



## **Traditional knowledge and fisheries management: insights from small-scale fisheries**

**Paula Martinez Falcão Pereira**

Doutoranda em Geografia  
Universidade Federal de Santa Catarina, Brasil  
[paula.oceanologa@gmail.com](mailto:paula.oceanologa@gmail.com)  
<https://orcid.org/0000-0001-7556-6736>

**Milton Lafourcade Asmus**

Professor Doutor em Ciências Marinhas  
Universidade Federal do Rio Grande, Brasil  
[docasmus@gmail.com](mailto:docasmus@gmail.com)  
<https://orcid.org/0000-0001-6581-7706>

Submissão / Submission: 15/02/2025

Aceite / Acceptance: 09/03/2026

PEREIRA, Paula Martinez Falcão; ASMUS, Milton Lafourcade. Conhecimento tradicional na gestão pesqueira: Contribuições da pesca artesanal. Periódico Eletrônico Fórum Ambiental da Alta Paulista, [S. l.], v. 22, n. 1, p. e2527, 2026. DOI: [10.17271/1980082722120265506](https://doi.org/10.17271/1980082722120265506). Disponível

em: [https://publicacoes.amigosdanatureza.org.br/index.php/forum\\_ambiental/article/view/5506](https://publicacoes.amigosdanatureza.org.br/index.php/forum_ambiental/article/view/5506).

Creative Commons Attribution (CC BY 4.0) License: <https://creativecommons.org/licenses/by/4.0/>

## Conhecimento tradicional na gestão pesqueira: contribuições da pesca artesanal

### RESUMO

**Objetivo** - Analisar a integração do conhecimento tradicional de pescadores artesanais como base para o aprimoramento da gestão pesqueira, examinando seu potencial para subsidiar processos de governança mais participativos, equitativos e sustentáveis no contexto da pesca artesanal de pequena escala.

**Metodologia** - O artigo consiste em um ensaio teórico-reflexivo, de natureza exploratória e descritiva, desenvolvido a partir de uma revisão crítica da literatura sobre gestão pesqueira, conhecimento tradicional, conhecimento dos pescadores e integração e coprodução de sistemas de conhecimento.

**Originalidade/relevância** - O estudo aborda a lacuna entre os modelos convencionais de gestão pesqueira e os sistemas de conhecimento tradicional, contribuindo para o debate teórico acerca das hierarquias epistemológicas na governança ambiental e da necessidade de integrar diferentes formas de conhecimento na formulação e implementação de políticas públicas voltadas à pesca artesanal de pequena escala.

**Resultados** - A análise indica que a integração do conhecimento tradicional possui alto potencial para aprimorar a tomada de decisão e a gestão dos recursos pesqueiros, ao produzir informações contextualizadas e socialmente relevantes para o monitoramento, avaliação e gestão adaptativa. Além disso, favorece a participação efetiva dos atores envolvidos e amplia a legitimidade e a eficácia dos processos de governança.

**Contribuições teóricas/metodológicas** - O artigo contribui ao afirmar o conhecimento tradicional como um sistema de saber legítimo e epistemologicamente fundamentado, cuja articulação com o conhecimento científico pode fortalecer os processos de gestão pesqueira. Também mobiliza referenciais teóricos sobre integração de conhecimentos, transdisciplinaridade e coprodução como suporte conceitual para essa articulação.

**Contribuições sociais e ambientais** - As reflexões apresentadas apontam para o fortalecimento da participação social, o reconhecimento dos conhecimentos e dos territórios dos pescadores artesanais e a promoção da sustentabilidade social, econômica e ambiental na cadeia produtiva da pesca artesanal.

**PALAVRAS-CHAVE:** conhecimento dos pescadores; governança pesqueira; transdisciplinaridade.

2

## Traditional knowledge and fisheries management: insights from small-scale fisheries

### ABSTRACT

**Objective** – To analyze the integration of traditional knowledge held by artisanal fishers as a basis for improving fisheries management, examining its potential to support more participatory, equitable, and sustainable governance processes in small-scale fisheries.

**Methodology** – This article consists of a theoretical-reflective essay of an exploratory and descriptive nature, developed through a critical review of the literature on fisheries management, traditional knowledge, fishers' knowledge, and the integration and co-production of knowledge systems.

**Originality/Relevance** – The study addresses the gap between conventional fisheries management models and traditional knowledge systems, contributing to theoretical debates on epistemological hierarchies in environmental governance and on the need to integrate different forms of knowledge into the formulation and implementation of public policies for small-scale artisanal fisheries.

**Results** – The analysis indicates that the integration of traditional knowledge has strong potential to improve decision-making and fisheries resource management by generating context-specific and socially relevant information for monitoring, evaluation, and adaptive management. It also strengthens stakeholder participation and enhances the legitimacy and effectiveness of governance processes.

**Theoretical/Methodological Contributions** – The article contributes by affirming traditional knowledge as a legitimate and epistemologically grounded knowledge system, whose articulation with scientific knowledge can strengthen fisheries management. It further mobilizes theoretical frameworks on knowledge integration, transdisciplinarity, and knowledge co-production as conceptual foundations for this articulation.

**Social and Environmental Contributions** – The reflections presented highlight the importance of strengthening social participation, recognizing artisanal fishers' knowledge and territorial rights, and promoting social, economic, and environmental sustainability within the small-scale fisheries production chain.

**KEYWORDS:** fishers' knowledge; fisheries governance; transdisciplinarity.

## **Conocimiento tradicional y gestión pesquera: aportes desde la pesca en pequeña escala**

### **RESUMEN**

**Objetivo** – Analizar la integración del conocimiento tradicional de los pescadores artesanales como fundamento para el fortalecimiento de la gestión pesquera, evaluando su potencial para sostener procesos de gobernanza más participativos, equitativos y sostenibles en la pesca de pequeña escala.

**Metodología** - Se desarrolla un ensayo teórico-reflexivo, de carácter exploratorio-descriptivo, apoyado en una revisión crítica de la literatura sobre gestión pesquera, conocimiento tradicional, conocimiento de los pescadores e integración y coproducción de sistemas de conocimiento.

**Originalidad/Relevancia** – El estudio aborda la brecha entre los modelos convencionales de gestión pesquera y los sistemas de conocimiento tradicional, contribuyendo al debate sobre jerarquías epistemológicas en la gobernanza ambiental y sobre la necesidad de integrar diversas formas de conocimiento en la formulación e implementación de políticas públicas orientadas a la pesca artesanal de pequeña escala.

**Resultados** – El análisis indica que la integración del conocimiento tradicional tiene un gran potencial para mejorar la toma de decisiones y la gestión de los recursos pesqueros, al producir información contextualizada y socialmente relevante para el seguimiento, la evaluación y la gestión adaptativa. Además, favorece la participación efectiva de los actores involucrados y amplía la legitimidad y la eficacia de los procesos de gobernanza.

**Contribuciones Teóricas/Metodológicas** – El artículo contribuye al afirmar el conocimiento tradicional como un sistema de conocimiento legítimo, cuya articulación con el conocimiento científico puede calificar los procesos de gestión pesquera, y al movilizar diferentes referencias teóricas sobre la integración y la coproducción del conocimiento como soporte conceptual para dicha articulación.

**Contribuciones Sociales y Ambientales** – Se destaca la importancia de fortalecer la participación social, reconocer el conocimiento y los derechos territoriales de los pescadores artesanales y promover la sostenibilidad social, económica y ambiental en la cadena productiva de la pesca de pequeña escala.

---

**3**

**PALABRAS CLAVE:** conocimiento de los pescadores; gobernanza pesquera; transdisciplinariedad.

## 1 INTRODUCTION

The management of fisheries resources faces increasing challenges due to the complexity of coastal social-ecological systems, requiring approaches that integrate multiple forms of knowledge into decision-making processes. The inherent uncertainties of these systems highlight the limitations of approaches based on technical and scientific knowledge (Berkes, 2003; Preiser et al., 2018). In this context, research and management institutions have sought to articulate multiple knowledge systems and social perspectives as a strategy to support knowledge co-production (Armitage et al., 2011; Avilés et al., 2022).

The governance of small-scale artisanal fisheries requires advances that combine stock monitoring and regulation of fishing practices. For any management system to be effective, it must be supported by a solid knowledge base and reliable information (Berkes et al., 2001). Different sources of knowledge can support fisheries management, particularly scientific knowledge and traditional knowledge — also referred to as local ecological knowledge, traditional ecological knowledge, or fishers' knowledge (De Sousa et al., 2022; Caldeira et al., 2025).

In Brazil, fisheries governance has historically been characterized by centralized and top-down policies, often disregarding territorial specificities and favoring industrial fisheries over small-scale artisanal fisheries (Filho, 2017; Diegues, 2019; Renck, 2023; Santos et al., 2012). In contrast, examples of co-management demonstrate fishing communities taking a leading role in decision-making, developing strategies based on their own knowledge of the territories and ecosystems where they operate (Martins et al., 2018; Seixas et al., 2020).

Traditional knowledge associated with artisanal fisheries is empirical and experiential, encompassing capture techniques, practical skills, and specific forms of social organization and relationship with the territory (Diegues, 2004). Nevertheless, such knowledge is frequently marginalized in fisheries management and scientific research (Renck, 2022). Because it relies on oral transmission, experience, and practice, its systematization and integration into formal management instruments remain challenging. Yet, its articulation with scientific knowledge can help overcome epistemological biases and broaden the information base for management (Jones et al., 2024).

Despite the growing recognition of traditional knowledge in environmental and fisheries governance, significant barriers continue to limit its effective integration into management and decision-making processes. In this context, this article examines the role of traditional knowledge in fisheries management and discusses how its articulation with scientific knowledge can contribute to more participatory, inclusive, and context-sensitive governance in small-scale fisheries.

## 2 BACKGROUND

The broader debate on sustainable coastal and marine management provides the theoretical foundation for understanding the challenges faced by fisheries governance. The demand for sustainable management of coastal and marine resources emerged from the environmental paradigm, driven by concerns about reversing environmental degradation,

protecting conserved areas, and fulfilling the commitments associated with sustainable development (Brundtland, 1987). However, this paradigm has largely been grounded in the notion of nature conservation as separate from human societies, often overlooking the interdependent relationships between traditional peoples and communities and the maintenance of biodiversity and ecosystems (Levis et al., 2024). This separation has important implications for fisheries governance, particularly in contexts where livelihoods and ecosystems are deeply intertwined.

Coastal and marine environments are undergoing increasingly rapid transformations. In this context, technical and scientific knowledge alone is insufficient to address the uncertainties and complex challenges associated with social-ecological systems (Berkes, 1999). Sustainability science has therefore emphasized the need to integrate alternative knowledge systems and worldviews in the search for complementary and context-sensitive solutions (Tengö et al., 2017; Pennino et al., 2021). This debate is particularly relevant for fisheries management, where decision-making depends on dynamic ecological, social, and territorial information.

Within this scenario, resource planning and spatial management approaches must integrate cultural and natural values, promoting both biodiversity conservation and sociocultural diversity (Diegues, 2019). The growing recognition of the complexity inherent to social-ecological systems has highlighted the importance of advancing beyond interdisciplinary approaches toward transdisciplinary frameworks that integrate scientific knowledge with diverse knowledge systems, including traditional and local knowledge. (Norström et al., 2020; Tengö et al., 2014; Diegues, 2004; Marques, 2001; Berkes, 1999). In fisheries governance, the integration of these knowledge systems represents not only an epistemological shift but also a practical necessity.

The Brazilian coastal zone encompasses more than 400 municipalities across 17 states bordering the Atlantic Ocean, extending from Cape Orange in the north to Arroio Chuí in the south, over a coastline ranging from 7,408 km to 9,198 km. These coastal environments are characterized by remarkable biological and ecological diversity, including mangroves, tropical forests, coral reefs, Atlantic Forest formations, dunes, estuaries, and salt marshes, among others (Short and Klein, 2016). In addition to environmental diversity, each region presents distinct social, cultural, and economic dynamics. Consequently, environmental and fisheries management strategies must be adapted to local realities, prioritizing specific territorial demands and contexts (Seixas and Dias, 2020).

In practice, however, management policies and instruments are frequently designed and implemented in a top-down manner, privileging technical-scientific knowledge while marginalizing local and context-specific knowledge (Marroni and Asmus, 2014; Scherer and Asmus, 2021). Such governance arrangements often impose uniform regulations across heterogeneous contexts, resulting in less democratic processes and the perpetuation of social-environmental injustices (Leroy and Meireles, 2013). These tensions are particularly visible in the fisheries sector.

In Brazil, approximately one million people identify as professional artisanal fishers. This population faces numerous challenges in sustaining their livelihoods and social reproduction as a distinct social group (Dos Santos, 2012). As representatives of traditional peoples and communities, artisanal fishers maintain ways of life intrinsically linked to their territories and

natural resources. Fishing constitutes their primary source of income and subsistence, and through the application and intergenerational transmission of their knowledge, they contribute to the preservation and sustainable management of fishing territories and resources (Diegues, 1999). Recognizing and integrating this knowledge into fisheries management is therefore central to promoting sustainability, equity, and participatory governance in coastal and marine social-ecological systems.

## **2.1 Traditional knowledge of artisanal fishers**

Traditional peoples and communities have historically been impacted by the advance of economic activities driven by growth and accumulation, which often result in processes of territorial and symbolic expropriation (Gonçalves, 2006; Van der Haegen and Whiteside, 2025). In Brazil, these groups face the loss of their territories and the weakening of their ways of life, with direct effects on the continuity of their productive and cultural practices (Leroy and Meireles, 2013; Brito, 2018).

Brazil is home to a strong and diverse presence of traditional communities across all regions of the country, generating a wide range of knowledge systems and techniques practiced for centuries. Numerous identities and ways of life compose the category of traditional peoples and communities, and traditional knowledge constitutes a central element of group identity, enabling access to territory and common-use resources (Diegues, 2004).

The National Policy for the Sustainable Development of Traditional Peoples and Communities, established by Decree No. 6,040 of February 2007, formally recognized for the first time in Brazilian history the existence of these populations and defined traditional peoples and communities as: culturally differentiated groups that recognize themselves as such, possess their own forms of social organization, and occupy and use territories and natural resources as a condition for their cultural, social, religious, ancestral, and economic reproduction, using knowledge, innovations, and practices generated and transmitted through tradition (BRASIL, 2007).

Traditional knowledge can be understood as a dynamic system of knowledge accumulated and transmitted predominantly through oral tradition, observation, and experimentation (Berkes, 1999). Far from being static, it is an adaptive set of practices and interpretations that evolves within communities and can incorporate elements from other knowledge systems, including scientific knowledge (Berkes et al., 2000).

In general, this knowledge system is intrinsically linked to the way of life and direct dependence on natural resources. It encompasses both practical dimensions—such as production techniques, management, and use of resources—and symbolic, cultural, and cosmological dimensions, constituting the intangible heritage of these social groups (Diegues et al., 2004). Thus, traditional knowledge is not restricted to a technical repertoire, but integrates values, social norms, rituals, and unique ways of interpreting and interacting with the natural world.

The empirical knowledge of artisanal fishers extends beyond technical know-how and the mastery of tools. It encompasses an integrated understanding of aquatic environments—marine, coastal, and riverine—including their geographical, oceanographic, and biodiversity

characteristics (Prá and D'Agostini, 2023). According to Diegues (1999), fishers' knowledge is "experiential, highly qualitative and unique, grounded in lived experience and transmitted orally across generations." Through this knowledge, artisanal fishing practices and techniques remain active, as does the expertise related to the management of target species and fishing territories.

A substantial body of research has examined fishers' knowledge (Silvano and Valbo-Jorgensen, 2008; Johannes et al., 2000; Berkes et al., 2000; Seixas and Dias, 2020). Over time, such knowledge has contributed to the advancement of scientific understanding in areas such as marine ecology, coastal morphodynamics, and fisheries statistics and management. The first scientific research on shoreline retreat, for example, was reportedly conducted in 1964 through questionnaires administered to Scandinavian fishers (Muehe, 2009).

The persistence of its marginalization in formal management processes, therefore, cannot be attributed to a lack of empirical robustness, but rather to structural asymmetries in the recognition of knowledge systems.

## **2.2 Limits of conventional fisheries governance**

Small-scale fisheries play a significant economic and sociocultural role in Brazil, contributing to employment and income generation while supporting food sovereignty and food and nutrition security. More than 60% of the fish consumed in the country is estimated to originate from artisanal fisheries (FAO, 2020), underscoring their central role in the fish supply chain and in sustaining the livelihoods of thousands of families.

The continuity of small-scale fisheries is threatened by a range of conflicts, which also jeopardize the existence and reproduction of fishers' knowledge. Overfishing, pollution from waste, and overlapping uses imposed by other economic sectors are among the key challenges faced by the sector. In addition, the lack of systematic monitoring and reliable fisheries data hinders effective management (Dias-Neto, 2010; Costello et al., 2012). Often undervalued in comparison to industrial fisheries, and subject to legislation that frequently prohibits the capture of target species and the use of certain artisanal fishing gear in the name of biodiversity conservation, small-scale fisheries experience social, economic, and environmental losses when traditional knowledge is disregarded in regulatory processes (Diegues, 2019; Renck et al., 2023).

The territories of small-scale fisheries are increasingly subject to transformation and, in some cases, elimination, posing a significant threat to the continuity of both the activity and the knowledge systems associated with it (Prá and D'Agostini, 2023). Numerous territorial conflicts—driven by competing political and economic interests—directly affect traditional riverine and coastal communities (Leroy and Meireles, 2013). Real estate speculation, tourism enterprises, and large infrastructure projects stand out among these pressures. Restrictions on access to commonly used terrestrial and aquatic spaces are identified by most fishing communities in Brazil as the primary conflict they face (Barros et al., 2021).

Moreover, small-scale fishers are subject to fisheries management policies in which they do not effectively participate. The limited inclusion of representatives of traditional communities in decision-making processes remains a persistent feature of policy and management plan implementation. This exclusion is widely recognized as a weakness in coastal governance systems, as it marginalizes a significant portion of the population directly involved



in and affected by fisheries management (Benham, 2017; Marroni and Asmus, 2014; Scherer and Asmus, 2021).

In this context, integrated and participatory fisheries management becomes both necessary and urgent, particularly with regard to small-scale fisheries. Improvements are required not only in stock control and regulatory frameworks but also in ensuring the sustainability of the entire value chain, including the sociocultural dimensions associated with the activity (Santos et al., 2012; Prá and D'Agostini, 2023).

For management to be effective, it must be grounded in a robust base of knowledge and information. In countries such as Brazil, where fisheries statistics are scarce and often lack temporal continuity, fishers' knowledge becomes essential for addressing scientific uncertainty (Martins et al., 2017; Renck et al., 2022). Fisheries management remains predominantly based on quantitative and biological data and on specialized scientific expertise (Hind, 2015).

Although conventional fisheries science is widely accepted within the scientific community, it is insufficient to resolve the uncertainties arising from the multiple ecological, social, and economic factors that influence fishing activities (Fisher et al., 2015). In contrast, a growing body of fisheries research investigates fishers' knowledge and advocates for its incorporation into knowledge production processes aimed at managing and protecting marine resources (Berkes, 1999; Hind, 2015).

In this sense, the limitations of conventional fisheries management models stem not only from data gaps or inadequate technical instruments, but also from governance structures that historically privilege certain knowledge systems while marginalizing those produced by fishing communities. Overcoming these challenges therefore requires recognizing the epistemological legitimacy of traditional knowledge and fostering institutional arrangements that enable the articulation and co-production of different knowledge systems in fisheries management.

### **2.3 Integration and co-production of knowledge**

The integration of different knowledge systems has been widely recognized in the literature as a promising pathway for addressing the current challenges of fisheries management, particularly in contexts of high socio-environmental complexity such as small-scale artisanal fisheries. Much of the research effort has focused on fishers' local and ecological knowledge, which supports the adoption of sustainable management practices. Studies by Begossi et al. (2016) and Seixas et al., (2020) highlight the relevance of fishers' biological knowledge, including detailed understandings of habitats and target species behavior. Begossi et al. (2016) demonstrates that information collected through interviews with fishers not only complemented existing scientific data but also provided insights previously unknown to science.

In De Souza (2023), who developed a participatory fisheries monitoring methodology in collaboration with fishers along the southeastern Brazilian coast, the process generated records and descriptions of endangered species for which scientific information was previously lacking. According to the author, participatory monitoring proved more effective in generating fisheries data capable of supporting management measures than conventional monitoring models.

Martins (2018) emphasizes the importance of fishers' memory and perception in



reconstructing historical catch trends and also identifies participatory monitoring as an essential tool for fisheries management. Renck et al. (2022; 2023) examine the relationship between fisheries legislation and public policies, highlighting the potential contribution of fishers' knowledge to the development of environmental regulations and public policies that are more effective and better aligned with local realities.

Castello et al. (2009) present a successful case in which fishers' management knowledge contributed to the recovery of an overexploited Amazonian species, the pirarucu, increasing catch quotas tenfold over an eight-year period. According to the authors, fishers' participation was crucial to the recovery process, generating both socioeconomic and environmental benefits for the region. They argue that integrating fishers into management processes is fundamental for resource conservation and can enhance the governance of other small-scale fisheries, provided that bridges are established between the knowledge systems underpinning management.

Internationally, fishers' ecological knowledge has also been extensively examined in research seeking to develop more participatory models for coastal and marine resource management (Kitolelei, 2022; Ullah et al., 2023; Petriki et al., 2024; Hamelin et al., 2024). Research on fishers' knowledge has a long trajectory within the natural sciences and has evolved through several phases, incorporating anthropological, social science, and mixed methodologies (Hind, 2015). Nevertheless, it continues to face challenges in being fully integrated into fisheries science. According to Hind (2015), investigations grounded in qualitative methods and experiential knowledge are often less accepted within scientific communities that prioritize quantitative data in fisheries management. This epistemological bias constitutes a significant obstacle to the integration of traditional knowledge into formal management practices.

These difficulties reveal that the challenge of integration is not only methodological, but also epistemological and institutional. Barriers related to disciplinary boundaries, the hierarchization of knowledge, intercultural communication, and the limited circulation of scientific results restrict the effective incorporation of traditional knowledge into formal management processes.

In this context, participatory and transdisciplinary methodologies have been mobilized as instruments to promote more horizontal processes of knowledge production. Participatory research, social cartography, participatory mapping, and collaborative fisheries monitoring are strategies that seek to articulate different forms of knowledge in the construction of diagnoses and management proposals (Boubekri et al., 2023; De Souza et al., 2023). Citizen science also presents itself as a promising approach by involving researchers and communities in the collection, analysis, and interpretation of data, thereby increasing the social legitimacy of decisions (Vohland et al., 2021; Silva and Hanai, 2025).

More than integrating information from different sources, knowledge co-production involves the joint construction of questions, methods, interpretations, and solutions among scientists, managers, and fishing communities. It is a relational process that presupposes mutual recognition of legitimacy, redistribution of decision-making power, and the creation of institutional arrangements capable of sustaining the effective participation of local actors.

Thus, co-production is not only a technical strategy for improving data, but also a transformation in the epistemological and political foundations of fisheries governance. By

articulating different knowledge systems, it paves the way for more adaptive, socially legitimate management models that are sensitive to the territorial specificities of artisanal fisheries.

### 3. CONCLUSIONS

One of the main challenges to implementing integrated fisheries management lies in the limited social participation in decision-making processes. This challenge could be mitigated if policies and regulatory instruments effectively incorporated fishers' traditional knowledge. Such knowledge systems hold significant potential to contribute to the preservation and sustainable management of coastal and marine ecosystems, complementing available technical and scientific knowledge.

However, this contribution remains underused due to insufficient institutional recognition and the limited acknowledgment of its epistemological legitimacy. For fishers' knowledge to become a meaningful foundation for fisheries, coastal, and marine management, transdisciplinary processes are required to generate socially relevant and decision-oriented knowledge. The incorporation of citizen science into decentralized public fisheries policies may further strengthen this approach by enhancing both the legitimacy and effectiveness of management decisions.

Marine resource management practices developed by small-scale fishing communities are intrinsically linked to their traditional knowledge systems, transmitted across generations through oral traditions and lived experience. Yet these communities are situated at the center of multiple conflicts, including territorial loss, restricted access to common-use areas, declining fish stocks, and legal frameworks that threaten their rights and ways of life.

In this context, fisheries management oriented toward sustainability must reconcile responsible species management with the safeguarding of fishing communities' livelihoods. The integration of traditional knowledge, however, should not be confined to its use as a supplementary input to conventional management. Rather, it requires institutional and epistemological transformations that enable intercultural dialogue, transdisciplinary approaches, and genuine processes of knowledge co-production. Only through such transformations will it be possible to recognize the plurality of knowledge systems and to strengthen governance practices that are more participatory, equitable, and context-sensitive.

### REFERÊNCIAS BIBLIOGRÁFICAS

ARMITAGE, D. *et al.* Co-management and the co-production of knowledge: learning to adapt in Canada's Arctic. *Global Environmental Change*, v. 21, n. 3, p. 995–1004, 2011.

AVILÉS, I. D. *et al.* Integrating scientific and local knowledge to address environmental conflicts: the role of academia. *Human Ecology*, v. 50, n. 5, p. 911–923, 2022.

BARROS, S.; MEDEIROS, A.; GOMES, B. E. (org.). **Conflitos socioambientais e violações de direitos humanos em comunidades tradicionais pesqueiras no Brasil: relatório 2021**. 2. ed. Olinda, PE: Conselho Pastoral dos Pescadores, 2021.

BRASIL. **Decreto nº 6.040, de 7 de fevereiro de 2007**. Institui a Política Nacional de Desenvolvimento Sustentável dos Povos e Comunidades Tradicionais. Brasília, DF: Presidência da República, 2007. Available at: [http://www.planalto.gov.br/ccivil\\_03/\\_ato2007-2010/2007/decreto/d6040.htm](http://www.planalto.gov.br/ccivil_03/_ato2007-2010/2007/decreto/d6040.htm). Accessed on: 7 March 2026.

BEGOSSI, A. et al. Fishers' knowledge on the coast of Brazil. **Journal of Ethnobiology and Ethnomedicine**, v. 12, n. 20, 2016. <https://doi.org/10.1186/s13002-016-0091-1>

BERKES, F. **Sacred ecology: traditional ecological knowledge and management systems**. Philadelphia; London: Taylor & Francis, 1999.

BERKES, F. Alternatives to conventional management: lessons from small-scale fisheries. **Environments**, v. 31, n. 1, p. 5–20, 2003.

BERKES, F.; et al. Rediscovery of traditional ecological knowledge as adaptive management. **Ecological applications**, v. 10, n. 5, p. 1251-1262, 2000.

BERKES, F. *et al.* **Managing small-scale fisheries: alternative directions and methods**. Ottawa: IDRC, 2001.

BENHAM, C. F. Aligning public participation with local environmental knowledge in complex marine social-ecological systems. **Marine Policy**, v. 82, p. 16-24, 2017.

BOUBEKRI, I.; MAZUREK, H.; DJEBAR, A. B.; AMARA, R. Harnessing fishers' local knowledge and their perceptions: opportunities to improve management of coastal fishing in Mediterranean marine protected areas. **Journal of Environmental Management**, v. 344, p. 118456, 2023.

BRITO, Ciro de Souza. **A luta continua: direito à terra e desafios a regularização fundiária de territórios de povos e comunidades tradicionais no Brasil**. 2018. Campo Jurídico, [S. l.], v. 6, n. 1, p. 1–27, 2018. DOI: 10.37497/sdgs.v6i1.89. Available at: <https://ojs.revistacampojuridico.com.br/index.php/cjur/article/view/96>. Accessed on: 7 March 2026.

BRUNDTLAND, G. H. (coord.). **Our common future**. Report of the World Commission on Environment and Development. United Nations, 1987.

CALDEIRA, M.; SEKINAIRAI, A. T.; VIERROS, M. Weaving science and traditional knowledge: Toward sustainable solutions for ocean management. **Marine Policy**, v. 174, p. 106591, 2025.

CASTELLO, L. et al. Lessons from integrating fishers of arapaima in small-scale fisheries management at the Mamirauá Reserve, Amazon. **Environmental Management**, v. 43, n. 2, p. 197–209, 2009. <https://doi.org/10.1007/s00267-008-9220-5>

COSTELLO, C. et al. Status and solutions for the world's unassessed fisheries. **Science**, v. 338, n. 6106, p. 517–520, 2012.

DE SOUSA, W. L.; ZACARDI, D. M.; VIEIRA, T. A. Traditional ecological knowledge of fishermen: people contributing towards environmental preservation. **Sustainability**, v. 14, n. 9, p. 4899, 2022.

DE SOUZA, F. P. *et al.* A abordagem qualitativa nas pesquisas envolvendo comunidades tradicionais pesqueiras. **Mares: Revista de Geografia e Etnociências**, v. 5, n. 1, p. 53–64, 2023.

DIAS-NETO, J. **Gestão do uso dos recursos pesqueiros marinhos no Brasil**. Brasília: IBAMA, 2010.

DIEGUES, A. C. S. A socioantropologia das comunidades de pescadores marítimos no Brasil. **Revista Etnográfica**, v. 3, n. 2, p. 361–375, 1999.

DIEGUES, A. C. et al. **A pesca construindo sociedades: leituras em antropologia marítima e pesqueira**. São Paulo: NUPAUB-USP, 2004.

DIEGUES, A. C. Conhecimentos, práticas tradicionais e a etnoconservação da natureza. **Desenvolvimento e Meio Ambiente**, v. 50, p. 1–18, 2019.

DOS SANTOS, M. P. N. *et al.* A pesca enquanto atividade humana: pesca artesanal e sustentabilidade. **Revista de Gestão Costeira Integrada**, v. 12, n. 4, p. 405–427, 2012.

DUARTE, J. P. P.; RIBAS, L. C.; HANAI, F. Y. Descentralização de políticas públicas para uma gestão ambiental integrada: análise do programa Município VerdeAzul. **Periódico Eletrônico Fórum Ambiental da Alta Paulista**, v. 20, n. 1, 2024.

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS (FAO). **The State of World Fisheries and Aquaculture 2020: Sustainability in action**. Rome: FAO, 2020. Available at: <https://www.fao.org/3/ca9229en/ca9229en.pdf>. Accessed on: 7 March 2026.

FILHO, G. A. Da Sudepe à criação da Secretaria Especial de Aquicultura e Pesca: as políticas públicas voltadas às atividades pesqueiras no Brasil. **Planejamento e Políticas Públicas**, n. 49, p. 173–198, 2017.

GONÇALVES, Carlos Walter Porto. **A globalização da natureza e a natureza da globalização**. Editora Record, 2006.

HAMELIN, K. M.; CHARLES, A. T.; BAILEY, M. Community knowledge as a cornerstone for fisheries management. **Ecology and Society**, v. 29, n. 1, 2024.

HIND, Edward J. A review of the past, the present, and the future of fishers' knowledge research: a challenge to established fisheries science. **ICES Journal of Marine Science**, v. 72, n. 2, p. 341–358, 2015.

JOHANNES, R. E. *et al.* Ignore fishers' knowledge and miss the boat. **Fish and Fisheries**, v. 1, n. 3, p. 257–271, 2000.

JONES, B. L. H. *et al.* New directions for Indigenous and local knowledge research and application in fisheries science: lessons from a systematic review. **Fish and Fisheries**, v. 25, n. 4, p. 647–671, 2024.

KITOLELEI, S. *et al.* Spatial use of marine resources in a rural village: A case study from Qoma, Fiji. **Frontiers in Marine Science**, v. 9, p. 993103, 2022.

LEROY, J. P.; MEIRELES, J. Povos indígenas e comunidades tradicionais: os visados territórios dos invisíveis. In: PORTO, M. F.; PACHECO, T.; LEROY, J. P. (org.). **Injustiça ambiental e saúde no Brasil: o mapa de conflitos**. Rio de Janeiro: Fiocruz, 2013. p. 115–131.

LEVIS, C. *et al.* Contributions of human cultures to biodiversity and ecosystem conservation. **Nature Ecology & Evolution**, 2024. DOI: 10.1038/s41559-024-02356-1.

MARRONI, E. V.; ASMUS, M. L. Historical antecedents and local governance in the process of public policies building for coastal zone of Brazil. **Ocean & Coastal Management**, v. 76, p. 30–37, 2013.

MARTINS, I. M. *et al.* What fishers' local ecological knowledge can reveal about the changes in exploited fish catches. **Fisheries Research**, v. 198, p. 109–116, 2018.

MUEHE, D.; LINS-DE-BARROS, M. F.; PINHEIRO, S. L. (org.). **Geografia marinha: oceanos e costas na perspectiva de geógrafos**. Rio de Janeiro: 1. ed., 2020.

NADAL, K. *et al.* Políticas públicas ambientais: uma revisão sistemática. **Revista Ibero-Americana de Ciências Ambientais**, v. 12, n. 1, p. 680–690, 2021. DOI: 10.6008/CBPC2179-6858.2021.001.0054.

PENNINO, M. G. *et al.* The Missing Layers: Integrating Sociocultural Values Into Marine Spatial Planning. **Frontiers in Marine Science**, 8:633198, 2021. DOI: <https://doi.org/10.3389/fmars.2021.633198>.

PETRIKI, O. *et al.* Local ecological knowledge (LEK) can guide decision-making in Inland fisheries management. **Applied Sciences**, v. 14, n. 19, p. 8819, 2024.

PRÁ, L. G. D.; D'AGOSTINI, A. O mar não está para peixe: análise marxista dos discursos contidos no documentário *Seaspiracy: mar vermelho* (2021). **Germinal: Marxismo e Educação em Debate**, v. 15, n. 1, p. 524–537, 2023. <https://doi.org/10.9771/gmed.v15i1.50119>

PREISER, R. *et al.* Social-ecological systems as complex adaptive systems. **Ecology and Society**, v. 23, n. 4, 2018.

RENCK, V. *et al.* Conhecimento pesqueiro e o defeso: preenchendo uma lacuna necessária. **Ethnobiology and Conservation**, v. 12, n. 4, 2023.

RENCK, V. *et al.* Taking fishers' knowledge and its implications to fisheries policy seriously. **Ecology and Society**, v. 28, n. 2, 2023.

SCHERER, M. E.; ASMUS, M. L. Modeling to evaluate coastal governance in Brazil. **Marine Policy**, v. 129, 2021.

SEIXAS, C. S.; DIAS, E. C. A. Conhecimento ecológico dos pescadores de Tarituba: uma contribuição empírica à gestão da pesca com enfoque ecossistêmico. **Governança, conservação e desenvolvimento em territórios marinhos-costeiros no Brasil**. São Carlos: RiMa Editora, 2020. p. 265–289.

SEIXAS, C. S. *et al.* **Governança, conservação e desenvolvimento em territórios marinhos-costeiros no Brasil**. São Carlos: RiMa Editora. p. 265–289, 2020.

SHORT, A. D.; KLEIN, A. H. F. **Brazilian beach systems: review and overview**. Cham: Springer International Publishing, 2016.

SILVA, S. P.; HANAI, F. Y. Modelo conceitual para aplicação da ciência cidadã como ferramenta de geração de políticas públicas para preservação e conservação do ecossistema. **Periódico Eletrônico Fórum Ambiental da Alta Paulista**, v. 21, n. 1, 2025. DOI: 10.17271/1980082721120255600.

SILVANO, R. A. M.; VALBO-JØRGENSEN, J. Beyond fishermen's tales: contributions of fishers' local ecological knowledge to fish ecology and fisheries management. **Environment, development and sustainability**, v. 10, n. 5, p. 657-675, 2008.

TENGÖ, M. *et al.* Weaving knowledge systems in IPBES, CBD and beyond: lessons learned for sustainability. 2017.

ULLAH, H. *et al.* Local ecological knowledge can support improved management of small-scale fisheries in the Bay of Bengal. **Frontiers in Marine Science**, v. 10, p. 974591, 2023.

VAN DER HAEGEN, T.; WHITESIDE, H. Accumulation by repossession: Capitalist settler colonialism in Coast Salish territory. **Environment and planning A: economy and space**, v. 57, n. 4, p. 429-443, 2025.

VOHLAND, K. *et al.* (ed.). **The science of citizen science**. Cham: Springer International Publishing, 2021.

---

**DECLARAÇÕES**

---

**CONTRIBUIÇÃO DE CADA AUTOR**

- **Concepção e Design do Estudo:** Paula Pereira e Milton Asmus
  - **Investigação:** Paula Pereira
  - **Metodologia:** Paula Pereira e Milton Asmus
  - **Redação - Rascunho Inicial:** Paula Pereira
  - **Redação - Revisão Crítica:** Milton Asmus
  - **Revisão e Edição Final:** Paula Pereira
  - **Supervisão:** Milton Asmus
- 

**DECLARAÇÃO DE CONFLITOS DE INTERESSE**

Nós, **Paula Martinez Falcão Pereira e Milton Lafourcade Asmus**, declaramos que o manuscrito intitulado "**Integração do conhecimento tradicional na gestão pesqueira: contribuições para a pesca artesanal**":

1. Não possui vínculos financeiros que possam influenciar os resultados ou interpretação do trabalho. Nenhuma instituição ou entidade financiadora esteve envolvida no desenvolvimento deste estudo.
  2. Não possui relações profissionais que possam impactar na análise, interpretação ou apresentação dos resultados. Nenhuma relação profissional relevante ao conteúdo deste manuscrito foi estabelecida.
  3. Não possui conflitos de interesse pessoais relacionados ao conteúdo do manuscrito. Nenhum conflito pessoal relacionado ao conteúdo foi identificado.
-