Look Who's Asking—Reflections on Participatory and Transdisciplinary Marine Research Approaches

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Marine conservation transdisciplinary researchers often get to the field with a previously designed question, often formulated outside the actual geographical, social, cultural and ecological setting in which the research projects are supposed to be anchored. Involving people on the ground in the initial phase of formulating the questions and setting the research agenda is still uncommon. Once in the field, transdisciplinary researchers may or may not have the support of local communities to sample their data, although they will regularly need to count on these same communities if a collaborative regime is to be pursued and informed by the research outcome. This paper discusses measures that can be taken by marine fisheries and marine conservation researchers to improve participation in, and ownership of, the research by local counterparts, most importantly members of the communities where research is being conducted. The data was generated with a purposively sampled survey of 18 members of our research networks. Key proposed measures derived from this data include: (1) build rapport; (2) engage and exchange; (3) be accommodating and attentive; and (4) be respectful. Knowing who is asking the questions and assuring that all stakeholders have a voice in this process becomes especially relevant under extreme circumstances (e.g., disasters, pandemics), when problems are numerous but can only be accessed by those on the ground. We advise for faster progress in transforming academic and funding environments for true "level-playing-field" transdisciplinary and co-designed research projects that can help change top-down research tendencies.

Keywords: transdisciplinary research, research questions, marine conservation, stakeholder, participation and inclusion, co-design, build rapport

INTRODUCTION

Research collaboration is often understood as a partnership between different scientific research groups. Collaborating improves research quality and diversity (e.g., represented by different geographies), and provides new approaches to problems and different sources of knowledge. These collaborations have increasingly included transdisciplinary research, as the complexity of many societal problems expose the limitations of "traditional" disciplinary approaches. The goals of nature conservation, for example, are hardly ever achieved through a pure ecological lens, as humans make use of most of the landscapes and seascapes of the planet (Bennett and Roth, 2019).

Transdisciplinarity has become part of marine conservation, although it still needs to properly integrate both different disciplines and knowledge systems (e.g., Davies et al., 2020; Vierros et al., 2020). This means rethinking transdisciplinary approaches from question framing to interpretation of results (Bracken et al., 2015; Partelow et al., 2019; Davies et al., 2020; Freitas et al., 2020; Wisz et al., 2020).

Similarly, participatory research (disciplinary or transdisciplinary), done in collaboration with local communities, have been increasingly adopted in marine conservation (Ban et al., 2013; Foale et al., 2017; Turner et al., 2017). However, questions remain regarding the degree of participation and autonomy assigned to local communities. On the natural science side of marine conservation, participatory research has been widely driven by the necessity to collect data, rather than the necessity to connect with stakeholders. Insights from social science have led to a more emancipatory outlook, by pointing out conservation-related misunderstandings, unfulfilled expectations and social injustices, including exclusionary decision-making processes, failure to consider equity and local people's needs and livelihoods, or even dispossession of areas and resources (West, 2006, Filer, 2014; Clifton and Foale, 2017; Bennett, 2018). Since natural and social sciences have started to develop stronger dialogue around shared interests, it is expected that the next steps will be both more transdisciplinary and participatory (Davies et al., 2020).

Such a change of course is welcome, given that recent global calls invite us all to rethink conservation in general—and marine conservation in particular—in order to make it inclusive and just, from deciding what conservation wants to achieve, to how the unavoidable costs and eventual benefits will be shared (de Vos, 2020). Achieving this leap in inclusivity requires a change in focus to who is framing the research question? Are they based on local interests and within the actual geographical, social, cultural, and ecological setting in which the research projects are supposed to be anchored? Are the questions that the local people and institutions would like/need to ask being considered by academics? How do these questions translate into actual collaboration between researchers and stakeholders? Does information flow both ways (e.g., Partelow et al., 2019)? Whose lens is used to undertake the data analysis, draw conclusions, and write recommendations? Are the research questions and projects responding to local research and knowledge generation needs (e.g., Foale, 2001)? Reflecting on these questions may help guide conservation toward a transdisciplinary and participatory path where not only the academic voices and expertise are heard.

With a focus on marine (protected) areas and small-scale fishing projects, and examples from Bangladesh, Brazil, Fiji, and India, this paper aims to trigger and re-awaken the much-needed discussion on the potential overlaps between initially funded research questions, and those questions that are relevant for the local stakeholders (e.g., Marijnen et al., 2020). By drawing on experts' opinions, we discuss whether transdisciplinary participatory research is going beyond stakeholder participation in data collection (or as information providers), to being agents that also shape the process of identifying the most meaningful questions. Finally, we propose some preliminary insights on how

to improve transdisciplinary research so that it raises the profile of people on the ground (Chakraborty and Kaplan, 2020) so that their research priorities are also (inter-)national research priorities. Much needs to change for local communities to be "in the driver's seat" of research (Cripps, 2018; Schmidt et al., 2020), and making research relevant for local stakeholders could help dramatically improve conservation outcomes, by empowering communities to pursue their own nature-related interests (Peres, 2011; Barley Kincaid and Rose, 2014).

MATERIALS AND METHODS

To understand how the views and demands of stakeholders on the ground are being considered in the recent setting of research questions and agenda, we shared a survey via email among our professional networks, after identifying colleagues working in transdisciplinary and/or participatory conservation. Out of 20 directly contacted colleagues in June 2019, 18 fully completed the surveys by October 2019. We asked our colleagues to provide information from ongoing or past research projects focusing on small-scale fisheries, marine protected or managed areas in Australia, Bangladesh, Brazil, Fiji, and India. The semi-structured survey (**Supplementary Appendix**) included 22 questions on:

- Approaches and requests by the community stakeholders to investigate aspects they deemed relevant;
- Options and rationale to accommodate these whenever possible;
- Funding options;
- Consequences for the research and the rapport to the communities, the application of results, and the overall relevance of the project; and
- Researcher and stakeholders' perceptions and experiences.

We included only those colleagues who we knew were already engaged in participatory transdisciplinary conservation (purposive sampling) to understand whether and how they actually succeed in doing so. Given their scientific approach, it is not surprising that most of the researchers in the survey have been contacted by community members asking to investigate specific issues. We accept this bias (as well as the small sample size) for the purpose of this perspective, yet we are aware that in many more cases, especially in more disciplinary studies, locals' previous demands were possibly not utilized in research.

With the open feedback questions, we opted for a qualitative assessment of the information provided by our colleagues. Specifically, we sought for commonalities in the responses, which were then analyzed collectively. Some important quotes from the researchers themselves (**Table 1**) showcase key aspects, contextualities and sub-themes of their transdisciplinary work.

RESULTS

The main findings of the survey can be summarized under three main themes: (1) the need for participation beyond data collection, (2) acknowledgment and mitigation of an

TABLE 1 | Summary of insights by transdisciplinary researchers working with marine socio-ecological systems (2019 survey).

Insight	How?	Why?	Quotes
1. Invest in rapport	a. Plan for extra time b. Keep in touch	1. Participatory research depends on social relations, and these require time and effort. Building rapport is essential not only for good data, but also for meaningful data 2. Although regular meetings are difficult to organize on a regular basis, find ways to keep in touch with the diverse community stakeholders throughout the project. If on site meetings are not always possible, invest in other communication platforms (social media, WhatsApp groups, etc.) where stakeholders can discuss research results and change the course of the research, if necessary.	1 and 2. "Researchers have to approach the local people first (from all walks of life, not just the local representatives/NGOs), go on transect walks, have key informant interviews, focus group discussions—to understand the scenario. If the locals are consulted, their views are incorporated in research design and results, then there is a fair chance that local communities can be more involved and interested. For instance, I had worked on a pictorial book in Noakhali, southern Bangladesh, on climate change adaptation. After it was printed, I took back several copies for to those who we photographed and interviewed. The response was remarkable—we were able to work further with the same communities, as they saw first-hand the results of our research. " (Bangladesh, S17)
2. Engage and exchange	a. Practice truly networking b. Be ready for other points of view: there is more to it than it meets the eyes c. Be humble: they may know more than you do	1. The more you connect with local organizations, key people and local leaders, the more (reliable) information you will have access to and the higher are the chances that you will actually hear what people want to say. You may be heard better in return. 2. Involve as many stakeholders as possible to have a better grasp of the problem. Different stakeholders may frame it in different ways, according to their interests 3. This may be a hard pillow to swallow for some, but participatory research might show you that you got your hypotheses wrong. Pay attention to how stakeholders interpret facts and make connections between cause and effect.	1. "To change this, more networking is necessary, specific funding to reach both scientific and societies' demands and more integrative work among actors involved in these matters are essential features. In developing countries, where you are usually trying to survive as a researcher or an extensionist, and where effective organizational networks are usually missing, this is a very hard and usually unsustainable activity." (Brazil, S10) 2. "Fishers wished to enter the no-take zone during the swell season to catch sardines…but managers argued that fishers' presence in the MPA would affect the sharks, one of the main local (tourist) attractions. Turns out fishers increased their fishing and type of fishing (demanding the use of fresh sardines to catch tuna and billfish) due to increased tourism; i.e., MPA managers were afraid the fishers would interfere with the success of tourism, but fishers were fishing more exactly to attend their (tourists') demand" (Brazil.Fernando de Noronha). 3. "…For the identification of three priority areas for threatened freshwater dolphins in the Sundarbans, we relied on long-term information collected through a network established among captains of tourist vessels." (Bangladesh, S18)
3. Be accommodating and attentive	a. Adopt the policy of leaving no one behind (unless they ask for it) b. Be aware of power grabbing	1. The research design should have enough room to accommodate the various communities' desires and aspirations. This includes from respecting their (individual and communal) autonomy to participate or not in any phase to leaving time and funding to investigate some of their own priorities. 2. Understand the governance landscape (incl. corruption), chances are that only the powerful will have a voice, leaving others without the opportunity to express their unbiased opinions.	1a. "Maybe, after initiating research elaborated by the researchers and following presentation and discussion of the results from these studies, future research could be proposed accommodating communities' demands or directed to solve problems perceived by local people." (Brazil, S1) 1b. "…Following a survey focusing on two villages in the area, other villages felt "left behind," consequently a larger survey was designed, covering all of the 150 fisher villages in the region, with overwhelming response to this general survey had brought to light (India, Chilika Lagoon)." (India, S13) 2. "My 30 years of research in Brazil had one main obstacle: the Brazilian environmental governmental agencies. Obstacles were through visits in the sites (and punitive behaviors with fishers); through favoring prestigious politicians (in detriment of fishers), and through draconian legislation that did not have the support of researchers and fishers." (Brazil, S6)
4. Be respectful	a. Keep in mind that communities and community members are not guinea pigs b. Make promises you can keep	1. Stakeholders, especially members of diverse communities, are not the means to answer the research question. If they feel used and not see why they should participate in your research, not only your project may fail, but you may close the doors for future truly participatory research. 2. Scientists often have little decision-making power, but the beginning of a research project can create expectations of how the responses will change the locals' lives (for better or worse). Managing expectations is crucial for maintaining reliable relationships	"… it is extremely important to address issues to deal with the socio-ecological problems of fishers and including them in real time policy making as a core to understand what will be sustainable in terms of problem solving and also projects. If they are not included in the mainstream financial systems and keep on only being the tools of testing many theories from conservation to climate change adaptation, none will be sustainable. It's probably not about choosing from any one of them (popular or scientific). It is the amalgamation of both to tackle problems." (Bangladesh, S12)

agenda mismatch between funded and needed research, and (3) emphasizing the power of the transdisciplinary processes of learning together.

Participation Beyond Data Collection

Among the interdisciplinary researchers surveyed, local participation goes far beyond data collection, provision of information and valuable support in fieldwork (**Table 1**). Yet, often, there is still no clear acknowledgment of the stakeholders' role in transdisciplinary research beyond data collection and provision of information. Hence, how can we move toward having local communities as agents that help identify meaningful research questions and co-develop research protocols? And how can research institutions accommodate projects and allocate funding that integrate local knowledge and requests, and use these for innovative future research pathways (e.g., Outeiro et al., 2019; Davies et al., 2020).

> Research needs to evolve and first and foremost researchers need to expand their horizons. As researchers, we often start with our hypotheses and take it to the field site and try to test and find answers around it. I think that needs to change and made more relevant to the local context. (Bangladesh, S17).

Working with researchers who intend to have locals' participation from the beginning shows us that this approach is indeed possible—albeit often complicated. To have people involved, from the designing of ideas, field research, and interpretation of results requires a broad understanding of existing networks and socioecological relations. For example: what marine resources are used? How are these harvested? What is the cultural and economic importance of each resource? The aspect of spending "free time" (i.e., additional time to the initially planned research time) in the communities to build a relationship, trust and to be accessible as researcher is therefore vital. Most local communities *are* indeed interested, but are tired of promises, research visits without visible effect and no support. According to our colleagues, more transparent consultations are needed, with real intentions to incorporate the information gathered (**Figure 1**).

> "In my experience most projects use consultative meetings only to comply with donor or Government requirements, rather than to actually address concerns, discuss potential benefits and evaluate impacts. Due to these lackings, community meetings are generally viewed as presentations by NGOs rather than a two-way information-sharing platform." (Bangladesh, S18).

This includes being prepared to acknowledge the fact that stakeholders may understand their resources better than many researchers. It is also important to be flexible with initial research interests and demands—as they may not be compatible with local demands—and try to reduce the gap between the priorities of the research project and the priorities of the stakeholders. This is also what is meant by co-designing research, which remains difficult (e.g., Polk, 2015; Sugiyama et al., 2017). The researchers from the survey know the types of settings that can make it difficult to generate a whole "community perspective" on the research questions they might like answered. These settings can include

aspects related to the heterogeneity of stakeholder groups (e.g., age, gender and profession), local politics (sometimes old or fresh conflicts), socioeconomic problems, local power asymmetries, financial obligations and hurdles, or differing environmental perceptions. Therefore, if a project is supposed to be collaborative and transdisciplinary, this should be made evident throughout, and such an engagement and research relationship cannot be rushed; it takes time and hence requires longer project cycles. Time that usually does not exist if the study is guided and funded by conventional research approaches, where scientists are majorly assessed and graded on bibliometric indicators of performance (Bornmann and Marx, 2014). Specific and accommodating research calendars, funding deadlines, previous trips and meetings are needed to define the logistics of a project, as well as the demands and engagement of the involved persons.

An Agenda Mismatch

There is mismatch in the marine research agendas on several levels. First, there is a clear geographic mismatch between where the research is designed and funded, and where the urgent research needs are (Oliveira Júnior et al., 2016). Also, while scientists from developed countries tend to have the funding to carry out the research, it has been argued that local scientific knowledge and scientists from developing countries are the ones capable of better linking up the research findings with policy makers and have a better understanding of local stakeholder needs (Cvitanovic et al., 2015). Lastly, the funding bodies or donors, which often are from developed countries, have different agendas (e.g., poverty, gender, environment), which do not necessarily consider the interlinkages between these issues in the geographic foci of the research (Oliveira Júnior et al., 2016).
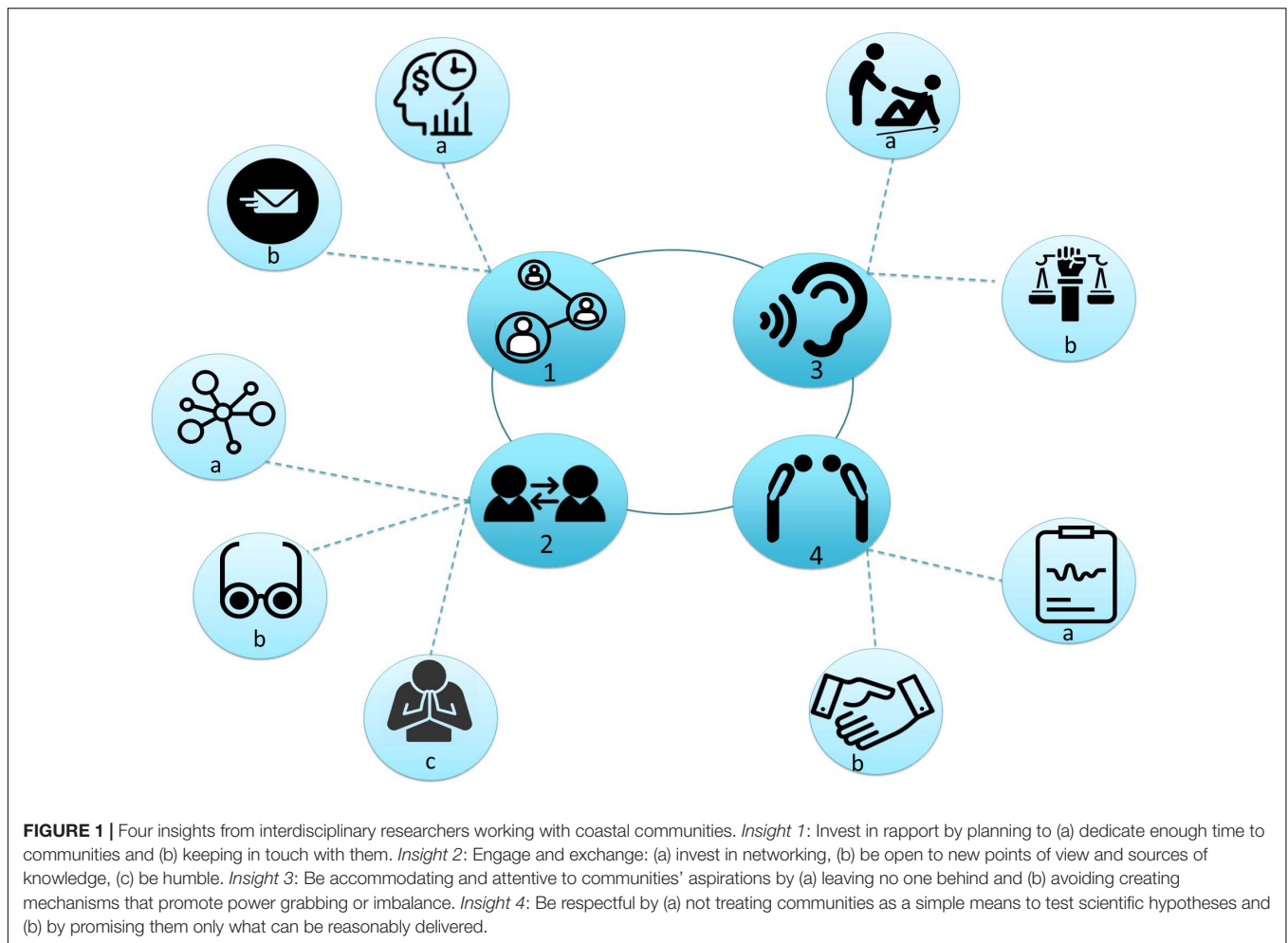
> "Specific funding to reach both scientific and societies' demands and more integrative work among actors involved in these matters are essential features. In developing countries, where you are usually trying to survive as a researcher or an extensionist, and where effective organizational networks are usually missing, this is a very hard and usually unsustainable activity." (Brazil, S10).

There is also mismatch between project timeframes and allowing the flexibility and time to build in local demands. Rapport remains one of the most important moments of applied research. If we want to include "popular demand" in our research, we need to spend time listening to people and building social relations. A deeper understanding of local social-ecological system is needed to build strong hypothesis and approaches. This includes providing robust training to students and researchers interested in social-ecological applied research, encompassing the need to include local demands in research and building rapport, and how this can translate into actual collaboration between researchers and stakeholders.

Learning Together

The accumulated experience of transdisciplinary researchers has therefore taught them some powerful lessons, which we summarize here in four interrelated pieces of insights (**Table 1** and **Figure 1**).

FIGURE 1 | Four insights from interdisciplinary researchers working with coastal communities. *Insight 1*: Invest in rapport by planning to (a) dedicate enough time to communities and (b) keeping in touch with them. *Insight 2*: Engage and exchange: (a) invest in networking, (b) be open to new points of view and sources of knowledge, (c) be humble. *Insight 3*: Be accommodating and attentive to communities' aspirations by (a) leaving no one behind and (b) avoiding creating mechanisms that promote power grabbing or imbalance. *Insight 4*: Be respectful by (a) not treating communities as a simple means to test scientific hypotheses and (b) by promising them only what can be reasonably delivered.

Insight 1 regards the need to invest in rapport in order to truly listen to those on the ground. This requires, for example, establishing meaningful partnerships. It takes time to build meaningful rapport with communities (again, problematic for time-constrained research calls) and once it is established, it needs to be nurtured (Abbe and Brandon, 2014). Transdisciplinary researchers seem to be aware of that and often maintain their fieldwork on the same site for many consecutive research rounds, which also helps them see more tangible results. Meanwhile, during and in between research periods, it is important to stay in touch with the communities to maintain the rapport.

Insight 2 pertains to the need to engage with communities and exchange knowledge. This begins with acknowledging the power of networking to facilitate not only knowledge exchange, but also trust building. For example, during the COVID-19 pandemic, much of fieldwork has been stalled (Sastry et al., 2020), except for studies that rely on strong connections with those on the ground, be they NGOs or fishers' associations (authors' own experience). From the local perspective, networking may also represent a chance to have access to external support during an unexpected crisis, as the one caused by the pandemic. Better connected communities are likely to have been more engaged in relief campaigns during this crisis, for example, as researchers reach

out to their partners and advocate for immediate action (Bennett et al., 2020). Networking may also represent an opportunity for knowledge co-production and for knowledge exchange in general (Reed and Abernethy, 2018). Knowledge sharing is a two-way street if researchers and communities are ready for it (Johannes et al., 2000; Mauser et al., 2013). Accepting that we have incomplete knowledge or a biased view is not necessarily easy, but it can build bridges and also accelerate knowledge accumulation (Butler et al., 2012).

"What I understood from my experience is, currently for Bangladesh fisheries sector, it is extremely important to address issues to deal with the socio-ecological problems of fishers and including them in real-time policy-making to understand what will be sustainable in terms of problem solving and also projects. If they are not included in the mainstream financial systems and keep on only being the tools of testing many theories from conservation to climate change adaptation, none will be sustainable. It's probably not about choosing from any one of them (popular or scientific). It is the amalgamation of both to tackle problems." (Bangladesh, S12).

Insight 3 refers to the need to being accommodating, including when faced with unpredictable situations related to the interaction of coastal communities. This comprises, for

example, the flexibility to include or exclude community members, respecting their agency and based on Free, Prior and Informed Consent, or the sensitivity to perceive that favoring some in detriment of others can lead to power grabbing (Green and Adams, 2015). Based on the authors' own experience, it is normal that the first to join an initiative are the most articulate and confident individuals, and/or those related to leadership. Although it is positive and often necessary to have the support of leaders (Gutiérrez et al., 2011), true partnerships should encourage wide participation and power balance within the limits of the initiative.

Directly following from this, Insight 4 regards being respectful of communities' expectations and desires. It is important for researchers to know that once dealing with people it is not acceptable to simply see them as means to test hypotheses. People need to know what they are getting into and accept to join or not based on a realistic picture (Suich, 2013). It is normal that communities want to see fast results or changes in legislation, but these are often beyond the immediate capacity of researchers, and this should be clear from the outset.

(A HOPEFULLY NOT FINAL) DISCUSSION

Some of the main challenges faced by those who want to advance a participatory transdisciplinary agenda include: (1). how to continue a project long enough to accommodate local research demands, (2). understanding the importance of the local social-ecological setting and knowledge, and (3). keeping the promises to the communities one is working with. These challenges are especially due to inherent funding limitations and project durations that do not accommodate for truly interdisciplinary research while demand researchers to perform according to bibliometrics indicators. Also, these challenges can be worsened by embedded local socioeconomic problems, such as local violence, lack of health care services, and wider issues around inequality, corruption and poor governance. Thus, it may be the case that the immediate and urgent local demands at low levels of local organization are not directly related to the researcher's questions. In addition, the time investment required by local people to propose research questions must be noted, as not all of them may be willing to make such personal investment, at the expense of their regular activities.

Despite these limitations, to integrate scientific and popular demand for science, it is cardinal to have a productive team of people who can try relentlessly for innovative ways to answer questions and keep the primary resource users' demands and necessities also at the core of the research. Secondly, current research funding models will need to be flexible enough to accommodate such dynamic processes of research and engaging with local communities, keeping research away from something resembling a "donor culture", where the wishes of the donor are to be granted even if they disrespect or ignore local cultures (West, 2006). We are already seeing the need for such flexibility with the recent COVID 19 pandemic, as both funding bodies and ongoing funded projects are having to adapt the focus of their work to meet the new demands caused by the pandemic on local communities. At the same time, COVID 19 has highlighted the importance for academics of having partners in the communities they work with. Thus, without disregarding the significant changes of the last decades that favored more inclusive approaches (e.g., Massarella et al., 2021), the time is ripe for a paradigm shift that will truly include those who are at the forefront of ocean conservation: from framing research questions onward.

DATA AVAILABILITY STATEMENT

The original contributions presented in the study are based on findings from the article/**Supplementary Material**, further inquiries can be directed to the corresponding author/s.

ETHICS STATEMENT

Ethical review and approval was not required for the study on human participants in accordance with the local legislation and institutional requirements. The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

The study was jointly designed and developed by AB, PL, and SS, as was the methodology. The survey was mainly conducted by PL and SS with their respective colleagues. The analysis was done mainly by AB, and the manuscript was structured and written jointly by all authors.

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SUPPLEMENTARY MATERIAL

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fmars.2021. 627502/full#supplementary-material

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