Review

Indigenous Environmental Justice within Marine Ecosystems: A Systematic Review of the Literature on Indigenous Peoples’ Involvement in Marine Governance and Management

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Abstract: We develop and apply a systematic review methodology to identify and understand how the peer-reviewed literature characterises Indigenous peoples’ involvement in marine governance and management approaches in terms of equity and justice worldwide. We reviewed the peer-reviewed English-language research articles between January 2015 and September 2020 for examples of Indigenous peoples’ involvement in marine governance and management using the analytical lens of environmental justice. The majority of research studies highlighted that Indigenous peoples experienced some form of environmental injustice linked to existing marine governance and management, most notably in the context of inequitable decision-making procedures surrounding the establishment and operation of marine protected areas. However, there are significant gaps in the current literature, including a notable absence of studies exploring Indigenous women and other gender minorities’ involvement in marine planning and management and the limited number of studies about Indigenous peoples living throughout Asia, the Arctic, Russia, and Africa. More studies are needed to explore collaborative and intersectional approaches, including co-governance and co-management and ecosystem-based management, and critically evaluate what constitutes inclusive, equitable, and just marine governance and management processes, practices, and outcomes for different Indigenous peoples occupying diverse social–ecological systems.

Keywords: indigenous people; environmental justice; marine governance and management; collaborative natural resource management; marine protected areas; marine spatial planning; co-governance and co-management; ecosystem-based management; indigenous knowledge (ILK); food security

1. Introduction

In this paper, we connect two key transdisciplinary themes—the study of Indigenous peoples’ involvement in marine governance and management and the study of environmental justice (EJ)—to highlight the synergies and ongoing conversations that are being sustained within the Indigenous environmental and ocean-related literatures [1–6]. Since the 1990s, scholarship on Indigenous marine management has developed separately from EJ, with both fields now significant foci of activism, research, and policy [7–11]. Both Indigenous EJ and marine studies name and seek to address power, public participation, human-induced impacts, including pollution, the uneven distribution of environmental risks and benefits, and knowledge production; however, each comes from different entry points.

EJ as a political movement and an academic field of study emerged out of protests by socio-economically deprived and politically marginalised communities (including but
not limited to Black, Latinx, Indigenous peoples and other ethnic minorities) protesting about their higher exposure to environmental risks (most notably air pollution and toxic chemicals) than wealthier and politically influential communities [12–17]. EJ (as a movement and field of research) first began in the USA in the early 1980s and later spread around the globe as activists and scholars began to highlight how environmental, social, economic, gender, and racial injustices often intersected and disproportionately negatively affected more impoverished non-White communities as well as Global South populations [18–23]. There is now a growing body of literature that examines Indigenous EJ dimensions, particularly in the context of freshwater, which highlights how Indigenous peoples’ interests, values, and rights are frequently marginalised within existing planning and management approaches [14,23–25]. Scholars have also demonstrated that Indigenous peoples are actively challenging their exclusion and fighting for greater recognition, participatory parity, and decision-making authority (not just the right to be consulted by governments), as well as their rights to access and utilise their tribal landscapes and seascapes for their physical and spiritual well-being [6,14,25–31].

The field of Indigenous marine studies emerged following Indigenous peoples voicing their concerns about the health of their ancestral marine environments and staging campaigns for their rights (in terms of authority, sovereignty and self-determination) and duties (as environmental guardians) to be formally recognised and enabled within various colonial states [31–34]. In doing so, Indigenous and non-Indigenous actors (be they scholars, activists, leaders, scientists, government officials and/or community members) drew attention to how the dominant forms of marine governance and management (embedded within Western scientific knowledge and governance arrangements) were (and still are) unable to address the declining health of communities whose physical and metaphysical well-being was connected to specific marine ecosystems, biota, and places (both human and more-than-human alike) [2,35,36].

Emergent scholarship has highlighted that Indigenous communities’ participation in and assumption of leadership roles in environmental governance and management (including those pertaining to coastal and marine environments) contributes to more inclusive governance, planning processes and more effective management strategies [2,6,33,37–39]. These studies draw on broader literatures on Indigenous knowledge (IK), legal rights (including self-determination), and customary approaches [35,39–42]. Indigenous Knowledge (IK) is a complex and highly dynamic nested knowledge system (consisting of information-practices-values) held by particular Indigenous groups with historical continuity of occupation and use of natural resources [43–47]. IK is held collectively and transmitted from one generation to the next and adjusted to fit changing conditions. It consists of the accumulation of past experiences of a specific group of people within their local environments and their connectedness between environments, humans and other beings (both human and more-than-human entities), and phenomena (metaphysical and biophysical) [46,48–51]. Academics working in the field of legal studies, for instance, have argued that colonisation did not mean the end of Indigenous nations’ sovereignties and that present-day nation–states (such as Canada, Aotearoa New Zealand, and the United States of America) are bound by international laws and agreements, treaties as well as case law decisions to recognise Indigenous rights to be involved in environmental planning and management that pertains to their ancestral lands and waters [52–58]. Environmental researchers have demonstrated how Indigenous customary environmental governance and management approaches can help maintain healthy ecosystems and sustainable livelihoods across long time scales, with high levels of resilience that ensure human and ecological communities can bounce back from disturbances [57–59].

Scholars and policy makers have proposed numerous definitions of what constitutes an Indigenous people or Indigenous community [60–65]. Confusions and overlaps between different fields’ framing of “Indigenous” (or “native”, “tribal”, “local”) often impede the exchange of ideas and synthesis [66–69]. For the purposes of this paper, we drew on the innovative definition put forward by the United Nation’s Special Rapporteur of the
Sub-Commission on Prevention of Discrimination and Protection of Minorities (Jose Martínez Cobo) in 1986:

On an individual basis, an indigenous person is one who belongs to these indigenous populations through self-identification as indigenous (group consciousness) and is recognized and accepted by these populations as one of its members (acceptance by the group). This preserves their sovereign right and power to decide who belongs to them, without external interference. [70]

We adopted this definition as it is inclusive of Indigenous peoples who are situated in countries in the Global North and Global South, as well as those in post-colonial (such as Kenya and Fiji) and settler colonial societies (including Australia and Canada) [71–74].

Indigenous peoples’ collective right to self-determination is an important cross-cutting theme across innumerable academic study fields (including environmental management and law), as are Indigenous peoples’ activism and actions to resist colonisation [73–78]. The United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) outlines that the “Indigenous peoples have the right to self-determination. By that right they freely determine their political status and freely pursue their economic, social and cultural development” [60]. However, there is no universally accepted definition of what self-determination is and how it is best enacted (or could be in the future) for Indigenous peoples. There is a diversity of understandings amongst scholars, activists, politicians, community members, and government employees [76,79,80].

Research has highlighted that Indigenous activists from the same Indigenous language or cultural group often hold contrasting viewpoints about the nature of self-determination rights. While all acknowledge Indigenous cultures and identities, governance arrangements and power divisions are notably different. Some frame self-determination rights in terms of state sovereignty and the idea of territorial secession of Indigenous people from the colonial state (through the formal creation of an internationally recognised Indigenous nation–state separated from the colonial state) [79,81,82]. Others conceive it to be largely procedural (which is more in line with the UNDRIP) and cast self-determination as “the right of Indigenous to self-govern via their own institutions within the [colonial] state, allowing for the pursuit of their social and economic development in terms of their own collective needs” [81]. Within the literature we reviewed, scholars and research participants often used the terms sovereignty and self-determination interchangeably (#22, #28 and #33), and thus, we followed suit in the rest of this paper. However, we suggest that additional research is required to clarify what Indigenous and non-Indigenous actors mean when they talk about (and often seek to enact) Indigenous self-determination in the context of marine governance and management in the Anthropocene.

In recent years, Indigenous marine management and EJ literatures have come into closer proximity due to the ever-increasing awareness of the interconnection between many of the socio-political and environmental challenges facing Indigenous peoples. These include Indigenous communities being marginalised within formal decision-making processes, experiencing heightened vulnerability to environmental risks alongside greater incidence of food and water insecurity, and constrained access to essential information (most notably about environmental health), services (such as health and education) and infrastructure (water and sewerage) and sustainable development opportunities [83–88]. All of these issues are also matters of EJ [89–92]. In sum, the emergent literature has highlighted that academics, planners, governments, and others need to pay far more attention to questions of the just distribution of ecosystem services and the abilities of Indigenous peoples to use their tribal lands, waters and seas, as well as to how planning and management decisions that affect them are facilitated and made [93–96].

Social–ecological changes occurring within coastal and marine environments around the world raise EJ questions [97–100]. These include who benefits (or is disadvantaged) from particular policies, who can access and utilise ecosystems [97,100], who is included in decision-making processes, and which groups’ rights are recognised and empowered.
Thus, we argue that a greater understanding of the EJ dimensions of Indigenous communities’ involvement in marine planning and management can provide scholars and practitioners with critical insights into factors that enable or constrain sustainable marine ecosystem governance and management. We contend, moreover, that an EJ theoretical lens can illuminate significant issues encountered by diverse Indigenous communities around the world navigate sustainability and climate change challenges. Accordingly, we argue that an overview of how EJ is taken into account within marine governance and management research and practice would be fitting and appropriate. In our review, we consider how Indigenous communities worldwide are involved in different forms of coastal and marine spatial planning, management and governance arrangements, and what constitutes just processes, institutional arrangements, and outcomes for both Indigenous peoples and the environment.

In this paper, we review the existing scholarship on Indigenous peoples’ involvement in marine, and coastal governance and management approaches through the lens of EJ. For the purpose of our scoping review, we employed an EJ analytical framework, which comprised the trivalent of EJ (distributive, procedural, and recognitional justice) that various EJ scholars have commonly employed (see Figure 1) [12,101,102]. Some scholars have included capabilities in their account of EJ, with capabilities defined as the “capacities necessary for people to function fully in the lives they choose for themselves” [10]. However, we deliberately did not include a capabilities-based approach to justice due to Indigenous scholars’ recent criticisms that it is incompatible with Indigenous ontologies and epistemologies, including Indigenous peoples’ understandings of nature [103,104]. Rather than EJ being a single thing, scholars are increasingly framing EJ in such pluralistic terms and refusing to adopt a universal theory and instead advocating for geographically and culturally specific understandings of just arrangements and outcomes [10,105–112]. Although there are many theories of justice, we deliberately employed the theoretical lens most commonly used by researchers who examine Indigenous communities’ understandings and experiences of EJ [104,111–115]. In this paper, we conceptualised Indigenous Environmental Justice (IEJ) in such a broad, integrated and pluralistic way that takes into account the diversity of Indigenous peoples’ experiences, histories, knowledge systems, as well as their Indigenous ontologies and epistemologies [116,117].
The rest of the paper is structured as follows. First, we outline the methodological approach we employed for this systematic review. Second, we present the results of the review and situate the reviewed papers into the broader literature. We organised our results into sub-headings that reflect the three dimensions of EJ (procedural, distributive and recognitional), which includes identifying specific examples of factors that contributed towards environmental injustice and also actions that addressed injustice. Lastly, we detailed the critical gaps in the existing scholarship on EJ and Indigenous peoples’ involvement in marine and coastal governance and management.

2. Materials and Methods

This study takes a systematic review approach. Systematic literature reviews attempt to identify, appraise and synthesise all relevant studies in order to answer a particular question, with the goal of producing a scientific summary of the evidence. Systematic reviews allow for the reduction of literature review bias and enable follow-ups to be more likely to reflect knowledge development [118–120]. Informed by the recent scholarship adopting pluralistic framings of IEJ, we employed three interrelated questions to guide our research (in terms of our search criteria, analysis of data, and write-up of our results).
The questions encompassed the trivalent of EJ. Question 1—To what extent do the current ways of governing and managing coastal and marine areas contribute to fair and just processes and outcomes for Indigenous peoples?—examined both distributive and procedural dimensions of justice. Question 2—To what extent are Indigenous peoples able to meaningfully participate in coastal and marine governance, planning and management processes?—explored the justness of procedures. Thus, question 3—To what extent are Indigenous ways of knowing and being recognised and empowered within coastal and marine governance and management?—considered issues related to recognitional justice.

A literature search for relevant studies was undertaken in the academic database Scopus. The search covered years from 2015 to September 2020 (the time of the search) and focused on research articles. A systematic search strategy was employed, which combined three levels of search terms (see Table 1 detailing our keywords). We deliberately decided to employ a single database (Scopus) because of its accessibility, ease of use, and accuracy (search engine produced articles of relevance). At the start of our study, we attempted to use other databases (the Web of Knowledge and Google Scholar) in tandem with Scopus, but this approach proved methodologically unsatisfactory. Our search of the Web of Knowledge database, for instance, (using the same parameters as used in Scopus) provided us with a wealth of papers (more than 200,000 articles). However, we found that the vast majority of papers were completely unrelated to our study’s focus, guiding questions, and even the keywords searched, and it would require us to adopt different search criteria and parameters to reduce the number of articles. Accordingly, we elected to employ Scopus due to its accessibility and accuracy, allowing others to replicate our study in the future.

Table 1. The search query for the systematic review process.

| Database | Keywords Used                                                                 |
|----------|-----------------------------------------------------------------------------|
| Scopus   | ((TITLE-ABS-KEY (“Ecosystem-based management” OR “Coastal Management” OR “Ecosystem based management” OR “marine Management” OR “marine protected area”)) AND ((“Indigenous peoples” OR “Native peoples” OR “First Nations” OR “Inuit” OR “Aboriginal people” OR “Native American” OR “Tribes” OR “Clans”)) AND (“collaborative” OR “collaboration” OR “participatory” OR “partnership” OR “co-management” OR “co-governance”) AND (LIMIT-TO (SRCTYPE,”j”)) AND (LIMIT-TO (DOCTYPE,”ar”)) AND (LIMIT-TO (LANGUAGE,”English”))) |

The initial focus was on ecosystem-based management (EBM) due to the apparent synergies between EBM and Indigenous environmental management practices, with both emphasising holism (interconnectivity within ecosystems and humans as part of nature), use of multiple types of knowledge, and participatory decision-making processes [6,40]. However, this search yielded too few articles. Furthermore, most articles referring specifically to EBM were not focused on Indigenous peoples’ involvement in marine governance and/or management [125–129]. Therefore, the search expanded to include Indigenous peoples and coastal management, marine management and marine protected areas.

Following the literature search on Scopus, which yielded 92 papers, an initial scan of the articles was undertaken where the titles and abstracts were read to identify those considered eligible for inclusion. A number of criteria for inclusion were applied (see Table 1 and Figure 2). Firstly, the study was required to be written in English (for logistical reasons). Secondly, concerning literature type, only article journals with empirical data (which was based on primary research such as interviews, focus groups, or surveys) were selected. This meant review articles, book series, books, chapters in books and conference proceedings were excluded. Thirdly, a period of five years was selected (between 2015 to
September 2020 (see Table 2), a total of five years and nine months). Although some systematic reviews sometimes include grey literature [130–132], in this review, we expressly set out to examine the peer-reviewed articles (see Figure 2) and synthesise those papers to better understand the gaps in current academic scholarship, and thus excluded grey literature.

Table 2. The inclusion and exclusion criteria.

| Criterion         | Eligibility                              | Exclusion                              |
|-------------------|------------------------------------------|----------------------------------------|
| Literature type   | Journal (research articles)               | Journals (systematic review), book     |
|                   |                                          | series, book, chapter in a book,       |
|                   |                                          | conference proceeding                  |
| Timeline          | Between 2015 and 2020                    | <2015                                  |
| Language          | English                                  | Non-English                            |

![Figure 2](image-url) Flowchart showing the identification, screening, eligibility, and inclusion process.

Data Extraction and Analysis

Following the initial scan, the selected articles (which met our criteria) were read in total (see Table 3), and data were extracted following Petticrew and Roberts’ guidelines for conducting systematic reviews in the social sciences. The authors suggested that relevant data from the studies included in the review should be extracted according to a standard template and stored in a database [121]. Based on the proposed standard template and according to the research question, relevant variables were identified, and the associated data were extracted and entered into a Microsoft Excel spreadsheet, the included variables (codes) are documented in Table 4.

Table 3. Coastal and marine management papers included in the systematic review.

| Identifier | Paper Details                                                                 |
|------------|-------------------------------------------------------------------------------|
| 1          | Brain, M., Nahuelhual, L., Gelcich, S., & Bozzeda, F. (2020). Marine conservation may not deliver ecosystem services and benefits to all: Insights from Chilean Patagonia. *Ecosystem Services*, 45, 101170. DOI: 10.1016/j.ecoser.2020.101170 |
| No. | Author(s) | Title | Journal | Year | DOI |
|-----|-----------|-------|---------|------|-----|
| 2   | Cisneros-Montemayor, A., Zetina-Rejón, M., Espinosa-Romero, M., Cisneros-Mata, M., Singh, G., & Fernández-Rivera Melo, F. | Evaluating ecosystem impacts of data-limited artisanal fisheries through ecosystem modelling and traditional fisher knowledge. | Ocean & Coastal Management | 2020 | 10.1016/j.ocecoaman.2020.105291 |
| 3   | Baker, S. and Constant, N. | Epistemic justice and the integration of local ecological knowledge for marine conservation: Lessons from the Seychelles. | Marine Policy | 2020 | 10.1016/j.marpol.2019.103722 |
| 4   | Djoestro, M., & Behagel, J. | Building local support for a coastal protected area: Collaborative governance in the Bigi Pan Multiple Use Management Area of Suriname. | Marine Policy | 2020 | 10.1016/j.marpol.2019.103746 |
| 5   | Maxwell, K., Ratana, K., Davies, K., Taiapa, C., & Awatere, S. | Navigating towards marine co-management with Indigenous communities on-board the Waka-Taurua. | Marine Policy | 2020 | 10.1016/j.marpol.2019.103722 |
| 6   | Pham-Do, K., & Pham, T. | Tourism in marine protected areas: A view from Nha Trang Bay, Vietnam. | Tourism Management Perspectives | 2019 | 10.1016/j.tmp.2019.100623 |
| 7   | Krueck, N., Abdurrahim, A., Adhuri, D., Mumby, P., & Ross, H. | Quantitative decision support tools facilitate social-ecological alignment in community-based marine protected area design. | Ecology And Society | 2019 | 10.5751/es-11209-240406 |
| 8   | Satizábal, P., & Dressler, W. H. | Geographies of the Sea: Negotiating Human–Fish Interactions in the Waterscapes of Colombia’s Pacific Coast. | Annals of the American Association of Geographers | 2019 | 10.1080/00028968.2019.1593304 |
| 9   | Noble, M. M., Harasti, D., Pittock, J., & Doran, B. | Understanding the spatial diversity of social uses, dynamics, and conflicts in marine spatial planning. | Journal of Environmental Management | 2019 | 10.1016/j.jenvman.2019.103568 |
| 10  | Whitney, C. K., & Ban, N. C. | Barriers and opportunities for social-ecological adaptation to climate change in coastal British Columbia. | Ocean & Coastal Management | 2019 | 10.1016/j.ocecoaman.2019.105291 |
| 11  | Bakar, N. A. A., & Wall, G. | The Importance Of Institutional Support To Sustain Communities’ Livelihoods In Marine Protected Area: Tun Sa-karan Marine Park, Sabah, Malaysia. | Alam Cipta | 2019 | 12(1), 21–32 |
| 12  | Macedo, H. S., Medeiros, R. P., & McConney, P. | Are multiple-use marine protected areas meeting fishers’ proposals? Strengths and constraints in fisheries’ management in Brazil. | Marine Policy | 2019 | 99, 351–358 |
| 13  | Gilani, H. R., Innes, J. L., & Kent, H. | Developing Human Well-being Domains, Metrics and Indicators in an Ecosystem-Based Management Context in Haida Gwaii, British Columbia, Canada. | Society & Natural Resources | 2019 | 31(12), 1321–1337 |
| 14  | Makey, L., & Awatere, S. | He Mahere Pāhekoheko Mō Kaipara Moana—integrated Ecosystem-based Management for Kaipara Harbour, Aotearoa New Zealand. | Society & Natural Resources | 2019 | 31(12), 1400–1418 |
| 15  | Eckert, L. E., Ban, N. C., Tallio, S. C., & Turner, N. | Linking marine conservation and Indigenous cultural revitalization. | Ecology and Society | 2018 | 23(4) |
| 16  | Loseto, L. L., Hoover, C., Ostertag, S., Whalen, D., Pearce, T., Paulic, J., ... & MacPhee, S. | Beluga whales (Delphinapterus leucas), environmental
change and marine protected areas in the Western Canadian Arctic. *Estuarine, Coastal and Shelf Science*, 212, 128–137.

17 Masterson, V. A., Mahajan, S. L., & Tengö, M. (2018). Photovoice for mobilizing insights on human well-being in complex social-ecological systems. *Ecology and Society*, 23(3).

18 Christie, P., Fluharty, D., Kennard, H., Pollnac, R., Warren, B., & Williams, T. (2018). Policy pivot in Puget Sound: Lessons learned from marine protected areas and tribally-led estuarine restoration. *Ocean & Coastal Management*, 163, 72–81.

19 Davies, K., Fisher, K., Foley, M., Greenaway, A., Hewitt, J., Le Heron, R., ... & Lundquist, C. (2018). Navigating collaborative networks and cumulative effects for Sustainable Seas. *Environmental Science & Policy*, 83, 22–32.

20 Sowman, M., & Sunde, J. (2018). Social impacts of marine protected areas in South Africa on coastal fishing communities. *Ocean & coastal management*, 157, 168–179.

21 Satizábal, P. (2018). The unintended consequences of ‘responsible fishing’ for small-scale fisheries: Lessons from the Pacific coast of Colombia. *Marine Policy*, 89, 50–57.

22 Moore, S. A., Brown, G., Kobryn, H., & Strickland-Munro, J. (2017). Identifying conflict potential in a coastal and marine environment using participatory mapping. *Journal of Environmental Management*, 197, 706–718.

23 Tiakiwai, S. J., Kilgour, J. T., & Whetu, A. (2017). Indigenous perspectives of ecosystem-based management and co-governance in the Pacific Northwest: lessons for Aotearoa. *AlterNative: An International Journal of Indigenous Peoples*, 13(2), 69–79.

24 Watts, P., Koutouki, K., Booth, S., & Blum, S. (2017). Inuit food security in Canada: arctic marine ethnoecology. *Food Security*, 9(3), 421–440.

25 Abreu, J. S., Domit, C., & Zappes, C. A. (2017). Is there dialogue between researchers and traditional community members? The importance of integration between traditional knowledge and scientific knowledge to coastal management. *Ocean & Coastal Management*, 141, 10–19.

26 Vaughan, M. B., Thompson, B., & Ayers, A. L. (2017). Pāwehe Ke Kai a ‘o Há’ena: creating state law based on customary indigenous norms of coastal management. *Society & Natural Resources*, 30(1), 31–46.

27 Patankar, V., D’Souza, E., Alcoverro, T., & Arthur, R. (2016). For traditional island communities in the Nicobar archipelago, complete no-go areas are the most effective form of marine management. *Ocean & Coastal Management*, 133, 53–63.

28 Stocker, L., Collard, L., & Rooney, A. (2016). Aboriginal world views and colonisation: implications for coastal sustainability. *Local Environment*, 21(7), 844–865.

29 Lozano, A. J. G., & Heinen, J. T. (2016). Identifying drivers of collective action for the co-management of coastal marine fisheries in the Gulf of Nicoya, Costa Rica. *Environmental Management*, 57(4), 759–769.

30 Wendt, H. K., Weeks, R., Comley, J., & Aalbersberg, W. (2016). Systematic conservation planning within a Fijian customary governance context. *Pacific Conservation Biology*, 22(2), 173–181.

31 Glaser, M., Breckwoldt, A., Deswandi, R., Radjawali, I., Baitoningsih, W., & Ferse, S. C. (2015). Of exploited reefs and fishers–A holistic view on participatory coastal and marine management in an Indonesian archipelago. *Ocean & Coastal Management*, 116, 193–213.
Ramírez-Gomez, S. O., Torres-Vitolas, C. A., Schreckenberg, K., Honzák, M., Cruz-Garcia, G. S., Willcock, S., ... & Poppy, G. M. (2015). Analysis of ecosystem services provision in the Colombian Amazon using participatory research and mapping techniques. *Ecosystem Services, 13*, 93–107.

Richmond, L., & Kotowicz, D. (2015). Equity and access in marine protected areas: The history and future of ‘traditional indigenous fishing’ in the Marianas Trench Marine National Monument. *Applied Geography, 59*, 117–124.

### Table 4. Variables that we used to code papers in our systematic review.

| (1) | Reference (authors, year, title, and journal) |
|-----|-------------------------------------------|
| (2) | Indigenous group                          |
| (3) | Research methodology                      |
| (4) | Geographical area: location of study (nation–state); type of environment (coastal or marine) |
| (5) | Credits: whether there is a named Indigenous author and/or acknowledgement of Indigenous group |
| (6) | Research participants: types of actors or groups who were involved in the study |
| (7) | Degree of Indigenous participation |
| (8) | Axes of inequality examined by authors (categories included: Indigeneity, ethnicity, gender, race, class, disability, other) |
| (9) | Indigenous experiences of coastal/marine planning, management, governance regimes |
|     | a. factors that contributed to Indigenous environmental injustice: procedural; distributive; recognitional; |
|     | b. factors that contributed to Indigenous environmental justice. |

We conducted qualitative thematic content analysis from the peer-reviewed empirical articles that met the inclusion criteria [133,134]. The diversity of methodologies found (including interviews, ethnography, photo-voice, mixed methods, and quantitative surveys) precluded us from using any systematic meta-synthesis. Instead, we conducted a thematic analysis (drawing on Braun and Clarke’s six-step approach) and deductive coding (employing a codebook we designed before our analysis; see Table 4). We followed Braun and Clarke’s approach to thematic analysis, which provided a step by step but recursive process, which allowed us to move back and between the different stages when necessary to ensure that all relevant material was identified and coded [135,136]. The method allowed us both structure and flexibility to extend our thinking around Indigenous environmental justice issues associated with marine governance and management based on the collated data [137]. The first step involved us familiarising ourselves with the data. We did this by reading each article in its entirety several times. The second stage consisted of us undertaking initial coding (using pre-determined codes outlined in Table 4) to identify material that fitted within the central ideas of EJ (encapsulated in our framework and guiding questions). The third stage involved analysis of the initial codes and grouping of the codes into broader themes (related to EJ). This involved reviewing our codes and then grouping codes into potential themes. Reviewing the codes collected data and the potential themes was a crucial step as it allowed us to ensure that each theme was relevant to our EJ framework. The fourth stage involved reviewing the themes against the data set (the reviewed papers) to ensure if they answered any of the guiding research questions and if they told a convincing story based on the collected data (the reviewed
papers). The fifth step involved us developing a detailed analysis of the themes, which allowed us to define the focus and scope of each theme more clearly. The final stage involved us writing up our results into a narrative, which involved us synthesising the key themes and discussed them in relationship to each other (using our guiding questions and the EJ framework as our analytical guides). By contextualising our results regarding the broader literature on EJ and Indigenous marine studies, we demonstrated the similarities and divergences across the studies and identified the significant gaps in the existing academic knowledge base.

3. Results and Discussion

3.1. Geographical Location of Studies

Our literature search yielded 33 academic papers (see Table 3) that met the selection criteria and described a study that included one or more Indigenous people (sometimes termed as an Indigenous community, tribe, nation or Traditional Owner group) and detailed their coastal and marine management involvement and governance. All the papers we reviewed included some aspect that related to Indigenous people in their research. However, less than one-third of papers (n = 10) explicitly named an Indigenous group that had participated in the study. The named Indigenous peoples included four different Colombian Indigenous peoples (n = 4), Canadian First Nations (n = 4), New Zealand Māori (n = 3), Australian Aboriginal peoples (n = 3), and Inuit (n = 2). However, the majority of the studies were much more generic, simply referring to Indigenous people in non-specified terms, as either simply Indigenous or native people, villagers, artisan fishers, local residents, islanders, or communities (n = 23). In some studies, this generalisation indicated a failure by scholars to specifically name the Indigenous peoples (individuals, communities, or entire groups) on which they were conducting research, which is highly problematic (an example of misrecognition, which is a form of injustice).

Indigenous scholars and community members have critiqued the use of generic labels that treat all Indigenous people the same and instead insisted that different tribes, clans, language groups, and/or Indigenous nations be named and their unique cultural identities recognised. In other papers, though, the studies themselves were of a much more generic nature (for example, where race or ethnicity, or differentiation of any type, was not included in the study’s scope) rather than an apparent oversight or example of injustice. The overall lack of recognition of specific Indigenous groups in the literature (which partly answers our third research question) and the potential of consideration and recognition of consequences associated with misrecognition (a form of recognitional injustice) are discussed later in this paper.

The literature search generated articles with the following geographic focus: six studies in Canada, four in Colombia, three in New Zealand, three in Australia, and two studies in the USA, Brazil and Indonesia, and one each in numerous other nations. Analysis of the papers by geographical region (as opposed to country) revealed that the majority of the papers (n = 17) were focused on the Americas (North, Central and South Americas) (see Figure 3). Of those papers, eight focused on Indigenous populations living in either Canada or the USA, while the rest examined Central and South America, most notably Colombia (n = 4) and Brazil (n = 2). Outside of the Americas, the most common sites for empirical studies was Australia and New Zealand (n = 6), Asia (n = 4), Islands of the Pacific Ocean (n = 3) and Islands of the Indian Ocean (n = 2). The number and geographical spread of articles were far lower than the number we anticipated and reflected the paucity of published academic literature on Indigenous peoples’ involvement in coastal and marine management and planning. This does not conclusively mean that there is such a lack of Indigenous peoples’ involvement in coastal and marine management and planning itself, but it does show a distinct gap in the literature (their involvement is not being explicitly acknowledged in the academic write-up of these projects).
For 2019 and 2020, there was an increase in the number of publications on Indigenous coastal and marine management, which indicated that scholars increasingly recognised that it is a critical area of study adaptation (2020—#1, #2, #3, #4, #5, #6; 2019—#7, #8, #9, #10, #11, #12). As expected, there were significant spatial gaps in the current peer-reviewed scholarship (see Figure 3); with no studies from the Indian subcontinent, Russia, and Nordic countries (to name just a few), which contrasted with the wealth of scholarship on Indigenous knowledge, environmental monitoring, land management, and climate change [136–142].

![Figure 3. Geographical location of empirical studies.](image)

The articles used a narrow range of research methodologies, with interviewing (both individual and group) by far the most popular; this included semi-structured interviews ($n = 19$), workshops ($n = 9$), focus groups ($n = 5$), and unstructured interviews ($n = 5$). Participation observation ($n = 8$) was the second most common research method used within the papers we reviewed. Only a handful of other studies employed other methodologies, including policy analysis ($n = 5$), participatory mapping and action-based research ($n = 5$), questionnaires ($n = 4$), household surveys ($n = 3$), and photo-voice ($n = 1$). Eleven papers used mixed methods (qualitative and quantitative research methodologies), with the majority of those using a combination of interviews or focus groups accompanied by questionnaires or household surveys.

Marine protected areas (MPAs) was the most featured subject for researchers to investigate ($n = 12$), which included multi-user MPAs. An equal number of studies examined the topics of marine spatial planning ($n = 6$) and the collection and utilisation of IK alongside Western scientific knowledge ($n = 6$). Another five papers considered the development and use of collaborative, participatory tools within marine planning and management processes, which closely overlapped with studies investigating community-based marine management approaches ($n = 4$). Only a handful of studies investigated Indigenous customary marine governance and management ($n = 3$) and EBM ($n = 3$). The limited number of papers in our review that explicitly explored EBM (two from New Zealand and one from Canada) highlighted that the intersectionality of the concept and Indigenous EJ had only recently emerged within the scholarship (#5, #19, #13).
We were surprised that while six papers examined IK within marine management, only three papers explicitly focused on Indigenous environmental management practices (#3, #5, #28). The six papers all situated IK as a placed-based, holistic, and nested knowledge system that consisted of information–practices–values. However, the reviewed papers did not specifically investigate IK through holistic, interconnected and integrated approaches and instead primarily studied IK as a repository of ecological information that could help fill the gaps in scientific knowledge about biophysical phenomena (#16, #23). Rather than recognising that IK is interwoven with Indigenous worldviews, values, norms, governance structures and environmental management approaches (#3, #5, #28), IK was viewed as something that scientists and practitioners (often non-Indigenous actors) could use to augment and expand their knowledge, skills, and practices. Such a lack of recognition (or understanding) of IK and Indigenous worldviews by scholars, governments, planners and other key stakeholders within marine planning and management contributes to environmental injustices for Indigenous communities through misrecognition (as detailed in Section 3.3).

3.2. Characteristics of Indigenous Peoples’ Involvement in Marine and Coastal Governance and Management

The articles we reviewed discussed a wide range of forms of marine spatial planning, coastal and marine governance and/or management regimes, and MPAs that involved at least 18 distinct Indigenous groups from five different countries. As mentioned previously, most studies discussed the establishment and operations of one or more MPAs within a local or national context and employed qualitative research methods (most notably individual interviews and group interviews). Only seven studies examined various co-management (shared) arrangements that existed between Indigenous and non-Indigenous institutions (#5, #10, #14, #19, #25, #26, #29), and even fewer explored how Indigenous worldviews, laws and practices were used to inform Indigenous-led marine management and governance regimes (#29, #30). As three papers demonstrated, in some parts of the globe, the use and management of marine resources continue to take place according to IK systems and principles of environmental guardianship, with a focus on intergenerational equity (#5, #14, #26).

Many Indigenous societies, as outlined in many reviewed papers (including #14, #30, #15, #22), possess a form of temporary restriction on harvesting (of specific species or in geographical areas) as a means to assist an ecosystem’s integrity and resilience through the replenishment and sustainability of its fish stocks. In Aotearoa New Zealand, the Māori concept of rāhui is sometimes applied as a method to allow species to recover from over-exploitation or loss of numbers from pollution, invasive species, extreme weather events or other adverse impacts, which parallels the use of tapu (no-take coastal areas) in Fiji (#14, #30). The concept of tapu (also known as tabu, ha’a and kapu) is widely employed throughout the islands of the South Pacific (including Indigenous Fijian, Aotearoa New Zealand Māori, Rapanui, Tahitian, Hawaiian and Tongan cultures) to refer to something that is considered sacred, which could be a place, person, part of the body, flora or fauna, metaphysical being, or practice. Tapu is associated with some sort of “spiritual restriction” and a set of prohibitions about interacting with tapu things. For instance, in Aotearoa New Zealand, tapu is one of the organising principles of Māori culture, with the world organised into tapu (sacred) things and noa (ordinary or non-sacred) things and a set of rules governing people’s behaviour to maintain the balance between the sacred and ordinary. In Fiji, the concept of tapu appears to be relatively restricted in its application, with the term used to refer to no-take zones whereby a chief and/or community can declare a coastal area tapu to ensure the area’s ecosystem can recover (from people’s over-exploitation of marine biota, pollution, an invasive species, or other environmental disruptions). Tapu areas are no-take zones where people are prohibited (temporarily or permanently) from undertaking any harvesting activities and are designed to ensure marine ecosys-
tems’ sustainability across generations. Similar practices also occur in Aotearoa New Zealand, Tahiti, and the Cook Islands, whereby a rāhui (temporary prohibition) is placed, a practice steeped in Indigenous tradition and knowledge, associated with the concept of tapu [138–141]. While this tradition is still practised, in many contexts, the spread and dominance of scientific knowledge and Western modes of development (associated with colonisation) over the last two centuries have resulted in Indigenous governance and management regimes being marginalised and supplanted in favour of globalised capitalist economies, political governance structures, and environmental management approaches (#15, #22, #29, #34), limiting the application of traditional methods.

Only seven articles specifically recorded that one of the co-authors was an Indigenous person, community, or tribal group or nation (#5, #8, #14, #15, #21, #23, #28); although 14 studies included an acknowledgement to an Indigenous organisation, community or individuals who participated in the research project (#2, #3, #5, #8, #13, #14, #15, #18, #22, #23, #25, #28, #30, #32). Therefore, more than half of the papers did not include any specific statement that expressed the authors’ acknowledgement or gratitude for Indigenous people sharing their knowledge and experiences with researchers (who were overwhelmingly non-Indigenous) or acting as co-researchers.

One of our guiding questions (Question 3) focused on the extent to which Indigenous peoples are incorporated into marine governance and management approaches. In contrast, the lack of direct acknowledgement of Indigenous peoples’ contributions to research (as authors or research partners) does not directly answer the above question. It does indicate a general lack of recognition given to Indigenous peoples by many researchers. Such lack of Indigenous engagement in research is heavily criticised by a plethora of Indigenous scholars for reinforcing colonising discourses [142]. Indeed, the politics of erasure and indifference (a form of recognitional injustice that we discuss in Section 3.3.3), evident in the many reviewed papers that lacked either Indigenous authorship or acknowledgement of Indigenous people on whom the studies were based, highlighted the continuation of colonial power dynamics. The limited engagement with or support for Indigenous peoples in research, their IK, and lifeways may be interpreted (as Shaw et al. 2006 and Blaser et al. 2013 previously suggested) as evidence of how pervasive and strong colonial modes of knowledge production remain within many countries and academic spaces [143,144].

3.3. Justice Dimensions

The majority of studies focused on the struggles Indigenous peoples face in trying to engage in and transform existing coastal and marine governance and management approaches, as well as the adverse effects they experienced because of inequitable institutional arrangements (#13, #34), lack of resources (#12, #16, #25), and failure to recognise Indigenous values (#16, #29). The marginalisation of IK, values, experiences and modes of living by the hegemonic (non-Indigenous) social group and the non-Indigenous political regime was, according to the findings, frequently tied to structural racism (#1, #22, #23), discriminatory policies and high rates of poverty amongst Indigenous peoples (#18, #21). The findings highlighted not only the variety of Indigenous peoples’ experiences with different laws, institutional arrangements, and management approaches, but also the commonalities of their experiences—most notably, that Indigenous peoples have experienced social and environmental injustices (distributive, procedural and recognitional) tied to their capacities to engage with and sustainably manage their coastal and marine environments.

3.3.1. Procedural (in)Justice

The findings indicated that Indigenous peoples around the globe are deeply concerned about the health of their territories and want to ensure the sustainability of their marine environments; however, they face substantive, procedural barriers that limit their
capacities to be involved in planning, managing and governing their ancestral lands, waters, and seas. The majority of papers (n = 20) described that Indigenous communities experienced procedural injustice (for example, #1, #2, #4, #13, #15, #16, #26, #33, #34), which directly answers our first and second research questions about the justness of processes (Question 1) as well as Indigenous participation in marine management and governance regimes (Question 2); these papers highlighted that Indigenous peoples’ capacities to actively shape marine governance and management were severely constrained by existing laws, regulations, and institutional processes. More than 30 per cent of studies identified that Indigenous people could not meaningfully participate in marine planning and management strategies due to poorly designed and exclusionary policies and planning processes. Many papers reported on historical and contemporary experiences of Indigenous people being discriminated against by government institutions, government employees (such as planners and marine managers), scientists, and industry bodies (#11, #21, #33); these included being denied access to information about spatial planning and environmental health (even if legally entitled to that information) (#1, #9, #15, #20), not being informed about or given the opportunity to participate in the development of new plans and policies that directly related to their territories, livelihoods, and sacred sites (#12), as well as acts to legally dispossess them of their land/water/fishing rights (which included loss of sovereignty and self-determination) (#33).

After the lack of ability to participate in decision-making processes, institutional racism (n = 10) was the next most frequently recorded procedural injustice form. Institutional racism, which is intertwined with lack of participation, is a significant barrier to Indigenous people’s meaningful involvement in marine management, planning and governance. It should be noted that while the authors sometimes employed different terminologies, such as discrimination and marginalisation, the hallmarks of institutional racism were visible in the empirical studies under review (#20). In Dwesa-Cwebe, Hluleka (South Africa), for instance, Sowman and Sunde (2018) documented how local communities were excluded from participating in decision-making processes regarding the creation and management of an MPA (#20) [145]. When the MPA was introduced to the area (located in the Eastern Cape), the Indigenous coastal communities experienced a whole raft of adverse impacts. These included: the weakening of tenure rights; the criminalisation of customary harvesting and management practices; the loss of access to resources; the loss of livelihoods; the marginalisation and erosion of IK; the alienation of communities from conservation efforts; the exacerbation of poverty; increased burden on women to find alternative sources of food; the fragmentation of community cohesion and identity; the increase in intergroup conflict (specifically between communities and government officials); and the physical abuse, arrest and imprisonment of community members by MPA officials and police (#20).

Most examples of procedural injustice documented in the literature were not as severe as the South African example. However, reports of Indigenous peoples being marginalised and excluded from marine planning and decision-making, particularly regarding MPAs, were common (#1, #2, #9, #15, #33). Many reviewed papers demonstrated that when Indigenous people were involved in marine planning and MPAs, their participation was often tokenistic due to poorly designed and discriminatory government procedures (#1, #15). Indigenous groups, for instance, were often invited to participate at the end of planning processes when critical decisions had already been made by the government and other powerful interest groups (#1, #4, #12). A common critique raised by Indigenous peoples was that government officials treated them (Indigenous tribes, peoples, nations) as if they were just another “stakeholder” that the government needed to consult with, rather than an Indigenous nation who possessed sovereignty, rights, and responsibilities for their ancestral lands and waters beyond that of mere “stakeholders” (#1, #9, #11, #14, #15, #18, #20, #25, #28, #33). MPAs offered the opportunity for all communities of interest to work together to solve a shared (albeit complex) environmental problem. However, lack of attention to rights and justice concerns often resulted in environmental and Indigenous
injustice due to the assumed authority and assertion of non-Indigenous “rights”, systems and values. As acknowledged in several papers (#1, #3), such injustice can further result in a lack of support for and engagement in an MPA and potentially undermine ecosystem restoration and enhancement efforts.

Only a handful of studies reported high levels of Indigenous participation (Indigenous-initiated, collaborative) in marine and coastal planning and management (#5, #14, #15, #23). Nevertheless, by and large, the scholarship highlighted that power remained inequitably distributed within marine planning and management regimes, and external actors (predominantly government agencies) were the ones who decided the timing, scope and extent of Indigenous participation in environmental planning and management. Inadequate or “weak” governance structures and processes also contributed to procedural injustice for Indigenous groups \( (n = 7) \). The majority of reviewed coastal and marine governance arrangements around the globe continue to be designed and applied in a top-down manner, which does not allow Indigenous community members the space to participate in deliberations or be involved in governance arrangements (top-down approaches were critiqued in #18, #22, #25, #26).

3.3.2. Distributive Injustice (Focused)

In the reviewed papers, the second most common form of injustice experienced by Indigenous peoples related to the inequitable distribution of environmental goods (such as clean water, air, food) and environmental risks (such as exposure to pollution and other hazards). Distributive (in)justice, as we discussed in Section 1, is directed at understanding the outcomes of particular decisions and processes, and therefore is closely related to procedural (in)justice (encapsulated in Question 1 for this study). The term “environmental goods” is used within the EJ, economic, and sustainable development literatures (embedded within Western ontologies) to refer to non-market goods, including clean water, clean air, rivers, mountains, oceans, flora and fauna. Like the terms natural resources or ecosystem services, the concept of environmental goods is widely used within academia, but scholars critique the terms for being at odds with many Indigenous ontologies and epistemologies [146–149]. Goods, resources and services imply some form of division between systems or worlds (social, ecological, cultural, political, spiritual, economic) and an elevation of people above the natural environment, which contradicts Indigenous ways of knowing that includes people as an interconnected and interdependent part of nature. However, the authors here have used the most common terms consistent with the literature reviewed so that the content and key arguments in this article can be engaged by a broad academic audience [149–152].

More than 21 per cent of papers reported that Indigenous peoples were not able to access environmental goods (most notably fish and other marine fauna). A significant focus was the difficulty in accessing fish and other aquatic biotas, such as beluga whales \( (Delphinapterus leucas) \) in Arctic Canada and salmon in Northern North America, and the negative consequences for Indigenous food security (#1, #16, #24, #25). Many Indigenous people reported that their inability to catch fish, collect shellfish, and harvest marine mammals was caused by the drastic decline in the number of aquatic fauna due to overfishing (with Indigenous communities placing the blame on non-Indigenous commercial fishers) (#3, #14, #15). The lack of access to aquatic biota was also a result of laws and regulations that prohibited all groups, including Indigenous peoples, from fishing activities in designated areas (such as MPAs that operated as exclusive no-take zones) (#8, #20, #27). The decrease in the quality and quantity of fauna in Indigenous groups’ traditional landscapes and seascapes was further linked, according to the reviewed papers, to a plethora of other intersecting environmental changes, most notably water and plastic pollution, climate change, and invasive species (#14, #15, #17, #24, #25). The inability to access environmental “goods” was closely intertwined with the loss of biodiversity (noted in 15 per cent of papers—#14, #15, #20, #24, #25), therefore resulting in a scarcity of goods and the ongoing degradation of marine environments. The loss of access to environmental goods (such as
seafoods) was an example of distributive injustice experienced by Indigenous peoples (and related to our first guiding question concerned with the outcomes and the processes involved in marine governance and management regimes for Indigenous communities).

The diminishment of fisheries stock and decreased accessibility to marine areas (due to legal restrictions or environmental risks) had a significant impact on Indigenous coastal communities in terms of their livelihoods, recreational and cultural practices (as identified in numerous papers, including #14, #24, #25). As one recent review article on Indigenous fisheries highlighted, Indigenous coastal communities share meaningful connections to marine ecosystems that contribute to their food sovereignty (their right to determine and access healthy and culturally appropriate foodstuffs) and underpin their cultural identities [153,154]. A 2016 study found that coastal Indigenous peoples’ average annual fish consumption (on a per capita basis) was far higher (74 kg consumed per year) than the global average (19 kg consumed per year) [153]. In terms of geographical areas, the highest total consumption was in Africa (109 kg) and the lowest in Oceania (33 kg, with the low figure reflecting the low consumption of fish in parts of Papua New Guinea). Within countries, Indigenous fish consumption was higher than non-Indigenous populations, with many Indigenous groups framing the harvesting and consumption of fish in terms of both material needs (fish as their ‘daily bread’) (#11, #14, #20, #24) and their socio-cultural keystones [153,155,156]. Indigenous peoples’ high consumption of seafood was highly relevant to discussions about coastal and marine governance and management, with many of our reviewed papers identifying that weak governance reinforced procedural inequity and distributive inequity; the decline in fisheries stock was often traced to a lack of monitoring and enforcement of regulations around commercial fisheries operations (#11, #15, #25).

The loss of access to marine resources reportedly resulted in a litany of problems, including the disruption and loss of marine-based livelihoods (particularly Indigenous subsistence or artisan fishers, as well as fisher processors and traders). These resulted in heightened resource scarcity (monetary and food), with 21 per cent of papers reporting that restrictions reduced Indigenous peoples’ capacities to access local food sources (#9 #11, #14, #15, #20, #24, #25). Indeed, scholars noted a correlation between the inability of Indigenous peoples to harvest marine and coastal biota and a significant decline in food security amongst Indigenous coastal communities (#9 #11, #14, #15, #20, #24, #25) (but there was no mention of Indigenous food sovereignty). Such adverse impacts on food security are likely to have subsequent impacts on cultural values, social resilience and Indigenous peoples’ high consumption of seafood was highly relevant to discussions about coastal and marine governance and management, with many of our reviewed papers identifying that weak governance reinforced procedural inequity and distributive inequity; the decline in fisheries stock was often traced to a lack of monitoring and enforcement of regulations around commercial fisheries operations (#11, #15, #25).

The papers included in our review and other literature showed inequities in access to fisheries, which were partly a consequence of equality-based policies directed at who can use and access biota (as well as water, minerals and so forth) in particular local, state, and national contexts. Many coastal and marine governance and management regimes, including those of Alaska and Hawai’i (USA), are underpinned by the guiding principle of equality, with equality-based laws and regulations treating all as the same [163–166]. Nevertheless, individuals and groups of people are not all the same [163,166]. As Donkersloot et al. aptly summarise (writing in regard to Alaskan Native communities’ access to salmon fisheries):

“Not all people begin with common positions of power or shared capacities to equally enjoy the benefits of public resources, goods,
and services; nor do they all have equal needs.” [163]. Equality is sometimes confused with equity, but the two terms are different [163,164]. On the one hand, equality assumes a level playing field and a homogeneity across all actors so that every person or group possesses the same and equal rights and opportunities (such as the right to harvest shellfish and catch fish from a coastline). This also inherently assumes that the Western governance and management system is appropriate, correct and accepted as such. Equity, on the other hand, refers to both the distribution of environmental “goods” (including fisheries) and risks (distributive justice) as well as the fairness of processes (procedural justice), which are critically influenced by intersecting factors (including social capital, gender norms, power relations, economic and demographic conditions). Equity-based policies, therefore, consider the justness of how environmental goods and threats are distributed within and between different groups of people (distributive justice) and the capacities of people to participate in environmental governance and management across generations (procedural justice). When examining the consequences of equality-based policies on Indigenous peoples, Donkersloot et al. demonstrated that the equal treatment of people under the law could be a significant barrier to Indigenous peoples’ ability to exercise their rights and maintain their ways of life [163,164].

In their study assessing the equity and sustainability of Alaskan salmon systems through a social well-being framework, Donkersloot et al. argued that equality “erases historical and current inequities” experienced by Alaskan Native communities; these range from historical traumas embedded within colonisation and current disparities in educational, health and economic opportunities, and access to resources and their multiple associated benefits [163]. The erasure of Indigenous peoples’ unique histories, experiences and identities through equality-based government policies is an example of how recognitional and procedural injustices are interwoven. In many colonial situations, these erasures (under the guise of equality) negatively impact the livelihoods, cultural continuity, well-being, and ways of life of many Indigenous peoples. Simultaneously, these processes are further embedding and empowering non-Indigenous superiority and hegemony [167–169].

In the specific context of the management of salmon systems in Alaska, Donkersloot et al. argue that the state’s equality-based environmental policies have caused detrimental impacts on Alaskan Indigenous households and communities through changes to who was able to obtain a fishing permit. There is no distinction between Indigenous or non-Indigenous people, between urban and rural, and Alaskan or non-Alaskan residents regarding how fishing permit holdings are issued. Emphasis is placed on equality under the law, but not all people are the same [163]. For thousands of years, the health and well-being of Alaskan Native peoples have been interwoven with their salmon fisheries. The existence of complex and ongoing human-salmon relationships continues today (despite the effects of colonisation) through Indigenous languages, cultural practices, socio-political institutions, social values, worldviews, and knowledge systems, with Indigenous communities is still heavily dependent on subsistence salmon harvesting for their food security, identity, and social well-being. Access to one or more flora and fauna (such as salmon for Alaskan Native peoples) is a prerequisite to achieving well-being for many Indigenous peoples [163,170–172]. Furthermore, when thinking about what constitutes environmental justice, Indigenous peoples discuss the importance of marine governance and management approaches to foster their well-being and their ecosystems and how human–fisheries relationships need to be sustained for future generations [103,173–176].

Indigenous conceptualisations of what constitutes sustainable marine governance and management frequently extend to include intergenerational justice matters (#14, #15, #23, #28) [177–179]. The significance of thinking “seven generations into the future” is, for instance, the critical principle guiding Haudenosaunee Nations’ (one of the Indigenous peoples of the US) sustainable stewardship of their lands and waters [173,177]. Indigenous societies frequently emphasise that living people possess important obligations to their ancestors (honouring them and their cultural legacies), their families (duties of care to
human and more-than-human kin alive today), and their descendants (ensuring that future beings can enjoy healthy environments) [148,177,180]. In this way, Indigenous ontologies and epistemologies frame both time (time as a spiral or loop), relationships (centred on kinship that includes humans and non-humans), and EJ differently than Western-based theories of justice (time as linear and attention directed at what current generations of humans need to live dignified lives) [102,177,181,182]. Indigenous concerns about future generations are two-fold: for nature per se; and the continuation of their unique cultures located in specific places and environments [16,103,182,183]. IEJ is about Indigenous peoples’ interwoven relationships between their social and natural worlds and the critical need to sustain those connections for current and future generations. These connections include their (and their descendants) abilities to harvest flora and fauna (for use as food, medicine, material for clothing, art, ceremonies and so forth) from their ancestral landscapes, waterscapes and seascapes. In this way, there are substantive overlaps between Indigenous experiences of distributive, procedural and recognitional injustices (related to all three of our guiding questions) and actions to address any form of injustice that needs to adopt a holistic and integrated approach (as discussed in Section 3.4).

Only 9 per cent of papers (#20, #21, #24) discussed increased exposure to environmental risks as being of significant concern for Indigenous peoples; this stands in marked contrast to scholarship on global environmental change that emphasises Indigenous peoples’ heightened vulnerability to the impacts of climate change as a prime example of an environmental injustice [184–195]. Instead, the reviewed papers primarily focused on the distributive injustices of decreasing access to marine biota and the risk of greater food insecurity. We noted this potential gap in the literature. However, it was outside the scope of this paper to investigate perceptions and understandings of “risk” and potential reasons or implications for this apparent lack of attention to risk about Indigenous peoples and research comparative to non-Indigenous scholarship.

### 3.3.3. Recognitional Injustice

A significant gap (or an issue) we noted with the reviewed articles was the lack of recognition (which directly addressed our third research question), acknowledgement and investigation into the diverse experiences of specific Indigenous peoples despite those studies concentrating on specific communities and/or entities (groups, peoples, nations, or tribes). Indeed, there was a tendency to use the generic term “Indigenous people” without any attempt to acknowledge the different and unique experiences, histories, values, knowledge systems of Indigenous societies. Globally, Indigenous societies include an estimated 370 million people (five per cent of the global population). Although there are substantive commonalities between Indigenous peoples in terms of their historical experiences of colonisation as well as their current situations (with a large portion living in precarious political and socioeconomic conditions), there is also substantive diversity in terms of languages, worldviews, religious beliefs, social practices, gender norms, modes of living, traditional governance structures, as well as their relationships with non-Indigenous groups and the nation–state in which they dwell [62,196]. Accordingly, there were several failures here. One was the lack of recognition and explicit identification of the Indigenous societies or individuals referred to in empirical studies and the lack of acknowledgement of Indigenous peoples’ heterogeneity, which demonstrated that scholars are guilty of misrecognition (which parallels the behaviour of many government and non-government organisations).

Misrecognition was often framed as a cultural and institutional process of disrespect, stigmatisation, and denigration that devalued some people compared to others (the dominant ethnic and/or socioeconomic groups within a society) [197–200]. In the context of Indigenous communities, misrecognition included the general disrespect for Indigenous groups’ cultural identities, values and knowledge systems (#3, #9, #18, #22, #26, #33), as well as Indigenous ways of living more broadly [85,191,192]. Nevertheless, as was evident from our findings, Indigenous peoples’ engagement with research projects was often
highly constrained and restricted to being research participants and sometimes research assistants involved in collecting data during fieldwork; only seven of the reviewed papers specifically identified that one or more of its authors was an Indigenous person (#6, #8, #14, #15, #21, #23, #28).

We argue that the discipline would benefit from more attention to and further in-depth investigations of the IEJ issues associated with the paucity of in-depth research and academic publications with and by Indigenous peoples engaging in marine governance and management across the globe. Epistemologically, this means that scholars need to question the universal relevance of their theoretical frameworks (underpinned by Western intellectual thought) and research methodologies taking into account Indigenous ontologies, epistemologies, IK, and conceptualisations of what IEJ is (or is not) [17,117,121,177]. In doing so, this requires that scholars and practitioners working in the field of Indigenous marine management actively commit to the process of decolonisation. As discussed in Smith’s seminal work on Decolonizing Methodologies, decolonisation is an ongoing process that encompasses all aspects of life, including research design, methods, analysis, and outputs, as well as what types of knowledge are deemed valid and allowed to shape formal decision-making processes (with IK still often excluded within marine governance and management) [142,201,202].

Only 9 per cent of articles (#18, #20, #25) highlighted that IK was still marginalised, with the majority of studies instead noting the benefits of including IK alongside scientific knowledge to improve understandings of ecosystem function, develop better planning and management strategies, and ensure that Indigenous peoples support (but not necessarily lead) management approaches. An even smaller percentage of papers (6 per cent—#15, #28) noted that the lack of recognition of the historic and ongoing effects of colonisation on Indigenous cultures, ways of life, and sustainable natural resource management systems resulted in ongoing injustices. Indeed, few studies explicitly recognised Indigenous socio-cultural values (12 per cent—#9, #18, #22, #28) and inseparable linkages between IK (as a nested system of knowledge–values–practices) and Indigenous sovereignty (historical, current and future configurations of decision-making authority and/or autonomy).

A small portion of studies identified the lack of formal recognition (by external actors, most notably the colonial state) of Indigenous sovereignty (12 per cent—#9, #11, #28, #33) within marine and coastal governance and management regimes as being contributors to environmental injustice for Indigenous peoples. The failure of governments to acknowledge Indigenous peoples’ self-determination rights (as outlined by UNDRIP) to be involved in governance, planning and management decisions that pertain to their ancestral lands and waters was a commonly cited example of misrecognition within the reviewed papers (#1, #8, #11, #28, #33). For instance, the lack of recognition given to Sabah communities’ customary rights when the Malaysian government created the Tun Sakaran Marine Park was detailed by Bakar and Wall (#11). The failure to recognise Indigenous self-determination rights and their capacities to determine how they manage and govern their ancestral territories (which include shorelines, harbours, estuaries, seas and oceans) was another form of misrecognition reported in a small number of studies (#11, #22, #33).

Despite the existence of treaties and laws that acknowledge and, in some instances, actively support Indigenous self-determination and sovereignty, many Indigenous peoples report that their authority is undermined by outside organisations (governments, NGOs, industries). They are, therefore, unable to exert their Indigenous sovereignty to its total capacity [176,203,204]. As the trend to create more and larger MPAs continues (#33), proponents, governments and planners involved in establishing MPAs should take into account the problems associated with misrecognition (or lack of recognition) of Indigenous peoples (of their cultural identities, values, livelihoods, and sovereignties). Such top-down efforts to implement MPAs can serve to alienate communities, creating conflict and increasing social inequities (#22, #16, #33), but it remains unclear about what these con-
flicts mean in terms of the effectiveness and success of these MPAs, and subsequent outcomes for environmental and social health and well-being. Such Indigenous injustices and conflicts are closely intertwined with EJ, and therefore unjust approaches like those discussed here are incompatible with improving the health and well-being of marine and coastal ecosystems or their interdependent communities. This may serve to undermine the very aim of MPAs, which is to protect marine areas, hence emphasising the importance of addressing and rectifying (entirely possibly unintentional) injustices for improved outcomes for the environment and Indigenous peoples.

Wider scholarship, which focuses almost exclusively on land and freshwater governance and management, has highlighted that spaces of misrecognition extend beyond the misrecognition of cultural identities and include the misrecognition of the land, water, plants and animals, and entire ecosystems [200,205]. At present, studies have concentrated on the misrecognition of Indigenous lands as “invaluable”, “unused”, and “wastelands” by the government, businesses, and other powerful interest groups (which include Indigenous lands lost/invaded/alienated following colonisation); following on from this terrestrial-centred work, there is a small amount of research that explored the lack of recognition afforded to Indigenous peoples’ relationships with their freshwater spaces but virtually nothing about their saltwater environments [112,206–209]. These labels make it easier for governments and companies to justify the placement of environmental risks (such as toxic waste disposal sites, nuclear power plants, oil and gas refineries, and mining operations) on Indigenous lands and close to Indigenous settlements, cultivations, herding or hunting grounds, as well as other sites of cultural significance [10,111,208]. In terms of injustice through acts of misrecognition, few researchers have considered if, when, and how misrecognition of Indigenous seascapes takes place and what the consequences are in terms of coastal and marine governance and management; this is one of the many notable gaps in the peer-reviewed scholarship.

Even when recognition of IK, values, and worldviews occurs, problems still arise (#19, #22, #23) when translating the rhetoric of reconciliation (particularly prominent in Australia and South African contexts) and inclusion into on-the-ground actions that offer tangible benefits for Indigenous communities [210–213]. Reed et al. (2020) observed that in Australia and elsewhere, Indigenous environmental governance and management regimes are frequently tied up with colonial entanglements whereby Indigenous participants are required to resist and contribute to the expansion of colonial government bureaucracies [214,215]. These types of systems [213,216], which employ state-based recognition of Indigenous rights, knowledge, and values through mechanisms, including co-governance arrangements, can serve as tools that maintain the systems of oppression of Indigenous peoples instead of providing greater opportunities for Indigenous authority, self-determination, and sovereignty over their ancestral lands, waters, and seas. Regarding the Australian Federal Government-sponsored Indigenous environmental programme (which is in operation throughout the nation in different lands and seas), Muller summarises this tension well:

Until there is a ‘space’ created for Yolngu, [the Indigenous people of north-eastern Arnhem Land (Northern Territory, Australia)] self-determination, that is resourced and institutionally acknowledged (rather than operating in the margins of funding contracts), then self-determination will always be forced into a prescribed, predetermined context. [217]

Muller’s concern, shared by other scholars (e.g., Taylor et al. 2020), that development of a “space” for Indigenous self-determination that is adequately resourced and acknowledged is widely applicable to most, if not all, contexts in which Indigenous peoples seek self-determination in environmental governance and management [155,205,217,218].

3.4. Addressing Injustice: Potential or Real-World Examples

Few authors provided details about how to address such injustices as those illustrated above, with only a small number of studies (n = 8) highlighting the avenues that
can be (or are already being) used to improve fairness in decision-making processes (which is to say, procedural justice). In particular, researchers highlighted how the development and enactment of new types of planning and management approaches, often centred on collaborative partnerships and shared management built on the recognition of different forms of knowledge (Indigenous, local, scientific), can enhance Indigenous participation and produce greater procedural equity (#14, #23, #25, #26). These include co-governance and co-management arrangements wherein Indigenous peoples share decision-making authority with non-Indigenous parties (most notably government agencies). One example was the co-management of the Kaipara Moana (also known as the Kaipara Harbour) in New Zealand (#14). The purpose of the co-management framework—He pahekoheko mo Kaipara moa–Integrated Kaipara Harbour management—is to promote and encourage an integrated and coordinated inter-agency management and kaitiakitanga (Māori environmental guardianship) of Kaipara Harbour and its catchment [54,219]. Likewise, in the Hawaiian community of Hā’ena (USA), the Indigenous community is in a co-management arrangement with the State Government and developed (and ran) a fishing education immersion program where community members camp on the coast. Participants of all ages fish, gather seaweed, sew nets, prepare food harvested from the ocean, and eat together while sharing stories. The education program also feeds into their co-management arrangements, with their IK and worldview emphasising the need to maintain respectful, balanced, familial relationships with all elements of the natural world, which is considered not just animate beings but family (#26).

Indigenous socio-cultural norms in Hawai‘i, paralleling those in New Zealand, Australia, and Canada (as described by studies including #14, #26, #28), also promote balanced relationships with other people the community, for example, teaching generous sharing of catch. Such positive examples highlighting the strength of collective versus self-interest worldviews and systems demonstrate how procedural, distributive, and recognition dimensions are relevant in developing and maintaining IEJ within marine planning, governance, and management (which includes decision-making processes). Although Indigenous peoples’ participation is often understood as engaging in coastal and marine management activities, it is also studied in terms of their engagement within different stages of marine governance, planning and decision-making.

Many Indigenous peoples identify that in various instances, their capacities to participate in decision-making processes are constrained. Thus they feel that their values, knowledge and aspirations for the future are not actively incorporated into the design and implementation of marine plans and management strategies (#22, #33). Overwhelmingly, Indigenous peoples want further actions to protect as well as manage their marine ecosystems and waters; however, they disagree with the principle and practice of conservation and planning processes that are designed by external agencies (such as the US government in the Marianas Trench example) and imposed on them (#33).

Evidence has strongly demonstrated that collaborative, inclusive, and place-specific marine governance and management decision-making processes can engender higher levels of trust and legitimacy in marine planning processes and outcomes. In doing so, these allow for the inclusion of multiple values, priorities, and ways of life (including those of Indigenous peoples) [39,220–222]. Emergent scholarship on EBM and co-governance and co-management (such as the works of Reid, Rout and Maxwell) has demonstrated that such participatory, inclusive, and collaborative processes can also ensure that on-the-ground environmental management requirements (such as the most effective forms of regulation and how to monitor and enforce the rules) are noted [42,155,223,224].

EBM has been positioned by scholars to allow all stakeholders or all interested groups within an ecosystem to participate in environmental management through deliberative meetings and other collaborative, participatory and co-designed processes, which are tied to the need to manage and allocate resources more fairly [225–229]. With its focus on fairness and equity of decision-making processes, EBM-based approaches offer a po-
tential pathway for addressing and resolving the procedural injustices that many Indigenous peoples experience regarding marine governance and management. However, at present, there is limited academic literature that assesses or provides insight on the ways in which EBM can operate alongside or within IK-based governance and management systems and what the implications of EBM are (or could potentially be) for Indigenous peoples’ livelihoods, economies, well-being, and their self-determination rights or sovereignty.

4. What are the Knowledge Gaps and Directions for Future Research?

At present, the academic literature is narrow in its geographical focus, which means we know little about what Indigenous peoples’ involvement in coastal and marine governance and management means for most of the globe (including much of Asia, India, Africa, and the Americas). There is also an absence of cross-country analysis or global comparisons. In this way, the current body of peer-reviewed journal articles demonstrates a lack of recognition of the diversity of Indigenous peoples and a failure to think across spatial and temporal scales and nation–state boundaries to consider the similarities and differences between Indigenous experiences of coastal and marine governance and management. Accordingly, published research is needed that addresses this gap in our understandings of the diversity of Indigenous societies and their specific experiences of different marine governance and management regimes.

Proponents of EBM argue that governments alone are not able to make fair and sustainable decisions regarding the current and future use and management of environments, and thus advocate for collaborative, participatory, and co-designed planning and management that involve governments, Indigenous peoples, and critical stakeholders [227–230]. Such planning processes are intended to allow for a diversity of perspectives, different forms of knowledge (including IK), and multiple values and uses to be provided for.

Another significant gap concerns different subjectivities within Indigenous societies (such as gender, class, occupation, and age) and how they influence individual and collective capacities to engage in and shape marine governance and management processes. For instance, we do not know the extent to which gender norms shape Indigenous capacities to participate in marine spatial planning, institutions, or management practices. Emergent research from other environmental arenas, such as Indigenous-led biodiversity conservation and climate change adaptation projects, demonstrates that Indigenous people of different genders experience differing abilities to access environmental goods (and exposure to environmental threats) as well as inequitable capacities to participate in decision-making [231–234]. In particular, Indigenous women and gender minorities report being unable to (and/or fearful to) speak in governance and management forums (including public consultation and tribal meetings) due to patriarchal gender structures, which means that Indigenous male voices are privileged over Indigenous females and gender minorities [235–240]. Accordingly, in some instances, Indigenous women-only climate change adaptation, land and water management committees and practitioner teams are in operation (such as Indigenous women rangers in Australia as part of the Caring for Country programme) [241–244]. At present, there is a lack of research that adopts an intersectionality approach to questions pertaining to Indigenous marine governance and management as well as fisheries, and this is an area where future research is needed; this is especially critical in the context of gender equity, where a wealth of broad scholarship has demonstrated that gender justice and environmental justice are interwoven together, but we do not know what this means in the context of Indigenous societies, Indigenous ways of knowing, and Indigenous ways of living [245–253].

The majority of articles were based in Canada, Australia, and Aotearoa New Zealand, and focused on MPAs (#1, #6, #28, #30) and marine spatial planning (#9, #22) rather than other forms of marine governance and management. A handful of articles explored Indig-
enous groups’ involvement in and the justice implications of co-governance and co-management approaches and EBM. There is, however, increasing academic and political support for integrated, collaborative and holistic approaches to marine governance and management (as evidence by the Aotearoa New Zealand Government’s Sustainable Seas National Science Challenge, a ten-year research programme that adopts a co-governance and EBM approach). Accordingly, it is highly likely that publications exploring Indigenous-non-Indigenous co-governance, co-management, and EBM will increase over the next decade both in Aotearoa New Zealand and also in Canada [29,42,230,254–256], and quite possibly other colonised nation–states as well.

In the majority of countries, there is a clear dearth of peer-reviewed articles that consider how Indigenous peoples’ different types of knowledge, values, lifeways, and management practices can be situated at the heart of efforts to address environmental crises and engender more sustainable and just marine governance and management regimes; this is likely due to a lack of formal recognition of Indigenous peoples’ rights, knowledge, and responsibilities by the colonial governments. As a result, there are growing calls by some scholars that all researchers working with Indigenous communities need to actively engage with Indigenous ontologies, knowledges, and goals (including those for economic development and sovereignty). The use of co-design in research projects is one of the most commonly cited examples of how researchers can decolonise their research practices, and it is demonstrated in EBM studies emanating from Aotearoa New Zealand [29,42,54,56].

Still, only a handful of reviewed studies used co-design ((#5, #14, #15, #23). There are, therefore, limited examples within the peer-reviewed research that provide tangible pathways to overcome the persistent Indigenous EJ issues, including acknowledging and utilising different forms of knowledge (Indigenous, local and Western) together with engendering effective, equitable, and sustainable governance and management approaches. The authors pose this as a wero, the Indigenous Māori term for a challenge, to the research community—to publish deep-thinking and provocative research in peer-reviewed publications that provide tangible examples and pathways for overcoming Indigenous EJ issues particularly regarding the marine and coastal governance and management realm.

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