Animal Protection, the Global Ghost Gear Initiative, the Pinniped Entanglement Group and the 5 Gyres Trawlshare Microplastics Project.

In 2020, CSGRT featured in 43 written articles for organisations such as the Pinniped Entanglement Group, Global Ghost Gear Initiative Newsletters, Finisterre, Cornwall and the Isles of Scilly Local Nature Partnership, the SW Coast Path, Cornwall Wildlife Trust, Cornwall and Devon Mammal Groups.

CSGRT and seals were discussed in three live radio interviews from BBC Radio 4's nature table to Radio Cornwall interviews about seal pups and our Green Recovery Challenge Fund grant. CSGRT took part in three high profile TV series including Countryfile and Springwatch earlier in the year and Simon Reeve in Cornwall that was watched by three million viewers in November. Several clips also featured in local news programmes throughout the year.

Our exhibition and activity resources grew again this year. Our Virtual Reality experience, where people of all ages and abilities can explore the anatomical features of our seal skeletons was launched and proved a great hit prior to lockdown. We created a series of nine online activities for families to share during lockdown and these are available to download for free from our online shop. We also have new Seal Adaptation leaflets, 15 Fascinating Fact Infographics, a Timeline of CSGRT's first 20 years and Top Ecotips to give away to inspire eco action at home.

Monthly summary and seasonal phenology shifts

The beauty of long-term data sets is that we can begin to spot changes. Phenology shifts appear to be taking place in the southwest. Peak haul out season for seals was earlier moving from April in 2013/14 to March (for 5 years) to Feb (for 2 years) and even Jan and Dec (for 1 year each). Likewise, the pupping season, that used to peak in October, has moved to September for the last 2 years and is shorter and more compressed than it used to be. Alongside this, seals have recolonised new haul outs not previously recorded by CSGRT on the Lizard and at West Cornwall, whilst haul outs have shifted from one side of the headland to the other on the Roseland.

In January, we discovered that adult female, BRF20 'Tulip place holder', who has an extremely swollen and blind right eye has actually survived in this condition since 2012 – she seems to spend the summer in the Fal or on the Lizard and the winter on the Roseland haul out. Sarah Greenslade took a photo of a seal launching itself vertically out of the water that had us amazed. Then, true to form, adult male 'Arrow Flight' made his usual short winter visit to the north coast from his favourite haunt in Mounts Bay.

In February, it was a great relief that LF80 'Brittany' and another unidentified seal actually turned up during filming for Countryfile for our 100th Looe survey. Like 'Arrowflight' adult female SCF1 'Kelp' also turned up at West Cornwall from Mounts Bay – this was only the 5th time since 2008 that we have seen her on the north coast. Great news was to be had from Fowey too as FRC1 'Serena Lowen' the common seal was recorded there again. It was wonderful to host a West Cornwall Fieldcraft Day for the University of Exeter despite the beach having been recently scoured of its top layers of sand revealing more rocks below.

Our monthly meetings became 'virtual' in March as we all learned new skills as fast as we could. Meetings started with a bang, as Looe's LF8 'Lucille' amazed us all by hauling out in south Devon! She now links south Devon to north Cornwall where she was identified in 2017. Kate Hockley and Sue Sayer celebrated by wearing their glad rags as their voluntary contributions were recognised in Soroptimist Award nominations. Adult male BRX70 'Crinkle' delighted The Seal Project team in south Devon by linking them up with Dorset as they started a new adventure conducting

boat surveys. S38 'Thistle clubs', first ID'd in 2002 was photographed with three entangled seals all lined up on the beach. Then lockdown hit! Some of our luckiest volunteers were able to exercise to their seal site. Fortunately, their survey photos kept our spirits up. LM72 'One spot 2' was re-identified back in south Devon for the first time after lots of identifications in Looe, the Roseland and the Lizard.

April got off to a sad start after ex RSPCA rehab seal 'Vobster' who was released in north Devon was found bycaught off the northwest coast of France - RIP. Fortunately, our spirits were soon lifted after we recorded some interesting prone howling and body slapping behaviour by a sub adult adolescent male. BRX139 'Easter bunny' put in an appearance in south Devon with a shawl of plastic sack around her neck, which fortunately disappeared soon afterwards. Adult male LM46 'Wiggins' turned up in Mevagissey again and adult male common seal LC18 'Ellis' returned to the Roseland as lockdown continued. Oblivious to world affairs, DP927 'Clockwork seal' put in his usual April appearance at West Cornwall and we are left wondering where else he goes when he is off our radar.

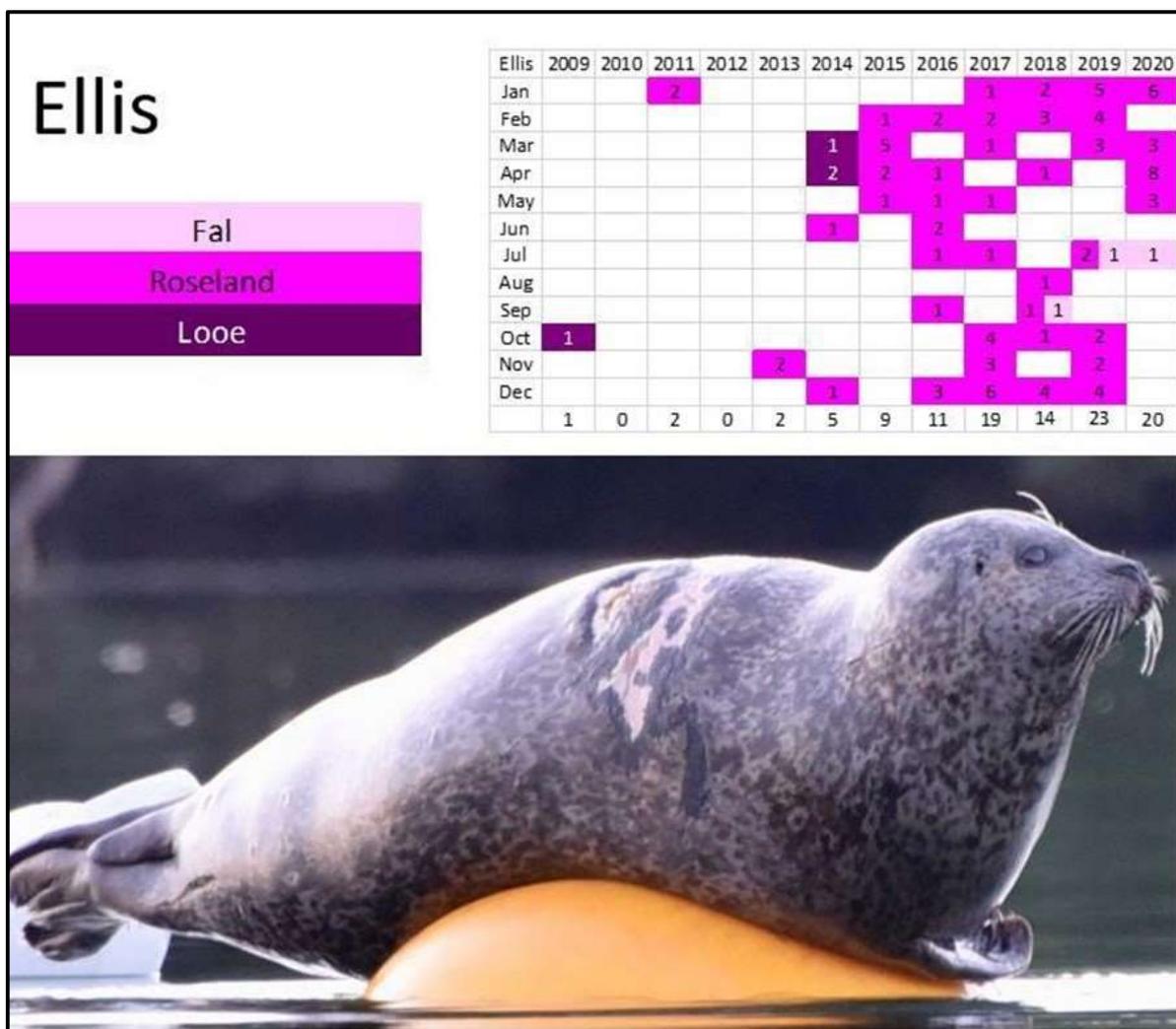


Figure 10.1 / Plate 10.3. Common seal *Phoca vitulina* 'Ellis' with confirmed sightings along the south Cornwall coast.

Devastation hit in May as we lost one of CSGRT's founder members – the legend that was Tim Bain. RIP great man. We also learned from research that seal mums must leave their pups at three weeks in order to survive the energy loss created by feeding them. We became more confident about our online talks and even did some for Maritime UK. It got busy again in north Devon as 57 seals we re-identified during 27 surveys with Starfish being identified ten times in May alone and tagged seal RSPCA's Wookey was photographed hauled out. In December, he became our first link between north Devon and Gower. We had been helping identify an old adult male Bertus in Holland and we were relieved to find that he was still alive after a carcass washed up nearby. The Fal became a popular haul out spot for adult females on human structures as the rest of us enjoyed a range of nesting birds on our daily exercise.

In June, we enjoyed a behind the scenes experience during Springwatch filming with our patron Gillian Burke was able to meet Augusta whilst recording for our Crowdfunder film.

Kate Williams had an extraordinary experience at Portreath as she watched a sudden rush of ten seals exiting a cave all at once beneath her. Teresa Boulden spotted ex rehab seal 'Puffa' at Pendeen from 2003. The Lizard team got great photos of three of their favourites...LIZ112 'Two fishes', LIZ15 'Key' and LIZ860 'Fidget'. Not to be outdone, S161 'Crosscomb' put in an appearance in a blowhole rockpool in the middle of the West Cornwall wave cut platform...she is the only seal we have ever seen access this pool from underwater. The Seal Project were sad to identify a beautiful dead adult male seal as TOR13 'Sidney'. RIP.

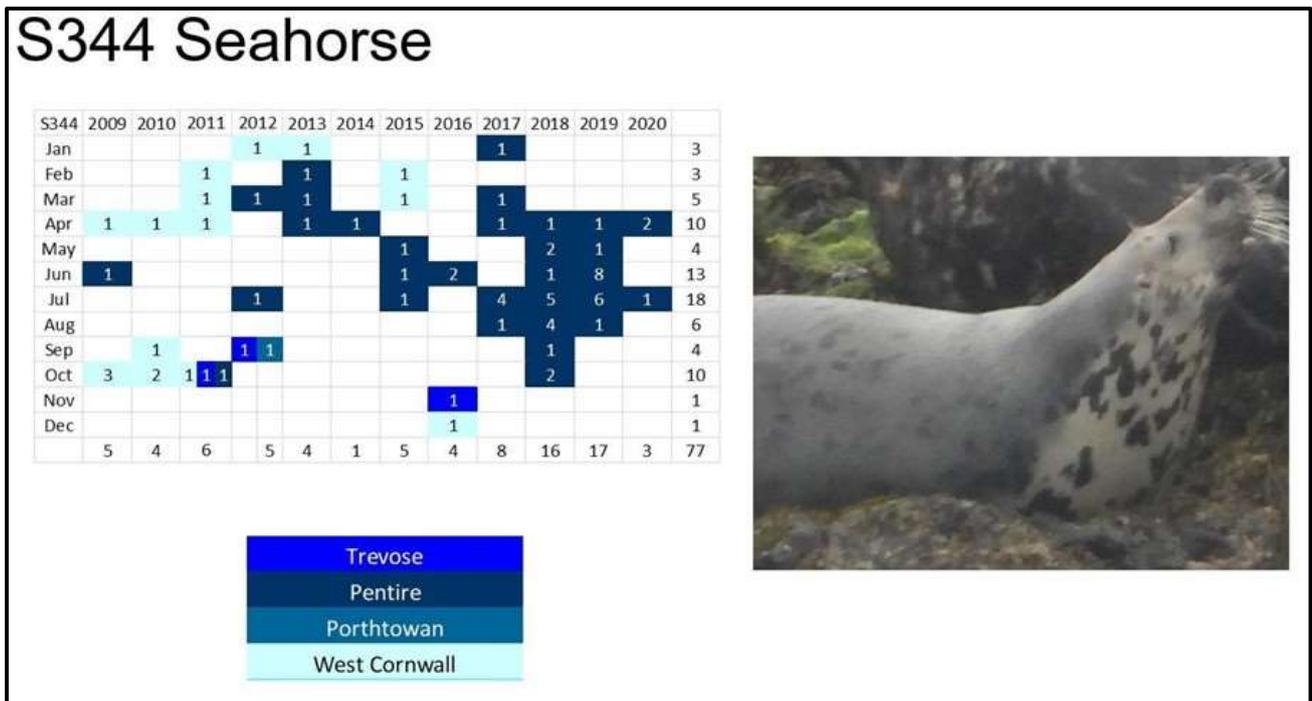


Figure 10.2 / Plate 10.4. Grey seal *Halichoerus grypus* 'Seahorse' with confirmed sightings along the north Cornwall coast.

The pupping season started with four dead pups (2 from late June) at Porth, St Mary's, Portreath and Torbay – the last of which was tiny and obviously premature. To help pups, we shared messages about the impact of disturbance on mums in the summer which was picked up by the Telegraph newspaper. July was a month of filming, as we went out with crews from Cornwall Climate Care, BBC Spotlight and Beagle Media. Our seals hauled out on cue to greet Simon Reeve and he was introduced to NF8 'Radley', S466 'Skinny H', S344 'Seahorse' in turn. Still with no Ranger funding after August, our Sharing our Seas: Seals and People Virtual Conference took place over a week to be followed by the launch of our all-important Crowdfunder. Massive thanks again for everyone's amazing support. We continued to enjoy Andy Roger's monthly updates sharing all his natural highlights from Pentire. This was the month lockdown was lifted. This roller coaster month ended with a sealy low, as poor entangled S524 'Legs' returned with a new bobbly lesion on her neck and a high, with a beautiful photo of LC18 'Ellis' hauled on a mooring buoy in the Fal.

As pupping season took off in August, so did disturbance records all-round the southwest. A juvenile seal called 'Sammy' became far too interested in people as visitors returned to his favourite beaches in Weymouth – fortunately he was watched over by an amazing local volunteer team who kept him safe. We are very grateful to Ghost Net Busters who did a very early morning removal of some lost fishing gear from the Pentire offshore haul out without disturbing any seals. Matt and Lucy got a great record of four seals hauled out at Dawlish as S89 'Wings', S326 'Box Desk' and S347 'Spade' all delighted visitors in St Ives Harbour and the haul out returned to the mainland at West Cornwall. The month ended sadly with the demise of LP306 'Wide eyes wolf' at around the age of six years old. RIP.

South-West Marine Ecosystems in 2020

No. of seals	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	
Jan	26	84	22	76	12	182	94	188	154	218	1115
Feb	34	15	21	27	73	17	52	5	140	15	399
Mar	55	125	27	55	113	80	94	63	108	25	747
Apr	58	91	164	186	362	39	123	305	14	10	1354
May	50	33	118	169	135	35	65	31	62	56	754
Jun	14	32	22	49	14	21	49	57	39	26	324
Jul	32	78	42	65	40	131	98	105	251	60	903
Aug	71	22	68	24	82	25	119	145	126	150	835
Sep	84	25	81	176	74	81	70	61	58	50	763
Oct	12	68	80	53	63	121	31	75	341	53	897
Nov	42	7	14	83	14	20	174	37	127	147	665
Dec	151	1	30	36	13	127	84	232	124	136	934
	629	581	689	999	995	879	1053	1304	1544	946	
Incidents	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	
Jan	3	9	3	6	5	13	13	3	11	13	80
Feb	3	3	4	2	6	3	3	2	6	5	37
Mar	5	2	2	11	8	7	9	6	7	4	62
Apr	13	3	20	19	16	3	19	13	3	4	114
May	6	5	13	17	14	3	9	12	17	15	111
Jun	3	7	6	12	5	5	10	19	22	14	104
Jul	6	23	20	8	10	15	15	27	86	22	233
Aug	11	6	12	9	20	12	13	26	50	37	199
Sep	12	8	19	17	15	16	19	15	17	17	157
Oct	3	8	10	10	8	6	14	9	23	10	101
Nov	6	1	4	8	2	5	15	4	2	8	55
Dec	9	1	4	4	2	10	6	9	12	7	64
	80	76	117	123	111	98	145	145	256	156	

Figure 10.3. CSGRT level 3 (serious) disturbance data.

A seal was recorded behaving strangely in September by the Padstow Ferry Skipper in the River Camel and to our amazement this turned out to be BRX4 ‘Flower’ from south Devon – behaving normally for her. LP41 ‘Jenga’ became the first ever ex-rehabilitated male seal to be recorded mating at Porthtowan – his chosen female was S451 ‘Skateboard’. A ‘chocolate orange’ stained seal and a premature pup were recorded on Gower by Gareth. We called Ghost Net Busters out for another low-profile removal of trawl net from a secluded pupping beach. As pupping season peaked, CSGRT partnered with BDMLR to rescue a pup (named Empanada by the Cornish Seal Sanctuary) from West Cornwall. We finally got out on the first boat survey PIPs of the year – wearing masks of course...our new ones designed by Rowes Cornish Bakers. The common dolphins seemed delighted and we had one of our best ever experiences with them in glassy seas that will live long in our memories.

Keeping up to date with pups, kept us hugely busy in October and there were lot of highlights. Investigations with other research organisations suggest our seal S112 ‘Ghost’ is a world record breaking mum. We were delighted that she returned to have her 17th pup in 18 years – right on cue. She hung around for 24 days – a good sign for her pup! S240 ‘Hanging eyes’ was hot on her heels returning after an absence of 2.5 years to have her 12th pup in 14 years. TOR2 ‘Sammy’ and TOR5 ‘Nipper’ had their pups on the same beach in south Devon.

Rob Wells celebrated as there were late pups – two firsts! One on the historical mainland haul out beach on the Roseland watched over by Kerstin and the second on his local St Austell Bay haul out. We recorded two seals painfully hooked in their sensitive muzzles in St Ives Bay. Louise Secker discovered an exciting link up between Lundy and North Cornwall by LUN533 ‘Owl eyes Podium’ who we have tracked since 2012 and our Hub teams found a link between Lizard South and south Devon. Tagged seals provide invaluable information as they can be accurately aged and reveal that older seals are not always longer/bigger as shown by LP123 ‘Ugg’ and LP228 ‘Orion’. It was a bumper month for tagged seal sightings and a tagged seal from the Roseland turned out to be an entirely new link up as ROS1000 ‘Morgan’ had been rehabbed by RSPCA Mallydams and released in Sidmouth in 2018.

December was seabird month, as the phenomenon of 'snowing gannets' returned to the north coast. Clean Ocean Sailing approached us about a large gill net on the Roseland and they partnered seamlessly with our local hub to successfully remove it. Thank goodness as this was another bad month for entangled seal sightings. LIZ35 'Quaver star' put in her occasional visit at West Cornwall, although she seemed to have a respiratory infection. Sadly LP182 'Stinkweed' (an ex-RSPCA rehabilitated seal) was found dead at Hayle – another adult male to die in his prime – 11 years old – RIP. More tagged seal news came as Andrea Hunt identified a second Mallydams seal called LP649 'Panda' at West Cornwall, which was the first ever link between the Gower and Cornwall. Then, LP5650 'Empanada' (mentioned above) delighted us as she swam right around the treacherous Land's End seas from her Lizard release site on the south coast to appear back on the north coast beach she was rescued from. This is a minimum journey of 75km navigated in just 12 days at the ripe old age of three months! Another seal to turn up on cue was S923 'U cup head' who made her one visit to West Cornwall on 09/12/20, as adult female S253 'Scales of Balance' did her usual West Cornwall to North Cornwall commute in less than four days.

Conclusion

Collectively, we continue to learn that there is no such thing as an 'average' seal: like us, they are all doing their own individual thing. They know what they are doing - we just haven't caught up yet. Our photo identification work continues to demonstrate how far our seals swim and how much they depend on joined up and protected coastal habitat. Our photo ID works has helped us to realise just how complicated seal society is and the impacts we are all having on their health and welfare.

Massive thanks to all our volunteers across our Wales, Somerset, Devon, Cornwall, Dorset and Hampshire network, who make these incredible discoveries possible. This huge team effort makes our globally rare grey seals the most intensively studied in the world.

Updates from around the southwest region

Alderney on the Channel Islands by Dr Mel Broadhurst-Allen, Alderney Wildlife Trust

2020 research reports and projects

During 2020, the Alderney Wildlife Trust (AWT) completed a small number of vessel-based observation surveys for marine mammals across Alderney. This included one grey seal population assessment, during the early part of their breeding season.

The vessel based surveys recorded groups of 21 – 45 grey seal individuals, which is the largest number of grey seal individuals grouped together within the survey area (Alderney offshore islets, such as the Renoquet Reefs). These surveys identified that the recorded grey seal individuals ranged from young weaners to old adults, of both sexes.

Photographs of the grey seal individuals were taken during these surveys and added to a basic seal photographic identification catalogue (individuals photographed across the Bailiwick of Guernsey: Alderney, Guernsey, Herm and Sark).

Seal sightings and notable highlights

A notable highlight of 2020 was the large number of grey seal sightings submitted by the public to the AWT.

Several photographs taken by the public and similar seal surveys completed in Guernsey helped identify two grey seal individuals to be present on both Alderney and Guernsey during 2020.

Management actions

Due to the Covid-19 pandemic and subsequent restrictions, little management actions were implemented in 2020.

Dorset by Sarah Hodgson, Dorset Wildlife Trust

Seal sightings and notable highlights

Despite Covid-19 and a series of national lockdowns, the highest ever number of seal sightings were recorded in Dorset during 2020 (201 sightings), up 134% on the previous year, although 2018 and 2019 had been particularly poor years in terms of sightings. It should be noted that this data is only ad hoc casual sightings data rather than as a result of effort-based surveying so conclusions about the variance in abundance and distribution of seals cannot be drawn.

As in previous years, grey seals were spotted most frequently, with grey seals accounting for 80% of sightings where the species could be identified. Seals were recorded throughout the year, but sightings increased during the period between June and September. During the first lockdown in April a new seal haul out was identified along the Dorset coast and up to three grey seals were seen to be using the resting spot over several days.

An additional 15 seals were added to the Dorset seal photo ID catalogue, bringing the total to 73 up to the end of 2020. There were 42 re-identifications of 14 different seals. Some were matched on multiple occasions including the very first one that was added to the Dorset catalogue in 2014 which was seen a further 11 times in 2020.

In 2020 the first South Devon-Dorset seal match was discovered with an adult male seal known as Crinkle observed around south Devon and west Dorset. After sharing the Dorset catalogue with other Cornwall Seal Group Research Trust photo ID hubs, another seal, which was recorded in Dorset in 2015, was recognised and is known to have been seen around the Exe estuary.

Rescues and rehabilitation

BDMLR and/or the RSPCA have been called out to check on a number of seals in Dorset during the course of the year, including one common seal and several grey seals, however, one individual seal was the reason behind the majority of calls (see below).

Human impacts

In June, there was much concern for a young grey seal which began to haul out on a busy public beach. The juvenile male was in good health but seemed somewhat tolerant of humans. Unfortunately, there were reports of some antisocial behaviour directed towards the seal. However, the seal continued to haul out on a very regular basis for the remainder of the year. A dedicated team of local volunteers started a seal patrol to try and keep people back but this wasn't always possible and despite educational posters, on-site volunteers and advice in the local press and on social media from multiple agencies and organisations, there were further interactions between the seal and beach goers/water users. As the year progressed so did the level of interactions as the seal became more habituated and this resulted in a couple of incidents where swimmers suffered minor scratches and bites.

Strandings and PMEs

Six dead seals were discovered along the Dorset Coast in 2020, four were unidentifiable due to decomposition; two were grey seals. There were no post-mortem examinations carried so the cause of death remains unknown. One of the deceased grey seal pups was seen alive but with a cough in the days preceding its death but sadly rescuers were unable to capture it to take it into a rehabilitation facility in time.

North Devon by Kate Williams Photo ID Coordinator Cornwall Seal Group Research Trust

Seal sightings and notable highlights

Surveying continued in North Devon as the main surveyor is local to the area. Numbers appear quite static reflecting the same trends as previous years, numbers building to a maximum of about 25 adult female seals in August. Disturbance remained an issue, these females are pregnant and it is important that they are not disturbed.

Interestingly in 2020, witnessed disturbances came mainly from shoreside with more people using the coast for exercise and relaxation during the stressful restrictions. People took to climbing down across the rocks to go fishing, if this didn't disturb the seals from the rocks then it stopped them hauling out that day. North Devon was packed with holiday makers staying in the UK and the coast path was extremely busy all summer. The regular seals identified using photo ID returned and we were happy to see them. Two young flipper tagged seals were photographed and identified as seals that were rehabilitated at RSPCA West Hatch.

Lundy by Kate Williams Photo ID Coordinator Cornwall Seal Group Research Trust

The Lundy Conservation Team did their best to survey for seals despite being low on volunteers due to the restrictions. Pupping season was monitored and at least seven females were re-identified using photo ID as returning to have their pup on Lundy again.

Lundy. Dean Woodfin Jones (Lundy Warden) (Extract from the Lundy Field Society Annual Report)

A detailed report (referenced below) is included in the Lundy Field Society Annual Report for 2020 and the following summary is by Dean Jones (Lundy Warden).



Plate 10.5. Atlantic Grey Seals hauled out below the Mousehole & Trap on August 4th 2020. Image: Dean Jones

The Atlantic Grey seal population has been monitored annually on Lundy since 2011 and to a varying degree beforehand. The highest count of seals in the 2020 survey, carried out by the Lundy Conservation Team on 24 Aug, was 218 (121 females, 17 males, 47 juveniles, one white-coat pup and 32 animals of undetermined sex) – the third highest number recorded around Lundy's shores (the highest count to date being 239 animals in August 2011). This compares with 206 in 2019 and 223 in 2018, and 42 more animals than the mean highest counts since 2006. Similar to the surveys of 2017 to 2019, the majority of seals around the island were females, with some showing obvious signs of pregnancy in some of the popular haul-out areas, especially at the start of the land-based surveys. After the initial counts at the start of the season, the number of female seals dropped slightly, possibly due to some of the pregnant females moving into the island's inaccessible coastal caves to pup, or to other areas in South West England after conditioning themselves in Lundy waters. As in previous years, an increase in males around the island was evident by mid-September compared to the start of August, likely to be turning up to patrol beaches for females in order to conceive next year's pups.

Jones, D. W. *et al.* 2021. Atlantic grey seal *Halichoerus grypus* populations and productivity studies in 2020. *Report of the Lundy Field Society* 70. (Available via: <https://www.lundy.org.uk/publications/annual-report>)

Somerset by Vanessa Lloyd, Sea Watch Foundation

Seal sightings and notable highlights

All seal sightings were collated as part of a Sea Watch Foundation Regional Coordinator volunteer role covering north Somerset, Somerset and Exmoor. A total of 27 effort surveys were completed in 2020 which yielded three sightings of grey seals at Portishead in March and Hurlstone Point in June and August.

There were also a total of 11 casual sightings, five grey seals and two common seals, including a pregnant female common seal resting on the sand banks at Burnham-on-Sea. The remaining four sightings were recorded as unidentified seals. Sightings were recorded in Lee Bay, Hurlstone point, Minehead, Clevedon and Portishead. In November a juvenile male grey seal, named 'Jeff' by the locals, took to resting on the slipway of Minehead harbour for a few days.

Research reports and projects

The aim for 2020, in collaboration with the Somerset Wildlife Trust, was to complete effort surveys every month at a different location to help boost sightings data and to provide a clearer picture of abundance and distribution of marine mammals along Somerset's coast. Despite the COVID-19 restrictions seven new locations were surveyed and online training sessions took place which has boosted the number of regular observers. Future training days will assist with survey methodology and marine mammal identification, with the aim to help increase the number of regular volunteer observers completing effort surveys independently. Details of events and annual reports can be found on Somerset Wildlife Trust and Sea Watch webpages.

11. Cetaceans

Editors: Dan Jarvis, Duncan Jones, Abby Crosby, Bob Earll and Keith Hiscock

All cetaceans – Cornwall

Contact: Abby Crosby (abby.crosby@cornwallwildlifetrust.org.uk)

The number of sightings and reports of strandings was greatly reduced in 2020 compared to previous years largely because of reduced access to shores and the sea during COVID-19 restrictions.

Table 11.1 Number of live sighting records per species for 2020 (one record may consist of many individual animals)

Species	Total in 2020
Bottlenose dolphin	51
Common dolphin	1408
Harbour porpoise	639
Minke whale	76
Pilot whale	7
Risso's Dolphin	31
Fin whale	8
Humpback whale	38
Sei whale	1

Table 11.2 Cetacean stranding total by species in 2020 and compared with data in the report for 2019

Species	2020	2019	Average 2009-2018 (from the SWME Report for 2019)
Bottlenose dolphin	2	54	106.2
Common dolphin	119	729	201.2
White-beaked dolphin	-	3	1.7
Harbour porpoise	23	594	435.7
Minke whale	2	-	-
Pilot whale	1	-	-
Risso's Dolphin	3	30	39.2
Long-finned Pilot Whale	1	2	2.4
Cuvier's beaked whale	1	-	-
Whale sp.	1	[not included]	-
Cetacean sp.	13	[not included]	-
Dolphin sp.	36	[not included]	-
TOTAL	202	1463	

All cetaceans – Somerset

Table 11.3 All cetacean sightings from Somerset

Species	2018	2019	2020
Bottlenose dolphin	2	0	0
Common dolphin	2	0	1
Harbour porpoise	34	21	37
Unidentified cetacean	0	2	2

Contact: https://www.somersetwildlife.org/sites/default/files/2021-02/SomersetExmoorSeaWatchreport_2020.pdf

Baleen whales (Mysticetes).

Contact: Dan Jarvis (dan@bdmlr.org.uk)

Data contributed by Abby Crosby (Environmental Records Centre for Cornwall and the Isles of Scilly/Cornwall Wildlife Trust); Duncan Jones (Marine Discovery Penzance); Jenny Simpson (Padstow Sea Safaris); Nikki Banfield (Isles of Scilly Wildlife Trust); Ellie Knott (Devon Biological Records Centre); Dean Woodfin Jones (Lundy) and other observations sent in by SWME members.

Summary

This was a bumper year for baleen whale sightings in South West England. Four species were observed, with record numbers of sightings of humpback and fin whales, and a near-record number of minke whale sightings recorded. Figure 11.1, below, shows the number of sightings reported to the Cornwall Wildlife Trust’s Sequest database and the Environmental Records Centre for Cornwall and the Isles of Scilly, and comprises the largest single dataset for cetacean sightings in the region.

Baleen whale species seasonality appears to be following trends that have recently been identified, with minke whales appearing mostly during Spring and Summer. Meanwhile the sei, fin and humpbacks seem to be occasional visitors during Summer, and humpbacks increasing during Winter.

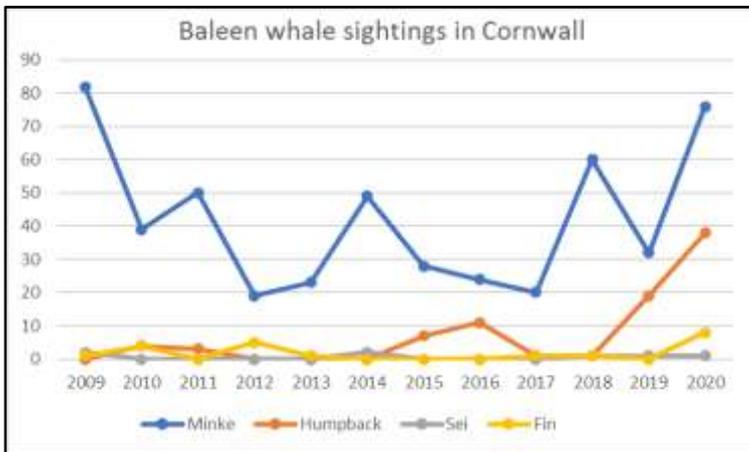


Figure 11.1. Baleen whale sightings in Cornwall from CWT and ERCCIS data only (Cornwall Wildlife Trust/Environmental Records Centre for Cornwall and the Isles of Scilly).

Minke whale (*Balaenoptera acutorostrata*)



Plate 11.1. Minke whale sighting in Padstow Bay. Image: Jenny Simpson/Padstow Sea Safaris

In total there were 82 records of minke whale sightings collected from South West England in 2020. The first sighting of the year came in February, when one was seen off St Ives, followed by a single sighting in March of an individual in Fal Bay. As with previous years, sightings began to increase in Spring and peaked in Summer, before quickly winding down again in Autumn. Occasional sightings continued into Winter as well, and in fact January was the only month of the year to have no minke whales reported.

The large majority of sightings were of individual animals, but there were a few sightings of two or three animals though they were mostly not obviously associating with one another and were separated by some distance and time. However, from the Lundy Field Society Annual Report for 2020: "30 Jul – two travelling in tandem and seen from the Oldenburg just after Bull Point on the crossing to Lundy (Derek Green)". Many of the sightings came from around the west of Cornwall from Mount's Bay around to St Ives, but there were also clusters of sightings around Padstow Bay, Fal Bay and Gerran's Bay as well. Occasional sightings were also reported from Fowey, St Agnes, Plymouth and between North Devon and Lundy (Plate 11.1).

There were two strandings of dead individuals in 2020. One was a juvenile female at Towan beach, near Portscatho in South Cornwall during May, while the other was an adult female on the island of St Martin's, Isles of Scilly in December. A small minke whale stranded alive in May, also at St Martin's, Isles of Scilly. It was pushed back into the sea by well-meaning residents, but there was concern that it may have been a maternally separated unweaned animal that would not have survived unless it reunited with its mother. There were no further sightings or strandings of it.

Sei whale (*Balaenoptera borealis*)

In an odd coincidence, there was a single sighting of one individual in Padstow Bay during June by Padstow Sea Safaris. The same observers also recorded a single sei whale in Padstow Bay in July 2019 – the only sighting of the species that year as well.

There were no recorded strandings of this species in 2020.

Fin whale (*Balaenoptera physalus*)



Plate 11.2. Fin whale seen off St Ives in December. Image: Brenda and Adrian Tregunna.

There were 10 observations of fin whales during 2020 from around South West England. A lone whale was filmed off Towan Head, Newquay, during January, marking the first sighting of the year. This was followed by a particularly exciting encounter in July off Dartmouth, South Devon, when another lone animal was filmed approaching and swimming under the bow of a slow-moving yacht before turning and surfacing directly in front of stunned witnesses in very calm conditions. A single animal was seen on two different trips in August by Marine Discovery Penzance in the outer Mount's Bay area south of Mousehole. This was followed by another probable fin whale sighting off Land's End a few days later. The next sighting was in early September some way south of Veryan Bay, South Cornwall, followed by another sighting by Marine Discovery Penzance (MDP) south of Penberth Cove a week later. Finally, on 20th December (Figure 3) a fin whale spent most of the afternoon around a mile off St Ives and was seen by many observers, while another individual was seen off Land's End on the same day.



Plate 11.3. The live stranded fin whale at Parbean Cove being examined by a BDMLR vet. Image: Helen Chadwick.

A 19.2m long female fin whale live stranded at Parbean Cove, near Nare Point on the south side of Helford estuary mouth on 14th February. It had previously been seen by the crew on board the boat operated by Clean Ocean Sailing swimming nearby, and was later spotted stranded by them as they passed by and reported it to British Divers Marine Life Rescue. Volunteer Medics and a vet attended, however it passed away relatively quickly (Figure 4). It was in very poor nutritional condition and evidently had not fed for a considerable period of time. A team of veterinary pathologists and volunteers from Cornwall

Wildlife Trust Marine Strandings Network and the Cetacean Strandings Investigation Programme carried out a post mortem examination the following day, which indicated an infection may have been at work. Nothing was found in the stomach (including litter).

Humpback whale (*Megaptera novaeangliae*)



Plate 11.4. Humpback whale photo-identification photo. Image: Brenda and Adrian Tregunna.

There were 42 humpback whale sightings during 2020 that could be collated for this report in total. The first sighting of the year was an individual seen in St Ives Bay during February, and then another was seen breaching off Berry Head, South Devon, in May. In July a lone animal breached off Lyme Bay, Dorset, and was followed by a sighting off Rame Peninsula, South East Cornwall, during August. All other sightings then occurred during November and December between Mousehole around to St Ives Bay as well as at the Isles of Scilly. Some of these sightings were certainly of the same individuals seen on the same day by

multiple observers across different locations as they moved along the coast (Plate 4). There may have been as many as ten individuals in the area around Christmas and new year, which is unprecedented for South West England and once again hints that the population is recovering and returning to old habitats and haunts.

For the first time in South West England, photo-identification images were obtained of one animal and forwarded to the UK humpback whale ID Facebook group and the larger Happy Whale network covering the Atlantic. This animal was positively identified as having been seen in Ireland during August and October 2020, and even more amazingly was matched to photos taken of an animal seen off Mount's Bay in August 2019 by several observers and has been christened 'Pi'. This marks the first record of a photo-identified humpback whale not only returning to South West England between years, but also linking the region to Ireland in terms of habitat use and migration route (Plate 4).

Just a few days after this exciting discovery, an old photo taken of a humpback whale at the Isles of Scilly during 2008 was also submitted for identification and became the second ever record of a positive photo-identification match for this region! This whale was recorded south of Franz Josef Land, which are an isolated group of islands in the Arctic Circle north of Russia, during 2012.

There were no recorded strandings of this species in 2020.

Toothed whales/dolphins (Odontocetes)

Contact: Duncan Jones (duncoliver@yahoo.co.uk)

This set of notes on toothed whales has been compiled in July 2021 from the incidental observations made by the editor's group during 2020. Seaquest numbers (Table 11.1) and strandings (Table 11.2) reflect broader toothed whale numbers, but sightings levels were undermined by Covid-19 restrictions.

Bottlenose dolphins (*Tursiops truncatus*) in the south-west



Plate 11.5 Bottlenose dolphins out of Penzance. Image: Duncan Jones/Marine Discovery Penzance.

The South West Bottlenose Consortium joined forces with MSc Student Shauna Corr (shauna.corr93@gmail.com) from the University of Plymouth to continue their research, following their success on the discovery of the resident pod of bottlenose dolphins around the SW coast. They tracked bottlenose dolphin movements, using citizen science sightings from multiple sources, throughout Cornwall, Devon, Dorset and to Sussex to help understand more about this vulnerable pod, with the hope of aiding their conservation in the future.

Summary Coastal bottlenose dolphin populations are increasingly vulnerable to anthropogenic activities due to their limited genetic variation, small effective population sizes, and proximity to human population centres. A small, discrete community inhabits the coastal waters along the South of England, one of the most heavily impacted marine ecosystems worldwide. Anthropogenic pressures are expected to rise within the region causing increased conservational concerns for the long-term viability of this population. However, effective conservation has been hindered by a lack of knowledge on this population and the impact of regional stressors. This study presents a cost-effective method for estimating population demographics and stressor impacts using citizen science data and photo-identification techniques. Social structure analysis demonstrated a typical fission-fusion society (half-weight index = 0.201), with the population ranging between North Devon and Sussex, with an average individual range of 530km (68-760km). Areas of moderate to high anthropogenic pressure were found to overlap significantly with regions of high habitat suitability (100% and 63% respectively), with pollution and shipping identified to be the most pervasive threats. Although adult survival rates indicated that the population was relatively stable from 2008-2017 (0.951 (0.017 ± SE, 0.901-0.975 95% CI)), their small effective population size still confers a significant risk to their long-term viability and resilience to environmental change (40 (CV =0.18, 95% HPDI = 30-59)). Results provided here can be used as a basis to inform policy and conservation measures by highlighting the most deleterious anthropogenic activities for mitigation and regions of conservation significance.

You can see presentation on this work from the Cornwall Wildlife Trust Marine You Tube channel)

<https://www.youtube.com/watch?v=zu3iaeJ8hbw> and in the SWME cetacean 2021 webinar

https://www.youtube.com/watch?v=Ya-p6NC_GBA&t=743s

There is one reported sighting of a bottlenose dolphin off the Landing Bay at Lundy in 2020.

Harbour porpoises (*Phocoena phocoena*)

The south west coast appears to be an important area for UK harbour porpoises. Sightings rates recorded in Mount's Bay (Table 11.4) are higher than areas identified as being important hotspots in other areas of the UK. A 2013 study of harbour porpoise habitat preference in the West of Scotland recorded between 4 and 13 porpoises per 100 km of survey effort across the years 2003 – 2010. Goodwin and Speedie recorded a sighting rate of 26.3 per 100 km effort for the West of Scotland and 2.5 per 100 km for West Wales another area identified as a candidate SAC for harbour porpoises. Mount's Bay is likely to be a reflection of the situation across much of the south west coast. Identification and tracking of a particular leuscistic porpoise connected Mount's Bay with Padstow and the South Devon coast and demonstrated movements between these three areas at least.

The following is an extract from the Lundy Field Society Annual Report for 2020: "Days on which there were sightings were spread through the year and were mostly of single individuals or two or three at a location. On 1 & 15 Apr five were seen on each day respectively off the South West Point and North End (Dean Jones). Chris & Sharron Blackmore made timed observations from Castle Parade and additional observations off the west coast from 6 to 16 Jul, recording as many as five or six together early in the morning from Castle Parade."



Plate 11.6. Harbour porpoise and calf off Hurlstone Point, Somerset. Image Brian Gibb

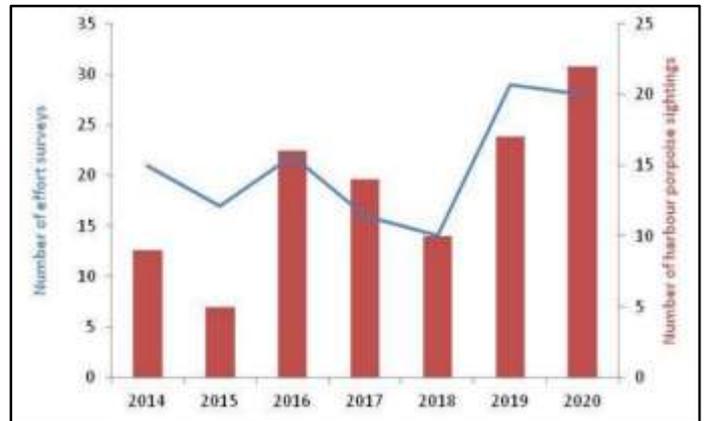


Figure 11.2. Number of harbour porpoise sightings and effort surveys from 2014 to 2020. From the Somerset and Exmoor Seasearch report 2020.

Seawatch Foundation surveys in Somerset have documented occurrences of cetaceans and other megafauna (see: https://www.somersetwildlife.org/sites/default/files/2021-02/SomersetExmoorSeaWatchreport_2020.pdf). The first recorded sightings of harbour porpoise were at Ladye Bay and Salthouse Bay, by the marine lake in Clevedon as well as from Watchet harbour. Other notable sightings throughout 2020 included two harbour porpoise sighted in the River Avon by Hotwells in Bristol! They were spotted at Sea Mills and Shirehampton too as they headed back into the Severn estuary. A particularly unusual sighting and video clip of porpoise was made by anglers on the River Tone at Burrowbridge in mid-April. Thomas Samuel McDade (on Facebook) commented that they were 'early' and normally follow the sprats and looks as if they were coming in to feed on young perch and roach. Adrian Jones commented (also on Facebook) that they may be the same porpoises seen in the River Parrett in the previous week.

Table 11.4 Distance surveyed in sea state ≤ 3 and number of harbour porpoise sightings 2011-2018 in Mount's Bay, Cornwall.

Year	Distance km	Sightings	Sightings per 100km
2011	6178	338	5.5
2012	6645	596	9.0
2013	6985	1019	14.6
2014	7471	767	10.3
2015	6466	966	14.9
2016	7235	1606	22.2
2017	3510	1060	30.2
2018	4292	1678	39.1
Total	48782	8030	16.5

2020 was not a typical year for surveying due to government imposed restrictions on movement and activity. However, when surveys were undertaken, harbour porpoise sightings seemed to follow typical patterns. Boat surveys resumed a more normal pattern between the start of July and end of October.

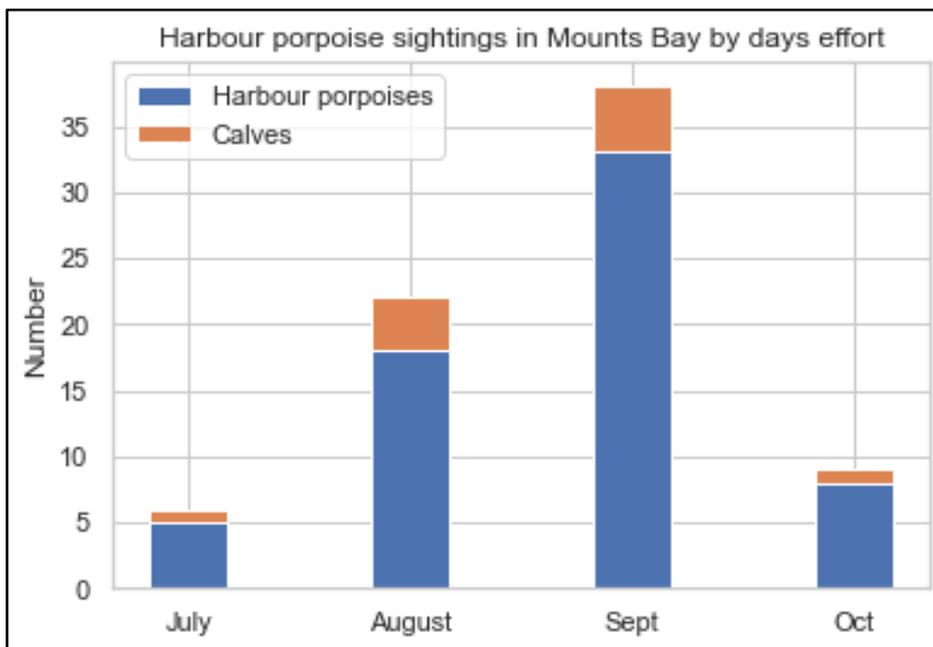


Figure 11.2 harbour porpoise sightings calculated against days' effort for the summer and autumn months outside of restrictions. The proportion of calves recorded is shown. This data is for Mount's Bay in Cornwall courtesy of MDP but is a likely representation of much of the Cornish and Devon coasts.

Short-beaked common dolphins (*Delphinus delphis*)



Plate 11.7 Common dolphin out of Penzance. Image: Duncan Jones/Marine Discovery Penzance.

2020 was not a typical year for surveying due to government imposed restrictions on movement and activity. However when surveys were undertaken common dolphin sightings seemed to follow typical patterns. Boat trips and surveys resumed as normal between the start of July and end of October. During this period common dolphin numbers around the south-west coast were typically high. High numbers of calves were recorded closer inshore which also appears typical.

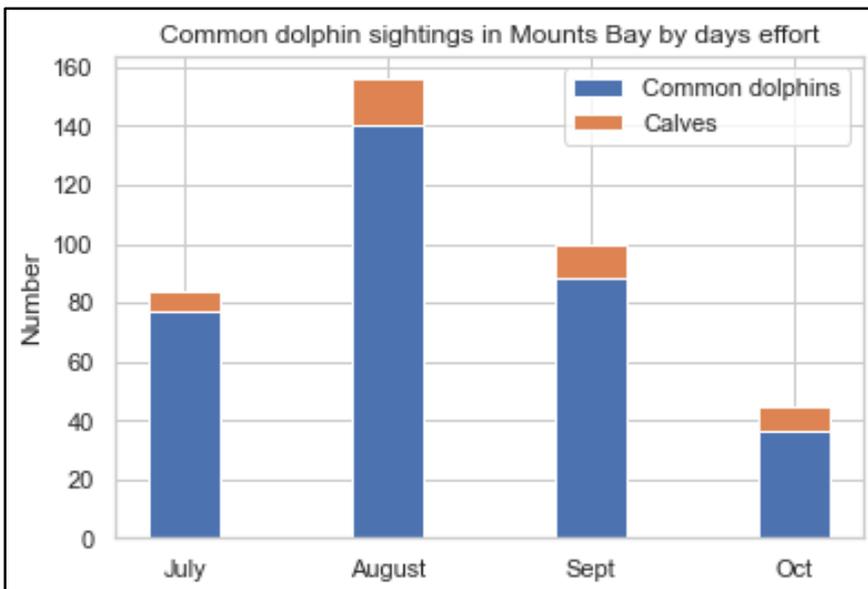


Figure 11.3 common dolphin sightings calculated against days' effort for the summer and autumn months outside of restrictions. The proportion of calves recorded is shown. This data is for Mount's Bay in Cornwall courtesy of MDP but is a likely representation of much of the Cornish and Devon coasts.

Common dolphins are frequently seen throughout the year; often in small groups of about six but sometimes in larger groups of c. 60 to hundreds. The records below are harvested from social media but are typical.

Early January – reported and video'd in the Helford River (Helford Gig Club) and a report from the Teign estuary recalled by KH.

18th May. Charles Hood reports (on Facebook) "hundreds of common dolphins in the bay" [Mounts Bay].

27th June. Reuters reports that dead dolphins are washing-up in such high numbers on France's Atlantic coast that local populations of these

13 July. Terry Griffiths reports a pod of Dolphins 400+ leaving Teignmouth and heading toward Dorset.

22 August. Robert Hughes (The shore of South Devon) reports that short-beaked common dolphins seem to be doing well in Labrador Bay. At least seven calves this season.

The Annual Report of the Lundy Field Society for 2020 cites frequent sightings of common dolphin including on the crossing to Lundy and around the island with eleven observations of 20 or more including two of c. 100 individuals.

Blainvilles beaked whale (*Mesoplodon densirostris*)

2nd July. Rob Deaville of the Cetacean Strandings Investigation Programme [CSIP](#) (via Twitter): Blainvilles beaked whale stranded on Portland – only the third record in the UK since CSIP began in 1990. Samples and data collected- stomachs empty, no marine debris found. pic.twitter.com/orWruNHwiv

Long-finned pilot whale (*Globicephala melas*)



Plate 11.8. Pilot whales in Mount's Bay. Image: Duncan Jones/Marine Discovery Penzance.

28th August. Dan Jarvis reports more than 50 pilot whales in Mount's Bay including many calves sighted by MDP.

7th September. Andy Howell (boat skipper) reports 'Huge pod of [pilot] whales swimming around the boat in Falmouth' and said he 'had been working 20 years and never seen anything like it'. One of several reports in September of schools of pilot whales – usually offshore.

15th September. On Twitter, Skipper Sean Marshall said: "Carrying out University of Plymouth Marine Biology fieldwork today offshore from Plymouth aboard RV Wavedancer. "Stunning footage of us being visited by a pod of Pilot Whales." Sean said the unexpected, but welcome visit happened not far from The Eddystone. Video from Emma Sheehan: pic.twitter.com/KdOb4Rc31a

Risso's dolphin (*Grampus griseus*)

Risso's dolphin sightings appear to peak biannually in odd years and this possibly coincides with cuttlefish spawning patterns in the south-west (cuttlefish spawn from about the end of April into June) and explains why 2020 had lower sightings than 2019. Photo matches by MDP between Mount's Bay and both Bardsey Island and the Isle of Man suggest that dolphins seen in the south-west are part of a wider west coast population. A current habitat modelling study shows strong correlation between sighting locations and cuttlefish habitat as well as temporal sighting peaks that coincide with cuttlefish spawning season.

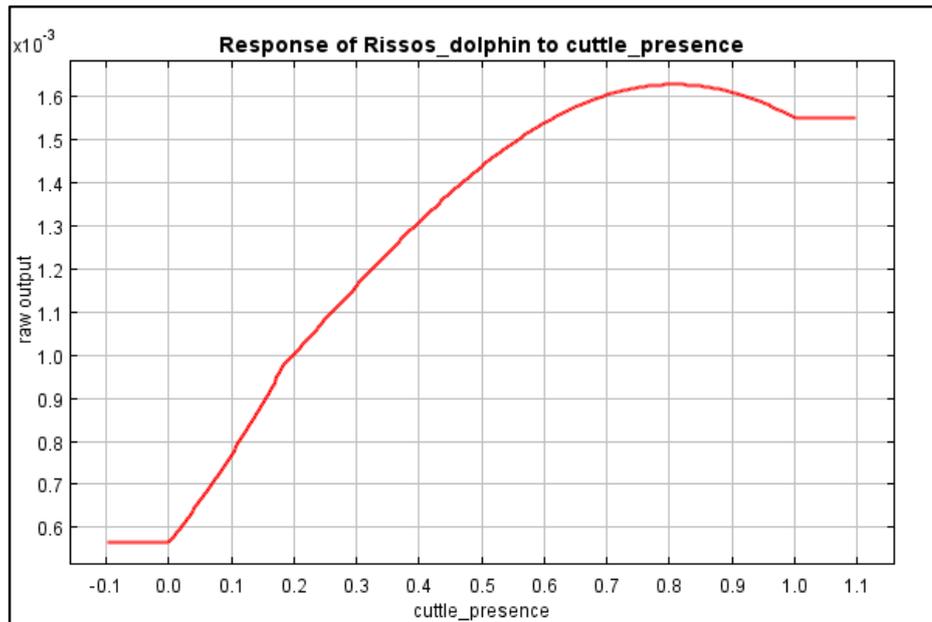


Figure 11.4 Likelihood of detecting Risso's dolphins increases with likelihood of cuttlefish presence in an area. Data from an unpublished study by Eleanor Keppie using MDP data 2010-2019. The figure is an output from a habitat model using minimum cross entropy comparing sightings and effort across environmental background layers and predicting presence. Raw output is relative likelihood of presence of Risso's dolphins.

18th October. Risso's dolphin in Plymouth Sound (mistakenly described as a killer whale) (video footage by Eileen Wright).

October (date?): Some nice sightings over the last 2 days, highlight 8 Risso's Dolphins today + Common Dolphins, Storm Petrels, Great Skuas and Gannets. Read more on our FB page [facebook.com/MARINElifeUK](https://www.facebook.com/MARINElifeUK) and website pic.twitter.com/lvqOd6L659.

Management

12. Fisheries

Edited by Tom Hooper (Isles of Scilly IFCA)

Contact: Tom.Hooper@scilly.gov.uk

This report provides a brief overview of some of the fishing activities in the South West in 2020 including research activities, landings, regulation and management.

Covid and the fishing industry

National lockdown in response to the Covid-19 pandemic led to unprecedented restrictions on all aspects of normal daily life, including the fish catch, processing and export sectors. The lockdown led to fall in demand for fish and shellfish, loss of export markets, disruption in supply chains and falls in prices as markets disappeared. South-west fish markets in Newlyn, Looe, Plymouth and Brixham remained open. Producer organisations, merchants and processors worked alongside fish markets and the catching sector to manage the supply of landings to stabilise prices where possible. Exports to Europe and China were heavily reduced and auction market prices were generally lower than normal, but gradually improved for some of the more popular species of fish.

For the inshore fleet mainly targeting shellfish, the loss of export markets had an immediate impact as the majority of these species do not have a large domestic market. Seafood Cornwall working with the Cornish Fish Producers' Organisation created #fishtoyourdoor, an initiative which has linked 4,000 customers to merchants and fishermen. In April, Defra launched the £10 million Fisheries Response Fund which was targeted at registered licensed fishing vessels up to 24m in length.¹

Ocean Health Index

Contact: Matthew Witt (m.j.witt@exeter.ac.uk) & Rachel Turner (r.turner@exeter.ac.uk)

With funding from the European Maritime and Fisheries Fund (EMFF), a team from the University of Exeter undertook an Ocean Health Index (OHI) analysis for the South West region, which included components related to fisheries opportunities and sustainability.

The OHI is an indicator index metric, developed to quantitatively measure the benefits and services the ocean provides (Halpern *et al.*, 2012). The metric integrates a suite of socio-economic and ecological objectives (referred to as goals). The tool was initially developed at a global scale, but has been tailored to represent the cultural, social, and ecological characteristics and priorities of South West England using the best available information and knowledge. Two of the goals directly measure fishing activity: 'Food provision: Fisheries & Mariculture' and 'Artisanal Fishing Opportunities' (access opportunity for small-scale fisheries), whilst further goals, including 'Biodiversity: Habitats', also rely on fishing effort data to inform their scores. Goals are shaped by multiple input data sets contributing to four elements: status, trend, pressure and resilience. Each goal score is the average of its current status and likely future status.

The final South West England OHI+ score of 65 out of a possible 100, provides an insight into the extent to which coastal seas are being managed to deliver sustainable social, economic, and ecological benefits to communities in the South West. The Artisanal Opportunities goal, measuring the productivity and access opportunities for under-ten metre vessels, indicates that the small-scale fleet remained stable in most regions between 2014 and 2018 inclusive, scoring 80 of a possible 100. The Fisheries goal, measuring the amount of sustainably harvested seafood in a given region for use primarily in human consumption via domestic or export markets, scored lower at 62, with the headline conclusion that 'there is progress towards sustainable landings, but room for improvement in all regions [in

¹ <https://www.gov.uk/government/publications/fisheries-response-fund-support-for-fishing-and-aquaculture-businesses>

the South West]’. The full Ocean Health Index report will be published in June 2021 at: <https://www.sustainable-seas.org/>.

Crustacean fisheries and landings

Contact: Ros McIntyre (rosslyn.mcintyre@cefas.co.uk)

Cefas publish assessments on the status of edible crab and lobster stocks every two years. The most recent publication was in October 2020. The data come from port sampling and Marine Management Organisation official landings comprised of sales notes, Monthly Shellfish Activity Returns (MSAR) for under 10 metre vessels and EU logbooks for over 10m vessels. There is a requirement for potting fisheries to record the number of pots being fished in MSAR forms only, although this is not done universally. Regional assessments are produced for five separate Crab and five Lobster Fishery Units that are based on the understanding of larval distributions and development, hydrographic conditions and distribution of the populations. Two are relevant to the South West: the Western English Channel and the Celtic Sea. For lobster, the relevant Fishery Unit encompasses a single area for the whole of the South West. The findings are summarised in the table below.

Table 12.1. Status of crab and lobster stocks.

Crab	Lobster
<p>Western English Channel Exploitation levels are close to the levels required to produce maximum Sustainable Yield (MSY). The status of the stock is moderate to good with spawning stocks around the level required to produce MSY. There are insufficient data on male crabs to undertake an assessment on this portion of the stock.</p>	<p>The status of the stock of lobster is moderate. The exploitation level is between MSY target level and the maximum reference point limit for both sexes. Spawning biomass levels are between the minimum reference point limit and the level associated with MSY and appear stable.</p>
<p>Celtic Sea Exploitation levels are moderate for females and likely to be sustainable, but above the target MSY level. The status of the stock of females is approaching the level associated with MSY. There are insufficient data on male crabs to undertake an assessment on this portion of the stock.</p>	
<p>Cuttlefish A report on the western Channel cuttlefish fishery was released on 1st October (after significant delays): https://www.gov.uk/government/publications/western-channel-cuttlefish-report-december-2018-june-2019. The report describes the landing composition of cuttlefish over the 2018–2019 winter fishery, with a view to finding out if there were fishing practices (gears/locations/times) which resulted in larger proportions of juvenile cuttlefish in the landings. The report also estimated the relative proportion of juveniles in the overall landings. High proportions of juveniles were being caught in the fishery.</p>	

Crawfish in SW England: quantifying recovery and stock for fishery management

Contact: Catherine Whitley (c.whitley@mrag.co.uk)

In partnership with the Isles of Scilly IFCA, a study led by Masters student Catherine Whitley at the University of Plymouth investigated the perceived recovery of crawfish (*Palinurus elephas*) populations in the southwest of England. Overfished to commercial extinction in the late 1970s, crawfish were largely absent from UK waters until 2014 when increased port landings and individual sightings were reported in the Isles of Scilly, Cornwall and Devon. Utilising a combination of existing data and input from stakeholders, this study aimed to provide the current state of knowledge on crawfish, a species of high commercial and conservation importance, in order to highlight management concerns and develop recommendations to support their recovery and sustainable exploitation.

The main findings show crawfish are evidently recovering based on the recent increase of commercial landings into southwest ports (13.6 tonnes in 2019, Figure 1), which was mirrored by the rapidly expanding distribution and frequency of diver sightings (594 recorded sightings between 2014 and 2020, Figure 2). Although the current fishery remains a fraction of its historic size (Figure 1), the prevalence of high market prices (between £27 and £31 per kg) keeps the fishery economically viable, which may lead to increased fishing effort. Fishing effort is currently concentrated in the inshore regions, particularly around the Isles of Scilly and southern Cornwall peninsula, with tangle nets identified as the main capture gear. In this area, both commercial fishermen and diver sightings indicated hard, rocky reefs to be a priority habitat for crawfish, particularly juveniles which fishermen expressed have undergone a 'sudden boom' in recent years. Supported by diver recordings, this indicates the successful settlement and potential recruitment to the fishery.

Using these findings, management recommendations were proposed for local IFCAs to enforce, as well as changes to national policy to reduce conflict between the inshore and offshore fisheries. These included closing the fishery in Marine Conservation Zones (MCZs) where crawfish are a designated feature; establishing a netting permit to monitor and cap the number of vessels and volume of fishing gear targeting crawfish; increasing and standardising the number of monitoring surveys of crawfish populations in the southwest; standardising the minimum conservation reference size (MCRS) to 110mm carapace length out to the 12 nautical mile limit; and introducing a national stock assessment to inform fisheries management on the health of regional stock levels. While crawfish remain a data deficient species, there is enough knowledge to implement proactive management measures before this species becomes another 'boom and bust' fishery.

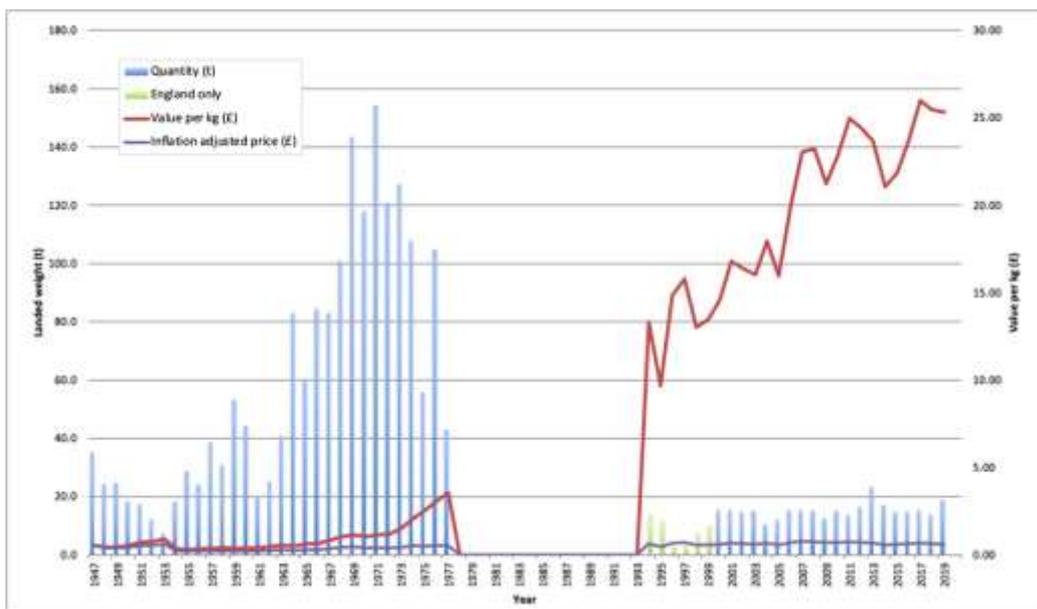


Figure 12.1. Annual landings data of *P. elephas* into UK ports between 1947 and 2019. Green bars indicate landings for England only. Data sourced online from The National Archives and the MMO.

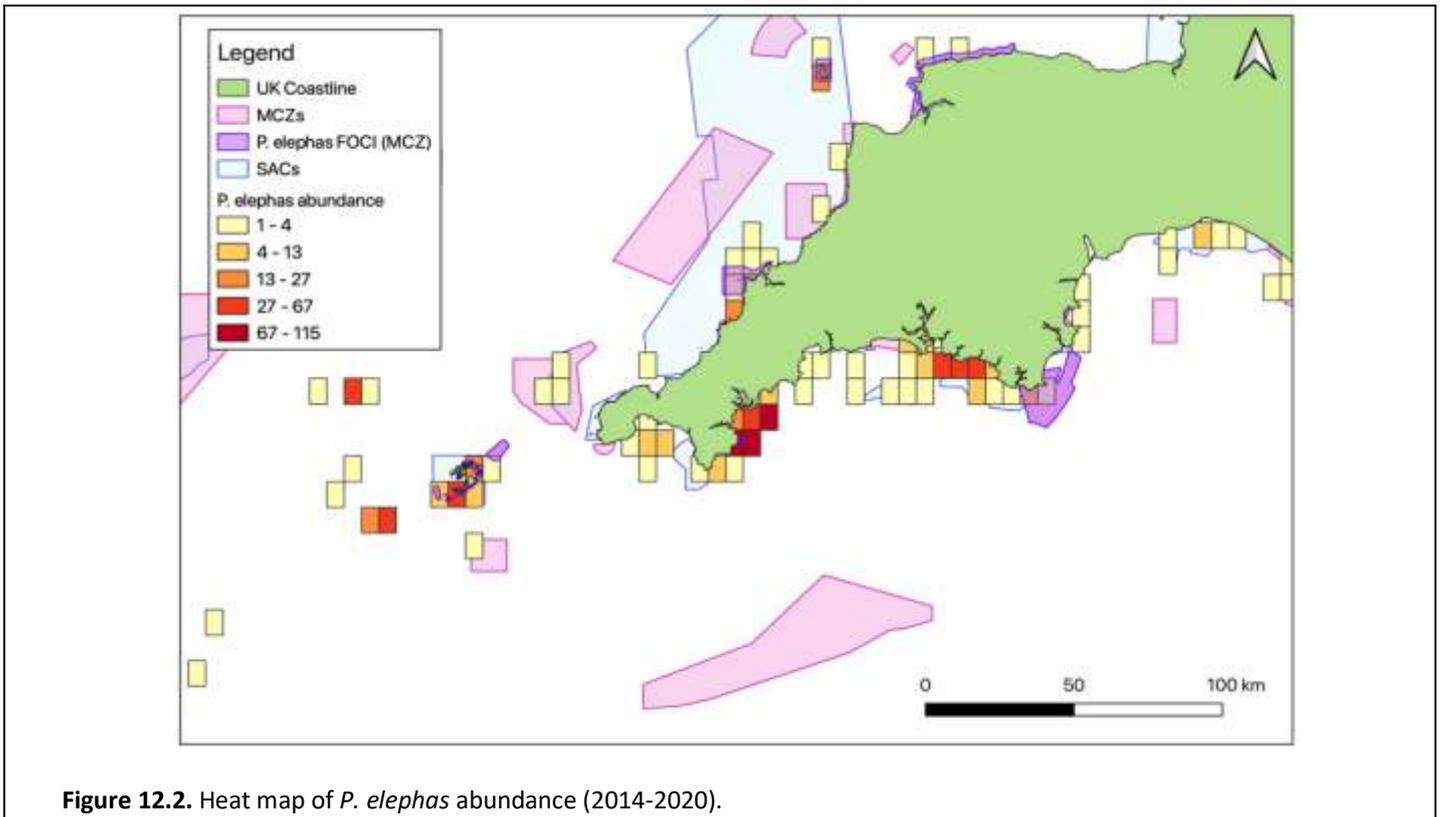


Figure 12.2. Heat map of *P. elephas* abundance (2014-2020).

Wrasse

Contact: Lauren Henly (lh626@exeter.ac.uk)

A study led by PhD student Lauren Henly at the University of Exeter has assessed the suitability of current and past management measures in ensuring the sustainability of the live wrasse fishery in Plymouth Sound. The study highlighted the main drivers of variation in catches and landings per unit effort (CPUE and LPUE) of the four targeted species of wrasse, ballan (*Labrus bergylta*), corkwing (*Symphodus melops*), goldsinny (*Ctenolabrus rupestris*), and rock cook (*Centrolabrus exoletus*) – Plate 12.1 - and determined if there was any temporal variation in wrasse catches over the 2017–2019 period.

Ballan wrasse showed declines in both CPUE and LPUE between 2017–2018, which are likely linked to the high fishing pressure experienced in 2017 and the selective removal of recently mature females. Catches of corkwing wrasse have increased over the 2017–2019 period, which is likely to be a result of the change in the conservation reference size (CRS) range of the species from 12–23 cm to 14–18 cm in the Devon & Severn IFCA District in 2018. This change is likely to have increased the proportion of mature males that were being returned to sea, and afforded protection to larger and more fecund individuals of both sexes, aiding recruitment. Goldsinny LPUE was lowest in 2018, following the year of most intense fishing effort. However, unlike in ballan wrasse, goldsinny LPUE recovered in 2019, perhaps because the CRS range applied allows a large enough proportion of mature individuals to be returned to the sea; at lower fishing effort levels, this CRS range is likely to be sufficient to allow stock recovery. Rock cook catches and landings remained stable across the study period, despite previous analyses suggesting declines. Survey effort was uneven across years between exposed and sheltered locations, and rock cook show a preference for more exposed areas, so by controlling for fishing location, this study helped reduce the likelihood of identifying a false decline in rock cook across the 2017–2019 period.

Following publication of this study and analysis of a further year’s data in the latest Devon & Severn IFCA wrasse report, a formal consultation has taken place regarding a potential change to the ballan wrasse CRS range in the District from 15–23 cm to 18–26 cm, which will decrease the retention rate of ballan wrasse in the district. The

change would also afford more protection to the recently matured females in the population giving them a chance to contribute to recruitment, whilst still protecting some larger mature females and mature males.



Ballan (*Labrus bergylta*)



Corkwing (*Symphodus melops*)



Goldsinny (*Ctenolabrus rupestris*)



Rock cook (*Centrolabrus exoletus*)

Plate 12.1. Wrasse species included in the study. Images are not to the same scale. Images: Keith Hiscock.

Citation:

Henly, L., Stewart, J. E., and Simpson, S. D. (2021). Drivers and implications of change in an inshore multi-species fishery. *ICES Journal of Marine Science*. <https://doi.org/10.1093/icesjms/fsab083>

Fisheries Act 2020

The Fisheries Act received Royal Assent on the 23rd November, providing a framework for UK fisheries policy. The Act includes eight fisheries objectives: sustainability, precautionary, ecosystem, scientific evidence, bycatch, equal access, national benefit and climate change. The Act creates a legal requirement for UK's four national fisheries policy authorities to produce a Joint Fisheries Statement that will lay out how these objectives will be met. The Joint Fisheries Statement that will provide more detail on distribution of quota, fisheries management plans and actions to maintain or restore stocks.

Devon and Severn IFCA

Contact: Dr James Stewart (j.stewart@devonandsevernifca.gov.uk)

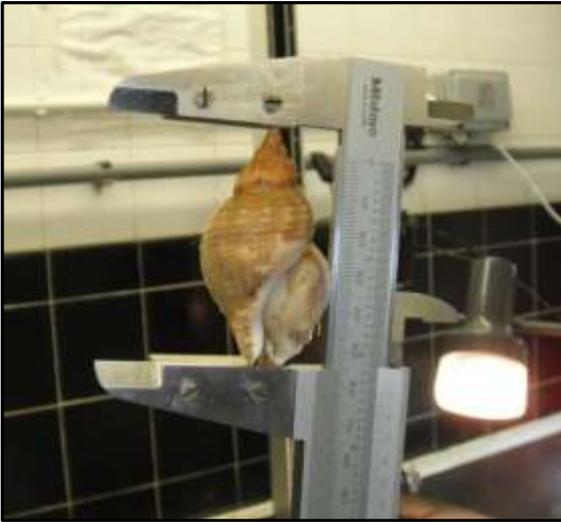


Plate 12.2. Measuring whelk (left) as part of research into size at sexual maturity and mussel (right) as part of mussel surveys in the Taw-Torridge. Images provided by James Stewart

A broad-scale survey was undertaken of mussel beds in the Taw-Torridge estuary to develop a clearer understanding of the extent and health of mussel beds. Mussels are an important food source for wading birds, crabs and many fish species, are an important habitat for other marine life and provide ecosystem services as a food source for humans and role in removing bacteria and toxins from the water. There is concern on the health of mussel beds generally from commercial and recreational fishing, coastal developments and more specifically in this site from strong tidal movements and high freshwater input.



Plate 12.3. Crab tiles in the Cattewater, Plymouth. Image: Keith Hiscock

Devon and Severn IFCA are at the start of a project to develop Fisheries Research and Management Plans (FRMPs). These will collate, review and critically analyse existing data on fish and stock structure, fisheries management and marine environmental management to identify gaps in knowledge which may hinder current or future efforts to manage those stocks. They will include both scientific and local anecdotal information. They will identify key gaps in knowledge in terms of ecology and will lead to prioritised research and identify potential partners for undertaking the work.

Every four years, crab tile surveys are carried out to determine the number and location of crab tiles in estuaries. The surveys help the IFCA assess the impacts of crab tiling on sensitive estuary environments, and to inform the development of appropriate management. Following a successful trial in 2016, the 2020 crab tile surveys were carried out by drone, which allows accurate counting of crab tiles in hard-to-reach areas of the estuaries. Crab tiling is one of several activities, collectively known as hand-gathering/handworking that are assessed by D&S IFCA.

The IFCA have made representations to the Planning Inspectorate regarding concerns that the cooling water for the Hinkley Point C nuclear power plant could lead to large quantities of fish mortality and how this may impact the Severn Estuary SAC and wider fish populations.

In November 2020, the Minimum Conservation Reference Size (MCRS) for whelk in D&S IFCA's District increased from 55mm to 65mm. This was part of a phased increase from 45mm which began in 2018. This change in management is the result of extensive D&S IFCA research into whelk size of sexual maturity, which was carried out in 2015–2016 and highlighted that the previous MCRS was not large enough to protect mature individuals.

D&S IFCA have also produced a Mariculture Strategy, to highlight core areas where D&S IFCA may have the opportunity to work with the mariculture sector in evaluating and advancing mariculture opportunities, to provide information to those interested in entering this sector, and to continue to balance the environmental, social and economic aspects of these activities.

Cornwall IFCA

Contact: Colin Trundle colin.trundle@cornwall-ifca.org.uk

Cornwall IFCA has completed the first versions of Habitat Regulations Assessments (HRA) for all European Marine Sites within the Cornwall IFCA District where conservation advice is available and Marine Conservation Zone Assessments for all tranche one and tranche two Marine Conservation Zones (MCZs) and undertaken the assessment review process. These have assessed the impact of fishing activities on the designated features within Marine Protected Areas to ascertain whether management measures are required to achieve the conservation objectives of each feature within each site. The process has identified an additional three fishery/feature interactions for consideration of further management.

The previous year saw unprecedented upheaval in the UK and around the world. While there were inevitable delays in some research programmes, particularly those involved in working aboard industry boats, a large number of direct research programmes were able to go ahead. Many of these programmes involved a blend of a skeleton crew aboard the IFCA's research vessel, Tiger Lily, with other officers accessing real-time data and scans providing analysis and observational monitoring.

Surveys undertaken in 2020 included:

- Dropdown video survey in the Eddystone area of the Start Point to Plymouth Sound and Eddystone SAC;
- Fisher self-sampling of crawfish catch and bycatch;
- 100% acoustic survey of Fal and Helford SAC identifying distribution of habitat and maerl;
- Continuation of the long-term annual Fal Fishery oyster, queen scallop and slipper limpet assessment survey, and
- Trial scallop dredge surveys.

Cornwall IFCA has taken a Fisheries Management Plan approach to fulfilling its duties. During 2020 Cornwall IFCA developed an initial working draft of a Crustacean Fisheries Management Plan, building on the previous year's analyses of the shellfish returns data collected by Cornwall IFCA. The longstanding permit byelaws which manage crustacean fisheries within the Cornwall IFCA district have provided, not only more than three decades of returns data, but an excellent contact list of relevant stakeholders. Work started in 2020 on the creation of an industry steering group to provide a bottom up approach to the ongoing management of harvest strategies and regulations.

Isles of Scilly IFCA

Contact: Tom Hooper (tom.hooper@scilly.gov.uk)

Two new byelaws were introduced in 2020. The first is a minimum landing size for crawfish (*Palinurus elephas*) increase from 95mm to 110mm carapace length. This brings the Isles of Scilly district in line with requirements in both Cornwall and Devon and Severn. The second is a byelaw for recreational or 'hobby' fishermen operating in Scilly. The byelaw sets up a permit system through which recreational fishermen will be required to purchase up to six tags for pots that they want to fish.

Southern IFCA

Contact: Simon Pengelly (simon.pengelly@southern-ifca.gov.uk)

The Authority worked with the Marine Stewardship Council achieve re-certification of the Poole Harbour clam and cockle fishery and yields within this fishery continue to rise in response to the Authority's management interventions. Over the course of the year the Authority consulted on new measures for net fisheries in harbour and estuarine areas, together with a consultation on management measures for pot fisheries in the District. Both reviews will continue into 2021, when byelaws will be considered by the Authority.

In June 2020 the Authority made a new byelaw for minimum conservation reference sizes in the District. This byelaw replaces legacy byelaws and was made in part to address sustainability concerns as a result of changes made to the European Technical Conservation measures. The byelaw also introduces new minimum sizes for wrasse species in the District, believed to be the most restrictive in Europe, together with increases in minimum sizes for grey mullet species and crawfish. Following the making of this byelaw, the Authority has commenced a full review of species sizes in the District, with an aim of making further possible changes after 2023.

Potting density study, Lyme Bay

[Included in the Marine Protected Areas section.]

Bass tracking in Devon estuaries using acoustic telemetry

Contact: Dr Tom Stamp (thomas.stamp@plymouth.ac.uk)

Funded by the European Maritime and Fisheries Fund, the University of Plymouth and Devon and Severn IFCA conducted a European bass tracking study. The broad aim of which was to assess the effectiveness of designated Bass Nursery Areas (BNA) at protecting juvenile bass populations across the Devon and Severn IFCA district.

Acoustic telemetry was used to track the movement of 146 tagged European bass across three sites: The Dart estuary, Salcombe harbour and the Taw/Torridge estuaries. The technique relies on the implantation of an acoustic transmitter tag within the body cavity of the fish. Once activated the tag emits a unique 'ping' every 90 seconds. When each fish is within 200-300m of a strategically placed receiver, the time and date that each fish was detected is recorded. By monitoring movements of the tagged bass via a system of 78 acoustic receivers, detailed observations of bass movement within and between the three sites was collected from 2018-2020.

Over the study period, the tagged fish were redetected 5.2million times. Tagged fish were found to make repeated movements entering and then exiting Bass Nursery Area (BNA) boundaries, and would on average be within BNA boundaries for 15 hours then exit the site and be absent for 21.6 hours. During the 21.6 hour absence period, fish were within an area of 3-4km of the site they were tagged. Fish would repeat this behaviour and stay local to their host BNA for approximately 75% of the year. Outside of this period fish were detected making wide ranging movement across the region, with the furthest movement detected between the Dart estuary and Strumble Head, West Wales.

The results suggest that BNA do not offer complete protection for juvenile bass populations, however fish do remain local to particular BNA sites for a significant proportion of the year.



Plate 12.4. European bass being released following tagging within Salcombe harbour (left). Acoustic transmitter tag (top right). Acoustic receiver (bottom right).

13. Marine Protected Areas and management for conservation

New activity with regard to designation and other new activity (or publication of reports) in 2020 are included here. Some of the fisheries studies reported above will have been undertaken to inform MPA management.

SACs and MCZs

From Keith Hiscock: At the Lundy Marine Protected Area Advisory Group meeting on 22nd October, Jen Ashworth reported that a 'pause' on the Highly Protected Marine Areas initiative had been announced 'a week ago'. Jen also noted that (Environment Secretary) George Eustice hadn't changed his mind since his July speech in which he said "...our approach towards biodiversity net gain in the planning system, **and also behind other initiatives like highly protected marine areas that we intend to pilot.**" Jen also mention 'no change in status of MPAs – i.e. MPAs in general, not separate types' (in response to a question from KH about SACs and SPAs).

Highly Protected Marine Areas

The 'Benyon review' of HPMAs was launched on World Oceans Day on 8th June. More in: <https://www.gov.uk/government/publications/highly-protected-marine-areas-hpmas-review-2019/benyon-review-into-highly-protected-marine-areas-final-report-executive-summary>.

The Plymouth Sound National Marine Park

Work continued on the development of The Plymouth Sound National Marine Park with the appointment of a 'Board' to develop the concept.

Management

There were activities related to MPA management:

- The ReMEDIES (Reducing and Mitigating Erosion and Disturbance Impacts affecting the Seabed) project commenced including seagrass restoration and establishment of reduced-impact moorings. LIFE Recreation ReMEDIES is a £2.5 million, four-year marine conservation partnership project to 'Save Our Seabed' at five Special Areas of Conservation in Southern England. The project is led by Natural England in partnership with Ocean Conservation Trust, Marine Conservation Society, Royal Yachting Association and Plymouth City Council/Tamar Estuaries Consultative Forum. For more information, see: <https://saveourseabed.co.uk/the-project/>.



- A project to recover tyres (and other litter) from the seabed of Plymouth Sound was launched and successfully funded during November. See: <http://www.shipsproject.org/1000tyres.html>.
- The 'SWEEP Expo: Natural Capital in the South-West' meeting was held on line over three days in late October. Funded by NERC, the South West Partnership for Environment and Economic Prosperity (SWEEP) is a 5-year collaboration between the Universities of Exeter, Plymouth and Plymouth Marine Laboratory with a large group of highly-engaged businesses, policy makers, NGOs, environmental charities and community partners. More on sweep.ac.uk/NatCapExpo/.

The SWME webinar held in 2021 included three presentations relevant to 2020 and to MPA management:

- **Using Seabed Imagery to Inform Management - Bideford to Foreland Point MCZ and Hartland Point to Tintagel MCZ**

Emily Whiting: Natural England (Emily.Whiting@naturalengland.org.uk)

To conserve vulnerable and diverse benthic habitats, it is important to provide effective management. Management mechanisms such as protected areas are known to enhance conservation. However, it is also recognised they alone cannot ensure the persistence of habitats and their communities. This study utilised seabed imagery as a tool to provide current information of the habitats and features within two Marine Conservation Zones (MCZ) in north Devon. Bideford to Foreland Point MCZ and Hartland Point to Tintagel MCZ are home to biodiverse and economically valuable benthic ecosystems. However, these ecosystems are under threat from fishing activities. Therefore, seabed imagery was used to understand the location and extent of habitats and features of conservation interest, understand the impacts of fishing activities.

This study found that a diverse range of biotopes were present in both MCZs, all of which were seen to be highly sensitive to pressures associated with fishing activities. Furthermore, the distributions of the features of conservation interest indicated the importance of habitat mosaics and veneers, suggesting that the features of functional reef may extend beyond substrate extent, highlighting the potential for biotope vulnerability to also extend beyond this point.



Plate 13.1. One of the seabed habitats imaged as a part of the Bideford to Foreland Point MCZ and Hartland Point to Tintagel MCZ study.

It was further found that the MCZs are sensitive to fishing, suggesting that it is vital that management strives to mitigate the impact of fishing activities. It was suggested that a shift from current feature-based management to a one that considers the whole-site may be a necessary approach. The current feature-based management may not offer adequate protection, overlooking the significant habitat mosaics and veneers that were found to be integral in the distribution of

sensitive biological communities. Furthermore, whole-site approaches to management would allow systems to recover natural dynamics allowing for shifting baselines. This report improved our understanding of benthic ecosystems in the South West and added crucial weight to management advice supporting their conservation.

- **The Lyme Bay potting study - defining a threshold for sustainable pot fishing**

Adam Rees: University of Plymouth & Blue Marine Foundation (adam.rees@plymouth.ac.uk)



Plate 13.2. Pots at Lyme Regis. Image: Adam Rees

The study found that managing the density of crab and lobster pots at an optimum level increases the quality of catch, benefits the marine environment and makes the industry more sustainable in the long term. This new research involved exposing sections of seabed inside the Lyme Bay Marine Protected Area to differing densities of pot fishing and monitoring any impacts through a combination of underwater videos and fisheries surveys. After four years it was found that in areas of higher pot density, fishermen caught 19% less brown crab and 35% less European lobster, and their catches of brown crab were on average 35 grams per individual (7%) lighter. The effect on marine species was also significant with two ecologically important reef species, Ross coral (*Pentapora foliacea*) and Neptune's Heart sea squirt (*Phallusia mammillata*), 83% and 74% less abundant respectively where pot density was higher.

This study provided evidence, the first evidence of its kind, that a pot fishing intensity ‘threshold’ exists where commercial pot fisheries are likely to be compatible with marine conservation when managed correctly at low, sustainable levels. The results indicate that a ‘low-effort high-reward strategy’ works for both fisheries and conservation. Potting is a big industry around south west England and supports the livelihoods of many small-scale fishers. Most MPAs in the south west currently permit potting within them despite the associated impacts not being completely known or quantified. The ecosystem effects of all commercial fishing methods need to be fully understood in order to manage our south west marine environments more effectively and so this evidence is a significant step towards developing well-managed fisheries inside Marine Protected Areas. At a time where COVID-19 and BREXIT are impacting an already uncertain fishery, and with a number of reports highlighting that many crab and lobster fisheries around the UK are close to overexploitation, this new evidence will hopefully help inform discussions regarding making changes to these fisheries that will help secure their long-term future.

*Rees, A., Sheehan, E.V. & Attrill, M.J. Optimal fishing effort benefits fisheries and conservation. *Scientific Reports* **11**, 3784 (2021). <https://doi.org/10.1038/s41598-021-82847-4>

Link to animation: <https://www.youtube.com/watch?v=Xm2emlIf0c&t=1s>

- **The Effectiveness of Partially Protected Marine Areas for Ecosystem Based Management**

Bede Ffinian Rowe Davies: University of Plymouth (bede.davies@plymouth.ac.uk)



Plate 13.3. A photograph of part of the healthy reef community in Lyme Bay.

Lyme Bay Marine Protected Area was created in 2008 under a government Statutory Instrument. This created the largest MPA in the UK at the time, covering 206km² of the southwest UK seabed. The partial protection excluded all forms of mobile demersal fishing across a mosaic of habitats including high biodiversity Annex I rocky reefs and mobile sediment. This MPA employs a ‘whole-site’ approach to management, where consistent management is applied across the whole area to be

protected, not just protecting species or ‘features’ of interest, as employed by the majority of MPAs in Northern Europe.

Researchers at the University of Plymouth have surveyed inside the MPA and controls outside of the protection for over a decade using a suite of survey methods. Here, the biodiversity, both taxonomic and functional, was assessed using both towed underwater video and Baited Remote Underwater Video (BRUV) data. The MPA showed clear increases in comparison to the unprotected controls in the abundance and diversity of commercially important fish taxa as well as increases in functional diversity, which was driven by increases in the proportion of filter feeding and sessile functional traits.

Lyme Bay gives clear evidence of how utilising a ‘whole-site’ approach to management can benefit both conservation and fisheries with increases in diversity (taxonomic and functional) and abundance of commercially important taxa.

BRUVs data mentioned here are in press in the *Journal of Applied Ecology* entitled “Ecosystem Approach to Fisheries Management Works – how switching from mobile to static fishing gear improves populations of fished and non-fished species inside a Marine Protected Area.”: Bede F R Davies, Luke Holmes, Adam Rees, Martin Attrill, Amy Cartwright & Emma Sheehan.

13. Marine Plastics

Edited by: Delia Webb

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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. Each of the CPPC members carry out their own independent activities, but also work collaboratively, as part of this coalition, on a number of key themes.

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 single use plastics, container spill items, and other types of plastic pollution which are prevalent in our Cornish environment either consistently, or sporadically in large volumes.
- 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.

The CPPC's website is www.cppccornwall.org.uk Email info@cppccornwall.org.uk Facebook page [@yourshoreplastic](https://www.facebook.com/yourshoreplastic) Twitter [@Cornish_PPC](https://twitter.com/Cornish_PPC)

The CPPC has previously collected data each December relating to the amount of beach-cleaning and litter-picking carried out by our members, together with the total amount of volunteer hours dedicated to that activity. However, the Covid pandemic severely disrupted the normal activities of all our member groups and individuals. Consequently, at the end of 2020 the CPPC instead asked our members to answer five questions relating to how the Covid pandemic had affected their beach-cleaning, litter-picking, education, research, scientific or other activities.

The full CPPC Covid Impact Report 2020 may be accessed via this link:

<https://cppccornwall.org.uk/wp-content/uploads/2021/02/CPCCIR2020-3.pdf>

but a summary of its findings is detailed here.

The five questions posed to CPPC member groups were:

1. What have been the positive changes and outcomes of this year's pandemic on your groups'/volunteers' activities and the environment in your area?
2. What have been the negative impacts and outcomes of this year's pandemic on your groups'/volunteers' activities and the environment in your area?

3. What lessons can be learned from this year, and how do you and your group/volunteers intend to modify the way you work in the future?

4. What are your group's objectives for 2021?

5. Let us have any project ideas for ways in which your group and volunteers could collaborate with other CPPC members in 2021 to focus on important themes or issues (e.g a campaign to ask people to use reusable masks as opposed to disposable ones).

Responses were received from **28** of the CPPC member groups.

There were definite key themes which emerged from the responses, and though each group replied in their own words, and in relation to their own 'patches' or locality, there was a clear sense of commonality and agreement.

In terms of positive outcomes, the overwhelming benefits were seen as those relating to the peace and quiet experienced during the first 'lockdown' period. Less traffic and people about allowed nature to flourish. Less human activity meant less wildlife disturbance, less litter, and more of a chance for our wildlife to reclaim ownership of the Cornish coast and countryside.

The overall reduction in groups' and individuals' carbon footprints were also identified as a massive positive. Walking, cycling, sea-swimming, and general outdoor activities were enjoyed, as well as the chance to spend more time with family. Staying local, shopping local, and appreciating your close community all contributed to this.

Additionally, groups felt that they had been given an opportunity to focus time and energy on altered approaches, new methods of working, acquiring new skills (sometimes out of necessity) and collaborating with partners in mutually beneficial projects and initiatives. 'Stuff' still happened – just in different ways.



Plate 13.1. One Bag Beach Clean conducting a socially distanced litter pick



Plate 13.2. Friends of St Andrew's Wetlands Reserve clearing BBQ litter.

The negative impact of the pandemic on our Cornish environmental groups and volunteers has been significant. The loss of face-to-face activities and events have hit hard in a number of ways. Volunteers have felt more isolated, missing out on the social contact, support, and camaraderie of their groups. Meeting online doesn't suit everyone, and the reduction in overall activity has also meant, less public engagement, less public awareness raising, less direct education work, and less funds generated. For those organisations who employ volunteers as well as staff, apprentices, interns, students etc., it has also meant

difficult decisions in terms of retaining, furloughing and redundancy. The financial losses suffered by some of the groups and organisations will directly influence future plans and budgeting, and there will be repercussions in some areas due to decreased opportunities for volunteer recruitment and training.

Restrictions on travel distances have made it difficult to access the more remote spots that are known to accumulate litter and marine plastics, or areas normally frequented for wildlife monitoring & recording. There may be some catching up that will need to be done to address this.

On a practical level the pandemic has made sharing equipment and resources incredibly complex. Health & Safety, sanitising and cleaning requirements have meant that most groups have chosen to stop this altogether, while a few have handed out equipment to small 'bubble' or family groups for their exclusive use.

Evidence of negative human behaviours has been witnessed across the Duchy. This includes wildlife disturbances, littering, fly-tipping, fly-camping, and antisocial behaviour. Some areas have seen problems due to large numbers of visitors, traffic/parking chaos, vandalism and theft. Certain types of littering increased dramatically – toilet/sanitary waste, BBQs, and PPE in particular. The sudden change from the calm and peace of the first lockdown period, to a seeming 'free-for-all' when restrictions were lifted, was experienced by many.

In terms of the ongoing campaign against Single Use Plastics the pandemic has made some feel like ground has been lost. Covid-19 has focussed the public's mind on human-to-human germ transfer, which has made reusable items such as coffee cups and bottles less attractive. There is also the trend for single-use PPE to contend with.



Plate 13.3. CPPC Littered PPE masks (both single use and reusable) are being found in coastal, rural and urban areas

Looking forward to this year and beyond, there was an overwhelming sense of hope and positivity. Collaboration is uppermost in our members' vision. Joined-up working is the best way in which we can all help each other as well as help the environment and wildlife around us. Groups spoke about their pride in being able to adapt and survive. They have improvised, invented, and worked in a variety of new ways in order to remain flexible enough to weather this pandemic storm. They are passionate about keeping carbon footprints low and adapting to the 'virtual' and online world. This will open up exciting possibilities for education, training, and communication, which when combined with traditional methods will ensure a diverse approach to all our work.

Objectives for the near future as well as the longer term include:

- Continuation of regular beach-cleans and litter-picks
- Using local learning experiences to influence future decision making
- Increased education work (all ages) on and offline
- More collaboration between groups, networks, external partners & stakeholders
- Renewed campaigns on SUPs, PPE, single-use BBQs, cigarette litter
- Renewed campaigns on recycling

The past 12 months have seen the CPPC members building up valuable resilience, strength, skills, and knowledge, and they are keen to use this not only to support their individual work, but also the work of the entire coalition.



Plate 13.4

14. Development and Planning

Edited by Richard White

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Update from items in the 2018 report

It is the nature of some large-scale development projects that they continue to be potentially relevant for several years. Schemes which seem to have had the plug pulled can sometimes spring back into life. It is worthwhile, therefore, to begin with an update on issues discussed in the 2018 report.

For the second year running, there seems to be no change with proposals for **dredging in Falmouth Harbour**. It appears that no new, formal marine licence application has been made to the Marine Management Organisation (MMO) by Falmouth Harbour Commissioners (FHC), so the proposals are still in abeyance:

<https://www.gov.uk/government/publications/falmouth-habour--2#history>

Back in June 2018, the then Business and Energy Secretary, Greg Clark, announced that the UK Government had decided against supporting plans for a **tidal lagoon in Swansea Bay**. However, Tidal Lagoon Power, the company behind the proposals, continues to seek investment:

<http://www.tidallagoonpower.com/news/2019/12/04/press-release-4-december-2019/>

<http://www.tidallagoonpower.com/investment/tidal-power-plc/>

*2020 update – Tidal Lagoon Power carried out a consultation on **decommissioning plans** as part of the Development Control Order in April 2020.*

<http://www.tidallagoonpower.com/projects/swansea-bay/planning/consultations/>

As a result of the UK Government decision on Swansea Tidal Lagoon, things have also gone quiet on the related proposal to re-open **Dean Quarry**, proposed as a source of gabbro for the development. It is to be assumed that the future of these proposals will depend on future investment in the tidal lagoon project.

Monitoring of potential ecological impacts of **Lyme Bay mussel farm** continues to be carried out as part of the University of Plymouth's ongoing research programme.

<https://sheehanresearchgroup.com/offshore-mussels/>

The **Marine Management Organisation marine planning** process continues. The South Marine Plan, covering inshore and offshore waters from Folkstone to the River Dart, has already been adopted by Government:

<https://www.gov.uk/government/collections/south-marine-plans>

Workshops were held as part of the third iteration of stakeholder engagement, between January and March 2019, focussing on draft policies and supporting text for the South West Marine plans:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/793205/IT3_eng_summary_final.pdf

2020 update – the Marine Management Organisation published a consultation draft of the South West Marine Plans in January 2020, with the consultation running until 20 April:

<https://consult.defra.gov.uk/mmo/draft-south-west-inshore-and-offshore-marine-plans/>

The **North Devon Marine Pioneer** continues to explore how marine natural capital can best be managed for the benefit of the environment, economy, and people and to test how local interests (environmental, social, business) can play their part in managing, monitoring, and communicating the benefits of a location's marine area and related coastal and terrestrial zones. A list of projects agreed by the project's steering group was published in January 2019:

<https://www.gov.uk/government/publications/marine-pioneer/marine-pioneer-achievements>

and links to all relevant project information can be found on the North Devon Biosphere website:

<https://www.northdevonbiosphere.org.uk/marinepioneer.html>

Further details emerged during 2019 of plans that Guardian Industrial (UK) Limited have for the recently acquired **Drake's Island**, in Plymouth Sound, including the development of a hotel and spa. The new owners are busy developing links with local organisations and local communities:

<https://drakes-island.com/future> and <https://drakes-island.com/island-life>

New plans and developments

The **Lower Otter Restoration Project** aims to restore, enhance, and protect habitats and amenities at the mouth of the River Otter in East Devon:

The Marine Management Organisation have provided a scoping opinion on an Environmental Impact Assessment for the work, which will include breaching some of the existing flood banks to re-connect the river with its natural floodplain.

http://www.lowerotterrestorationproject.co.uk/PDFs/CDE_OtterLeaflet_Sml_v6.pdf

<https://marinelicensing.marinemanagement.org.uk/mmofox5/fox/live/>

Network Rail is seeking to improve the resilience of the south-west main railway line between **Parsons Tunnel and Teignmouth**. A public consultation was held in the early summer of 2019, setting out, and seeking views, on proposals. The results of this initial consultation are summarised as part of a second public consultation held in early 2020.

<https://consultations.networkrail.co.uk/communications/swrrp/>

<https://consultations.networkrail.co.uk/communications/parson-s-tunnel-to-teignmouth-resilience-project-2/>

While supporting the need to improve resilience of the railway, a local group has been set up in opposition to the current plans, asking that alternative solutions are investigated:

<https://www.savethebeach.co.uk/about-the-save-the-beach-campaign>

EDF Energy are planning to seek a 'material change' to the **Hinkley Point C** Development Consent Order granted in 2013 to remove the requirement to install an acoustic fish deterrent at Hinkley Point C. A consultation on the proposed change was held between April and early June in 2019, ahead of a submission to the Secretary of State in 2020.

<https://www.edfenergy.com/energy/nuclear-new-build-projects/hinkley-point-c/about/acoustic-fish-deterrent>

Several local angling and conservation bodies issued a joint statement expressing concerns about this proposal:

<https://www.wwt.org.uk/news/2019/07/22/giant-plughole-threat-to-sea-life-in-uks-largest-estuary/17294>

There has been a renewal of interest in the **development of the Outer Harbour at Looe** (thanks to Ruth Williams for bringing this to our attention). This project, aimed at both flood protection and economic regeneration, has been around for some time, with at least two public consultations in 2015 and 2017:

<https://looeharbour.com/projects/looe-flood-protection-project>

This has received a recent boost, in response to flooding events and as a result of £2.3 million funding from Cornwall Council who aim to work with the community on designs which will form the basis of bids for further funding:

<https://www.cornwall.gov.uk/council-and-democracy/council-news-room/media-releases/news-from-2019/news-from-march-2019/cabinet-agree-4-million-regeneration-plan-for-south-east-cornwall/>

While local response has been mostly positive, concerns were expressed in earlier consultations that the environmental implications of plans had not been fully considered:

<http://looemarineconservation.org/conservation/looe-outer-harbour-proposal-official-position/>

Finally, the UK's first **National Marine Park** has been established in Plymouth Sound:

<https://www.plymouthchronicle.co.uk/2019/09/12/plymouth-to-be-uks-first-national-marine-park/>

with key partners coming together in September 2019 to sign a Declaration of Intent:

<https://plymouthsoundnationalmarinepark.com/wp-content/uploads/2019/09/NMP-declaration-of-intent-A4.pdf>