**Version 26th April 2016**

**South West Marine Ecosystems 2016**

**April 8th Plymouth Marine Laboratory (PML), Plymouth**

**Delegate Notes**

**Programme**

The 2016 South West Marine Ecosystems Meeting (SWME) meeting will take place in the lecture theatre at the Plymouth Marine Laboratory (PML), <http://www.pml.ac.uk/Contact-us> ) on Friday April 8th. In 2015 150+ delegates attended representing 55+ organisations. The format and content will be similar to previous years with a mix of long and short presentations and good time for discussion and networking.

All the speakers and delegates pay for the conference fee and thanks to the generosity of PML the price will be £20 (including refreshments and lunch) to help attract the widest range of people and in particular volunteers, students interested this area of work. The full programme is set out below but the objectives of the meeting are:

1. **Networking** To provide a networking opportunity for a wide cross section of people to meet, exchange views and build networks on south-west marine ecosystems; this includes active support for volunteer observations and schemes (citizen science), marine science and research interests, managers and a range of sea users including nature conservation, fishing, tourism etc.
2. **To assess the annual events – ecological and oceanographic - of the previous year** that have affected the south west marine ecosystems – making the linkages between environmental and biological phenomena e.g. SST on plankton or mackerel and cetaceans. We will be asking delegates to contribute their observations on 2015.
3. **Ecology of marine species** To explore research studies that throw particular light on aspects of ecology of marine species, planktonic, benthic and ‘mobile’ species (fish, birds, mammals, turtles) and the ecosystem that supports them and to understand the status of populations of marine species in the south west and how they are responding to environmental and anthropogenic pressures.

1. **Management and southwest marine ecosystems** To understand the linkages between science to managing human activities the marine environment with a view to supporting and promoting the health of southwest marine ecosystems

**Programme**

**Session 1 Events & Observations in 2015 & Oceanography, Plankton**

8.45 Registration and refreshments

9.30 Chair**: Peter Miller** PML **Welcome to PML & SWME16**

9.35 **Events & observations in 2015: Delegates will be invited to bring along and comment**

**on the events and their observations of 2015 using structured approach** facilitated by **Duncan & Hannah Jones** Marine Discovery

10.00 **The Events of 2014 – SWME Annual Report Keith Hiscock**, MBA

10.10 **Update on SW Plankton & the Western Channel Observatory Angus Atkinson** PML

10.30 **The barrel jellyfish *Rhizostoma octopus* – what we do and don’t know** **about its ecology**

**Cathy Lucas** University of Southampton, NOCS

10.50 **Integrated monitoring surveys: studying the pelagic ecosystems of the south west of the UK**

**Jeroen van der Kooij** Cefas

**Short slots**

11.10 - 11.15 **Fine scale insight into porpoise, basking shark and seabird distribution**

**around a rocky reef  Sophia Butler-Cowdry** (formerly NOC)

11.15 -11.20 **Monitoring the development and success of *Scyliorhinus stellaris* egg cases *in situ***

**John Hepburn**

11.20 - 11.25 **Marine Ecology & Conservation Network** **Brendan Godley** Exeter University

11.25 - 12.00 **First break**: Sandwiches and refreshments

Session 2Chair: **Martin Attrill** Plymouth University

12.00 **Robot fleet explores England's only deep-water MCZ Russell Wynn** NOC

12.20 **Recent seabird and cetacean surveys in the English, Bristol Channel & Celtic Sea**

**Tom Brereton** Marine Life

12.40 **Our current understanding of the ecology of blue & porbeagle sharks in the southwest in**

**the context of their wider distribution and ecology**

**Cat Gordon & John Richardson** The Shark Trust

13.00 **Seasearch south-west diver record highlights 2015 Chris Wood**

Seasearch/Marine Conservation Society

13.20 **Ecological coherence of the Celtic Seas MPA network**

**Olivia Langmead** MBA, **Sian Rees** & **Nicola Foster** Plymouth University

13.40 - 13.50 **South coast Devon and Dorset seal network** – **Bob Earll**, **Julie Hatcher** Dorset WT,

**Sue Sayer**

13.50 – 14.00 **South-west bottlenose dolphin network** –

**Simon Ingram** Plymouth University, **Duncan Jones**, **Sue Sayer, Ruth Williams**

14.00 – 14.05 **Valuing Ecosystem Services in the Western Channel (Valmer)**

**Olivia Langmead** (MBA), **Tara Hooper** (PML) and **Nicola Beaumont** (PML)

14.05 - 14.10 **Cameras and seals: quantifying effects of human disturbance**,

**Billy Heaney** Exeter University

14.10 – 14.15 **Analysis of a 'citizen science' database: Pink sea fans as indicators of the spatial**

**efficacy of marine protected areas in southwest UK coastal waters**

**Stephen Pikesley** Exeter University

14.15– 14.20 **Marine planning for the South West** **Neal Gray** MMO

14.20 - 14.50 **Second break**: Cakes and refreshments

14.50 Session 3 **Using science to inform marine management** Chair: **Matt Witt** Exeter University

14.50 **Fisheries status in the south-west and impacts of the reformed CFP** Jim Portus,

Chief executive of South Western Fish Producer Organisation (SWFPO Ltd)

15.10 **Chinese Whispers: Misconceptions and myths mask true progress in MPA and inshore fisheries management Sarah Clark** Deputy Chief Officer (Environment)

Devon and Severn Inshore Fisheries and Conservation Authority

15.30 **Research to action….making a difference locally and globally –**

**ghost gear in Cornwall 2014 -2015.**            **Sue Sayer and Kate Williams** Cornwall Seal Group

15.50 **The Falmouth Bay to St Austell Bay pSPA Biodiversity Atlas**

**Richard Cook** Natural England, **Matt Witt** & **Stephen Pikesley**

16.10 **Inspiring images**: **Marine life in action: underwater observations and questions from**

**shallow reef habitats’ Paul Naylor**

16.30 Close and refreshments

**The Events of 2015 – Icebreaker**

**Facilitator: Duncan Jones**

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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 2015 will be compiled using, as an initial catalyst, the questionnaires completed by participants at the 2016 meeting. This is your chance to tell us what you have seen out there. Please think about things you have noticed in 2015 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 2014 – 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 report of observations in 2014 was compiled using the questionnaires completed by participants at the 2015 SWME meeting but also some significant ‘further enquiries’ to fill apparent gaps. 2014 was ‘The year of the storms’ – the extremely strong winds and heavy rainfall late in 2013 and early in 2014. Many observations related to wash-outs of species and to damage done to coastal features and wildlife. Nevertheless, the overall picture was one of survival of wildlife and that, after the storms, much of the seabed wildlife looked ‘as always’. There were unusual or exceptional sightings of some megafauna, there were records of species not previously recorded for the area or for certain locations and there were unusually high abundances of some species to note.

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

The report, and that for other surveys in 2015 and outcomes of SWME2015 can be found at the following link – <http://coastal-futures.net/south-west-ecosystems-archive> click on 2015.

**Update on SW Plankton and the Western Channel Observatory**

**Angus Atkinson\*, Andrea J. McEvoy, Claire E. Widdicombe, Tim J. Smyth, J.L Maud, Rachel Harmer, Martin Lilley**

\*Presenter: [aat@pml.ac.uk](mailto:aat@pml.ac.uk) Phone 01752 633409 Plymouth Marine Laboratory, Prospect Place, The Hoe, Plymouth, PL13DH, United Kingdom

Due to the history of fishing in the West Country, the various Plymouth laboratories having been monitoring the plankton in this area for over 100 years. This talk describes the weekly sampling programme at one of the fixed sites 10 miles south of Plymouth that has continued on a weekly basis since 1988.The regular sampling includes and comprehensive suite of pelagic and benthic variables, but this presentation summarises variability in the phytoplankton and zooplankton over the time series. I will present biomass estimates of the key zooplankton groups at L4 during 2015, in relation to those in the previous quarter century. Our analyses of the seasonal timing (phenology) and year to year variability in the major plankton taxa provide a slightly different perspective on the frequent suggestions highly anomalous years, due to high numbers of jellyfish, storm activity, floodwater discharge, etc. The talk emphasises some characteristics of the L4 zooplankton that provide some inbuilt resilience to dramatic changes in their environment.

**Website**: <http://www.westernchannelobservatory.org.uk/>

**Further reading**: Progress in Oceanography Special Issue 137(B) dedicated to this Western Channel Observatory, including papers by Atkinson et al 2015 (Progr Oceanogr 137: 498—512) and Maud et al. (Progr Oceanogr 137: 513-523)

**The barrel jellyfish *Rhizostoma octopus* – what we do and don’t know** **about its ecology**

**Dr Cathy Lucas**

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The last two years saw large numbers of the barrel jellyfish *Rhizostoma octopus* appearing in coastal waters, harbours and stranded on the beaches of south west and southern UK between ~April and September. *R. octopus* is one of six species of true jellyfish (i.e., Scyphozoa) commonly found around the British Isles, and is closely related to *R. pulmo* in the Mediterranean and the 2 m dia. giant jellyfish, *Nemopilema nomurai*, found in Japan. The recent blooms of the barrel jellyfish in the UK have led to a considerable amount of alarmist media coverage, but in fact they are natural members of our marine ecosystem and harmless to humans. There has been much speculation as to what has caused these recent outbreaks, and in reality, scientists know very little about this species, particularly when compared with another widespread species, *Aurelia aurita*. This presentation will summarise what we do and don’t know about the ecology of *Rhizostoma* species, in particular their distribution and life history. Information has been gathered from a variety of sources - academic research, citizen science and social media, but clearly far more long-term, quantitative data are required if we are to better understand how and when barrel jellyfish bloom.

**Integrated monitoring surveys: studying the pelagic ecosystems of the south west of the UK**

**Jeroen van der Kooij**

Cefas (Centre for Environment, Fisheries and Aquaculture Science)

Pelagic Science Team, Lowestoft

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Sustainable management of the marine environment requires data of many different types, from many sources. Remote sensing techniques and ecosystem models are used increasingly frequently to supply and interrogate, respectively, these data, and their use is forecast to grow. However, both methods and indeed other aspects of monitoring of marine resources, also depend on empirical data, often collected during at sea surveys. The growing need for data and falling budgets for data collection now motivates a general drive to make more efficient use of survey programmes. Traditionally, marine monitoring programmes have focused on specific aims such as the mapping and quantifying of commercially important fish species in support of fisheries management advice. Recently, the focus of these monitoring programmes has changed with many becoming more multi-disciplinary, deploying a number of different instruments to study wider aspects of the marine environment beyond the original primary aims. In October 2012, Cefas started a new annual monitoring survey in the UK waters of the western Channel and eastern Celtic Sea. The primary aim of the survey was to study the little known small pelagic fish community, but by integrating a wide range of different data collection methods, our overall understanding of the pelagic food web and ecological interactions in these coastal waters is starting to improve. A summary of methods and results of the last few years is presented.

**Fine-scale insight into porpoise, basking shark and foraging seabird distribution around a rocky reef off southwest UK**

**Dr Sophia Butler-Cowdry**

Founder Green Creds (formerly National Oceanography Centre, Southampton)

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Waters off southwest UK host a variety of free-ranging marine top predators, including harbour porpoises *Phocoena phocoena*, basking sharks *Cetorhinus maximus* and seabirds – the focal species in this presentation. As human impacts increase in the nearshore zone (e.g. wet renewables), improving our understanding of the fine-scale distribution of vulnerable and threatened species in relation to an array of environmental variables is vital for their long-term survival. Collecting robust and appropriately-resolved data is important to effectively inform coastal management regimes responsible for their protection. Current policy drivers (e.g. Marine Protected Area designation and management) also require the development of appropriate low-cost methodologies for land-based data collection going forward, particularly in areas where vessel-based surveys may be impractical.

This presentation will outline the methods used to collect these data in a tidally-dominated, high energy environment near Land’s End, and show some key results. These will include species-specific habitat maps linked with fine-scale (1-m resolution) seafloor bathymetry and, for porpoises and actively-foraging seabirds, key relationships with temporally highly-resolved (30-min) met-ocean data (e.g. weather and tides).

Land-based sightings data were collected between 2010 and 2013 using a theodolite and a team of dedicated observers overlooking the bedrock-dominated Runnel Stone Reef Marine Conservation Zone (MCZ). It should be noted this MCZ was designated in January 2016 due to the presence of certain static features, which included moderate/high energy intertidal, infra and circalittoral rock, and Pink sea fan *Eunicella verrucosa*; not due to the presence of Annex II-listed harbour porpoise nor the critically-endangered basking shark.

Highly-accurate (<50 m) positions of animals at sea were recorded and, for porpoises and seabirds, integrated into statistical predictive models to identify significant drivers of distribution. Acoustic data on cetaceans were also collected at the study site over three consecutive summers using CPODs (static acoustic data loggers) and modelled with the environmental data to provide valuable, sub-surface information on the same species. Highly-detailed tracks of basking sharks will be presented overlaid on the fine-scale bathymetry layer, side-by-side with radar-derived (160-m resolution) sea surface metrics (courtesy Dr Paul Bell), which provide a unique and novel insight into their behaviour around a high energy, rocky reef.

All target species were influenced by small-scale topographic features at the scale of metres to tens of metres, with areas of steep slopes and strong tidal flows (‘tidal-topographic’ fronts) forming particular hotspots within the survey region. Small-scale commercial fishing activity showed significant overlap with porpoises and foraging seabird distribution, although no negative interaction at this site was recorded. It does however highlight the additional importance of these particular fine-scale features for human as well as marine predators. Significant relationships with tidal flow parameters (e.g. current direction and tidal range) provided further insight into the physical processes driving the clustered sightings of both species, though the acoustic data also revealed significant diurnal patterns and small-scale spatial variation for porpoises, even within the fairly constrained (15 km2) survey region.

The presentation will conclude with a comparative table summarising the significant drivers of distribution for each species and, for porposies, compare the key findings as collected by the two different survey methods (visual and acoustic).

Further details of this study, including results from acoustic analyses of dolphins in the area, plus an additional study carried out at St Ives Bay for foraging seabirds (a joint partnership between the NOC, RSPB and CIFCA), can be found in my [PhD e-thesis](http://bit.ly/ButlerCowdryPhDTHESIS), available for download.

**Monitoring the development and success of *Scyliorhinus stellaris* egg cases *in situ***

**John Hepburn**

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[www.sharktrust.org/shared/downloads/projects/nursehound\_eggcase\_scientific\_poster.pdf](http://www.sharktrust.org/shared/downloads/projects/nursehound_eggcase_scientific_poster.pdf)

www.wemburymarinecentre.org/mermaid-purse-monitoring-a-guest-blog-by-john-hepburn/

At Wembury Point there is a stable Scyliorhinus stellaris hatchery, in the very low intertidal, making it possible to study the eggcases by snorkelling. Since April 2014 the eggcases have been tagged in a citizen science project initiated by John Hepburn, advised and supported by the Shark Trust, with a view to finding out:

* When they are laid
* How long they take to hatch
* What the success rate is, and what affects it (e.g. substrate, fertility, temperature, wave action, season, predation)

The Shark Trust's Great Eggcase Hunt would benefit from knowing the laying site of any eggcases reported. The tagging and recording process has evolved to overcome a number of difficulties, and some tentative, preliminary conclusions can be drawn:

* Eggs are laid throughout the year.
* Gestation period has not been determined with certainty due to practical difficulties in the tagging process. It may average 7 months.
* Consequent on the difficulty of determining the gestation period, the success rate and its causes relationships could not be determined. Nevertheless, storms have not been found to have a significant effect, and only eggs laid on *Cystoseira tamariscifolia* hatch.

One tagged case was found on the strandline approximately 500m from the hatchery. Other similar sites may exist, and protocols developed here could enable further research. *S. stellaris* is “Near Threatened” but declining in the Mediterranean. This research may inform knowledge of population dynamics and catch management.

**Exeter Marine Ecology and Conservation Network**

**Prof. Brendan J. Godley**

Chair in Conservation Science, Centre for Ecology & Conservation

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Brendan will outline

* The Marine Ecology and Conservation Network launched in 2015
* General mode of operation
* Past meetings
* Future meetings

Websites or references

<https://www.facebook.com/MECNExeter/>

<http://biosciences.exeter.ac.uk/staff/index.php?web_id=brendan_godley>

<http://www.seaturtle.org/mtrg/>

**Robot fleet explores England’s only deep-water Marine Conservation Zone**

**Prof Russell Wynn**

National Oceanography Centre, European Way, Southampton, SO14 3ZH, UK

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This talk will showcase some of the spectacular video and images obtained with a fleet of deep-diving robotic vehicles from an undersea canyon off southwest UK. Part of this work was funded by Defra, and the collected data are being used to inform management measures at the new Canyons Marine Conservation Zone (MCZ). Highlights include:

* 3D mapping of the canyon at all resolutions from 200 km down to 2 mm, using the NERC vessel RRS *James Cook*, the Remotely Operated Vehicle (ROV), *Isis*, and the Autonomous Underwater Vehicle (AUV), *Autosub6000*.
* The first-ever mapping of vertical and overhanging canyon walls collected with both AUV and ROV.
* Supporting oceanographic data, collected with a UEA submarine glider, showing giant internal waves in the canyon up to ~80 m high.
* Imaging of cold-water corals and associated fauna, e.g. clams, sponges, fish and octopi, and evidence for impacts of lost/discarded fishing gear within the Canyons MCZ.
* A vibrant pelagic ecosystem, including the first-ever photos of Blue Whale in English waters, the first ROV video of Broad-billed Swordfish in English waters, and large numbers of Blue Sharks and migratory seabirds.

A media release and expedition blog can be found at:

<http://noc.ac.uk/news/robot-subs-inform-protection-english-deep-sea-corals>

<https://codemap2015.wordpress.com>

**Recent seabird and cetacean surveys in the English, Bristol Channel & Celtic Sea**

**Tom Brereton**

Marinelife

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In recent years, Marinelife has been working on a number of seabird and cetacean projects in south west England waters with a variety of partners including CEFAS, Natural England, the RSPB, the Wildlife Trusts, Marine Discovery, Plymouth University, Exeter University and AK Wildlife Tours.

These have included photo-identification studies on Bottlenose and White-beaked Dolphins; an inshore day survey targeted at Balearic Shearwaters and Bottlenose Dolphins in August 2015, chartering nine boats from Portland to Lundy; and participating in the annual ‘Peltic’ Research Cruise onboard the RV CEFAS Endeavour.

Photo-identification studies suggest an inshore, mobile population of ~100 Bottlenose Dolphins free ranging between Dorset and Cornwall and a more sedentary and well-mixed population of ~140 White-beaked Dolphins in western Lyme Bay. An analysis of 57,024km of effort-related Marinelife data covering 72% of all 10km2 grid cells in the Channel confirmed western Lyme Bay as a key area, with no repeat sightings in any other sampled areas. Marinelife is working with the Wildlife Trusts to put forward this area as a candidate Marine Conservation Zone (MCZ).

In 2015, Marinelife’s contribution to the CEFAS ‘Peltic’ research cruise focussed on Balearic Shearwaters, with European Seabirds at Sea (ESAS) survey methods employed. The survey enabled abundance in south west waters in October to be estimated at ~800 birds, thus qualifying the region as an internationally important post-breeding area. For the third year in succession the main concentration of Balearic Shearwaters was found in deep (>50m) waters of the Celtic Sea west of Lundy. A hotspot analysis confirmed this area supported statistically significant concentrations of birds in each of the year of the survey, which in turn suggests that designation as a Special Protection Area (SPA) should be considered.

The comprehensive inshore survey of south west England waters in August 2015 did not locate any substantial numbers of Balearic Shearwaters (or Bottlenose Dolphins), though unusually high numbers of Harbour Porpoise were recorded.

Additional research uses of Marinelife data will briefly be discussed.

**Our current understanding of the ecology and fisheries of Blue and Porbeagle Sharks in the Southwest**

**John Richardson and Cat Gordon**

[john@sharktrust.org](mailto:john@sharktrust.org); [cat@sharktrust.org](mailto:cat@sharktrust.org)

The Shark Trust, The Millfields, Plymouth, UK

Blue Sharks are a wide-ranging and highly migratory species, visiting Southwest waters in large numbers each year as part of a trans-Atlantic migration. Blue Sharks are a relatively abundant and fecund species (4-135 pups per litter); yet at the same time, they are also the most heavily fished shark in the world, with estimates of up to 20 million reported landed annually. Considered *wanted* bycatch in high-seas longline tuna and billfish fisheries, Blue Shark are retained for their meat and fins and account for upwards of 80% of EU shark landings from the Atlantic – making them central to the profitability of the EU longline fleet.

In contrast, Porbeagle Sharks have a relatively low reproductive capacity (1-5 pups) and reach maturity much later than the Blue Shark. Driven by the high quality and value of the meat, a small target fishery operated in Southwest waters and wider Northeast Atlantic, however, the species’ vulnerability to over-exploitation meant the fishery followed a ‘boom and bust’ trajectory. Despite being assessed as Critically Endangered in the Northeast Atlantic in 2006, the Porbeagle fishery remained unmanaged. In 2007 catch limits were introduced, followed by a Zero-TAC (under the CFP) and finally ‘Prohibited Species’ status in 2015, meaning Porbeagle must not be targeted, retained or landed.

In the absence of management measures (aside from the EU Finning Regulation, applicable to all species), Blue Sharks run the risk of mirroring the same trend as other species previously targeted in commercial fisheries, such as the Porbeagle, which have experienced an acute population crash. Catch limits are urgently required to learn from history and prevent this from occurring.

**Seasearch south-west diver record highlights 2015**

**Chris Wood**

Joint National Seasearch Coordinator - Seasearch/Marine Conservation Society

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Volunteer divers have been collecting sublittoral species and habitat data using the Seasearch methodology for 28 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 2015 55% of the Seasearch records from England came from the South-West and 29% of Seasearch records overall.

During 2015 we concentrated on existing and yet to be designated SACs and MCZs. Amongst new MCZs in January 2016 are Hartland Point to Tintagel, for which we provided a report and species data in 2015, and three in Cornwall where we provided additional species data. Still outstanding is Studland where additional surveys were carried out in 2015 and a report produced. As the designation process moves slowly towards a conclusion the emphasis is moving to management and Seasearch hopes to play its part by acting as eyes and ears in the periods between statutory monitoring.

Amongst existing MPAs, most effort in 2015 was in the Manacles MCZ in Cornwall. Here the potential of harbour works in a newly designated MCZ brought Seasearch together with other partners to survey the areas which could be either subject to direct physical impact or sedimentation. The Dean Quarry area of the MCZ had not been the focus of most of the earlier surveys, but it became clear that many of the features of conservation interest extended to this area, and to other areas to the south of the somewhat arbitrary MCZ boundary.

In terms of species, 2015 records included:

* Crawfish, *Palinurus elephas*, regularly sighted in south Devon and Cornwall,
* Pink sea fans, *Eunicella verrucosa*; newly recorded ‘forest’ south of the Manacles MCZ,
* Continuing presence of southerly species such as Anemone prawn, Baillion’s wrasse and Black faced blenny,
* Occasional records of northerly species such as Red cushion star and Yarrell’s blenny at offshore sites,
* Rarely recorded nudibranchs such as *Tritonia maniculata* and *Discodoris rosi.*
* Continued dominance of *Saccorhiza polyschides* over *Laminaria hyperborea* at sites affected by the 2013-4 storms.

**Ecological coherence of the Celtic Seas MPA network**

**Dr Olivia Langmead**

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Co-authors: Dr Nicola Foster, Dr Sian Rees & Charly Griffiths

Individual MPAs protect a particular area of the sea, but they are most effective as part of a network of healthy, well-managed sites that can support coastal communities, sustainable marine industries and a wide range of recreational activities. Here we assess the Celtic Seas network of MPAs at the scale of the MSFD subregion to determine if it meets targets for ecologically coherence. The role of ‘other spatial measures’ (sites without statutory nature conservation protection that may also contribute to biodiversity conservation) was also considered.

* Not all the criteria for ecological coherence were met;
* Representativity and replication of seabed habitats within sites were achieved overall, but some member states fell short, and the offshore and deeper shelf regions were underrepresented;
* >50% of MSFD predominant habitat types had an adequate proportion of their area within the MPA network;
* 40% of MPAs were below the threshold viable size;
* Potential connectivity for some habitats was low.

Other spatial measures that were considered (following a review of the evidence of their contribution toward biodiversity conservation) were:

* Fisheries closures;
* Protected wrecks;
* Offshore renewable energy installations; and
* Voluntary marine conservation areas.

However, these sites were generally small and coastal, so do not fill the key gaps in ecological coherence targets. They may play an important role for the protection of certain habitats though. This work is discussed within the context of political and economic barriers to designation in the offshore region, and key challenges faced at a transboundary scale.

**Reports**

Rees, S., Foster, N., Langmead, O., Attrill, M., Griffiths, C., Zanghi, C., Shellock.,R. (2015). Assessment of the Ecological Coherence of the MPA Network in the Celtic Seas: Literature Review, Metadata Catalogue, Features of Conservation Importance and Assessment Approach. A report for WWF-UK by the Marine Institute, Plymouth University and The Marine Biological Association of the United Kingdom. pp 302

Rees, S., Foster, N., Langmead, O., Griffiths, C. (2015). Assessment of the Ecological Coherence of the MPA Network in the Celtic Seas: A report for WWF-UK by the Marine Institute, Plymouth University and The Marine Biological Association of the United Kingdom. pp 165

Weblink: <http://assets.wwf.org.uk/downloads/wwf_celtic_seas_a4_report_v4.pdf>

**A Dorset Seal Network**

**Julie Hatcher (1) & Sarah Hodgson (2)**

(1)Marine Awareness Officer for Dorset Wildlife Trust (2) Volunteer Seal Project co-ordinator for Dorset Wildlife Trust

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Following a number of casual reports of both common and grey seal sightings along the Dorset coast, DWT began a Dorset Seals Photo ID catalogue in 2014. With help and advice from Sue Sayer and the Cornwall Seal Group, the catalogue contained 13 individuals by the end of 2015, with the number of sightings far exceeding what we had anticipated. To take this forward, in 2016 DWT aims to:

* Engage more people in reporting their seal sightings
* Promote a code of practice for photographing seals
* Establish a Dorset seal group for those involved in regular recording
* Learn more about the common seals in Poole Harbour
* Work with recorders in Devon and Cornwall (and beyond) to cross-reference individual seals and further our knowledge of where and how far they travel.

<http://www.dorsetwildlifetrust.org.uk/Seals.html>

**Observing seals on the South Devon coast**

**Bob Earll**

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The purpose of my presentation is to highlight the interesting possibilities of observing seals in the Great Sleaden Rocks – Start Point area as a part of more general seawatching on the South Devon coast. Over the last seven years I have been seawatching from cliffs on the south Devon coast, Bolt Head, Bolt Tail, Prawle Point, Start Point, and Great Sleaden Rocks (GSR) to the west of Start Point Seawatching on this coast can often be *very* quiet. There is the range of usual suspects, gulls, shags, etc. and occasional fly-by’s of large numbers shearwaters and gannets in very large numbers in the summer. Over this period in this area I have never seen any porpoises even in ideal conditions, only seen bottlenose dolphins twice and no basking sharks. The south Devon coastline is *much* quieter than say Gwennap Head where I have seen all these species at a comparable time of year.

I had been visiting Great Sleaden rocks more often because grey seals can be seen in the area of the rocks. In 2015 in May when visiting GSR with Sue Gubbay and her husband Alan we arrived about two and half hours before low water; it was a calm day. Over the next three hours we watched up to 14 grey seals haul out on the rocks. A few weeks later in June Martin Brocklehurst and I were observing a similar number of seals hauling out at low water at GSR when Martin turned the telescope toward Start Point and counted a further 10 seals hauled out there. Making a total of 25 seals present in this wider location at one time.

Great Sleaden Rocks are near the shore on the coastal path and there is good circular walk starting at the Start Point car park. It seemed to me to be an ideal place to encourage potential seawatchers to visit to record seals and other marine wildlife since the grey seals seem to be present throughout the summer months and provide a good subject for study and focus for raising public awareness. I have sent photographs to Sue Sayer and she has re-identified two of the seals from GSR as previously been seen at Cornwall sites. Clearly the opportunity presents itself to join with Julie Hatcher’s work in Dorset and Sue’s work to understand how the south-west’s grey seal population is distributed.

One topic for study could be the interaction with the public. During 2015 I watched numerous variations on this theme, not least on one very busy bank holiday with lots of people watching the seals. One chap flew his drone over them; they were completely indifferent. Kayakers getting too close have spooked them into the water, but on another occasion seals followed individual kayaks. Some coasteerers blundered into them hauled out on the rocks and both parties were equally surprised, but the seals did haul out again. The bizarrest interaction was a chap with a cello who visited them deliberately to play to them. One seal was very interested and swan near him and listened. A big rib from Salcombe regularly takes tourists to see the seals at GSR and Start Point and certainly at GSR they seem largely indifferent to this. Lots of potential!

**Thoughts on the Dorset & south Devon Observations**

**Sue Sayer**

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CSGRT are keen to encourage and support anyone in the UK interested in surveying their local seals. Inevitably this involves a considerable commitment from local people as photo identification in particular is time consuming and needs to be done over long periods of time, usually (and ideally) by the same people to avoid identification intelligence to be lost. Having said this photo ID is an incredibly powerful tool revealing insights into marine mammal biology and ecology that cannot be gained from any other research method.

Basic data collection includes surveys at least once a month to reveal intra annual variation and preferably for at least two years. Each survey comprises a count (in and out of the sea), age and sex data and of course photos to compare and add to existing catalogues. CSGRT is aware of other seal sites in south Devon that could benefit from this kind of routine surveying.

Photo ID software does exist for use with grey seals but it only matches females and in the end, ID confirmation still has to be made by human eye.  It is very clever, but is very time consuming to use and requires high levels of spatial awareness. In contrast, human brains are wired to recognise patterns and with CSGRT’s experience of streamlining manual photo ID, a lot can be achieved without using software.

In the last few years CSGRT have recruited around 20 volunteers who now routinely conduct photo ID manually at various locations around Cornwall and north Devon, some of whom cope with huge catalogues of seals! I was personally delighted to have made two matches to Bob’s first two sets of photos from south Devon and am really looking forward to the first match we make with Dorset – we know from short term satellite tags it is only a matter of time!

Websites:

[www.cornwallsealgroup.co.uk](http://www.cornwallsealgroup.co.uk/)

<https://www.youtube.com/user/Suesseals>

'Seal Secrets' book published 2012 and reprinted 2013

**The Southwest Bottlenose Dolphin Network**

**Ruth Williams\* Simon Ingram, Duncan Jones & Sue Sayer**

Ruth Williams Marine Conservation Manager, Cornwall Wildlife Trust

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Website: [www.cornwallwildlifetrust.org.uk/livingseas](http://www.cornwallwildlifetrust.org.uk/livingseas)

Facebook: [www.facebook.com/CornwallWildlife](http://www.facebook.com/CornwallWildlife) Marine Strandings Network: 0345 201 2626

Address: Cornwall Wildlife Trust, Five Acres, Allet, Truro, Cornwall TR4 9DJ (registered office)

The Southwest population of bottlenose dolphins has been sighted around our coast since the early 1990's but whilst we get regular records from both *ad hoc* and effort based sightings, we still need to learn a lot more about this locally resident population, to enable us to put a case to the SNCBs to help us protect them. This presentation will briefly explain the policy and scientific need for robust evidence, collected using strict scientific protocols, and how we aim to progress this work in Cornwall and potentially the southwest through collaborative work to build on the data already collected by volunteers. Photo identification is one way of determining population structure and we would like input to the discussion on the practicalities of such work as well as to ensure collaboration and effective data sharing within the region. Please send any observation or photographs to Ruth Williams at the address above.

**Valuing Ecosystem Services in the Western Channel (Valmer)**

**Dr Olivia Langmead**,

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VALMER was an eleven partner, €4.7 million project co-funded by the INTERREG IV A Channel programme through the European Regional Development Fund, which aimed to examine how improved marine ecosystem services assessment could support effective and informed marine management and planning. The project ran from 1st September 2012 to 31st March 2015.

The VALMER project was focused on six case study sites at which the techniques and methods of ecosystem services assessment and its application were tested with a cross section of local stakeholders. The focus of this very brief presentation is on the North Devon case study. The work involved ecosystem services assessment of the subtidal sedimentary habitats, developing scenarios with stakeholders and socio-ecological modelling. The models were used to elaborate the scenarios into maps showing how ecosystem services changed with the changes in human activities and management. In doing so, we identified important nursery areas for commercially important fish species (that could be prioritised for management) and made explicit trade-offs between activities and marine ecosystem services across the case study area.

Co-author: Dr Nicky Beaumont, Dr Tara Hooper (PML), Charly Griffiths (MBA)

Report:

Langmead O., Hooper T., Griffiths C., Beaumont N. and Guilbert S. 2015. Chapter 3 - Case study process: North Devon. In: Dodds W. and Friedrich L.A. (Eds.). The potential role of ecosystem service assessment in marine governance in the western Channel. VALMER Work Package 4 evidence base report. VALMER project.

<http://www.valmer.eu/wp-content/uploads/2015/04/The-potential-role-of-ecosystem-service-assessment-in-marine-governance-in-the-western-channel.pdf>

**Cameras and Seals: Quantifying effects of human disturbance**

**Billy Heaney**

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<http://biosciences.exeter.ac.uk/staff/postgradresearch/index.php?web_id=Billy_Heaney>

To date, approximately 45% of the world’s Atlantic grey seals, Britain’s largest pinniped, breed in the UK. A significant population of grey seals can be found on the North coast of Cornwall, Godrevy. This beach is an important haul-out for grey seals and is the UK’s most popular National Trust site. The beach is used year round by seals and the population has been subject to observational study for more than ten years. However, little is known about the extent of which human activity impacts, and ultimately disturbs, the seal haul-out. Here we outline how cameras and sensing techniques can be used to aid in monitoring the site and help fill in knowledge gaps. In our study, several technological approaches have been used to explore the relationship between visitor numbers and the frequency at which seals are disturbed. We highlight the success of an on-going optical time-lapse series in collecting seal haul-out information, and the use of a thermal counter to monitor footfall close to the haul-out site. In addition, we discuss the use of thermal imagery to collect night time haul-out data and physiological information in relation to behaviour and the environment.

**Pink sea fans (*Eunicella verrucosa*) as indicators of the spatial efficacy of marine protected areas in southwest UK coastal waters: analysis of a ‘Citizen Science’ database**

**Stephen Pikesley**

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<https://www.researchgate.net/profile/Stephen_Pikesley>

Recent studies have demonstrated the utility of integrating 'citizen science' data into mainstream scientific analysis, particularly where broad-scale spatial patterns of distribution are required. In UK waters, the pink sea fan (*Eunicella verrucosa*) is a nationally protected slow growing, cold-water coral, and is a representative species of reef features that provide habitat for many other sessile species. However, this species is susceptible to physical impact, and likely vulnerable to bottom-towed fishing gears. In this study, data from a volunteer-based marine survey programme (‘Seasearch’) are analysed and the spatial distribution and relative abundance of pink sea fans throughout southwest UK coastal waters described. The congruence between pink sea fans and the extant southern UK MPA network is reported, and the current threat from Bottom-Towed Gear is quantitatively assessed. This analysis reveals that protection of this and other benthic species has been increased by management of previously 'open access' MPAs. Nonetheless, areas of pink sea fan habitat and their host reef systems exist outside extant protected areas in southwest UK seas, and may be at risk from bottom-towed fisheries. This analysis demonstrates the utility of well-organised citizen science data collection and highlights how such efforts can help inform knowledge on broad-scale patterns of biodiversity.

Publication:

Pikesley, S.K., Godley, B.J., Latham, H., Richardson, P.B., Robson, L.M., Solandt, J-L., Trundle, C.,

Wood C. & Witt, M.J. (2016). Pink sea fans (*Eunicella verrucosa*) as indicators of the spatial efficacy of marine protected areas in southwest UK coastal waters. *Marine Policy,* 64, 38-45.

http://dx.doi.org/10.1016/j.marpol.2015.10.010

**Introduction to Marine Plans for the South West**

**Neal Gray**

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Web: [www.gov.uk/government/organisations/marine-management-organisation](http://www.gov.uk/government/organisations/marine-management-organisation)

Twitter: @The\_MMO

The Marine Management Organisation is starting the [next phase of marine plans](https://marinedevelopments.blog.gov.uk/2016/03/16/more-opportunities-for-engagement-is-essential-for-next-phase-of-marine-plans/), developing plans for the North East, North West, South East and South West. 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.

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.

**The Impacts to date and predicted of the Demersal & Pelagic Landing Obligations (Discards Bans) of the new (2013) Common Fisheries Policy:**

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The changes made to the CFP in 2013 amended various regulations in 4 policy areas involving:

1. Fisheries management
2. International policy
3. Market & trade policy
4. EMFF funding

Within Fisheries management, the wasteful practices of discarding over-quota fish are to be ended by 2019. Discarding of quota species has been a feature of the CFP since quotas were enacted in 1983. Member States are required to ensure their fishermen do not exceed the allocation. Many administrations set monthly allowances for their fishermen. Landing fish in excess of the amount is an offence. Discarding to stay legal was inevitable. With TACs and quotas diminishing from over-capacity exploitation, keeping within available opportunities led to “high-grading”. With mesh sizes, keeping within the set by-catch allowances also led to discards to ensure skippers’ compliance. Although some of the key quotas are now at levels higher than they have been since 1983, the complexities of the new CFP regulations bring a new threat. In our amazing diverse and mixed fisheries there lurks the real risk of “choking”, the phenomenon of closing a fishery early because the quota for “choke” species has been exhausted by the Landing Obligation.

Some links to which I will refer:

<https://www.cefas.co.uk/publications/files/Clean-Fishing-Competition-2007-Version2.pdf>

<http://www.channel4.com/programmes/river-cottage/articles/all/hugh-on-river-cottage-gone-fishing>

<http://www.cefas.defra.gov.uk/our-science/fisheries-information/discards-and-fishing-gear-technology/project-50.aspx>

<http://www.bbc.co.uk/news/science-environment-21500701>

<http://www.fishingforthemarkets.com/>

**Chinese Whispers: Misconceptions and Myths Mask True Progress in MPA and Inshore Fisheries Management**

**Sarah Clark**

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website: [www.devonandsevernifca.gov.uk](http://www.devonandsevernifca.gov.uk/)

The Inshore Fisheries and Conservation Authorities (IFCAs) have the duty to lead, champion and manage a sustainable marine environment and inshore fisheries. Through the Marine and Coastal Access Act (MaCAA), the IFCAs have a well-defined statutory environmental remit. IFCAs also have a duty, under other pieces of legislation, to have regard for the marine environment. Through both MaCAA and the Habitats Directive, Marine Protected Areas (MPAs) are designated to protect marine habitats and species. The IFCAs and MMO have been working very hard to gather evidence on the location, extent and impacts of fishing activities on designated features within the inshore and offshore MPAs, to ensure that appropriate management of those activities, which interact with the features, is implemented.

MPAs are big news in the media and there are often articles that state that little, if any, management is being brought in to protect the features of MPAs. Environmental critics have suggested the MCZ designations lack teeth because they do not impose outright bans on the harmful activities they are supposed to prevent. Tranche 2 MCZs have been called ‘paper parks’ (a term used to express that boundaries are put in place but no management or enforcement is done) by some but designation is just the start. Look at the progress in development of management measures for European Marine Sites since 2012.

My talk will highlight some of the evidence to dispel the myth that there is no protection of these sites and that very few areas have any management in place. The focus will be on the MPAs within Devon and Severn IFCA’ s district but the work being undertaken can be scaled up 10 x to cover all IFCAs plus the work done by the MMO to manage sites outside the 6nm limit and Defra’s 17 offshore sites. Management decisions are taken on a case-by-case basis, and reflect the level of risk of damage that certain fishing activities may have on the designated habitats or species. It is time to appreciate that a huge amount of work is being undertaken to ensure protection of the marine environment and that the goal is to have healthy seas and a sustainable marine environment alongside sustainable fisheries and viable industries. The Blue Belt is here, and MPAs will safeguard marine waters around the coast of England.

**Research to action….making a difference locally and globally – ghost gear in Cornwall 2014 -2015**

**Sue Sayer and Kate Williams**

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Ghost fishing gear affects a range of marine life, including grey seals a species of conservation interest being a UK ‘special responsibility’ species under the EU Habitats Directive. Over 12 months 26 systematic boat based coastal ghost gear (GG) survey transects were repeated covering the same 115km stretch of Cornwall’s north coast. 360 additional opportunistic land based GG surveys were recorded by a large network of highly motivated volunteers.

A wide range of GG items were photographed around most of Cornwall’s 700km of coastline, offshore islands and in the open sea with 4226 new items totalling 49917 litres (or 51 tonnes). Whilst new GG items were recorded in all months, seasonal variations occurred. On average 26% (by item) and 11% (by volume) of all new GG was considered to pose a serious threat (interaction and entanglement risk possible/possible and above) to marine life and this increased to 47% (by item) and 30% (by volume) at established seal sites. At least 52 individuals, and numerous mussels and pink sea fans, from 12 species of marine life were photographed entangled in ghost gear.

Volunteers removed 14009 litres (or 14 tonnes) of ghost gear from the marine environment, considerably reducing the levels of risk posed by ghost gear to marine life (from 26% to 18%), particularly seals (from 47% to 24%). Whilst much of the ghost gear could have been locally generated, three examples of marked gear linked Cornwall to the east coast of England, southwest Ireland and Maine in the USA reinforcing the need for global solutions to this issue.

**The Falmouth Bay to St Austell Bay pSPA Biodiversity Atlas**

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The Falmouth Bay to St Austell Bay potential Special Protection Area (pSPA) Biodiversity Atlas project is an innovative collaboration involving Exeter University, Natural England, Cornwall Inshore Fisheries Conservation Authority & local volunteer birders. The project applies novel GIS spatial analysis techniques to collate, analyse and present all available datasets for a marine SPA and aims to develop a GIS toolkit for use by a range of stakeholders and future site managers.

The project aims to:

1. Provide a centralized database of information to inform long term condition monitoring of the site, as well as informing future site managers when considering potential management options should they be required;
2. Develop a cost-effective model for management which may be applied to other marine protected sites;
3. Ensure valuable information collected by volunteers around the country is captured and utilized to ensure the conservation of rare, protected and migratory species; and
4. Inform and develop long term research initiatives via collaboration for wild bird conservation

The presentation will cover:

1. The designation of the Falmouth Bay to St Austell Bay pSPA including process and presentation of evidence
2. The value of volunteer networks
3. The biodiversity approach
4. Results and findings
5. Conclusions and future work

**Inspiring images: Marine life in action: underwater observations and questions from shallow reef habitats**

**Paul Naylor**

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see [www.marinephoto.co.uk](http://www.marinephoto.co.uk) for photographic material and behaviour observations

Shallow rocky reefs are home to a wonderful diversity of animal species. Their accessibility also enables long dives so that some of the residents’ intriguing behaviour can be observed and photographed. This presentation will use photographs and video clips to show how:

* Individuals of some species are identifiable from week to week or even, in the case of tompot blennies, from year to year. [See P. Naylor & D. M. P. Jacoby: Territoriality in the tompot blenny *Parablennius gattorugine* from photographic records. *Journal of Fish Biology* 2016; doi:10.1111/jfb.12918]
* Repeated sightings can then give us more information about the animals’ lives.
* Prolonged observation also suggests a number of unexpected associations within and between different species such as crabs, blennies, wrasse, topknots, clingfish and butterfish [See P. Naylor. 2016: Magic moments; capturing marine animal behaviour with underwater photography. *Porcupine Marine Natural History Society Bulletin* **5**]
* Observations generally pose more questions than they answer so this is very much ‘work in progress’!