Blue Belt Programme Roundtable: Social dimensions of Marine Protected Areas

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- Expert Panellists: Selina Stead, Adaoma Wosu, Mike Riddell, Me'ira Mizrahi, Arthur Tuda and Claire Collins
- UK Overseas Territory Representatives from the Ascension Island Government, Government of South Georgia & the South Sandwich Islands, St Helena Government and Tristan da Cunha Government
- Supporting organisations, including the Royal Society for the Protection of Birds (RSPB), Joint Nature Conservation Committee (JNCC), Foreign, Commonwealth & Development Office (FCDO), Centre for Environment, Fisheries and Aquaculture Science (Cefas), and Marine Management Organisation (MMO)

The information contained in this report represents the contributions and recommendations of the expert panel and workshop participants and does not necessarily represent the views or recommendations of the Blue Belt Programme.

Contents

1 Summary

On 6th October 2021, international experts, representatives from UK Overseas Territories (OTs) taking part in the Blue Belt Programme[1] and partner organisations joined a roundtable discussion on social dimensions of Marine Protected Areas (MPAs). Facilitated by the Blue Belt Programme, the roundtable was an opportunity to learn about why socioeconomic assessment and monitoring is important, different tools and techniques for data collection and how the data can be used to support effective MPA management. It also provided a platform to discuss the challenges and opportunities for the Blue Belt OTs in undertaking socioeconomic assessment and monitoring.

International experts presented experience and learning from around the world including East Africa, Myanmar and the British Indian Ocean Territory (BIOT). MPA managers, policy makers and scientists representing Ascension Island, South Georgia & the South Sandwich Islands, St Helena, Tristan da Cunha, the Joint Nature Conservation Committee (JNCC), the Centre for Environment, Fisheries and Aquaculture Science (Cefas), and the Marine Management Organisation (MMO) took part in the discussion and shared their expertise and experience.

Effective MPA management is ultimately about managing people and to be able to do that it is essential to understand people's behaviour. There are many different reasons for collecting socioeconomic data and it is important to define why you need the data and what you are trying to achieve; this will determine what variables to measure and the methods / tools to be used. A common thread throughout the discussion was that it is essential to ensure that local communities are involved from the beginning in setting objectives for any project or programme and that they understand how it will benefit or impact on them.

A take-home message was that people form the heart of effectively managed MPAs and without the support of local communities MPAs will fail. Understanding people's behaviour can achieve better environmental, economic and social outcomes.

The Blue Belt Programme would like to thank the Blue Belt OTs and partners for contributing their views and experiences to the discussion, and express gratitude to the expert panel for sharing their expertise and learning with all involved.

This report presents the proceedings of the roundtable which took place on 6th October 2021. It shares presentations and recommendations by the panel of experts, summarises the discussion between participants and expert panellists, and provides a list of resources[2].

[1] Blue Belt OTs from here on

[2] The information contained in this report represents the contributions and recommendations of the expert panel and workshop participants and does not necessarily represent the views or recommendations of the Blue Belt Programme.

1.1 Key messages from the expert panel

The roundtable was honoured to host Selina Stead, Adaoma Wosu, Mike Riddell, Me'ira Mizrahi, Arthur Tuda and Claire Collins who shared their experiences from regional and local approaches to socioeconomic assessment and monitoring through a series of presentations. During their presentations and subsequent discussion, the expert panellists shared these key messages:

- Effective MPA management is ultimately about managing people and to be able to do that it is essential to understand people's perceptions and attitudes, which influences their behaviour. Understanding human behaviour can achieve better environmental, economic and social outcomes.

- Stakeholder engagement is one of the most important factors influencing MPA success. When local communities are actively engaged in a process, this facilitates ownership and helps to mitigate conflicts between different stakeholder groups.

- It can be difficult to get to the bottom of why people do not support rules and regulations. Unless you talk to people and ask the questions to understand the reasons for non-compliance, it is very difficult to develop policies and regulations that will be supported.

- There are many reasons for collecting socioeconomic data and it is important to define why you need the data and what you are trying to achieve. The variables measured and the methods / tools used depend on the context and the definition of purpose.

- It is essential to ensure that community members are involved from the outset in setting the objectives and that they understand what information will be collected and how it will be valuable for them.

- Socioeconomic monitoring can be challenging. It requires administrative and institutional support and can also be expensive because it takes a lot of time and resources to be conducted effectively.

2 Introduction

2.1 Socialising Marine Protected Area management

The roundtable began with an introduction by the Marine Management Organisation's Chief Scientific Adviser, Professor Selina Stead, who provided an overview of socialising Marine Protected Area management.

Sustainable marine management balances three pillars: environmental, economic and social. There has however traditionally been more of a focus on the environmental pillar. The science on environmental health is very important but it is ultimately about managing people and to be able to do that, it is essential to be able to understand people's perceptions, which influences their attitudes, which influences their behaviour. Social data on marine resource dependence is often weak or absent, however understanding human behaviour can achieve better economic and social outcomes. It can be very difficult to collect social data and to measure how management interventions influence people's behaviour.

2.1.1 Examples of how social science can inform effective MPA management

A study was undertaken on the island of Rodrigues to understand why compliance with Marine Protected Areas (MPAs) was good in some parts of the island but not in others[3]. A socioeconomic survey was carried out involving focus groups and household surveys to understand how important the marine environment was for people's livelihoods, food and other important qualities of life. Over 86% of fishers acknowledged illegal fishing to be a problem and there was almost an acceptance that it had become normal; however, fishers recognised that there did need to be some control of resource use. The results demonstrated the conflict between people understanding the conservation need but given a lack of alternative sources of income at that time, trying to make trade-offs. This highlights an important point that unless you have the socioeconomic evidence, it is very difficult to make these trade-offs. Once people accept that there needs to be a change and recognise what the issue is, then you can consider what the most appropriate form of regulation might be, noting that this may not necessarily be formal governance.

[3] Peterson, A.M. and Stead, S.M. (2011). Rule breaking and livelihood options in marine protected areas. Environmental Conservation, 38: 342-352. https://www.cambridge.org/core/journals/environmental-conservation/article/abs/rule-breaking-and-livelihood-options-in-marine-protected-areas/2A75F8314CF7DD185AA7C4B94B2EF14C

In the Seychelles, fishers were not complying with MPA regulations. Socioeconomic surveys[4] identified that construction of a new airport road had created a lot of sediment run-off which meant local fishers had to travel longer distances beyond the MPA to fish in unaffected areas. This extra travel was costing them more money in boat fuel and extra time at sea, which is why they were not complying with the MPA regulations. Fishers also felt that they had not been consulted about the plans. At the same time, there had also been significant bleaching which, combined with damage from cyclones, had severely impacted the coral reefs. Participatory mapping was used to identify areas where there was a noticeable positive difference in the health of the marine environment as a result of the MPAs, helping to improve people's perceptions of them.

The global economic downturn in 2008 impacted tourism, which was then compounded by a volcanic ash cloud affecting international flights. Food security was reduced as a result, leading the Seychelles Government to consider introducing low impact aquaculture as a nature-based solution. There were many opposing views about this with some concerned it would affect Seychelles' reputation as having a pristine environment, whereas others were keen to develop a third economic pillar beyond tourism and fisheries. The potential for sea cucumber culture was investigated as this could reduce fishing pressure, improve food security and support conservation actions through enrichment of the benthic sediment. Socioeconomic surveys were carried out with the local community to investigate the barriers to mariculture. These surveys highlighted concerns about pollution and conflicts with fishing, but they also highlighted benefits such as provision of a source of protein, provision of alternative livelihoods for fishers and enhancement of degraded marine habitats. Discussions were held with the local communities about where to locate the mariculture activities and consensus was reached that as long as they avoided the sensitive coral reefs and important tourist sites, they would be acceptable. These conversations also enabled wider discussions about the benefits and constraints of the MPAs. The work highlighted that it can often be quite difficult to get to the bottom of why people do not support regulations. Unless you ask the questions to understand the reasons for non-compliance, it is very difficult to develop policies and regulations that will be supported.

"To build trust, you've got to have transparency in your decision-making and that transparency of showing what social, economic and environmental variables are telling you, making those trade-offs; that's how you co-create this collaborative culture and strong communities to really get those sustainable impacts" – *Selina Stead*

[4] Philpot, D., Gray, T.S. and Stead, S.M. (2015). Seychelles, a vulnerable or resilient SIDS? A local perspective. Island Studies Journal, 10: 31-48.

Figure 1: The barriers to healthy seas and ocean identified by Caribbean stakeholders

A study in the Caribbean that conducted 1,000 interviews across seven countries identified that a lack of effective management was the biggest barrier to healthy seas and oceans (Figure 1), with non-compliance and socioeconomic pressures also being important. The data collected often varied both within and across islands and between different communities, depending on the socioeconomic pressures in those areas.

The studies described above, highlight the importance of integrating social data with economic and environmental evidence to improve the effectiveness of MPAs. They also show that how you quantify the social data and what variables are measured varies, and so it is very important to have both qualitative and quantitative data to understand the context.

2.1.2 Recommendations

- To build trust there must be transparency of data used in decision-making. This co-creates a collaborative culture and united communities to achieve sustainable impacts.
- Good governance[5] incentivises effective engagement in sustainable marine management of MPAs. The main principles of good governance: cohesion, openness, participation, effectiveness and accountability all rely on social, economic as well as environmental data.

2.2 Roundtable aims and objectives

The Blue Belt Programme's Senior Integrated Marine Managers, Dr Emily Hardman and Marianne Teoh then provided a brief overview of the context and objectives for the roundtable event.

People form the heart of effectively managed MPAs and without the support of local communities[6] MPAs fail. It is essential that alongside the ecological aspects, the human

[5] See: https://iwlearn.net/resolveuid/53e8e16c-0a48-4071-8f14-5e822141177b for a summary on the links between ocean, management and policy and how that can help with socio-economic data collection to help to balance the trade-offs with environmental data.

[6] The term 'community' is unique and defined differently in OTs / MPAs; in one MPA it might be 30 people, in another 20,000; it could include fishers, coastal industries, tourists, recreational resource users, visiting

aspects of management effectiveness such as wellbeing, food security, resilience, compliance, income and financial resources are considered. With the rapid expansion of MPA programmes around the world, there is now a much-needed drive to put local and community needs at the forefront so that these MPAs are accountable to communities and deliver human wellbeing.

The current Blue Belt Programme is funded up until the end of March 2022, but we are now starting to think about the next phase of the Programme. The Foreign, Commonwealth & Development Office (FCDO) is keen that one of the areas of focus is on demonstrating the benefits of large scale MPAs at the local, regional and international scale and this includes the social and economic benefits to the Overseas Territories' (OTs) communities. Discussions with Blue Belt OTs have highlighted an interest in undertaking socioeconomic surveys to help understand the benefits of the MPA to local communities and to determine how perceptions of the MPA have changed over time, developing new ecotourism opportunities and other income-generating activities, and understanding the resilience of OT communities to climate change.

The aims of the roundtable were therefore to:

- understand OT priorities and needs to inform planning for the next phase of the Blue Belt Programme, to ensure that human wellbeing and social dimensions are factored strongly into all aspects of future MPA management
- share learning and ideas around the social dimensions of MPA management and monitoring from around the globe and consider:
    - why socioeconomic monitoring is important for MPAs
    - which socioeconomic approaches have proven useful for MPA managers
    - how socioeconomic data can be used in practice to improve MPA management
    - the challenges, limitations and ideas related to socioeconomic monitoring for UK OTs

An online poll with participants asking, "From your perspective, what are the most important reasons for collecting socioeconomic data for an MPA", demonstrated that 31% of participants said, 'To understand the impact of the MPA on marine resources users'; 27% said 'To use local knowledge in the design and management of an MPA'; 21% said 'To improve support and compliance with MPA rules and regulations' and 19% said 'To understand how well the MPA is being managed'.

scientists and coastal businesses, both physically present in the OT as well as those based elsewhere but with an economic interest in the area.

EXPERT PANEL PRESENTATIONS

3 Socioeconomic data for MPAs

Section 3 summarises the presentation given by Adaoma Wosu and Mike Riddell from the Landscapes and Livelihoods Group[7]. Adaoma and Mike drew on their experiences in East Africa and Madagascar to talk about collecting socioeconomic data, how it's used and introduced some of the tools that can be used.

3.1 Why use socioeconomic data?

MPA management is really about linking the social factors and the ecological factors to enhance MPA objectives and outcomes. There are three areas that this sort of interaction becomes most important to understand:

- design and development of robust management interventions
- identifying and assessing the potential positive and negative socioeconomic impacts of the planned management
- monitoring and evaluation of the social outcomes

3.2 Typical phases of socioeconomic data collection within the MPA management cycle

There is no set way of doing things, but broadly speaking projects will often put together some form of concept at the beginning; then there is normally the management plan design process; there may then be a phase of trialling different interventions; and finally full-scale implementation of the management plan and iterative, adaptive management (Figure 2).

Figure 2: The typical phases of socioeconomic data collection

[7] https://www.landscapesandlivelihoods.com/

Desk-based review: This aims to identify and characterise the area to assess the feasibility of an MPA and screen potential risks. This is often done based on a desk-based review but may also include some data collection (e.g. demographics, identification of stakeholders, broad community profiles). These are then reviewed to identify whether there is sufficient social information to assess the pre-feasibility of the MPA. For example, is there anything to suggest that an MPA could not be established in that area?

Socioeconomic assessments: these are normally carried out to better understand the links between the social and ecological system. This information helps to understand the feasibility of the MPA or, if it is an existing MPA to understand some of the issues that are occurring. There are a number of different of methods that can be used at this stage, for example, participatory resource use mapping; or assessing the potential social risks and impacts to ensure that the MPA is designed to try to avoid or manage those impacts with the community's input.

Socioeconomic baseline: this aims to understand livelihoods and wellbeing and establish indicators that can be used for monitoring and evaluation. This often involves some form of quantitative data collection on aspects such as livelihood activities, food security, wellbeing and attitudes at the individual and household level through household surveys, key informant interviews or focus group discussions. This provides higher resolution data and helps to inform the design of different management interventions on a village-by-village basis.

Specialised studies: these can happen at any stage of MPA establishment but would involve specialised studies to look at specific interventions. The methods used would be tailored to the specific situation but could involve consultations and meetings (e.g. focus group discussions) with particular social or user groups.

Monitoring and evaluation: once the project is on-going, monitoring and evaluation feed into adaptive management. This might be tailored to a specific intervention to understand how effective it has been or whether it needs to be changed. It could involve community monitoring, a series of repeat surveys, or community consultations.

3.3 Tools for socioeconomic assessment and monitoring

There are a range of different tools and approaches available, so it can be challenging for MPA managers to work out what is most useful for their MPA. Some examples of approaches that are often used in MPAs include:

- Marxan/MarZone[8] – decision support tool for multi-zone planning

[8] https://marxansolutions.org/

- The Management Effectiveness Tracking Tool (METT)[9]
- The Socio-economic Assessment Tool (SEAT)[10]
- FishPath[11] – community monitoring of fisheries catches
- SocMon[12] – Socioeconomic monitoring initiative for coastal managers
- Sustainable Livelihoods Enhancement and Diversification (SLED)[13]
- GAPA[14] – governance assessment
- The Basic Necessities Survey (BNS)[15] – a method of measuring poverty
- The Large Marine Ecosystems Governance Toolkit[16]

3.4 Take home messages

- There is no standard process for socioeconomic data collection, it depends on the context and what you are trying to achieve
- There are many reasons for collecting socioeconomic data and it is important to define why you need the data and what you are trying to achieve
- The choice of methods/tools should follow on from the definition of purpose

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"We ourselves have been involved in projects and programmes that have collected vast amounts of socioeconomic data, but without a really clear idea of how that information was going to be used, how it's going to be fed back to stakeholders, and so it's very important to kind of get that planning bit right" – *Mike Riddell*

[9] https://www.protectedplanet.net/en/thematic-areas/protected-areas-management-effectiveness-pame?tab=METT
[10] https://www.sciencedirect.com/science/article/abs/pii/S0308597X18300459
[11] https://www.fishpath.org/home
[12] https://www.icriforum.org/socmon/
[13] https://www.iucn.org/content/sustainable-livelihoods-enhancement-and-diversification-sled-a-manual-practitioners-0
[14] https://www.iied.org/assessing-governance-protected-conserved-areas-gapa
[15] https://library.wcs.org/DesktopModules/Bring2mind/DMX/API/Entries/Download?EntryId=38385&PortalId=0&DownloadMethod=attachment
[16] https://iwlearn.net/resolveuid/53e8e16c-0a48-4071-8f14-5e822141177b

4 Lessons from Myanmar

Section 4 summarises the presentation given by Dr Me'ira Mirzahi, a post-doctoral research fellow at James Cook University researching coastal livelihoods in south-east Asia. Me'ira shared her experience of incorporating socioeconomic dimensions into MPA planning through a case study in Myanmar working with the Wildlife Conservation Society (WCS).

4.1 Context

The use of MPAs as management tools to protect marine ecosystems is one of the most widely accepted methods of marine management. MPAs are not only designed to enhance biodiversity but they can also complement fisheries management and enhance other livelihoods such as tourism. While the number of MPAs across the globe has increased over time (Figure 3) in line with potential 30x30 targets[17], their environmental and socioeconomic impacts remain uncertain. One of the potential reasons for this is that socioeconomic dimensions are often considered to a lesser extent than biophysical ones when designing MPAs. There are many best practice guidelines for MPA design and management, but these focus mostly on biophysical criteria. When they do focus on human dimensions, they can often do so from an economic perspective which sometimes fails to consider the diverse context in which MPAs are operating.

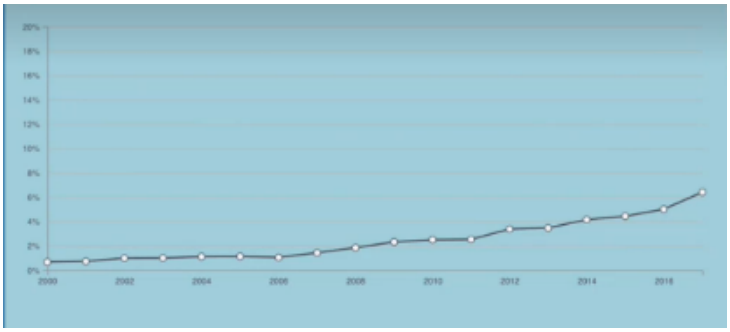

Figure 3: The percent cover of MPAs across the globe since 2000 (UNEP-WCMC & IUCN, 2019)

4.2 The importance of stakeholder engagement

A systematic review was conducted in 2019 on the socioeconomic factors that influence how MPAs can impact on ecosystems and livelihoods[18]. It found that stakeholder engagement was the most highly cited factor out of 33 socioeconomic factors that could

[17] A commitment to protect or conserve at least 30 percent of the world's ocean by 2030

[18] Mizrahi, M.I., Diedrich, A., Weeks, R. and Pressey, R.L. (2019). A systematic review of the socioeconomic factors that influence how marine protected areas impact on ecosystems and livelihoods. Society & natural resources, 32: 4-20. https://www.tandfonline.com/doi/full/10.1080/08941920.2018.1489568?scroll=top&needAccess=true

positively impact on both biodiversity and ecosystems and also provide livelihood benefits to local communities. Another study[19] also showed that stakeholder engagement was considered to be the most important factor influencing MPA success and equally, its absence was the most important factor influencing failure.

The value of stakeholder input cannot be overstated; it can:

- produce decisions that are responsive to stakeholder interests and values
- ensure the rights of local people, indigenous groups and vulnerable groups are upheld
- resolve user conflicts between different stakeholder groups
- build trust through enhancing buy-in by local communities
- educate the public about the project
- maximise the impact from the project or MPA on biodiversity or livelihood benefits

4.3 Co-management of marine areas in Myanmar's Rakhine Coast

Myanmar's coastline stretches around 2,300 km between Thailand and Bangladesh and can be separated into three geographical regions, including the Rakhine Marine Corridor. Throughout Myanmar, marine resources are a major contributor to food security providing direct livelihoods to around 1.4 million fishers. There have been estimates to suggest that pelagic and demersal fish stocks have decreased throughout Myanmar's entire Exclusive Economic Zone (EEZ) to around 10% of their 1979 biomass and there are similar estimates for inshore coastal fisheries.

Rakhine Marine Corridor has nearshore coral reefs, seagrass, mangroves and fisheries associated with them. The current decline in fish stocks in these areas are increasingly concerning, especially in southern Rakhine, as fishing communities there are highly reliant on fisheries for their livelihoods and food security. WCS started working in Kyeintali township in southern Rakhine in 2015 to explore opportunities to support local communities to improve the management of their fisheries through spatial measures. The first process was to conduct a stakeholder analysis which identified stakeholders and categorised them according to their relationship with the issue or activity. We then identified the different stakeholders' level of interest and influence with regards to the activity and determined the best means of working with the different stakeholder groups ensuring that free, prior and informed consent (FPIC) ideals were met when meeting with indigenous and vulnerable groups. This process helps to identify the potential interests of all stakeholders, the individual groups or organisations who should be encouraged to

[19] Giakoumi, S., McGowan, J., Mills, M., Beger, M., Bustamante, R.H., Charles, A., Christie, P., Fox, M., Garcia-Borboroglu, P., Gelcich, S. and Guidetti, P. (2018). Revisiting "success" and "failure" of marine protected areas: a conservation scientist perspective. Frontiers in Marine Science, 5: 223. https://internal-journal.frontiersin.org/articles/10.3389/fmars.2018.00223/full

participate in activities, highlights any potential conflicts that could arise and identifies ways to maximise inclusion by vulnerable groups.

We then started the process of conducting meetings and consultations with the ten communities within Kyeintali to share information and gauge interest in developing a co-management area. This was a very slow process, involving lots of consultations with community members and local civil society groups. It led to the decision to pursue a co-management approach to local fisheries that would be managed by the community in collaboration with the local department of fisheries. The ten villages in Kyeintali elected a male and female representative to join the co-management committee, where they helped to design, administer, monitor and support other decision making associated with the area.

The next step was to collect the socioeconomic and fisheries landing site data from each village to better understand the local context and challenges and to provide baselines for future monitoring. One tool that WCS often uses is a basic necessities[20] survey. This a quick way of measuring and analysing household-level poverty and of monitoring any changes in poverty levels over time as a response to management interventions. Participatory mapping exercises were also conducted with each village to learn how people were perceiving and interacting with their marine environment. The mapping data were then georeferenced, enabling the identification of the areas where there were the highest levels of fishing concentration; this helped to determine the outline of the co-management area. To help ground-truth the local knowledge data, pelagic data systems were also installed on ten purse seine boats to track the fishing activities of fishers within the communities. When the data from all the boats with monitoring systems was combined and this was compared with the participatory mapping data, it highlighted the relative accuracy of participatory mapping data (Figure 4).

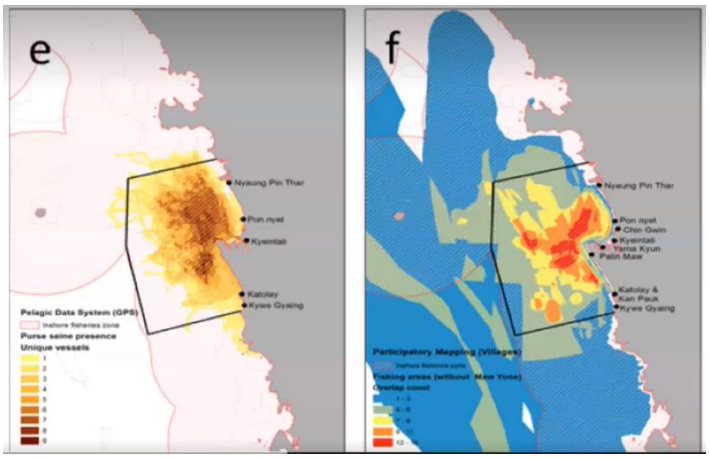

Figure 4: Comparison of pelagic data system data (e) with information obtained through participatory mapping with local villages (f)

[20] Basic necessities are locally defined as assets or services that 50% or more of local people surveyed in the initial surveys would agree “are basic necessities that everyone in the community should have and nobody should go without”. Using that locally determined measure of poverty, any family that fails to own or have access to all of the items within that basket of basic necessities is considered from a local perspective to be below the poverty line.

The information was then used to collectively zone the co-management area to optimise the way that people are interacting with their resources and to develop a management plan. The zoning and management plan were designed in collaboration with the communities and included seasonal closures, multiple use zones, species conservation zones and no take zones where all extractive activities were banned (Figure 5). The communities all confirmed that they agreed with the zoning plan before moving forwards and if there was any opposition, the plan was adapted until agreement was reached. This was very much an adaptive process that required several visits back to the communities to ensure support for the proposed zoning plan. This work has shown how enthusiastic local communities are to do something about the state of their fisheries, especially when they are heavily engaged with the process. This has facilitated ownership by the Kyeintali people to manage their resources and helped locally to mitigate conflicts between small scale and industrial fishers operating within these areas.

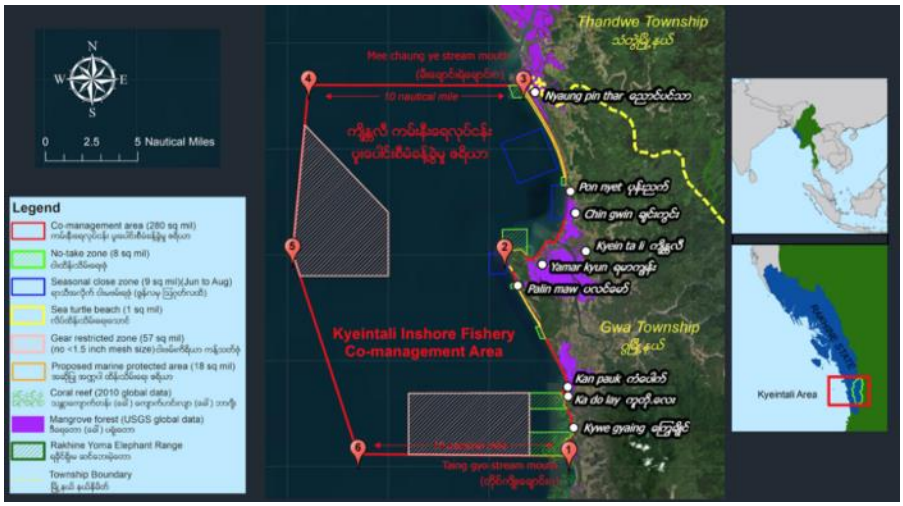

Figure 5: The Kyeintali inshore fishery co-management area

"WCS leant from the communities by mapping their fishing patterns and key resource use areas and in turn, we were able to contribute to the communities' knowledge and sustainable customary practices through our scientific expertise in fisheries life stages and coastal ecology" – *Me'ira Mizrahi*

5 Lessons from Kenya

Section 5 summarises the presentation given by Dr Arthur Tuda, the Executive Secretary of the Western Indian Ocean Marine Science Association. Arthur has 20 years' experience as an MPA practitioner in Kenya and shared his experience of using socioeconomic data to improve MPA management.

5.1 MPAs in Kenya

The very first MPA is said to have been established in Kenya in 1968, the Malindi Marine National Park. More recently, there has been an increase in locally managed marine areas, which are small areas managed by communities through processes of co-management. Kenya's MPAs mostly protect coastal habitats such as mangroves, coral reefs and seagrass beds and also a variety of endemic and endangered marine mammals including dugongs and dolphins. The declaration of MPAs in Kenya was driven more by socioeconomic factors than ecological factors as MPAs were seen as contributing to tourism (an equivalent to safaris in the terrestrial environment). So, most of the MPAs were designated in important tourist areas for diving and snorkelling.

Despite the fact that socioeconomic factors played an important role in declaring MPAs in Kenya, these factors were not actually monitored for a long time. Ecological parameters have been monitored for more than 30 years, supported by local and international NGOs. A study supported by IUCN looked at the socioeconomic factors that were constraining the management of Kisite Marine Park[21] and this really marked the beginning of interest in monitoring social parameters in MPAs. In 2001, the Kenya Wildlife Service (KWS), began looking at the socioeconomic data, which included information on artisanal fisheries, marine resource use, tourism use and revenues and park infringements.

"The socioeconomic environment is very important because MPAs in Kenya now emphasise pro-poor and equitable management with participation of local communities" – *Arthur Tuda*

[21] https://www.cbd.int/financial/values/kenya-ecoparks.pdf

5.2 MPA management in Kenya

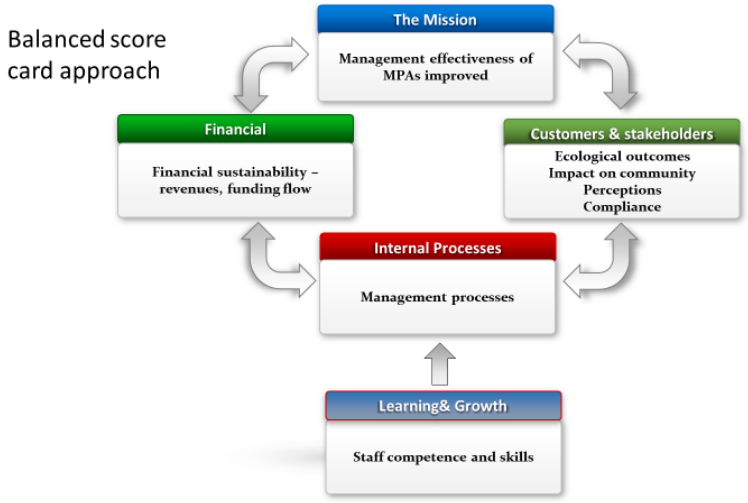

Figure 6: The balanced score card approach used by KWS

Kenya currently has a management planning framework and the MPA goals and objectives are defined mainly by three factors: the ecological environment; the socioeconomic environment; and the future environment. KWS applies a business model to MPA management using an approach called a balanced score card (Figure 6). This looks at four different perspectives of MPA management and this approach defines the kind of data that needs to be collected to be able to report back to government and to stakeholders on the performance of the MPA. For example data are collected on the skills and competencies of the people who manage the MPAs; the management processes; the ecological outcomes, impacts on communities, community perceptions, compliance; as well as on the financial sustainability of the MPAs.

5.3 Approaches in socio-ecological monitoring

Based on this approach, monitoring focuses on 3 main approaches:

- tracking statistical trends; using data that are collected by other departments e.g. visitor's data, revenues, infringements and also working with partners who look at other factors like community participation. This range of data is used to track trends over time.
- stakeholder feedback and qualitative monitoring on a periodic basis on compliance and public attitudes and awareness of MPAs
- commissioned research; this looks at specific aspects of the MPA for example the impacts of the MPA on livelihoods or the impact of Covid on fishers.

The parameters currently monitored in Kenya's MPAs therefore include:

- ecological parameters e.g. health of coral reefs and seagrass, threats, water clarity, turtle nesting, beach erosion, and marine litter
- socioeconomic parameters e.g. human resource use (recreation and fishing), KWS staff attitudes and knowledge, attitudes and knowledge of fishers, stakeholders and the public, and compliance.

Data on the ecological parameters can also be integrated to assess social aspects of the MPA. For example, by comparing the biomass of sea urchins inside and outside of MPAs, the data can be used to demonstrate the impact of management measures on the local fishing industry. This highlights that there is a very strong connection between social, economic and ecological data.

Assessments of the impacts of MPAs on community livelihoods are also conducted every three to four years using tools like the Social Assessment of Protected Areas[22]. Other tools include SocMon, which is a set of guidelines for establishing a socioeconomic monitoring programme in the Western Indian Ocean[23].

5.4 Use of socioeconomic data in Kenya

In Kenya it is a legal requirement that the status of MPAs is reported every three years and this includes the ecological status as well as the socioeconomic status. The reports go to Cabinet, as there is a particular interest in understanding how MPAs contribute to poverty alleviation. There is also periodic reporting to government departments on how the MPAs are impacting on local communities. The results of specific research projects are published as reports or scientific articles. Most importantly, the information is used to review and update site management plans and the KWS strategic plan.

5.5 Lessons from socioeconomic monitoring in Kenya

- there are still challenges with implementation because of capacity issues. Socioeconomic monitoring is one of those areas that is not well developed in the region, and there are still huge capacity gaps.
- it is important to think about the overall MPA design and management because the choice of tools and instruments and what to monitor depends on the design of the MPA
- there are still challenges with data analysis. Sometimes a lot of data is collected but is not well analysed. Social data interpretation is also very important.
- context matters; without administrative and institutional support, socioeconomic monitoring is difficult
- sometimes socioeconomic monitoring can raise community expectations and it can even skew the results, particularly the perception studies
- socioeconomic assessment and monitoring can be expensive because it takes a lot of time and resources to be conducted effectively

[22] https://pubs.iied.org/sites/default/files/pdfs/2021-05/20151IIED.pdf
[23] https://gcrmn.net/wp-content/uploads/2019/05/SocMon_WIO_English.pdf. NB Socioeconomic monitoring guidelines have also been developed for coastal managers in Pacific Island countries, South East Asia, South Asia and the Caribbean. See: https://www.icriforum.org/socmon-resource-library/

6 Lessons from the British Indian Ocean Territory

Section 6 summarises the presentation given by Claire Collins, from the University of Exeter. Claire has been undertaking her PhD research on the drivers for shark fishing amongst communities in Sri Lanka and the implications for large-scale, remote MPA management and shared the findings of her research.

6.1 Context

The British Indian Ocean Territory (BIOT) MPA has been in place since April 2010 and since that time there has been high levels of non-compliance, mostly from Sri Lankan vessels but also to some extent from Indian vessels. The type of vessels that target the area fish with mixed gear and mostly target tuna, billfish and sharks. There are about 3,800 Sri Lankan flagged vessels that have a high seas licence, and they are primarily concentrated off the south and west coasts of Sri Lanka. BIOT is a large-scale MPA, it is relatively remote and there is no resident population. The threat originates from non-resident fishers, so it is very difficult to address gaps in understanding of the social dimensions in this situation. Within the wider region, there are increasing numbers of vessels putting more pressure on target stocks such as tuna. There are known gaps still in satellite surveillance, and satellite data cannot tell us much about the human drivers for these activities or the context of why fishers might be fishing where they are.

6.2 Approach

The aim of the study was to improve understanding of the human dimensions of this problem of non-compliance within the BIOT MPA. It was designed to identify two important things; understanding the social context of these fishers and identifying drivers for this non-compliance and whether it differs across areas or regions. The study involved community-based fieldwork and relied on fisher-generated knowledge, using participatory mapping. As it was such a sensitive topic, a very informal approach to the research was taken, and a partnership with a Sri Lankan NGO (Oceanswell) was instrumental. It also involved collating understanding from multiple methods and then trying to build a narrative and/or ‘triangulate’ fundings from the combined dataset.

6.3 Methods

A systematic review of the existing enforcement data was undertaken to understand where vessels were coming from and characterise vessels and fishers to help direct sampling approach and methods for community-based data collection. Data was then collected within the community, using interviews and focus groups. Due to the nature of the work, a lot of importance was placed on deciding which methods were appropriate to use and adopted methods were mostly informal, flexible and guided by issues of importance to the fishers.

In order to determine potential drivers for non-compliance, data was analysed using tools such as thematic framework analysis (of qualitative data), social network analysis of non-compliant and compliant vessels and spatial modelling using participatory mapping exercise data.

6.4 Results

The enforcement data showed that there was a clear trend in terms of where the non-compliant vessels were coming from. This led us to investigate the context of vessels within these areas and why compliance might be more likely in some areas rather than others.

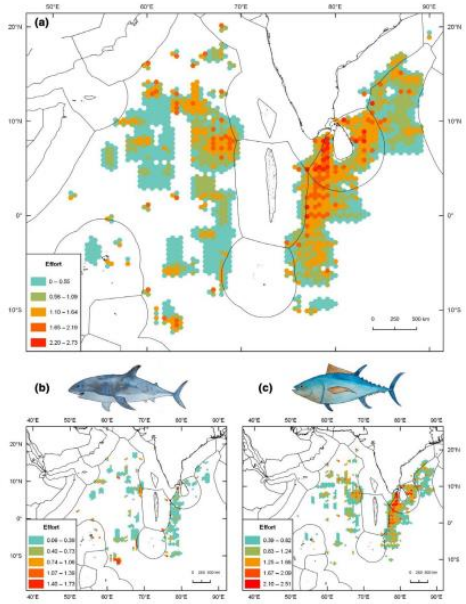

Figure 7: Distribution of fishing effort (Collins et al., 2021)

Participatory mapping was used to understand more about the Sri Lankan fleet. Heat maps of fishing effort were generated (Figure 7) for the whole fleet and then separated by target species to try to understand why some vessels might be going further away than others and why some might be looking to target MPAs.[24] We found that movement was highly variable, and fairly wide ranging across the Indian Ocean. This highlighted collection of social data is important to identify significant factors driving fishers' spatial behaviour and to help identify particular factors which might increase the likelihood of non-compliant behaviour.

[24] Collins, C., Nuno, A., Benaragama, A., Broderick, A., Wijesundara, I., Wijetunge, D. and Letessier, T.B. (2021). Ocean-scale footprint of a highly mobile fishing fleet: Social-ecological drivers of fleet behaviour and evidence of illegal fishing. People and Nature, 3: 740-755. https://besjournals.onlinelibrary.wiley.com/doi/pdf/10.1002/pan3.10213

Another finding of relevance to MPA management was a highly variable perception of risk of being caught whilst fishing illegally in the MPA[25]. This is highlighted by quotes from different fishers of "*they arrest us as soon as we arrive,*" compared with "*no, only 1 or 2% get caught*." This demonstrates that there is no guarantee that a sanction-based model will work unless you talk to people and understand the deterrent effect that this enforcement is having. This issue is going to be studied more over the next couple of years, trying to understand why some fishers have a different perception of what the risk is and the varying impact of sanctions.

The study also found that a lot of vessels were targeting sharks which are found within the centre of the MPA associated with the shallow, coral reef systems. We are interested in collecting further data, particularly in Indian fisher communities, to understand more about the social importance of sharks and why they might still be acting as an incentive for illegal fishing within the MPA within some communities.

6.5 How the data can be used

- if an MPA is going to be established, profiling the compliance threat as soon as possible is essential, to understand whether there's a higher risk during a particular season or to a particular species such as shark.
- it is also important to consider interaction and compliance with management across scales, considering the management within the origin country and regional management and how this altering people's behaviours.
- sanction-based models need more data to understand the deterrent effect and whether these are the most appropriate forms of management or whether there are particular issues within these fleets that might be incentivising non-compliance behaviours.

The PhD research has involved working with the company that runs the patrol vessel [MRAG] as well as teams in Sri Lanka and India which enabled us to link up different perspectives of the MPA, how it is perceived, how people want it to be managed and what kind of impact that might have for the different stakeholders. It is also important to think about how we can engage people that are within the region more widely.

Within the context of BIOT, the hope is that this work will build an increased understanding of the fishing fleets and highlight how important it is to understand their context and how that influences the success of this MPA. It also shows that the MPA is strongly linked within the wider social framework of the region. This work will help to move towards more predictive management of the MPA and demonstrate how we can work within the existing management structures but look to build more participatory processes as well.

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[25] Collins, C., Nuno, A., Broderick, A., Curnick, D.J., de Vos, A., Franklin, T., Jacoby, D.M., Mees, C., Moir-Clark, J., Pearce, J. and Letessier, T.B. (2021). Understanding persistent non-compliance in a remote, large-scale marine protected area. Frontiers in Marine Science, 8: 503. https://www.frontiersin.org/articles/10.3389/fmars.2021.650276/full#B25

"…**there's no guarantee that that will work unless you understand, you actually talk to people and understand the deterrent effect that this enforcement is actually having"** – *Claire Collins*

ROUNDTABLE DISCUSSION

Contributions by Participants and Expert Panel

7 Roundtable discussion

The following sections expand on these themes and summarise the contributions, questions, discussion and recommendations from roundtable participants and expert panellists[26].

7.1 Experience of using socioeconomic data in the UKOTs

Representatives from two Blue Belt OTs shared their thoughts on the use of socioeconomic data.

In South Georgia & the South Sandwich Islands (SGSSI), there is no population. The stakeholders include the fishing industry, tourist industry, a broad NGO representation and scientists; obtaining their views and input can be difficult. Prior to the MPA designation, there was a huge amount of scientific engagement looking at the technical details of the spatial zoning of the MPA and impacts on the fishing industry and to some extent tourism. Then, when the MPA was established in 2012, socioeconomic modelling was done. This is still used when they are considering the introduction of other management measures to understand the impact of these changes on different activities, particularly fishing. A major source of revenue for SGSSI is fishing licences and this income covers the costs of research, patrolling and surveillance, so it is very important to strike a balance between a sustainable fishery whilst at the same time providing the necessary income streams for MPA management. The Government of SGSSI is embarking on a terrestrial protected areas programme at the moment and engagement with the tourism industry will be much more important for this process.

In Tristan da Cunha, establishing the MPA has meant that they are no longer issuing fishing licences to foreign fleets. One of the biggest challenges when working with the local community to accept and support the MPA was finding a way of replacing that income, which has now happened. However, the economic and social impacts of the MPA have not yet been measured.

[26] The information contained in this report represents the contributions and recommendations of the expert panel and workshop participants and does not necessarily represent the views or recommendations of the Blue Belt Programme

7.2 Challenges to socioeconomic data collection in the UKOTs

7.2.1 Lack of capacity for monitoring

A participant from Tristan da Cunha noted that data collection is one of their biggest problems, simply because of lack of capacity and capability on-island and the difficulty in getting people to Tristan due to the remoteness.

One of the expert panellists encouraged OTs to consider community monitoring. This enables the community to set their own agenda as to what they want to focus on and identify what is important to them, then to undertake some basic, simple monitoring. A Blue Belt Programme representative shared experience from the island of Rodrigues where some fishers were trained and employed [as Community Resource Observers] to collect fisheries data with spot checks from the NGO for quality assurance. This worked well and periodically there were feedback sessions when the data collected were presented back to the wider community, highlighting what the data were showing and generating discussions about how that data could be used to improve fisheries management. Another approach used was to train young school leavers in socioeconomic survey techniques and they then carried out the household surveys. This meant survey capacity was enhanced as well as providing practical experience for the young people.

7.2.2 Burden on local communities / ‘survey fatigue’

Linked to the issue of lack of capacity, a participant from Tristan da Cunha explained that often external researchers will ask people on-island to collect data on their behalf which imposes a burden on the community from which islanders get very little in return. There can also be conflicts between what scientists want to do and what Tristan da Cunha’s research and monitoring priorities are.

A Blue Belt Programme representative noted that the development of their Monitoring and Research Plan will be a good way of helping to balance the issue of multiple external institutions wanting to do work at the site. This was supported by one of the expert panellists who highlighted that identifying monitoring and evaluation priorities and communicating these to external organisations is very important.

One of the expert panellists picked up on the aspect of placing a burden on managers and local communities, commenting that survey fatigue was something they came across frequently. They have however found that where local communities have been consulted and been involved right from the beginning, survey fatigue is less of an issue because people have already got that buy-in, and it is something that they are doing for themselves. It is important to ensure that community members are involved in setting the objectives and understand what information will be collected and how it will be valuable for them. It was noted that there is however a huge commitment and an expectation that community members give their time voluntarily to these initiatives.

Another expert panellist added that they also had experience of researchers coming with their own priorities as well as different NGOs trying to work with the same community group on a similar issue but with no communication or coordination. They noted however that they are now seeing more responsibility from scientists in engaging local communities in a more acceptable way. They reiterated that early engagement with local communities by researchers and external organisations is essential in terms of involving community members in the study and showing how it is going to be useful to them.

A Blue Belt Programme representative shared experience from Cambodia where they had regular monthly meetings with fishers, patrol teams and local authorities to help pull in the data that had been collected by scientists to improve decisions on the ground, for example around enforcement patrols. They also held wider MPA committee meetings quarterly to bring in NGOs, businesses, fishers and enforcement officers to translate that data into action.

One of the expert panellists highlighted the process of free, prior and informed consent (FPIC)[27]. This process is around addressing the issues that had been raised in regard to whether or not the research agenda is aligned with the community's priorities and objectives. Again, the importance of community engagement early on in the process was stressed. It was also noted that more could be done to strengthen this process and make it more rigorous, even elevating it to industry-standard levels.

A Blue Belt Programme representative explained that with the development of Marine Plans in England, many of the stakeholders were quite hard to reach and required different approaches. A simple tool called User Stories was therefore adopted early on. Stakeholders were asked three simple questions: (1) how they intended to use or why they were interested in the development of the Marine Plans; (2) how they wanted to be engaged during development of the marine plans; (3) in what format they would like marine plans to be displayed. A mixture of face-to-face meetings and online surveys were used to gather the information, but this helped to build up a profile of the different stakeholders' needs were when it came to engagement.

7.2.3 Remoteness of UKOTs

A representative from Cefas highlighted that a big challenge for the Blue Belt Programme is that the UKOTs are extremely remote and with Covid reducing the ability to travel, there is a need to consider how we can still take those participatory approaches and form those relationships though an internet-based context.

[27] The principle of Free, Prior and Informed Consent (FPIC) refers to the right of indigenous peoples to give or withhold their consent for any action that would affect their lands, territories or rights. "Free" means that consent must be given voluntarily and without coercion, intimation of manipulation; "Prior" means that communities must receive information on the activity and have enough time to review it before the activity begins; "Informed" means that the information provided is detailed, emphasises both the potential positive and negative impacts of the activity, and is presented in a language and format understood by the community; "Consent" refers to the right of the community to agree or not agree to the project before it begins and throughout the life of the project

One of the expert panellists agreed that trying to do remote working as a result of the pandemic had been a real challenge. They have tried to address this by identifying good, national consultants who are in-country and who have the relevant expertise and experience, although this would not be possible for many of the OTs. Similarly, for participatory or community monitoring, making sure that there are trained individuals who can be on site has been important and then providing them with remote assistance through workshops and remote training.

A representative from JNCC gave an example of work in Latin America that had looked at trying to connect different communities[28]. They presented quite high-tech visualisations of the landscape and coastal regions to demonstrate the flows of ecosystem services and disservices[29] connecting the terrestrial and marine communities. This enabled the terrestrial communities and governance processes to link-up to the marine ones, which had not happened previously. The visualisations helped people to understand the landscape as a whole and also helped to reveal the complexities of the socioeconomics that was driving the environmental impacts. The visualisations really helped to connect communities, highlighting how useful remote support through the use of technology and online mapping can be.

A discussion was held as to whether online questionnaires or surveys would be a way of collecting socioeconomic data in the context of SGSSI where stakeholders are not physically present in the territory. A representative from Cefas also suggested that correctly incentivised online surveys could be used as a way of reducing the burden on local communities to collect socioeconomic data. A Blue Belt Programme representative highlighted that when developing the Marine Plans for England, the MMO used online consultation for some aspects of it alongside other more traditional stakeholder consultation and engagement techniques.

A representative from Tristan da Cunha however explained that internet connection is very poor and also very expensive, so this is not really an option. A Blue Belt Programme representative noted that methodologies for mining social media data are becoming quite advanced now. This was trialled for St Helena and you can obtain information such as the distribution of tourists, areas that are important to locals and tourists and trends. This can be done anywhere in the world, and although the ethics need to be very carefully considered, it is quite a powerful tool to gather information remotely and quite simply. A representative from St Helena added that Survey Monkey is used quite often for simple surveys and obtaining people's opinions, however the level of participation is low. They noted that you can put a lot of time and effort into writing a really good survey and then nobody responds. A Blue Belt Programme representative noted that it is important to consider what other data are available for example data collected by other departments

[28] See: https://jncc.gov.uk/our-work/eo4cultivar/ for project information and: https://jncc.gov.uk/our-work/eo4c-colombia-mapper/ for the visualisation

[29] Ecosystem services are any positive benefit that wildlife or ecosystems provide to people; disservices are the negative effects of nature on human wellbeing

such as tourism numbers, it does not necessarily have to involve going out and doing surveys.

One of the expert panellists however highlighted that for stakeholder engagement, there is a spectrum from light-touch, to heavily engaged and actively participating in the decision-making process. Online surveys have to be administered quite carefully in that process. They can be quite effective for getting quick feedback for example, or if you have already established quite good relationships with people. However, if important management decisions regarding new regulations or zonation are taking place then it is those personal relationships that will secure that engagement and participation from stakeholders. It was also noted that it does take time to build up those relationships with stakeholders to enable meaningful engagement.

7.2.4 Ensuring good quality data

A representative from JNCC explained that a challenge they had faced when working in the western Indian Ocean was, depending on who you engage, stakeholders can skew the data. One of the expert panellists noted that this is a common problem when you keep going back to the same community over and over. There is a risk that the community will just give the answers they think you want to hear, which may not necessarily be true. Additionally if you start providing incentives for them to participate, then it becomes more like a business for them, and the first thing they want to know is if they are going to be compensated for their time. These sorts of behaviours indicate that you may be introducing bias into the results.

Another panellist highlighted the technique of triangulation, and that particularly when sensitive questions are being asked, you ask these in various ways or through various means to corroborate your findings. It was noted that bias really comes down to question design, and sometimes not asking the most obvious or explicit questions helps.

A Blue Belt Programme represented shared experience from the Marine Conservation Zone project in England where there was a huge amount of stakeholder engagement, both in terms of collecting information about people's use of the marine environment but also in actively engaging stakeholder groups in establishing and designing the boundaries for the MPAs. The project involved participatory mapping with individual fishers and recreational sea users. These individual maps were then collated into an overall dataset which was then presented back to the community group to sense check it and flag up any anomalies to the rest of the group.

8 Final thoughts from Blue Belt OTs

At the end of the roundtable, Blue Belt OT representatives shared their thoughts on the discussion and socioeconomic assessment and monitoring.

One of the participants from **South Georgia & the South Sandwich Islands** explained that they do not have any plans for socioeconomic monitoring at this stage, but it is something they will bring into their 5-yearly review process (the next review will be in 2023). It will be interesting to give this some consideration; they do currently have a lot of engagement with the fishing industry, so are already dealing with their major socioeconomic driver but there are others as well, for example tourism.

One of the participants from **Tristan da Cunha** noted that they do already have a fair amount of socioeconomic data as there are only 250 people on the island and there are no secrets, they know everyone's personal circumstances. For them, the big challenge is to be able to demonstrate that the MPA is benefiting the community. There are other challenges at the moment linked to the impact of Covid and shipping and so this will be quite difficult to do but is very important to ensure long-term community support for the MPA. It was noted that it would be really helpful to have people come to Tristan da Cunha to collect the data.

One of the participants from **St Helena** explained that they are currently reviewing their Marine Management Plan. This will set St Helena Government's priorities for the next five years and all of their stakeholders will feed into its development.

The participant from **Ascension Island** highlighted that they have already started some socioeconomic monitoring work and have encountered a lot of the problems mentioned during the discussion session around participation, but they are trying to set baselines. It was noted that if the runway gets repaired and tourism and businesses start up again, then that will bring in a whole new area of socioeconomic monitoring which they are starting to prepare for.

9 Resources

Socioeconomic monitoring and assessment guides

Bunce, L., Townsley, P., Pomeroy, R. and Pollnac, R. (2000). Socioeconomic manual for coral reef management. Australian Institute of Marine Science, Townsville, Australia, 251 pp. Available: https://www.icriforum.org/wp-content/uploads/2021/04/GCRMN_Manual.pdf

Malleret-King D., Glass A., Wanyonyi I., Bunce L. and Pomeroy, B. (2006). Socio-economic monitoring guidelines for coastal managers of the Western Indian Ocean, SocMon WIO. CORDIO East Africa publication, 108 pp. Available: https://www.icriforum.org/wp-content/uploads/2021/04/SocMon_WIO_English.pdf

Wongbusarakum, S. and Pomery, B. (2008). SEM-Pasifikia: Socioeconomic monitoring guidelines for coastal managers in Pacific Island countries. Secretariat of the Pacific Regional Environment Programme, 137 pp. Available: https://www.icriforum.org/wp-content/uploads/2021/04/SEM-Pasifika_0.pdf

Franks P., Small. R, and Booker, F. (2018). Social Assessment for Protected and Conserved Areas (SAPA). Methodology manual for SAPA facilitators. Second edition. IIED, London. Available: https://pubs.iied.org/sites/default/files/pdfs/migrate/14659IIED.pdf

Franks, P. and Small, R. (2016). Understanding the social impacts of protected areas: a community perspective. IIED Research Report. IIED, London. Available: https://pubs.iied.org/sites/default/files/pdfs/migrate/14661IIED.pdf

Booker, F. and Franks, P. (2019). Governance Assessment for Protected and Conserved Areas (GAPA). Methodology manual for GAPA facilitators. IIED, London. Available: https://pubs.iied.org/sites/default/files/pdfs/migrate/17655IIED.pdf

IMM (2008). Sustainable Livelihoods Enhancement and Diversification (SLED): A Manual for Practitioners. IUCN, Gland, Switzerland and Colombo, Sri Lanka; CORDIO, Kalmar, Sweden; and ICRAN, Cambridge, UK. Available: https://www.iucn.org/sites/dev/files/import/downloads/sled_final_1.pdf

Durham, E., Baker, H., Smith, M., Moore, E. and Morgan, V. (2014). The BiodivERsA Stakeholder Engagement Handbook. BiodivERsA, Paris, 108 pp. Available: https://www.biodiversa.org/702

Scientific papers on social impacts of large MPAs

Artis, E., Gray, N.J., Campbell, L.M., Gruby, R.L., Acton, L., Zigler, S.B. and Mitchell, L. (2020). Stakeholder perspectives on large-scale marine protected areas. *Plos one*, 15. https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0238574

Ban, N.C., Davies, T.E., Aguilera, S.E., Brooks, C., Cox, M., Epstein, G., Evans, L.S., Maxwell, S.M. and Nenadovic, M. (2017). Social and ecological effectiveness of large

marine protected areas. *Global Environmental Change*, 43: 82-91. https://ore.exeter.ac.uk/repository/bitstream/handle/10871/25888/Ban%20et%20al.%20Social%20and%20ecological%20effectiveness%20of%20large%20marine%20protected%20areas.pdf?sequence=1

Christie, P., Bennett, N.J., Gray, N.J., Wilhelm, T.A., Lewis, N.A., Parks, J., Ban, N.C., Gruby, R.L., Gordon, L., Day, J. and Taei, S. (2017). Why people matter in ocean governance: Incorporating human dimensions into large-scale marine protected areas. *Marine Policy*, 84: 273-284. https://www.sciencedirect.com/science/article/abs/pii/S0308597X17300532

Davies, T.E., Epstein, G., Aguilera, S.E., Brooks, C.M., Cox, M., Evans, L.S., Maxwell, S.M., Nenadovic, M. and Ban, N.C. (2018). Assessing trade-offs in large marine protected areas. *PLoS one*, 13. https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0195760

Day, J.C. (2017). Effective public participation is fundamental for marine conservation—lessons from a large-scale MPA. *Coastal Management*, 45: 470-486. https://www.tandfonline.com/doi/pdf/10.1080/08920753.2017.1373452

Gray, N.J., Bennett, N.J., Day, J.C., Gruby, R.L., Wilhelm, T.A. and Christie, P. (2017). Human dimensions of large-scale marine protected areas: advancing research and practice. *Coastal management,* 45: 407-415. https://www.tandfonline.com/doi/full/10.1080/08920753.2017.1373448

Gruby, R.L., Gray, N.J., Campbell, L.M. and Acton, L. (2016). Toward a social science research agenda for large marine protected areas. *Conservation Letters*, 9: 153-163. https://conbio.onlinelibrary.wiley.com/doi/pdf/10.1111/conl.12194

Gruby, R.L., Fairbanks, L., Acton, L., Artis, E., Campbell, L.M., Gray, N.J., Mitchell, L., Zigler, S.B.J. and Wilson, K. (2017). Conceptualizing social outcomes of large marine protected areas. *Coastal management*, 45: 416-435. https://www.tandfonline.com/doi/pdf/10.1080/08920753.2017.1373449

Richmond, L., Gruby, R.L., Kotowicz, D. and Dumouchel, R. (2019). Local participation and large marine protected areas: Lessons from a US Marine National Monument. *Journal of environmental management*, 252. https://www.sciencedirect.com/science/article/pii/S0301479719313428

General scientific papers on social impacts of protected areas

Ban, N.C., Gurney, G.G., Marshall, N.A., Whitney, C.K., Mills, M., Gelcich, S., Bennett, N.J., Meehan, M.C., Butler, C., Ban, S. and Tran, T.C. (2019). Well-being outcomes of marine protected areas. *Nature Sustainability*, 2: 524-532. https://researchonline.jcu.edu.au/59925/2/JCU_Ban%20et%20al_2019_Nat_Sust.pdf

Bennett, N.J., Di Franco, A., Calò, A., Nethery, E., Niccolini, F., Milazzo, M. and Guidetti, P. (2019). Local support for conservation is associated with perceptions of good governance, social impacts, and ecological effectiveness. *Conservation letters*, 12. https://conbio.onlinelibrary.wiley.com/doi/pdf/10.1111/conl.12640

de Lange, E., Woodhouse, E. and Milner-Gulland, E.J. (2016). Approaches used to evaluate the social impacts of protected areas. *Conservation Letters*, 9: 327-333. https://conbio.onlinelibrary.wiley.com/doi/pdfdirect/10.1111/conl.12223

Giakoumi, S., McGowan, J., Mills, M., Beger, M., Bustamante, R.H., Charles, A., Christie, P., Fox, M., Garcia-Borboroglu, P., Gelcich, S. and Guidetti, P. (2018). Revisiting "success" and "failure" of marine protected areas: a conservation scientist perspective. *Frontiers in Marine Science*, 5: 223. https://internal-journal.frontiersin.org/articles/10.3389/fmars.2018.00223/full

Jones, N., McGinlay, J. and Dimitrakopoulos, P.G. (2017). Improving social impact assessment of protected areas: A review of the literature and directions for future research. *Environmental Impact Assessment Review*, 64: 1-7. https://arro.anglia.ac.uk/id/eprint/701576/1/Jones_2017.pdf

Mizrahi, M.I., Diedrich, A., Weeks, R. and Pressey, R.L. (2019). A systematic review of the socioeconomic factors that influence how marine protected areas impact on ecosystems and livelihoods. *Society & natural resources*, 32: 4-20. https://www.tandfonline.com/doi/abs/10.1080/08941920.2018.1489568

Oldekop, J.A., Holmes, G., Harris, W.E. and Evans, K.L. (2016). A global assessment of the social and conservation outcomes of protected areas. *Conservation Biology*, 30: 133-141. https://conbio.onlinelibrary.wiley.com/doi/10.1111/cobi.12568

Blue Belt Programme

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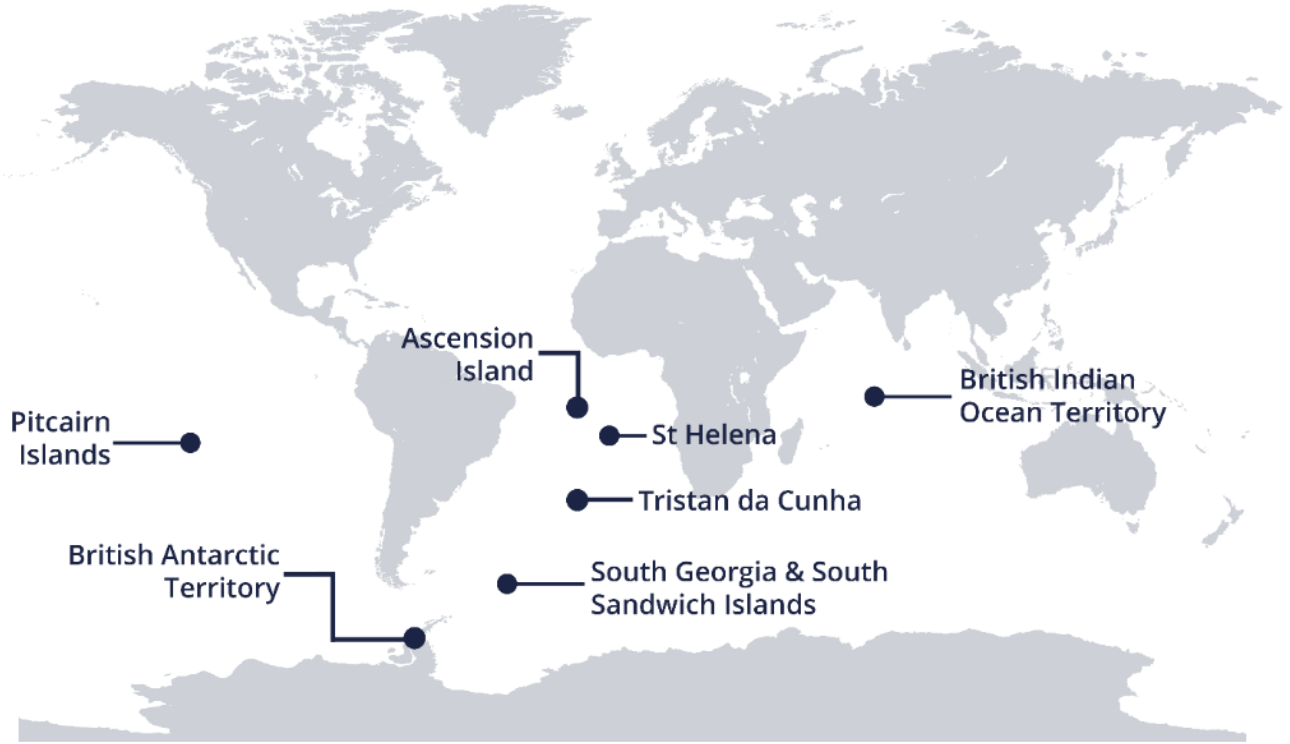

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