



The complexity of evaluating, categorising and quantifying marine cultural heritage

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ABSTRACT

Despite the growing recognition that ecosystem-based management approaches to ocean governance need to recognise and integrate cultural dimensions to remain relevant, efficient, inclusive and equitable, the difficulty of meaningfully integrating these in ecosystem-based ocean management remains a challenge. This is particularly due to i) the difficulty of quantifying marine cultural heritage and cultural connections, ii) the complexity of identifying, evaluating and categorising ‘cultural ecosystem services’, particularly when it comes to *intangible* cultural heritage, and iii) the difficulty of spatially defining cultural heritage, connections and ecosystem services. There are several problems with current understandings and evaluations of marine cultural heritage, connections and cultural ecosystem services that first need to be addressed before attempting to quantify the social and cultural dimensions implicit in ecosystem-based ocean management. Challenges include the exclusion of some cultural ‘services’ that cannot be attributed an economic value because they are intangible, and the larger issue of Western-dominated conceptualisations, e.g., ‘services’, ‘ecosystems’, ‘nature’, ‘culture’. In this short communication we argue that the quantifying and simplification of marine cultural heritage and connections should be avoided altogether, as this can result in ecosystem collapse instead of ecosystem flourishing. The piece concludes by arguing that we need to *qualify* instead of quantify cultural dimensions of ecosystem-based ocean management, and develop contextual participatory research methodologies to better understand marine cultural heritage and cultural connections to marine social-ecological systems.

1. Introduction

Ecosystem-based management (EBM) approaches to ocean governance need to recognise and integrate cultural heritage and cultural dimensions to remain relevant, efficient, inclusive and equitable [1-7]. As highlighted by O’Higgins et al. [8], EBM “is an approach developed to work on wicked problems that recognises social-ecological systems and the need to incorporate systems thinking into natural resource management”. The elevated recognition of social-ecological systems approaches to ocean management, which highlight the interconnections and interdependencies between humans and nature in ecosystems [9], also point to the importance of understanding and integrating cultural aspects of ocean uses, interactions and connections.

Nonetheless, the difficulty of meaningfully integrating these cultural dimensions in ecosystem-based ocean management remains a challenge

(see [2,10-12]). One of these challenges relates to the difficulty and complexity of quantifying, identifying, evaluating and categorising marine cultural heritage, cultural connections, and what is referred to as ‘cultural ecosystem services’ (CES), particularly when it comes to *intangible* cultural heritage [2,10,13]. Intangible cultural heritage is defined in this paper as values, beliefs, worldviews, practices, assets and processes that cannot be attributed to something concrete or static, and that is often living and ever-changing, linked to dynamic spatio-temporal conditions, a system or oral traditions (see [14,7,15]).¹ The three aspects of cultural dimensions mentioned above, as well as intangible cultural heritage, often form part of or overlap with each other. The reason for mentioning all three in this paper is therefore deliberate and supports the notion of resisting the urge to simplify these in ecosystem-based management approaches - as they are currently often collapsed under CES. A final challenge pertains to the difficulty of

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¹ UNESCO [15] further emphasises that intangible cultural heritage, or living heritage, “has the capacity to change and evolve as it is passed on from generation to generation. It underpins our sense of identity and connects us to our past, each other and the wider world”.

spatially defining cultural heritage, connections and ecosystem services [2,12,7].

In addition to concurring with existing literature pointing out the current inadequacies of integrating CES into policies and EBM governance (see [16-19]), we argue that the quantification and simplification of marine cultural heritage and connections should be avoided altogether, as this can result in ecosystem collapse instead of ecosystem flourishing. Instead, we recommend that marine resource management and development decisions adopt a more precautionary approach before humanity does more harm than good, and that researchers and research institutions employ and support contextual participatory methodologies to better understand marine cultural heritage in social-ecological systems with knowledge holders themselves. These shifts will better ensure that the complexity, intricacy and pluriversality² of both tangible and intangible marine cultural heritage and cultural connections is recognised for more inclusive and effective ecosystem-based ocean management.

2. Obstacles to considering marine cultural heritage in EBM

There are several problems with the current understanding and evaluation of marine cultural heritage as a component of EBM approaches. Common approaches to EBM implicitly treat social and cultural dimensions as quantifiable, with an emphasis on economic valuation [18,21]. However, some cultural 'services' should not be categorised as 'services' at all and cannot be quantified, as they are intangible and exist outside an instrumental (utility) value perspective that dominates many natural resource management paradigms [22,23]. The reduction of heritage to instrumental value silences the values and histories of cultural groups whose worldviews are grounded in relational or holistic value perspectives [22,24].

2.1. The problem of attributing economic values to culture

CES is often defined as "non-material benefits obtained from ecosystems that contribute to well-being" [25], rendering it a very broad and abstract category. As a prominent example, the Food and Agriculture Organisation [26] divides CES into i) recreation and mental and physical health; ii) tourism, iii) aesthetic appreciation and inspiration for culture, art and design, and iv) spiritual experience and sense of place. FAO's categorisation of CES is a version of the Millennium Ecosystem Assessment of 2005, The Economics of Ecosystems and Biodiversity, and the Common International Classification of Ecosystem Services as used by the European Commission (see [11]).

It is simpler to attribute an economic value to tourism than the other FAO-defined categories, which often results in an over-emphasised importance of tourism within CES and the subsequent attempt to then attribute an economic value to the whole CES sub-category altogether (see [10]). This is problematic, as aspects of CES such as spiritual values, intangible cultural heritage, Indigenous culture and practices, sense of place and mental health arguably cannot be attributed a specific economic value, therefore often deeming them less important or even invisible in ecosystem evaluations. As emphasised by the European Commission report on Ecosystem Services and Biodiversity ([27]:16) when referring to the lack of data on cultural services, particularly in marine ecosystems, "there is concern that if suitable data cannot be found for these ecosystem services they will be neglected in policy decisions as a result".

2.2. Western understandings diminish the importance of contextuality

A systematic literature review of CES [25] reveals that there is

² Pluriversality is the recognition that there is not one universal way of knowing, being or valuing (see [20]).

limited information and knowledge about marine CES, particularly in 'developing' countries. A systematic review found that research on CES is "scarce compared to other ecosystem service categories" and that the Western-weighted studies undermine "the role of other worldviews in the understanding of a wide range of interactions between cultural practices and ecosystems worldwide" ([28]:2). This diminishment of alternative worldviews becomes evident when the FAO or European Commission understandings of CES outlined above are imposed onto 'Global South' contexts (see [12] for Chile; [29] for Singapore; [30] for South Africa). The result is a danger of diminishing what constitutes cultures and cultural heritages in specific contexts [17], reducing their value and silencing their history. Allen et al. [16] point out that CES "by definition" are context-specific. From work with coastal communities in South Africa, the authors find that the concept of marine cultural heritage, particularly intangible cultural heritage, is strongly linked to place and localities [31] which makes it challenging to even create a national framework for marine CES.

2.3. Some marine cultural heritage and cultural connections should not be simplified, quantified or 'collapsed'

From conversations with marine and coastal managers and policy-makers in South Africa, the authors acknowledge the need for quantifiable cultural heritage and connections in order to protect and manage cultural heritage. As one coastal manager said, "if it is not in a map or an Excel spreadsheet, it doesn't exist" (see [32]). The need and want to simplify marine cultural dimensions are understandable as this makes them easier to categorise, evaluate and manage. However, there are some marine cultural heritage and connections that should not be simplified, quantified or 'collapsed',³ as their intricacies, intangibility or sacredness would be devalued and threatened by these approaches. For example, it has become apparent that some marine cultural heritage is intangible and often resists articulation and classification, such as sacred cultural practices, Indigenous knowledge systems, histories and even places that are "too sensitive to mention or mark on maps" ([7,33]:16). There are also important marine cultural heritage and cultural connections that cannot be spatialised, such as the ocean being the home of the ancestors in Nguni communities and tradition, and the healing powers of the ocean, which is often dependent on its cleanliness and pureness [7, 34]. As highlighted by Bernard [35], water "is not only a vital medium for physical survival, and indeed life on earth, but also for human spiritual, psychological and social wellbeing".

2.4. We have ecosystem collapse because we collapse (and quantify) culture

Marine cultural heritage and connections are intricate, multi-layered, overlapping, pluriversal, complex and multidimensional, similar to our marine social-ecological systems (see [36]). We are currently facing "increasingly frequent social-ecological crises" that are "rooted in the intertwined nature of our social and ecological systems" such as climate change, plastics in the ocean and wealth disparities ([36]:xxiv). A vital component of these systems are cultural dimensions, which provide crucial insights into how people interact with and care for their environments [2,37,5]. Infield and Mugisha [37] emphasise the challenge of conserving and understanding "the natural world" without understanding the "human cultures that shape it", as "each culture possesses its own sets of representations, knowledge and practices through which people interact with their environment. Nature is both a cultural construction and a biophysical reality". Therefore, failure to recognise this complexity and the proposition to collapse and try to

³ The reason for placing collapse in quotation marks is the argument that we are facing social-ecological systems crises due to our simplification and quantification of complex, intricate and contextualised marine cultural heritage.

quantify cultural aspects of these ecosystems as the only way to account for them, is a flaw not a strength.

Culture influences and underpins everything we do and how we do it [38], and specific cultures will define our understanding of ecosystems, conservation and what we mean by EBM. The importance of scrutinising “how and what cultures impact upon and are impacted by ocean governance” ([7]:2) and EBM is thus essential to better understand complex marine social-ecological systems and how to better manage these through cultures of care instead of cultures of extractivism. An increased recognition of how different cultures conceptualise and value EBM would also increase our understanding of how to challenge current dominant marine EBM approaches and how to integrate different cultural connections and heritages into ocean and coastal management.

Therefore, a priority of ecosystem-based ocean management needs to be a better understanding and accounting of both tangible and intangible marine cultural heritage by developing context-specific, pluriversal and dynamic processes to acknowledge, safeguard and promote these cultural connections to the ocean and coast (see [39]). As emphasised by Bernard [35], “Many cultural beliefs and practices have been undermined and transformed by changing modes of production, social organisation and beliefs brought about by colonialism, capitalism and Christianity”, and EBM should absolutely avoid repeating this same tradition.

A more nuanced understanding of marine cultural heritage can support this. Working with complex and pluriversal systems requires complex and pluriversal approaches, not the simplification, collapse or quantification of marine cultural heritage and cultural connections. If we actually recognise the intricacies of social-ecological systems, where culture plays a fundamental part, we will likely better understand the importance of co-existing with nature and not unsustainably extracting resources by prioritising a capitalist system. If EBM continues to simplify the approaches and understandings of our social-ecological systems, we are more likely to perpetuate a worldview that separates humans from nature, supporting the ongoing materialistic commodification of natural resources [37]. This neo-liberal commodification has led to social-ecological crises which is currently leading the world on a trajectory towards ecological collapse.

2.5. Recommendations

We propose two ways of responding to the complexities of CES: i) that marine resource management and decision-makers adopt precautionary approaches, and ii) that researchers and research institutions continue developing, supporting and practising contextual participatory methodologies.

Firstly, marine decision-makers should slow down the current need to find quick, efficient and quantifiable solutions to EBM, and rather take a precautionary approach⁴ to marine cultural heritage management before we do more harm than good and end up undermining, devaluing, and diminishing sensitive, Indigenous and intangible heritage and cultural connections to the ocean and coast. A precautionary approach would mean pausing action on development decisions that would impact marine cultural heritage and cultural connections until long-term and cumulative impacts are more adequately understood. In practice, this would mean developing a greater understanding of marine cultural heritage, both tangible and intangible, at different scales and exploring opportunities for greater co-management of marine areas where local coastal communities can govern according to their own social-cultural-ecological priorities (see [7,40]). Within the South

African context, this approach can be applied to the current national marine spatial planning (MSP) process being developed and implemented in the country.⁵

It is, however, important to consider the applicability and therefore viability of such a precautionary approach in a context where many countries are rushing to exploit marine areas and resources for economic gain. An important practical aspect of embedding this onto existing practices would be to ensure that environmental impact assessments, or strategic environmental assessments, for natural resource extraction activities also have to consider marine cultural heritage and cultural connections in their risk assessments. These assessments would have to be designed for the specific contexts where they are being carried out and need to be beyond an understanding of marine cultural heritage as primarily shipwrecks (see [7]).

Secondly, there is a need to qualify instead of quantify cultural dimensions of ecosystem-based ocean management, and research institutions and researchers should therefore develop and adopt contextual participatory methodologies to better understand marine cultural heritage and cultural connections to marine social-ecological systems that can be better recognised in EBM approaches. Practically, qualifying marine cultural heritage would mean working closely with coastal communities to expand our knowledge on the complexity of specific cultural connections, heritage and practices. However, it is important to recognise that some cultural connections and CES are not meant to be shared or understood outside of their respective communities or contexts, which also forms part of a more in-depth, ethical and empathetic understanding of marine cultural heritage altogether.

Again, we have to consider the relevance of such approaches in light of neoliberal and capitalistic governance regimes, and the danger of these approaches and community engagements being co-opted as mere tickbox exercises (see [7]). This emphasises the importance of these processes being embedded at the very beginning of marine EBM approaches such as MSP and marine protected areas (see [42]), to make sure the pluriversality and multitude of marine cultural heritage and cultural connections inform policies, decision-making and management.

Furthermore, when conducting research regarding cultural values and culturally significant areas, it is important to guard against researcher pitfalls such as oversimplification of culture, expert classifications from the outside and measuring values with metrics that in practice cannot capture or relate to intangible cultural values or meanings [43]. To avoid these pitfalls, Turner et al. [43] provide five useful steps that researchers can employ: i) focusing on the communities and what matters to them; ii) using meaningful ways of communication such as digital storytelling; iii) make space for invisible or hard-to-measure concerns; iv) selecting historical baselines that are appropriate for assessing conditions; and v) creating alternatives through iterative processes.

To ensure that we work to qualify and contextualise marine cultural heritage to better understand its history, pluriversality and significance, participatory methodologies for knowledge co-production are helpful. Galafassi et al. [44] highlight how an iterative knowledge co-creation process in Kenya and Mozambique supported transformation in social-ecological systems by bringing together different knowledge systems and knowledge holders, values and perspectives. Strand et al. [7,40] find that the use of arts-based participatory research approaches in South Africa are useful to identify and highlight important cultural connections to the ocean and coast that are not necessarily recognised in current ocean governance approaches. In the Arctic, Yua et al. [45] propose a knowledge co-production framework to better understand and recognise Indigenous Peoples of the Arctic and their knowledge “which address all aspects of life, including the spiritual, cultural, and

⁴ The precautionary principle, as set out as Principle 15 in the United Nations Rio Declaration, states that to protect the environment a precautionary approach should be taken and ‘where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation’ [41].

⁵ In 2018 the MSP Act (MSP Act 2018) was gazetted and in April 2021 was signed into operation, providing mandatory requirements for the establishment of marine area plans for four regions along South Africa’s coastline [42].

ecological”.

3. Conclusions

To attempt to categorise, quantify, collapse and spatialise marine cultural heritage, cultural connections and CES through rigid, quantitative approaches is not only difficult and limiting, but also problematic, as it is often based on Western-dominated conceptualisations and categories of culture. This silences and devalues context-specific, intangible and dynamic marine cultural heritage, particularly from the Global South. Cultural heritage that are intangible and dynamic often resist economic valuation and are often neglected in ecosystem services assessments, as well as policy-making. This means that more attention needs to be paid to develop sensitive and contexts specific processes of understanding and evaluating marine cultural heritage, cultural connections and CES.

The arguments presented above suggest that quantifying and simplifying marine cultural heritage and connections should be avoided altogether, as this can lead to ecosystem collapse instead of ecosystem diversity and sustainability. This is particularly important when it comes to intangible cultural heritage which can be sacred, ever-changing, dynamic and strongly linked to people’s identities and Indigenous knowledge systems. Therefore, more contextual participatory methodologies are required to expand our understanding of the intricacies, pluriversality and complexity of marine cultural heritage and cultural connections to improve our EBM approaches to complex marine social-ecological systems.

CRedit authorship contribution statement

This author statement is developed using the CRedit (Contributor Roles Taxonomy). **Mia Strand**: Conceptualisation, Writing – original draft preparation, Writing – review & editing. **Nina Rivers**: Conceptualisation, Writing – review & editing. **Bernadette Snow**: Supervision, Writing – review & editing.

Declaration of Competing Interest

The authors declare that there are no conflicts of interest.

Data availability

Data will be made available on request.

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