

Engaging recreational fishers in Marine Spatial Planning (MSP) in Bermuda

¿Cómo involucrar a los pescadores recreativos en el ordenamiento espacial marino en las Bermudas?

Comment impliquer les pêcheurs récréatifs dans la planification spatiale maritime aux Bermudes?

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EXTENDED ABSTRACT

The Bermuda Ocean Prosperity Programme (BOPP—www.bermudaoceanprosperity.org) is utilizing Marine Spatial Planning (MSP) to optimize sustainable growth across the maritime economy, while managing marine resources for the future by creating a network of marine protected areas (MPAs). The Programme is led by the Bermuda Government Ministry of Home Affairs in partnership with the Waitt Institute and the Bermuda Institute of Ocean Sciences (BIOS). The BOPP approach has three pillars. Sector-specific economic assessments are evaluating local commercial fisheries, marine tourism activities, maritime renewable energy and aquaculture for areas of potential growth, with a view to expanding the sustainable Blue Economy, creating jobs and improving livelihoods. Support for additional data collection and stock assessments will also contribute to enhanced fisheries sustainability. Finally, the centerpiece that brings these efforts together is the development of a Marine Spatial Planning (MSP) framework that aims to minimize conflict amongst the various maritime sectors and sustainably manage marine resources by incorporating 20% of Bermuda's EEZ within a network of fully protected fisheries replenishment zones (MPAs).

To help guide this process, a Steering Committee was formed that includes representatives from relevant Government Departments, stakeholder boards and agencies, together with BIOS and an NGO observer. Blue Economy and MSP subcommittees focus on the different aspects of the programme. There is also a Science Advisory Committee that is co-chaired by the Government Department of Environment and Natural Resources (DENR) and BIOS, and includes key DENR technical staff and other local scientists and conservation experts. The Steering Committee, the MSP Subcommittee, and the Science Advisory Committee developed draft principles and goals that will be used to drive the prioritization of activities and zones within the MSP framework. The Core Principles of the MSP framework promote the following values: a 'common resources' approach with a focus on reducing conflict between stakeholder groups and also between human uses and the environment; maintaining ecosystem integrity while developing a sustainable maritime economy; taking culture and community amenity value into account while making decisions in a transparent way that includes input from all stakeholders; being forward-looking and adaptive; and making evidence-based decisions or exercising the precautionary principle when appropriate. There are seven Foundational Goals that address conservation issues, and seven Resource Use Goals focused on various human uses of the marine environment.

To ensure that the MSP framework reflects the perspectives and priorities of the local community, stakeholder involvement is critical. Therefore, while the BOPP Committees drew up draft Objectives to address the Foundational Goals, an important aspect of this approach is that the Objectives for each of the Resource Use Goals were to be developed by stakeholders from that particular sector. The stakeholder engagement process for BOPP is centered on working groups called the Ocean Village, and recruits sector representatives who then reach out to their organizational members and sectoral networks in order to acquire wide-ranging input on the MSP Principles, Goals and Objectives, as well as the spatial distribution of particular stakeholder activities (Fig 1). The BOPP Ocean Village includes eight working groups representing cultural and leisure activities, various aspects of marine tourism, both the commercial and recreational fishing sectors, mariculture, those involved with infrastructure and development, water quality, and conservation.

A prioritization model will apply the MSP framework to a range of biophysical and human use data in order to develop a draft MSP map that achieves an optimal balance between delivering on key conservation targets from the Foundational Objectives and minimizing conflict with the various resource uses as much as possible. Data on the distribution of biodiversity in general, and of key species of commercial and conservation interest in particular, as well as the spatial distribution of stakeholder activities across Bermuda's marine environment are being collated for this purpose. BOPP is using SeaSketch, an online participatory GIS platform (www.seasketch.org), to collect and collate these data. SeaSketch allows stakeholders to complete an Ocean Use Survey for any maritime activity in which they participate, whether it is for commercial or personal purposes. Predetermined categories match the named Ocean Village groups, but Other activities can also be submitted. For each activity, users highlight the areas where they engage in that activity, and then assign a value to each area that reflects its importance to them. A similar mobile platform, called Maptionnaire, is also being utilized (www.maptionnaire.com). Given the importance of fishing to the Bermuda community, connecting with a variety of fishers in order to get their input and gather spatial data on the distribution of different types of fishing activity is therefore critical.

The basic Ocean Village engagement model works efficiently for industry groups, community organizations, or sectors with known users, but is less effective for many recreational activities. However, it is known that recreational sectors with a greater level of specialization tend to engage more with management (Loomis and Holland, 1997; Pitt and Trott, 2013). At present, lobster diving and spearfishing are the only recreational fishing activities that require a licence and thus have known participants, and both activities are considered specialized (Robertson and Pitt, 2013). The Lobster Divers Association facilitates easy contact with this sector (Pitt and Warren, 2021), ensuring good representation, but spearfishers are fewer in number and not formally organized beyond social media groups. Local angling clubs are also known stakeholders, with a presence on the Marine Resources Board, the statutory stakeholder advisory body. They have engaged with previous management consultations, but only cover ~8% of recreational hook and line fishers, primarily those targeting pelagic species (Pitt and Trott, 2013). Reef and shoreline fishers are not well represented by the clubs, and contacting these stakeholders is challenging.

To expand the scope of engagement, facilitators utilized social media and personal networks to identify participants for the recreational fishing working group, and selected ten participants that, between them, engage in a range of recreational fishing activities. While other working groups utilized emails and met remotely, many fishers preferred to communicate by phone or messaging apps, and meetings combined in-person with remote participation. Over a series of four meetings, with additional online discussion, participants learned about BOPP and MSP, as well as the Ocean Use Survey. They provided input on the Core Principles, Foundational goals and Foundational Objectives, developed four Objectives that aim to facilitate sustainable recreational fishing, and suggested an additional Foundational Goal addressing compliance and enforcement issues, along with five Objectives to help with its implementation. They also completed Ocean Use Surveys.

In addition to leveraging the organizational and personal networks of working group members to engage the wider recreational fishing community and promote participation in the Ocean Use Survey, facilitators also gave presentations to various youth and social groups, and conducted surveys with fishers along the shoreline, at fishing tournaments, and at venues such as marine supply stores, utilizing SeaSketch, Maptionnaire and even printed maps that could later be digitized (Fig 2). This broadened approach has so far garnered 90 Survey responses from recreational fishers, exceeding the minimum target of 80 surveys considered to be statistically representative for this particular group of stakeholders within the overall Bermuda population, where it is estimated that ~25% of the population of ~60,000 fishes for leisure at some level (Sarkis et al., 2010; Pitt and Trott, 2013).

This experience highlights that overarching models of stakeholder engagement may not fit all sectors, especially for recreational activities, so multiple approaches are necessary, social networking is useful, and flexibility is key.

KEYWORDS: Marine Spatial Planning, recreational fishing, stakeholder engagement, Bermuda

LITERATURE CITED

- Loomis, D.K. and S. Holland. 1997. Specialization and Sport fishing: Angler support for rules and regulations. *Proceedings of the Gulf and Caribbean Fisheries Institute* 49: 398-410.
- Pitt, J.M. and T. M. Trott. 2013. Insights from a survey of the recreational fishery in Bermuda. *Proceedings of the 65th Gulf and Caribbean Fisheries Institute, Santa Marta, Colombia*: 254-260.
- Pitt, J.M. and Tammy M. Warren. 2021. Balancing the recreational lobster diver fishery with the small scale commercial lobster trap fishery in Bermuda. *Proceedings of the 73rd Gulf and Caribbean Fisheries Institute*. Extended abstract.
- Robertson, M.E, and J.M. Pitt. 2013. The distribution and impacts of recreational lobster diving and spearfishing in Bermuda. *GCFI* 66. Abstract and poster.
- Sarkis, S., P.J.H. van Beukering, and E. McKenzie (eds.). 2010. *Total Economic Value of Bermuda's Coral Reefs: Valuation of ecosystem services. Technical Report*. Department of Conservation Services, Government of Bermuda.

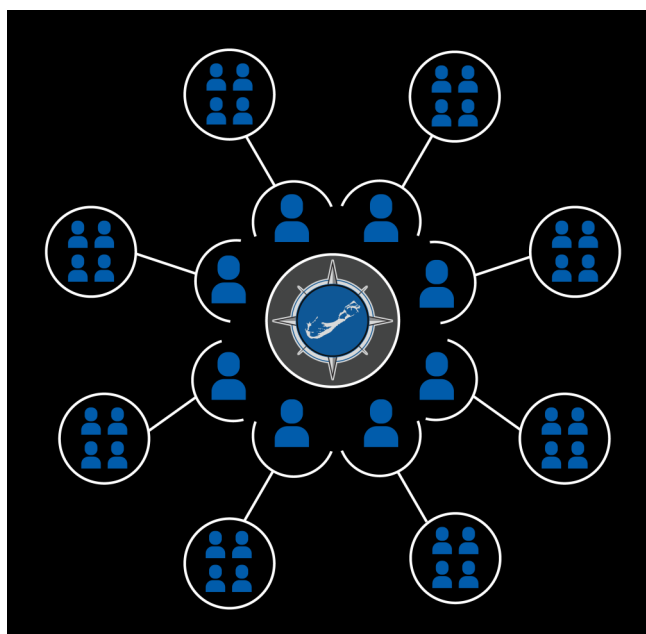


Figure 1. Conceptual diagram of the Ocean Village stakeholder engagement model .

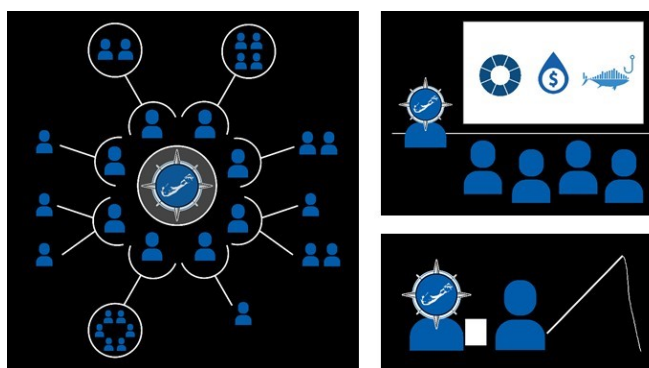


Figure 2. Conceptual diagram of an alternative engagement model utilizing a range of approaches for connecting with recreational fishers .