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

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. We updated this coverage in our previous issue. More examples of social science and interdisciplinary researchers doing innovative social science work to advance marine conservation and management practice are below.

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Nina Rivers: Integrating Indigenous and local knowledge systems into marine spatial planning

Editor's notes: Nina Rivers is a postdoctoral research fellow at the Institute for Coastal and Marine Research in the Department of Development Studies at Nelson Mandela University in South Africa. She can be contacted at nina.rivers@gmail.com.

What I am working on: I am a marine anthropologist currently investigating how a community of practice can facilitate and develop a truly co-developed marine spatial plan for Algoa Bay on the eastern coast of South Africa. My research is part of the Algoa Bay Project in which a consortium of researchers from three universities and three national research institutions are working towards a holistic and co-developed MSP which includes biophysical, legal, and socio-economic components.

Broadly, I am exploring how ocean governance can be more equitable and sustainable by accounting for local social, economic, historical, political, and cultural realities. Specific research questions include:

1. What stakeholders should be involved in an MSP?
2. What enables and constrains stakeholder involvement processes in area-based management (ABM) strategies (e.g., marine protected areas, marine spatial planning, and integrated coastal management) in the global South?
3. What are the outcomes (positive and negative) linked to these factors?

Some of the methodologies used to answer these questions are a rapid stakeholder analysis of Algoa Bay stakeholders, a case study of the Algoa Bay in which various stakeholders were interviewed about their experiences of stakeholder involvement in the Algoa Bay Project to date, and a systematic literature review of global South literature focused on stakeholder involvement processes in ABM.

Preliminary results indicate that primary enablers for equitably involving stakeholders in ABM in the global South include building partnerships and trust for collaborative processes and using ABM approaches appropriate to the local social, economic, historical, political, and cultural contexts. Linked to the last finding is acknowledging and understanding how knowledge is constructed and emerges out of specific contexts, because this impacts how management practices are understood, implemented, and monitored.

In terms of constraints that hinder effective stakeholder involvement processes, global South governance systems are generally characterized by underfunded programs; lack of sufficient capacity among government authorities as well as stakeholders to meaningfully engage with ABM processes; uncoordinated legislation; time lags in implementation of legislation as well as effective mechanisms to enforce it; lack of monitoring for these initiatives; elite capture of natural resources; corruption; lack of political will; hegemonic power of international aid organizations; lack of endorsement and support from authorities of local stakeholders; exclusion of local and marginalized stakeholders; lack of trust and transparency; limited knowledge exchange; limitations of obtaining and sharing relevant data; paternalistic approaches to Integrated Ocean Management; reductionist views of stakeholders or 'communities'; sectoral miscoordination; and political regimes that favor supporting economic growth over protecting the marginalized or the biophysical environment they rely on.

Looking ahead, my research for the following two years will investigate how indigenous and local community knowledge linked to coastal and marine ecosystems can be integrated into ABM tools. Arts-based participatory methodologies will be used to explore this question, and we will use photo stories and digital voice to record intangible local and indigenous knowledge.

Potential and observed influence: The Algoa Bay Project is piloting the development of South Africa's first MSP and, as such, will inform how MSP is designed and implemented in the rest of the country. It is imperative to understand how indigenous and local knowledge systems can be integrated into current and future area-based ocean management strategies. This research is especially pertinent given that indigenous knowledge systems are still largely neglected in MSP.

Applicability of this work elsewhere: Lessons learned are contributing towards developing regional marine spatial planning strategies in the Western Indian Ocean (WIO)

region.

Learn more: Learn more about the Algoa Bay Project [here](#), [here](#), and [here](#).

Anya Phelan: Documenting how remote island communities are experiencing the marine plastic pollution crisis

Editor's note: Anna (Anya) Phelan is a senior research fellow at The University of Queensland (UQ) and the academic coordinator for the UQ Global Change Scholars Program. She can be contacted at a.phelan@business.uq.edu.au and on [LinkedIn](#).

What I am working on: My research focuses on key pathways to reduce and prevent plastic pollution. The crisis facing the world's oceans from plastics is well documented, yet there is little knowledge of the perspectives, experiences and options of the coastal communities facing overwhelming quantities of plastics on their beaches and in their fishing waters. To better understand the issue through local eyes, I recently led a study that examined the use, disposal, and local consequences of single use plastics in remote island communities in Eastern Indonesia.

Through a baseline assessment of plastic pollution literacy, we examined the knowledge and understanding of community members about the issue of plastic waste and marine plastic. Using a systems-thinking approach, we identified community mental models of factors contributing to ocean plastic pollution and the links to key livelihoods, such as fisheries, aquaculture, and tourism.

Potential and observed influence: We found that plastic waste is outpacing all mitigation efforts, and the sheer volume of plastic is overwhelming coastal regions. Increased availability of fast-moving consumer goods and rising standard of living is contributing to the escalating use of single-use plastic and packaging. Limited infrastructure, great distances, and high transportation costs make waste management a difficult issue for remote communities. Meanwhile seasonal storms inundate the coastlines with large volumes of plastic waste from other regions, leaving the island communities to shoulder the impacts of the growing problem. The research identified a complex set of factors contributing to extensive plastic leakage into the marine environment, including minimal infrastructure, institutional constraints, and lack of producer responsibility.

Our results suggest that to strengthen coastal management a circular plastic economy is greatly needed, focused on responsible supply chains and non-plastic alternatives.

Applicability of this work elsewhere: At a systems level, social and economic costs are often borne by those affected rather than those responsible for the supply of the plastics and management of the wastes. This study showed that low-resource coastal communities are forced to shoulder the impacts of the ocean plastic crisis. There are thousands of similar coastal communities in Indonesia, all struggling to cope with their own waste plus waste brought in by currents. The system results show that communities are caught in a perpetual reinforcing loop. Unless the supply changes, these communities have no hope of effectively managing their waste. Although our survey results show that plastic literacy is low, there is little the coastal communities can do unless presented with better choice architecture both on the supply side and in disposal options. For coastal communities in emerging economies the ocean plastic crisis cannot be abated without responsible supply. The study findings highlighted the integrated role that producers and manufacturers need to play to reduce plastic leakage and support marine conservation.

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

Kreg Lindberg: Novel analyses to assess the well-being and resilience of coastal communities

Editor's note: Kreg Lindberg is an associate professor at the Cascades Campus of Oregon State University. He can be contacted at kreg.lindberg@osucascades.edu.

What I am working on: I recently worked with Oregon Department of Fish and Wildlife to assess well-being and resilience in Oregon coastal communities. The well-being component focused specifically on how marine reserves may affect the subjective well-being (which reflects how people experience and evaluate their lives) of coastal residents and how that effect varies across groups based on fishing employment, recreation engagement related to the reserves, and environmental worldview. The community resilience component focused on developing and applying a new measurement scale, one that measures *perceived* resilience rather than the more common approach of primarily measuring factors that may affect resilience.

Potential and observed influence: There are numerous evaluations of the effect of policy, environmental, and other changes on coastal communities. Those evaluations often focus on employment or income, willingness-to-pay, and other common metrics. Such metrics are important, but direct measurement of subjective well-being is less common. A novel contingent well-being approach was used to achieve such direct measurement. The method is exploratory, but our analysis suggests it can be used to understand how natural resource management actions such as marine reserve designation can impact perceptions of well-being – thereby informing the policy process.

Likewise, several measures of community resilience exist, but the mixing of resilience with the factors affecting it hinders understanding of the importance of those factors. For example, several measures use resident perceptions of strong community leadership as an indicator of resilience, but strong leadership is a potential factor affecting community resilience. If leadership is modeled as an indicator of resilience, it is difficult to simultaneously assess its role as a factor affecting resilience. Our thrive-oriented measure of resilience can be used to better evaluate what contributes to resilience, which can help prioritize efforts to enhance resilience within and across communities.

Applicability of this work elsewhere: Individual well-being and community resilience are widely regarded as important societal priorities. My goal is to contribute to the extensive efforts to understand and enhance well-being and resilience across diverse contexts and locations.

Learn more: The well-being analysis is available [here](#); the community resilience analysis is available [here](#).

David Trimbach: Understanding people-place relationships is integral to effective marine ecosystem management

Editor's note: David Trimbach is a postdoctoral research associate in the Human Dimensions Lab and the Department of Fisheries and Wildlife at Oregon State University. He can be contacted at david.trimbach@oregonstate.edu and on Twitter [@davetrimb](#).

What I am working on: People-place relationships, including people's sense of place, are tangible and common bonds and sets of ascribed meanings that people – regardless of role, politics, or income – can recognize and understand. Consequently, understanding people-place relationships is integral to effective and more equitable marine ecosystem conservation and management. A geographer by training, I am working on a number of sense-of-place projects in the Puget Sound region of Washington State in the US. One such project [demonstrates the importance of Puget Sound residents' attachments to place](#) and how strong place attachments inform pro-environmental stewardship behaviors among residents. I am also looking at attachments and bonds to the [region's shorelines](#) and iconic Southern Resident killer whale populations.

Potential and observed influence: People-place connections influence people's attitudes, behaviors, and responses to place changes (such as those associated with environmental degradation, climate change, and landscape modification). By understanding, gauging, centering, and integrating sense of place into conservation or management, we can have a deeper understanding of how or why places matter to people; what people might do or not do to protect or preserve places; and how to create plans, policies, or projects that foster and reflect people's connections and loyalties to the natural environment and/or specific habitats, landscapes, and geographic features.

Applicability of this work elsewhere: Work focused on people-place relationships and sense of place have wide applicability to other contexts and locations. The idea that people's connections and meanings associated with place matter for conservation and management is not new. Often these connections and meanings are primary motivators for practitioners and planners involved in these fields. What is relatively new is using social science approaches, tools, and frameworks to better understand and include pertinent communities' connections and meanings to inform conservation and practitioners' work – whether that is an outreach or education campaign, planning

process, or even specific policy. There is even a growing interdisciplinary field known as 'place-based policy', which is often anchored or centered around sense of place. Sense of place matters, as it can help practitioners better gauge and navigate the social, cultural, relational, personal, and emotional landscape, which is just as important as the physical or natural landscape for effective conservation and management.

Learn more: Learn more about my research on [my website](#), in this [Puget Sound Institute blog](#), and in a [recent publication in Geographical Review](#)

Felipe Vázquez Palacios: The COVID-19 pandemic has driven elderly fishermen to despair

Editor's note: Felipe Vázquez Palacios is a researcher at the Centro de Investigaciones y Estudios Superiores de Antropología Social Unidad Golfán Mexico. He can be contacted at fvaz@ciesas.edu.mx.

What I am working on: I am researching how the COVID-19 pandemic is experienced by an elderly fishing population in the Gulf of Mexico, as well as the disadvantages and accumulated problems in the health, economics, and social dynamics of this group. The pandemic has had negative effects on the health and lifestyle of this population, as well as on their productive activities, which were already characterized by precariousness, deterioration, contamination, overexploitation of resources, institutional indifference, vulnerability, and insecurity. The closure of the productive and tourist sectors, lack of employment and money, and oversaturation of fishing activity, along with depreciation of fishing product, are driving these fishermen to despair as well as subjecting them to strenuous hours of work.

Potential and observed influence: Although quarantines have not been enforced, fishermen feel that hygienic restrictions have slowed their work and made it difficult, especially work conducted on land. Because of this, the pandemic is perceived to be harmful, not so much for its danger to health, but because hygienic restrictions keep things closed and prevent commercial activity.

Applicability of this work elsewhere: Ethnographic analysis has made it possible to find three positions on the pandemic:

- *The nostalgic:* Fishermen with this position emphasize that nothing will be the same after the pandemic and that the damage is irreversible. This causes them great sadness and dejection. Fishermen with this position pay little attention to hygienic measures and have a tendency to remain immobile because "nothing can be done due to lack of resources."
- *The conservative:* Fishermen with this position feel the alterations in their family dynamics and daily life due to hygienic measures but try to cling to their customs, traditions, spaces, and way of organizing daily life because they are afraid of losing what little they have left. Fishermen with this position feel insecure and helpless because they see their limitations and cannot solve their problems.
- *The resilient:* Fishermen with this position follow hygienic measures, examine risk factors to prevent harm, act with initiative, look for alternatives and new learning with a sense of belonging, are attentive to the news, and are interested in the various programs offered to them.

It is important to account for these positions when developing policies to help elderly fishermen.

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

Carmen Pedroza Gutiérrez: Female work in fisheries is often Ignored, Invisible, Unrecognized (IIU)

Editor's note: Carmen Pedroza Gutiérrez is a social scientist at the National Autonomous University of Mexico (UNAM). She can be contacted at carmen.pedroza@enesmerida.unam.mx.

What I am working on: My primary research interest is the gender division of labor in fish transformation activities and trade – including how this labor might empower women in decision making processes at the local level and, in turn, how income-based empowerment activities might change local gender institutions to be more egalitarian towards women's participation in the labor market. My primary goal is to account for the real value of women's contributions to the fishing industry in marine and inland ecosystems. I believe that using a gender perspective in fisheries research is the only way to generate a deeper understanding of the social processes organizing fisheries value chain activities and fully analyze coastal communities' welfare.

Potential and observed influence: Gendered structures create the environments in which we perform our everyday life activities, and this is true for fisheries economics and management as well. Understanding the factors that generate and influence the gender structures within which all value chain activities are performed is necessary for accounting for the value of women's work and achieving more egalitarian working conditions in this economic sector.

Applicability of this work elsewhere: I believe that understanding the factors that influence gender relations and gender structures provide the necessary elements to achieve a more egalitarian society in general and gender equality in the fishing activity in particular. Moreover, understanding who does what and why is the basis to understanding the importance of women's work in the fishing sector. Giving the corresponding value to female work would help to fight against the Ignored, Invisible, Unrecognized (IIU) situation which characterizes the lives of many women in the fishing sector.

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

Robert Burns and Ross Andrew: Assessing marine sanctuary visitor use should be customized to local contexts

Editor's note: Robert Burns is the director of the Division of Forestry and Natural Resources and a professor of Recreation, Parks, and Tourism Resources at West Virginia University. Ross Andrew is a postdoctoral fellow at West Virginia University. They can be contacted at Robert.burns@mail.wvu.edu and Ross.andrew@mail.wvu.edu respectively.

What we are working on: Visitor use has obvious connections to marine protected area management, as a driver of change in both ecological and economic conditions. National Marine Sanctuaries (NMS) are underwater parks in the US, federally protected for their diverse and exceptional biological and cultural resources. The [National Marine Sanctuary Visitor Counting Process \(NMS-COUNT\)](#) was developed and conceptualized to address the needs of NMS managers for visitor counting and assessment. In open water areas, many NMS sites are accessible through almost infinite locations, so a rigorous set of methods to count those visitors, assess their activities, and evaluate their expenditures related to NMS site visitation is needed.

Potential and observed influence: The NMS-COUNT process considers the local context of NMS sites, and builds off the strength of each site using local expert panels to identify the most feasible visitor monitoring solutions. Following a standardized process across four phases, pilot studies at Gray's Reef NMS and Florida Keys NMS have produced thousands of visitor observations through wide arrays of sampling techniques. Traditional observation and counting methods are supplemented with specific survey questions and non-traditional techniques for visitor counting (e.g., acoustic signals, social media data, satellite imagery classification, vessel ID tracking data). The methods best suited to a specific NMS site are pulled from the myriad of potential tools, producing a customized counting process that is tailored to the unique attributes of a specific protected area.

Applicability of this work elsewhere: The goal of the NMS-COUNT process is to provide a scalable framework for the entire NMS system within the US. A "one size fits all" approach is not effective for the diversity of NMS settings, but the NMS-COUNT process is a standardized process that can be customized to different contexts. This process has been reviewed by other academic and agency experts within the US and internationally and holds great potential for learning about visitors in marine settings that are challenging to sample.

Learn more: Learn more about the NMS-COUNT process work [here](#).
