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Learning at the Helm: Rewards and Realities of Early-Career Leadership in Interdisciplinary Marine Research

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Abstract

In marine research, diverse teams are needed to understand and tackle global environmental issues. Often, it is early-career researchers (ECRs) who are tasked to lead these larger interdisciplinary research initiatives. There are a number of reasons for this: passion for the topic matter, desire to further their careers, or because ECRs may be perceived to have more time available. Whilst positioning ECRs in leadership roles can improve research inclusivity and innovation, they may lack the experience or training needed for such roles, or may not have access to essential support frameworks, such as mentorship, to help them navigate the challenges of research leadership. This perspective article offers shared insights from a team of diverse researchers who have led large interdisciplinary research teams as ECRs. Drawing on our experiences as ECRs in research leadership, we provide guidance for ECRs, their mentors, and collaborators on how to foster supportive environments that enable positive experiences for ECRs leading interdisciplinary research teams. Our recommendations include diversifying support networks, setting boundaries, and maintaining regular communication among team members. We highlight that while ECR leadership in interdisciplinary

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research can be a positive experience that is beneficial for professional development and career progression, strong mentorship is a key ingredient for a positive experience. This article identifies the need for research environments that allow emerging ECR leaders to grow, take risks, and make productive mistakes without jeopardising career progression. We offer prospective thinking on preparing emerging marine research leaders to shape and advance interdisciplinary marine research.

Keywords
collaborative research; early-career ocean professional; early-career researchers; interdisciplinary research; leadership; professional development

1. Introduction

Pressing global environmental challenges, jointly called triple planetary crises—including climate change (Lehtonen et al., 2019; Plagányi et al., 2026), the loss of biodiversity (Sharman & Mlambo, 2012; Worm et al., 2006), and pollution (Willis et al., 2022)—are simultaneously impacting the wellbeing of human societies and the health of natural marine and coastal ecosystems (Trebilco et al., 2021). The interconnected nature of these challenges (Boucher et al., 2025), particularly in the marine environment, heightens impacts across spatial and temporal scales, and further undermines social and ecological resilience. For example, the impacts of climate change can result in significant marine habitat loss (Hoegh-Guldberg & Bruno, 2010) and accelerate biodiversity declines (Worm et al., 2006), which can lead to reduced resilience in native communities and the potential proliferation of invasive and range-shifting species (Komyakova et al., 2022), with severe cascading impacts on social-ecological systems. Similarly, climate impacts can lead to biodiversity redistribution of marine species, impacting human and ecosystem well-being (Pecl et al., 2017). Pollution and ecosystem use change can also weaken marine ecosystem functions and resilience (Felipe-Lucia et al., 2020; Zhang et al., 2021), leading to biodiversity loss. Understanding and addressing these complex and interconnected issues requires innovative solutions produced by teams with diverse backgrounds and expertise, and from a variety of sectors (Banal-Estañol et al., 2019; Sun et al., 2021).

Researchers are increasingly building multidisciplinary teams that enable integration of technological innovation with social, environmental, and governance perspectives. This evolving and more inclusive science and co-production model celebrates diverse collaborations, transparent dialogues, and non-traditional science outputs, and is supported by funding bodies preferentially prioritising the selection of research projects that involve diverse teams (Díaz-Faes et al., 2025; Lyall et al., 2013). While multidisciplinary work aims to explore a problem by bringing together insights and learning from multiple academic disciplines, interdisciplinary research integrates diverse perspectives and methods across disciplines as well as beyond academia (e.g., with industry or community partners). In this article, we focus specifically on interdisciplinary research in the context of marine and coastal environments.

In the last decade, the development of large, interdisciplinary research teams and collaborations has led to an increase in the number of authors on peer-reviewed literature (Thelwall & Maflahi, 2022). This growth in the size of authorship teams has been attributed to an increased demand for research projects that bring together multiple complementary methods and the necessary complexity to explore the expanding research frontier (Thelwall & Maflahi, 2022). These interdisciplinary research teams typically include multiple authors

(>5 people) from different knowledge systems and have found success in addressing many of the global challenges of our time (Game et al., 2009). Whilst necessary, building, managing, and working within these interdisciplinary teams can come with challenges, including the balancing of different disciplinary norms and priorities, knowledge systems, work styles, and research time constraints (Kelly et al., 2019). Researchers, particularly early-career researchers (ECRs), are not often provided training on managing the demands of leadership and project management within these large and diverse teams—and a growing body of research has explored the roles, challenges, and support required for ECRs to undertake multi-, trans-, and interdisciplinary research (Satterthwaite et al., 2025). Given that today's ECRs are the research leaders of the future ocean (Satterthwaite et al., 2025), it is essential to support their skills and capacity developments to ensure they are best prepared to address the wicked problems of our time.

2. Development Opportunities for ECRs

A growing body of research has proposed institutional strategies for integrating ECRs into multidisciplinary research initiatives (Sobey et al., 2013), and has offered recommendations for cultivating interdisciplinary or socio-ecological marine research trajectories (Kelly et al., 2019). Soft skills such as project management, effective information exchange, and trust and collaborative relationships across disciplinary boundaries have also been identified as key to facilitating effective team management (Read et al., 2016). However, these soft skills are rarely taught to either senior or early-career science and conservation researchers, leading to disagreeable and inefficient collaborative experiences (Karimi & Pina, 2021; Slater et al., 2024). This gap in researcher training highlights a need for practical tools and support that actively support and equip marine researchers to improve the quality of their collaborative experiences.

The barriers to ECRs' capacity in interdisciplinary marine research are well-documented, and—similarly to other research domains—include challenges such as short-term contracts, job insecurity, demanding workloads, and limited competitive funding (Andrews et al., 2020; Brasier et al., 2020; Deininger et al., 2021; Satterthwaite et al., 2025; Schadeberg et al., 2022). Further challenges for ECRs in collaborative settings include discrimination based on, for example, age, gender, race, first-language background, or experience. Such barriers can lead to lower perceived credibility and trust, requiring more efforts towards diversity, equity, and inclusion in sciences (Kaikkonen et al., 2024; Rölfer et al., 2022). Suggestions from the literature on overcoming these barriers include increased support from funding bodies, efforts to create spaces that foster collaborative culture and interpersonal professional relationships, formalising mentorship, and mainstreaming mental health support (Andrews et al., 2020; Cheruvelil et al., 2014; Goring et al., 2014; Pannell et al., 2019).

This article seeks to contribute to this body of research. Specifically, this perspective article provides guidance for ECRs, as well as their mentors and collaborators, on how to foster supportive environments that enable positive leadership experiences for ECRs leading large interdisciplinary science teams. We show that the capacity for ECRs to successfully lead large interdisciplinary authorship teams is increased through key enablers, including strong mentorship, financial and other institutional support, and access to opportunities for communication and leadership development. This article moves beyond diagnosing barriers to ECR leadership by offering practical, experience-based actions for ECRs, mentors, and institutions to take in efforts to improve marine interdisciplinary research experiences. Drawing directly from lived leadership experiences, we translate common challenges into actionable strategies that can be adopted immediately within interdisciplinary research teams.

3. Approach

Building on the communication training elements of Read et al. (2016), and the collaborative manuscript development strategies by Oliver et al. (2018), the lead authors (PP, KW) surveyed researchers who led large interdisciplinary authorship teams when they were ECRs to better understand their experiences and challenges. In this article, we define an ECR as an individual, regardless of age, working in ocean research across academia, industry, consultancy, government, and other sectors who identifies as being at an early career stage (Satterthwaite et al., 2022). We acknowledge here that early career stage can draw out because of career breaks and interruptions. We use the term "ECR" rather than "early-career ocean professional (ECOP)" given the research focus of this article. However, we expect that the experiences and lessons learned may also be useful to ECOPs working in sectors outside of research.

We invited respondents to co-author this work to provide a more nuanced, collective response. Together, we discussed and developed key lessons to support ECRs in preparing for and engaging in interdisciplinary science projects exemplified by navigating large multidisciplinary authorship teams. The key lessons presented below identify enablers, guidance, and tangible actions that ECRs can use when building and working in interdisciplinary teams and within the research community more broadly.

We targeted members from the University of Tasmania's Centre for Marine Socioecology (CMS; https://marinesocioecology.org), a research group that focuses on applying inter- and transdisciplinary approaches to studying marine issues (~140 members). The CMS is a collaboration between the University of Tasmania and the Commonwealth Scientific and Industrial Research Organisation (CSIRO), and though primarily focused on marine sciences, the CMS specialises in inter- and transdisciplinary research approaches with members and students from a broad spectrum of disciplines (e.g., physics, law, economics, biology, sociology, psychology, human health, art, media, philosophy, and governance) and organisations (e.g., state and federal government bodies, community networks, marine industries, etc.). Since its establishment over a decade ago, the CMS network has centred around collaboration and institutional reflection of interdisciplinary research and researcher experiences (e.g., Cvitanovic et al., 2020). We targeted respondents from the CMS community as a practical means of accessing a large group of early-career interdisciplinary researchers.

The CMS aims to facilitate opportunities for its ECR members to take on leadership roles early in their careers. For example, the Centre hosts an ECR network led by ECRs and has facilitated leadership training for ECRs. The Centre also creates opportunities for ECR members to lead research projects and initiatives: For example, 40% of participants and collaborators in the CMS Future Seas initiative (Pecl et al., 2022) were ECRs or PhD students (Nash et al., 2022). Additionally, many papers within this research initiative were led by at least one ECR or PhD student. Given these ECR leadership opportunities provided and supported by CMS, we considered the Centre to offer an appropriate sample of perspectives for this survey.

Importantly, the experiences described within this article are not limited to CMS-associated projects, but reflect participants' broader early-career trajectories.

Participants were engaged in this research based on three eligibility criteria:

1. They had acted as either principal investigator (PI) or lead author on a large, interdisciplinary research paper or project.
2. They undertook this leadership role while identifying as an ECR within CMS.
3. The research output must have been published (in any formal format, including reports and scientific papers) between 2020 and 2024.

The aim of this selection process was to ensure that participants had direct, recent, and relevant experience in leading complex interdisciplinary work during the formative stages of their research careers. The focus on the CMS network allowed us to draw from a pool of researchers operating within marine socio-ecological domains, while ensuring common institutional context and comparable early-career conditions. While this purposive sampling approach does not aim to be representative of all interdisciplinary ECRs, it was designed to elicit rich, experience-based insights from individuals who had actively navigated the opportunities and challenges of interdisciplinary leadership while in the early stages of their marine science careers. To ensure transparency in our perspectives and roles within the research context, we provide a positionality statement in Box 1.

Box 1. Positionality statement.

> We are a group of 12 researchers who work across global contexts but share a common training background in Australia and involvement in CMS as ECRs in interdisciplinary marine research. Our team spans diverse disciplinary research backgrounds, including socioecology, social sciences, policy and governance, marine pollution, marine ecology and biodiversity, food systems, and climate science. We are now all employed across academia, government, non-government organisations, and consultative roles. Our intention is not to fully capture the experience of all ECRs nor to provide a comprehensive account of all lived experiences, but rather we offer insights shaped by our lived experiences. We are all researchers from high-income countries, identify as white, with nine identifying as female, and three as male. Our backgrounds have influenced our access to resources, networks, and opportunities in leading large research teams. Our experiences may not fully reflect the challenges or opportunities faced by researchers from other cultural, economic, or racial backgrounds, and our reflections are shaped by the privileges and constraints inherent to our context. By situating ourselves in this context, we aim to be transparent about how our positionality may have influenced team dynamics, decision-making, and leadership experiences discussed in this article.

3.1. Survey Design and Data Collection

To begin discussions and generate perspectives, the lead authors developed an open-ended, qualitative survey to elicit detailed reflections on participants' experiences leading interdisciplinary research efforts. The survey was designed to capture both practical and personal dimensions of leadership, including emotional responses, institutional support, and strategic learning.

The survey included background demographic questions (disciplinary background and current career stage) followed by open-ended items focused on a specific interdisciplinary project or paper led by the respondent.

The questions explored motivations, enablers, barriers, mentorship, and career impacts. The survey included the following questions:

1. What is your research discipline(s)?
2. What is your current position?
3. Please briefly describe the large, interdisciplinary project or paper you (co-)led. (Include project aims, origins, and the disciplines involved.)
4. How many co-authors did this project involve?
5. Was this a positive experience? (Yes/No—please explain.)
6. Did you receive mentorship or have guidance in (co-)leading this project? Please explain.
7. What enablers did you experience or identify during the process that helped you (co-)lead this project or paper?
8. What barriers did you experience or identify during the process that hindered your efforts to (co-)lead this project or paper?
9. How did you address these barriers?
10. How would you address these barriers in future projects?
11. What do you see as the main benefits of taking on this project, if any?
12. Do you think this experience was beneficial for your career development? If so, how?
13. Is there anything else you would like to add?

The survey was distributed electronically via the CMS member mailing list, where members who self-identified as meeting our criteria were asked to respond using Google Forms. Participants were invited to co-author this article to allow each to build on the responses and to reflect on the process together. Participants were given two weeks to complete their responses, and we received 11 responses. All responses were submitted in written form and the results anonymised. The questions were designed to be reflective and open-ended, enabling participants to articulate nuanced insights and experiences in their own words. This approach was chosen to prioritise authenticity, minimise group conformity and social acceptability bias, and allow depth over breadth.

Although participant names and affiliations were removed prior to analysis, many responses described specific projects, events, collaborations, and interpersonal situations that could potentially identify individuals. Because of this, a single author (PP) reviewed the responses to identify key themes for discussion and conduct the sentiment analysis. Given the relatively small sample size, we used an AI-assisted sentiment analysis as a supporting tool to assess survey responses, as a means to reduce potential bias. This approach was used to generate broad themes for discussion, and to broadly assess respondents' experiences in leadership as either mostly positive, mixed, or mostly negative (Q5, 6, and 12). The responses to the open-ended survey questions (Q5–Q12) were provided in plain text format and organised by question. We used ChatGPT-4 (July 2025 version) to extract repeating patterns present throughout each response that specifically linked to the question themes (e.g., leadership challenges, support systems, mentorship, compensation and workloads, and conflict resolution). The lead author reviewed the AI-generated outputs to ensure the results presented below accurately reflect both individual and collective participant/co-author perspectives. The outputs were then assessed by the lead authors to create a list of barriers and enablers to ECR leadership in interdisciplinary research, and to identify logical themes within the responses. Further data processing and visualisation was handled in Microsoft Excel.

4. Synthesis of Experiences and Perspectives

Across the research experiences ECRs reported on, there was variability in project scope, research topic, and team size (Figure 1). ECRs' feelings toward leading their project overall (Q5) were largely positive: seven positive responses; four mixed responses; and zero negative responses. Research project mentorship was reflected on less positively (Q6): six negative responses; two mixed responses; and three positive responses (Figure 2). Lastly, nearly all ECRs found the experience of leading a large team to be beneficial to their careers (Q12), with 10 positive responses and one mixed response.

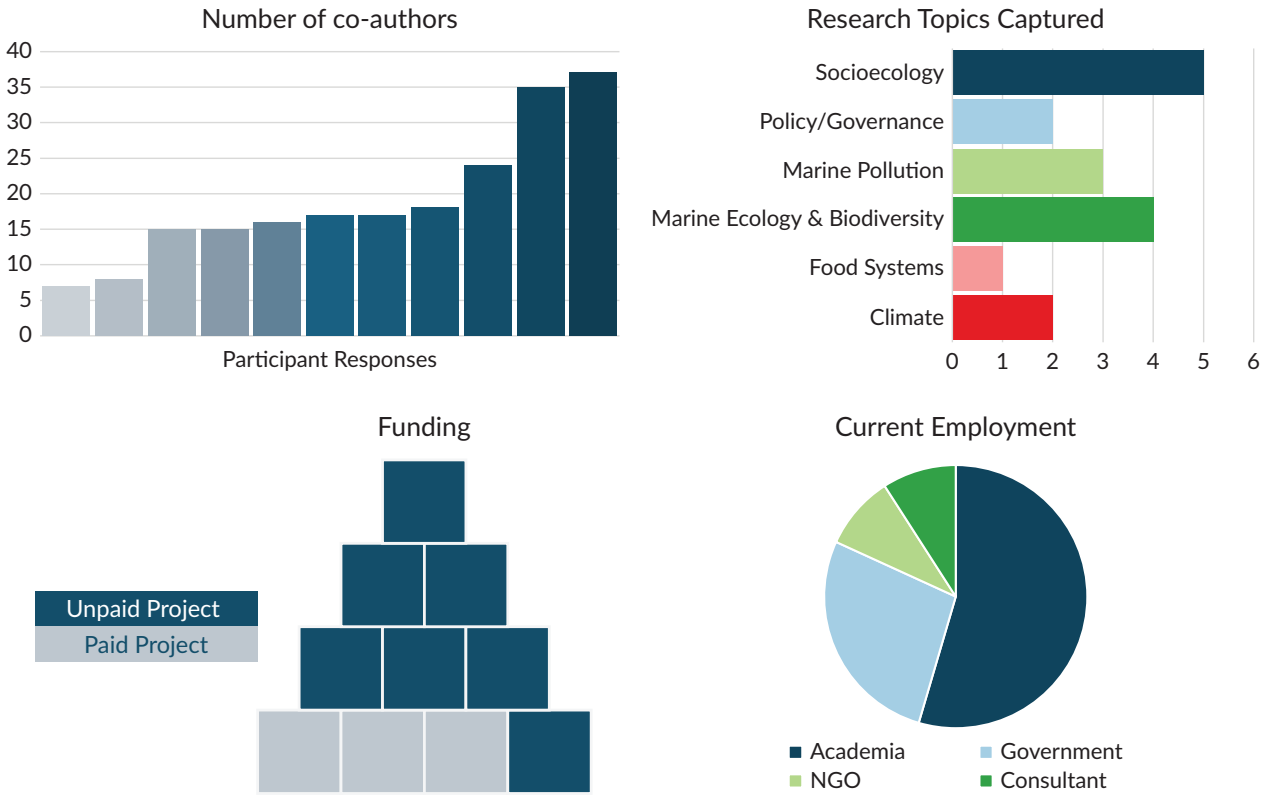


Figure 1. Summary of the responses to questions 1–4 of the experience reflectance survey. Respondents reflected on 11 interdisciplinary projects that they led as ECRs. All respondents were ECRs at the CMS at the time they led their project. ECR leads covered multiple disciplinary backgrounds (top right), and worked with a number of co-authors (between seven and 37; top left). Only three received funding from or were employed by their project (bottom left). At the time of writing, all ECR leads are currently employed in their area of expertise including academia, government, NGOs, and consultative roles (bottom right).

4.1. Why Take On Leadership Early?

Survey responses consistently indicated that ECRs perceived leadership roles in interdisciplinary teams as beneficial for career development (Figure 2). All participants emphasised the opportunities these roles provided to build networks and work across diverse perspectives and disciplines, and develop leadership and communication skills. These experiences were frequently described as pivotal in enhancing career trajectories, with all participants (but one mixed response) suggesting their leadership position was beneficial to their career development. While all project leads were associated with the CMS (i.e., academia)

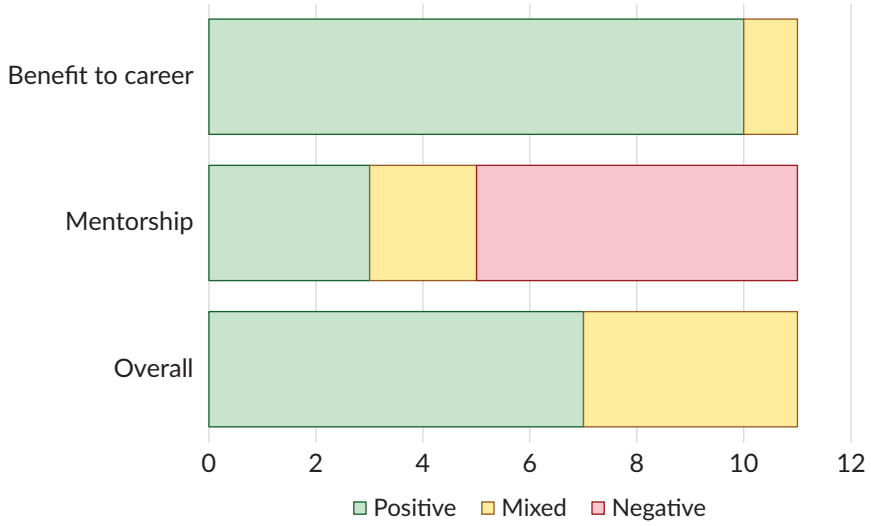


Figure 2. Results of a sentiment analysis based on questions 5, 6, and 12. We analysed the long-form answers to question 5 ("Was this a positive experience?") to understand ECR leads' experiences overall: Seven said it was a wholly positive experience, while four had mixed responses. We also analysed responses to question 6 ("Did you receive mentorship or have guidance in (co-)leading this project?"), to which three described positive experiences, two had mixed experiences, and six had negative experiences. We also explored responses to question 12 ("Do you think this experience was beneficial for your career development?"), to which 10 expressed explicitly positive responses and one a mixed response.

for the duration of their individual projects, participants have since moved into a variety of sectors, including academia (n = 7), government (n = 2), NGOs (n = 1), and the private sector (n = 1; Figure 1). Enhanced professional networks, increased visibility, and the ability to draw on these experiences in job interviews, grant proposals, and other competitive processes were identified as the most valuable opportunities for career development:

> It produced well-cited research. It increased my profile at [the university] and elsewhere. It has been an excellent example of leadership that I have used in many funding/award applications….Great to work with such an interesting array of researchers who had different perspectives to me and really broadened my outlook on how to think about sustainability issues in the oceans. (P3; positive response)

> Yes, it was a good development process for leadership, budgets, communication and engagement. (P4; positive response)

> This project has been incredibly useful for demonstrating leadership for funding applications and job promotions. (P6; positive response)

> I call back to this experience in my resume to demonstrate that I can lead multi-author teams…this has helped me secure leadership roles. I use many of the lessons learned in my current role where I often act as a decision maker for large projects and where I now lead similar size teams. (P11; positive response)

Although no participant viewed their leadership experience as wholly negative (Figure 2), a commonly mentioned challenge (Q8–10) was the lack of formal funding or institutional support to ensure the

completion of their work. Most participants led their projects alongside their primary research responsibilities or ongoing doctoral/postdoctoral studies, often without dedicated time or remuneration. While it is clear that taking on leadership roles has many benefits for an ECR's professional development, such experiences come with a significant demand for the lead's time and resources:

> It was beneficial, but now I am often given these roles in a project without the project understanding how big an effort it is….I learnt a lot, it was something that was seen as outside of my work role at the time so it was a lot of work for free. (P2; mixed response)

4.2. Positive Leadership Experiences Require Strong Mentorship

Mentorship emerged as a critical factor shaping ECRs' experiences in leading interdisciplinary projects. Supportive mentors are known to boost research productivity, career satisfaction, and retention in academia (Brasier et al., 2020). Further, a 2020 study has demonstrated that more supportive environments tend to lead to a high number of outputs and greater impacts (Belavy et al., 2020). Participants in this study were exposed to varying levels of mentorship throughout their work and thus reported highly variable experiences.

Only three of the 11 participants received consistent, structured, and proactive mentorship during their leadership experience (Figure 2). These individuals emphasised how instrumental this support was in helping them manage responsibilities, navigate team dynamics, and avoid burnout:

> My primary thesis supervisor provided me with advice and guidance on how to handle a big co-author group. Advice included how to contact different people I hadn't known before, how to select co-authors, and how to navigate the paper editing and feedback process (including how to make executive decisions for conflicting advice). (P7)

In contrast, the majority of participants described minimal, inconsistent, or entirely absent mentorship. In some cases, senior collaborators were unresponsive or disengaged, leading to ECRs shouldering project leadership with little guidance. Many responses reflect these common frustrations:

> I lacked authority and as a junior was not respected by some team members, which led to several team members ignoring emails, dismissing requests, or acting outside of agreed targets. (P8)

> Not having other senior co-authors come to the workshop or make our paper a priority. (P10)

> Ghost authors…not being a priority. (P11)

While many participants reported minimal or absent mentorship, several described compensatory strategies such as cultivating peer-mentoring clusters, proactively seeking external advisors, or formalising decision-making structures to reduce reliance on informal senior input. Though these were not always a substitute for structured guidance, they allowed ECRs to feel more confident in their leadership:

> My junior colleague was also very supportive and positive and their enthusiasm was helping me stay afloat. (P8)

> After each workshop, [we] would check-in and debrief with the [other project coordinators]. This was very helpful because without those check-ins I think it would have been harder to ask for help. (P10)

> I had mentors from outside who guided me through….Having a higher overarching core team was useful as they were able to step in when we asked or needed to manage conflicts we didn't feel comfortable with. (P11)

These findings reinforce the value and need for research projects to invest resources in developing robust and inclusive mentorship structures; and this is particularly needed for interdisciplinary initiatives where communication and participant research backgrounds are more diverse (McGregor, 2017). Although formal mentorship remains essential, informal mentorship can provide complementary, relational support that increases well-being, fosters confidence, and helps ECRs navigate the complexities of divergent disciplinary norms and academic settings experienced in interdisciplinary marine research environments (Cvitanovic et al., 2026). Targeted mentor training, formalised expectations for co-authorship and engagement, and cultural norms of effective mentorship are therefore essential to support ECRs stepping into leadership roles (McGregor, 2017). Recognising mentorship as a non-transactional practice, similar to a gift economy, can build more inclusive and accessible research cultures (Cvitanovic et al., 2026). Such investments not only enhance individual outcomes but also build more resilient, collaborative research communities.

4.3. Good Communication Underscores Good Collaboration

Across projects, communication emerged as a critical factor shaping both the success and emotional tone of interdisciplinary leadership experiences. While no question directly asked about communication, positive and negative experiences were shared in response to questions pertaining to barriers and enablers. It is important to note that different research backgrounds can lead to different or discipline-specific expectations around authorship, research, and writing protocols. Many ECRs described struggling with unclear or inconsistent communication norms, particularly when combined with the hierarchical dynamics of working as ECRs. In several cases, poor communication (whether interpersonal, e.g., exchange of information and emotion between coauthors; or structural, e.g., written requests and documentation) intensified existing pressures, leading to avoidable delays, confusion, and frustration. ECRs noted that managing large teams with conflicting terminologies, disciplinary languages, or dominant personalities further complicated coordination efforts. For some, being early in their career made it challenging to assert authority or negotiate conflict, especially in the absence of formal leadership training or institutional backing. ECRs emphasised the emotional complexity of these leadership roles, balancing professional growth with stress, uncertainty, and, at times, interpersonal tension:

> Coauthors provided unhelpful input or didn't follow instructions when providing input, leading to unnecessary extra time-consuming work. (P1)

> I observed what not to do in terms of communication and collaboration. (P10)

Despite these difficulties, several strategies were found to reduce friction and foster productivity. Building relational trust, forming smaller core teams within larger groups, and establishing clear ground rules around feedback and authorship were repeatedly identified as effective. However, such structures were often implemented only by those with access to prior mentorship or experience:

> Regular meetings, a clear scope, strong communication and a commitment to building rapport with new people. Being inclusive and supportive and flexibility were also important. (P4)

> Face-to-face time enabled good communication and idea sharing. (P6)

To improve future collaborations, ECRs recommended setting clear expectations from the outset, including explicit authorship and role guidelines, feedback protocols, and communication timelines. Thoughtful team selection, prioritising trusted collaborators, and establishing shared norms early were also highlighted as essential. Normalising the emotional highs and lows of first-time leadership and providing institutional support could further ease the burden on ECRs navigating complex interdisciplinary environments.

5. Tangible Actions to Improve and Enhance Leadership Experiences

Together, our responses to the questionnaire (specifically Q7–11) highlighted numerous barriers and enablers of success within our various projects. We have grouped these into broad categories of enablers or barriers to success, and further grouped whether they are interpersonal or institutional in nature (Table 1).

Table 1. Broad enablers and barriers of success that were identified by participant responses to the survey.

Enablers of Success	
Institutional	*Interpersonal*
Diversity in organisational cultures and support structures, and knowledge	Direct mentorship from senior academics or project leads
Financial support	Effective communication
Positive feedback along the way	Guidance or training on leadership and problem-solving
Respect and recognition of work	Supportive co-leads, even if hands-off
Time allowed for projects	Trust within teams
Barriers to Overcome	
Institutional	*Interpersonal*
Lack of financial support, pay in experience	Behavioural issues (big characters and big egos)
Lack of support or recognition for contributions	Challenges in authority and communication, especially for junior staff
Pressure to contribute	Difficulty asking for help
Pressure to publish or meet metrics	Ghost authorship
Unclear responsibilities and reporting lines	Ineffective mentorship—lacking depth, commitment, or consistency
Unreasonable time pressure and workload(s)	Lacking team management skills (inc. conflict resolution)

The enablers and/or barriers that ECRs most frequently identified include: help and support (seeking or providing), mentorship from more experienced academics, time (dedicating extra hours, seeking compensation for this), communication (improving or initiating), feedback (managing or requesting), and

team building early on (collaborating or negotiating). Funding and compensation for people's time arose as a constant sore point, reflecting research culture norms to rely on ECRs to fulfil challenging roles as they are often eager to have a go and are more willing to be paid in experience.

Below we consider both the identified enablers and barriers to provide suggestions of tangible actions that can be employed by large interdisciplinary teams, inclusive of ECRs, mentors, project leads and managers, and institutions.

5.1. ECRs

5.1.1. Strong Project Management

Effective project management requires clear expectations, transparent decision-making, and shared accountability. The following actions can help ECRs to achieve this:

- Employ a project management plan that is co-developed with the team. Revise the plan at regular, mutually agreed intervals.
- Set deadlines, even if you don't have a project delivery deadline. A looming deadline motivates some, but clear timelines and deliverables support everyone.
- Employ the use of a meeting agenda and meeting minutes to reduce ambiguity, support accountability, and protect ECR leaders from perceptions of informal or uneven decision-making.
- Be explicit and transparent about decisions (e.g., contradicting co-author suggestions cannot both be implemented).
- All records on agreed roles and decisions should be easily accessible for review by all team members.
- Clarify authorship and contributions, agree on responsibilities early, and regularly revisit. Consider an authorship charter that sets clear expectations for ethical authorship (see Supplementary Material).

5.1.2. Time Management and Commitment

The following actions can help ECRs assess and manage their capacity to contribute effectively to large interdisciplinary projects:

- Consider whether you have the time and capacity to take on this work. Be realistic about the time and energy commitment before saying "YES!"
- Discuss time management with a trusted mentor; ask them what the realities of such a project may be.
- Set boundaries early; your time is finite. Make sure those boundaries are clearly communicated and discussed with the team, including acknowledging boundaries of other team members.
- Use ECR status to your benefit: Ask for guidance and mentorship, and be open to learning.

5.1.3. Evaluate Available Support

The following actions can help ECRs identify, develop, and diversify the support available to them:

- Explore what the support structure looks like (Do you think you will be well supported?).
- Seek mentors from diverse backgrounds to enhance your learning in transdisciplinary environments.

- Seek mentors who champion your leadership, not just your research.
- Seek advice on others' experiences (including from your ECR peers) and seek out reliable collaborators/team players.
- Diversify support sought and received: ECRs should intentionally seek out support from at least two mentors (e.g., we suggest a project-specific mentor and a potentially more ongoing longer-term career mentor) to reduce dependency on a single individual and their perspective. Cvitanovic et al. (2026) share practical advice for interdisciplinary marine ECRs on seeking and selecting mentors, as well as managing mentor–mentee relationships.
- Own your role, even if you are the youngest in the room. Develop confidence in your contribution while making space for others' voices.

5.2. Mentors

5.2.1. Early-Career Support and Communication

Mentors can play an important role in making ECR leadership visible, supported, and sustainable. Mentors can:

- Be a champion of ECRs: This role requires active, visible support rather than passive endorsement, particularly during moments of conflict or uncertainty.
- Speak up when there is opportunity to reaffirm ECR leadership.
- Regular check-ins: Create space for troubleshooting and reflection. Share strategies for balancing voices, resolving conflicts, and keeping projects moving.
- Ensure support and mentorship: Where possible, connect ECRs with co-mentors or peer networks to expand their support network beyond one person.
- Advocate for an ECR's time: ECRs can find it hard to say no to perceived opportunities. Keeping meetings and activities focused on core project objectives helps ECRs manage their time and maintain workloads.

5.2.2. Professional Development

Effective mentorship also requires skills that may not develop through research training alone. The following actions can strengthen mentors' skills and confidence in supporting ECRs:

- Seek targeted training to strengthen your skillset for providing support to ECRs: Mentorship, leadership, communication, mental health first aid qualification, and subconscious bias awareness are all skills that support researchers to successfully lead large teams.

5.3. Institutions

5.3.1. Development Opportunities

The following actions are recommended for institutions seeking to provide development opportunities:

- Provide tiered training (open to all career stages) in leadership, project management (including budgeting and procurement), supervision, communication, conflict resolution, research integrity, and mental health first aid.

- Offer coaching and leadership shadowing to provide on-the-job training experience.

5.3.2. Support and Recognition

The following actions are recommended to strengthen institutional support and recognition of ECR leadership:

- Provide financial support, through targeted internal grant schemes, that can financially cover an ECR's leadership time.
- Make sure funding processes are well structured, equitable, and transparent.
- Recognise ECR leadership through newsletters, internal awards, or nominations for external prizes; these actions require minimal financial investment but can significantly legitimise ECR leadership within hierarchical research cultures.
- Develop promotion criteria that value team leadership and supervision.
- Develop recognition pathways that reward support and facilitator roles, making explicit the relational work of coordinating and synthesising large teams.

5.3.3. Inclusive Culture

The following actions are recommended to foster an inclusive institutional culture:

- Promote inclusive culture, where all voices of all career levels and backgrounds are heard and respected.
- Encourage more senior collaborators and mentors to continue their own development through training and feedback; for example, ask senior managers if they have completed and maintained training in leadership, mentorship, communication, and mental health first aid, with 360-degree feedback tied to performance plans.
- Ensure appropriate PI/corresponding-author credit for ECR leaders; for example, through encouraging adoption of CRediT taxonomy and authorship guidelines across the institution.

In addition to our recommendations, there are a number of tools available that are tailored to project management and relationship building within science and academia more broadly. Some can be developed relatively easily to provide structure to a project, particularly when such structure is initially absent, and are especially useful during the early stages of project development. We provide one such example in the Authorship Charter (Supplementary Material), though similar charters could be adapted for mentorship, funding, or workload expectations. Such materials might include a first-meeting checklist for interdisciplinary teams, a minimum mentorship expectations framework, positionality guidance (Battaglia et al., 2026), or a simple authorship negotiation timeline.

ECR leadership is growing across marine sciences, and so too are the number of resources developed by ECRs for ECRs, such as guides to open access publishing (Franco-Santos, 2024), practical advice for working within interdisciplinary research (Kelly et al., 2019), and guidance applicable across career stages on ensuring meaningful collaboration with ECRs (Kaikkonen et al., 2025). Collectively, these tools and resources demonstrate that practical, peer-informed solutions already exist and can be readily adopted or adapted to support more equitable and effective collaboration. Importantly, these tools require minimal resources to implement, suggesting that meaningful improvements in collaboration and leadership practices are achievable even in resource-constrained environments.

6. Conclusion

Positioning the next generation of research leaders at the helm of interdisciplinary teams can support research efforts tackling complex global challenges. Exposing ECRs to this type of leadership experience presents great benefits for career development, and professional and personal growth. Crucially, these benefits are deeply intertwined with many ECRs' primary motivation: contributing to solutions and understanding of triple planetary crises. By supporting ECRs to build the hard and soft skillsets needed to lead interdisciplinary research, we not only strengthen their prospects for long-term academic permanency but also expand the collective capacity to generate meaningful, lasting solutions to the world's most urgent challenges. Leadership is a challenging task, and for new leaders to be successful, mentors and senior researchers have a responsibility to champion, guide, and support ECRs through the task. This guidance is especially important as leading interdisciplinary co-author teams builds the experience needed for the increasingly inclusive, transdisciplinary nature of marine research and for careers that extend beyond academia into government, industry, and other marine sectors. While ECR leadership offers many benefits, institutional and systemic barriers remain. Institutions, organisers, and mentors have a role to play in creating support mechanisms that further empower emerging researchers.

Importantly, ECR leadership in interdisciplinary research is not a future aspiration; it is already taking place, and delivering impactful outputs. The experiences and recommendations presented here demonstrate that, with intentional support, structures, and shared responsibility, emerging researchers can successfully lead complex collaborations. Beyond individual career development, enabling ECR leadership creates pathways for emerging researchers to become active, connected, and valued members of the marine interdisciplinary community. By strengthening supportive networks, inclusive leadership practices, and opportunities for meaningful contribution, institutions and research teams can ensure ECRs are not only participants in interdisciplinary research but also contributors who help shape its future direction. Fostering ECR leadership is not only an investment in individual careers, but a practical strategy for strengthening the resilience, inclusivity, and impact of interdisciplinary marine science.

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Conflict of Interests

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LLMs Disclosure

LLM tools (Chat GPT-4) were used to conduct part of the sentiment analysis of the survey responses as discussed in Section 3.1.

Supplementary Material

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

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