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RESEARCH ARTICLE

A transdisciplinary co-conceptualisation of marine identity

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Abstract

1. Challenge 10 of the United Nations Decade of Ocean Science for Sustainable Development (2021–2030) calls for the restoration of society's relationship with the ocean. Research suggests that the relationship people have with marine environments can influence their depth of engagement in marine citizenship action, and the important role for 'marine identity' in driving that action. Although identity is well-researched, marine identity is a concept novel to academia and a baseline understanding is required, both to grasp the scope of the concept, and to support research into its role in transforming the human-ocean relationship.
2. Here, a transdisciplinary study, endorsed as a UN Ocean Decade Activity and by the EU Mission Ocean & Waters, brought together a multinational community of marine researchers and practitioners to co-produce a baseline conceptualisation of marine identity, drawing on photovoice and deliberative methodology. This paper presents the findings of the co-production process and offers a first introduction in the literature of the multiple variations and formations of marine identity.
3. We find marine identity to be a complex and multidimensional concept, suffused with individual experiences and understandings of the marine environment, based on social and cultural understandings of the ocean, contemporarily and historically. We present real-world examples of marine identity to illustrate key themes that were developed through co-production.
4. Policy implications: We propose marine identity as a catalyst for understanding existing multifaceted and caring relationships with the ocean, as well as the restoration of society's relationship with the ocean. Marine identity research should,

For affiliations refer to page 20.

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therefore, be prioritised in research seeking to contribute to the UN Ocean Decade Challenge 10, as this will support integration of non-material values of the ocean into marine planning processes and policy making, enabling effective responses to Challenge 10's emphasis on integrating traditional/cultural ways of knowing and valuing the marine environment, through diverse marine identities. We welcome research efforts that will further develop the marine identity concept and empirically investigate the relationships between marine identity, marine citizenship, and people's relationships with the ocean.

KEYWORDS
identity process theory, marine citizenship, marine identity, ocean decade, sense of place

1 | INTRODUCTION

Since the turn of the decade, the 2020s have been positioned as a time for much needed change and action to restore human-ocean relationships. The United Nations Decade of Ocean Science for Sustainable Development (2021–2030) (hereafter the UN Ocean Decade) aspires 'to catalyse transformative ocean science solutions for sustainable development, connecting people and our ocean' (UNESCO-IOC, 2021). This aspiration acknowledges the importance of understanding the multiple and diverse connections between people and ocean, coasts, seas, and intertidal waters (hereafter the ocean or marine environment), in order to sustain the benefits that marine environments and biodiversity provide for human well-being, often referred to as 'ecosystem services' (e.g. Beaumont et al., 2007; Fischer & Eastwood, 2016). Challenge 10 of the UN Ocean Decade—to '[e]nsure that the multiple values and services of the ocean for human well-being, culture and sustainable development are widely understood' (UNESCO-IOC, 2021, p. 23)—calls for a deeper understanding of the multiple ways of living with and knowing the ocean. The need to understand and support sustainable relationships between humans and water is equally prevalent in other programmes, such as the EU Mission: Restore our Ocean and Waters by 2030 (hereunder Mission Ocean), an overarching policy framework that aims to implement the objectives of the EU Green Deal in European blue spaces. In recognition of the importance of public engagement and acceptance for initiatives such as marine protected area designation, the European Commission has chosen 'Public Mobilisation and Engagement' as one of two 'Cross-Cutting Enablers' that will drive Mission Ocean & Water's success (European Commission, 2021, p. 19). Accordingly, there is a growing interest in broader marine social sciences research (Bennett, 2019; McKinley et al., 2020) and increasing emphasis on concepts such as marine citizenship, ocean literacy, and ocean connectedness to help make sense of these relationships.

Marine citizenship, defined as 'exercising the right to participate in the transformation of the human-ocean relationship for sustainability' (Buchan et al., 2023), is a key policy tool for sustainable marine governance (Buchan et al., 2023; McKinley & Fletcher, 2010, 2012). This conception of marine citizenship is grounded in the tradition of environmental citizenship, recognising both individual and collective rights and responsibilities concerning ocean resources, both within and beyond state boundaries. These responsibilities are often overlooked or unrecognised within the traditional nation-state framework of citizenship (Buchan et al., 2023; Dobson, 2003; Fletcher & Potts, 2007). Such a conception of citizenship—grounded in responsibilities and rights rather than state dependency—reflects the global society ethic at the centre of the UN Ocean Decade. The UN Ocean Decade's motto: 'The science we need for the ocean we want' (emphasis added) demonstrates at once this collective 'we' and the use of 'ocean' as opposed to 'oceans' evoking a shared space and challenge. Challenge 10 aspires for collective "society-ocean connections [to be] strengthened, and that there is increased motivation, capability, and opportunity for people across all sectors of society, to make decisions and behave in ways that ensure a healthy ocean" (Glithero et al., 2024, p. 7). In this way, marine citizenship can be viewed as a requisite of Challenge 10, as being a means through which the human-ocean relationship will be restored, but also as a foundation for its ethic of shared challenge and identification of the ocean as a connector of human society.

Marine citizenship is positively influenced by relationships that people have with marine environments, as well as by values, marine place attachment (*thalassophilia*), and marine place dependency (Buchan et al., 2024). However, understanding how to operationalise marine citizenship has, to date, received limited attention. Acknowledging the existence of knowledge-action and value-action gaps, a novel marine identity process theory, defined as 'an identity rooted in the way in which the ocean as a place supports the sense of self' has been proposed as a catalyst for realising marine citizenship actions (ibid.). The direct connection between marine identity process and marine citizenship has not yet been empirically tested. The purpose of this study, therefore, was to commence a first exploration of the ways that diverse conceptualisations of marine identity align with the elements of identity process theory. We set out to interrogate the nature of marine identity in a way that transcends disciplinary and geographical boundaries, thus informing in as broad a way as possible, future research into marine identity, its role in motivating marine citizenship, and thus its contribution to achieving Challenge 10 of the UN Ocean Decade.

1.1 | The case for marine identity

There is very little literature explicitly relating to marine (or ocean) identity (see Buchan et al., 2024; Jaksha, 2019; Kelly et al., 2023). However, there is a vast and growing body of literature on human-ocean relationships. Therefore, to situate our study of marine identity within this literature, we first present an overview of the role of identity in existing conceptual frameworks.

1.1.1 | Influence on pro-environmental behaviours

Supporting the hypothesis that marine identity might drive marine citizenship action, identities are implicated in moral responsibility and prosocial behaviour (Hardy, 2006; Schmitt et al., 2019); in pro-environmental behaviours (Freed, 2015; Gatersleben et al., 2014; Stets & Biga, 2003; Whitmarsh & O'Neill, 2010); and in environmental citizenship (Clayton, 2003). The dynamic relationship between action and identity is embedded in the situational context where a behaviour is performed (Bandura, 2018) and incorporates considerations of not only individual attributes but also societal relations and the wider environment, both natural and anthropogenic (Brown & Westaway, 2011).

1.1.2 | Sense of place: The ocean

The ocean as a place is central to the definition of marine identities proposed by Buchan et al. (2024). An individual can be conceptualised to be encapsulated within communities and the biosphere in a dynamic relationship that constitutes a place (van Putten et al., 2018). This place-based relationship affects and is affected by individuals and communities to constitute various aspects of their lives, including material, relational and subjective well-being, as illustrated in a range of case studies around the world (Maharja, Praptiwi, Richter, et al., 2023).

Sense of place research, which explores the details of knowledge, history, intimacy, and relations with place, can provide insights for further development of the marine identity concept. Sense of place research is approached through multiple disciplinary perspectives and is also closely linked to value framings (Liquete et al., 2013; Riechers et al., 2022). Researchers have demonstrated how human-ocean environment interactions form a geographical surrounding through relations, imaginations, belonging and memory (Acott et al., 2023; Feld & Basso, 1996; Filippucci, 2010, 2016; Kelly & Hosking, 2008; Poe et al., 2016; Tilley & Cameron-Daum, 2017). Places are not merely a backdrop to everyday life but are rather produced along, with and through it (Hirsch & O'Hanlon, 1995; Ingold, 2000). Identities are influenced by the social and cultural features of a particular society, in a specific place and time, which can assign certain values to the natural environment around them (Ayodeji, 2009; Crumley, 1994; Ounanian et al., 2021). Identity and place, then, are co-constituted through environmental engagement.

As places change, then in turn, so might identity. A changing marine environment caused by pollution, ecosystem degradation, loss of coastal areas due to sea level rise, or policy influences, can threaten sense of place and remodel marine identities, as well as human uses and comprehension of seascapes (Fuller et al., 2017; Refulio-Coronado et al., 2021; Romagnoni et al., 2022). For example, various projects exploring the emotional impact of climate change effects on island and coastal populations reveal intense and conflicting emotions related to the vulnerability that comes with living with the marine environment (Bercht, 2021; du Bray, Wutich, et al., 2019; Hermann, 2017). This environmental flux and the alterations to everyday life are, therefore, likely to produce altered senses of place and place-based identity.

1.1.3 | Ecosystem services and valuation

The Ecosystem Services (ES) framework is perhaps the most dominant paradigm in environmental management contexts and aims to account for the benefits people derive from nature (Beaumont et al., 2007), in our case the marine and coastal environment. Alongside the Natural Capital approach (e.g. Hooper et al., 2019), the ES framework sometimes relies on an economic framing of societal values to understand these benefits (see for example, System of Environmental Economic Accounting, n.d.). This has driven extensive research into environmental values, spanning a wide set of theories from core or basic values (e.g. Schwartz, 2012) that underpin the whole of a person's moral or ethical position, through to specific values, which can be further refined to relational, intrinsic and instrumental values, a framework now seeing application in policy (Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, 2022).

More recently, within the vast ecosystem services literature, is an implicit recognition that ecosystem services are co-produced by interactions between people and place (e.g. Chan et al., 2011). The concept of relational values has been introduced as a way of understanding human–nature relationships (Chan et al., 2018; Riechers et al., 2022). Following Chan et al. (2018), 'Relational values are not present in things but derivative of relationships and responsibility to them' (p. 1462). (Riechers et al., 2022) Relational values link with ecosystem services particularly through recognition of cultural heritage and identity (Beaumont et al., 2007; Liquete et al., 2013). Indeed, identity is an important emergent element in research into relational values (Riechers et al., 2022). The role of identity here defines what is meaningful and important to a person, thus shaping the interactions that lead to the co-production of ecosystem services and explaining why people attribute diverse values to the same place (Fischer & Eastwood, 2016). Through the lens of environmental valuation, 'marine identity' could be perceived as an expression of relational value and, following Riechers et al. (2022), reinforcement of such values could potentially contribute to pro-marine environmental action. This recognition of the need for a framework that can understand cultural values in ways that are not reduced to economic valuation is a crucial step in relation to supporting Challenge 10 and its aim to integrate various ways of knowing and valuing the ocean into ocean science (Glithero et al., 2024).

1.2 | Marine identity process theory

The relationship between values and identity is dynamic and within the field of psychology, they are treated as distinct but interacting concepts. Interdisciplinary empirical investigation of factors influencing marine citizenship produced findings which mapped to Breakwell's (1986, 1993) Identity Process Theory (IPT; Buchan, 2021; Buchan et al., 2024). The IPT recognises that identities are formed and re-formed in a dynamic way, in which values, attitudes and other social elements are absorbed into the identity framework. IPT identifies four key identity process components: self-esteem, distinctiveness, continuity and self-efficacy.

Twigger-Ross and Uzzell (1996) identify the salience of place within the identity process framework, highlighting the importance of social representations of place (also known as place identifications). The authors observed the importance of scales of place, variable between individual identities. Recognising the cultural and individual variation in social representation of the ocean as a place, relational values, and the range of scales from local beach to global ocean, marine identity process must be a concept of multiplicity, in which humans individually and collectively interact with, perceive and conceive ocean as places.

Identity Process Theory predicts that threats to identity result in action to remove that threat (Breakwell, 1986; Jaspal & Breakwell, 2014). Where there is dependency upon a healthy marine environment, people with a marine identity experience a threat to their sense of self in situations of marine degradation (Buchan, 2021). However, it should not be supposed that all marine identities are conducive to marine citizenship, due to the variety of social and personal interactions with the ocean, not all of which will be founded upon marine sustainability or healthy marine ecosystem (Hoelle et al., 2023). For example, Whyte (2019) has studied surfers' complicated relationships with the coastal environment. Although surfing can produce an activist notion of citizenship in practitioners, this is not necessarily the case. Some surf cultures hold these ethics together with highly polluting practices such as long-distance travel, visits to fragile reef ecosystems, and widespread use of petroleum-based products like surf wax and wetsuits. In Whyte's research, individual surfers range from environmentally aware and activist to unconcerned about the damaging nature of their practice.

The ability of humans to develop multifaceted relationships with the ocean as a type of place that transcend locality, indicates that marine identity research can make an important contribution to better understand the key social drivers for achieving Challenge 10 of the UN Ocean Decade. This article engages directly with Challenge 10 by (1) investigating the different ways that people understand how the marine environments that they identify with are affected by the behaviours of themselves and others and (2) by presenting examples of the variety and richness of the knowledge and relationships that Challenge 10 aims to integrate into ocean science. It does so by developing a theoretical conceptualisation and practical understanding of the emerging concept of marine identity (Buchan et al., 2024; Jaksha, 2019; Kelly et al., 2023). By adopting a transdisciplinary approach, we take an open and inductive approach to conceptualising marine identity to elicit insights about both identity process and influencing factors as a potential driver of marine citizenship. We do not attempt to map the findings onto existing ecosystem services or sense of place frameworks, rather to present them in their breadth to inform future research.

In the next sections, we present the methodology used to co-create a multinational, cross-cultural, and transdisciplinary baseline understanding of the novel concept of marine identity and its link to marine citizenship. After presentation and discussion of our findings, we highlight implications for future research.

2 | METHODS

Given the complexity of the concept of identity, and the diverse disciplinary approaches to its investigation, this study adopted a transdisciplinary approach to create an investigative space that was open to induction of the novel marine identity concept. Transdisciplinarity moves between, across and beyond disciplines and seeks to understand the present world without boundaries (Nicolescu, 2014). Transdisciplinary research is underpinned by collaboration between researchers and non-academic stakeholders in order to integrate and reflect on different knowledges, and grapple with paradox (Wickson et al., 2006). This resonates well with Challenge 10's ambition to integrate other-than-academic forms of knowledge into ocean science and investigation (for example, to 'Fund and support Indigenous-led research toward effective codesigned and integrative science'; Glithero et al., 2024, p. 13). To support a transdisciplinary approach, a co-production methodology was used (see Section 2.1), consisting of a one-day online workshop (see Section 2.3) supported by photovoice (see Section 2.2). Photovoice was used to elicit diverse kinds of information and expression that are often less accessible by other methods (Harper, 2002). Furthermore, the participatory aspect of the photovoice approach followed here enabled us to co-create new insights on marine identity by engaging participants of diverse backgrounds, disciplines, and geographic contexts and hence combine diverse understandings of the concept. The workshop enabled collaborative discussion and reflection on the emergent themes of the photovoice and understandings and characteristics of marine identity.

2.1 | Co-production

Knowledge co-production refers to a process where a broad range of actors come together to collaboratively identify the topic, knowledge gaps, discussion and/or knowledge outputs to better grasp 'the complexity of real-world problems' (Hegger et al., 2012). Building on transdisciplinary praxis (Wickson et al., 2006), and transdisciplinary knowledge co-production involving non-academic participants (Strand, Ortega-Cisneros, et al., 2022), the study involved academic researchers and non-academic marine practitioners, representing both the communities they work with and themselves as individuals and researchers.

In November 2022, a one-day, online, deliberative workshop was held involving international marine researchers and practitioners. Participation was via the platform Zoom (San Jose, CA: Zoom Video Communications Inc). Prior to the workshop, we used a participatory photovoice process where participants were invited to submit photographs and interpretative text that were made accessible to all. The lead researcher and two workshop facilitators were embedded in the research as facilitator-participants, and contributed photographs, experiences, and perceptions, as peers in this emergent community. Keeping with the ethos of co-production, workshop participants were invited to participate in the writing of this manuscript with a choice to contribute to the original writing, to review/edit, to be acknowledged or remain anonymous.

2.2 | Photovoice method and analysis

Photovoice and photo-elicitation are visual arts-based research practices commonly used in identity research (Harper, 2002; Wang & Burris, 1997). Visual art has been important for representation and stereotypes of identities, and in *Art on My Mind: Visual Politics*, bell hooks (1995) contends that art can provide the functions of (i) recognition of the familiar or (ii) defamiliarisation when it comes to group representations. Visual art can, therefore, enable a broad sampling of examples of marine identity. Photo-elicitation and photovoice methods have the potential power for seeing differently through visual art (Leavy, 2020).

Typically, photo-elicitation uses images as a prompt during interviews, whilst photovoice allows research participants to communicate knowledge through the photographs they make (Leavy, 2020; Strand, Rivers, Baasch, et al., 2022). We used a participatory photovoice method as the starting point of the co-development process. We did this for two reasons: (1) to maximise the efficiency of the workshop itself by capturing multiple views and enabling early reflections by all participants; and (2) to seed a rich discussion because 'images evoke deeper elements of human consciousness' (Harper, 2002). Additionally, the use of photovoice enabled wider contribution by those who were unavailable for the workshop itself.

Participants were optionally invited to submit up to four photographs with corresponding text, responding to the question: *What is marine/ocean identity?* For effective photovoice, participants must understand the mission of the research (Bugos et al., 2014); therefore, it was requested that photos relate to participants' own personal, experiential or informed view, based on what they understood from their research, practice, or own life. Images were taken or selected by themselves, which has been shown to empower participants and promote greater reflection and clarification of thoughts and ideas (Richard & Lahman, 2015). The images, alongside their interpretative text, were shared with workshop participants and photovoice contributors prior to the workshop to enable reflection across cultures and respective worlds (Harper, 2002). Nineteen participants contributed 60 photos. Six of the contributing participants were unable to attend the workshop (see Supplementary 1).

Saldaña (2016) notes that there are multiple epistemological interpretations of what identity is, which in turn shape what form of coding and qualitative analysis is used. The lead researcher conducted a preliminary thematic analysis (Bryman, 2016) of the photovoice using NVivo (release 1.7). Although informed by the evidence linking marine identity to marine citizenship, this pre-analysis of the photovoice was inductive and aimed to provide a starting point for the workshop deliberations, rather than generate findings. Emergent topics included characteristics of the ocean (e.g. beautiful, dangerous); how boundaries people-land-the sea were narrated; citizenship; marine dependency and heritage; emotions and senses; gaze and otherness; identity process theory elements; and the subjects of the images (see Supplementary 2 for the codebook). The pre-analysis was presented during the workshop as an overview of the images to start the deliberations. The images were used as a visual prompt representing multiple perspectives on marine identities and do not form a stand-alone dataset.

2.3 | Online workshop method and analysis

The online workshop comprised two parts. Part 1 focused on understanding the meaning of marine identities. The lead researcher introduced the theoretical background to the project and presented marine identity as an identity rooted in the way the ocean as a place supports the sense of self. The photovoice collection was shown to the group as a prompt for discussion about commonalities and differences evoked by the photovoice collection. Deliberation was used to seek agreement on a definition of marine identities that encompassed diverse perspectives. We inducted key themes relating to the relationship between self/human and the ocean pragmatically and without disciplinary prejudice.

In part 2, participants were placed into three smaller groups mixed in terms of location, discipline and researcher/practitioner. In these groups, participants built on the discussions from Part 1; shared their examples of marine identity; and considered how identities might influence marine citizenship. Participant-facilitators in each group supported the discussions to ensure all participants were able to share their views and contribute key ideas to an online workspace (Miro board). A breadth of interpretations of marine identity emerged along with several core questions for future research in this domain.

Workshop data from both sessions were recorded on the Miro board, which all workshop participants and photovoice contributors had access to. The zoom meeting was recorded, and the recording made available to participants after the workshop, to support accuracy in analysis post-workshop. Contributions to the Miro board were organised according to the workshop goals as described above, and these were extracted and imported into NVivo where they were inductively coded by the lead researcher to create organisation of the themes. The outcomes of this process were shared with the participants post-workshop. The participants then worked together to produce this manuscript as the outcome of the co-production process. The collaborative writing process enabled ongoing deliberation to reach consensus about the core marine identity themes emergent in this study.

2.4 | Recruitment and participants

Target participants were marine researchers and practitioners from around the world who were interested in developing the concept of marine identity and understanding its role in promoting marine citizenship. In keeping with the transdisciplinary research design, recruitment was pursued through a form of snowballing on social networks (Noy, 2008). The use of social media platforms, such as X (previously Twitter) and LinkedIn, enabled recruitment information to be made public and shared via international marine networks. Recruitment information was also disseminated through the Canadian Ocean Literacy Coalition and Marine Social Sciences Network (via social media and newsletters). Gatekeepers of organisations, projects, and networks (such as international environmental organisations engaged in community-based work on-the-ground and Indigenous and other cultural ocean literacy/citizen projects and networks), were contacted directly. This increased the range of potential participants and improved reach to communities less accessible through online recruitment, although it remains a limitation that the online recruitment may have not reached all potential participants.

Recruitment took place from mid-September until the end of October 2022; in total, 45 people responded to the call for participation. Of these, 32 participated in the co-production process, and 26 participated in the workshop on the day including the lead researcher (see Supplementary 1 for a full participant list). The process yielded representation in the workshop and/or photovoice activity from 17 countries within Western, Southern and Northern Europe; North America; Oceania (Australia and Aotearoa New Zealand); Sub-Saharan Africa; and South-eastern Asia. Of the 32 who participated in the co-production process, 72% were from Europe, 84% were women, and 16% were men. Participants represented additional areas of the world through their research or practice being multinational.

Potential participants received information sheets about the project and those who participated completed consent forms for the workshop, its use of data and the data deposit with UK Data Service, and for the photovoice including permission to reproduce images in this manuscript. The study was approved by the University of Exeter Geography Ethics Committee, reference 519,878.

3 | RESULTS OVERVIEW AND CRITICAL REFLECTIONS

3.1 | Defining marine identities

Part 1 of the workshop identified commonalities and differences in conceptualisations of marine identities, depicted by the photovoice collection and the understanding and experiences of the participants. Consideration was also given to the shared features of marine identities. Quotes from the workshop are presented in italics.

3.1.1 | Commonalities across depictions and understandings of the basis and nature of marine identities

The photovoice data portrayed many similarities in the ways that the participants conceptualised marine identities. Transnational themes and the primacy of human-ocean relationships were commonly expressed. For example, the images were dominated by ocean water, with views of the ocean—or 'ocean gaze'—often the main subject, reflecting personal exposure to the marine environment, be that from the shore, underwater, at sea, or a more abstract or artistic representation of our personal relationships with the ocean (Figure 1).

Within and amongst the natural seascapes, social-cultural heritage was commonly recognised as a feature of marine identity. Photovoice data included representations of intangible cultural heritage (Strand et al., 2023), such as traditions and customs, and occasionally tangible heritage, for example, traditional crafts, lighthouses, and ancient settlements (Figure 2). Dependency upon the ocean was a predominant and recurring theme, with personal narratives reflecting themes of marine dependency for recreation, livelihood (particularly fishing), food provision, health and overall well-being.

Materiality of the ocean was forefront in the photovoice, through sensory experience, the ocean's fluidity and temporality, and the physical risks it can pose (Figure 3). As a group, the workshop participants suggested that the ocean has unique temporal and immersive qualities, recognised as an affective body that connects the self to the place in which it lives.

Finally, elements of social identity processes were explicitly recognisable, in particular: self-efficacy and continuity (Figure 4). Self-efficacy is a core component of the self-concept, identifying

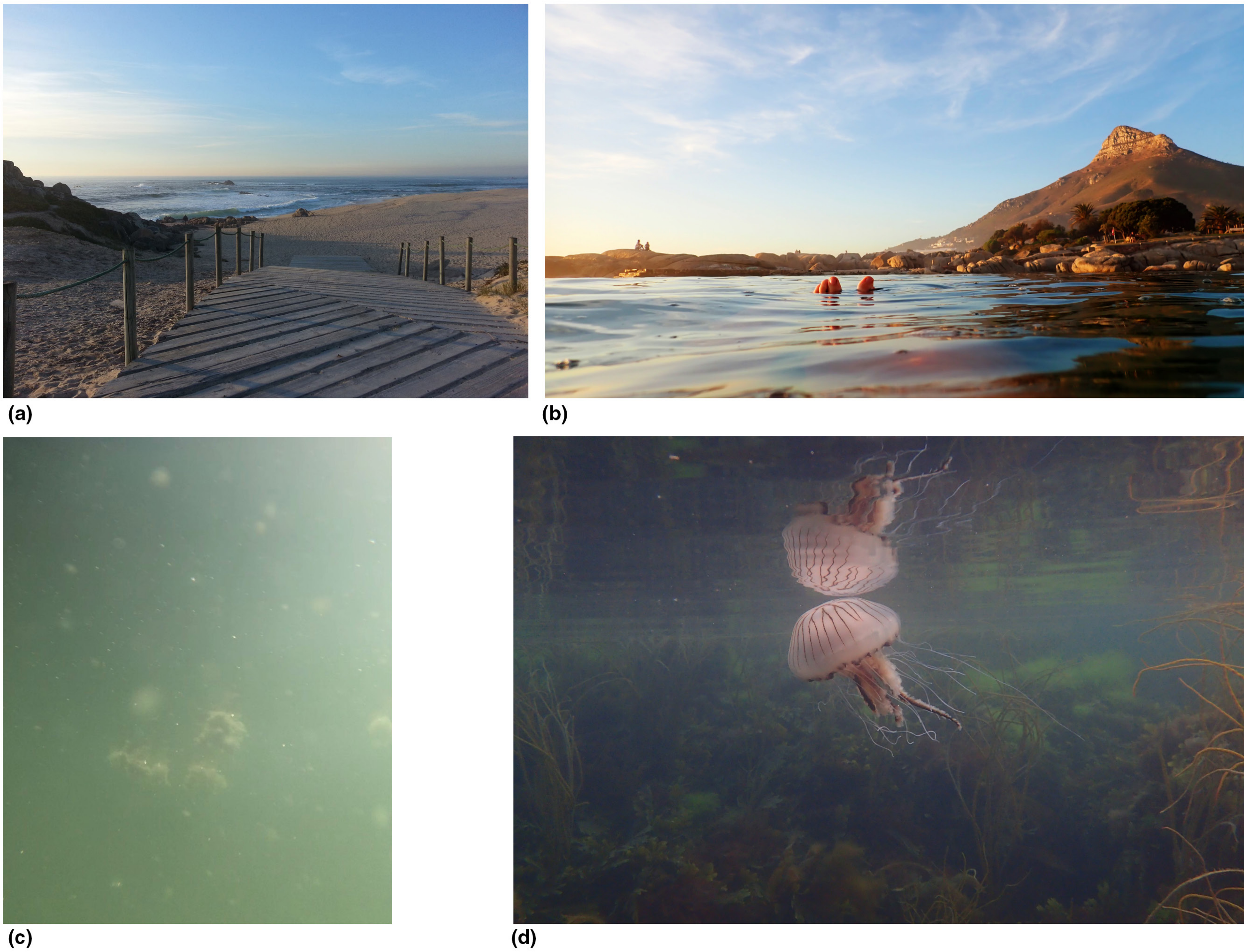

FIGURE 1 Exploring the ocean 'gaze'. (a) From the shore out to the ocean. Credit: Maria Vittoria Marra. (b) Breaking the sea surface. Credit: Mia Strand. (c) Artistic representation. Credit: Aleš Čermák. (d) Underwater sealife. Credit: Pamela Buchan. Photovoice texts: (a) 'An image from the Portuguese Way to Santiago I took during a business trip to Matosinhos, Porto. I will always remember that trip as the first one in my life in which, in spite of being on my own, I totally felt happy and comfortable as if I was familiar with the place already, and that walk I took along the ocean which is represented in his picture was unforgettable.' (b) 'Marine identities are fluid, flowing, adaptive. They often rely on the ocean for wellbeing, healing and mental health, letting the ocean hold them or cleanse them. Marine identities are embedded in cultural heritage, both tangible and intangible. Whether it is ancient, generational, new or broken connections to the ocean, they depend on the ocean's health for their own. The importance of a clean and healthy ocean therefore becomes a necessity, not an option. Marine identities are past, present and future.' (c) 'The water world takes on differing states which open up alternative possibilities for co-constitution with human life and experience.' (d) 'Paradox. The ocean calls to me to get inside it. It's both escape and reality, freedom and attachment. Following a sea animal while it goes about its business feels like a moment in another world. I think of those I met underwater when I visit above the waves'.

the ability to be an autonomous and competent individual. Through our research, we identified that though communities may be dependent upon the ocean for resources, they also can be empowered by it through gathering its provisions to gain independence from conventional economies. The ocean supports certain freedoms and formative development, for example, through youth sailing projects (e.g. Save The Med Foundation[1]). Place-referent continuity was evident in our reflections on formative memories at the coast or in the water, particularly for those growing up near the coast or in island nations. We recognised place continuity through time, through location at the coast, and in the settlements, cultures and practices that have been passed down through generations (Strand, Rivers, et al., 2022).

The workshop participants recognised that as a group, these mostly positive, shared conceptualisations of marine identities were limited to our shared positionality as people working in the marine world, and predominantly from Western nations in the Global North. This limitation made it particularly important to interrogate differences in our marine identity depictions.

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[1] Marine regeneration, education and community programme based in the Balearic Islands https://www.savethemed.org/en/.

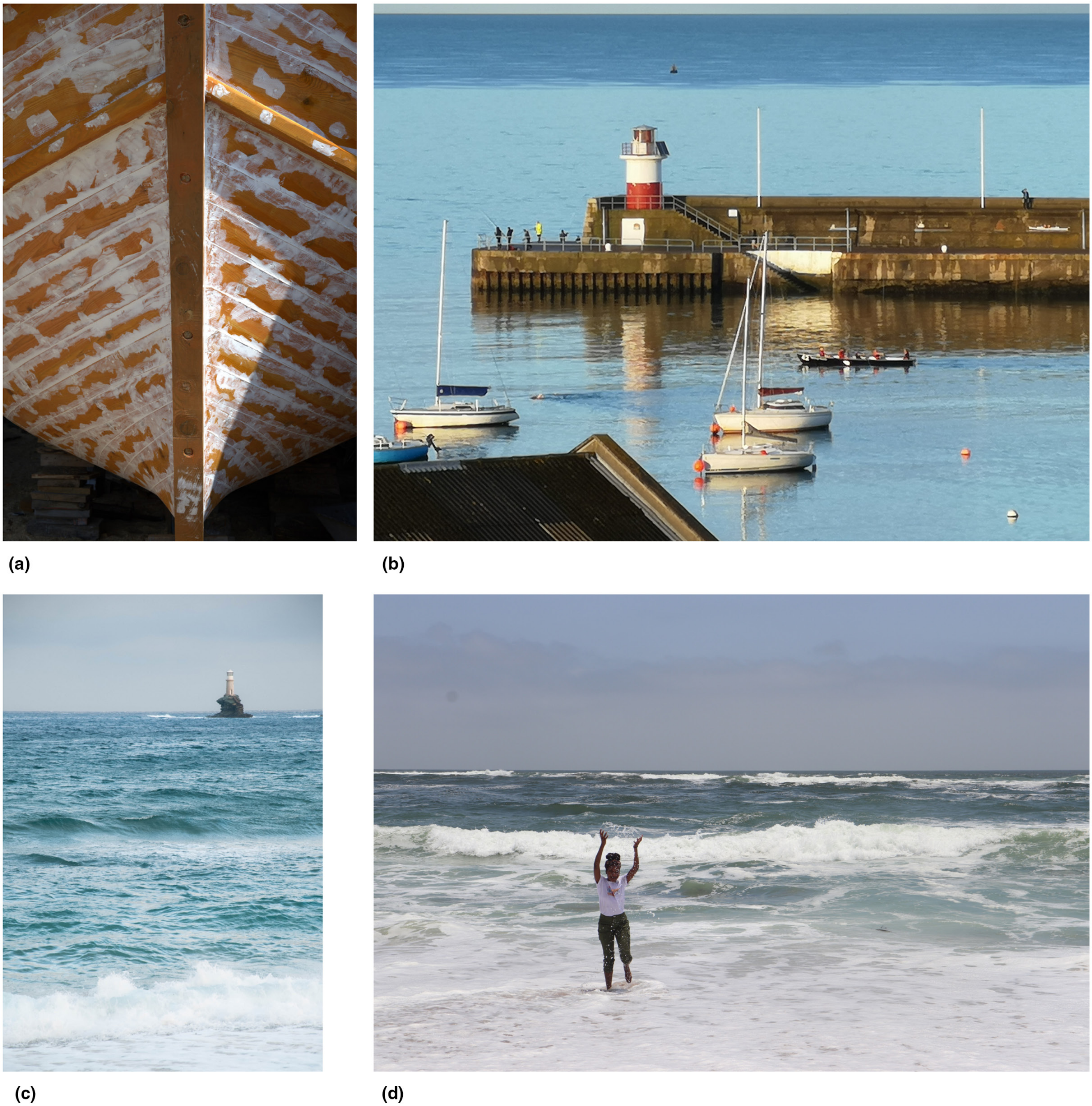


FIGURE 2 Common themes in visual depictions of marine identities. (a) Human heritage through marine traditions. Credit: Mavra Stithou. (b) Multiple marine place dependencies. Credit: Elisabeth Morris-Webb. (c) Interplay between human structure, the untameable sea and inner thoughts. Credit: Mavra Stithou. (d) Well-being. Credit: Tangi Hangula. Photovoice texts: (a) "Image 'Shipyard': Marine identity is strongly linked to the presence of traditional fishing boats (caique') and the art of shipbuilding as an element of intangible cultural heritage unique to the specific country." (b) 'We were running a stakeholder engagement event at Wicklow library all about the residents personal connections to, and engagement with, their local coastal 'places'. As I looked out from the balcony, the harbour was teaming with people enjoying their environment so it warranted a photo. Framed by the old harbour walls, perhaps made initially for commercial fishers from an aging economy, we see a plethora of activities related to more relational and recreational modern economies: Sailing yachts, swimmers, fishers, walkers and long boat rowers are all enjoying their environment. I have added this photo as a reminder of the many different ways people engage and identify with their environment, all contributing to their ocean citizenship.' (c) "Image 'Andros lighthouse': Marine identity here is represented by a build cultural heritage element of symbolic meaning, related to marine activities at sea such as fishing and maritime shipping. Furthermore, the presence of lighthouses is linked to emotions of expectation and protection." (d) "The ocean is a great place for serendipity. On a particularly stressful and exhausting day, I decided to go for a walk on the beach and ended up relaxing and connecting with the ocean. The stressful burden that had accompanied me to the beach was lifted at that moment, and an enveloping peace washed over me. Aside from providing ocean resources, it also provides mental and emotional comfort".

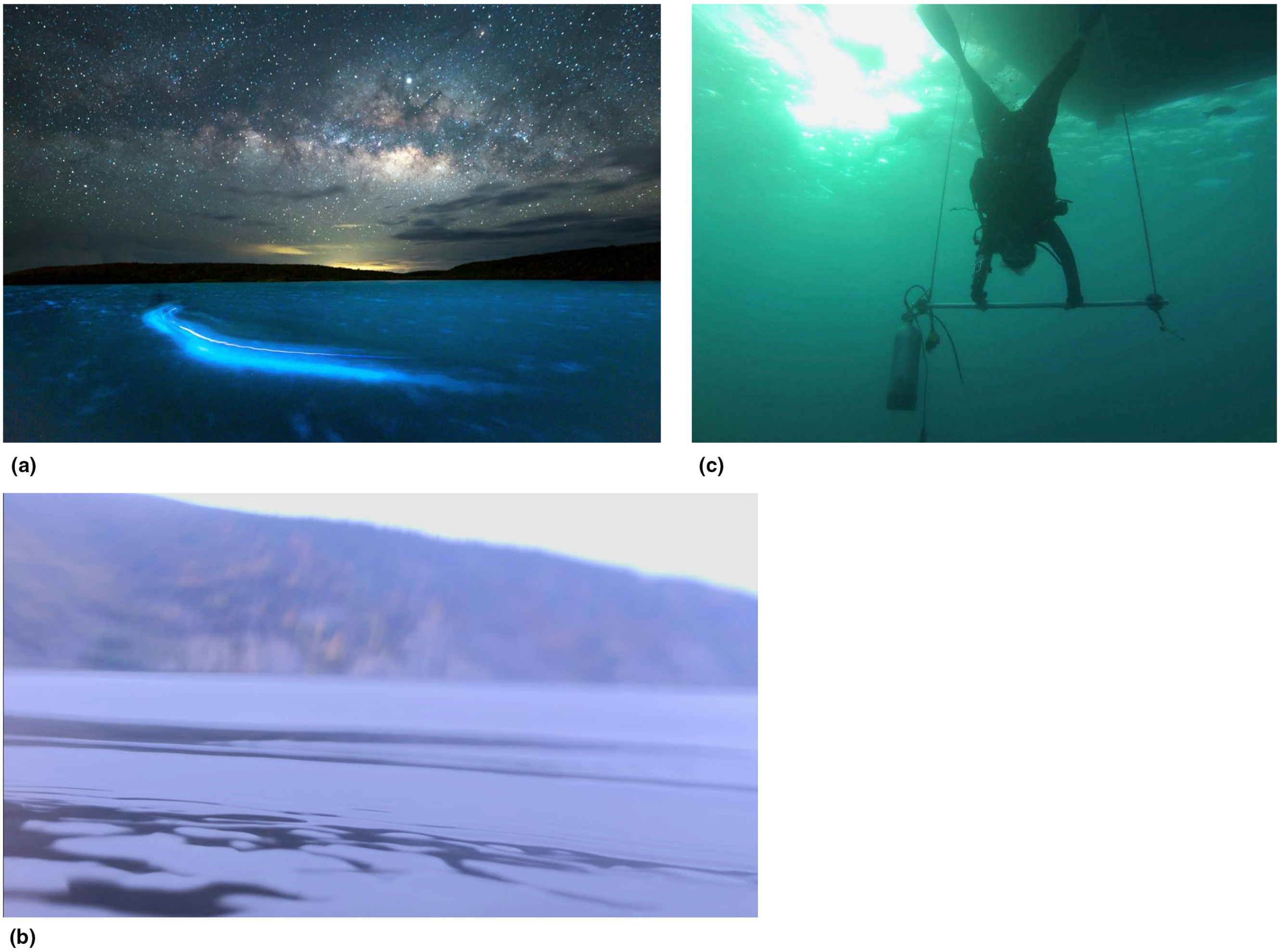


FIGURE 3 Ocean materiality. (a) The ocean affords multiple sensory experiences. Credit: Anonymous Participant. (b) Blurring of boundaries. Credit: Aleš Čermák. (c) Freedom when diving. Credit: Rachel Forbes. Photovoice texts: (a) 'Bioluminescence is a natural phenomenon in which an organism produces and emits light due to a chemical reaction. Before I knew the word for it, I was enthralled by the magic that made the water of my island sparkle. A bioluminescent body of water will glow when it's disturbed by a wave breaking or a splash in the water at night, and that is exactly what I am doing as I glide through it in a glass-bottom kayak. It's not just any kayak ride: It's being filmed for an international audience to bring attention to this beauty in my Caribbean paradise. The ocean flows in my veins just as easily as blood; this shimmery stuff courses through my body just as it swirls around the coast of Puerto Rico. I am nothing without the ocean—she brought me my first memories, sustenance, curiosity, and a purpose.' (b) 'The melding and interpenetration of earth and sky, extends beyond the earth into the extra-planetary realm.' (c) 'Scuba diving provides me freedom to move underwater. It's an experience like nothing else. When I used to teach scuba diving it was awesome watching people experience being underwater for the first time'.

3.1.2 | Differences across marine identity depictions and understandings

In response to the positive emotions that dominated our own relationship with the ocean, our discussions considered the implications for marine identity of more negative emotions, relationships with and perceptions of the ocean (Figure 5). We recognised the ocean not only as a place of beauty, recreation, and formative memories and experiences, but also as 'dangerous', 'unpredictable', 'independent' and the 'precarious' relationships humans have with the ocean, as a "spectrum from dangerous, scary, powerful". These nonetheless may be strong ocean relationships: "headline in the Canadian paper I read this morning, the first story was about Hurricane Fiona, and it was a family who lost their home, and it said the ocean tried to kill us, but we still want to live by the sea".

We also considered negative associations with the ocean such as colonial legacies, the slave trade, and dependencies for subsistence which can produce precarity. To avoid perpetuating or emphasising exclusionary binary thinking or framing of people's relationships with the ocean, we find that these differing ways of relating to the ocean and their role in forming marine identities need to be highlighted as they are connected to socio-political, geographical and historical contexts and locations. In fact, these differences underscore the importance of integrating diverse ways of knowing the ocean into ocean science, in line with UN Ocean Decade policy through Challenge 10.

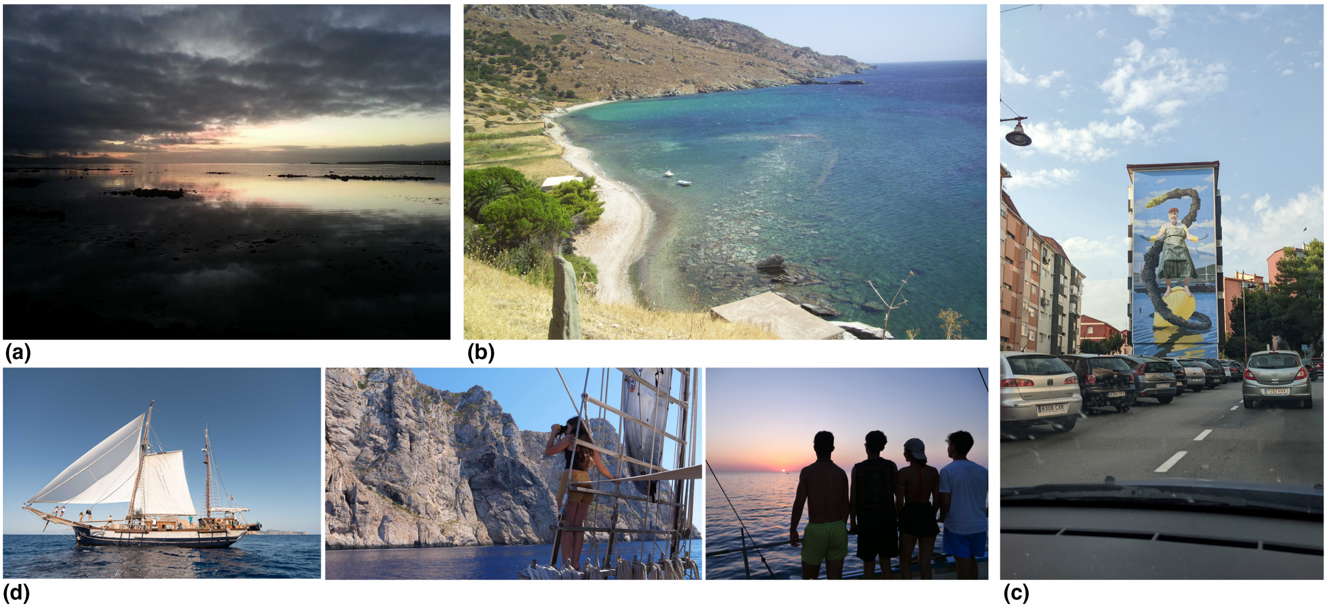
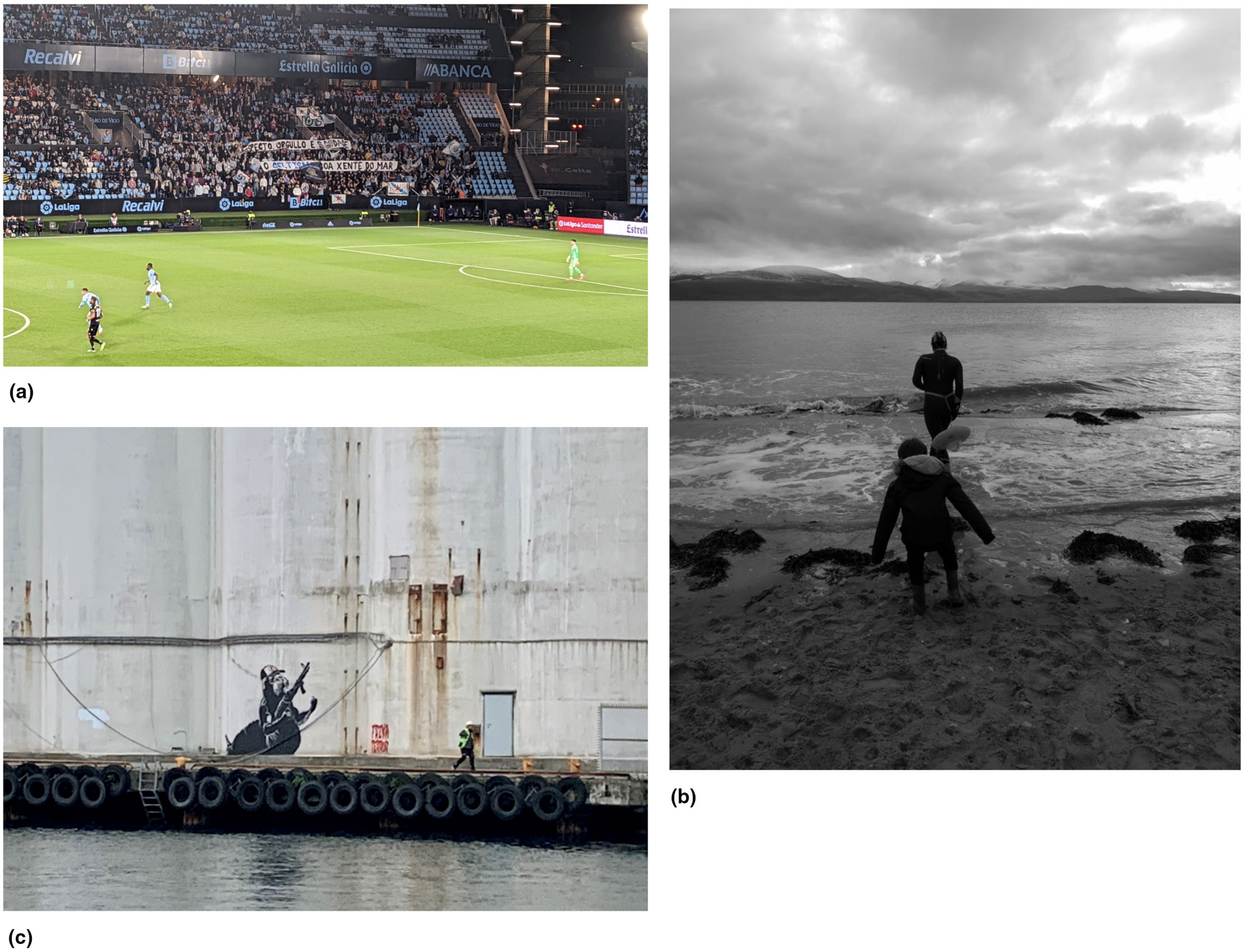


FIGURE 4 Social identity process elements rooted in the ocean as a place. (a) Place-referent continuity between former and current homes. Credit: Maria Vittoria Marra. (b) The marine environment as providing continuity between past and present, contributing to community identity. Credit: Katerina Velentza. (c) The ocean as empowering women, delivering self-efficacy. Credit: Sophia Kochalski. Artwork is 'Eugenia e o dragón de batea' ('Eugenia and the dragon of the raft'), by Yoseba MP. (d) Formative development of self-efficacy. Credit: Yuma Martellanz/Save The Med Foundation. Photovoice texts: (a) 'A picture I love I took several years ago in Galway, the city where I moved first in 2013, and decided to come back in 2021. The view of the hills of the Burren National Park across the Bay always reminds me of the Strait of Messina, the part of the world where I come from, and it is always a calming and comforting sight for me.' (b) 'Past and present are extremely entangled in the waters of the Mediterranean Sea. Remains of ancient submerged structures and pieces of underwater cultural heritage constitute a core part of marine and ocean identity of island and coastal communities. The depicted remains at the island of Andros, Greece, even though not well-recorded and unprotected, represent significant past human interactions with the sea, that eventually got lost under water.' (c) 'Some cities in Galicia, Spain, have grown quickly in the 20th century. Some of the not so pretty architecture resulting from this is now used for street art, many of it being ocean-themed. Yoseba MP has a series of murals of "super abuelas", super grandmas, celebrating Galician heritage and the women that are keeping everything running. This specific image is in Vigo. You can see a "mariscadora", a shellfish collector. This traditional activity in the region is mostly carried out by women. I love it when a beautiful picture just shows up somewhere unexpected in the city. It's both a reminder and an expression of the region's connection to the sea. This picture also reminds me of stories that a friend told me about her beloved grandmother: They live in a part of the city close to the sea, with a little beach and some rocks. When times were hard and there was little food, the grandmother collected shellfish for the family to eat. On one of these occasions, there was a young man taking her bucket with shellfish. The grandmother, a tiny woman, thought about her two little girls at home and became angry with the guy, screaming at him and threatening him with a stick she had for digging up shellfish. The guy protested, but finally left. Later, she realised that it was his bucket, not hers. She is for me the "super abuela" on the picture.' (d) "Teenage years are a key time in life when identity is shaped. Through Save The Med Foundation, I have been running the Changemakers Project since 2018—inviting students ages 15–18 spending a week at sea alongside marine scientists and educators, studying marine biodiversity and conservation in the Balearic Sea. (The students are selected following a rigorous judging of team projects that aim to reduce the everyday consumption of single-use plastic) While leading the expeditions, the most formidable thing is watching the transformation of young students after a week at sea. No phones (too busy for phones!), rising early with the sun, eating together at sunset, exposed to elements of wind and sea. Spending hours observing the horizon: Movements of seabirds, splashes, sightings of dolphins, sperm whales, bluefin tuna… being with the sea as a respectful observer, watching, learning and understanding the limits of our knowledge about the sea. I have seen students going from shy, reserved and unsure—to confident, curious and climbing to the top of a mast. But it's not just physically being out in the ocean that makes the transformation. A key element of the expedition is that everyone on-board is "part of the crew" expected to help clear the decks, cook meals, collect data, record observations, work as a team. To answer the question: What is marine/ocean identity? I believe this ACTIVITY WITH A PURPOSE and SENSE OF BELONGING is part of what consolidates that connection with the sea and begins forming a strong marine identity. Arguably a teenager could spend a week on-board a superyacht/cruise and this might not impact them in the same way as actively participating as citizen scientists, working alongside professionals. At the end of the week they can safely say: 'I am a person who has contributed to helping the sea/to a cause.' Amongst many other things. One particular student, Nalua from Mallorca's Queens College, joined an expedition in 2018. Through her experiences on-board she consolidated her decision to go on to study marine biology at Strathclyde University. Some students who joined had never been out at sea and envisioned a career at sea for the first time, simply by meeting and talking to the crew (sailors, marine biologists, educators, underwater photographers). A recent quote from a student: 'These five days have been incredible, amazing. I've experienced so many things I've never experienced before. These are things you have to experience first-hand instead of being told about it. I saw dolphins, sunfish and mantas. My favourite part was being able to be part of this family and share my ideas and being able to be listened to by other people, professionals, and learn from them and also the fact that our ideas have been taken into account and valued, that's the best part of it'.



(a)

(b)

(c)

FIGURE 5 Marine identities may be formed upon ‘negative’ emotions to and relationships with the ocean, such as: (a) loss of life at sea in the fishing industry, Credit: Sophia Kochalski; (b) frightening experiences of the ocean's power Credit: Steve Webb; or (c) danger posed by marine wildlife in human space, Credit: Giulia Champion. Photovoice texts: (a) “The 15th of February 2022, the Galician fishing boat “Vila de Pitanxo” sank off the coast of Newfoundland, Canada. 21 of 24 people onboard tragically died. The outpouring and support for fisherfolk was tremendous during this time. Soccer is the most popular sport in Spain, and here we see a picture from a game of the region's only 1st Liga Club, Celta de Vigo. The two banners read (in Galician) “Respecto, Orgullo e Saudade” and “O Celtismo coa xente do mar” and thus express the recognition and solidarity of Celta fans with the people of the sea.” (b) ‘This photograph shows me entering the sea for a swim. My son is busy in the foreground. As a child we played games by the sea seeing who could sit through the biggest wave. That's when I was swept out. When the sea cut away the sand beneath me, I remember being tossed around in the waves and struggling to surface for air. It was absolutely petrifying for me, my family and the people involved in rescuing me. However, as I grew into a teenager, the sea tempted me back with its mysterious allure. I learned a lot about the sea. Today I enter the sea to swim or paddleboard with due respect and knowledge to escape the daily chaos of work and family life. I swim to refresh myself, for exercise and to help me clear my head. A swim is my re-set button, no matter what the weather. On the day of this photo there was snow on the mountains behind. The cold is immediately awakening and invigorating. As I swim out away from the people, I can float on my back and look at the sky, in silence, and feel calm. If the waves are crashing, I enjoy the energy it has to offer me, but I am also belittled by the challenges it sometimes offers as I learn to scare myself and learn my place, reminding me of my childhood. I return re-set, with a big smile on my face every time. Ready to take on the world, and often a better person! For me, the sea or a lake is the only place I can truly feel at peace. It has made me who I am. It helps me set my pace and know who I am, and reminds me where I came from.’ (c) ‘I took this photograph in Stavanger, Norway in August 2022, as the graffiti was just painted. It portrays Freya, a female walrus that during summer 2022 would occupy wealthy people's yachts in the Oslo Fjord. The walrus was euthanised on August 14th as it was decided that she was “terrorising” people with her presence and was a risk for health and safety. The graffiti, as well as these events, remind us that in much socio-economic calculus of today's life—in certain spaces and places—extra-human life is not considered, or considered a nuisance and removed. This type of rhetoric is challenged by the work done by Huggins and Pollard in [submitted photovoice] images 1 and 3. See more here: https://www.theguardian.com/world/2022/aug/15/norway-right-put-down-freya-walrus-prime-minister-says-jonas-gahr-store’.

Participants reflected on different understandings of how marine identities arise. We considered to what extent the physical connection to the marine environment was important and how inland people and communities may develop marine identities. Several participants had grown up inland, yet had developed a marine identity, which led us to question whether people can be ‘born with’ or into a marine identity or if they ‘choose’ a marine identity; or perhaps it is possible for both to occur.

We explored different perceptions of the boundaries of the ocean. Since the ocean and seas are physically and ecologically connected to land, we considered how relationships with inland lakes and rivers might be part of marine identities and yet different from that experienced at the coast or on/in the ocean. Inland communities may have an intermittent relationship with the ocean (e.g. recreation or holidays). However, these short interactions with the ocean seem to be enough to generate marine identity, especially at a young age. People who have experienced the sea during family holidays as children have carried out the desire to live by the sea all their life, sometimes even moving abroad to realise this desire. We recognised that we embrace the ocean in myriad ways, with perceptions of the ocean, even those based upon its materiality, varying from person to person. One participant noted that: “I've been interviewing people about how they feel about their relationship with the sea, and someone said actually ‘we are beach people, not sea people’.”

Materiality, experience, and perceptions all play crucial roles in shaping identities. Consistent with social identity theory, the plurality in marine identities holds significance. One workshop participant captured this sense of plurality: “The Multi-Dimensional nature of marine/ocean identity: My understanding of marine/ocean identity is that it is at once fluid, temporal and spatial. Collective marine/ocean identities (both local and global) are mediated through cultural, social, environmental, and economic relations. These give rise to a range of meanings to the experiential nature of the material (the physical nature of water, wind, tides, currents, etc) and its relationship to the land, which in turn shape a range of marine/ocean identities. Furthermore, these identities are reciprocal (between humans and the water), in that they are determined by specific connections/encounters i.e., by being on, immersed in, or viewing, of the ocean.”

These different connections to the ocean create different identities. Marine identity research must consider the interplay, overlap, and conflict between the different dimensions to different types of identity.

3.1.3 | Defining marine identities and their features

Dependency upon the ocean and its materiality were the features of marine identities most frequently raised. Dependency related to livelihoods, through maritime industries, tourism and fishing; wellbeing, including food provision and mental health; and recreation. Workshop participants reported cases of communities established along the coast who appear to take the ocean for granted, contrasting them with people living in inland areas who feel a strong ocean connection. The discriminating factor seems to be a traditional, dependency-based relationship with the ocean. For example, a strong trading tradition appears to have a fundamental role in shaping the marine identity of communities living either along the coast or more inland (e.g. the cities of Hamburg and Bremen in Germany), whereas communities who have been more dependent on the resources of the land, even if established along the coast, have developed less connection to the ocean. Dependency is not a straightforward ocean relationship, as dependency implies vulnerability: “On the one hand, the same group of people lives from the sea (tourism, fishing), on the other hand, the ocean, with its floods that have become more frequent in recent years, disturbs the peaceful sleep of the same people.” We reflected on narratives of the ocean as a provider and people as extractors from the ocean.

A key area of debate was the role of the materiality of the ocean. For some, this was a starting point to marine identity: “I agree on the point that the materiality of the sea, the different sensations it gives compared to other environments, is a very important aspect to consider in the definition of ‘marine identity’.” The ocean is uniquely immersive and dynamic, and yet constant in its cycles. This was recognised as a potential mechanism for how climate change and ocean degradation can challenge marine identities: “Love the idea of the ocean as a constant. Maybe that is why it is so comforting (to me) but also why climate change represents such a threat as it is now changing.”

How this materiality is understood by people—and when—gave pause to assumptions that it was necessarily a starting point for all kinds of marine identities: “I'm just thinking about the materiality. I wonder if that is really the starting point? Because I just think that… the relationship between humans and the ocean is reciprocal, and one shapes the other in my opinion.” Through deliberation on this point, we emphasised the role of perceptions of the ocean and social understandings that mediate and translate its qualities into place identifications. One example of the complex relationship between ocean materiality and socially mediated relationships is as follows:

> Many years ago, my grandmother moved to a coastal community (Luderitz, Namibia), and that is where she raised her children. However, because I didn't grow up there, I never really had a connection with the ocean… our ocean is very cold, windy and wavy, and it was just problematic for me. But then I wanted to understand my grandmother's relationship with the ocean, as well as my parents' relationship with the ocean, and whether I could identify with that. So, I began researching ocean relationships… Through [my research], I started seeing and understanding the ocean differently and I then developed my own ocean relationship.

The importance of social relationships comes to the fore when considering traditional, historical, and Indigenous human-ocean relationships. We challenged the dominance of the material in the formation of marine identities and reflected on non-linear framings of marine identity development, such as being born with or into it:

> In Māori culture the sea is considered to be the source of life, and people are the descendants of Tangaroa (the god of the sea), and all children of Ranginui and Papatūānuku.[2]
>
> The people that I was speaking with were saying over and over again, that they felt this connection, and that they felt they had the skills to hunter and gather, and I ended up going down the biophilia hypothesis route that they just needed to be near water, and to feel in control and have this self-efficacy and be able to provide their own food.

These reflections led us to consider access to marine identity and power dynamics. Are some identities more valid than others, either through the power within those who hold that type of identity, or the power of cultural authenticity? We present some reflections on these considerations through our real-world examples in Section 3.2.

Our goal was to co-produce a definition of marine identity. This was challenging, due to the pluralities, commonalities, and differences; the range of potential origins and dependencies; and our reflections on the material and conceptual ocean. The marine identities that result in marine citizenship may or may not share the same features as marine identities which are neutral or pose a barrier to marine citizenship. We attempted to engage with the breadth of how the ocean can be a foundation for human identity.

Despite the challenges outlined above, the original definition seems adequate for the development of research in this space: *An identity rooted in how the ocean as a place supports the sense of self*. Here, place is understood as more than a physical locality, but rather "porous networks of social relations" (Massey, 1994). The ocean as a concept arises from its material presence but is mediated by human experience and social interaction, and thus is complex and plural, and encompassing of relationships within specific localities right up to conceptualisations of a global ocean.

3.2 | Marine identities in the real world

Through deliberation in part two of the workshop, we identified a collection of framings of marine identities that were responsive to the commonalities, differences, features and issues raised in part one. The strongest themes to emerge were:

- Geographical framings (inland, rivers, beach, mangrove, open ocean, access, proximity)
- Resource framings (activities, food, work, income)
- Spiritual connections, health and well-being
- Origins of marine identity including identity as a choice or innate/born with
- Ocean representations (social/cultural/historical meanings as influencers of marine identity)

Below, we present a selection of case studies, projects and (inter)disciplinary framings that illustrate the diverse themes presented above. These are not intended to be comprehensive of potential marine identities, but to engage with Challenge 10's aims and further exemplify diversity within the marine identity construct. We also identified themes which we feel we cannot ourselves represent in this article, such as communities whose life is on the water, or those whose marine identity is interwoven with the impacts of harmful colonial pasts. There were also themes relating to components of the marine environment, such as coastal living, or the intersection of rural and coastal communities. There are also marginalised communities who use the Ocean as a concept to construct their identity (Ahmed, 2006; Jaspal & Breakwell, 2014). These include queer, mixed-race and Black authors (Amideo, 2021; Hazard, 2022; Imbler, 2022), who utilise the Ocean as a metaphor by drawing on its fluid, malleable and entangled properties that exemplify ideas of transformation, transitionality and intersectionality (Neimanis, 2017). This active process of identity formation lies beyond the scope of this article.

3.2.1 | Inland marine identity: The Hanse and cultural remaritimisation of German port cities

Large port cities in central Europe display marine infrastructure, culture and symbols, even if they are not directly on the sea (Izdebska & Kozlowska, 2022; Schut, 2014). In Germany, this maritime heritage is closely linked to the Hanse, a group of merchants active across the Northeast Atlantic from the 12th to the 17th centuries (Holterman, 2020; Schiefer & Holterman, 2024). Starting in the 19th century, a symbolic return to the Hanse took place in a process that could be categorised as 'cultural remaritimisation' (Tommarchi, 2021). The associated identity is a mixture of seafaring and commercial pursuits: cosmopolitan and open but also sober and reliable (DeWaal, 2016; Robel & Marszolek, 2018; Van Hooydonk, 2006). The Hanseatic identity is reflected in city names and coats of arms and forms an integral part of city marketing (Schiefer & Holterman, 2024; Schut, 2014). Due to the rehabilitation of former port areas for other uses (Sepe, 2013; Weinhold et al., 2009), modern images are currently coexisting with traditionally shaped, nostalgic marine identities (Baptist, 2022; Kowalewski, 2021; Ruhkopf, 2021), resulting in new identities for port cities as well as structural and cultural transformations.

3.2.2 | Resource-based marine identities—The role of stock fish

Food is considered a potent cultural trait (Almerico, 2014; Gerber & Folta, 2022; Figure 6). A food-based example of marine identity

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[2] https://teara.govt.nz/en/tangaroa-the-sea/page-5.

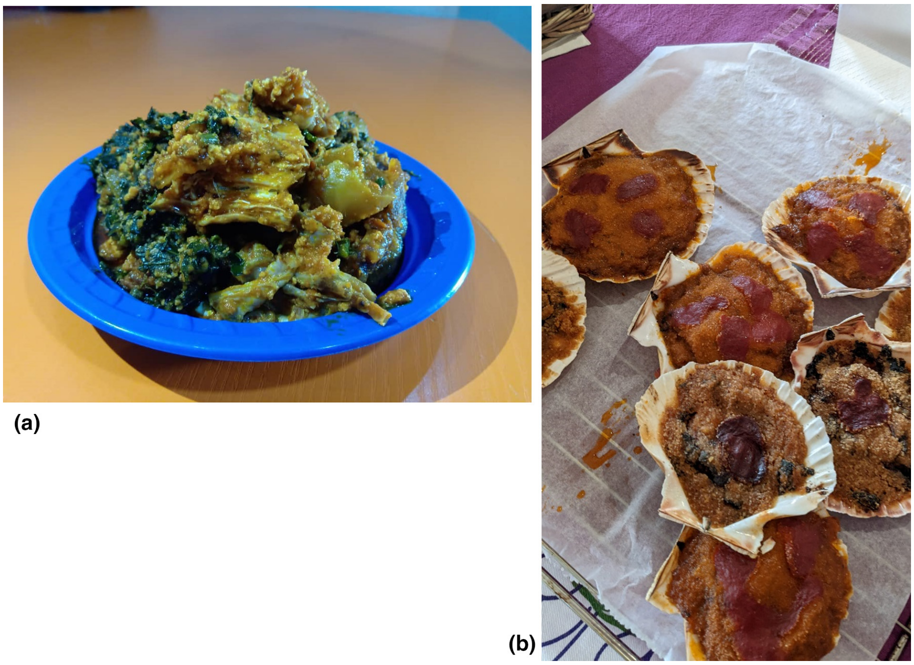

FIGURE 6 Food as a potent cultural trait of marine identity. (a) Egusi soup made with assorted meat and fish as well as cow skin is one of the most cherished soups in West Africa. It is often prepared with cod fish head. Although it is bony and with less flesh, stock fish adds some unique taste not found in other dried fish heavily consumed in West Africa. This photo was taken during a family dinner in Lagos Nigeria. (Not part of photovoice collection). Credit: Adeoye Olusola. (b) Stuffed scallops on the Spanish Atlantic coast. Credit: Sophia Kochalski. Photovoice texts: (b) 'Galicia both produces and consumes a lot and a lot of different fish and shellfish. This is a picture from my family's last Christmas dinner. People eat fish and shellfish over the whole year and to all kinds of occasion, it would not be uncommon to have seafood on a weekday night at home when the season is right. But for Christmas, New Year's Eve and the 6th of January ("Reyes"), seafood is obligatory (bivalves, crustaceans, cephalopods…). People order their Christmas seafood weeks and months in advance to not end up empty-handed'.

mentioned during the workshop was stockfish, that is the cod (*Gadus morhua*) most commonly, but also other similar fish species. Stockfish is caught and dried outdoors in Norway and then widely exported from the North East Arctic to the Mediterranean and the West Coast of Africa (Inderhaug, 2020). The stockfish is widely consumed across West Africa and is part of the culinary tradition of the area due to its unique taste. Even if they have never been at sea, locals generally know how to cook stockfish and have little interest in where it comes from, yet it forms part of local identity.

In the Strait of Messina, Italy, the consumption of the stockfish (here called piscistoccu) strengthens the geographical identity of the people living along the coasts in between the regions of Calabria and Sicily. This is an identity rooted in a wide range of shared traits spanning from myth (e.g. Scylla and Charybdis, see Harris, 1925) to geological reality of many active seismic faults (Polonia et al., 2012).

3.2.3 | Shifting (and losing) marine identities: The small-scale fisher communities in Selayar, South Sulawesi, Indonesia; and the traditional boats of the Aegean Sea, Greece

Coastal and island communities have deep links to the ocean. Their dependence on but also knowledge of the sea has shaped their marine identities. This human-environment interconnection is commonly manifested in social activities of the respective communities, their livelihoods as well as the tangible and intangible elements of cultural heritage that they produce (Ransley, 2012). In the transitions towards modernisation that humanity experienced from the second half of the 20th century and into the 21st century, most coastal and island communities saw a shift in their typical economic, social and cultural activities, which resulted in a substantial loss of marine identities in most regions around the world. Government policies, the degradation of the natural ecosystems and most recently the impacts of COVID-19, have forced local communities to find alternative livelihoods and ways of living, thus losing local knowledge and attachment towards the ocean (Richter et al., 2021).

The coastal communities of Selayar in Indonesia have historically been characterised by small-scale fishers reliant on the natural ecosystems (Hattam et al., 2021; Maharja, Praptiwi, Roberts, et al., 2023). However, government agendas have steadily pushed livelihood development away from fisheries and towards tourism (Fortnam et al., 2022). Despite some resistance in the local communities, the younger generation is embracing this move, considering that sustaining their life based on fisheries would be difficult due to the degradation of the local coastal and marine environment (Praptiwi et al., 2021; Richter et al., 2021).

Similarly, in the Aegean Sea, in Greece, the traditional wooden boats, kaikia, propelled by sails or rowing, have sustained human livelihoods for centuries (Damianidis & Zivas, 1986). As cultural assets, they express the local knowledge (IPCC, 2022) of the Aegean people and their attachment to the sea (Adams, 2001; Velentza, 2022). The loss of non-polluting traditional boats during the 20th and 21st centuries (Gillmer, 1973; Miliou et al., 2018), has led to a transition to motorboats, the introduction of fishing trawlers and ferries, decline in traditional maritime jobs, the development of exclusively touristic economies, degradation of the marine environment and the loss of marine identities.

3.2.4 | Inter-relationship of structural factors and marine identity: Gendered narratives in the fishing industry in Azores

Limited perspectives influence marine science, public recognition of ocean citizenship (Neilson & São Marcos, 2019) and who can claim a marine identity. Gendered narratives influence decision-making (Frangoudes & Gerrard, 2018; Harper & Kleiber, 2016), and after the Portuguese revolution in 1974, artisanal fishing was perceived as in need of rescue from the dictator-imposed primitive state (Garrido, 2018). Fishing is socially constructed as men's work (Yodanis, 2000), with structural barriers to women (Canha, 2015), and decision-makers ignoring women (Monfort, 2015), whose contributions are dismissed as household labour (Harper et al., 2017). Located in the middle of the Atlantic Ocean, the Azores archipelago has a prominent small-scale fishery (Neilson et al., 2019). The work of women in these fisheries has been invisible and undervalued for decades (ibid.). The women's association, UMAR-Azores, disputes the lack of women in the fisheries of the islands, pointing to the contested nature of identity at the individual, family, and society level (Canha & Raposo, 2006; Sempere & Sousa, 2008). Commonly, fishing is recognised as such only when at sea. Much of the preparation of the gears is unseen as well as unknown, and much is unpaid. In 2021, men who retired from professional fishing continued to be referred to as fishermen, whilst former fisherwomen were not recognised as such. This case points to the missed potential for an inclusive ocean sustainability through the continuing erasure of women's marine identities.

3.2.5 | Indigenous ocean ontology

The ocean is intrinsic to multiple Indigenous ontologies and cosmologies globally and, therefore, with Indigenous identities and cultural heritage. For the South African Khoi and San, or Khoisan, the ocean plays a central role in traditional rituals, ceremonies and spiritual connections to ancestors (Boswell & Thornton, 2021; Strand, Rivers, et al., 2022). In the Pacific, Hau'ofa emphasises that Indigenous identities and sense of community are interdependent with the ocean (Hau'ofa, 1994, 1998; Ingersoll, 2016).

Indigenous and coastal communities' connections to the ocean as kinship reflect the scientific reality of humanity's ecosystemic ties with the ocean. In Canada, several Indigenous First Nations' identities are interwoven with the ocean and coast, such as the səlilwətaɬ (Tsleil-Waututh) Nation identify as 'People of the Inlet'.[3] Many arctic communities are interdependent with the ocean (Demuth, 2019; Williams, 2020), with such connections embedded in foundational beliefs, including those of the Inuk: "a story told countless times / [...] about Sassuma Arnaa, Mother of the Sea, / who lives in a cave at the bottom of the ocean" (Kijiner & Niviâna, 2018). The ocean cannot be separated from Indigenous identities; it forms part of who they are and how they see themselves (Strand, Rivers, et al., 2022).

3.2.6 | Cultural representations of the ocean

Cultural identities and representations of the oceans are multifaceted and diverse, encompassing spiritual, traditional, healing, tangible and intangible,[4] connections to the ocean. Many cultures view the ocean as a source of life, healing, spirituality and home to ancestors, with beliefs and practices that reflect this (Strand, Rivers, et al., 2022). For example, in the Namibian context, the knowledge of creating *Aawambo* traditional jewellery called *onyoka* with seashells that are worn at important traditional practices and cultural events, is often passed down through generations (Shigwedha, 2004).

The ocean also plays a significant role in healing practices and traditional medicine (Proulx et al., 2021; Strand, Rivers, et al., 2022). Traditional practices often incorporate the use of ocean-derived resources, such as seaweed and seal oil, for their therapeutic properties (Borja et al., 2020; Fortuine, 2011).

Likewise, the values people have underpin their identities, and for many, religion defines values and has a key influence on human attitudes, perceptions, and beliefs about nature and behaviour (Draheim et al., 2015; Lowe et al., 2019; White, 1967). Given that religion is shaped by our environment, including political, cultural, historical, economic, and ecological factors, religious identities are often intertwined in the surrounding ecology such as fishing techniques and harvest regulations, and even perceptions of space (Counted & Watts, 2019; Draheim et al., 2015; Lowe et al., 2019; Taylor, 2007).

3.2.7 | Ocean materiality

The materiality of the ocean is four-dimensional, physical, and temporal. Interaction with it has sensory and experiential consequences for bodies and land and can be experienced in a multitude of ways, feeding into cultural ontologies (see for example histories of canoeing, diving and surfing in Dawson, 2018; Ecott, 2002). In the Balearic Islands, volunteers who partook in citizen-science expeditions at sea reported having meaningful experiences that reshaped their thinking and relationship with the sea, crafting an identity (Save the Med Foundation, 2019). In Buchan et al. (2024), specific experiences of the materiality of the ocean were seen as a starting point in a marine citizenship pathway, as marine citizens articulated this materiality and sensory experiences in their ocean relationships (Whyte, 2019).

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[3] https://twnation.ca/our-story/.

[4] Tangible and intangible connections to the ocean are also reflected in cultural expressions such as history, music, art, storytelling, and other forms of cultural heritage that have been developed and preserved over time (Strand et al., 2023).

The arts collaborative project Sea-Water Amplification (SWA),[5] explores the influence of the ocean upon sense of self through direct relation to the ocean and mediated through conceptualisations and social representations of the ocean as a place (Figure 7). The implications of ocean materiality for marine identities extend from individual experiences through to social and cultural impacts, and feed into questions around the experiential origins of marine identity.

3.2.8 | Marine identity creation through virtual/digital exposure and experience

Environmental education can be supported and enhanced through effective use of virtual reality (VR) and Augmented Reality (AR), transporting people to locations that would otherwise be inaccessible, for example, because of distance, safety, economic barriers, or abilities (Deines, 2021), whilst also contributing to students' well-being (Williams et al., 2021). Additionally, VR experiences can give young participants higher feelings of presence compared to watching 2D footage, and enhance empathy in students who otherwise may feel disconnected from nature (Trope & Liberman, 2010). This sense of presence also positively mediates cognitive and non-cognitive learning (Queiroz, 2020). With VR and AR, diverse knowledge can be included in outdoor education in a more meaningful way than with traditional methods. For example, students can use these technologies to interact with and promote marginalised community stories about nature and climate change (Dwyer, 2020) or explore social and environmental justice issues. Technologies such as VR and AR could help strengthen the connection between a person's behaviour towards the environment and on a regional, continental, and global scales. Depending on the immersive experience they have, these technologies can potentially play a role in creating access and experience with the ocean and seas (Fauville et al., 2024), further fostering marine identity in different ways.

3.2.9 | Marine identity through oppression

Afro-diasporic and Indigenous communities across the Americas connect to the ocean through cosmological and syncretic beliefs (Botanova & Latimer, 2022; Chauvin, 2017; Flores & Stephens, 2017; Gómez-Barris, 2017; Merchant, 2020). The forced migration of abducted and enslaved people violently fractured relations and kinships across groups and with their original land- and seascapes. Middle passage beliefs have been built on connection to the deep ocean; a portal for return to the motherland; and as space where ancestors and deities live, especially according to Yoruba beliefs that became syncretised with others in the Caribbean and parts of Latin America (Blackmore & Gómez, 2020; Bongie, 1998; Dawson, 2018; Enwezor & Freiman, 2007; Gumbs, 2020; Sharpe, 2016; Sharpe & Gumbs, 2021; Turner et al., 2020).

As the syncretic and multilingual Caribbean developed, the ocean further became central in Afro-diasporic identity across the islands in the region, including St Lucia (Walcott, 1992), Haiti (Depestre, 1993), Martinique (Glissant, 1990, 1994, 1997) and Cuba (Rojo, 1998, 2010). These depict the sea as a living archive and ancestor, and develop archipelagic thinking (Champion, 2022; Loichot, 2020; Poupeye, 1998; Price, 2015; Roberts, 2021; Stephens & Martínez-San Miguel, 2020). These engagements with the ocean have informed Caribbean and Afro-descendant marine identity across the Americas, differing from the beliefs of Indigenous communities (Hernández, 2022).

4 | DISCUSSION AND IMPLICATIONS FOR FUTURE RESEARCH

This paper presents potential approaches to understanding marine identities, illustrating the huge breadth of this concept and areas where it has implications for marine citizenship. We have shared a diverse set of examples which illustrate a complexity posing both challenge and opportunity for those working to develop evidence and practice to support the restoration of human-ocean relationships. Our co-production process identified key areas where evidence is needed to support the development of this area of research, and implications for existing interventions.

4.1 | Definitions and language

Throughout this study, we have repeatedly met with differing interpretations of terms and overlap in understandings. Geographers of place will be familiar with the inconsistencies in application of terms such as place identity, place attachment and place identification (Lewicka, 2011; Trentelman, 2009), and we find likewise that a clearer understanding of the distinctions and connections between marine identity, marine citizenship and ocean literacy (Kelly et al., 2022) is needed, together with research that shines a light on their interrelationships.

Terminology poses a challenge in definitional understanding, but also attached values reflect power dynamics, for example between the perceived legitimacy of scientific language and that of Indigenous or local place-based knowledge, as identified by Challenge 10 (Glithero et al., 2024). Definitions of citizenship are multiple, and it must be acknowledged that for some cultures and communities, the word is laden with colonial implications. Whilst we have sought to give shape to a marine identity concept, we

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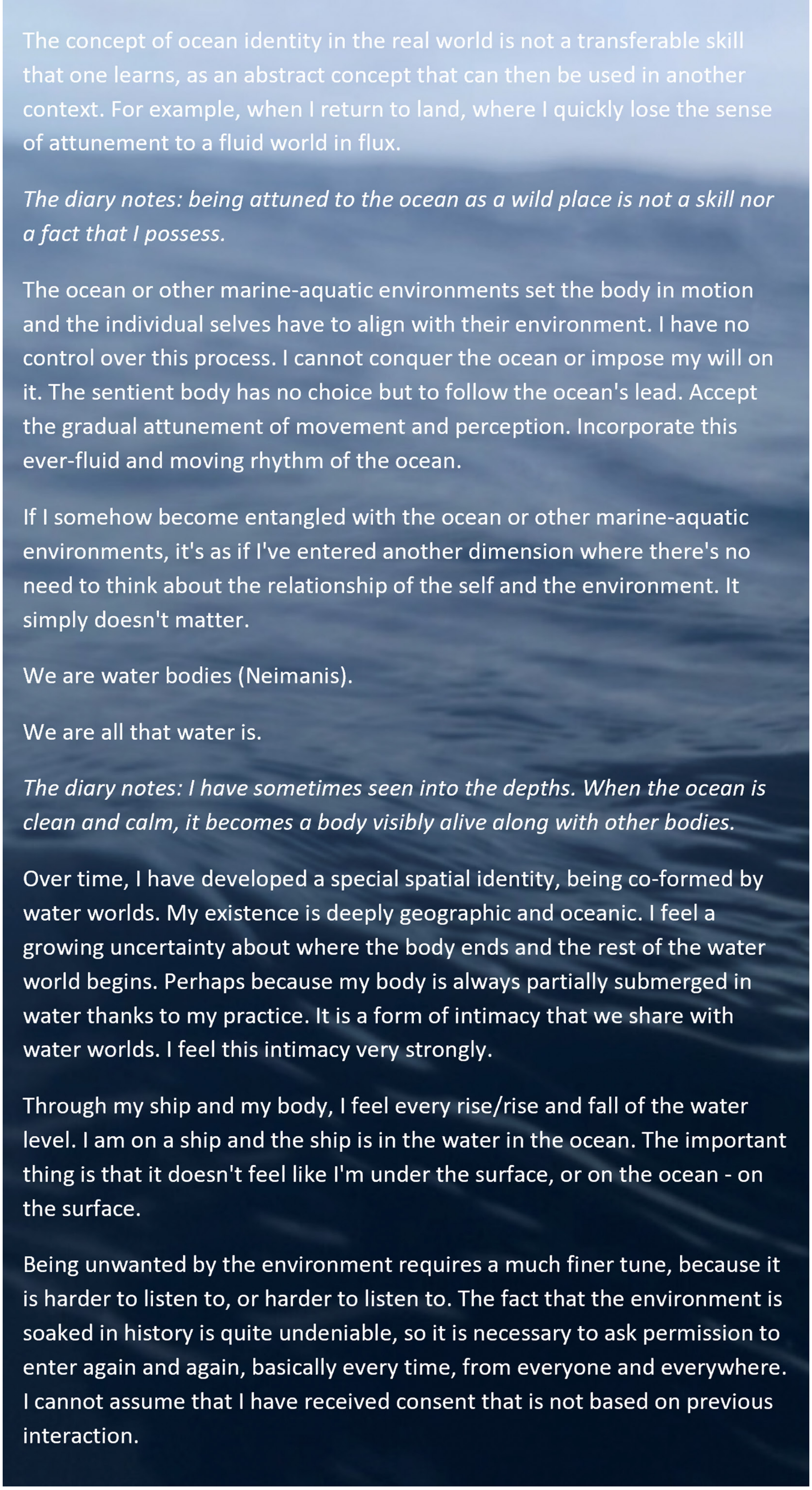
[5] https://swa.abhpp.org/en/about-us/ An educational and research environment led by Ausdruck Books Hybrid Publishing Platform (Čermák and Křivánková). The collaboration aims to better understand and define transformational aspects of being outdoors in the context of seascape epistemology.



The concept of ocean identity in the real world is not a transferable skill that one learns, as an abstract concept that can then be used in another context. For example, when I return to land, where I quickly lose the sense of attunement to a fluid world in flux.

The diary notes: being attuned to the ocean as a wild place is not a skill nor a fact that I possess.

The ocean or other marine-aquatic environments set the body in motion and the individual selves have to align with their environment. I have no control over this process. I cannot conquer the ocean or impose my will on it. The sentient body has no choice but to follow the ocean's lead. Accept the gradual attunement of movement and perception. Incorporate this ever-fluid and moving rhythm of the ocean.

If I somehow become entangled with the ocean or other marine-aquatic environments, it's as if I've entered another dimension where there's no need to think about the relationship of the self and the environment. It simply doesn't matter.

We are water bodies (Neimanis).

We are all that water is.

The diary notes: I have sometimes seen into the depths. When the ocean is clean and calm, it becomes a body visibly alive along with other bodies.

Over time, I have developed a special spatial identity, being co-formed by water worlds. My existence is deeply geographic and oceanic. I feel a growing uncertainty about where the body ends and the rest of the water world begins. Perhaps because my body is always partially submerged in water thanks to my practice. It is a form of intimacy that we share with water worlds. I feel this intimacy very strongly.

Through my ship and my body, I feel every rise/rise and fall of the water level. I am on a ship and the ship is in the water in the ocean. The important thing is that it doesn't feel like I'm under the surface, or on the ocean - on the surface.

Being unwanted by the environment requires a much finer tune, because it is harder to listen to, or harder to listen to. The fact that the environment is soaked in history is quite undeniable, so it is necessary to ask permission to enter again and again, basically every time, from everyone and everywhere. I cannot assume that I have received consent that is not based on previous interaction.

FIGURE 7 Reflection from the SWA project (https://swa.abhpp.org/en/about-us/) on the transformative properties of physical interaction with the ocean for marine identity, combines images (https://www.instagram.com/p/CpkSNhioexB/) and diary notes (pers com Čermák).

simultaneously acknowledge that what we are calling marine identity for academic purposes is recognised through other languages and forms outside of the academic world. Its use here is instrumental to further our understanding of how identity can drive action in the context of marine sustainability.

4.2 | Implication for existing interventions

Our findings have implications for research in this space, for example relating to ocean literacy or sense of marine places, and contribute thinking that can enhance policy work focused on environmental values and valuation of nature, such as the recent work in the UK marine context related to the valuation of natural capital (Stebbings et al., 2021) and marine citizenship, by exposing the complexity of marine identity.

Our photovoice data presented a compelling story of positive ocean relationships which mirrored previous findings (Buchan, 2021; Buchan et al., 2024). We must ask whether this is: (a) because this is the most typical route to marine citizenship; (b) an effective route only for people from more industrialised nations; or (c) that limitations, such as the countries and cultures represented amongst us as a group, prevented us from identifying alternative pathways. This question remains unanswered by this study and identifies that researcher and participant positionality should be a key consideration for research and practice.

We concluded that 'marine stakeholders', from the point of view of decision-making, needs to be interpreted in a much wider sense and become more situationally responsive. For example, we identify that inland people can hold strong marine identities, and, recognising the most fundamental marine provision of gas and climate regulation (Beaumont et al., 2007), all people are stakeholders in the future of the ocean. This general interest and the centrality of the ocean to the hydrological cycle of rainfall and river formation is what the European Commission has attempted to evoke by creating its Mission Ocean *and* Waters. However, leaving aside those non-coast dwellers that identify with the marine, the Commission has highlighted the difficulty it faces in convincing its inland population of the importance of the ocean, and creating this emotional connection across the continent that marine citizenship may require (Directorate-General for Research and Innovation (European Commission) et al., 2021). So, whilst definitions of marine stakeholders ought to be widened, effort is required to ensure that different stakeholder groups actually understand the nature of their interest in these matters.

Yet we also identified marine identity-linked risks and loss for coastal communities specifically. This may be a matter of scale. Where wider ocean policy is concerned, for example offshore industries, or national approaches to the blue economy, a wide public mandate would better reflect the shared ecological relationship humans have with the ocean. Whilst in locality-based marine and coastal developments, the social impacts for coastal communities deserve higher priority, including recognition of traditional and historical community-ocean rights. Such developments influence what types of marine identity will prevail, and empowerment of specific marine identities may play an instrumental role in marine and social sustainability. These considerations align with the considerable body of literature on ocean justice, (e.g. Bennett et al., 2021; Blythe et al., 2023).

All these insights have implications that ought to shape the way Challenge 10 is tackled. The breadth of marine identities—of systems and discourses of valuation, of identities based on action, memory, spirituality, materiality, resource extraction, and so on—challenge Western and academic formulations of ecosystems as service providers that can be valued under universal regimes (du Bray, Stotts, et al., 2019). These insights support both Challenge 10 and Mission Ocean's focus on the integration of Indigenous and local place-based knowledge and systems of valuation into marine science (engagement with indigenous people and local communities is a prerequisite for much of the yearly Mission Ocean funding offered through the European Commission's Horizon Europe programme[6]). We would likewise emphasise the need for more targeted funding for Indigenous-*led* research in order to engage with the Challenge in a way that empowers knowledge holders as opposed to extracting knowledge.

Challenge 10's focus on encouraging positive behaviour change through strengthening connections and increasing motivation and opportunity implies an increase in marine citizenship globally. Our findings, and especially the diverse examples of marine identities collected, demonstrate that individual marine identities are deeply affected by the behaviour of others that qualify these identities. This could be through an actor introducing an environmental threat to an area, or through certain marine identities being forced on some groups by others (as in the Atlantic slave trade). The Challenge 10 white paper (Glithero et al., 2024) makes clear that it is a working document and will be revised throughout the Ocean Decade. In sharing the findings described above, we support the renaming of Challenge 10 to '*restore* society's relationship with the ocean'. Some groups need not change their behaviours towards the ocean at all, whilst other damaging or otherwise negative behaviours ought to be identified and targeted. If Indigenous and local place-based knowledge is to be put at the heart of the UN Ocean Decade, then the diverse nature of marine identities demonstrates that the one-ocean, global society high-level messaging of the UN Ocean Decade needs to be enacted in a way that allows diversity of experience into UN Ocean Decade science and action.

4.3 | Recommendations for future marine identity research

The evidence from this study indicates that marine identity research going forwards needs to be sensitive to power, scale and the multiple nature of identities at the individual level. It needs to explore the relationships between marine identities and how humans benefit from ecosystem services provided by the coastal and marine environment. As well as needing to grow the body of evidence that increases our understanding about the relationship of marine identity in driving marine citizenship, we also need to better understand the impacts of marine identity loss, change and lack of formation, particularly when driven by change in the natural environment, industrialisation, and societal structures. We would also encourage investigation of the intersections between marine identities and marine citizenship, through the lens of health and well-being across nations and cultures and connecting with existing studies focused on the benefits of green/blue prescribing or outdoor settings for activities such as learning. Such future research will lead us to the features of effective policy-design and practices that will deliver on the UN Ocean Decade's Challenge 10.

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[6] For example, the Horizon Europe Mission Ocean call for 2022 required the winning projects to "actively involve local stakeholders along the value chain, such as fishermen, SMEs and start-ups and relevant commercial actors, marine planners, coastal area inhabitants, local governments, indigenous groups, NGOs" (Horizon Europe – Work Programme 2021–2022 Missions, 198).

4.4 | Limitations

There are limitations to the approach undertaken in this study, particularly around our sample. It was a practical necessity to undertake this study online to enable people from around the world to engage with little to no cost implications. However, we acknowledge that online participation can also prevent people from engaging in research and this may have had implications for recruitment. The findings are the outcome of the deliberations and experiences of people working in the marine world in a professional context, predominantly in Western nations in the Global North. Both of these factors may introduce bias into the conclusions of the co-conceptualisation process. We consider this study to be a starting point for future marine identity research which can build upon our findings and test them with other people in diverse settings.

5 | CONCLUSIONS

In this study, an international group of marine researchers and practitioners were convened in an online workshop to co-conceptualise marine identity as an important driver of marine citizenship, responding to Challenge 10 of the UN Ocean Decade. Our transdisciplinary, co-production approach enabled a wide range of data to be considered together, producing reflections on the meaning, features and origins of marine identities that were derived from a multiplicity of geographies and cultural settings. We have presented a selection of real-world examples of some of the key themes to emerge and reflected on the implications of our findings for future research and practise concerned with the human-ocean relationship in the context of Challenge 10.

Our key messages are that marine identity is not a simple concept and can be approached from multiple and sometimes conflicting epistemologies. The social setting of identity implicates language and power dynamics, and marine identity research needs to be sensitive to these and transparent about its cultural and geographical limitations. The role of the ocean as a place within identity brings to the fore the implications of both its materiality and its conceptualisation.

Our findings support recent advances in Challenge 10 through the white paper (Glithero et al., 2024) which calls for a restoration of society's relationship with the ocean. Marine identity is an important form of human-ocean relationship which underpins actions and behaviours in relation to the marine environment. However, we also recognise the limitations of our work and position this study as a foundational piece for future research into marine citizenship and the role of marine identity within it.

Marine identity, and how it influences global marine citizenship, must be a topic of interest to scholars from multiple disciplines. However, we find marine identity to be central to capturing humanity's dynamic and diverse relationship with the ocean and, as such, a fundamental mechanism for contributing to or catalysing restoration of society's relationship with the ocean. We call for marine researchers and practitioners to build on the marine identity conceptualisation that we have provided here, with research that will deepen people's understanding of marine identity and its relationship to marine citizenship and ocean literacy. Such research will identify where and how marine identity will support or oppose marine sustainability, and highlight mechanisms that can be adopted in policy and practice to deliver on Challenge 10.

AUTHOR CONTRIBUTIONS

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CONFLICT OF INTEREST STATEMENT

The authors have no conflicts of interest.

DATA AVAILABILITY STATEMENT

The data used in this study is available through the UK Data Service here: https://reshare.ukdataservice.ac.uk/856523/.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

Supplementary 1. Participants of the conceptualising marine identities workshop on November 23rd.

Supplementary 2. Codebook.

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