ICES Journal of Marine Science, 2025, Vol. 82, Issue 6, fsaf086
https://doi.org/10.1093/icesjms/fsaf086
Received: 17 December 2024; **revised:** 21 May 2025; **accepted:** 23 May 2025
Stories from the front lines

Learning from the oceans' interconnectedness: matters of *writing* and *publishing* in interdisciplinary scholarship

Andrea Franke * **and Kimberley Peters**

Helmholtz Institute for Functional Marine Biodiversity at the University of Oldenburg (HIFMB), 26129 Oldenburg, Germany

*Corresponding author. Andrea Franke, Helmholtz Institute for Functional Marine Biodiversity at the University of Oldenburg (HIFMB), Marine Governance Group, Im Technologiepark 5, 26129 Oldenburg, Germany. E-mail: andrea.franke@hifmb.de

Abstract

The recurring recognition of the inseparable interconnection between societies and marine environments has led to the desire to move beyond traditional silos of scientific understanding. Integrating discrete disciplines from marine social and natural sciences is increasingly attempted to tackle cross-boundary research challenges. Consequently, much literature focuses on *why* and *how* to design and implement interdisciplinary projects. There is surprisingly less attention to the delivery of such projects—how to *write and publish* their results. Drawing from our writing and publishing experiences within different interdisciplinary projects, we shed light on the challenges we are facing and how to overcome them. We reflect on why good interdisciplinary writing matters and demonstrate the omission of work on writing and publishing in interdisciplinary teams in marine science literature, before we offer guidance towards effective writing relationships. Better understanding diverse writing and publishing traditions is essential in harnessing the full potential of cutting-edge interdisciplinary marine scholarship. Writing from the front lines as a marine social and a marine natural scientist, this paper mixes academic styles: third person narration with first person testimony, to argue that writing challenges need to be openly discussed and to showcase how to work towards successful integration.

Keywords: integration; interdisciplinary writing; marine social sciences; marine natural sciences; societal challenges; solution-oriented; ocean sustainability

Writing struggles: an introduction

This is a paper of how we—one self-confessed marine social scientist (Kim, a human geographer) and one self-defined marine natural scientist (Andrea, a fisheries biologist)—write collaboratively. Our motivation in developing this piece came from our experience of writing together which finally resulted in a paper on marine Real-world Labs (Franke et al. 2023) but not without some serious complications rooted in fundamentally different writing cultures.

While interdisciplinary collaborations, across marine social and natural sciences, attending to cross-boundary research challenges (such as advancing marine sustainability), are well described (e.g. Ommer 2007, Markus et al. 2018, Bennett 2019), there is surprisingly little information on how to deliver their results. How to jointly write and publish interdisciplinary work is a blank page. Yet, being capable of writing together is essential for integrating and disseminating such research outcomes.

In what follows, we draw from our experiences of writing in various interdisciplinary teams and offer guidance towards respectful, productive and effective writing practices and relationships between different marine sciences. It is our hope that our story of overcoming our writing struggles—time and again—provides comfort, encouragement, and insight for others who are writing across and with different disciplines and may be struggling as well. Ultimately, we aspire to help other interdisciplinary teams—specifically consisting of social and natural scientists—to overcome barriers of divergent writing philosophies and potential conflicts to explore the full potential of their cooperation.

In the next section, we relay our stories, in conversation with one another, from the front lines, of how we write in our disciplinary homes and how we came to write together—badly—before finding resolution. We then shift gears to a more conventional format, briefly introducing the necessity for interdisciplinary marine research, highlighting the lacuna of attention towards writing in interdisciplinary teams. Leapfrogging from this, we then set out the potential difficulties of writing in interdisciplinary teams and notably put forward strategies for overcoming such challenges. We then conclude.

We produce a paper that is not in the spirit of one author, or the other, but brings together our styles to examine considerations for writing in interdisciplinary teams. We meld the styles we use, as two scholars from different fields, who communicate research in quite different ways—one more systematic, one more discursive—two ways, one goal. Importantly, we do not reify the stereotyped differences in style between 'social' and 'natural' sciences and, in our personal accounts, show the nuance in these fields which are not homogeneous or sealed in their approaches. Drawing on our experiences, though, we show there *are* differences in how disciplines write and that these do impact dissemination aims. Of course, there is more to be said on writing in transdisciplinary teams—with non-academics—but this is beyond the scope of the paper. Here, we focus on interdisciplinary challenges and hence considerations

of writing across disciplines respectfully and productively. So, to our stories.

Two stories, in conversation

Andrea

I am a marine and fisheries biologist by training with a focus on experimental work with fish early life stages (Franke and Clemmesen 2011, Franke et al. 2017, Franke et al. 2024). In the natural sciences, writing is often structured and very systematic, which does not mean it is easy. Articles are usually divided into an abstract, an introduction, materials and methods sections (in some journals at the end of the article), results (including graphs and tables showing the data), discussion, and usually a short conclusion or summary and of course acknowledgments and references. How I am writing matters because I want to describe my research as clearly as possible. If I fail to explain my work well, the readers can hardly understand how the fish larval experiment was performed or how data were analysed and they might lose interest. For me, reading precedes writing, to get to know the state of the art in my field and to avoid running experiments that have been performed already. Once I am actually writing a manuscript, there is still a lot of reading.

Kim

In the social sciences, at least in the discipline where I work and undertake qualitative research, papers will be prose-heavy. And long! I am a human geographer by trade and training, taking this expertise in geopolitics and territory to the ocean (how do relations between states shape marine governance measures? How is geographical space enrolled in management measures, such as creating restoration zones like Marine Protected Areas?). Some social science work is of course quantitative in scope and writing up can be more akin to the natural science structures of write-up that Andrea just outlined. However, in qualitative fields, writing can look (even visibly on the page!) quite different. This is because research is not the presentation of statistical results, tables, graphs, and so on. Not unlike the natural sciences there will be an introduction, stating the purpose of the paper. However, before this, I, myself might begin a paper with a vignette from the research—some quotes from my research participants. I might loop my literature review, theory and methods together, in acknowledgement that thinking and practice are not separate. Notably, there are almost never separate results and discussion sections. It would not be fitting to present qualitative results (which might be interview quotes, oral history stories, photos, diary excerpts, or archival materials) and then discuss them some pages later. Readers would be flicking back and forth. It is more practical to integrate the results with the discussion. Like Andrea though, writing means clarity—and a lot of reading. My research might not involve lab experiments, but I still have to make sure I am making a novel contribution to the marine field and not repeating research that has already been done before.

Andrea

Being an experimental biologist working with marine fish larvae means to design and run experiments to answer certain research questions that are usually hypothesis-driven. These experiments can be solution-oriented, e.g. in applied fields like aquaculture or curiosity-driven to answer fundamental research questions, e.g. about the acclimation potential of fish larvae to climate change. The motivation and background of my research is described in the introduction of a paper, the experimental setup, lab work, and statistics in material and methods, the results are statistically analysed and shown in different figures and finally discussed. If the results are not statistically significant, i.e. have a P-value >0.05, the treatment (the factor that was tested, e.g. a higher temperature) had no significant effect. To my knowledge, it is not possible to publish non-significant results in high-ranking journals, sometimes it is even impossible to get them published in a peer-reviewed journal at all, which signifies a tremendous loss of valuable information. In my experience, the first author is responsible for coordinating the writing process between the co-authors and editing the text in the end to ensure coherence. Peer review in marine and fisheries biology is usually single-blind, which may lead to bias and loss of objectivity in contrast to a double-blind process where the authors and reviewers do not know who the other ones are. Once a manuscript is submitted and hopefully not rejected, there will be minor or major revisions led by the first author.

Kim

Being a qualitative researcher means I am interested in the world in all its complexity, all its messiness—in the 'small' stories (Lorimer 2003), the personal experiences, the individual opinions, beliefs, and emotions that shape how our oceans are managed (Bennett 2019, Bavinck and Verrips 2020, McKinley et al. 2020). I never start with a hypothesis that can be tested—proven significant or not; right or wrong, because I am interested in subjective worlds of experience—the ways different people engage the issues facing our oceans (other social scientists of course will set hypotheses). As a marine governance scholar, I am driven in disrupting the idea that governance mechanisms—law, policy, and guidance—just exist. Rather, I am interested in the formulation and operation governance. Who writes marine law and policy, who implements it? What structures of power determine the way we envision our ocean futures? What privileges allow some people a voice in deciding what 'good' policy looks like? Whose voices are excluded? Such questions demand that we think about concepts such as power, justice, inequality, and exclusion (Satizábal 2018, Figueroa et al. 2023). This kind of research allows us to talk about the fundamental issues: problems, limitations, even failure in marine governance (Cvitanovic et al. 2022).

Andrea

After my PhD in marine larviculture, I got the opportunity to work on one of my favourite topics: Ocean Health. I got to talk to so many different natural *and* social scientists and had absolutely fascinating conversations and discussions. We organized the symposium 'Integrated Science for Future Ocean Health and Recovery' in 2018 and wrote an interdisciplinary paper together (Franke et al. 2020). And I loved it. Seeing through other people's eyes, bringing all these different perspectives *together*, gathering complementary information. All of this just felt really meaningful even though I realized that some researchers, with strong disciplinary roots, hardly see the added value of marine inter- or transdisciplinarity. I was advised to better go into project management instead of being a marine scholar, because very likely no one would hire

someone working in and on interdisciplinarity as a researcher. This was the worst moment of my career. However, it's never going to take away these mind-blowing evenings when I called the environmental ethicist, one of the co-authors on our paper and asked him to please explain to me what his text means, so I could 'translate it' for a broad readership.

Some contracts later, now at another institute, Kim and I wrote a paper about marine Real-world Labs (a transdisciplinary research method for exploring options for sustainable ocean futures). We wrote this together with other senior researchers of various scientific backgrounds (Franke et al. 2023). I was excited but this time the writing got much tougher. It often took longer than I was used to until my co-authors answered my emails or wrote their parts for the manuscript. And after we got the reviewers feedback, some authors didn't help to work on the revision. It was really frustrating. And it took too long. Being on a fixed-term contract means that the clock is always ticking. And then, I got an email from Kim. She had put so much excellent and essential work into this manuscript but now she didn't want to be part of it anymore. I couldn't believe my eyes.

Kim

I was really on board with the paper and I liked Andrea's approach. She superbly herded a collective of authors (who were like stray cats), with energy and commitment. She took the helm, and after a difficult set of detailed reviews, she positively responded. She shared the paper for further comments and feedback. There were elements of the paper, in the mixing and melding of thoughts, traditions and approaches to researching the ocean and finding 'solutions,' that I started to feel unsure about. I felt a discomfort making hard and fast recommendations on a technique that was experimental—a 'real-world lab.' Who was doing this research, what colonial traces endure in efforts of experimentation? I normally only wrote with other critical social scientists and these issues are well acknowledged. I also didn't normally write in a team this big. I wrote Andrea an email, probably when I was tired, and my thoughts not as lucid as they could have been. I remember opening her reply and thinking 'shit: I've really offended her.' I felt wretched. I'd made her feel wretched. Somewhere along the line, I'd not acknowledged her hard work, not made clear my own concerns. And notably, had miscommunicated the way forwards in what sounded like I was disappointed in her work and that I was threatening to 'leave' our paper. I tried to work out how I had done this and as a scholar who usually considers themselves to be thoughtful in engaging colleagues. Where had I gone so wrong? We talked—she let me talk, she talked. We discussed. We had some of the best conversations of my career—academic (learning we were on the same page), and professional (in learning how to work together). We made it through. That paper, when it came out, gave me goose bumps because I knew what was behind it—so many writing challenges, which we had overcome.

Andrea

And then Kim asked me if I wanted to write a paper with her about the challenges of writing in interdisciplinary teams—specifically consisting of marine social and natural scientists—and how to overcome them. I loved the idea and I said yes immediately!

We tell these stories in conversation, not to generalize an experience of interdisciplinary writing but to showcase our own struggles, misunderstandings—and resolutions. It became crystal clear to us that we *are* in different disciplines, not only with different research approaches and understandings—but also with divergent writing and publishing traditions. It makes sense then that writing deserves more attention.

Writing is the way in which the research we do, and the knowledge we create, is shared and novel research ideas are proposed to acquire funding. How people read it, encounter it, engage it—what they think of it—shapes its effectiveness. But how can we best write collaboratively in interdisciplinary teams, when we have different approaches deeply rooted in diverging epistemologies (Moon et al. 2021)? It is strange, given the importance of writing, that as marine scholars of different dispositions and disciplines we talk so little of writing together. It is even stranger as we come to collaborate all the more frequently—and are demanded to do so at the direction of funding councils—to reach common marine goals collectively. In an attempt to start filling this gap, we write this manuscript, turning next to the existing literature, which supports our point.

The 'writing gap' in interdisciplinary marine scholarship

In spite of distinct and singular marine disciplines having continued importance, when thinking about the 'grand challenges of our time' and the role the ocean is playing to ensure food security and health, combat climate change and counteract ecosystem destruction, it becomes apparent that a holistic understanding and therefore an improved *integration* of scientific disciplines is crucial not least in marine research (see, e.g. Sustainable Development Goal 14 'Life below Water'). The oceans are spaces of politics, culture, economics, history, and biodiversity—of resources for nourishment, monetary gain, and mental health (Lombard et al. 2023). Indeed, our well-being is inextricably linked with the seas and coasts in a physical and emotional sense (Franke et al. 2020, Levi and Peters 2024). Understanding marine worlds as interconnected—both socially and ecologically—is therefore vital (Hau'ofa 2008, Refulio-Coronado et al. 2021). However, existing marine knowledge is not only far from complete, it is also fragmented by various boundaries (Markus et al. 2018, Cooke and Arlinghaus 2024). In order to work towards ocean sustainability, an integration of the marine social and natural sciences and humanities is thus indispensable.

When teams integrate 'information, data, techniques, tools, perspectives, concepts or theories from two or more disciplines or bodies of specialized knowledge,' with the goal of advancing 'fundamental understanding or solving problems whose solutions are beyond the scope of a single discipline or area of research practice,' we speak about interdisciplinary research (NSF 2024). Interdisciplinary theorists Julie Thompson Klein and William Newell point out that 'interdisciplinary study is not a simple supplement but is complementary to and corrective of the disciplines' (Klein and Newell 1998). Working in an interdisciplinary way can be seen as a thought process that leads to a better understanding of a phenomena or problem that cannot be solved by one discipline alone (Hübenthal 1994). It requires an extensive learning process that takes place on three levels: between individuals, between disciplines, and between types of knowledge

(Haapasaari et al. 2012). Ultimately, interdisciplinarity can lead to solving complex issues of societal relevance by connecting the partial explanations of different disciplines and sciences with one another (Hübenthal 1994, Frodeman et al. 2017).

With respect to ocean sustainability, the same progression can be witnessed. Marine issues and people, cross borders and move, and studying the ocean from only one perspective creates gaps in understanding the processes of change, of struggle, of catastrophe and potential. Hence, there is a strong desire to move beyond traditional silos of knowledge to a holistic understanding of the ocean cemented in policy fields and initiatives, such as the UN Decade of Ocean Science for Sustainable Development ('the Ocean Decade,' 2021–2030). Increasingly, marine disciplines and topics are combining or merging. There are a vast number of articles that explain *why* integrating marine social and natural sciences is a necessary task (e.g. Christie 2011, Rudd 2014, Markus et al. 2018, McDonald et al. 2018, Blythe and Cvitanovic 2020). However, due to the high level of specialization in single disciplines, it takes time and energy to work in an interdisciplinary way, to understand other fields of research and to integrate and jointly advance knowledge. As such, much has been written on the effort of interdisciplinary collaboration between natural and social sciences in the marine sciences—*for whom* it matters, its challenges, recommendations *how* it may be achieved (e.g. Christie et al. 2017, Ommer 2018, Bennett 2019) and even considerations for early career researchers in the marine sciences in developing interdisciplinary careers (e.g. Andrews et al. 2020, Deininger et al. 2021). Papers also focus on how to achieve effective knowledge exchange and integration conceptually and methodologically as well as practically through dialogue and collaboration rather than just transferring knowledge between disciplines (e.g. Fazey et al. 2013, McDonald et al. 2018). In many of these papers, there are recommendations or roadmaps towards interdisciplinarity and to navigating it once there.

Yet, the literature focuses on how to *do* interdisciplinary work, not how to *write and publish* it at the end. Literature on interdisciplinary writing for academic publications is extremely scarce and almost exclusively exists in the context of interdisciplinary study programmes (Wolfe and Haynes 2003, Boix Mansilla et al. 2009, Dezure 2017, Repko and Szostak 2017, Bergen et al. 2020). However, most marine scholars have studied a specific discipline (and often stick to it) as interdisciplinary marine study programmes are rather new and still rare. This raises the question of how interdisciplinary teams, coming from different scientific worlds with their own writing conventions, find common ground to be able to clearly articulate their research together? Notably, matters of writing and publishing are somehow just assumed, and most often, absent from discussion. The *how* seems to be a given and not just in the marine sciences, but in publications about interdisciplinary work per se. What is more, writing, in general, is largely under-examined in most academic scholarship (Peters 2017). As researchers, we are trained in our research—in modes of theoretical understanding and the very methods, tools, techniques, and approaches we use in data collection and analysis—but writing is just something we *do*. Yet, as the scholar Dydia Delyser (2003) says, ultimately, we are all writers. How remiss, then, that really, we spend so little time talking about the very thing that is the mechanism for sharing the toils of our research: *writing. Publishing.*

There are, thankfully and reassuringly, an increasing number of graduate workshops on writing and 'how to guides' for publishing—but those are often limited to certain disciplines or specific sciences. Consequently, when writing in interdisciplinary teams, authors may be confronted with a clash of contrasting styles of writing and often have to realize that they do not even speak the same academic 'language.' The differences between writing cultures can be substantial and can lead to severe frustration and conflicts ultimately jeopardizing outputs (as was almost the case with our paper on marine real-world labs). Indeed, writing together can be seen as the final challenge in the process of interdisciplinary cooperation. Yet, literature about *how* to overcome these challenges and conflicts remains rare. Therefore, the focus of our paper is on the latter.

It is our contention that a vital discussion on interdisciplinary writing and publishing is needed in the effort towards realizing the potential of cutting-edge, interdisciplinary marine science scholarship. If we cannot collaboratively write together and understand our writing approaches, traditions, and publishing processes, we may fail at attempts to adequately convey and share research. The motivation behind writing this article is to build a bridge and start filling the gap.

Matters of writing and publishing together—as we, and others, see them

What constitutes 'good writing'? And *who* gets to decide? It appears that 'good writing' for marine social and natural scientists can look quite different. But how do we bridge this gap when writing together? And how do we make sure that readers from all backgrounds understand what we aim to convey? Is it even possible that we understand each other while speaking different (academic) languages, using different terminologies and definitions? Our ways of writing can indeed differ so profoundly that co-authors don't even agree what 'good writing' is; however, we all have the same goal: to communicate our research and publish. So, how can we work together as a team and create meaningful collaborations to improve marine governance and sustainability?

There are a variety of tensions and challenges in writing across divides. For example, on the one hand, for some qualitative social sciences writing *is* slower—and scholars in (some of) these fields argue we *should* write slowly (Mountz et al. 2015). On the other hand, marine biologists usually like to analyse, discuss, and publish their data as fast as possible (to avoid someone else publishing similar work in the meantime). There is hence a question of speed. In addition, in the natural sciences 'materials and methods articles' are a standard format, while many social scientists work with qualitative data and present their research differently, with more creative structures. So, how do, can and should we meld styles?

There is also the overarching challenge for many Early Career Researchers, on fixed-term contracts, where the inherently lengthy timelines of interdisciplinary processes and trials of collaborative writing may lead to scholars being deemed as 'less productive' against the norms and expectations of outputs that exist within disciplinary domains. Further problems arise when interdisciplinary work is only seen as an 'add-on' and not as an expertise on its own (Lindvig and Hillersdal 2019).

Yet, researchers who publish interdisciplinary work are more likely to produce either frequently-cited or rarely-cited

Figure 1. Quotes from the Marine Governance Group discussion on interdisciplinary writing.

works (Leahey et al. 2017). How do we deal with these additional hurdles, extra cognitive effort, and 'high risk strategy' of interdisciplinary writing?

In 2022, off the back of our writing endeavours together, we began discussing all of these issues—and, with increased fervour, the need for a paper like this one. We had to make sense of how our own miscommunications, disappointments, and concerns, had emerged and how we still ended up producing a paper we both liked, and were proud of, in content, style, and contribution to marine integrated research. Were other scholars engaging in interdisciplinary marine science, also caught in such tricky writing spots? Were they, like us, muddling through, or not like us (as we had frank and open conversations), suffering in silence and eventually giving up? Was there frustration brewing in the effort towards interdisciplinarity that could be lightened with sharing our experience, highlighting, and acknowledging the problems and offering recommendations from our own modes of overcoming writing and publishing adversity?

In the interdisciplinary marine institute in which we work, there are various forums for sharing our work, to test out ideas, ponder problems and gain feedback. We discussed the idea for this paper in one of the regular Marine Governance Group meetings, Wednesday morning, 9 a.m., to see if our colleagues were confronted with similar issues when writing in interdisciplinary teams. Would the group be as enthusiastic and get 'stuck in' to such a discussion? The answer was yes. The conversation was rich, detailed, long. Everyone spoke. We realized in this moment that this paper was necessary: that others of us were also thinking about matters of writing and publishing across disciplinary divides.

In Fig. 1, we draw from experiences and ideas of the Marine Governance Group—including human geographers, political ecologists, marine ecologists, anthropologists, marine governance scholars, environmental science, and marine science-policy experts—who generously shared their own thoughts on the topic. We present quotes to echo various voices and perspectives, to raise awareness but also to offer comfort and reassurance, and as a roadmap to how we might (in the final section of the paper) overcome some of these matters towards writing together.

Ways ahead: considerations and suggestions on how to write and publish in interdisciplinary teams

We first discuss essential *prerequisites* for interdisciplinary writing processes before we outline the *specific stages* of writing and publishing.

Awareness, openness, and communication

One of the major points about interdisciplinary writing and publishing is that it is not a singular topic. It is 'a way of testing, probing, thinking and learning' (Hamilton 1980). It is multifaceted and complex like the ocean itself. It requires interdisciplinary thinking and learning. As such, writing has to be understood 'as a process interwoven with the stages

Figure 2. Interdisciplinary thinking and writing requires bridging plural values, understandings, writing cultures, and disciplinary languages existing in the marine social and natural sciences. The curiosity, awareness, interest, respect, recognition, and open-mindedness of all co-authors are a prerequisite to build trust and find common ground.

of all learning' (Hamilton 1980). Writing together with authors from various disciplines necessitates the awareness that their beliefs, practices, and cultures may differ (Brammer et al. 2008). Our epistemologies and ontologies—ways of knowing and doing research—depend on our disciplinary roots and may differ significantly between marine social and natural sciences, e.g. if researchers take different philosophical positions on what they understand to exist in the world (e.g. a realist or anti-realist position, see Peters (2017) for further information). According to Newell and Green (1982), 'disciplines are (…) distinguished from one another by the questions they ask about the world, by their perspective or world view, by the set of assumptions they employ and by the methods which they use to build up a body of knowledge (facts, concepts, and theories) and a certain subject matter.' Seeing the ocean differently means writing about it differently. This can create misunderstandings and conflicts as we have experienced in our collaboration. We realized that embracing heterogeneity, respecting and 'learning about others' values, particularly regarding the (…) practice of writing' is fundamental for a mutual understanding (Brammer et al. 2008). Genuine interdisciplinary writing—based on openness, attentiveness, and care—takes extra time and energy (Hamilton 1980). The goal is 'to move beyond the customary explanation and categorization of what constitutes good writing' (Brammer et al. 2008). To realize how our ways of thinking and writing can enrich and complement each other is an essential step as the lack of a common understanding of and approach to interdisciplinary writing undermines the ability of researchers to work towards finding sustainable and inclusive solutions for complex issues (Lowry et al. 2004) such as marine governance. In interdisciplinary scholarship, it is important *not* to see writing as a simple 'end goal' of dissemination but consider it as a process that is part of collaboration and requires time and patience. This also means that there is no 'one fits all' recommendation, no simple recipe.

Open team communication is key to create a transparent process and, especially, to mediate in case interpersonal tensions arise from disciplinary differences. The communication of an interdisciplinary team goes beyond mere knowledge exchange. Building *trust* and relationships on eye level is essential to establish a healthy communication culture and avoid imbalanced power dynamics (Fig. 2). Enough time has to be allocated to facilitate a process of negotiation where every input—concerning the seas, coasts, and their human dimensions—is equally valued, carefully listened to, and reflected (O'Rourke et al. 2023).

A common ground to integration

Arguably, the integration of perspectives, concepts, theories, tools, or data from various marine disciplines during collective knowledge production is the greatest challenge in interdisciplinary research and is '(…) seen as the litmus test of interdisciplinarity' (Wolfe and Haynes 2003). As the plurality of knowing and doing in interdisciplinary efforts includes also different views on integration, the question of *how* integration may be achieved is a matter of ongoing debate and research (Frodeman et al. 2017, Repko and Szostak 2017, Bammer et al. 2020, Horn et al. 2023). Moreover, it can be argued that the complexity of integration directly corresponds to the complexity of the addressed problem. Developing common ground and a clear joint vision through team learning is facilitated by 'thinking through differences in interpretations and underlying assumptions, resolving conflicts and creating a shared new understanding of the problem' (de Bakker et al.

2019). Bammer et al. (2020) 'argue that some team members must have expertise in research integration and implementation to effectively harness the contributions of the full team.' The major steps of *integrating* interdisciplinary research—as a prerequisite to writing—can be summarized as: defining the problem, forming a team to gather knowledge of relevant disciplines, engaging with other disciplines, jointly evaluating disciplinary insights in the context of the specific problem, resolving possible conflicts through identifying linkages and insights that complement each other, creating common ground and a shared vision for tackling the problem, constructing a new, more comprehensive, understanding of the problem, producing a model (metaphor, theme) that captures the new understanding, and testing the understanding by attempting to solve the problem (modified after Newell 2007). It has to be specifically noted here that interdisciplinary integration is an *iterative*, *non-linear* process.

In the following, we discuss the three stages of writing and publishing specifically in an interdisciplinary context.

Pre-writing

As there are various challenges and issues that do, or might, arise when writing in interdisciplinary settings, members of interdisciplinary writing teams need an array of competences, beyond the mere understanding of the involved disciplines: open-mindedness, sensitivity, and resilience may be the most important ones. The lead (one or two individuals) needs to be a skilled connector and communicator to guide the development of a shared vision, clearly allocate tasks, set realistic deadlines, and encourage participants to keep them. They can either form a team of co-authors with the disciplinary backgrounds that are necessary to address the marine problem they aim to tackle or lead an existing team. They may want to ensure a mix of early career scientists as well as senior scientists to allow for diverse viewpoints and experiences.

It is recommended to start with a meeting or workshop to get to know each other's perspective on the marine realm, to foster a respectful interdisciplinary knowledge exchange, embrace plural understandings and build trust. In our experience, spending time together in person has many advantages—you get to listen and to discuss, you can learn about different ways of thinking, analysing, and knowing, different points of view, perspectives, values, and specific terminologies, and disciplinary languages—and is something we do as often as we can in our collaborations. To derive a shared new understanding of the marine issue at hand, engaging in an open dialogue and thinking through differences in interpretations and underlying assumptions are essential (Newell 2007, de Bakker et al. 2019). In this regard, generative artificial intelligence may help understanding unfamiliar epistemologies and ontologies as it can transform challenging literature from different disciplines into digestible pieces making unknown research approaches and ways of writing more accessible.

Teams should brainstorm and converge brainstorming to prepare an outline (Lowry et al. 2004). Discuss the structure of the article and expectations and formulate a common goal! Teams should also agree on task allocation and a timeline with precise deadlines for each step.

Every team member should be aware of their role(s) and responsibilities, as they might be the only one with certain essential marine knowledge and dropping out of the team would endanger the entire publication. Everyone is responsible for delivering their input on time (or to communicate difficulties in meeting deadlines, ideally in advance).

It is useful to talk about journals early on and read their guidelines and discuss the coverage of potential fees for the publication and scientific illustrations and the order of authors on the publication. It should be noted that for both social and natural scientists the first and second author positions are the most beneficial, while for natural scientists, the last and second-to-last positions are also of significance as they indicate who supervised the project.

Finally, teams may select an online platform to ensure simultaneous access during collaborative writing and transparency. It is crucial to set clear parameters on its use and to ensure different iterations of the article are saved and available in case authors wish to return to earlier edits later. If authors prefer not to use 'real time' platforms for writing, a clear schedule of who edits each draft in turn, should be established.

Writing

As Hamilton (1980) writes '(…) in our overriding interest in interpretation, we forget how difficult it is and how important it is to describe.' Comprehensively describing the nature of our research is especially important in interdisciplinary writing efforts. To write accessibly is key—specifically in interdisciplinary articles—to ensure that all readers, regardless of their disciplinary background, can understand the final article.

All co-authors should be aware that the idea is not to gather multidisciplinary results and present them through only one perspective on the ocean. Interdisciplinary work can only integrate specialized marine knowledges—and various strengths and diversities of different research fields—when the parties involved are able to bridge their differences (see Fig. 2; Winowiecki et al. 2011). This requires critical thinking and a continuous dialogue while speaking or writing with each other. Collaborative writing in interdisciplinary teams is a *non-linear, reflective, reactive, and iterative process* allowing us to transcend disciplinary limitations. It is slower and perhaps harder than disciplinary writing but it is also invigorating as it can enable us to bridge the gap between marine social and natural research and, therefore, to jointly achieve knowledge integration essential for the sustainable development of marine socio-ecological systems.

We recommend beginning the first draft with defining the marine problem or issue the interdisciplinary team aims to address in the article. In this way, it is possible to ascertain if the team is on the same page and if you have found common ground. The basis of writing the first draft is that co-authors draw on their disciplinary sources to present concepts, theories, results, figures, etc., including a self-reflective, critical argumentation considering limitations of their field (Wolfe and Haynes 2003).

Employing multidisciplinary perspectives, as a next step, is considered a prerequisite for interdisciplinary integration (Wolfe and Haynes 2003). This requires knowledge about other marine disciplines and can be challenging due to the high levels of specialization and diverging writing styles. Conflicts on what constitutes 'good writing' may appear. Engaging in open dialogues will help reveal commonalities about writing ideologies (Brammer et al. 2008) and, as we have shown in our collaborations, to dispel myths! Stay curious. Reading 'different' publications is key in realizing that diverse modes of writing can enrich and complement each other. Writers will

also encounter disciplinary jargon and unfamiliar terminologies. Divergent disciplinary languages can be a significant barrier to joint writing and can lead to profound misunderstandings (Winowiecki et al. 2011). To overcome communication barriers, we recommend asking co-authors for explanations (we do this often). It is recommended that we learn different 'languages' used in distinct disciplines instead of creating a meta-language as it would be an abstract construct with no real meaning for anyone (Hübenthal 1994, Winowiecki et al. 2011). Moreover, decide jointly on which definitions to use and clarify them in the publication if necessary (Hübenthal 1994, Monteiro and Keating 2009, Winowiecki et al. 2011). In our experience, it might be necessary to define 'common' terms, used e.g. in marine biology or ocean governance, as they may be unknown to co-authors. Likewise, clarification is needed when the same term has dissimilar meanings in different marine disciplines.

The next step, usually during internally reviewing and revising the first draft, is working on interdisciplinary integration towards a new understanding of the complex problem the team is addressing (Wolfe and Haynes 2003). According to Wolfe and Haynes (2003) it is essential that (i) dialectical reasoning of different disciplines are given equal status and seemingly contradictory views are reconciled, (ii) new metaphors are created that offer an understanding of the disciplines' interrelationship, and (iii) holistic theories, frameworks, or models integrate the perspectives. An improved understanding of the problem that helps to create inclusive and equitable pathways towards marine sustainability is the final goal. To convey interdisciplinary insights, creating professional scientific illustrations can help to reduce complexity (see our own illustration, Fig. 2). If necessary, teams may discuss the best options for journals again.

Finally, the lead author is responsible for copyediting the article to refine the language and structure to ensure clarity and coherence and improve readability and overall quality. Note that copyediting an interdisciplinary article may take considerably longer than a disciplinary article to reconcile and 'smooth' the style. If applicable, data has to be uploaded to suitable repositories and supplementary material in form of extra text, figures, or data has to be compiled. The workload should be split fairly. The final first version has to be reviewed and approved by all authors before submission. This includes a final discussion and careful decision regarding the order of the co-authors depending on their actual input. In both social and natural science disciplines, the order of the authors usually reflects the extent of their input. While the team leader is in charge of the timely communication of the agreed deadlines of sub-tasks, everyone is responsible for sticking to them.

Publishing (submission and revision)

Likely, your internal deadline for submission has been postponed a couple of times (as ours has for this paper and the one before). Maybe the process of integration is on a good path but you reached a moment where the team cannot further improve the current outcome. If you are the lead author and have received the approval of all, it is your call to submit the paper. Try not to get lost in perfection. Make sure to select a journal that welcomes interdisciplinary marine research and if the journal demands or allows the suggestion of reviewers, pay attention to their interdisciplinary track record. Typically, disciplines define peers, which raises the question who should count as a peer when reviewing interdisciplinary research articles (Holbrook 2017)? Disciplinary-based reviewers may raise issues and request revisions inappropriate for the scope of interdisciplinary research or difficult to reconcile because they are at odds (Martin and Pfirman 2017).

Furthermore, it is worth noting that scholars from different disciplines may have diverging experiences of the reviewing process. Kim, e.g. has only ever experienced double or triple blind peer review in her social science work while Andrea is used to single blind peer review. If the journal demands or allows the suggestion of reviewers, pay attention to their interdisciplinary track record apart from their disciplinary knowledge. Receiving the reviewers' opinion can help to substantially improve the manuscript.

Once reviews are back, as with any paper, embrace the useful comments, forget the painful ones. Be prepared to receive a rejection and discuss the next journal for submission or encounter a wide range of (potentially contradicting) comments. As the reviewers may come from different disciplines/sciences, you may have to grapple with challenging commentary, for instance, if it comes from a viewpoint, some members in the team are less familiar with. Dealing with revisions may require the same process of establishing (mutual) understanding across a team, as the initial writing process did. It is crucial that the team works together on the revision—this may be a long and hard process. Be aware that the approaches to how to handle a revision may differ between co-authors and therefore should be discussed and agreed upon. For example, some marine disciplines may respond to revisions as a letter in prose. Others may be more used to point by point responses, replying to each reviewer in turn. Speaking openly about what style of response may be more appropriate and effective, is part of the process. If necessary, remind your co-authors that it is everyone's responsibility to improve the manuscript.

The revised manuscript might be very different from the original idea as the outcome of integration cannot be known beforehand. The final revised version (which may include an update of the co-authors' order depending on their overall effort) has to be reviewed and approved again by all authors. It may be that the revision process has to be repeated (depending on re-review) and the steps above can be followed again. If a paper is accepted, be sure to celebrate as you have contributed to the advancement of integrated marine research necessary for achieving marine sustainability and (advice to team members) to adequately thank the paper lead for their efforts!

Conclusion

In this paper, we have discussed the writing and publishing of interdisciplinary marine science scholarship, advocating the need to take writing challenges seriously. As the necessity for interdisciplinary marine research is ever increasing, there is a sizable body of articles that suggest how to work towards interdisciplinarity across social and natural sciences. However, the question of *how* shies away from writing and publishing. Interdisciplinary collaboration, integration, and notably, as we have posited, *writing and publishing,* is an iterative process that often requires significantly more open-mindedness, time, and patience than cooperating purely in disciplinary teams. This requires some attention to be paid to the process and best practices. Dealing with diverging epistemologies and ontologies, writing styles, and approaches, as well as distinct

disciplinary 'languages' can lead to misunderstandings and disagreements, alongside the fundamental question of what constitutes 'good writing' as also reflected in the rich discussions with our colleagues who are working across and between disciplines. To overcome these challenges, we have set out a series of prerequisites to consider and a guide to follow in pre-writing, writing, and publishing stages.

We urge that co-authors need to engage in an open, respectful dialogue driven by curiosity and recognition of plural ocean understandings and the heterogeneity of values. Reading 'different' publications is key in working towards a mutual understanding and writing together.

When working in larger teams, a skilled and resilient connector and communicator is required to lead the process in a transparent and clear manner. Teams are more than just a group, they work together in writing manuscripts with consideration and care for each other.

Integrating differing marine perspectives is the ultimate goal and can only be achieved over time in a non-linear, reflective and reactive manner. To realize how different ways of thinking and writing can enrich and complement each other is the prerequisite for creating common ground and a shared vision for jointly crafting a manuscript. The goal of conveying a new, holistic understanding of the marine issue, which was addressed, will only be achieved by writing accessibly. In other words, not only what we write but *how* we write, determines what is understood and shapes the effectiveness of the text.

We aspire that this paper will help interdisciplinary writing teams to overcome potential conflicts and to explore the full potential of their cooperation. We hope it becomes a port of call for others who have struggled, like us, by sharing our story and potential approaches to overcoming challenges. Specifically, Early Career Researchers report to be 'advised against collaborative writing and that their supervisors would sometimes undercut any effort in that direction (…) as something that would hold them back from even trying' (Lindvig and Hillersdal 2019). We hope that our article inspires both early career and senior marine researchers alike to look beyond the challenges of interdisciplinary writing and recognize the benefits and values—for personal and societal development—of integrating diverse approaches to problem-solving towards the sustainable development of our ocean. Working and writing with researchers from different sciences will broaden our/your horizon and it will help produce more open-minded and inclusive marine scholarship. As Kim recently said: 'I look at a natural science paper now and it is not that this style *can't* be an art, the art is in the clarity!' While Andrea came to realize that it can be useful to embrace complexity instead of trying to break it down and that describing this complexity in its entirety cannot be written briefly. Acknowledging different ways of knowing and doing research and the willingness to engage in a dialogue with each other will allow us all to see the world through another lens. This is one of the most enriching experiences one can hope for. It is a journey and, for now, this one ends here.

Acknowledgements

Kim is grateful to Andrea for showing interest and enthusiasm in this paper, and the willingness to work on it (alongside the herring paper and after the Real-world Labs). Andrea is grateful to Kim for the invitation to write this piece together and appreciates Kim's trust, positive energy, curiosity, interest (in herring and other fish matters), ongoing support and care! Moreover, Andrea is profoundly grateful to her mentor, Dr Catriona Clemmesen, who has always encouraged her to find her own way in an exceptionally empathetic manner, to JHM for his continuous care and encouragement and to AF for an endless supply of sunshine and much more. Both authors appreciate the support of the Marine Governance group at the HIFMB for their willingness to share thoughts, and feedback, on the issues we discuss in this piece. Although the quotes presented in Fig. 1 did not constitute formal research, for which ethical approval would be applied for at our institution, we adopted an ethical approach for transparency and consent for the use of our colleagues' statements based on typical ethical procedures and good practice. That is, we openly asked for comments, shared how the comments may be used and asked orally, during the meeting, if we might use the comments in our paper. Later when drafting the paper, we asked for explicit written consent to use the comments, giving members the choice to withdraw the comments, to edit them and to be anonymous. We also thank Susanne Landis (scienstration.com) for the smooth and creative process of designing the scientific illustrations. Finally, we are grateful for the constructive and helpful editorial advice of Linwood Pendleton and Barbara Neis, and the supportive, encouraging feedback of Christopher Cvitanovic and anonymous reviewers. Together they have helped us strengthen the paper and do justice to a topic that we hope is as important to others as to us. We also highly appreciate the professional, swift and kind handling of the accepted manuscript by the journal's team.

Author contributions

Kimberley Peters had the idea to write this manuscript. Both authors developed the outline, wrote, revised and approved the manuscript.

Conflict of interest: None declared.

Funding

Both authors acknowledge support by the HIFMB, a collaboration between the Alfred-Wegener-Institute, Helmholtz-Center for Polar and Marine Research, and the Carl-von-Ossietzky University Oldenburg, initially funded by the Ministry of Science and Culture of Lower Saxony (MWK) and the Volkswagen Foundation through the 'Niedersächsisches Vorab' grant program (ZN3285).

Data availability

The data underlying this article are available in the article.

References

Andrews EJ, Harper S, Cashion T *et al*. Supporting early career researchers: insights from interdisciplinary marine scientists. *ICES J Mar Sci* 2020;77:476–85. https://doi.org/10.1093/ICESJMS/FSZ247

Bammer G, O'Rourke M, O'Connell D *et al*. Expertise in research integration and implementation for tackling complex problems: when is it needed, where can it be found and how can it be strengthened? *Palgrave Commun* 2020;6:1–16. https://doi.org/10.1057/s41599-019-0380-0

Bavinck M, Verrips J. Manifesto for the marine social sciences. *Marit Stud* 2020;**19**:121–3. https://doi.org/10.1007/S40152-020-00179-X

Bennett NJ. Marine social science for the peopled seas. *Coast Manag* 2019;**47**:244–52. https://doi.org/10.1080/08920753.2019.1564958

Bergen N, Hudani A, Khan S *et al*. Practical considerations for establishing writing groups in interdisciplinary programs. *Palgrave Commun* 2020;**6**:1–6. https://doi.org/10.1057/s41599-020-0395-6

Blythe J, Cvitanovic C. Five organizational features that enable successful interdisciplinary marine research. *Front Mar Sci* 2020;**7**:539111. https://doi.org/10.3389/FMARS.2020.539111

Boix Mansilla V, Duraisingh ED, Wolfe CR *et al*. Targeted assessment rubric: an empirically grounded rubric for interdisciplinary writing. *J High Educ* 2009;**80**:334–53. https://doi.org/10.1080/00221546.2009.11779016

Brammer C, Amare N, Campebell SK. Culture Shock: teaching writing within interdisciplinary contact zones. *Across Discip* 2008;**5**:1–16. https://doi.org/10.37514/ATD-J.2008.5.1.04

Christie P. Creating space for interdisciplinary marine and coastal research: five dilemmas and suggested resolutions. *Environ Conserv* 2011;**38**:172–86. https://doi.org/10.1017/S0376892911000129

Christie P, Bennett NJ, Gray NJ *et al*. Why people matter in ocean governance: incorporating human dimensions into large-scale marine protected areas. *Mar Policy* 2017;**84**:273–84. https://doi.org/10.1016/J.MARPOL.2017.08.002

Cooke SJ, Arlinghaus R. Learning, thinking, sharing, and working across boundaries in fisheries science. *ICES J Mar Sci* 2024;**81**:665–75. https://doi.org/10.1093/ICESJMS/FSAE026

Cvitanovic C, Van Putten EI, Tuohy P *et al*. Normalizing failure: when things go wrong in participatory marine social science fieldwork. *ICES J Mar Sci* 2022;**79**:2184–95. https://doi.org/10.1093/ICESJMS/FSAC153

de Bakker F, Crane A, Henriques I *et al*. Publishing interdisciplinary research in business & society. *Business & Society* 2019;**58**:443–52. https://doi.org/10.1177/0007650319826188

Deininger A, Martin AH, Pardo JCF *et al*. Coastal research seen through an early career lens—a perspective on barriers to interdisciplinarity in Norway. *Front Mar Sci* 2021;**8**:634999. https://doi.org/10.3389/FMARS.2021.634999

Delyser D. Teaching graduate students to write: a seminar for thesis and dissertation writers. *J Geogr High Educ* 2003;**27**:169–81. https://doi.org/10.1080/03098260305676

Dezure D. Interdisciplinary pedagogies in higher education. In: R Frodeman, J Thompson Klein, RCS Pachego (eds.). *The Oxford Handbook of Interdisciplinarity*. 2nd edn. Oxford Handbooks, online edn, Oxford Academic, 2017. https://doi.org/10.1093/oxfordhb/9780198733522.001.0001

Fazey I, Evely AC, Reed MS *et al*. Knowledge exchange: a review and research agenda for environmental management. *Environ Conserv* 2013;**40**:19–36. https://doi.org/10.1017/S037689291200029X

Figueroa I, Satizábal P, Saavedra-Díaz LM *et al*. Manifiesto para la protección de los derechos humanos de las comunidades pesqueras artesanales en Colombia. *Jangwa Pana* 2023;**22**. https://doi.org/10.21676/16574923.5481

Franke A, Bayer T, Clemmesen C *et al*. Climate challenges for fish larvae: interactive multi-stressor effects impair acclimation potential of Atlantic herring larvae. *Sci Total Environ* 2024;**953**:175659. https://doi.org/10.1016/J.SCITOTENV.2024.175659

Franke A, Blenckner T, Duarte CM *et al*. Operationalizing Ocean health: toward integrated research on ocean health and recovery to achieve ocean sustainability. *One Earth* 2020;**2**:1–9. https://doi.org/10.1016/j.oneear.2020.05.013

Franke A, Clemmesen C. Effect of ocean acidification on early life stages of Atlantic herring (*Clupea harengus* L.). *Biogeosciences* 2011;**8**:3697–707. https://doi.org/10.5194/bg-8-3697-2011

Franke A, Peters K, Hinkel J *et al*. Making the UN Ocean Decade work? The potential for, and challenges of, transdisciplinary research and real-world laboratories for building towards ocean solutions. *People Nat* 2023;**5**:21–33. https://doi.org/10.1002/PAN3.10412

Franke A, Roth O, Schryver PD *et al*. Poly-β-hydroxybutyrate administration during early life: effects on performance, immunity and microbial community of European sea bass yolk-sac larvae. *Sci Rep* 2017;**7**:15022. https://doi.org/10.1038/s41598-017-14785-z

Frodeman R, Klein J Thompson, RCS Pachego. (eds.). *The Oxford Handbook of Interdisciplinarity*. 2nd edn. Oxford Handbooks, online edn, Oxford Academic, 2017. https://doi.org/10.1093/oxfordhb/9780198733522.001.0001

Haapasaari P, Kulmala S, Kuikka S. Growing into interdisciplinarity: how to converge biology, economics, and social science in fisheries research? *Ecol Soc* 2012;**17**:1–12. https://doi.org/10.5751/ES-04503-170106

Hamilton D. Interdisciplinary Writing. *College English* 1980;**41**:780–96. https://doi.org/10.58680/ce198013896

Hau'ofa E. *We Are the Ocean: Selected Works*. Hawaii: University of Hawaii Press, 2008.

Holbrook JB. Peer review, interdisciplinarity, and serendipity. In: R Frodeman, J Thompson Klein, RCS Pachego (eds.), *The Oxford Handbook of Interdisciplinarity*. 2nd edn. Oxford Handbooks, online edn, Oxford Academic, 2017. https://doi.org/10.1093/oxfordhb/9780198733522.001.0001

Horn A, Urias E, Klein JT *et al*. Expert and non-expert at the same time: knowledge integration processes and dynamics in interdisciplinary teamwork. *Sustain Sci* 2023;**18**:2357–71. https://doi.org/10.1007/S11625-023-01365-6

Hübenthal U. Interdisciplinary thought. *Issues Integr Stud* 1994;**12**:55–75. http://hdl.handle.net/10323/4145

Klein JT, Newell WH. Advancing interdisciplinary studies. In: WH Newell (ed.), *Interdisciplinarity: Essays from the Literature*. New York, NY: College Entrance Examination Board, 1998.

Leahey E, Beckman CM, Stanko TL. Prominent but less productive: the impact of interdisciplinarity on scientists' Research. *Adm Sci Q* 2017;**62**:105–39. https://doi.org/10.1177/0001839216665364

Levi S, Peters K. Concerning emotions: feminist contributions to reflexive marine governance. *J Environ Policy Plann* 2025;**27**:66–78. https://doi.org/10.1080/1523908X.2024.2395862

Lindvig K, Hillersdal L. Strategically unclear? Organising interdisciplinarity in an Excellence Programme of Interdisciplinary Research in Denmark. *Minerva* 2019;**57**:23–46. https://doi.org/10.1007/S11024-018-9361-5

Lombard AT, Clifford-Holmes J, Goodall V *et al*. Principles for transformative ocean governance. *Nature Sustain* 2023;**6**:1587–99. https://doi.org/10.1038/s41893-023-01210-9

Lorimer H. Telling small stories: spaces of knowledge and the practice of geography. *Tran Inst Br Geogr* 2003;**28**:197–217. https://doi.org/10.1111/1475-5661.00087

Lowry PB, Curtis A, Lowry MR. Building a taxonomy and nomenclature of collaborative writing to improve interdisciplinary research and practice. *J Bus Commun* 2004;**41**:66–99. https://doi.org/10.1177/0021943603259363

Markus T, Hillebrand H, Hornidge AK *et al*. Disciplinary diversity in marine sciences: the urgent case for an integration of research. *ICES J Mar Sci* 2018;**75**:502–9. https://doi.org/10.1093/ICESJMS/FSX201

Martin PJS, Pfirman S. Facilitating interdisciplinary scholars. In: R Frodeman, T Klein, RCS Pachego (ed.). *Oxford Handbook of Interdisciplinarity*. 2nd edn. Oxford Handbooks, online edn, Oxford Academic, 2017. https://doi.org/10.1093/oxfordhb/9780198733522.001.0001

McDonald KS, Hobday AJ, Fulton EA *et al*. Interdisciplinary knowledge exchange across scales in a globally changing marine environment. *Glob Change Biol* 2018;**24**:3039–54. https://doi.org/10.1111/GCB.14168

McKinley E, Acott T, Yates KL. Marine social sciences: looking towards a sustainable future. *Environ Sci Policy* 2020;**108**:85–92. https://doi.org/10.1016/J.ENVSCI.2020.03.015

Monteiro M, Keating E. Managing misunderstandings. *Sci Commun* 2009;**31**:6–28. https://doi.org/10.1177/1075547008330922

Moon K, Cvitanovic C, Blackman DA *et al.* Five questions to understand epistemology and its influence on integrative marine research *Front Mar Sci* 2021;**8**:574158. https://doi.org/10.3389/FMARS.2021.574158

Mountz A, Bonds A, Mansfield B *et al.* For slow scholarship: a feminist politics of resistance through collective action in the neoliberal university. *ACME: Int J Critic Geogr* 2015;**14**:1235–59. https://doi.org/10.14288/acme.v14i4.1058

Newell WH. Decision making in interdisciplinary studies. In G. Morçöl (ed.), *Handbook of Decision Making*. CRC Press: New York, 2007.

Newell WH, Green WJ. Defining and teaching interdisciplinary studies. *Improv College Univ Teach* 1982;**30**:23–30. https://doi.org/10.1080/00193089.1982.10533747

NSF (retrieved 15.05.2024). https://new.nsf.gov/funding/learn/research-types/learn-about-interdisciplinary-research#definition

Ommer RE. *Coasts under Stress: Restructuring and Social-ecological Health*. McGill-Queen's University Press: Montreal, 2007.

Ommer RE. Curiosity, interdisciplinarity, and giving back. *ICES J Mar Sci* 2018;**75**:1526–35. https://doi.org/10.1093/ICESJMS/FSY022

O'Rourke M, Rinkus MA, Cardenas E *et al.*. In: D. Gosselin (ed.), *A Practical Guide for Developing Cross-disciplinary Collaboration Skills*. Springer International Publishing, 2023.

Peters K. *Your human Geography Dissertation: Designing, Doing, Delivering*. SAGE Publications Ltd: London, 2017. https://doi.org/10.4135/9781529714869

Refulio-Coronado S, Lacasse K, Dalton T *et al.* Coastal and marine Socio-Ecological Systems: a systematic review of the literature. *Frontiers in Marine Science* 2021;**8**:648006. https://doi.org/10.3389/FMARS.2021.648006

Repko AF, Szostak R. *Interdisciplinary Research. Process and Theory*. 3rd edn. SAGE Publications, Inc: Los Angeles, 2017.

Rudd MA. Scientists' perspectives on global ocean research priorities. *Front Mar Sci* 2014;**1**:105199. https://doi.org/10.3389/FMARS.2014.00036/

Satizábal P. The unintended consequences of 'responsible fishing' for small-scale fisheries: lessons from the Pacific coast of Colombia. *Mar Policy* 2018;**89**:50–7. https://doi.org/10.1016/J.MARPOL.2017.12.005

Winowiecki L, Smukler S, Shirley K *et al.* Tools for enhancing interdisciplinary communication. *Sustain: Sci Pract Policy* 2011;**7**:74–80. https://doi.org/10.1080/15487733.2011.11908067

Wolfe CR, Haynes C. Interdisciplinary writing assessment profiles. *Issues Integr Stud* 2003;**21**:126–69. http://hdl.handle.net/10323/4403

Handling editor: Barbara Neis