Improving Marine Extractive Reserve outcomes in Brazil

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Objectives

This project aims to design a strategy plan for more effective management of Marine Extractive Reserves (MERs)[1] in Brazil through a comparative assessment of successful co-managed fisheries elsewhere. This assessment will outline the elements of MERs that are essential to their success via improved ecological, economic, and social outcomes. Insight into MERs and proposed improvements will inform current efforts by World Wildlife Fund (WWF) to improve community based marine resource management in Brazil. Specifically we will attempt to answer: What mechanisms determine the success or failure of MERs? How can lessons learned from successful co-management efforts worldwide increase performance of Brazil's MERs?

Significance

As the human population and demand for animal protein increase, wild fishery stocks are pivotal to global food security. Co-management strategies address this issue by putting fishers at the forefront of managing their own resources. Territorial Use Rights Fisheries (TURFs) give fishing autonomy to local fishers in which they self-manage their fishing activities. Co-management empowers such fishing communities to be stewards of their own livelihoods and environments in ways top-down management cannot.

In Brazil, the artisanal fishing industry employs over 800,000 fishers [9]. Industrial fishing has grown substantially, expanding catch range and targeting more species than ever before; this has encroached on this vulnerable sector's resources and markets [6]. Traditional fishing communities, like those on Brazil's northern coast, continue intergenerational education of centuries-old fishing practices that can provide sustainable catch and preserve local culture. Their local ecological knowledge remains invaluable, especially in data-limited fisheries, yet the voices and needs of these local experts have been underutilized. These traditional fishing communities are the bedrock of their local economy, but the majority still live below poverty due to historic mismanagement.

MERs return the power of resource management to the communities that depend on them, utilizing the community's inherent understanding of the environment. Brazilian MERs have not yet resulted in measurable success despite widespread success of co-management in similar regions. Past research has demonstrated that the absence of no-take zones, lack of community engagement, and minimal alternative income opportunities are symptoms of poorly implemented co-management. [5][8][13].

This project has an opportunity to bridge the management gap between long standing communities and modern fishery management strategies [1]. The persistence of these reserves depends on their success

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[1] Marine Extractive Reserves (MERs) are a form of co-managed Marine Protected Area which allocate public areas to beneficiary populations for the purpose of extractive use. MERs are known as Reservas Extravistas (RESEX) in portuguese, and hold this title in Brazil.

today. WWF and the Brazilian government recognize the importance of these fishing communities to the economic and cultural success of the country. This analysis will provide WWF and partners with a tool for policy advocacy, and best management practices for immediate implementation by fishers that will extend beyond the scope of this project.

Background

WWF-Brazil's Marine Program was created in June, 2015, with the organization understanding the urgent need to address coastal marine issues. Since its beginning, the Marine Program works in three strategies: (*i*) integrated coastal management, (*ii*) promotion of sustainable fisheries, aquaculture and seafood consumption, and (*iii*) expansion and strengthening of protected areas management and biodiversity conservation. Working with traditional communities provides an escape from the bureaucracy of a top-down approach, as well as increasing the success rate of the projects, by taking into consideration the needs and knowledge of these communities.

The extractive reserve model emerged as a result of social movements in the 1980s, when people in Brazil began to demand more involvement in the management of the natural environment. This strategy incorporates elements of co-management in an effort to improve socioeconomic and ecological outcomes by empowering communities to manage their own resources using cooperation and local ecological knowledge. There is mounting evidence that this strategy can successfully resolve many problems commonly associated with common-pool resource management when applied to small scale fisheries [2].

Extractive reserves are also created to preserve the traditional communities' culture and livelihoods from the expansion of large corporate enterprises. MERs on the northern coast of Brazil, for instance, are heavily impacted by real estate, oil, and gas sectors. Granting communities the right to traditional territory despite other industry pressure is a matter of social and environmental justice which WWF is highly committed to, but survival of these reserves depends primarily on economic success.

Available Data

Relevant data for co-management assessment and comparison (TURF/MER):
For primary analysis of comparable TURFs, Sustainable Fisheries Database[9]. For gathering further information on TURF success worldwide, and updating the Bren data from 2012, TURFtools (developed by previous Bren GP for EDF), TURF-Reserve Design Tool [4]. For studying the 22 subject sites, WWF has provided Brazil's most complete database on MER fisheries in the region through Unidades de Conservação no Brasil: Início[12]. While TURF, fisheries data provided is plentiful, expected data from COBI management in Mexico, RARE fisheries worldwide, and Brazilian government data is not readily available to link.
Relevant fisheries management data:
For management strategizing, A fishery manager's guidebook - Second edition [7]. Understanding implementation of MER, Coastal-Marine Extractive Reserve: Reflections on the Pre-Implementation Stage[13].

Possible Approaches

Assessment of Brazilian MERs and comparative analysis utilizing relevant success stories.
- Determine fundamental social, economic and institutional characteristics of MERs.

- Identify high performing TURFS that are comparable to MER conditions, to build a model of co-management success.
- Map relevant stakeholders and their incentives.
- Develop a comprehensive management plan to improve the performance of MERs, including suggestions for resource allocation and opportunities for collaboration with other stakeholders.

Create model of ideal co-management, based upon TURF success outside Brazil
- Initially map out the performance metrics that need improvement within MER zones, including fish stock, market value of catch, socioeconomic health of participants, and enforcement.
- Create shortlist of successful TURFs with similar ecological, geographical, and institutional characteristics, using RARE and TURFTools data.
- Identify key areas of stakeholder engagement in successful TURFs, deliver a management performance model.

Deliverables

Final deliverables will include the required presentation, poster, policy brief and written final report. The clients expect the report to include:
- Analysis of current institutional, economic and social need of fisheries, necessary management changes, including specific policy, fund allocation, and enforcement recommendations.
- Management plan encompassing recommended changes for policy, fund allocation, enforcement, and stakeholder engagement map.
- Coordinated NGO outreach plan to address information gap within MERs.

Internships

A 2020 summer internship in São Paulo will be hosted by WWF-Brazil, focused primarily on advancing on the goals of the group project, and supported with mentorship and additional opportunities to engage in other initiatives of professional interest at the WWF-Brazil São Paulo office. This internship is tentatively unpaid, but WWF-Brazil is seeking funding to support the costs of travel and living should this project be selected. Other group project members will have the opportunity to arrange unpaid internships with WWF-Brazil or its partners based on interest.

Supporting Material

Budget

Budget	Cost ($USD)	Funding Source
Printing	$200-$300	Bren
Further Materials for Presentation	$200-$400	Bren
Data Access	$50-$150	Bren

Client Letter of Support: Attached.

References

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Group Project Committee
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Dear Group Project Committee:

It is with great excitement that I write this letter, on behalf of WWF-Brazil in my role as Conservation Analyst, to support the Group Project proposal "*Improving Marine Extractive Reserves outcomes in Brazil.*" The proposal was written in partnership with Dylan Glave and Peyton Moore, MESM 2021 Candidates. As a MESM alumnus myself, I look forward to engaging with Bren again, now as a Group Project client, to help advance interdisciplinary solutions to important environmental problems that matter to the many coastal communities of Brazil.

Since its creation, WWF-Brazil's Marine Program has been working under three strategies: (*i*) integrated coastal management, (*ii*) promotion of sustainable fisheries, aquaculture and seafood consumption, and (*iii*) expansion and strengthening of protected areas management and biodiversity conservation. Currently, we estimate that 80% of fisheries in Brazil are either overfished or fully fished, and fisheries management is far from having adequate science and policy solutions to improve this status. WWF's hope for this project is to advance the understanding of policy and managements measures tested and implemented in TURFs (territorial use rights for fisheries) around the world, looking to improve the co-management in Brazilian Marine RESEX (Extractive Reserves).

As the client for this project, we enthusiastically commit to provide access to relevant data, as well as necessary consultation and supervision throughout the year-long project in recognition of the mutual academic objectives of the student team. Furthermore, WWF-Brazil also commits to hosting an intern to primarily advance the project, but also engage in other areas of interest to the intern in our office in São Paulo, over the summer 2020. This internship will be un-paid, although funding for the position is being requested to provide a stipend that covers travel and living expenses. Regarding all other expenses related to the project, we expect that it will not require more funding than the budget provided to group project by the Bren School. We understand however, that should special opportunities to advance the impact of the project arise (e.g. workshops or travel to project sites), that WWF-Brazil will seek financial support as needed.

If there is any additional information we can provide to support this project, please don't hesitate to contact us. We are very interested in this collaboration with the Bren School, and we look forward to moving ahead with this project should it be selected.

Best Regards,

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