

Published on *Marine Ecosystems and Management (MEAM)* (<https://meam.openchannels.org>)

How social science is continuing to change and improve marine ecosystem conservation and management: Part I

In 2017, MEAM (now The Skimmer on Marine Ecosystems and Management) [interviewed 17 social science and interdisciplinary researchers from around the world to learn how their work could improve marine conservation and management practice](#). Since then, the social science of marine management has developed further in these areas and branched out in many other valuable directions. In this issue of The Skimmer and the next, we update our previous coverage by interviewing an ensemble of other social science and interdisciplinary researchers doing innovative social science work with great potential to improve (or a proven track record) of improving marine conservation and management practice. This work ranges from the [use of cognitive mapping to create mental models of how fishers in the Caribbean view and organize the world...to testing how "nudges" could cost-effectively increase compliance with conservation regulations...to innovating how communities participate in marine planning processes to reduce feelings of exclusion and suspicion](#).

Here is the first set of interviews. As with last time, we hope that you find these research and practice profiles as energizing and inspiring for your own work as we found editing them.

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Eric Wade: Mental models give us a glimpse into fishers' decisions and trade-offs

Editor's note: Eric Wade is a Ph.D. candidate in the Department of Fisheries & Wildlife at Oregon State University. He can be contacted at eric.wade@oregonstate.edu and on Twitter @EricWadeBZ.

What I am working on: My work is highly interdisciplinary, drawing on theories from behavioral economics, social psychology, and anthropology with interests in human dimensions of fisheries management, ocean governance, and conservation and development. Currently, my research explores the decision-making and behaviors of fisherfolk in the Caribbean. I look at the role of livelihoods and social networks in those fishing decisions and how decisions interact with risk and uncertainty. One way I operationalize these ideas is through the use of cognitive mapping to elicit mental models of fishers. Mental models are abstract models of how we view and organize the world around us.

Potential and observed influence: By tapping into the motivators of fishers' decisions, we have the potential to obtain a glimpse into the complex dynamics and trade-offs they make. On the same note, given the growing uncertainties facing small-scale fisheries from global environmental change, market variability, or even a global pandemic, this research has the potential to reveal how fishers are navigating these uncertainties and how they are operationalizing these new levels of risk. For example, using the mental model approach in Belize, my research found that stakeholders had different conceptualizations of a new fisheries policy. We found that both fishers and policymakers had incorporated aspects of the new fisheries policy – such as the introduction of Territorial Use Rights for Fisheries, catch logbooks, and vessel monitoring – into their pre-existing models of how fishing was traditionally conducted under an open access system. The organization of our mental models is an important aspect of how stakeholders are interpreting a policy, as it allows us to analyze whether stakeholders are accepting the new policy or whether they are going on with business as usual. This approach has great potential for marine conservation and management, in that it allows researchers and fisheries managers to be able to have both a systems view of stakeholders' view of a new initiative, and it also allows for the isolation of specific drivers in the mental model.

Applicability of this work elsewhere: The ease of administering cognitive mapping (the methodology to elicit mental models) makes it applicable across a range of contexts and locations. Administration of the cognitive mapping protocol can range from 10 minutes to over an hour. Cognitive mapping is an interactive method and allows participants to freely express their thoughts around a specific topic. The approach reduces data collection bias given the open nature, with limited control and direction by researchers. As with all social science methodologies, care must be taken to ensure that the cognitive mapping protocol considers local socio-cultural conditions.

Learn more: Learn more about my work [here](#), [here](#), and [here](#).

Mary Mackay: Nudges can be an inexpensive way to increase compliance with conservation regulations

Editor's note: Mary Mackay is a postdoctoral fellow at CSIRO Oceans & Atmosphere. She can be contacted at mary.mackay@CSIRO.au and on Twitter @MaryMackay8.

Tailored management approaches for four compliance



The Compliers

Consistently compliant

- Risk averse
- Stronger environmental values

Likely to remain compliant and to respond to risk-based approaches



The Non-compliers

Consistently non-compliant

- Risk seeking
- Low conscientiousness, low agreeableness and introversion

May need stronger approaches than those tested to encourage compliance behaviour

The Resistant

Resistant

- Resistant

Apprehensive perception of miscompliance risk

Key take-aways:

- Stronger environmental values associated with compliance behaviour
- When people are non-compliant they expect others to act the same
- Encouraging environmental concern and targeting misconceptions may increase compliance
- Scope for innovative compliance initiatives by focusing on the individual fisher rather than the average fisher

Mackay et al. (2020). Me and my behavior: an experiment on individual characteristics and compliance behavior in recreational fishing. *Front. Mar. Sci.* 7:579213. doi: 10.3389/fmars.2020.579213

What I am working on: Non-compliance in fisheries is a tenacious problem. My research has looked into novel ways to encourage voluntary compliance in recreational fisheries using nudges. **Nudge theory** argues that through positive reinforcement or indirect suggestion, non-forced compliance can be achieved. Through economic experiments we tested the influence of a social norm nudge with student participants in different hypothetical fishing scenarios. We found that the presence of a social norm nudge increased compliance by 10%. We also found heterogeneity across individuals' responses to the nudge. For example, risk preferences significantly related to compliance behavior, i.e., those who did not comply were more risk-seeking. We further explored how other **individual characteristics** such as personality types, values, and perceptions are associated with rule following. We found that strong environmental values were associated with compliance behavior, and consistent non-compliance was associated with low conscientiousness and agreeableness.

Potential and observed influence: Non-compliance with regulations in the global conservation context is one of the largest sources of illegal activity in the world, resulting in degradation to societies, economies, and the environment. The threats that non-compliance poses to marine conservation and socio-ecological systems are quite consequential – non-compliance has the potential to undermine management and sustainability and create conflict between user groups. Therefore, ensuring compliance is critical. One of the appeals of informal or soft regulations such as nudges to complement deterrence-based measures is that they are relatively inexpensive to implement. They can be also used by countries with fewer resources for monitoring and enforcement fisheries, including small-scale and subsistence fisheries. Generally, knowledge of the behavioral relationship between compliance and individual characteristics can move fisheries management toward increased innovation by encouraging the management of the individual fisher rather than the average fisher.

Applicability of this work elsewhere: Behavioral economics and, specifically, nudges have been used all over the world in a number of contexts with great success. We recently documented a number of **examples of nudges** being used in Australian recreational fisheries management. As with any new management approach, nudges need to be rigorously tested to demonstrate their cost-effectiveness and avoid unintended consequences. However, through careful design and when embedded within an adaptive management framework, nudges have the potential to contribute to improved recreational compliance, thereby avoiding the threats that non-compliance poses to marine systems, locally and globally.

Learn more: Learn more about my research [here](#).

Syma Ebbin: Art may inspire behavior changes needed to conserve marine environments

Editor's note: Syma Ebbin is associate professor in residence in the Department of Agricultural and Resource Economics at the University of Connecticut and research coordinator for Connecticut Sea

Grant. She can be contacted at syma.ebbin@uconn.edu or on [LinkedIn](#).

What am I working on: I am an interdisciplinary scientist who started out my professional and academic life as a biologist, crossed over to fisheries management, and then took a deep dive into the social sciences to study coastal and marine resource management from a different perspective. Now I find myself poking my toes into a different pool – the humanities, specifically the arts. I have been trying to understand the impact of incorporating the arts into my teaching and ultimately into enhancing stewardship values and conservation behaviors.

Over 10 years ago I developed the [Arts Support Awards Program at Connecticut Sea Grant \(CTSG\)](#) where I serve as the research coordinator. When I started at CTSG, most of our research portfolio was comprised of natural science-focused work with some social science. Since its inception, the Awards program has funded 16 artists working independently or in groups, and they have generated an impressive body of work, some of which was exhibited in a [10-year retrospective show Crosscurrents in 2019 at UConn Avery Point's Alexey von Schlippe gallery](#)

A special issue of the [Parks Stewardship Forum, The Interdisciplinary Journal of Place-Based Conservation](#) just came out and included a suite of articles, each addressing the value of incorporating the humanities and arts into ocean literacy and stewardship from different perspectives. This is not a novel idea. Integrating the arts and sciences has a long history reaching back at least to the Greeks and Second Library of Alexandria where scholars worked on poetics, physiology, astronomy, philosophy, physics, and literature among other disciplines. Fast-forward to the Renaissance and the idea of the Renaissance Man or Polymath – talented individuals, knowledgeable and skilled in diverse disciplines, able to integrate different streams of thought to produce novel ideas and products – emerged. Currently STEM learning (science, technology, engineering, math) has morphed into STEAM education, incorporating the arts – reunifying and reenergizing knowledge and creativity.

Potential and observed influence: Art has the capacity to [metabolize, transform, and connect experiences and ideas, impacting both artist and audience and generating empathy and emotional responses](#). This may be what is needed to provoke the behavioral changes necessary to conserve the marine (and terrestrial) environment as well as the other species occupying this planet. Research has shown that art can [impact the values, beliefs, and perspectives of both the artist and the audience](#) Art creates [richer understandings, connects knowledge with emotions and, might inspire greater efforts aimed at conservation](#).

Applicability of this work elsewhere: Participatory art such as mural creation, theatrical performances, and art festivals, along with other immersive artistic events serve to [create community and also focus that community on values which can generate actions aimed at restoration or stewardship](#). Art can generate [more creative and effective communication about issues and ultimately reach populations that scientific discourse does not penetrate](#).

Learn more: The [special issue of Parks Stewardship Forum on Humanizing the Seas: A Case for Integrating the Arts and Humanities into Ocean Literacy and Stewardship](#) makes the case that the arts and humanities can and should play a much larger role in marine education and conservation. My article "Immersing the arts: Integrating the arts into ocean literacy" can be [here](#). Learn more about the CTSG Arts Support Awards Program [here](#), and watch a movie on the Crosscurrents Exhibition [here](#).

Yoshitaka Ota and Andrés Cisneros-Montemayor: Without new scholarship on ocean governance and equity, we risk a future that further separates the haves and have-nots

Editor's note: Yoshitaka Ota is the director of the Nippon Foundation Ocean Nexus Center and a research assistant professor at the University of Washington School of Marine and Environmental Affairs. He can be contacted at yota1@uw.edu. Andrés Cisneros-Montemayor is deputy director of the Nippon Foundation Ocean Nexus Center and a research associate at the University of British Columbia Institute for the Oceans and Fisheries. He can be contacted at a.cisneros@oceans.ubc.ca and on Twitter [@AndresMCisneros](#).

What we are working on: Working with partners all over the world, we have created the [Nippon Foundation Ocean Nexus Center at the University of Washington EarthLab](#) We do research on oceans, but our focus is on *people*. Our aim is to close the gap of inequality over the long term and meet the urgent needs of people today. We will do this by [recognizing the root causes of inequity, recovering an equitable approach to managing human-oceans activities; and ultimately building new evidence, tools, and narratives that reverse these harms and create a future where oceans are for all people](#).

Potential and observed influence: After spending a decade working on interdisciplinary socio-ecological research with the [Nereus Program](#) to predict the future state of our oceans, it was clear and unsurprising that global environmental changes will negatively impact sustainability – the ability to sustain habitat, biodiversity, and cultural landscapes; protect traditional stewardship; and maintain livelihoods and food sovereignty in coastal communities. What is even more important is that this work has revealed systemic inefficiencies within ocean governance. Decision-makers are unable to respond to sustainability issues in ways that do not exacerbate inequalities between those who benefit from the oceans and those who do not. There are limited governance structures for empowering economically and politically marginalized oceans populations – the people who will be disproportionately affected by the very environmental problems we are trying to solve. Without new scholarship on ocean governance and equity, we risk a future that further separates the haves and have-nots.

To avoid this future, management options must be examined within a much broader context of political powers and social organizations. This does not mean we are getting away from protecting the health of our oceans, but we must prioritize people within the ecosystem that we are trying to improve. In terms of marine management, we must reassess how we make decisions. The usual order linking climate, environment, economy, society, and a policy response may not be the appropriate model. Solutions based on a domino or [donut theory](#), always starting from environmental changes, may fail as an adaptation policy and furthermore cause imbalanced burdens and injustice in our relationships with the oceans (and with each other).

Applicability of this work elsewhere: We view this approach as scalable to other environmental issues because it asks the question: shall humans use and control the environment for our own good or shall we learn to live in harmony for our environment?

Learn more: Learn more about the Ocean Nexus Center and its work [here](#).

Nemer E. Narchi: Local coastal knowledge systems are vital tools for coastal management

Editor's note: Nemer E. Narchi is an associate researcher professor in El Colegio de Michoacán in Mexico. He is also the regional representative for Central and South America and the Caribbean for the International Society of Ethnobiology, and vice president of the Mexican Society of Ethnobiology. He can be contacted at narchi@colmich.edu.mx.

What I am working on: I have always been fascinated with marine ethnobiology – the study of the relationships of present and past human societies to marine biota and ecosystems, and the knowledge emerging from these relationships. A not-so-recent, multi-authored publication "[Marine ethnobiology a rather neglected area, which can provide an important contribution to ocean and coastal management](#)" takes a closer look at these relationships, revealing that fisheries management, while important, is but one of the many manifestations of local ecological knowledge. By looking carefully at a diverse array of studies we confirmed that marine ethnobiology offers not only a unique tool for [managing artisanal fisheries](#), but also novel solutions to [foster co-management of marine protected areas strategies for managing seascapes](#), and a roadmap for [implementing local knowledge-based management schemes](#).

Potential and observed influence: When marine scientists have paid attention to the stories embedded in local knowledge, they have reported [new species, described novel metabolites, and registered alternative resource management strategies](#). For example, in [Laguna dos Patos, Brazil](#), my colleague Gustavo Moura has shown that the local fishing calendar that allocates spatially and temporally differentiated fishing quotas to neighboring communities results in sustainable management practices. Currently, with a number of colleagues working in the Americas, we are blending the study of coastal knowledge systems with a critical approach known as "[social oceanography](#)". Our goal is to fight prevailing views that consider local knowledge to be inferior to highly technical exogenous strategies in such a way that local coastal knowledge systems can be seen as vital tools for coastal management and policy making.

Applicability of this work elsewhere: There is a lot of portability of ethnobiological research. Previously, we have suggested that [black coral management schemes original to Northwestern México](#) could offer an alternative [management strategy for red coral artisans in the Mediterranean](#). That is easy. However, the real applicability of marine ethnobiology lays in the fact that people can accumulate local ecological knowledge over the course of their lifetime. That makes virtually all coastal populations excellent field sites for marine ethnobiological research. When local knowledge is kept well and alive and people can politically empower themselves to the point of transforming their reality, [successful local management strategies](#) have a good chance of making a long-lasting impact in marine ecosystems worldwide.

Learn more: Learn more about my work [here](#) and how marine ethnobiology can be applied to conservation and management [here](#).

Rodrigo Oyanedel: Markets and supply chains can drive illegal and unsustainable fishing

Editor's note: Rodrigo Oyanedel is a PhD student with the Interdisciplinary Center for Conservation Science at the University of Oxford. He was formerly a Latin American Fisheries Fellow at the Bren School of Environmental Science & Management at the University of California Santa Barbara. He can be contacted on Rodrigo.oyanedel@zoo.ox.ac.uk or twitter [@r_oyanedel](#).

What I am working on: My main research interests relate to how markets and supply chains influence the way marine resources are used. Focusing on a small-scale fishery in Chile as a case study, I am working on two interrelated projects. The first ("A Dual Trading Model for Fisheries") provides a generic dynamic simulation model to assess the economic factors that affect intermediaries' decision to trade legal or illegal fishing products. The second ("A framework for assessing and intervening in markets driving unsustainable fisheries") aims to assist in the identification of interventions that can help reduce unsustainable fishing practices from a market standpoint.

Potential and observed influence: My current work has two main potential impacts. The first one has to do with advancing our understanding of how markets and intermediation in fisheries work. This is key because markets and intermediaries exert significant pressure on fishers and as such influence their behavior, which can lead to overexploitation if left unchecked. For instance, in cases where intermediaries exert collusive price-fixing or control market access, prices paid to fishers might be set intentionally low, which can, in turn, drive overexploitation. With my research, I will provide a framework and a simulation model that are easily adaptable to other fisheries and circumstances, and as such can help researchers, managers and practitioners to better understand how market and intermediaries affect fishing dynamics.

The second impact is more localized and has to do with the common hake fishery's management in Chile (my case study). High levels of illegal and unreported fishing have kept this fishery in a collapsed/overfished state for years, preventing recovery and the sustainable use of the resource. With my project, I will provide compelling evidence to improve management locally for sustaining this fishery.

Applicability of this work elsewhere: The objective of the two projects I am currently working on is to provide generic tools to better understand how fisheries markets and supply chains operate, especially when they drive illegal or unsustainable practices. Markets and intermediation driving unsustainable fisheries is, unfortunately, a common phenomenon, and there are currently few methodological approaches for assessing these influences. The products from my projects will help address this gap and should be applicable to many contexts and locations where these pressures occur.

Learn more: Learn more about my research [here](#) and [here](#).

Rebecca Jefferson: Training and mentoring can help conservation professionals integrate social sciences into their work

Editor's note: Rebecca Jefferson is founder and director of [Human Nature](#), a social enterprise that provides training and mentoring to conservation professionals wanting to integrate social sciences into their work. She can be contacted at rebecca@humannature.co.uk, on Twitter [@Human_NatureUK](#), and on [LinkedIn](#).

What I am working on: Human Nature provides training and mentoring to conservation professionals who want to integrate social sciences into their work. We currently deliver an online course [Introduction to Social Science for Conservation](#) which provides foundational knowledge about what conservation social science is, an exploration of the methods used to conduct it, and how to integrate it into your work. The course is live-taught to a small group (maximum 15) over three mornings. Breakout groups allow for discussion between participants and a chance to learn from the experiences of others.

Potential and observed influence: Integrating social sciences into marine conservation and management provides multiple values such as enabling better understanding of human components of ecosystems, designing locally relevant solutions, and enhancing ecological outcomes. Many people working in the conservation sector have considerable expertise in natural sciences but are less confident with social sciences. To meet the growing need for conservation social science, researchers, practitioners, and policy makers need to increase their skills. Providing a foundational understanding of conservation social sciences empowers those working in marine (and terrestrial!) conservation and management systems to better understand the systems they work in, to shape their interventions to the local context, and to monitor and evaluate the social impacts of conservation action.

Applicability of this work elsewhere: Social science is core to any conservation or management context, as it provides the tools to understand, engage, and collaborate with people. People are the agent of change which this conservation and management aim to influence; therefore, social science unlocks more possibility than taking a solely natural sciences approach.

Working with course participants this year, it is evident there is a real passion to use social science to better understand society and catalyze a healthier future for people and planet. Barriers come in the form of lack of confidence to use new tools, and lack of familiarity with the ways social science can be integrated into projects. A recent participant rather beautifully described the problem as having boxes in their mind – with most of them full of tools for asking and answering natural science-based conservation questions, but a social science box that felt empty. Our work helps people fill their mental boxes with knowledge of appropriate social science tools and helps them broaden their networks to support them in integrating social sciences into their work.

Learn more: We will be offering our Introduction to Social Science for Conservation course in 2021 in various time zones (details [here](#)). If you are interested in our courses or would like to explore other ways to work together, we would love to hear from you.

Maree Fudge: Innovating how communities participate in marine planning can reduce exclusion and suspicion

Editor's note: Maree Fudge is a postdoctoral research fellow at the [Institute for Marine and Antarctic Studies](#) and the [Centre for Marine Socioecology](#) at the University of Tasmania in Australia. She can be contacted at maree.fudge@utas.edu.au, on Facebook [@WaterwaySocialResearch](#), and on Twitter [@mareefudge](#).

What I am working on: I am researching the policy, decision-making, and political processes of people's connections with the marine environment. I make connections between democratic changes and process, and how communities and societies are grappling with adaptation to the changes in the marine environment. It is an exciting time to be thinking about how demands for greater participation in governance and decision-making are changing our idea of what democracy is and how it can operate. Since the 1970s, a strong norm of participation has been developing across democracies, and this norm is now dominating how we think of marine governance. However, anyone who works in marine planning and governance knows that actually "doing" participation is really difficult and politicized work, and often ends up with community members feeling shut out and suspicious rather than included. My work involves examining how participation is linked with people's representation in marine planning and governance, how this connection is linked to legitimacy, and how we can innovate in our participation practices to reduce feelings of exclusion and suspicion.

Potential and observed influence: We have produced a simple, accessible analytical lens (in press) that captures the connection between participation, representation, and legitimacy. In the case studies to date, we have been able to reconsider real-world rules and processes, and participants have told us that the lens and the language of representation and legitimacy have helped them name some of the tensions and contradictions that they knew were in play in a marine planning process but could not address. While we have focused on the marine environment to date because it is a "commons", this work is relevant for any public policy area where access to shared resources is changing.

Applicability of this work elsewhere: Our work identifies opportunities to innovate in participatory marine planning and governance, and to drive and support increasing democratization of marine governance. We are currently engaging with as many case studies as possible to continue to test and improve our analytical lens and promote the legitimacy of participatory marine governance. If you are involved in any participatory initiatives, please get in touch to discuss being part of the ongoing research.

Learn more: My academic papers are in press but please contact me directly to access the lens and discuss using it. You can also learn more about my laboratory's research [here](#), [here](#), and [here](#).

Priscila F. M. Lopes: Making women visible makes fisheries management and conservation more efficient, socially fair, and resilient

Editor's note: Priscila F. M. Lopes is an associate professor in the Department of Ecology at the Universidade Federal do Rio Grande do Norte in Brazil. She can be contacted on Twitter [@PriLopes_UFRN](#).

What I am working on: I have recently engaged in a new project on how small-scale fisheries react and respond to stochastic, and often negative, events. The motivation for the project came from a series of calamities that have hit Amazonia and the northeastern coast of Brazil. Amazonia has been dealing with unprecedented fires that threaten its forest and aquatic environments. These environments are strongly interconnected – for example, many of the commercially and subsistence relevant fish are frugivorous (fruit-eating). In addition, since late July 2019, the northeast coast of Brazil has been hit by the largest oil spill in the South Atlantic, with economic, social, cultural, and health consequences to fishers and local communities yet to be evaluated. At the same time, both regions have been severely affected by COVID-19, especially early in the pandemic, when health and economic effects were worst. We are trying to figure out transformative experiences that allow fishers to cope with huge and unexpected pressures. We are seeing men and women be affected and react in different ways, thus we expect to find more examples of transformation in places where fishermen play a more active role.

Potential and observed influence: We first intend to understand whether bringing women out of invisibility makes coastal sustainability more efficient, socially fair, and resilient. If we find that being a recognized female sea worker (i.e., compensated equally to men) creates better socioecological mechanisms to deal with impacts, it will help direct fisheries and conservation policies that promote female workers as active agents of sustainability.

Applicability of this work elsewhere: Women are active harvesters of the sea in many places, although they also often tend to be invisible, at least to policy makers. In recent years, we have seen a growing interest in understanding how women use marine resources, and how that use can shape not only ecological aspects but also social dynamics, with greater or lesser empowerment depending on how recognized their work is. I believe that, as we improve our knowledge on the role of gender in fisheries and marine conservation, policy and decision-makers will start including a gender component in their actions. And it should not matter where as long as including women results in concrete positive changes for communities and the environments on which they depend. On a hopeful note, I also believe that society will start to push for these changes because there is a growing awareness of a long-overdue human rights deficit around gender inequality.

Learn more: You can learn more about this work on this [blog](#) and these [news](#) and [scientific](#) articles.

Hiroe Ishihara: Identify and sense of belonging play critical roles in marine resource management

Editor's note: Hiroe Ishihara is an assistant professor at the Graduate School of Life and Agricultural Sciences at the University of Tokyo. She can be contacted at a-hiroe@g.ecc.u-tokyo.ac.jp.

What I am working on: I am currently heading a research project entitled "Rethinking biodiversity conservation from local stakeholders' perspectives: Case studies of relational values in Japan and US" funded by the Toyota Foundation. This research project aims to incorporate stakeholders' perspectives into marine conservation by operationalizing a new approach called a "relational values" or "nature's contribution to people" approach. This approach was launched by the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) to broaden the existing notion of ecosystem services, which is heavily dependent on monetary valuations of nature. Not all stakeholders value nature solely in monetary terms because nature provides different types of contribution and services. For example, identity is an important value for an independent fisherman surviving in a harsh environment, and sense of belonging is an important value for a fishing community. By broadening the notion of ecosystem services, we hope to capture values from stakeholder's perspectives.

Potential and observed influence: Relational values, such as identity and sense of belonging, play a critical role in marine resource management. By operationalizing the relational values approach, we hope to visualize the diverse perspectives that resource users have about the ecosystem they depend on, and incorporate these perspectives into marine conservation policies. For example, conservation policies such as individual quotas that are introduced as an efficient way to impose total allowable catch or maximum sustainable yield are often met with resistance from resource users because they fear that the fishing will shift from group operation to individual operation causing the breakdown of sense of belonging. However, due to the difficulties of visualizing relational values, these sorts of non-monetary perspectives are often ignored in the design of marine conservation policies. Furthermore, we empower local resource users' voices when we visualize their perspectives as "relational values".

Applicability of this work elsewhere: We strongly believe that by developing a method to evaluate relational values that is applicable to both Japan and the US, we will develop a method applicable to

other parts of the world.

Learn more: Learn more about my research [here](#) and [here](#).

Talya ten Brink: Planning for human impacts of offshore wind projects will help them succeed

Editor's note: Talya ten Brink is a research associate at the University of Rhode Island and the GIS Coordinator for the Greater Atlantic Region of NOAA's National Marine Fisheries Service. The views expressed are those of the author and do not reflect the official policy or position of any agency of the US government. She can be contacted at tenbrink@uri.edu and on Twitter at [@DrTalyatenBrink](https://twitter.com/DrTalyatenBrink).

What I am working on: I am studying the co-existence of fisheries and offshore wind projects. As offshore wind projects become larger and more widespread, it is necessary to plan for their human and environmental impacts, including impacts on food access and economic livelihoods. Addressing these issues during the planning process can mitigate negative impacts and promote regional opportunities.

Potential and observed influence: A recent [article](#) on the human impacts of the Block Island Wind Farm, the first offshore wind farm in the United States, required interviews capturing the perceptions of local recreational and commercial fishermen. This research brought to light both perceived negative impacts such as displacement, crowding, hazards, and acute effects during construction; as well as perceived positive impacts such as increased fish abundance and an influx of species targeted by recreational fishermen. These lessons informed a [chapter](#) that identified several key challenges and benefits to synthesizing social science data and biological data around the impacts of offshore wind. Challenges included the difficulties of integrating quantitative and qualitative data, the temporal misalignment of qualitative and spatial assessment (i.e., biological surveys), and the inconsistency between species targeted by researchers versus commercial or recreational interests. Benefits included qualitative responses informing the focus of the biological surveys and opportunities to build positive relationships between fishermen and scientists. These findings can be used to inform other socio-ecological projects.

Applicability of this work elsewhere: We also worked with researchers from the United Kingdom to provide a [review](#) of reasons for conflict between fishermen and developers of offshore wind farms in the US and the UK and crucial lessons for good engagement. Recommendations included ongoing two-way communication between stakeholders, using fisheries liaisons, and addressing deeper meanings of places. As the short and long-term impacts of climate change and offshore wind accumulate in these environments, key stakeholders need ongoing transactional communication to facilitate thoughtful marine spatial planning. These relationships will help offshore wind projects succeed as a viable tool for reducing climate change, while minimizing negative economic and environmental impacts.

Learn more: Learn more about my recent work at the links above and [here](#).

Trisia Farrelly: An international convention is needed to fill gaps in national, regional, and international efforts to prevent plastic pollution

Editor's note: Trisia Farrelly is a senior lecturer of social anthropology and co-director of the Political Ecology Research Centre at Massey University in New Zealand as well as co-founder of the [New Zealand Product Stewardship Council](#) and [Aotearoa Plastic Pollution Alliance](#). Trisia is a [Ryoichi Sasakawa Young Leader Fellow](#) and is on UNEP's Scientific Advisory Committee and Ad Hoc Expert Group, Marine Litter and Microplastics. She can be contacted at T.Farrelly@massey.ac.nz.

What I am working on: I am exploring the potential for an international convention to fill gaps in national, regional, and international efforts to prevent plastic pollution. Our recent [article](#) presents an analysis of the various policy response options available to the New Zealand government to prevent plastic pollution. Some recommendations include prioritizing policy and investment at the top of the waste hierarchy; linking plastic waste to toxicological risk and commitments to carbon reduction targets; faithfully domesticating global commitments; and supporting a new convention to regulate plastic production and product design and transboundary flows of plastic pollution. Similarly, our [gap analysis](#) captured ten Pacific Island countries' policies, legislation, and strategies. Despite some robust legislation and a growing range of plastic pollution management initiatives, the study concluded that a binding plastic pollution convention is urgently needed. With colleagues, I am currently exploring plastic pollution as waste colonialism in the region.

Potential and observed influence: The Pacific region is disproportionately impacted by plastic pollution. The combined EEZs of Pacific island nations have a total coastline of over 57,000 km. Plastic pollution washes up on the shores of Pacific Island countries from thousands of kilometers away. In a [2018 study](#), plastic was found in 97 percent of the 34 fish species examined compared to a global trend of 67 percent. We hope that our work will influence governments to focus on the development of robust legislation and policy to prevent, reduce, redesign, reuse (and in the case of the small island developing states, "repatriate") plastics to eliminate terrestrial, air, freshwater, and marine plastic pollution. We also hope that the findings will support the drafting of national plastic pollution elimination plans, as well as statements in support of such a convention.

Applicability of this work elsewhere: Other Large Ocean and Small Island Developing States face similar challenges to Pacific Island countries. The results of these studies may offer some solutions and build momentum for global support for a convention. We also hope the work will inspire metropolitan states in the region to support their Pacific Islands neighbors by strengthening their own plastic policy frameworks, developing public-private partnerships and take-back schemes, and supporting a binding convention.

Learn more: Learn more about Massey University Political Ecology Research Centre's plastic pollution prevention work [here](#) and [here](#). Read more about a global plastics agreement [here](#) and [here](#). View a webinar on the plastic pollution policy gap analysis [here](#). Learn more about New Zealand's plastic pollution policy [here](#), [here](#), and [here](#). Learn more about the Aotearoa Plastic Pollution Alliance [here](#).

Narriman Jiddawi: Empowering coastal women can increase their incomes in a sustainable manner

Editor's note: Narriman Jiddawi is a senior marine scientist and director of the newly established Institute of Fisheries Research in Zanzibar. Formerly, she was a senior lecturer at the Institute of Marine Sciences at the University of Dar es Salaam in Tanzania. She can be contacted at n_jiddawi@yahoo.com and narusale@gmail.com.

What I am working on: I have specialized in marine fisheries but have been doing a lot of work to promote the economic empowerment of women along the coast in a sustainable manner. Women commonly work along the intertidal area, gleaning shells, octopus, and sea cucumber, thereby boosting the blue economy in a unique manner. However, there is usually a clear, gendered division of labor, and women's work is not very well recognized, keeping them in poverty. Women also work in coastal forests, collecting firewood to use at home.

Potential and observed influence: With the assistance of colleagues, we have been able to involve some women in a variety of economic activities along the coast in a sustainable manner to improve their income. Examples include making jewelry using seashells, farming half-pearls, and farming seaweed in deeper waters. By sustainable, I mean that they have started their own small no-take zones to ensure they get the resources they require. This work was done in collaboration with the Coastal Resources Center of the University of Rhode Island with funding from USAID and with collaborators from Stockholm University and Sea PoWer in the United Kingdom.

Applicability of this work elsewhere: This work can be conducted elsewhere as the techniques used are simple and can be replicated easily. The only requirement is that the resources needed (e.g., bivalves for farming pearls or making jewelry using shells, seaweed for farming seaweed) be available on the sites where the activity needs to be done. Moreover, considering women is especially important for conservation and environmental management initiatives in all coastal areas. Not considering local communities may lead to failure. [Social science is an important tool](#) to help achieve conservation and environmental management goals.

Learn more: Learn more about my research [here](#) and [here](#); pearl and other bivalve farming projects in East Africa [here](#), [here](#), and [here](#); and a paper on the importance of gender analysis in coastal management/marine spatial planning [here](#).

Do you have relevant work to share?

To find social science researchers to profile, we asked the 7,900 members of the EBM Tools Network discussion list for recommendations for social scientists whose work is or could improve marine conservation and management practice. We were unable to profile all of the researchers recommended, and we encourage other social scientists to share their relevant work in the Comments section below the main article.

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