

South West Marine Ecosystems 2017
April 21st Sherwell Centre, Plymouth University, Plymouth
Speaker Notes

Programme

Session 1 Events & Observations in 2016

- 9.30 **Welcome** Chair: **Martin Attrill**, Plymouth University Marine Institute
- 9.35 **Events & observations in 2016** *facilitated by Bob Earll & Natasha Bradshaw*
Comment on events and bring along your observations of 2016
- 10.00 **The Events of 2015 – SWME Annual Report**
Keith Hiscock, Marine Biological Association (MBA)
- 10.10 **Predicting and projecting variability and climate change in the (physical) marine environment**
Jonathan Tinker, Met Office Hadley Centre
- 10.30 **Western Channel Observatory update**
Steve Widdicombe, Plymouth Marine Laboratory (PML)
- 10.50 **Satellite-derived environmental drivers for top predator hotspots**
Peter Miller, PML
- 11.10 **Seasearch SW diver record highlights**
Charlotte Bolton, Seasearch/Marine Conservation Society
- Short Updates**
- 11.30 **Community Seagrass Initiative** **Jessica Mead**, National Marine Aquarium
- 11.35 **Marine Ecology and Conservation Network** **Zara Botterell**, University of Exeter

11.40 – 12.30 First break: Sandwiches and refreshments

Session 2 Seabirds & Mammals

- Chair: **Matthew Witt** Environment and Sustainability Institute, University of Exeter
- 12.30 **The influence of tidally driven processes on harbour porpoise distribution**
Duncan Jones, Marine Discover and Falmouth Marine School
- 12.50 **Acoustic monitoring of SW odontocetes** **Nick Tregenza**, Chelonia Ltd
- 13.10 **Trends in callouts over the past ten years in Cornwall & unusual events of 2016**
Dan Jarvis, British Divers Marine Life Rescue
- 13.30 **CWT Marine Strandings Network** **Abby Crosby**, Cornwall Wildlife Trust
- Short updates**
- 13.50 **Bottlenose dolphin photo-id work** **Ruth Williams**, Cornwall Wildlife Trust
- 13.55 **2016 seal highlights** **Sue Sayer**, Cornwall Seal Group Research Trust
- 14.00 **National seabird census 2015 – 2019** **Alex Banks**, Natural England
- 14.05 **Collaborative monitoring of the Eddystone SAC**
Matthew Witt, University of Exeter

14.10 - 14.50 Second break: Cakes and refreshments

Session 3 Using science to inform marine management

- Chair: **Libby Ross** Devon & Severn Inshore Fisheries & Conservation Authority
- 14.50 **South West Marine Plan** **Neal Gray**, Marine Planner, Marine Management Organisation
- 15.10 **Response of benthos to zoned exclusion of towed demersal fishing gear in Lyme Bay; 5yrs after closure** **Martin Attrill**, Plymouth University
- 15.30 **Anchoring & Mooring in MPAs: impacts, risk and management**
Olivia Langmead, Marine Biological Association and Plymouth University Marine Institute
- 15.50 **Somerset's Brilliant Coast** **Nigel Phillips**, Coast Ambassador, Somerset Wildlife Trust
- Short Update**
- 16.10 **Cornish Plastic Pollution**
Claire Wallerstein, Cornish Plastic Pollution Coalition
- 16.15 **Inspiring images from the north coast**
Sue Sayer with Annabelle & Chris Lowe, Marine Life Boat Surveys
- 16.30 Close

Events and Observations of 2016 – Icebreaker

Facilitators: Bob Earll & Natasha Bradshaw

The seas around the south west are influenced by many varied natural processes, acting over a range of timescales from daily to decadal or even longer. They are also widely influenced by anthropogenic activity. The number of influences and their propensity to change from year to year leads to a variety of recipes for the conditions we might see.

This variety often leads to unusual records or anomalies. Keeping records of these variations from the norm allows us to identify patterns. They can help us to link extreme weather events to ecological changes or to better understand survivability in the aftermath of these events. Long term data collection also allows us to consider the impacts of processes such as climate change. The report of observations for 2016 will be compiled using, as an initial catalyst, the questionnaires completed by participants at the 2017 meeting. This is your chance to tell us what you have seen. Please think about things you have noticed in 2016 and take the time to fill in your forms as the wider the participation the wider the net we cast in understanding what is happening across the whole region.

The idea is to gain information on the whole picture so we are interested in comments from many categories. You might want to consider: Weather - Oceanography (including plankton) – Benthos – Fish (& Turtles) – Birds – Seals – Cetaceans – Management Issues

The Events of 2015 – SWME Annual Report

Dr Keith Hiscock

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Every year brings new events or variations on the 'usual'. Recording those events will help us better identify patterns and linkages as well as the effects of, for instance, severe weather, climate change and the arrival of non-native species. Making and recording observations contributes to the fund of natural history knowledge that informs science, conservation and that enriches our lives.

The 2015 report is a compilation of separate accounts from major topic-areas and can be accessed from: <http://swmecsystems.co.uk/annual-reports>. Some highlights:

- Seawater temperatures in winter 2014/15 and autumn 2015 were 'mild'. However, spring and summer were below average.
- Turbulent conditions favoured large diatoms such as *Coscinodiscus wailseii* in the water column.
- Large numbers of barrel jellyfish occurred early in the year and continued to accumulate in sheltered bays and wash-up on beaches through the summer.
- The number of spiny lobsters *Palinurus elephas* being seen by divers rose again in 2015 with as many as six being seen on a dive.
- Range extensions/new recorded locations of *Turbicellepora magnicostata* at Penzance; anemone shrimps (*Periclimenes sagittifer*) at Babbacombe.

- Small numbers of basking sharks, sunfish and triggerfish seen, but a number of warmer water species continued to be recorded. Shoals of anchovy off Plymouth in November. Outstanding fish features were the world's largest seahorse (34 cm) and a large shoal of bluefin tuna.
- The highest number of stranded dead seals in Cornwall since records began.
- Turtle reports from south west England and the Channel Islands were up significantly (19 compared with 13 in 2014).

Thanks to everyone who submitted records and images during the 2016 meeting or subsequently and especially to the section editors for pulling material together.

Predicting and projecting variability and climate change in the (physical) marine environment

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The marine environment is constantly changing, on time scales of minutes to millennia. Marine ecosystems are intimately linked to the physical environment, and to respond to changes in the instantaneous and prevailing conditions through many complex interactions.

The Met Office produces forecasts and projection of the marine environment on a range of spatial and temporal scales – here we focus on the oceanographic component (temperature, salinity, currents, and stratification), however, waves, surges and biogeochemical products are also produced. Reanalyses running from the 1980s to near-present day are consistent with operational forecasts out to 5 days. Beyond 5 days, a different approach is needed - seasonal and decadal forecasts rely on slow (typically ocean and ice) components of the climate system to give extended predictability. At longer timescales, ensemble shelf seas climate projections for the North West shelf seas have been developed to give a first estimate of climate uncertainty on the shelf. Contribution activities such as the Copernicus Ocean State Report, and the Marine Climate Change Impact Partnership helps communicate this science to the wide community.

As well as giving an overview of the Met Office marine capabilities, and available datasets, we will concentrate on two examples highlighting climate change and year to year variability: the ensemble shelf seas climate projections, and new Copernicus Ocean State Report.

Western Channel Observatory Update

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The Western Channel Observatory (WCO; <http://www.westernchannelobservatory.org.uk>) is an oceanographic time-series and marine biodiversity reference site in the Western English Channel. *In situ* measurements are undertaken weekly at a coastal station L4 and fortnightly at an open shelf

station E1. A number of other coastal and offshore stations are also sampled to support specific scientific programmes and projects. This presentation will use the fundamental environmental and biological observations taken at the WCO to illustrate the ecological structure and function of the Western English Channel in 2016. These data will be placed into the context of up to 30 years of regular sampling. New activities and observations recently added to the WCO sampling portfolio will be introduced and some results from large projects and synthesising activities supported by the WCO will be presented. The presentation will conclude by highlighting other aspects concerning the WCO including current threats and future plans.

Satellite-derived environmental drivers for top predator hotspots

Peter Miller

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Marine predator hotspots result from the patchiness of biological productivity, sparsely distributed across shelf seas and open oceans. Using satellite remote sensing we seek to advance our understanding of environmental drivers such as temperature, productivity, fronts and eddies, on this patchiness and the related distribution of top predators. This will assist in the effective management of populations of conservation concern, including certain sharks, cetaceans and seabirds. This talk will relate satellite data of the southwest UK to published distribution models, in order to attempt predictions of animal aggregations during 2016. In particular I will analyse composite front maps, which combine the location, strength and persistence of all ocean fronts detected on satellite sea-surface temperature or ocean colour data over several days into a single map (Miller, 2009), and have been previously applied to assist in the delineation of marine protected areas (Miller and Christodoulou, 2014). Either this will provide a helpful context to the animal sightings to be presented during this meeting, or demonstrate the shortcomings of these predictions.

Miller, P.I. (2009) Composite front maps for improved visibility of dynamic sea-surface features on cloudy SeaWiFS and AVHRR data. *Journal of Marine Systems*, 78(3), 327-336.
[doi:10.1016/j.jmarsys.2008.11.019](https://doi.org/10.1016/j.jmarsys.2008.11.019).

Miller, P.I. & Christodoulou, S. (2014) Frequent locations of ocean fronts as an indicator of pelagic diversity: application to marine protected areas and renewables. *Marine Policy*. 45, 318–329.
[doi: 10.1016/j.marpol.2013.09.009](https://doi.org/10.1016/j.marpol.2013.09.009)

Further research on [ResearchGate](#). Ocean fronts product [leaflet](#).

Seasearch South-West Regional Highlights 2016

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Volunteer divers have been collecting sublittoral species and habitat data using the Seasearch methodology for 29 years. Seasearch/MCS is the third largest contributor of marine species data to the National Biodiversity Network (NBN) and adds up to 50,000 new records each year. In 2016 59% of the Seasearch records from England came from the South-West (Cornwall/IOS, Devon and Dorset) and 33% of Seasearch records overall.

During 2016 our diving activities concentrated on both existing and yet to be designated SACs and MCZs, and also involved collaborative projects with our local IFCA and Natural England. As the designation process moves slowly towards a conclusion the emphasis is moving to management of MPAs and Seasearch hopes to play its part by acting as eyes and ears in the periods between statutory monitoring.

This short talk will briefly report on those projects, and highlight exciting species records from the South-West region and beyond.

Community Seagrass Initiative

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The Community Seagrass Initiative (CSI) is a seagrass conservation project based in the South West of England. Jessica Mead, Weymouth project officer, will give a brief overview of the CSI and its work to date. This includes volunteering opportunities for water users, public engagement and awareness raising events and other research being carried out such as seagrass friendly mooring trials, seagrass seed cultivation and monitoring of the seagrass in the Fleet Lagoon.



Photo: Alex Mustard

Marine Ecology and Conservation Network

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Over the last year, the Marine Ecology and Conservation Network has held four events bringing together NGO's, businesses, scientific researchers and policy makers from all over the SW England and beyond. At our annual meeting we shared recent research and current initiatives surrounding the themes 'Citizen Science' and 'Plastic Pollution'. As well as acting as a forum to bring everyone together we have also organised events in collaboration with other organisations. This includes a SW Bottlenose Dolphin Conference with Cornwall Wildlife Trust and a marine conservation workshop with the Zoological Society of London. Most recently we hosted a public seminar with conservationist and researcher Colin Speedie on his recently released book on basking sharks. Suggestions for low cost/high value events welcomed.

The influence of tidally driven processes on harbour porpoise *Phocoena phocoena* distribution

Duncan Jones

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Due to its Annex II European Habitats Directive status, the Joint Nature Conservation Committee (JNCC) have recently proposed Special Areas of Conservation (SACs) for the harbour porpoise. In order that SACs are successful it is important that key habitat features are preserved for the species named in the designation. In order to do this it is necessary to understand how animals exploit habitat. Due to low dedicated survey coverage for most of UK waters, predictors for the spatial and temporal use of habitat for harbour porpoise at fine scales are still poorly understood.

A platform of opportunity has been used to collect effort based sightings data for harbour porpoises and other species in Mount's Bay, Cornwall, over the last eight years. All sightings in sea state two and below have been analysed accounting for bias introduced by the opportunistic platform. This analysis has identified several hotspots. A high resolution bathymetry model has been generated for the survey area using the Channel Coast Observatory, GEBCO and Navionics data. The accuracy of this model has been tested using geostatistics. Presence and absence of porpoises in these areas has been modelled in relation to: depth, slope, slope aspect, tide speed, tide direction, tide percentile, water temperature gradient, sea state and time of year. Spatial regression was used to account for autocorrelation followed by a stepwise general additive model to identify significant predictors of porpoise presence. Preliminary results suggest that tidal regime is a key driver for both spatial and temporal presence.

It is hypothesised that tidal the turbulence created by tidal flow along the inner shelf between 30 metres depth and 50 metres depth triggers lagrangian process, focusing phytoplankton, zooplankton and in turn clupeid species. The prey availability in these areas attracts high aggregations of harbour porpoises. Developing a better understanding of how harbour porpoises use foraging areas at a fine scale can provide useful information to mitigate conflict with fisheries in the form of by-catch. This type of modelling could be used to control activity within SACs in order to preserve access to key habitat for this species.

Acoustic monitoring of SW odontocetes

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Monitoring top predators in marine ecosystems is often expensive. In many contexts deep declines in predators have gone unrecognised until levels were a tiny fraction of their previous level. In the south west we lost an inshore group of bottlenose dolphins, probably in the 1970s and as an effect of organochlorine pollution. The area has since been recolonised. Porpoise numbers also declined

and porpoises were lost from our estuaries where they had once been numerous.

Static acoustic monitoring has now been successfully used both in Cornwall and in diverse and challenging contexts elsewhere, and continues to develop. Acoustic monitoring has shown strong seasonal patterns of inshore habitat use in Cornwall by porpoises.

There is a strong case for citizen science based long term acoustic monitoring of inshore cetaceans. This could use the new C-POD-F logger and automated data analysis. The key tasks are finding collaborators, identifying suitable long term deployment sites, and methods of deployment. Such monitoring could demonstrate recolonisation of estuaries by porpoises and trends in inshore bottlenose dolphin numbers.

Trends in callouts over the past ten years in Cornwall and the Isles of Scilly, and the unusual events of 2016

Dan Jarvis

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2016 was another busy year for British Divers Marine Life Rescue in Cornwall and the Isles of Scilly with 262 callouts received, the highest number to date. Approximately 75% of callouts related to seals, whilst the remainder was made up of cetaceans, seabirds, sharks and turtles. Although the number of callouts has increased significantly since 2013, it does not necessarily correspond to a similarly significant increase in the number of animals in need of assistance. Greater public awareness of BDMLR along with increasing numbers of year-round tourists to the South West coastline are thought to be major contributors to the steady long-term rise in callouts, but more acutely the severe winter storm patterns between 2013-2016 have also had a marked impact between December to February. During 2016 there were a number of notable incidents involving unusual species, including the 2nd U.K. and European record of a bowhead whale; the 1st U.K. record of a female sperm whale; three common seals pups – despite there being no known pupping areas for the species in SW England; and the 1st record of a ringed seal in SW England.

Cornwall Wildlife Trust (CWT) Marine Strandings Network

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Cornwall Wildlife Trust's Marine Strandings Network is the licensed recorder for all marine strandings in Cornwall and consists of a team of over 100 volunteers who record all strandings of marine organisms on Cornwall's coastline. We man a 24/7 hotline which takes calls from the public when they find a dead animal on the coast, and send trained volunteers to record every animal we can and where possible facilitate retrieval for post mortem. We work not just locally, but as an official collaborator for the UK Cetacean Strandings Investigation Programme (CSIP), currently under the management of the Institute of Zoology and funded by Defra, which contributes to the UK's programme of cetacean research on the North Sea and its response to ASCOBANS (the Agreement

on the Conservation of Small Cetaceans of the Baltic, North East Atlantic, Irish and North Seas). Recording stranded animals provides us with information about the marine environment and the health of marine creatures. This information is vital in helping us to determine cause of death and threats to survival. Our talk will review MSN research from its past 23 years of existence, and address the recent rise of cetacean strandings in 2017.

Bottlenose dolphin photo id work – SW collaboration

Ruth Williams

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Bottlenose dolphins in the coastal waters of SW England are under threat and likely in decline. Despite this, these animals have no specific protected area or special protection measures other than via general statutory protection of wildlife and cetaceans in UK waters. In order to ensure the best protection for these vulnerable animals we need to present the best scientific evidence to support and promote conservation action.

The SW Bottlenose Dolphin Consortium is a new partnership of various stakeholders throughout the southwest of England sharing a common interest in developing understanding and conservation of the region's bottlenose dolphins. We are currently collating historic data on bottlenose dolphin sightings and photos, working with as many collaborators as we can in the region, so we can analyse this large shared dataset and start to answer the relevant questions needed to better protect this species. Our data is stronger when shared and can address the questions we need to answer and this collaborative project hopes to do this.

2016 Seal Highlights

Sue Sayer

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Cornwall Seal Group Research Trust (CSGRT) had a landmark year in 2016 with our core photo ID research and the conservation work that this informs. We haven't just worked to conserve seals in the SW as we've been supporting organisations from northern England and Scotland to help improve the lives of their local seals. We've worked with statutory agencies, NGOs and amazing partners from local marine groups, to colleges and universities and campaign groups.

In the southwest, it's been an extraordinary year with unexpected sightings of species other than grey seals and trials of new technology. We'll be taking the usual whistle stop tour of individual seal stories from exciting pups, through new site links up to celebrities that died in 2016 and there's video footage of new behaviour. CSGRT completed two major contracts for Natural England in 2016 that you might like to learn more about...and new theories are emerging about why seal numbers across Cornwall might not add up!

Needless to say, it is all a bit more complicated than we first thought!

National Seabird Census 2015 - 2019

Alex Banks

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Natural England is one of the Seabird Monitoring Programme partners working to enable the national breeding seabird census 'Seabirds Count'. The census aims to replicate previous periodic national censuses in counting all seabirds breeding in the UK and Ireland. It allows data collection between 2015 and 2019 – there are three breeding seasons left for data collection.

The presentation will show:

- Known coverage of seabird nesting locations in the south west achieved to date;
- Plans for additional effort in 2017;
- Plans for dealing with gulls nesting in urban environments; and
- Opportunities for volunteers and professionals to take part in data collection, either opportunistically or in a targeted way.

Collaborative Monitoring of the Eddystone Special Area of Conservation (SAC)

Mathew Witt, Stephen Pikesley, Colin Trundle, Jean-Luc Solandt

The Eddystone Reef is part of the Start Point to Plymouth Sound and Eddystone Special Area of Conservation (SAC). In January 2014 management measures were introduced to prohibit bottom-towed fisheries from using key areas within the SAC, thereby creating a mosaic of protected areas that may provide protection to vulnerable reef-associated species. Newly established protected areas should be monitored over time to observe change in biological communities attributable to adopted management strategies and to assess their efficacy. As such, we have established an exciting collaborative partnership between the Marine Conservation Society, Cornwall Inshore Fisheries and Conservation Authority and the University of Exeter; funded by the Pig Shed Trust and Princess Yachts. Drop-down High-Definition camera surveys in 2015 and 2016 at the site have built upon a library of seabed images gathered from primary surveys in 2014. Analysis of over 1000 images highlight a variable community structure. Our work is closely focusing upon the transitions between habitat types that have been released from bottom-towed fishing pressure and makes use of independent reference areas for comparison. The project will fully report in 2020.

South West Marine Plan

Neal Gray

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The Marine Management Organisation is continuing to develop marine plans for the North East, North West, South East and South West areas. Marine plans guide what happens in the marine area, making sure activities take place at the right time and in the right place, enabling sustainable growth. The South West marine plans cover the coast from Dartmouth to Gloucester and extend from Mean High Water Spring Tides to the limit of the EZ (200mn or the median line with neighbouring countries or devolved UK administrations).

A marine plan will:

- encourage local communities to be involved in planning
- make the most of growth and job opportunities
- consider the environment from the start
- enable sustainable development in the marine area
- integrate with planning on land
- save time and money for investors and developers by giving clear guidance on things to consider or avoid
- encourage shared use of busy areas to benefit as many industries as possible
- encourage developments that consider wildlife and the natural environment

A marine plan:

- sets out priorities and directions for future development within the plan area
- informs sustainable use of marine resources
- helps marine users understand the best locations for their activities, including where new developments may be appropriate.

A marine plan also provides guidance on things to promote or avoid for some locations. Marine plans guide those who use and regulate the marine area to encourage sustainable development while considering the environment, economy and society. Marine plans apply only in their area, but if a proposed activity may affect other plan areas, this should be acknowledged and considered in the application and decision making.

Links

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

<https://www.gov.uk/government/collections/marine-planning-in-england>

Response of Benthos to Zoned Exclusion of Towed Demersal Fishing Gear in Lyme Bay; 5yrs After Closure

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The Lyme Bay reefs (south west UK) have been annually monitored since they were protected from towed demersal fishing in 2008. Following the extreme storm events in 2013/2014 additional research was carried out to assess if the benthos within the Marine Protected Area (MPA) were more resilient than the benthos in areas, which remain open to fishing. While MPAs are thought to be more resilient against natural disturbance, the benthic community in the MPA was significantly affected by the storms. Lessons learnt from this nine-year study will be presented that could be used to inform MPA management measures around the UK, such as in Cardigan Bay.

Anchoring and Mooring in MPAs: Impacts, Risk and Management

Olivia Langmead

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Key to delivering a well-managed and coherent network of MPAs is the implementation of management measures that ensure conservation objectives for protected species and habitats are met. Currently we have limited understanding of how recreational and commercial anchoring and mooring activities affect habitats and species and consequently there a lack clarity on appropriate management options to reduce potential impacts. Anchoring and mooring differ in terms of their permanence, leading to acute and chronic pressures respectively, but both may abrade, penetrate and change seabed features. In this study we investigated the following areas relevant to the management of anchoring and mooring:

- Sensitivity of UK protected features (41 habitats and 18 species) and identification of MPAs designated for sensitivity features;
- Exposure and level of risk to protected features within MPAs identified through collation and analysis of spatial data on scale, frequency and intensity of anchoring and mooring;
- Risk assessment using exposure, feature sensitivity and footprint of pressures for 190 MPAs in English and Welsh waters with designated features classified as sensitive to anchoring and mooring to identify high risk MPAs (22);
- Management measures and their efficacy (using analysis of contrasting case studies);
- Organisational responsibilities for control of anchoring and mooring – synergies and gaps.

Somerset's Brilliant Coast

Nigel Phillips

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- The initiative to raise the profile of Somerset's coast with regard to its marine life set out as an entirely volunteer led project but with very close liaison with Somerset Wildlife Trust staff.
- Difficulty in getting the public engaged with a coast that had virtually no profile with regard to marine life.
- Five years of the Somerset Marine Awareness Campaign 2012 – 2016 has led to Somerset Wildlife Trust launchings its Somerset's Brilliant Coast project, and now having a Coast Survey Project Officer.
- Difficulty In surveying a coast with the second highest tidal range in the world often resulting in a one kilometre deep intertidal zone.
- A coast survey project has now been devised and is now ready to roll out. Update from Beccy MacDonald SWT Coast Survey Project Officer.

Cornwall Plastics Pollution

Claire Wallerstein

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The Cornish Plastic Pollution Coalition is a grouping of over 30 environmental and beach-cleaning groups and marine science experts, together representing the interests of tens of thousands of people in Cornwall and beyond.

A year ago we decided to join forces, drawing on the particular strengths of each group to give us more clout in campaigning on specific plastic pollution issues.

For example, our work on balloon releases has led to us contacting over 20 organisations whose branded balloons have been found on Cornish beach-cleans. Many have now agreed to stop using balloons completely. Our report 'Just a Balloon' details over 2,000 pieces of balloon debris found across Cornwall from July – December 2016.

We also submitted evidence to the Government's Environmental Audit Committee inquiry on microplastics, helping influence the subsequent pledge to ban microbeads in cosmetics by the end of 2017, and are participating in the ongoing consultation on this issue.

We are represented on the Clean Cornwall management body and have even been invited to speak at a parliamentary event to call for evidence-based policy-making.

We are proud to be collaborating in this way to put Cornwall at the vanguard of efforts to tackle and bring greater attention to the plastic pollution issue.

Inspiring Images from the North Coast

Annabelle & Chris Lowe, Marine Life Boat Surveys

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& Sue Sayer

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Seal Group Research Trust (CSGRT) have been organising marine life and human activity surveys over a 100km+ stretch of the north Cornish coast since 2008. Initially with BDMLR, then Cornish Sea Tors and now exclusively with Atlantic Diver/ Newquay Sea Safaris (AD/NSS) these systematic surveys repeatedly cover the same coastal transects and offshore islands recording birds, cetaceans, other marine megafauna, ghost gear, human activity as well as seals. Volunteer surveyors have seen some incredible wildlife spectacles over the years and Annabelle, Chris and Sue will share some of their highlights from CSGRT surveys as well AD/NSS offshore marine expeditions including bow riding dolphins to sunfish swimming and nesting ledges packed with guillemots to send you home with ocean optimism.

OTHER ABSTRACTS

The Marine Environment – what’s in it for yotties?

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Both advocates for the marine environment and recreational sea users might like some answers to this question. There are broadly 3 reasons why recreational sea users should take an interest in the marine environment. The first two are boring but important. The last is more likely to engage them. Firstly, there is compliance. The rules are complex and worth getting to know as non-compliance can lead to the usual range of criminal penalties, and perhaps unwelcome publicity. Secondly, becoming better stakeholders and taking an active role in the public engagement process will improve the practicality of compliance and reduce disproportionate burdens. Lastly, they will enjoy their sport more. Looking out for marine wildlife increases the chances of seeing it, and the efficiency of lookouts and keeps seasickness at bay. Many boats carry a laptop so having a USB microscope on board, and a home-made plankton net open up a new world of marine life on the pontoon and at sea. An easy to make baited lander carrying an action camera gives an intimate view of life beneath the pontoon. Keeping masks, fins and snorkels onboard (and, if there’s room, wetsuits!) will show them how amazing UK’s marine life is.

Identification of individual undulate rays, *Raja undulata* to enhance understanding of site fidelity off the Dorset coast

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Undulate rays (*Raja undulata*) appear on the IUCN Red List of Threatened Species and are reported to be patchily distributed along the English Channel with sites of local abundance. Although they are acknowledged to have high site fidelity, little is known about their numbers, movement and distribution, with data generally developed from fishing, trawl records and limited tagging programs. They are however an important species, their low fecundity, late maturing and slow growth rate making them susceptible to over fishing.

Digital photography and readily available image recognition techniques has provided a methodology that can uniquely identify individual undulate rays from the pattern on their dorsal surface. Ray identity can be established from analysis of divers’ photographs that include juvenile and fully mature rays. Using this technique undulate rays have been shown to return to one particular Dorset site over prolonged periods and over successive years.

Monitoring over a four year study period has provided a database of ray sightings with approximately 100 individual rays being identified. The frequency of repeat sightings suggests the rays represent a relatively small population visiting the same area/site on a regular basis. Similar sites are known to exist around the UK coast however the importance to ray populations and their sustainability remains unknown. The continued information gathered from this site and the possible identification of similar sites compliments other research studies and helps provide greater insight to this species.

Further information available at: <http://www.stardis.co.uk/rays.html>

Tompot blenny (*Parablennius gattorugine*) behaviour update

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This ongoing photographic study (a summary was included as part of my SWMEC 2016 presentation) continues to reveal intriguing aspects of the lives of these charismatic animals. Additional information comes both from new observations and analysis of previously taken photographs. In a small area of shallow Devon reef between 2011 and 2016, the tompot blennies' distinctive head markings have been used to individually identify 10 crevice-guarding males and 20 females that visited these males in the breeding season. The tracking of these individually recognisable blennies has then helped to elucidate behaviour seen at other locations in Dorset and Cornwall.

Male tompot blennies on the Devon reef typically retain a crevice territory for up to 3 years and remain in it throughout the year including winter. Females visit to lay eggs between March and June, with males guarding the eggs until they finish hatching around July. The behaviour of females, including outside the breeding season, is particularly intriguing. Their approaches and displays to males, and their interactions between one another, suggest a hierarchy that may also indicate mutual mate choice where both males and females are 'choosy'.