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Against the Current: Lessons We Wish We Had Known as Women in Marine Science

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Abstract

Marine science has not been designed to support everyone equally. Women are under two-fifths of ocean science researchers globally and a far smaller share of senior leaders. The barriers are structural and well documented (including caring burdens and unrecognised service, biases embedded in publishing and funding, and unequal access to networks). These barriers are particularly challenging for women with multiple disadvantaged or minoritised statuses (e.g., ethnic minorities and leaders in the global majority). Yet women continue to build careers, lead, and reshape the field within and despite these systems, and their strategies are a valuable source of knowledge. That knowledge, however, has rarely been translated into actionable guidance for women early career researchers navigating these conditions, particularly those working from the global majority and working across disciplines and/or at the science–policy interface. This reflective article addresses that gap. Each author documented the conditions that shaped their career, and we compared these accounts collectively to identify shared experiences across career stages, disciplines, and countries. Five domains emerged, and each was read against the published literature and framed as a lesson: (a) build the networks that carry your work forward, (b) working across fields is a strength worth growing, (c) caring for yourself keeps you in the field for the long term, (d) publishing is a skill best learned together, and (e) your voice belongs in the policy room. We synthesise these into a practical action agenda organised by actor and theme.

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Keywords
early career researchers; early career ocean professional; equity; gender; inclusion; interdisciplinary; intersectionality; marine social science; science–policy; transdisciplinary

1. Introduction

Marine science has not been designed to support everyone equally. On aggregate headcount, the field appears comparatively balanced. Women make up 38.6% of ocean science researchers globally, approximately 10 percentage points higher than the share of women researchers in the natural sciences overall, though national figures range from approximately 12% to more than 63% (IOC–UNESCO, 2020). This aggregate conceals a steep gradient. Across European marine science and conservation institutions, representation is close to balanced at doctoral level, but women hold only 13% to 24% of senior positions, with the same pattern repeated in publishing, research funding, and institutional leadership (Giakoumi et al., 2021). Despite global commitments including Sustainable Development Goal 5 and the UN Decade of Ocean Science for Sustainable Development (2021–2030), women remain systematically underrepresented in positions of leadership, recognition, and influence (Maas et al., 2021). The barriers responsible are structural and include caring burdens and disproportionate service (i.e., academic housework), biases embedded in publishing and funding systems, and inequitable access to professional networks (Shellock et al., 2022). Together they form what De Welde and Laursen (2011) termed the "glass obstacle course," described as "glass" because these processes are typically implicit and unanticipated rather than openly stated. For women in minoritised groups and those working across disciplines, these barriers accumulate and intersect, shaped by race, nationality, geographic location, socioeconomic background, and disciplinary identity in ways that existing guidance has rarely addressed (Arnado, 2023; Stefanoudis et al., 2021).

Research has documented gender inequities in marine science across publishing, editorial leadership, funding, and recognition (Giakoumi et al., 2021; Maas et al., 2021; Shellock et al., 2022) and proposed system-level responses (Shellock et al., 2023a). Other work offers practical guidance for early career researchers (ECRs; Shellock et al., 2023b), and some studies show that global majority status compounds disadvantage (Arnado, 2023; Kaikkonen et al., 2024). Few studies, however, bring these together for women who are both ECRs and from the global majority. This article addresses that gap with practical guidance for navigating the system as it is today.

Together, we have navigated the path from postgraduate study to our current roles in research, academia, and research leadership, at institutions in both the global majority and global minority and across the breadth of marine science. Drawing on this collective experience, we identify five areas where structural barriers are felt most strongly and offer practical actions for each. The article has three aims: (a) to describe, from experience, the structural conditions that shape women's careers in marine science; (b) to distil this into five lessons, each pairing lived experience with concrete actions; and (c) to combine these into a coordinated action agenda.

Our evidence base is our own lived experience. This complements empirical research by offering first-person insight that surveys and interviews cannot fully capture. We developed the lessons in three stages. First, each author recorded the barriers she had faced, the turning points in her career, and the strategies that helped, reflecting on her positionality (see Supplementary Material). Second, we met online three times to

compare these accounts and identify common threads across career stages, disciplines, and countries. Third, we grouped these threads into the five domains, focusing most strongly on those reported independently by more than one author. We use "women" to include all who identify as women and/or womxn, recognising that gender is a spectrum understood differently across cultures and that many of these challenges are also faced by non-binary people.

This approach has limits. Our positionality shaped both what we noticed and what we were not placed to see (Holmes, 2020). We are a small group of women who have remained in marine science, not a sample of everyone who entered it, so the experiences of those who left are absent. The lessons are therefore offered as orientations others may find useful, not as generalisable findings. Each quotation is a first-person account by the named author, reproduced with her approval. We chose each one because it illustrates a common thread, not because it is representative.

2. Lessons

2.1. Lesson 1: Recognise the System, and Build the Networks That Carry Your Work Forward

For women entering marine science, especially those from the global majority, choosing to do an internationally recognised postgraduate degree is rarely just an academic decision. It is often shaped by positionality: where a researcher stands in relation to institutional prestige, geographic origin, and social identity. This position affects the knowledge she produces. It also affects whether others recognise a woman's expertise, often regardless of its quality. The pattern reaches well beyond universities. It shapes professional influence in research institutions, government ministries, international non-governmental organisations (NGOs), and donor organisations, as well as in the policy processes that make decisions about ocean governance.

Bourdieu's (1986) idea of social fields is a useful way to understand this. Bourdieu saw social life as divided into fields. Each field has its own hierarchy, its own stakes, and its own rules about who belongs. People in a field draw on three forms of capital. Economic capital is money and assets, such as grant income and research budgets. Cultural capital includes credentials, qualifications, and unwritten knowledge, such as knowing how to write a grant or approach a journal editor. People learn this knowledge through experience rather than teaching. Social capital is the benefit that comes from lasting networks, such as co-authors, editorial and review networks, working groups, and relationships with funders, agencies, and community partners. These networks form mainly through doctoral supervision, fieldwork, and conferences, and they need constant effort to maintain.

Arnado (2023) applies these ideas to academic publishing. In this field, editors and reviewers decide not only what gets published but also what counts as legitimate knowledge. In a study of 392 articles on Philippine international migration, scholars based at Philippine institutions were sole or first authors of only 16% of the articles. Their articles averaged 13 citations, compared with 23 for authors based abroad. Arnado gives two reasons. First, institutions in the global minority give researchers teaching relief, research time, and library access, which make strong manuscripts easier to produce. Second, editors and reviewers respond partly to an author's institution, not only to the quality of the manuscript.

This does not suggest that researchers in the global majority possess less capital. On the contrary, they frequently hold substantial capital, including linguistic skills, local ecological and social knowledge, an understanding of local governance systems, and long-term relationships with communities. This capital is highly valued in the places where marine research is conducted and applied. However, capital is field-specific, and international publishing recognises a narrower range of it. Consequently, the capital that made the research possible carries considerably less weight in publishing. This pattern is also central to the broader critique of parachute science (Stefanoudis et al., 2021).

Two implications follow for women ECRs. First, when a system's conventions were never taught to you, the difficulty of working within it is easily mistaken for personal inadequacy. Seeing it as structural relieves much of that pressure. Second, of the three forms of capital, networks are the one you can most readily build yourself. Close colleagues are usually already in place. But it is the more distant contacts, in other institutions, sectors, and countries, that bring new opportunities, and these are worth reaching for deliberately (Granovetter, 1973). The rest of this lesson focuses on building them.

It is within this context that scholarships backed by Official Development Assistance (e.g., Australia Awards, Fulbright, Commonwealth Scholarships, and equivalent national programmes) carry significance beyond their financial value. These schemes are not designed exclusively as academic pathways. They are intended to support professionals who will return to contribute to public institutions, civil society organisations, and government agencies. The formal competitive selection process confers a form of institutional recognition that tends to travel with the graduate into whatever sector they enter, and we have observed that a returned scholar's contributions can carry a different kind of weight in ministerial advisory processes, NGO leadership appointments, and multi-stakeholder programme settings. These schemes are not, however, a level playing field in themselves. Cost-of-living pressures in host cities can fall heavily on scholars whose home-country salaries provide limited financial cushion. Planning for international study means addressing the access question and these financial realities together. For C. J. Fernandez-Abila, the recognition carried by an international credential became fully visible only after she returned home:

> I completed my undergraduate degree at the University of the Philippines and returned there to teach. In that environment, pursuing advanced degrees abroad was not automatically remarkable; it was expected. It was the understood route for anyone building a serious research career. I followed it. What I did not anticipate was how much the credential changed what others assumed about my work, not just in universities but in government agencies and donor offices where I had presented the same quality of analysis for years. The work was the same. What changed was whether others were prepared to trust it before reading it. It points to something structural: a tendency for institutional affiliation to shape how work is received, independent of its quality. Understanding that pattern early, and recognising it as a feature of the system rather than a reflection of your ability, rarely comes up in formal career conversations but is worth knowing. (C. J. Fernandez-Abila)

Even when funding is secured, timing is rarely straightforward. Across much of Asia and the Pacific, expectations about when a woman may reasonably study or work abroad are seldom openly articulated but nonetheless shape what feels possible. Women without formal family obligations are not always free of relational and community responsibilities in practice: expectations around parental care, being present within the home, and maintaining community ties do not pause for a scholarship opportunity, and those

navigating marriage or extended family commitments may find the window for multi-year study narrower than they had hoped. Some of the women best placed to benefit are, in our observation, filtered out not by ability but by circumstance. Acknowledging this moves the conversation away from individual readiness and toward the conditions that shape who is able to go, and when. It is also a reason to be cautious about the "leaky pipeline" metaphor, which implies a single linear route from which individuals leak out, locating the problem in their departures. What we describe is better understood as a system with unevenly distributed entry points, and careers that loop, branch, and re-enter: (a braided river; Batchelor et al., 2021), with many pathways into and within science careers.

Beyond methodological training, internationally recognised degrees tend to open access to networks that are difficult to build from a distance. Informal relationships formed during graduate study (e.g., with supervisors, visiting researchers, peer cohorts, and conference circuits) often become the channels through which later opportunities are found, whether journal authorship, donor partnerships, programme secondments, or appointments to international advisory bodies. For those working outside universities, these connections can matter as much as formal publications: a colleague from a graduate programme may recommend you for a UN Ocean Decade working group, or a conference introduction may lead to a consultancy engagement. Scholars holding both a global majority identity and a global minority institutional affiliation tend to show higher citation impact and broader professional access, because they can move across networks that might otherwise remain difficult to enter (Arnado, 2023). This is why we treat networks as the asset at the centre of this lesson; they are the one form of capital described here that can be accumulated deliberately, from any starting point, and they compound. Much of the work that builds these networks goes unrecognised in academic careers, as C. J. Fernandez-Abila reflects:

> My undergraduate degree, master's, and PhD are all in economics. But from the beginning, my work has been with socio-disadvantaged communities, fishing families, coastal villages, rural households. Not all of that fits neatly into one discipline, and for some time I found myself explaining the combination rather than describing it as a strength. Between returning from my master's and completing my doctorate, I built a teaching record and published—the contributions most visible on paper. Alongside them were impact evaluations for NGOs, technical work with government agencies, community programmes, institutional service; a capacity central to transdisciplinary practice, and one many women in this space have developed by navigating these transitions. That work rarely appeared in formal assessments, but it was where much of the real contribution happened. Public service is not a distraction from this kind of career; it is often where the work is most directly felt, and deserves to be counted. (C. J. Fernandez-Abila)

For women who are also navigating disciplinary boundaries, these challenges compound rather than simply add. This is the insight at the centre of intersectionality: forms of disadvantage are not separable strands to be counted one by one, but interact to produce experiences that analysing any single category on its own will miss (Crenshaw, 1989). A woman from the global majority working across disciplines is not encountering three discrete obstacles. Instead, she is encountering a single configuration that a colleague sharing only one of those positions would not recognise. In academic contexts specifically, interdisciplinary backgrounds can be hard to position. Qualitative approaches may be evaluated against biophysical standards they were not designed to meet, and interdisciplinary or transdisciplinary proposals can face additional scrutiny in review processes designed around single-discipline research, with transdisciplinary proposals—which involve

non-academic co-production—often facing the greatest challenge. Over time, in our experience, this breadth tends to become a genuine professional asset. Applied governance and policy arenas increasingly value the capacity to move between biophysical evidence and social analysis, and many women in this space have developed precisely that capacity, even where it has taken time for the systems around them to recognise it as such (Shellock et al., 2023b). Being recognised also depends on staying connected, as K. Ismail found after returning to Malaysia:

> Returning to Malaysia after my postgraduate training abroad, I realised that networks I had built during graduate study would not maintain themselves across time zones, and that institutional affiliation shapes whose work is taken seriously in ways no one explicitly teaches you. A great deal of academic, research, and applied work still moves through informal channels. For women returning to the global majority, sustaining those connections deliberately and naming the positionality that shapes how our contributions are received is something I wish I had understood as deliberate practice from the very beginning. (K. Ismail)

2.2. Lesson 2: Working Across Fields Is a Strength Worth Growing

Many ECRs enter the field with a single disciplinary foundation. Postgraduate training is necessarily focused, and depth in a discipline is a genuine asset. But when that knowledge meets real-world problems in coastal communities, marine ecosystems, or environmental governance, the boundaries of a single discipline rarely hold. Researching coastal pollution, for instance, is not simply a matter of analysing plastics in a laboratory. It also requires understanding the communities living alongside that coastline, the cultural and economic practices that shape pollution pathways, and the governance structures that determine what interventions are even possible. This is where social science, policy analysis, and community engagement become not supplementary but essential. For researchers coming from science, technology, engineering, and mathematics (STEM) backgrounds, this can feel like unfamiliar territory; for those entering from social science, the reverse is equally true. Practical guides written for exactly this crossing now exist and are worth seeking out early (Kelly et al., 2019; Moon & Blackman, 2014; Shellock et al., 2023b).

Researchers working across fields are frequently measured against a specialist ideal, as though range must be purchased at the cost of depth, and this is one reason interdisciplinary work is perceived as less rigorous, and its practitioners are asked to justify themselves (Shellock et al., 2022). We would frame it differently. In ecology, a broad niche is not a fallback from specialisation, but the optimal response to conditions in which preferred resources are scarce, patchy, or unpredictable, and the same logic is visible in the systems many of us study. Among small-scale fishers on Brazil's northeast coast, those dependent on a single narrow resource base absorbed the heaviest losses from the 2019 oil spill and the Covid-19 pandemic (Silva et al., 2026). R. Jayasinghe describes learning social science after training in the natural sciences:

> Coming from a natural science background, I found social science theories and methodologies quite different from anything in my training. My initial worry was that it was too late to develop those skills. But I started talking to colleagues from social sciences, helped with their fieldwork, and read widely around my own research areas. It takes time, but the more you expose yourself to it, the more comfortable interdisciplinary and transdisciplinary work becomes. (R. Jayasinghe)

This experience is not unusual, and the discomfort it describes is worth naming honestly. Interdisciplinarity is not a skill that arrives fully formed after the PhD. It develops through deliberate exposure via collaborative projects, reading across disciplines, and working alongside colleagues with different expertise. The earlier that exposure begins, the better placed a researcher is to understand the full complexity of the problems they are working to address. Building this capacity takes time, and that time has to come from somewhere. For ECRs, and particularly for women, protecting space for interdisciplinary learning requires the same intentionality as protecting space for writing. It is worth being deliberate about which collaborative projects and cross-disciplinary commitments genuinely build new skills and networks, and which absorb time without adding to research capacity.

Institutions have a role to play here too. Interdisciplinary and transdisciplinary training is most effective when it is structured into early career pathways rather than left to individual initiative, through joint supervision arrangements, cross-departmental seminars, or funding that explicitly supports collaborative and community-engaged research. Where those structures are absent, the burden of building interdisciplinary and transdisciplinary capacity falls disproportionately on researchers themselves, often in the margins of already full working lives.

2.3. Lesson 3: Caring for Yourself Keeps You in the Field for the Long Term

Beyond the institutional service demands described earlier, many women in marine science carry a quieter but equally real set of social responsibilities. These feel personal and moral rather than professional, and are harder to name when they become too much. There is often a genuine pull to give back: to mentor those coming behind, to remain visible in spaces where women from the global majority are still underrepresented, and to contribute to communities that supported the journey. For many, these are not burdens imposed from outside but a valued part of professional identity. The difficulty is that they accumulate alongside everything else, and precisely because they feel personal rather than institutional, the cost is easy to overlook. The burnout that follows is, in our experience, less about conventional workload than the gradual depletion of the capacity to show up for colleagues, students, and communities in the way one wants to. It arrives quietly, through the slow narrowing of what feels possible, rather than a single moment of collapse. Recognising this as a common experience rather than a personal failing is an important first step. C. J. Fernandez-Abila reflects on the cost of taking on too much at once:

> I sat on committees, reviewed manuscripts, mentored students, served on boards for women in fisheries. Each one mattered—I believed that then and I believe it now. What took me longer to understand was that doing all of it at once had a cost I was paying quietly, and that naming that cost was not the same as walking away from the responsibility. (C. J. Fernandez-Abila)

However, the responsibility to contribute does not require carrying everything at once. Mentoring one person well, or showing up consistently in one community space, is more sustainable than spreading thinly across many obligations. Peer networks matter here too, and finding others who understand the particular weight of these responsibilities reduces the sense that it falls to any one person alone. It also helps distinguish commitments that feel nourishing from those that have quietly become habitual. Revisiting them periodically, and giving yourself permission to step back from some without guilt, is not a withdrawal from social responsibility but a way of ensuring that what you do offer remains meaningful. Finally, attending to

early signs of depletion is easier when burnout is spoken about openly with trusted colleagues or mentors rather than managed alone. A culture that treats wellbeing as a professional matter, not a private one, makes that honesty more possible for everyone.

The physical and temporal conditions of work matter as much as its emotional weight. ECRs can fall into measuring commitment through hours rather than output: working six days a week, forgoing public holidays, treating sustained presence at a desk as evidence of seriousness. This pattern is worth examining early, because sustained long hours without recovery carry health costs and, in some cases, lasting physical harm. Pudendal neuralgia is one such condition: chronic pain arising from compression or irritation of the pudendal nerve, associated with prolonged sitting, difficult to diagnose and slow to treat, and rarely discussed in workplace health conversations (Murer et al., 2021). As with other posture-related conditions, the risk can be reduced through workstation design and negotiating for a standing or adjustable workstation. This is not a luxury request but a reasonable adjustment that institutions should provide as standard. The norm to work toward is one in which you work the hours genuinely required, take the time back that is owed, and treat rest, movement, and public holidays as non-negotiable rather than aspirational. R. J. Shellock describes the lasting cost of working long hours without the right setup:

> I used to think that working longer meant working harder. I developed pudendal neuralgia from sitting too many hours without the right setup, and I now take medication every day to manage chronic pain that has become a permanent part of my life. I wish someone had told me earlier: work the hours you need, take the time back, and make sure your institution provides you with a standing desk. It is not an indulgence. It is how you stay in this field for the long term. (R. J. Shellock)

For women from the global majority, the weight of social responsibility extends well beyond the professional sphere. A woman may hold postgraduate degrees, lead international projects, and contribute to high-quality research, and still return home to a different set of expectations entirely. The unspoken script is familiar: finish your studies, get married, have children, settle. A career involving frequent travel, fieldwork in remote locations, or engagement with politically contested issues is often met not with pride but with quiet concern (i.e., is it safe, is it appropriate, is it wise?). In our experience, these questions are rarely asked of men at the same career stage. The scrutiny is not always hostile; sometimes it comes wrapped in genuine care. R. Jayasinghe recalls how this concern showed up in her own work:

> Shortly after returning to Sri Lanka following my PhD, I was coordinating a waste upcycling project. A question I heard repeatedly, particularly from officers in government agencies, stayed with me: "Why are you working in the waste space? Isn't it difficult for a woman? You have to deal with waste collectors and poor communities. Why are you doing this hard work?" What struck me was not the discouragement, but the assumption embedded in the concern—that difficulty itself was a reason a woman should reconsider. (R. Jayasinghe)

For an ECR trying to establish herself, the challenge is not simply bandwidth or burnout. It is the constant negotiation between who she is professionally and who society expects her to become. The structural barriers that limit women in science are well documented (Giakoumi et al., 2021; Shellock et al., 2022); the interior work of carrying these expectations (daughter, wife, and mother-in-waiting) is far less recognised, and typically begins long before a woman has chosen any of those roles for herself. Addressing these

pressures requires deliberately constructing alternative pathways: not simply access to the field, but positions in which young women work directly with communities as researchers rather than observers, which we have found builds a professional confidence that persists across career stages. Intentionality in team composition and working culture matters as much as formal mentorship, and is particularly significant for women from the global majority, for whom competing personal and societal pressures can determine whether they remain in the field. Broader cultural expectations shift slowly, but the immediate environments senior researchers and institutions create can serve as counter-spaces in the meantime.

It is also worth holding open another part of the picture. Conversations about women in marine science can sometimes default to a single image of empowerment: the woman who steps forward, takes the floor, and occupies the visible leadership position she has been denied. This is particularly the case for women who engage with global minority institutions and international development frameworks. This image describes a real and important kind of progress, but it is not the only one, and it is not always the one a particular woman is choosing. Some of the women most respected in this field have decided, deliberately and with full awareness of the alternatives, to do the structural work that holds programmes, teams, and communities together rather than the public-facing work that gets named at conferences. They are the spine rather than the mouth. To read that choice as a failure of empowerment is to mistake one particular model of feminism, shaped by liberal Western assumptions about visibility and resistance, for equality itself.

Decolonial feminist scholarship has long argued that agency takes many legitimate forms, including those that work within rather than against existing relational and community structures, and that universalising one model of the empowered woman can itself silence the agency of women from the global majority (Manning, 2021). Equality is not about which kind of contribution a woman makes; it is about whether she has the genuine ability to choose. That ability is what intersects with race, class, nationality, disability, and background (Crenshaw, 1989), and it is what institutional and structural reform should be trying to expand. None of this displaces the structural critique made elsewhere in this article. The point is rather that an honest account of equality must make room for the full range of choices that become available once the choice is genuinely a woman's to make. It must make room for those who choose to work quietly: their contribution is no less professional, no less consequential, and no less feminist for being carried out away from the front of the room. It must make room, too, for those who decide that the discipline is not where they wish to remain, who carry their skills into another field, or who reshape their working lives on terms they find more sustainable. To read such a departure only as a loss, or as evidence that the woman has been failed, is to reinstate the very assumption this account resists: that a liberated life has a single permissible shape.

2.4. Lesson 4: Publishing Is a Skill You Can Learn, but It Is Best Learned Together

For many women ECRs in marine science, publishing can feel like a system built by and for people whose career paths looked nothing like theirs. Without adequate mentorship, it is easy to make poor early decisions around journal selection and reviewer suggestions, leading to desk rejections and demoralising experiences that erode confidence before it has had the chance to build. ECRs don't lack ability; instead, they lack someone helping them navigate the system. R. J. Shellock describes how she learned to publish by working with others:

> I was the first in my family to go to university, and I remember thinking, this isn't my world. Publishing felt distant, intimidating, like something that happened to other scientists, not me. What I didn't

> understand then was that I hadn't failed; I had simply never been shown how. What did show me was being given a place in the process. I started out as a co-author on other people's papers, helping to write part of a manuscript while someone else led, and that was where I began to see how a paper is actually put together. From there came a much larger collaboration, a paper with 34 co-authors. I wasn't carrying it by myself; I was learning with the support of people who had done it before, and that gave me a confidence I would never have found writing in isolation. (R. J. Shellock)

This is why we have designed a step-by-step overview of the publishing process (Figure 1), intended for women ECRs to use independently, or for supervisors and mentors to work through alongside them. Much of the guidance is practical, including sending a pre-submission enquiry where the option exists to gauge editor interest early and save time. This is a learnable skill, which simply hasn't been passed on to all ECRs.

Alongside these tools, there are practical routes ECRs can take to build experience and confidence, and the common thread among them is not to write alone. Reviewing other researchers' papers is one of the most direct ways to understand what editors and reviewers actually look for. For those who have not yet published or completed a PhD, this is best done with the support of a more senior colleague. Joining a paper as a co-author, particularly where someone more experienced is leading, is a lower-stakes way to learn how a manuscript is coordinated and written before taking one on alone, and large, multi-author collaborations can make a good first publication for the same reason, with the writing divided so that no single person carries it. Taking on an editorial role for a journal, in time, builds an understanding of the process from the other side. Generative AI tools can also help with drafting, structuring, and refining a manuscript, lowering a barrier that has long fallen hardest on researchers writing in English as an additional language and those without funding for costly editing services (Prakash et al., 2025).

2.5. Lesson 5: Your Voice Belongs in the Policy Room If That's Where You Want to Be

Many ECRs shy away from policy and decision-making spaces, particularly those of us trained through science-heavy doctoral programmes. Doctoral training rewards depth and methodological precision but offers little exposure to the rooms where ocean policy is actually negotiated. Government meetings feel unfamiliar, the language is different, and there is often a quiet sense that policy work is something we earn the right to do later. Recent surveys of more than 1,300 ECRs across 108 countries reflect this directly. While they identified climate, biodiversity, and sustainable ocean use as their top topical priorities, the most consistent capacity gap they named was meaningful inclusion in decision-making and policy processes (Satterthwaite et al., 2025). The hesitation is not, in our reading, about capability. It is about not having been shown the door and, often, about no one opening it at all.

This hesitation has a real cost. Doctoral training teaches you to find a gap in the literature and fill it. It rarely teaches you that the questions a ministry, a coastal planning unit, or a community organisation is trying to answer often look quite different from a literature gap, and tend to need evidence that is legitimate, credible, and salient. Surveys comparing the priorities of scientists with those of policymakers and resource users repeatedly find persistent divergence, particularly on applied questions about restoration, bycatch, livelihoods, and local knowledge (Rudd, 2014). Reviews of marine science–policy knowledge exchange similarly conclude that one of the most consistent barriers to research uptake is poor alignment between research design and decision-making needs (Karcher et al., 2023). Government funding, whether through

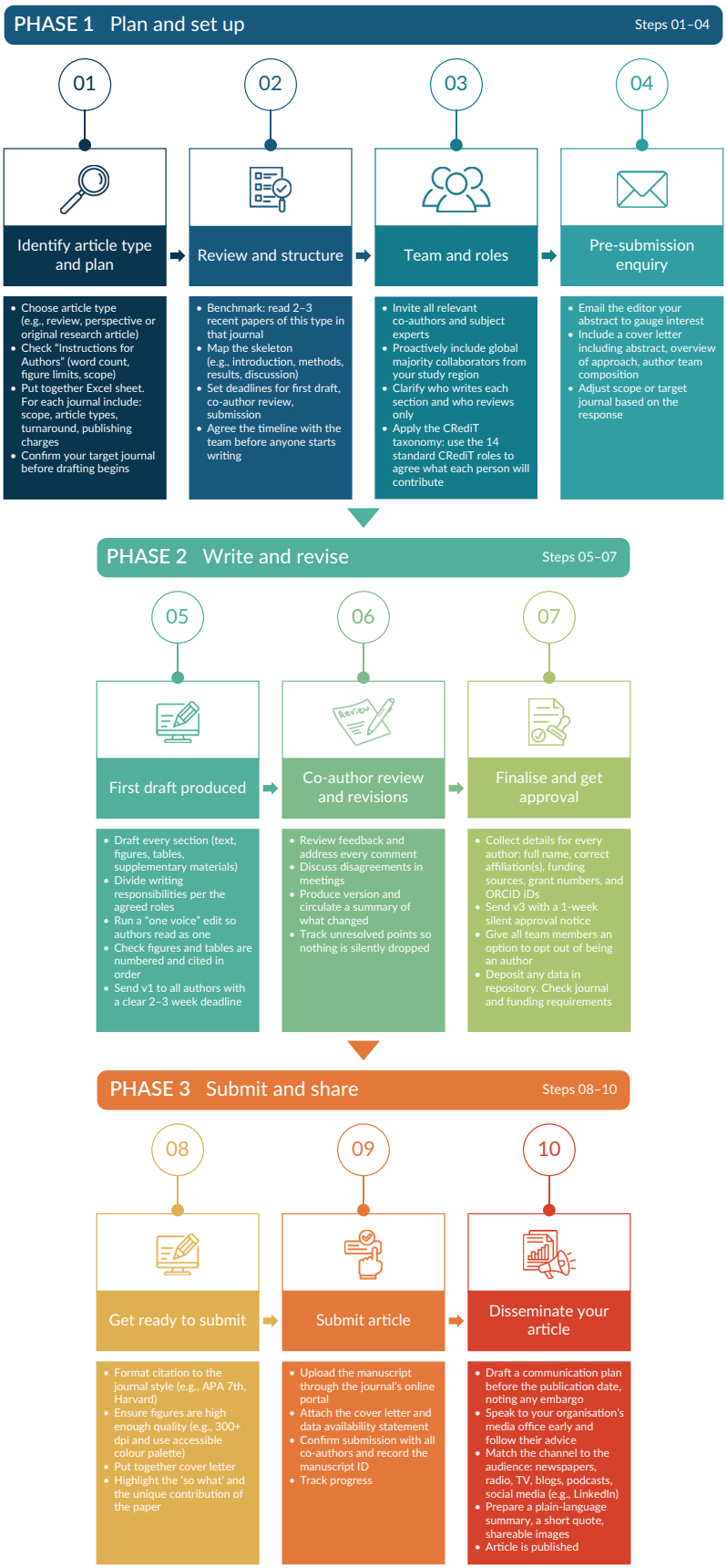


Figure 1. A step-by-step guide for publishing journal articles.

ministerial research budgets, agency-commissioned studies, or national programme calls, tends to flow toward work that visibly serves a policy mandate; the more your research is recognisable as answering a question someone in government is already asking, the more accessible those funds become. K. Ismail reflects on why she took her time to enter policy spaces:

> For a long time, I thought of policy work as something I would grow into later, once I had enough publications, once someone more senior invited me in. A great deal of what I learned in those early years came from observation: sitting in meetings I had asked to attend, watching how questions were framed, noticing who was listened to and why. Somewhere along the way, I became comfortable putting my hand up, sharing an opinion before I felt fully ready, and admitting when I had got something wrong. I noticed that some of my peers—particularly those trained in different settings—moved into these spaces much earlier than I did, while others, often for reasons that had little to do with capability, did not. That earlier entry is less common for many of us working in or from the global majority, and I think it is worth being honest that confidence is part of the picture: women I admire, who clearly know the substance better than many of the people speaking, will still hold back until they feel certain they have earned the right to be heard. (K. Ismail)

For women in or from the global majority, this matters even more. Domestic research budgets are often limited, while international funding calls are highly competitive and frequently shaped by priorities set elsewhere, leaving government research funding as one of the few accessible and locally controlled sources of support. Stakeholder communities are also often directly affected by the issues under study, making it harder to overlook the need for research that is both used and published. There is also the question of who frames the research agenda. When priorities are set primarily within global minority institutions and exported through funding calls, researchers based closer to the communities being studied can find themselves shaping their work to fit external framings rather than locally identified needs (Stefanoudis et al., 2021). Engaging with domestic government priorities is therefore also a question of whose questions count, and a way of ensuring that expertise held in the global majority is resourced toward the problems its own contexts have prioritised (Tigchelaar et al., 2021).

Working at this interface requires a set of skills that doctoral programmes rarely teach: (a) listening carefully to what an agency is actually asking, (b) translating technical findings into briefing notes and short policy summaries, and (c) holding realistic expectations about timelines, which are usually shorter and less forgiving than academic ones (Bednarek et al., 2018). Much of this work is performed by boundary organisations and the knowledge brokers within them. These are bodies that sit deliberately between research and decision-making and whose staff spend their time translating, convening, and maintaining relationships across that divide. It is worth knowing that these are roles and careers in their own right, not simply extra duties. These are also roles into which women in this field are frequently drawn, and the brokering work they involve is easily overlooked and rarely counted (Bednarek et al., 2018).

Practical knowledge is required when working at the science–policy boundary and undertaking knowledge brokering. This includes reading political context, recognising what does and does not fall within a given agency's remit, and identifying the moments at which evidence is most likely to be taken up. This is cultural capital in the sense set out in Lesson 1 (i.e., unwritten knowledge learned through experience rather than teaching), and it is easily mistaken for personal aptitude by those who happen to have acquired it. Budget cycles illustrate the point. Government funding typically runs to a fixed financial year, and as that year

closes, units may hold uncommitted funds that must be allocated quickly. In those circumstances, agencies approach people they already know and trust rather than beginning a relationship from scratch. A researcher who has invested in an agency (e.g., attending its meetings, contributing to its consultations, and making clear what work she can take on) is better placed to be approached when a short-notice opportunity arises. Knowing when such a moment has arrived is cultural capital; the standing relationship it activates is social capital; and what follows is the conversion of that relationship into economic capital, as commissioned work and research income. Knowledge of this kind is learnable but acquired by doing rather than reading. For early career women, this engagement needs to be actively protected rather than absorbed into schedules already stretched by the service and coordination loads described above (Shellock et al., 2022).

A mentor who actively brings you into these spaces is the easiest path in, and the literature on intergenerational knowledge exchange is clear that this kind of accompaniment is one of the most effective ways ECRs develop (Satterthwaite et al., 2025; Shellock et al., 2023a). But many of us never had that mentor, and waiting for one is its own form of staying outside the room where research priorities, and the budgets attached to them, are decided. You can include yourself: ask to attend the meeting, volunteer for the working group nobody else has time for, email the agency directly and offer a contribution, or show up to a consultation as an interested professional. Each is uncomfortable the first time; none requires permission you have to wait for. It also means learning from many people rather than one, none of whom may ever call themselves your mentor. K. Ismail describes what changed when she stopped waiting to be invited:

> What changed things for me was realising that no invitation was coming and that I could simply ask to be included. So I did, repeatedly, in different forms, often before I felt fully ready. Over time, those same rooms became where I learned how government research budgets moved: who decided, when, and what kinds of work were resourced. I did not have one mentor walking me through it; I had different people in different rooms, each showing me a piece of how it worked. (K. Ismail)

C. J. Fernandez-Abila adds that research also needs to reach the people it affects:

> Understanding ocean resilience demands technical rigour and, I have come to learn, an equal investment in communication. I remember sitting with fishing communities, where the findings meant little to the people most directly affected by them. The science was sound. The communication was not. Policy briefs, community summaries, and outreach outputs rarely count toward promotion the way papers do, and that asymmetry is real. But making your science legible to the people it is meant to serve is not peripheral to this work. It is central, and it deserves to be developed with the same deliberate effort as the research itself. (C. J. Fernandez-Abila)

Flexibility, in this work, is a strength rather than a weakening of academic standards. The same body of work may need to become a peer-reviewed article, a technical report for a ministry, a community-facing summary in a local language, and a contribution to a multi-stakeholder process, each shaped to its audience and each capable of opening different funding doors (Karcher et al., 2023). Treating these as part of one coherent practice is more honest about how the work unfolds and more sustainable over a career.

Finally, we do not suggest that the policy room is the summit of a marine science career. Basic science, laboratory work, taxonomy, long-term monitoring, and field research are complete careers on which the field

depends, not preparatory stages on the way to influence. Our argument is narrower. Those who do want to work at the science–policy interface are too often kept out by a lack of access rather than a lack of capability.

3. From Lessons to Actions

The five lessons do not collapse into a single recommendation. Taken together, they describe a set of recurring structural conditions that shape how careers develop for women in marine science, particularly for those working in global majority contexts, across disciplinary boundaries, and at the research–policy interface. Figure 2 draws these conditions into a practical action agenda, organised by actor and by theme. It is not a step-by-step guide. It is a map of where responsibility sits, and of what coordinated effort looks like when it is done well.

The agenda is built around three actor columns: (a) what ECRs can do as individuals, (b) what falls specifically to institutions and funders, and (c) what requires shared engagement between researchers and their institutions. Much of the existing guidance for women in marine science is written for individuals alone: the

Category	Individuals	Institutions and funders	Shared commitments
Pathways and access	• Plan smart: choose programmes for both learning and networks and prioritise scholarships over loans. • Context matters: frame study and career moves in terms of family and community realities, not just individual readiness.	• Fair funding: design funding to cover real living costs in Global Minority cities and widen access. • Inclusive timing: design access schedules that account for unequal timing pressures, especially for women facing family, community, and relational obligations. • Stronger returns: create clear pathways for returning scholars to use their skills in meaningful roles.	• Plan the pathway together: treat scholarship timing, deferral, and re-entry as a negotiation between applicant and institution, so caring, family, and community obligations shape the schedule rather than disqualify the candidate. • Design the return, not just the departure: for fellowships away from the home country, agree before departure how the scholar's expertise will be used on return and who resources the continuing link between host and home institution.
Networks and transitions	• Build networks: stay connected at home and actively build relationships during your studies. • Own your transition: frame cross-disciplinary moves as a deliberate career choice; join communities that span fields and sectors. • Leverage breadth: treat interdisciplinary range as a long-term asset, especially for governance and policy work linking biophysical evidence and social analysis.	• Enable applied, interdisciplinary work: embed support for qualitative, interdisciplinary, and co-produced research in funding, review, and evaluation systems so it is fairly assessed and not sidelined by single-discipline norms.	• Build breadth into the role: timetable joint supervision, cross-departmental seminars, and co-production time as normal workload, not something researchers absorb in the margins. • Sustain networks across distance: jointly resource the collaborations that continue after a scholar returns home, including travel, virtual convening, and co-authorship time, so networks built during study do not decay by default. • Match review to the work: agree that interdisciplinary and transdisciplinary proposals are assessed by panels competent to judge them, and that qualitative work is not measured against biophysical standards it was never designed to meet.
Roles, time and well-being	• Clarify the role: agree on responsibilities and time for development before accepting a job. • Ask for support: request practical. accommodation (e.g. a standing desk and flexible hours) to support your work.	• Support cross-sector work: provide time and resources for advisory, government, and community-facing roles so researchers can stay credible and effective at the research–policy–practice interface. • Make adjustments standard, not requested: provide adjustable workstations and equivalent provisions by default, so no one has to justify a health need in order to work safely.	• Put the whole workload on paper: agree an explicit allocation covering service, mentoring, community liaison, and knowledge brokering, and revisit it whenever new duties are added. • Treat rest as a professional matter: hours worked are taken back, leave and public holidays are protected, and depletion can be raised with a manager without it counting against you.
Recognising the full scope of work	• Broaden career contributions: treat policy briefs, evaluations, community engagement, and transdisciplinary advisory work as equivalent to publications and keep a record of them all. • Value public service: treat advisory, government, community, and NGO work as core to a research career in development and governance, not a distraction. It is where impact is most directly felt.	• Broaden outputs: recognise policy work, practitioner engagement, community co-production, and cross-sector collaboration as valid research outcomes. • Recognise diverse outputs: count policy briefs, evaluations, technical reports, and co-produced materials in evaluation, promotion, and funding to reflect the full range of scholarly contribution.	• Agree what counts, in writing: name technical reports, policy briefs, evaluations, community-facing outputs, and co-produced materials scholarly contributions in promotion criteria, grant assessment, and performance review. • Make the record possible: researchers document these outputs consistently. Institutions and funders supply the categories, formats, and evidence standards that allow them to be assessed. • Close the recognition gap and report on it: funders, publishers, and institutions move together on crediting non-traditional outputs, and publish the distance between what is asked of women ECRs and what is credited to them.

Figure 2. Action agenda for early career women researchers in marine science, organised by actor (individual, institution, and shared commitment) and category (pathway and access, networks and transitions, roles, time and wellbeing, and recognising the full scope of the work).

barriers were framed as personal, and so the solutions were too. Neither the published evidence nor our own experience supports that framing. The documented obstacles are institutional in origin, including recruitment and promotion criteria, the distribution of unrecognised labour, and the terms on which international collaboration is offered (Giakoumi et al., 2021; Shellock et al., 2022, 2023a). Structural barriers require structural responses, and the agenda keeps individual and institutional action visible side by side.

Figure 2 sets out the actions themselves, but two points are worth drawing out. The first is the recognition gap. Women ECRs are routinely asked to take on policy engagement, community liaison, and cross-sector collaboration, and this work is seldom counted as scholarly contribution in promotion criteria, grant assessment, or performance review. The distance between what is asked and what is credited is among the most consistently documented features of women's careers in academic science (Shellock et al., 2022, 2023a). The second is that the sharpest changes sit in the shared-commitment column. Change is not something an institution can do alone, nor something an individual researcher can negotiate for herself. It asks funders, publishers, and institutions to move together.

4. Conclusion

Marine science has not been designed to support everyone equally, and the evidence that it has not is now substantial. What is scarcer is an account of how those conditions are encountered from inside a career, and what can be done in response. That is what this article has sought to offer. The five lessons pair first-person testimony with concrete actions, and the action agenda distributes responsibility across individuals, institutions, and funders. Two commitments run through the article. The first is that guidance addressed to individual women cannot substitute for institutional change (i.e., promotion and recruitment criteria, grant assessment, the crediting of technical reports and community-facing outputs, the distribution of unrecognised service work, and the terms of international collaboration). These are all decided by institutions, funders, and publishers, and each is a place where the barriers described here are made and could be addressed. The second is that there is no single model of a successful marine science career. Equity is not measured by how many women reach any particular room, but by whether the range of legitimate paths through the field is genuinely open to them. Gender inequality in marine science is not a women's problem to solve. We share these reflections in the hope of contributing to a culture in which emerging scientists are not left to work out for themselves what should have been made clear all along.

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Conflict of Interests

The authors declare no conflict of interests.

LLMs Disclosure

The authors made use of large language model (LLM) tools during the preparation of this manuscript. Specifically, Claude (Anthropic) and ChatGPT (OpenAI) were used to assist with writing and reviewing portions of the text, and Claude (Anthropic) was further used during revision to assist with implementing changes in response to peer review and cross-checking in-text citations against the reference list. All tools were engaged through clear, detailed prompts grounded in the authors' own notes and project knowledge. No factual content was sourced from or delegated to these systems. Gemini (Google DeepMind) was used to generate images included in this paper. All LLM-assisted content was critically reviewed, verified, and edited by the authors, who take full responsibility for the accuracy, originality, and integrity of the final manuscript. LLM tools are not listed as authors and did not contribute to the conception, design, or intellectual direction of the research.

Supplementary Material

Supplementary material for this article is available online in the format provided by the author (unedited).

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