UKOT/CD Technical Workshop I: Marine Protected Areas

November 28 and 29, 2013
Joint Nature Conservation Committee
Samia Sarkis

FINAL REPORT
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UKOT/CD Technical Workshop I: Marine Protected Areas

JNCC/UKOT/CD Workshop
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ACKNOWLEDGEMENTS

This workshop owes its success to all of the speakers who willingly gave their time to share their expertise and techniques, presenting material most relevant to needs prioritised by UKOT and CD participants. Thank you to all participants for what was evidently a careful preparation beforehand, enabling JNCC to implement a workshop focused on addressing MPA related technical challenges in a limited timeframe on a range of topics for ten OTs and CDs. This led to dynamic and effective brainstorming sessions and a productive 2 days. A special thanks to JNCC's John Henson Webb for the organisation of the logistics at the Eco Centre, and Tara Pelembe for lending a very much needed hand in juggling space, coffee and lunch! Your assistance was much appreciated.

BACKGROUND AND OBJECTIVES

Biodiversity in the UKOTs is recognised as of global significance,, supporting unique ecosystems and a large number of rare and threatened species. Effective conservation of biodiversity in the OTs is essential if the UK is to meet the 2020 Biodiversity Targets, as well as commitments under other relevant Multilateral Environmental Agreements (MEAs). During the last UKOT Biodiversity Strategy Review Meeting, held at KEW, March 2013, OT government participants expressed a desire for broader based contacts with UK Government experts, particularly within DEFRA and its family of agencies. Specific issues in need to be addressed related to current or anticipated marine conservation and/or management actions were identified at this time and through subsequent consultation with OT and Crown Dependencies governments. Technical assistance, capacity building, resources, and an improved network with UK expertise were identified as critical components for progress in careful planning and implementation of necessary conservation actions.

In an attempt to address some of the areas of marine conservation/management of interest to UKOT governments, and strengthen the link between available expertise in the UK and its OTs and Crown Dependencies, a series of technical workshops was proposed by JNCC, dependent on interest and funding.

The current MPA workshop is the first of the proposed series. Based on a list of priorities given by OT and CD governments, relevant expertise was identified by JNCC and DEFRA; although the initial request by OT governments was an enhanced link with UK Government experts, expertise by NGOs was also sought out by JNCC where appropriate. Presentations were aimed to be focused and technical, providing relevant information to OT technical officers. In order to maximise knowledge transfer, afternoons were dedicated to small working groups, with OT participants discussing Territory-specific needs with relevant resource persons.

Working group discussions were planned as follows:

- Small working station enabling discussion between OT participant and resource person, in order to address in greater detail MPA work in the Territory; this will enable resource persons to assist OT participants in assessing current work, planning future work, and providing relevant contacts.
- Each Round Table was no more than 1 hour duration
- OT and CD participants rotated after 1 hour, in order to have the opportunity to discuss various topics and exchange ideas with all resource persons.

The overarching objective of the workshop is to enhance the understanding of OT technical officers for the actions and next steps needed and expertise available in the UK for MPA related work. It is hoped that, if successful, it will provide a model for capacity building, information sharing and strengthening network expertise between the UK and its OTs and CDs, and among the UKOTs themselves for other conservation and management issues.

ATTENDANCE

The workshop targets inhabited UK Overseas Territories and Crown Dependencies which have expressed an interest in addressing specific issues related to Marine Protected Areas in their Territory. UKOT and CD technical officers actively involved in MPA work were nominated by OT governments. Relevant UK organisations were consulted and requested to recommend experts from their organisations most apt to address MPA related topics of interest identified by OT governments.

List of UKOT and CD Participants

Country	Name	Organisation and Position	Email
UKOT PARTICIPANTS			
Anguilla	Karim Hodge	Director, Department of Environment	Karim.Hodge@gov.ai
Ascension	Nicola Weber	Conservation Officer,	nicola.weber@ascension.gov.ac
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Pew Charitable Trusts	Anthony Long	Director, Illegal Fishing Group	along@pewtrusts.org
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	Joanna Stockill	Marine Planning Development Manager	Joanna.Stockill@marinemanagement.org.uk
Foreign & Commonwealth Office	Louise Savill	Head Maritime Policy Unit	louise.savill@fco.gov.uk

AGENDA AND TIMETABLE

Thursday November 28, 2013

Chair: Samia Sarkis, JNCC

9:00 Introduction (Tony Weighell, JNCC)

9:10 Day 1 Objectives (Samia Sarkis, JNCC)

Session I: Process Overview (within and beyond EEZ)

9:15 MOD improving environmental guidelines- Extension to UKOTs and CDs (Rod Jones, UK Ministry of Defence; Beth Henshall, JNCC)

9:35 Maritime zones and maritime boundaries (Louise Savill, FCO)

10:00 The Marine Protected Areas cycle: A UK perspective (Peter Chaniotis, JNCC)

10:25 MPAs beyond National Jurisdiction: Ecologically and Biologically Significant Areas (EBSA) process- (Tina Blandford, DEFRA)

Coffee Break (10:50-11:05)

Session II: Gathering Evidence

11:05 Gathering Evidence. I. The role of hydrography in MPA planning and opportunities (Koen van Staen, CEFAS)

11:25 Gathering Evidence: I. Deep water surveys- A case study of Anton Dohrn Seamounts (Mike Nelson, JNCC)

11:50 Gathering evidence: II. Use of seabird data in delineating MPAs

IIa. Marine Important Bird Areas (IBAs): their inputs to EBSAs and other site-based management approaches- (Ben Lascelles, BirdLife)

IIb. Challenges of collecting and analysing seabird data for the purpose of identifying and delineating MPAs (Amanda Kuepfer, JNCC)

Programming of afternoon discussions.

Lunch (12:30-13:30)

13:30- Working Group Discussions (Process and Gathering Evidence)

WG I: Process of Establishing MPAs
WG II: Deep water surveys (Gathering Evidence)
WG III: Seabird data Use/Hydrographic Data Use
WG IV: EBSA
WG V: Defining maritime boundaries

16:45 OT participants meeting: Compiling information on other research needs for marine conservation and management in the inhabited OTs

Friday November 29, 2013

Chair: Samia Sarkis (JNCC)

9:00 Day 2 Objectives (Samia Sarkis, JNCC)

Session III: Management and Enforcement

9:05 Establishing management protocols (Nick Greenwood, MMO)

9:25 Creating an ecologically coherent network: OSPAR/UK experiences (Amy Ridgeway, JNCC)
Gaps in network: process and case study

9: 50 Management**:** Post-implementation of MPA Case Study - scientific monitoring and enforcement – Dr. Phil Trathan or Iain Staniland (British Antarctic Survey)

10:15 PEW ending illegal fishing project (Anthony Long, PEW)

Coffee Break (10:35-11:00)

11:00 Protecting the marine environment of St Helena - from research to management-(Judith Brown, St. Helena)

Session IV: Marine Spatial Planning

11:20 Mapping, geo-spatial analysis and marine planning tools … some examples (Janette Lee, CEFAS)

11:45 MSP and climate change (Alec Taylor, RSPB)

12:10 An introduction to marine planning and the draft East marine plans (Joanna Stockill, MMO)

Programming of afternoon sessions

Lunch (12:30-13:30)

13:30 The LIFE programme: What is it all about? (Richard Findon, DEFRA)

13:50- Working Group Discussions (Management, Enforcement and Marine Spatial Planning)

WG VI: MPA zoning and review
WG VII: Management
WG VIII: Post implementation and Enforcement
WG IX: Marine Spatial Planning: Tools
WG X: Marine Spatial Planning: Policies

17:00 OT participants closing meeting - Submission of preliminary thoughts on themes for Life+

PRESENTATIONS- ABSTRACTS

Please note: Abstracts are given in the order they are presented.

MOD improving environmental protection guidelines- Extension to UKOTs and CDs

by **Rod Jones**
UK Ministry of Defence

Navy Command Headquarters in Portsmouth is just one part of the Ministry of Defence and is responsible for putting warships and other maritime military units to sea, ready for the tasks expected of them. My role within HQ is to advise Navy Command personnel about the possible impacts of environmental legislation on the capability of RN and RFA seagoing units but this covers a whole range of issues from procurement to operating and training , through to disposal of vessels. As part of my role providing operational advice, I have been heavily involved in setting up our Environmental Protection Guidelines (Maritime) or EPG(M) with the assistance of the UK Hydrographic Office and the UK Statutory Nature Conservation Bodies.

EPG(M) has now been available to RN Units for about 2 years and provides generic interactive advice to Commanders and planners on additional safeguards they need to take when within the vicinity of statutory designated MPA that might be sensitive to military activity. The Guidelines currently cover only waters around the UK and NCHQ and UKHO are aiming to extend coverage to all EU waters and to Crown Dependencies and Overseas Territories. This requires a relatively consistent approach to the setting of MPA objectives and the identification of boundaries to ensure incorporation and effective safeguarding.

This presentation aims to inform the workshop of how EPG(M) functions within wider MOD marine environmental protection systems and the process of expansion and review currently underway as well as the type of information necessary to ensure MPA can be represented in the future.

Maritime Zones and Maritime Boundaries

by **Louise Savill**[1] and **Alan Evans**[2]
[1]Foreign & Commonwealth Office
[2]National Oceanography Centre

Under the United Nations Convention on the Law of the Sea (UNCLOS) all coastal States have a right to a 12M (nautical mile) Territorial Sea, a 24M Contiguous Zone, a 200M Exclusive Economic Zone and continental shelf beyond 200M. The extent of each maritime zone depends greatly on each State's geographic location and influences from neighbouring States. The United Kingdom has 17 Overseas Territories, with a combined marine area of 6,000,000 sq km within 200M, and a further potential of 1,800,000 sq km in areas of continental shelf beyond 200M, compared to 18,300 sq km of land area. Defining the extent of each maritime zone starts with the establishment of a baseline. Baseline's come in one of three forms; normal baselines (which follow the low water line), straight baselines (which joint promontory points along the coast) and archipelagic baselines (used only by

Archipelagic States). For those Territories with no impeding maritime zones from neighbouring states the generation of the 12M, 24M and 200M zones is a relatively simple geodetic calculation. And where the appropriate conditions are present the generation of continental shelf beyond 200M can be undertaken. However for those Territories with adjacent and/or opposite neighbouring states with impeding maritime zones there is a need to establish delimitation lines. Establishing the location of delimitation lines, and thus defining a State's maritime zones, has significant impact in providing the basemap for maritime and marine governance, which includes the potential to generate revenue as well as maintaining a healthy marine environment. This presentation will draw on jurisprudence and methods recognised in International Law which highlight the complexities the UK and her Overseas Territories must address in establishing accurate maritime zones.

The Marine Protected Areas cycle: A UK perspective

by **Peter Chaniotis**
Marine Protected Areas Advisor,
JNCC

The process of MPA identification, designation and evaluation will be illustrated with examples from the MPA Projects taking place across the UK. I will start with setting the scene for the legislative context behind MPA designation in the UK, followed by a review of the MPA cycle and some specific mention of quality assurance processes and the development of standard protocols.

The key messages from this presentation are as follows:

- Take stock of what is already adequately protected in your waters so that MPAs compliment rather than duplicate existing protection
- Appreciate that MPAs are only one of the tools available for conserving the natural environment and may not be suitable for all features
- The development of guidelines or selection criteria at the start of the process and sharing these with all those involved in critical
- Get all your evidence (biological, physical and socio-economic) into standardised formats
- Identify who the stakeholders are and begin engagement with them from the outset. It is important to ensure they are involved at strategic points throughout the process, but to make it clear what their role is in decision making

Links to documents:

Example MPA Project Selection Guidelines from the UK:
Scotland – http://www.scotland.gov.uk/Topics/marine/marine-environment/mpanetwork/mpaguidelines
England (all waters), Wales & Northern Ireland (offshore waters) – http://jncc.defra.gov.uk/pdf/100705_ENG_v10.pdf
Northern Ireland – http://www.google.co.uk/url?sa=t&rct=j&q=&esrc=s&frm=1&source=web&cd=4&ved=0CD8QFjAD&url=http%3A%2F%2Fapplications.doeni.gov.uk%2Fpublications%2Fdocument.asp%3Fdocid%3D19499&ei=eNWmUtzIGcGihgfm0YDwCg&usg=AFQjCNF5mMLulsMOIUaOJGvzM3gYMCQL7Q

Example MPA network reports from the UK:
Scotland – http://jncc.defra.gov.uk/page-5510#download
England and Wales and Northern Ireland offshore waters -
http://jncc.defra.gov.uk/PDF/MCZProjectSNCBAdviceBookmarked.pdf
Wales -
http://wales.gov.uk/topics/environmentcountryside/consmanagement/marinefisheries/conservation/protected/network-report/?lang=en

Example site consultation documents for Scotland (Faroe-Shetland sponge belt):
http://jncc.defra.gov.uk/page-6479
Click on the links at the bottom of the page to view examples of:

- Site summary documents
- Detailed application of the Scottish MPA selection Guidelines
- Data confidence assessments
- Management options papers

MPAs Beyond National Jurisdiction: Ecologically and Biologically Significant Areas (EBSA) process

by **Tina Blandford**
Marine Biodiversity Team,
Department of Environment, Food and Rural Affairs (DEFRA)

The UK Government supports the principle of designating MPAs in international waters. Specifically, we supported the call in 2010 by governments of the States party to the Convention on Biological Diversity (CBD) to strive for MPA and other area based mechanisms covering 10% of our oceans by 2020. The 10th Conference of the Parties to CBD in its Decision on Marine and Coastal Biodiversity (CBD X/29) sets out the process for identifying EBSAs based upon the scientific criteria previously adopted by CBD COP9. In particular, this decision looked to States, Regional Seas Conventions and Regional Fishery Management Organisations to organise workshops with the objective of identifying EBSAs. Workshops have been held in specific regions over the past two years. The aim of these workshops is to identify and describe marine areas in the high seas that fulfill the scientific criteria. A candidate EBSA may qualify on the basis of one or more of the criteria, and the boundaries of the EBSA need not be defined with exact precision. The identification and submission of EBSAs places no responsibility on States, Regional Seas Conventions or Regional Fishery Management Organisations to take any further action but they are a useful information tool for improved decision making on marine issues.

The role of hydrography in MPA planning and opportunities

by **Koen Van Staen**
Centre for Environment, Fisheries and Aquaculture Science (CEFAS)

Hydrography is broadly defined as "the measurement and description of the features of the sea and coastal areas for the primary purpose of navigation and all other marine purposes and activities". Hydrographic data plays a key role in the implementation of marine protected

areas in the United Kingdom. The data are able to identify and visualise the different physical marine habitats. The data may help to identify sensitive areas or those associated with features of conservation interest. A few examples will be provided of how these data are used as part of MPA implementation work and resolving stakeholder issues.
The definition of hydrography illustrates how the data are not just valuable for navigation, but are of benefit to many marine stakeholders. Considering the costs of the surveys, there are benefits to bring different stakeholders together and pool resources. "Collect once, use many times" is a statement that is often used in this context these surveys in a cost effective manner with widest possible benefits. The UK Hydrographic Office, the responsible charting authority for many Overseas Territories and Crown Dependencies, has identified the need to bring many charts around these areas up to modern standards. Improved charts often means improved access and potential increase in revenue. Considering the need to bring charts up to modern standards, there is an opportunity to work together those interested in navigational safety and marine protected areas, amongst others, to ensure surveys meet multiple needs. Joined up survey activity can rapidly lead to increased knowledge about marine habitats and assist in the implementation of marine protected areas.

Deep water surveys- A case study of Anton Dohrn Seamounts

by **Mike Nelson**
Offshore Seabed Survey Ecologist
JNCC

To facilitate Marine Protected Area (MPA) identification, monitoring and management, JNCC has dedicated survey teams working on the collation of existing survey data and the co-ordination of new survey to enhance our knowledge of areas that may be designated as MPAs.

As part of their statutory responsibility to recommend MPAs in the offshore area (>12 nautical miles from shore), JNCC needs to gather information and evidence to help support these recommendations; either by searching and retrieving existing information, or through collaborative or commissioned survey. On such surveys a variety of data may be recorded using a range of instrumentation. These range from using multibeam echosounders and sidescan sonar to record the bathymetry, seabed texture and morphology through to using high resolution digital video and stills equipment to image the seafloor.

Within JNCC, the survey team recognise the advantages of working collaboratively in the offshore marine environment to reduce costs (offshore survey can cost many thousands of pounds per day) and benefit from shared knowledge and expertise. JNCC work collaboratively with a large number of organisations including Cefas, the British Geological Survey, University of Plymouth, the country conservation agencies and many more.

While most of JNCC's survey work takes place in shallower waters (<200m), occasionally there is need to explore the deeper areas of the oceans.
In the summer of 2009, JNCC commissioned an offshore survey, aboard Marin Mätteknik AB's *M/V Franklin*,
of two areas that were under investigation as potential Special Areas of Conservation (SACs) for reef habitat under Annex I of the EC Habitats Directive: Anton Dohrn Seamount and

East Rockall Bank in the North East Atlantic. Anton Dohrn Seamount is a former volcano located in the central Rockall Trough and is approximately 1800m high from the deepest point of the surrounding bathymetric moat (around 2330m below sea level) to the crest of the feature. The East Rockall Bank area of search has water depths of between 2175m and 190m. Both sites lie >150km West of the St Kilda archipelago.

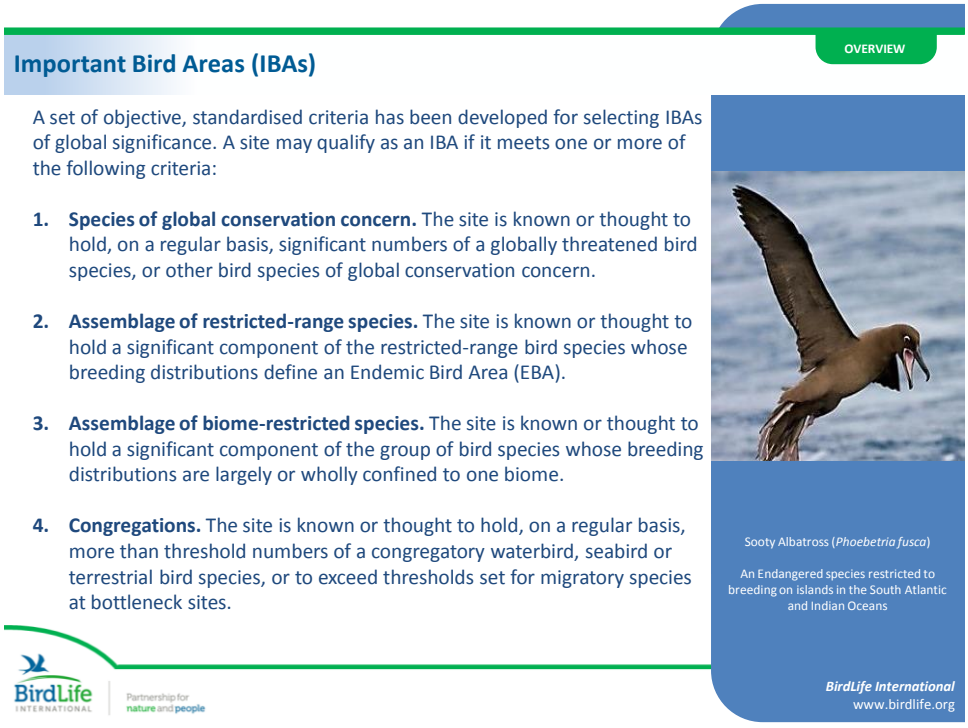
The key objectives of the survey were to acquire high quality acoustic and biological data to e nable the distribution, extent and biological characterisation of reef communities fitting the d efinition of reef under the EC Habitats Directive. On Anton Dohrn, the acquisition of over 21 5km of multibeam echosounder data and 10 camera transects was achieved. Whilst on East R ockall Bank, 692 line kilometres of multibeam echosounder and 168 line kilometres of sidesc an sonar data were acquired and 17 camera transects were completed.

This presentation provided an overview of the various survey techniques and equipment utilised by JNCC and its partners to gather high quality evidence in the offshore environment. The month long Anton Dohrn/East Rockall bank survey was described as a case study for the collection of benthic data from the deep sea and discusses some of the technical challenges of surveying these areas.

Marine Important Bird Areas (IBAs): their inputs to EBSAs and other site-based management approaches

by **Ben Lascelles**
Senior Marine Officer,
BirdLife International

Important Bird Areas (IBAs) have formed a cornerstone of terrestrial site-based conservation approaches for over 30 years. The schematic below describes the criteria for IBAs.



Since 2006 this approach has been extended to capture key areas in the marine environment. Identifying marine IBAs has required the compilation of extensive datasets, the development of new analysis techniques to define boundaries at sea and rigorous testing to ensure methods are applicable across a taxonomically varied group of over 350 species of seabird worldwide.
BirdLife Partners in over 40 countries have engaged in marine IBA projects, and contributed to the launch in 2012 of the 1st global inventory of marine IBAs (published as an electronic atlas http://maps.birdlife.org/marineIBAs/default.html). The inventory includes over 3300 sites in over 140 countries, territories and on the high seas.

The sites have been shared with a range of marine decision making processes, in particular the EU Bird's Directive and the CBD EBSA process. The development of the inventory has relied heavily on data contributions by the seabird scientific community. A critical part of this has been the development of the Tracking Ocean Wanderers database (www.seabirdtracking.org) which now holds 2 million tracking data points for 65 species of seabird, making it the largest tracking database in existence. This talk will present the e-atlas and associated tracking database; discuss how the results have been communicated to various relevant marine policy mechanisms (such as the EU Bird's Directive and Nairobi Convention); and provide an example of how the data was used to have initial discussions about developing an EBSA proposal for waters around Tristan de Cuhna.

Scientific evidence on seabird can assist in addressing bycatch issue by industrial fishing. To date, tracking data for 65 species has been compiled into a central database, providing information not only for bycatch issues, but for informing marine management decisions relating to MPAs and MSPs. It is justified to include seabird tracking data in MPA designation, as it can provide information on connectivity of sites, representation of life-history stage in MPA network, as indicators and ecosystem approaches.

Seabird tracking data was utilised as part of the EBSA process during the South Pacific Workshop in 2013; areas both within the EEZ of Tristan da Cunha and beyond the EEZ are utilised by shearwaters. A submission was made for that outside of the EEZ.

Challenges of collecting and analysing seabird data for the purpose of identifying and delineating MPAs

by **Amanda Kuepfer** and **Julie Black**,
Seabird & Cetaceans Team,
JNCC

This presentation looks at some of the challenges involved in collecting and analysing seabird data for the purposes of MPA identification, and tries to provide pointers in terms of things to consider when planning MPA identification work. It does not provide an exhaustive list of methods used to collect and analyse seabird data, but references have been provided for more information.

Background

As top predators and recognised indicator species of the marine environment, seabirds can be key focal points for MPAs, as well as being acknowledged as a useful tool to identify and delineate candidate MPAs and to monitor the effectiveness of established MPAs more generally. However, the very nature of seabird ecology brings many challenges to collecting and analysing seabird distribution data for this purpose.

Data collection

The key challenges of data collection are associated with the fact that seabirds can be extremely mobile, flying 1000s of miles across international waters, they can show very variable distribution patterns related to e.g. season or sex or age group, and they spend the vast majority of their lives in a spatiotemporally dynamic oceanic habitat. As a result, obtaining information on seabird distribution means that we have to potentially consider huge areas and be very careful about obtaining representative data in terms of space, time and demographically. It can also be very valuable to consider the possible influence of the dynamic marine environment on distribution patterns if appropriate data is available (e.g. variables such as sea surface temperature and chlorophyll concentration).

Data collection tends to come with logistical and financial challenges and it is therefore crucial to have a clear aim for what you want to protect so that you can understand the type of data you will need to achieve your aim (whether you will collect the data yourself or use data that has already been collected).

I discussed two main methods of seabird at sea distribution data collection:

At sea transect surveys

Transect surveys involve counting birds along systematic transect lines and can be done from boat (visual surveys) or from a plane (visual or digital surveys) and tend to be at least loosely based on the standard ESAS protocol (see http://jncc.defra.gov.uk/pdf/Camphuysenetal2004_COWRIEmethods.PDF). Such surveys allow collecting of both distribution and abundance data at a population scale and from multiple species. Boat surveys will also provide the additional opportunity of simultaneously collecting environmental data that can provide useful complimentary data during data analysis. It is easily applicable throughout the year. However, birds recorded are of unknown provenance (so difficult to link to specific colonies for example if that is an aim), and for many seabird species the appropriate survey area can be very large and hence very costly to cover using this method.

Tracking

Tracking involves fitting the birds with a device, such as a GPS or a satellite tag, which then transmits or stores the location information of its carrier. There is a wide selection of devices available, each with their own advantages and disadvantages related to weight, cost, accuracy and battery life. Tracking has the advantage of providing data on individuals of known provenance, and of providing information across space and time (unlike the snapshot view we obtain from a transect survey). In other words, it provides information on where the bird goes so no decisions on study area need to be made (but of course there are still decisions of study individuals). This method can be very useful if, for example, your aim is to obtain distribution data from birds at specific colonies, or if the target birds spend time in remote or inaccessible areas which would be difficult to survey from boat or plane, or for species with very big home ranges. However, given that tracking provides information at the individual level, it is important to obtain enough data to generate a representative picture of the population as a whole. Although there are continuous and rapid technological advances which provide increasingly affordable tracking devices, tracking has remained a costly exercise and it can be challenging to obtain large sample sizes. Potential bias in the

data collected must be recognised, for example if the device is not of negligible weight to the bird then it might influence the flight patterns of the bird with a bias towards shorter flights. Furthermore, the method is intrusive and welfare issues should not be underestimated and should always be considered.

Data analysis: Production of a density or usage surface

There are numerous mathematical and analytical challenges associated with seabird distribution data. This type of data tends to be temporally and spatially discrete, show spatio-temporal autocorrelation, transect data can be heavily zero-inflated and tracking data tends to be pseudo-replicated. As a result, the data doesn't tend to conform to the assumptions of some of the more simple types of statistical analyses. However, there are a range of methods available which deal with these mathematical challenges to various degrees.

The first step in analysing seabird distribution data is to transform the spatially discrete data into a continuous density or usage surface across the entire marine area of interest. There are two approaches that can be taken:

Interpolation

Data smoothing methods such as Kernel Density Estimation and Kriging essentially fill in the gaps in the data points by interpolating between known values at neighbouring sampled locations. The various types of interpolation techniques all come with their own advantages and disadvantages, but as a whole, they make a useful tool if data exists over the entire study area and the requirement is to simply smooth this data into a surface (of e.g. density or usage) to allow further analysis or boundary delineation.

Extrapolation

Extrapolation goes further than interpolation by being able to extrapolate (or predict) to locations outside of the surveyed area. This requires the use of covariates for which information is available throughout the area of interest (including unsurveyed locations). A whole range of habitat modelling techniques exist for this kind of analysis (regression type techniques such as GLM, GAMs, etc; machine-learning techniques such as Maxent, ENFA, etc; and many more). Habitat modelling involves the use of seabird distribution data and underlying environmental data to establish a relationship between the two, in order to allow the identification of suitable habitat within the bird's home range.

Whilst the different types of habitat modelling all come with their own pros and cons, related to complexity and predictive power, the approach can make predictions of usage to unsurveyed areas which in the case of wide ranging species can be a huge advantage. However, the various issues to be considered in a habitat modelling approach (such as data preparation, choice of covariates, model selection, etc) should not be underestimated.

Data analysis: Boundary delineation

Once a density or usage surface has been produced, a decision needs to be made as to what density or usage is 'high', ie where to draw a boundary. There tend not to be obvious boundaries in the seascape so boundary delineation becomes much more of a challenge in the

marine environment than terrestrially. Any boundary is likely to be challenged by stakeholders, and even more so when it does not follow an and visible habitat perimeter. Any methods used to delineate boundaries must therefore be objective, repeatable and scientifically robust. Possible methods include:

Using foraging range

This is a very straight-forward method where the boundary is defined by the sthe specie's foraging range. This method can serve as a good starting point in case of a lack of data. However, it is applicable only to a limited range of species (with relatively short foraging ranges) unless inclusion of large areas of potentially rarely used marine space is acceptable, and tends to be restricted to the breeding period when foraging ranges are constrained by nest-care duties.

Prioritising tools

A range of prioritising tools are available, including, for example, the Zonation algorithm software. This particular method allows both the conservation value as well as socio-economic costs to be considered in area prioritisation, by allowing trade-offs of seabird distribution and industrial or social activity within the area of interest. The software ranks individual grid cells across your area of interest based on conservation value and cost and provides a 'least cost' scenario. However, this ranking is continuous, meaning that a subjective decision still needs to be made as to a target proportion of the species or distribution to be included within MPA network (a usually subjective decision). It also may not be applicable where MPA legislation requires only scientific criteria to be used in identification of suitable areas (such as SPAs for example).

Point of diminishing returns

A method called maximum curvature has been used to identify the threshold value at the point of diminishing returns: a disproportionately larger area would be required to continue increasing the number of birds included within a boundary. It is a straight forward, repeatable and objective approach, which is mathematical, ie has no direct ecological interpretation, and is based only on the density or usage data.

In conclusion, as long as there is a clearly defined aim then it is possible to identify the type of data and analysis that is most appropriate, but there is no simple 'catch-all' solution, and different types of data and analysis should be considered to best meet your projects aims. It is important to be as objective and robust as possible so that it is easier to stand up to challenge, and it is important to be clear throughout the process on where any subjective judgements are made.

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Establishing management protocols

by **Nick Greenwood**
Marine Environment Manager, Marine Conservation and Enforcement Team,
Marine Management Organisation

Establishing and enforcing effective management protocols is essential to fully realise the benefits of marine protected areas (MPAs) and to ensure that they do not remain "paper parks". The MMO, alongside other organisations, principally the Inshore Fisheries and Conservation Authorities, is responsible for managing most human activities in MPAs in English territorial waters.

Management tools differ for different activities. Fishing and recreational activities are managed through byelaws, whereas marine licensable works (for example coastal development, navigational or capital dredging etc) are managed through licence conditions. Enforcement of fisheries measures in the UK relies on a range of tools. Conventional tools include port inspections and surface and aerial surveillance. Increasingly, more novel tools are being used (eg the European Union vessel monitoring system (VMS) for vessels over 12 metres in length) and developed (eg high frequency VMS and remote sensing technology).

More information on inshore VMS (a form of high frequency VMS) is available on the MMO website: http://www.marinemanagement.org.uk/protecting/ivms/index.htm
Enforcement measures include verbal and written warnings, prosecutions and financial administrative penalties (FAPs). FAPs act as an on the spot fine which increases with repetitive offences. More information on FAPs is available on the MMO website: http://www.marinemanagement.org.uk/fisheries/monitoring/penalties.htm

Creating an ecologically coherent network: OSPAR/UK experiences

by **Amy Ridgeway** and **Jon Davies**
Marine Protected Sites Team
JNCC

Contracting Parties to the Oslo Paris Convention (OSPAR) committed to nominating Marine Protected Areas (MPAs) to make a proportionate contribution towards the goal of an ecologically coherent network of well-managed MPAs in the OSPAR area by 2015. The UK Government and the Devolved Administrations (in Northern Ireland, Scotland and Wales) are working towards a network of MPAs in the UK seas that will fulfil national, European and international commitments. Each administration is responsible for MPAs within that part of the UK seas under their jurisdiction. They have each taken forward projects to identify MPAs to meet their respective policy commitments and also make an appropriate contribution to the UK's international commitments.

The Joint Nature Conservation Committee (JNCC) provides scientific advice to the UK Government and Devolved Administrations (Northern Ireland, Scotland and Wales) on marine conservation at the UK scale. JNCC is involved in the projects throughout the UK identifying MPAs that will contribute towards the network in UK waters. This paper will outline the progress made by the UK towards achieving its MPA network, and demonstrate how each of the different projects customised the network design principles provided by the

OSPAR Commission, to meet both their own policy needs and enabling their MPAs to contribute to commitments at the wider UK and international scale.

An important issue is how to determine whether the MPAs in the UK are making an adequate contribution towards an ecologically coherent network at different geographic scales. JNCC propose that network assessment uses biogeographic units but is also designed to respect the different administrative areas of UK waters. Working the OSPAR Commission and the French MPA Agency, JNCC have been developing methodologies for assessing whether MPA networks are ecologically coherent. In 2013 JNCC started to look at applying these methodologies to the evolving network within the UK.

The paper will present our progress, the challenges encountered and describe the lessons learned that have wider relevance to MPA practitioners around the globe. To conclude the paper will provide a perspective on the appropriate way forwards for assessing the progress of the UK's MPAs towards an ecologically coherent network.

Management: Post-implementation of MPA Case Study - scientific monitoring and enforcement

by **Phil Trathan** and **Iain Staniland**
British Antarctic Survey

The Government of South Georgia and the South Sandwich Islands (GSGSSI) recently established an MPA including a number of no-take areas within the Maritime Zone of the South Georgia and the South Sandwich Islands (SGSSIMZ). These waters are amongst the most productive in the Southern Ocean, supporting a great diversity and abundance of wildlife. This productivity has also meant that the area has long been attractive for the commercial harvesting.

South Georgia and the South Sandwich Islands is a UK Overseas Territory; however the islands also lie within the area managed by the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR), so harvest assessments are carried out within a multilateral, international context. The UK, through the GSGSSI, implements all CCAMLR Conservation Measures applicable to South Georgia waters and in some cases imposes lower fishery quotas and more stringent regulations in order to ensure the sustainable and rational exploitation of marine resources; this includes the designation of the South Georgia MPA.

Management of the MPA is achieved through a combination of general monitoring and focussed studies. Monitoring efforts are a combination of land based predator studies recording demographic parameters such as breeding success, population counts, offspring mass etc, and ship based work such as ground-fish surveys or acoustic transects to determine krill biomass. Focussed studies are aimed at answering questions to improve management provisions; these often build upon monitoring work e.g. tracking studies of marine predators, quantifying trophic interactions, modelling climate impacts on krill etc.

Fishing licenses provide income to the GSGSSI in order to provide support for fisheries research and the enforcement of conservation measures. Fishing vessels are inspected prior to their commencing fishing and daily positions and catches are reported during the fishing season, while regular protection patrols are undertaken by a dedicated surveillance vessel.

PEW Ending Illegal Fishing Project

by **Anthony Long**
PEW

With the goal of dramatically reducing illegal fishing around the world, this past year Pew launched a campaign that employs a range of strategies, including implementation of International Maritime Organization number requirements for fishing vessels, mandatory tracking of fishing vessels, ratification of the UN Port State Measures agreement, launching a new INTERPOL Environmental Crime Programme (Project SCALE), and supporting a Southeast African partnership to crack down on illegal fishing in the Indian Ocean. This session will provide information on this initiative and discuss strategies for the use of technologies and information sharing to best deal with the monitoring and enforcement of the maritime domain.

Protecting the marine environment of St Helena - from research to management

by **Judith Brown**
Darwin Marine Biodiversity and Mapping Project Manager
Environmental Management Division
Environment and Natural Resources Directorate
St Helena Government

Currently accessible only by ship, the isolation of the volcanic island of St Helena offers protection to its marine environment. With the construction of an international airport, due to open in the next two years, tourism will provide a vital source of income to the local population, however it will also increase pressures on the natural resources of the island. Sportsfishing, dive tourism, whale shark and cetacean tourism as well as increased commercial fisheries both offshore for tuna and inshore for crayfish and grouper are likely to increase with growing numbers of visitors and an increased drive for the island to become self-sufficient. Currently there are limited preservation measures in place and it is vital to implement policies and marine management strategies to ensure protection of the rich biodiversity. A Darwin funded marine biodiversity and mapping project, presently underway, is gathering data on species, habitats and resource use both from historical information and new surveys. As well as many new records for St Helena, so far eight new species have been discovered and 142 island wide surveys conducted which will provide both spatial and seasonal data on species abundance. Long term research projects are providing the baseline data on seabirds and cetaceans, including a tracking project and a public based marine sightings scheme. This information will all be integral in making management decisions and will form the basis of the Marine Management Plan for St Helena.

Mapping, geo-spatial analysis and marine planning tools … some examples

by **Dr Janette Lee**
Centre for Environment, Fisheries and Aquaculture Science (CEFAS)

Evidence of use of marine areas may be contained in diverse data sets, many of which have a spatial component. Interrogation of data and visualisation of results from analysis is strengthened by the use of Geographical Information Systems (GIS), enabling managers and policy makers to understand and demonstrate to others the meanings and interactions in the data. This presentation seeks to illustrate the potential of GIS as a tool to support marine planning and management and to prompt discussion on associated data requirements. A suite of GIS-based tools, driven by spatial data, are presented to illustrate some relevant functionality. These tools have been developed by Cefas and provide utility in support of marine planning. The selected tools show: how value can be added to data; how data can be analysed to explore spatial interactions; and how routine and repetitive procedures can be simplified or automated. Four tools of different levels of complexity are included.
The first tool illustrates how point data describing fishing vessel location can be processed to give indicative information on fishing activity (behaviour) and in the delineation of core fishing grounds. Satellite positioning data are integrated with skipper log book and landings data to provide indicative patterns of fishing activity for different fleet sectors. Simple speed-based rules are used to identify locations at which fishing is likely to occur. Wider discussion included an exploration of how activity from the smaller, inshore, vessels can be understood and the information that can be gleaned from analysis of data from enforcement vessels and aircraft.

The next tool demonstrates identification of an area of planning interest and an exploration of potential conflicts between new uses and existing activities. Using GIS functionality, an area of interest can be identified and analysis undertaken of the activities currently operating within that area.

The third example shows how a potential pressure layer can be derived from a set of selected activities to indicate areas where impact management may be required. Multiple activities can contribute to a single pressure and a single activity can contribute to multiple pressures. The GIS-based tool facilitates the creation of pressure footprints from multiple activity data layers.

The final tool illustrates a multi-stage process to facilitate cumulative pressure and impact assessment supporting policy discussion and decision modelling. Data describing different pressures can be combined to explore the risks of cumulative pressures. If suitable data are available data describing pressures can be combined with data describing habitat sensitivity to explore vulnerability.

The presentation concludes with a demonstration of some of the GIS functionality available to support the sharing and communication of information. Examples will show how data and analytical results can be communicated to stakeholders using a variety of easily understood output formats and visualisation techniques. The use of layered ‘pdf’ files demonstrates an effective way to share data with non-technical stakeholders. Video animations allow changes over time to be communicated effectively.

MSP and Climate Change

by **Alec Taylor**
RSPB

Marine Spatial Planning (MSP) is increasingly recognised as an important tool for countries to manage the use of their marine and coastal space. As part of this, it should set out a path for meeting a long-term vision, which includes promoting action to reduce the impacts of climate change. By 2025, up to half of the world's Exclusive Economic Zones (national jurisdictions) could be covered by some sort of marine spatial plan.

This presentation took a brief look at:

- How MSP can contribute to mitigating and adapting to climate change in the short and long term.
- How climate change is addressed in some existing marine spatial plans.
- Some of the evidence the RSPB is using to link climate change to seabird behaviour.
- The need for MSP to support a network of marine protected areas (MPAs) for climate change reasons

Seabird breeding success is in large part dependent on the supply and distribution of prey species (such as sandeels), which are heavily influenced by ocean temperatures and the timing and intensity of stratification. In general terms, cooler waters and later and weaker spring stratification create better better conditions for planktonic growth that provides food for sandeels, and in turn breeding seabirds. RSPB is working on showing these linkages at a colony-specific level, highlighting that both climate change and badly located development often have disproportionate impacts in certain areas.
In the face of long-term climate change, marine ecosystems must be as robust and resilient as possible. For the natural environment, the most effective means of providing this resilience is an effective network of MPAs, including areas providing vital ecosystem services from fisheries to flood protection. The presentation drew from a recent paper in *Nature Climate Change*[1], which concluded that MPAs, as along as they are extensive and form a coherent network, will continue to be extremely important for bird conservation in future. The most vulnerable areas in the coastal zone should also be identified.

In the short term, MSP must consider the importance of areas for birds when allocating space for development, and support the identification and designation of protected areas. This is part of an ecosystem-based approach to planning, which should avoid development in the most sensitive areas or times of year. The presentation highlighted some of the work that RSPB has been doing to track seabirds with GPS devices as part of the Future of the Atlantic Marine Environment Programme (FAME, www.fameproject.eu), which is showing in new detail how foraging seabirds are using areas also identified as important for human activities, such as renewable energy.
In the longer-term, plans must provide policy direction for activities to show how they have minimised their own contribution to climate change as a condition of granting development, as well as involving civil society to take action themselves.

Examples from newly emerging marine spatial plans in the UK show that climate change is recognised as an important threat, and that mitigating and adapting to its impacts should be a strategic priority. Whereas in England, plan policies focus on minimising emissions and encouraging developers to consider their climate change impacts, Scotland goes one stage further in seeking to

[1] Johnston, A., Ausden, M., Dodd, A.M., Bradbury, R.B., Chamberlain, D.E., Jiguet, F., Thomas, C.D., Cook, A.S.C.P., Newson, S.E., Ockendon, N., Rehfisch, M.M., Roos, S., Thaxter, C.B., Brown, A., Crick, H.Q.P., Douse, A., McCall, R.A., Pontier, H., Stroud, D.A., Cadiou, B., Crowe, O., Deceuninck, B., Hornman, M. & Pearce-Higgins, J.W. (2013) *Observed and predicted effects of climate change on species abundance affirm the future value of a protected area network.* Nature Climate Change. doi: 10.1038/climate2035

safeguard habitats providing essential ecosystem services relating to climate change, such as carbon sequestration or coastal protection.

The afternoon discussions relating to MSP focussed on the underlying legislative and jurisdictional arrangements for ensuring that MSP has a strong statutory backing. Some countries choose to extend their terrestrial planning (and accompanying EIA regime) into the marine environment, whereas others would prefer to have a more focussed marine planning system, which can be integrated at the coast. Early stakeholder engagement also provides much greater ownership and buy-in of the final plans. Whichever approach is chosen, MSP needs strong underlying environmental assessment and licensing processes, to implement the plans effectively.

An introduction to marine planning and the draft East marine plans

by **Joanna Stockill**
Marine Management Organisation

Marine planning aims to ensure a sustainable future for our coastal and offshore waters through managing and balancing the activities, resources and assets of our marine environment. The Marine Management Organisation was established in 2009, and is responsible for preparing marine plans for English waters. This includes working with stakeholders and developing the evidence base to support delivery and to allow integration of current and future activities into the plan. England is one of the first countries in the world to plan across all marine activities. It is hoped that the reduced costs and increased certainty provided by marine planning will create greater development opportunity and lead to economic, social and environmental benefits.

The first draft marine plans for the East Inshore and Offshore areas have just been through formal consultation. The presentation will provide an overview of the English marine planning process, explaining the key legislative drivers, the benefits of marine planning and the approach taken to develop the first draft marine plans, including key stages of delivery. The presentation will then look in more detail at the draft East marine plans, to explain the 'look and feel' of the plans and to provide a summary of the draft plan objectives and policies.

The LIFE programme: what is it at all about?

by **Richard Findon**
DEFRA

The presentation will provide a summary of the anticipated scope of the new programme for the environment funded by the EU known as LIFE, which now includes scope for limited access by OCTs. Although the regulation has yet to be finally agreed and the details of the priorities are due to be confirmed in January, the talk will describe the likely wide range of environmental topic areas as well those in the new climate change subtheme. It will outline the different types of project, the likely timescale for applications, support for applicants, and some of the key eligibility requirements. It will also highlight the competitive nature of the programme and the need to invest time developing high quality projects to be successful. It will conclude with a few prospective thoughts about projects that may be relevant to OTs.

WORKSHOP SYNOPSIS AND CONCLUSIONS

The concept of the MPA workshop was to focus on the priority areas, and assist UKOT and CD participants by providing them tools for addressing their needs, contact with UK-based expertise, and a venue for exchange of ideas and methods. Experts were invited based on recommendations made by main relevant UK organisations.

This workshop was built on the areas of interest identified by UKOTs and CDs. The full list of areas of interest, covering 1) Marine Protected Areas, 2) Fisheries, and 3) Cetacean conservation is given in Appendix II. Please note that these areas of interest are within the limits of marine work currently carried out by DEFRA. This is due to the initial goal of strengthening UKOT/CD and DEFRA links through matching expertise and needs. This was subsequently extended to other UK-based expertise. Nonetheless, the fact remains that not all topics of interest may be reflected in the attached list; for example, marine invasive species control is a major topic in the Caribbean UKOTs, which is not cited here.

Areas of Interest related to Marine Protected Areas

Regarding Marine Protected Areas, top research and management needs were identified by UKOTs and CDs. These were as follows:

1. Process for establishing MPAs: Gathering Evidence
2. Process for reviewing zoning of existing MPAs
3. Process for defining maritime boundaries and sovereign seas
4. Economic valuation of Marine Protected Areas
5. Gathering evidence for Ecologically and Biologically Significant Areas (EBSAs).
6. Expanding marine baseline studies to deeper areas (such as seamounts)
7. GIS mapping of MPAs
8. Process for Marine Spatial Planning

UKOTs and CDs which expressed interest in each MPA topic are listed in Table 1 below. Invitations were first sent out to those Territories and Dependencies which expressed an interest in MPA work; if they declined, invitation was extended to other Territories. Only one Territory which had first expressed interest declined. However, all Territories and CDs received copies of the pre-workshop document, presentations, and final report.

Please note that only interests related to MPAs are given in Table I below; interests by OTs and CDs for other marine-related topics are given in Appendix II.

Table 1. Areas of Interest related to Marine Protected Areas identified by UKOTs and CDs (2013)

Area of Interest	UKOT/CD
MPA process (gathering evidence; establishing MPAs)	Guernsey, Ascension, Montserrat
Zoning and review of existing MPAs	Anguilla, Cayman Islands
Monitoring	Guernsey, South Georgia and South Sandwich Islands
Defining maritime boundaries	Montserrat
Economic value of MPAs	British Virgin Islands,
EBSAs	Falkland, Ascension
Expanding marine baseline studies to deeper waters	Ascension
GIS mapping	Ascension, Guernsey, Montserrat, Isle of Man
Marine Spatial Planning/Integrated Coastal Zone Management	Bermuda, Cayman Islands, Guernsey, Jersey, Anguilla, Isle of Man
Policy development/Legal controls	St Helena, Guernsey

Workshop Presentations

Presentations were given in the morning only to allow for brainstorming in the afternoon. The first presentation summarised the work of the Ministry of Defence (UK) which is now in the process, again with the assistance of JNCC, of expanding the coverage of EPG(M) with the intention of capturing all EU MPA and OT and CD statutory designated MPA.in improving its environmental guidelines, extending their scope to UKOTs and CDs; there was a 10 month process facilitated by JNCC to obtain all relevant information on statutory MPAs in the UKOTs and CDs. Rod Jones of the MOD brought the participants up to date on the status of the environmental guidelines and the input by the UKOTs and CDs.
The workshop closed with an update on Life+ funding and new opportunities for the involvement of UKOTs. Overseas participants were introduced to the concept, and ideas were shared during a preliminary meeting.

All information presented is made available through copies of the presentations sent to participants. There is no information compiled from the afternoon discussions, as these were private conversations between UKOT/CD and experts.

UK-based Areas of Expertise related to the Marine Environment

Based on consultation with government and non-government organisations in the UK, main areas of expertise related to the marine environment within these organisations were assessed**.** From these, experts were invited to share their information with UKOT and CD participants for MPA related issues. Table III below provides a summary of some of the marine expertise available in the UK; it is by no means a comprehensive list, but can be used as a basis for developing further collaborations. All UK based groups are invited to contact JNCC and add to this list. Further details on expertise given below are in Appendix III.

Table 2. A preliminary list of relevant UK-based expertise related to Marine Protected Areas

Note: Where not given, emails can be found in participant list

Organisation	Team	Expertise relevant to MPAs (compiled May 2013)	Contact (where not given, emails can be found in participant list)
DEFRA	Marine Species Conservation	Cetaceans (whales, dolphins and porpoises)- Elasmobranches (sharks, skates and rays)	Nicola Clarke, James Gray, Jamie Rendell, Emma Rundall [firstname.secondname@defra.gsi.gov.uk]
	Marine Biodiversity	Marine Protected Areas (MPAs Ecologically or Biologically Sensitive Areas (EBSAs) International Coral Reef Initiative (ICRI)	Tina Blandford
JNCC	Marine Protected Areas	Establishing MPA process;gathering evidence;marine conservation zones;	Peter Chaniotis, Amy Ridgeway,
		Offshore survey techniques (acoustic/benthic sampling/	Mike Nelson
		Seabird ecology	Amanda Kuepfer
		Implementation (link with MOD)	Beth Henshall
British Antarctic survey		Scientific ecosystem monitoring and review (post implementation)	Phil Trathan
BirdLife International		Sea bird ecology/tracking Marine E-atlas: www.birdlife.org/datazone/marine ***Tracking Ocean Wanderers*** www.seabirdtracking.org State of the world's birds www.birdlife.org/datazone/sowb Marine IBAs informing SPA designation in EU *SEO/BirdLife marine IBA inventory* www.seo.org/aves-marinas	Ben Lascelles
CEFAS (Centre for Environment, Fisheries & Aquaculture)		GIS Analysis/tools for integrating data/defining pressure and impact/assessing risk of cumulative impacts/mapping pressure	Main contact: Ross Jolliffe ross.jollife@cefas.co.uk Janette Lee
		Hydrography survey	Koen van Staen
MMO (Marine Management Organisation)	Marine Conservation and Enforcement Team	MPA management Marine licensing/marine conservation/ enforcement http://www.marinemanagement.org.uk/protecting/conservation	Nick Greenwood

	Marine Planning	Implementation of marine planning, management of network of MPAs/respond to marine emergencies www.marinemanagement.org.uk/marineplanning htpp://planning portal.marinemanagement.org.uk	Joanna Stockill
The Pew Charitable Trust		Enforcement/Illegal fishing/Satellite applications Catapult/AIS tracking/Fish-I/TRYGG MAT http://tryggmat.no/combined-iuu-vessel-list	Anthony Long
		Baseline surveys incl. Seamount	Sue Scott suescott153@btinternet.com
		Deep water monitoring	Heather Koldewey Heather.Koldewey@zsl.org
RSPB		Review of zoning Marine legislation Marine Spatial Planning- engagement of local communities/GIS mapping of data	Main contacts: Clare Stringer Clare.Stringer@rspb.org.uk Jonathan Hall Jonathan.Hall@rspb.org.uk
		Seabird Research/tracking/link to fishing and climate change	Alec Taylor
Ministry of Defence		Implementation (linked with JNCC) (specific to MOD environmental guidelines)	Rod Jones

Workshop Process Evaluation

Ideally, the length of the workshop could have been 4 days rather than 2 days, however, budget and time constraints did not allow this. Furthermore, in order to allow UKOT and CD participants to engage fully with experts, numbers had to balance out; for this reason, experts were invited for the day of their presentation only. As there was double the number of experts than participants, there was concern that the former would overwhelm the latter, and the concept of the workshop lost.

This process seemed to have been successful. UKOT and CD participants came with questions, files of their work, and took full advantage of the afternoon sessions. Discussions were typically between 2 overseas participants, and 1 or 2 experts. Most discussions seemed to need approximately 45-60minutes, after which overseas participants rotated.
Success was gauged by a feedback questionnaire handed out to overseas participants at the end of the workshop, and filled in anonymously.

Results are given in Table III below. There was a total of 9 overseas participants, 7 from UKOTs and 2 from CDs.

Table 3. Assessment of workshop model for addressing UKOT and CD needs related to Marine Protected Areas.

Question	Response with number of answers given in brackets
Workshop rating: poor, good, very good, excellent	Excellent (V)/very good (III)/good (I)
presentations	Useful/informative (VII)/informative (I)/useful (I)
Most useful presentation	MPA cycle (III), Marine Planning (I), Deep water surveys (I), Management protocols (I), Scientific monitoring and research (II), Marine spatial tools, hydrography (II), designation and enforcement (I)/ All useful (II)/policy framework development process (I), GIS tool and other techniques (MMO) (II)/ Best practice (I)
Working group sessions	Good length (VI)/ need longer (I)/ too long (I)
Length of workshop	2 days (IV)/3 days (IV)/4 days (II)/
Further comments	Longer days for longer working group sessions opportunity for practical implementation need fisheries workshop (II) interesting to see how information truly helped participants in upcoming year more workshops needed/need proceedings/presentation notes more talks from OTs further discussion forums

In brief, of 9 OT/CD participants: 5 judged the workshop excellent, 3 very good and 1 good. 9 found the presentations useful and/or informative. Preferred presentations were those on MPA cycle (given by JNCC), research and monitoring (J. Brown and BAS), Marine Management and Marine Spatial Planning (MMO), Hydrography surveys (CEFAS), GIS tools (CEFAS), Deep water surveys (JNCC), Enforcement (Pew), Designation (DEFRA). 6 out of 9 found working group sessions to be appropriate duration, and 4 participants felt that 2 days was suitable, 4 others would have preferred 3 days, and 2 asked for 4 days. Other comments mentioned the need for further workshops, namely a fisheries workshop. Some participants were interested to do a follow up and see how useful this would be in the long term with respect to level of assistance provided by UK experts and organisations. Others requested proceedings or presentation notes and further discussion forums. One participant mentioned an opportunity for practical implementation and more presentations by the OTs and CDs themselves.

APPENDIX I – Working Groups Terms of Reference

Each afternoon approximately 5 working group stations will be set up, each one assigned a topic presented on the day. Resource persons for each will be present at each station to exchange information with OT participants on Territory-specific initiatives. No more than one hour will be spent at each station.

UKOT participants

1. **Prior to attending the workshop**- Identify specific concerns, questions, issues you may have in your Territory in relation to presentation topics. This could be done in consultation with colleagues in your Territory.
2. **Following presentations**, there will be a planning session for the afternoon; as OT participants will have to rotate working station, please prioritise your questions in order to allow enough time for all participants. You do not have to go to each working station, if the topic is not a priority for your Territory at this time.
3. Please take the opportunity to obtain as much technical information possible, and develop a plan of action for next steps needed to move forward in your Territory.
4. Feedback at the end of the workshop would be welcomed.

Resource persons

1. Please have available at the workshop as much technical information as possible on your topic, including links to recent publications, contact emails of colleagues who may be of assistance in the future, ongoing work which may serve as a model to Territories or techniques which may be adapted, etc.
2. A final workshop report will be sent to heads of departments of all OT governments, as well as to workshop participants. For this, an information fact sheet on your area of work with links and contacts (as given to participants in previous point) would be valuable. Please submit this for incorporation in final report before the end of the day.
3. OTs are at different levels of MPA work; please be ready to provide them with level of technical expertise required once they describe their case to you.

APPENDIX II- Areas of Interest for UKOTs and CDs

Compiled: November 2013

In no specific order:

Crown Dependencies

Guernsey-

- Marine Spatial Planning/Inter Coastal Zone Management/Marine Protected Areas – with particular reference to macro renewable energy
- Marine baseline data & ongoing monitoring for intertidal/pelagic & benthic zones
- Shore gathering – legal controls
- Integrated approaches to Marine mammal & sea bird monitoring
- Marine atlas and mapping
- Inter-island & regional strategies to protecting the marine environment

Jersey

- Marine Protected Areas
- Coastal Zone Management

Isle of Man

Marine Megafauna
Monitoring of cetacean, other marine mammals and marine turtle strandings/mortalities, which are reported to the Cetacean Strandings Investigation Programme (CSIP) http://ukstrandings.org/ and The Turtle Implementation Group (TIG) which are partnership organizations maintaining records for the UK and Overseas Territories. DEFA and Manx Wildlife Trust (MWT) collaboration.

Monitoring of cetaceans at sea via Manx Whale and Dolphin Watch (public reportings) http://www.mwdw.net/Home2.aspx (supported by various organisations including DEFA)

Strong interest in basking sharks, as the Isle of Man has a high seasonal density of sharks. Sightings and reporting systems in place, with links to groups in UK and elsewhere. Also associated research programmes in collaboration with UK universities (genetics, satellite tagging and monitoring) coordinated by Manx Basking Shark Watch (http://www.manxbaskingsharkwatch.com/) (Manx Wildlife Trust project with various support, including DEFA)

Small sharks
Currently part of small shark tagging programme with connections to UK project and particularly to Scottish project (MWT coordinated with DEFA support). Early stages, little data returned yet. Increasing tagging effort for 2014.

Water and Plankton monitoring
Routine monitoring of water quality parameters and phytoplankton (chlorophyll) Including toxic microalgae at several sites around, long term data set feeds into http://www.st.nmfs.noaa.gov/nauplius/media/time-series/site_ireland-iom-cypris-station-phy/

Habitat mapping and monitoring
Some work already done with broad-scale mapping of Territorial sea, and area-specific surveys largely complete (Ramsey Marine Nature Reserve). Opportunistic additions to dataset. Used to

underpin MPAs, Marine Spatial Planning etc, and in conjunction with water and hydrology monitoring. Collaborations useful.

Marine Protected Areas
Network of 6 protected areas, designated for various conservation purposes including biodiversity and fisheries stocks (3% of Territorial Sea area). CBD target of 10% by 2020. Planning underway but linkages and discussions useful.

Interaction/co-existence of fisheries and conservation objectives a key interest. Active research and co-management initiatives being trialled.

Ecologically-important habitats
Currently have protected areas in place for maerl, eelgrass (*Zostera* sp.) and horse mussel (Modiolus modiolus) beds and reefs within the Ramsey Marine Nature Reserve. More identified elsewhere and planning underway for protection. Have research links with UK universities, but collaborations/advice on protection mechanisms for isolated biodiversity habitats could be useful.

Invasive non-native marine species
Several already identified, although significant impact not yet apparent. Training programme scheduled and Action Planning underway. Advice and discussions with others would be useful.

Marine Spatial Planning
Offshore wind, tidal and hydrocarbon development planning in progress. Ensuring inclusion and consideration of environmental issues in a rapidly developing and financially driven sector is a priority, and dialogue/advice would be useful.
Production of Manx Marine Environmental Assessment document complete and publicly available to support/advise planning, development, conservation etc http://www.gov.im/categories/planning-and-building-control/marine-planning/manx-marine-environmental-assessment/

Part of wider Marine Plan process
http://www.gov.im/categories/planning-and-building-control/marine-planning/

Marine Economic Assessment
Developing subject with evolving methodologies, interpretations and applications. Discussion, collaborations and advice would be useful.

Fisheries Management Collaborations
The Isle of Man lies central to several other jurisdictions with shared interests in several, relatively poorly managed stocks. Increased collaborations and joint management approaches are critical, especially given the relative size of the Territorial Sea and fishing fleet of the Isle of Man. One initiative from the Isle of Man was the establishment of the Queen Scallop (Queenie) Management Board, to support the MSC certification of the fishery. It is probably the first multi-national group for an Irish Sea fishery. More could be done in relation to collaborations between management authorities for the improvement of both fisheries and environmental management.

Overseas Territories

Tristan da Cunha

Source: Trevor Glass (Department of Conservation, Tristan da Cunha), James Glass (Department of Fisheries, Tristan da Cunha)

- Biosecurity- process and implementation resources
- Fisheries

Source: RSPB

- Deep water benthic assessment
- Exploration of new fisheries
- Baseline surveys on seamounts
- Fisheries enforcement and capacity building (training)
- Assistance in shipping traffic control- assessing and responding to vessel groundings, including legislation

Falkland Islands

- Interest in Joint Cetacean Work - more specifically migratory whale monitoring and tracking programmes and conservation work
- Interest in EBSA workshop for the Region
- Inshore and Offshore cetacean monitoring and tracking

Bermuda

- Interest in Cetacean Work- more specifically whale watching guidance, and
- Post-mortem investigations/analyses
- Implementing CMS- sharks, turtles, cetaceans, seabirds
- Possible shark research
- Marine Spatial Planning currently being developed- further exchange on this would be useful
- Bermuda currently involved in the Sargasso Sea High Seas MPA, and MPA within EEZ.
- Coral Reef deeper species work

Gibraltar

- Interest in Dolphin Work
- Assistance in jellyfish issue
- Assistance in enforcement of fisheries regulations and political intervention from HMG

Turks & Caicos Islands

- Interest in Dolphin Work- more specifically “Swim with The Dolphin” ventures
- Long term research funding needed
- Conch assessment
- Marine Protected Areas- review
- Need for smaller/easier grant programme- for microprojects

Cayman Islands

- Input into information regarding existing marine parks (UK funded review of Cayman Islands’ MPAs zoning areas
- Request for contact person in DEFRA assisting in directing enquiries to appropriate DEFRA experts

- Suggestion of posting of marine contacts on website with areas of expertise to address enquiries to
- Explore feasibility of DEFRA visits to OTs for informal/formal exposure to ongoing and needed research and conservation issues.
- Suggestion of presentations by DEFRA marine experts on specific areas of work to UKOT (through video conferencing or workshops)

Ascension

- Interest in expanding current inshore marine baseline studies to deeper waters, for example on surrounding seamounts
- Assistance in initiating a fisheries management programme (both for commercial fisheries yellow fin tuna and others- and recreational fisheries- grouper, etc.)
- Interest in establishing marine protected areas- Interest in submitting to EBSA
- Assistance with fish kills, and other environmental problems, such as rising sea temperatures
- Need for dedicated Overseas Territories Officer working with DEFRA on marine issues of OTs, possibly out of JNCC

British Virgin Islands

- Interest in whale post-mortem investigations/analyses
- Assistance in economic valuation of protected areas
- Assistance in waste management (sewage, recycling etc.)
- Assistance in creating guideline/laws for the marine industry in particular charter boats/yachting
- Assistance in management of fisheries- ie. Spawning aggregations, stock assessments, monitoring, etc.

Anguilla

- Need a contact person in DEFRA on marine issues/environment/shipping/marine MEAs
- Assistance on reviewing of existing MPAs
- Provide copy and assist OTs with policy and legislation drafting of regulations on Cetacean/tourism programmes operating in OTs
- Assistance in developing fishery- Work towards sustainable pelagic fisheries (stock assessment and monitoring)
- Pelagic fishery programme- Develop fisheries management programmes; promoting pelagic fishery product to EU market
- Drafting fisheries and marine management legislation
- Data gathering/evidence-based decisions and implementation of sustainable options for pelagic fisheries
- Assist Anguilla with getting pelagic fisheries products into UK/EU markets
- More pelagic and conservation of inshore reefs
- Assist in establishment of a financing scheme for Anguilla's development scheme
- Integrated Coastal Zone Management

Montserrat-

- Marine baseline studies and GIS mapping
- Guidance in establishing MPAs based on marine baseline studies with a view to sustainable use

- Social/stakeholder surveys re- marine resource use
- Assistance in drafting fisheries and marine management legislation and developing management plans
- Assisting with sorting out maritime boundaries and sovereign sea
- Providing Technical Capacity (Person sourced by JNCC?) to the Department of Environment, that can be shadowed by local counterpart over a 1-2 year period. " JNCC to consult with local department to pick appropriate skill set to fill local gaps.
- Capacity building via workshops and attachments of Montserrat fisheries/marine management staff to organisations and agencies in the UK and other UKOTs for both administrative/managerial and technical staff
- The Fisheries Unit is expected to be moved to the Department of Environment. Therefore we would like to have support to convene a stakeholder workshop to (i) review the form and functions of the fisheries unit and (ii) determine and timetable priorities. We would require a facilitator with the relevant expertise.
- Coral reef and sea grass bed assessment pre and post port development

St. Helena

Currently there is a 2 year (8 month in) Darwin marine biodiversity and habitat mapping project running on St Helena and the main outputs from this (alongside a marine species list) will be a Marine Management Plan (MMP) for St Helena. There will be several Policy Papers which feed into this – these are:

- Underwater blasting to protect cetaceans (JNCC have input into this and this is ready to take to council)
- Sand extraction
- Marine pollution
- Whale/dolphin tourism
- Dive tourism
- Ban on catching sharks in fishing competition
- Artificial reefs
- Spearfishing
- Lobster fishing
- Sports/recreational fishing
- Coastal villages/areas for development
- Fisheries
- Marine pollution

Advice/input from DEFRA would be welcomed to assist in these policies and into the MMP. Species conservation management plans (especially for cetaceans would be useful tools for us to use to feed into our MMP). There are also discussions underway regarding expansion of commercial offshore fisheries and DEFRA input in fisheries management advice would be useful, including action plans to minimise seabird bycatch (although currently not a major issue may need further research if fisheries expand).Continued support and scientific advice regarding CITES from DEFRA is essential.

Pitcairn

Currently, Pitcairn marine is the basis of Prof. T Dawson's (Dundee University) Darwin project on sustainable marine. This will provide training and development of management systems.

We have been successful in gaining EU funding for the development of a marine and fisheries department and implementation of management systems and practises. This will hopefully roll out in 2014.

Interested in gaining information and assistance on:

- Developing dive tourism
- Whale tourism
- Sport fishing
- Marine pollution incl. ballast
- Fisheries regulations

South Georgia and South Sandwich Islands

Cetaceans

- Monitor recovery of cetacean stocks in SGSSI waters and more broadly in Southern Ocean;
- Depredation of longline caught toothfish by killer whales and sperm whales;

MPA

- MPA declared in 2012 and revised in 2013 following consultation;
- Reasonable monitoring in place, but need to consider further;

Marine biodiversity

- High biodiversity indicated in SG waters; focussed efforts required in fished depths (700-2000 m) to ensure biodiversity not threatened by fishery;
- Address threats to marine biodiversity (e.g. non-native marine species);

ACAP

- South Georgia home to many ACAP species: need to maintain monitoring effort, but focussed efforts required (by UK) to put pressure on fisheries in the areas of high seabird mortality (Patagonian shelf, SW Africa etc.)

APPENDIX III. UK-based Areas of expertise related to the Marine environment

Please note that this list is not comprehensive, and should be viewed as a preliminary compilation for establishing and/or strengthening collaboration between OT/CD and UK-based experts.
These areas of expertise were gathered following face to face discussions with representatives of respective institutions; they reflect information given by these representatives in 2013.

RSPB
Source: Clare Stringer; Jonathan Hall

Marine Protected Areas**:** Review of zoning/Marine legislation
Marine Spatial Planning: Design process/ Engagement of local communities- for eg in artisanal fisheries/Integration of data in GIS
Strategic Environmental Assessments (SEA): Conducting EIAs / Marine planning process for offshore developments (eg. hydrocarbons in Falkland Islands)
Response Strategies to Environmental Incident: Oil spills/ Shipwreck
Trophic linkages used in Fisheries management/MPA
Seabird research: Tracking including logging depth of dives/Global GIS database/Research in diet analysis, monitoring/Integrate into marine data and for assessment of fishing activities
Project management in OTs
Fisheries: Observer work/ Fisheries certification (in relation to bycatch)/ Best practice guidelines (assessing by-catch)

The PEW Charitable Trust: Expertise and Information
Source: Alistair Gammell

Available information:
1. Pitcairn scientific report
2. Chagos- Draft management plan, written for FCO; located on Chagos Conservation Trust website

Current studies and contacts:
1. Initial deep water survey work in Tristan's EEZ- contacts: Steve Cole, spent 1 month in Tristan for MPA agreement. Sue Scott (suescott153@btinternet.com), UK freelance scientist working on deep water survey in Tristan with British Antarctic Survey (8 day- cruise).
2. Robert Irving/Terry Dawson- authors of Pitcairn scientific report. Heather Koldewey (Heather.Koldewey@zsl.org) deep water monitoring around Pitcairn (ie. Fish populations) using baited cameras
3. Blue Ventures- Scientific Tourist Expeditions- in Pitcairn to collect data

Expertise on enforcement of MPAs, and working on stopping illegal fishing. Staff composed of former Royal Navy Commander (Tony Long), and former US Coast Guard. Case Study: Easter Island- type of surveillance and cost. Case Study 2: Pitcairn- Draft paper on how Pitcairn MPA could be enforced
Engage Royal Navy in OTs, assist in enforcement/reporting during maneuvers. Establish process to link Royal Navy with OT fisheries departments

DEFRA

Marine Species Conservation Team

Nicola Clarke, James Gray, Jamie Rendell, Emma Rundall *[firstname.secondname@defra.gsi.gov.uk]*

The Marine Species Conservation Team leads on policy for species that have specific conservation or management objectives and/or dedicated Agreements. This includes stand-alone conservation measures as well as managing fisheries interactions. Activities include;

Cetaceans (whales, dolphins and porpoises)

- The **International Whaling Commission (IWC**): UK strongly supports the moratorium on commercial whaling & promotes the conservation and welfare of whales. We lead on several IWC welfare initiatives and are vice chair to the IWC Conservation Committee. This includes working groups on issues such as **Ship Strikes, Whale Watching**, and species **Conservation Management Plans**. We also regularly support the **IWC small cetaceans fund**. More info: http://www.defra.gov.uk/wildlife-pets/whales-dolphins/.

- Under the Convention of Migratory Species, we are signatories to **ASCOBANS** (Agreement on the Conservation of Small Cetaceans in the Baltic, North East Atlantic, Irish and North Seas), a regional agreement seeking to maintain or restore small cetacean populations (http://www.ascobans.org/). On behalf of the Pitcairn Islands, we are also signatories to the Memorandum of Understanding (MoU) for the **Conservation of Cetaceans and their habitats in the Pacific Islands region**: http://www.cms.int/species/pacific_cet/pacific_cet_bkrd.htm

- UK **Cetacean Strandings Investigation Programme:** We fund work to perform post-mortem examinations on UK stranded carcasses to investigate causes of death, furthering our understanding of cetaceans. More info: http://ukstrandings.org/

- UK is committed to avoiding the **bycatch of cetaceans** wherever possible. We undertake research and monitoring programmes to better understand and reduce the incidental by-catch of cetaceans, including use of Dolphin Deterrent Devices ("Pingers") More info: http://www.defra.gov.uk/environment/marine/protect/species/cetaceans/

Elasmobranches (sharks, skates and rays)

- UK is committed to ensuring that all fisheries for elasmobranches are sustainable & the most threatened species adequately protected. The **Shark, Skate & Ray Conservation Plan** (http://archive.defra.gov.uk/environment/marine/documents/interim2/shark-conservation-plan.pdf) sets out current management measures & policy objectives, including actions at local (e.g. quotas, research on stocks), regional (e.g. EU shark finning regulations, measures in Regional Fisheries Management Organisations (RFMOs) such as ICCAT and IOTC) & international (e.g. CITES and CMS).

- The UK is a signatory to the **CMS Sharks MoU**, giving greater protection to a number of migratory shark species, including longfin mako and basking sharks. This agreement also extends to Bermuda, the Falkland Islands, South Georgia and the South Sandwich Islands & British Indian Ocean Territories. The first meeting took place in October 2012 where a conservation plan was agreed. More info: http://www.cms.int/species/sharks/sharks_bkrd.htm

Seabird bycatch

- The UK supports action to reduce the incidental bycatch of seabirds. The EU recently published a **Plan of Action** which provides a management framework to minimise, and where possible eliminate, the incidental catches of 49 threatened seabird populations by EU vessels in EU and non-EU waters, and reduce bycatch for other seabird species where populations are stable but bycatch is at levels that are cause for concern. http://ec.europa.eu/fisheries/cfp/fishing_rules/seabirds/seabirds_communication_en.pdf

- The UK also seeks to reduce seabird bycatch where through the CMS **Agreement on the Conservation of Albatrosses and Petrels** (ACAP) in the Southern Oceans (http://www.cms.int/species/acap/acap_bkrd.htm) and through **RFMOs.**

Defra's Marine Biodiversity team's priorities for UKOTs

Role

Within the Marine Biodiversity team, we work closely with the FCO (who lead on this policy area) to support environmental management initiatives, providing advice and support on marine matters where appropriate.

Priorities

- **Marine Protected Areas (MPAs) -** we support the principle of designating MPAs in international waters. Specifically, the UK Government supported the call in 2010 by governments of the States party to the Convention on Biological Diversity to strive for MPA and other area based mechanisms covering 10% of our oceans by 2020. **Uninhabited OTs** - MPAs have been designated in **SGSSI, BIOT and BAT**. **Inhabited OTs - i**n **Bermuda**, the Government is developing plans for the development of a "mixed use" MPA with the Sargasso Sea Alliance, building support for the protection of the Sargasso Sea; in **Tristan da Cunha** the Government has just successfully secured MSC designation for the Tristan rock lobster which highlights the sustainable management practices employed within the fishery Gough and Inaccessible Islands have separately been declared RAMSAR and World Heritage Sites; and in the **British Virgin Islands** the Government has designated a number of MPAs and the National Parks Trust is currently establishing a network of marine protected areas which will protect 30% of each type of habitat.

- **Ecologically or Biologically Sensitive Areas (EBSAs)** – we are committed to the identification of EBSAs. EBSAs are tools of a purely scientific and technical nature, but still represent a critical step towards the creation of a global network of MPAs.

- **New Implementing Agreement for the protection of Biodiversity Beyond National Jurisdiction -** In the Natural Environment White Paper, the Government committed itself to work towards delivering a new global mechanism to regulate the conservation of marine biodiversity in high seas. Such an agreement should set up a clear means of designating High Seas MPAs, building on the work undertaken by Regional Seas Conventions.

- The **International Coral Reef Initiative (ICRI)** - covers both cold and tropical water coral reefs, and is committed to reversing the global degradation of coral reefs and related ecosystems, such as mangrove forests and seagrass meadows, by promoting the conservation and sustainable use of these resources. The UK is a founding member of ICRI and has supported the protection of corals within both the UN and CBD processes. The UK is engaged with ICRI and provides Member reports to the Secretariat in advance of the annual General Meetings. A JNCC scientist attended the 2012 General Meeting on behalf of the UK. The next General Meeting will be taking place on 14 October in Belize, and we would welcome OTs' input.

Peterborough, Nov 28 and 29, 2013, OT and CD participants (Technical Workshop I: Marine Protected Areas)

Back Row left to right: Paul Brickle (Falkland Islands), Nick Rendell (Falkland Islands), Idi Gardiner (Turks & Caicos Islands), Ken Pemberton (British Virgin Islands), Judith Brown (St. Helena), Greg Morel (Jersey), Nicola Weber (Ascension Islands), Tony Weighell (JNCC).
Front Row left to right: Tara Pelembe (JNCC), Karim Hodge (Anguilla), Sarah Manuel (Bermuda), Samia Sarkis (JNCC).
Missing: Simone Whyte (Guernsey), Simon Young (Pitcairn)