

# Marine Sociology: Towards a Sustainable Future

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**Abstract**— The ocean is a critical part of the global ecosystem, providing billions of people with food, resources, and recreation. However, the ocean is also under increasing pressure from human activities, such as pollution, overfishing, and climate change. Marine sociology is the study of the social dimensions of the ocean, and it has a crucial role in ensuring a sustainable future for the marine environment. Marine sociologists study the relationship between people and the ocean, from the individual to the global level. They examine how people use and value the ocean, how social and cultural factors influence marine management, and how social change can be used to promote sustainability. Marine sociology is a rapidly growing field, increasingly recognised as vital in global maritime governance. Marine sociologists are working to develop new knowledge and tools to help decision-makers make more informed choices about the ocean. They are also working to build bridges between different disciplines and sectors to ensure that marine sustainability is considered in all aspects of decision-making. This review article overviews marine sociology and its contributions to sustainable ocean management. It discusses the key challenges facing the marine environment and the role marine sociologists can play in addressing them. The article concludes with a call for the further development of marine sociology and for greater collaboration between marine sociologists and other stakeholders to create a more sustainable future for the ocean.

**Keywords**— Marine sociology, social dimensions of the ocean, Sustainable Future, Human activities, Pollution, Overfishing, Climate change.

## I. INTRODUCTION

The ocean covers more than 70 per cent of the surface of the Earth and is responsible for a wide variety of ecosystem services. Some of these services include the regulation of climate, the preservation of cultural traditions, the provision of chances for recreation, and the protection of biodiversity. However, many human actions, such as overfishing, pollution, habitat destruction, invasive species, climate change, and ocean acidification, threaten the ocean. These threats pose enormous challenges not only to the long-term stability of marine social-ecological systems but also to the well-being and prosperity of the people who live in coastal communities and cultures.<sup>1</sup>

The multidisciplinary field of study known as marine sociology centres on investigating the connections between people and the marine environment. This branch of study looks into how humans affect the ocean, how the sea affects humans, and how humans control and manage the resources and services provided by the sea. The study of marine sociology can contribute to a better understanding of the complex and ever-

changing relationships between people and the ocean, as well as the creation of solutions that are both more effective and equitable for the protection and sustainable use of marine resources and services. This field of study is known as marine sociology.<sup>2</sup>

In this paper, the study concentrates on the legal viewpoint of marine sociology and how the law could address some of the most significant challenges facing marine sustainability. The study also discusses the implications of this perspective. The study also goes through some of the repercussions that these results have. In what follows, the study begins by offering an overview of the primary sources and concepts of international maritime law and how they tie to sustainable development. The study then discusses some issues arising from these primary sources and conceptions. After that, the study talks about some of the current problems and loopholes in international marine law, such as the lack of a comprehensive legal framework for the protection of marine biodiversity that extends beyond the jurisdiction of individual nations, the fragmentation and inconsistency of sectoral regimes for various types of aquatic activities, and the limited participation and compliance of states and other actors. The study also talks about potential solutions to these problems and loopholes. The study also reviews some possible remedies that may be applied to these issues. In addition to this, The study investigates a few of the emerging trends and innovations in international marine law. Some of these include the creation of new instruments and mechanisms for ocean governance, combining approaches based on human rights and environmental justice, and acknowledging the rights and roles of indigenous peoples and local communities. The study focuses specifically on the first two of these areas of inquiry. In conclusion, The study offers some observations and proposals relevant to the growth of marine sociology and international maritime law. These will be discussed in the following paragraphs—the critical judicial decisions and overarching principles that serve as the basis for international maritime law. With the area of public international law known as "international marine law," there is a subdivision known as "international marine law" that regulates the rights and duties of governments and other players concerning the ocean. Several sources come together to form what is known as international marine law. These include treaties, customary international law, general principles of law, decisions of courts, and other forms of soft law. Among other sources, broad legal concepts can play

<sup>1</sup> "Kittinger, J. N., Finkbeiner, E. M., Ban, N. C., Broad, K., Carr, M. H., Cinner, J. E., ... & Selkoe, K. A., 'Emerging frontiers in social-ecological systems research for sustainability of small-scale fisheries,' 5 Current Opinion in Environmental Sustainability 352-357 (2013)."

<sup>2</sup> McCay, B. J., & Jentoft, S. (Eds.), "From the bottom up: Participatory issues in fisheries management," (Springer Science & Business Media 1998)

a role.<sup>3</sup> The most widespread application of international maritime law is in the form of treaties, which are also the most significant component of this area of law. A legally binding agreement has been reached between the parties to a treaty, and as a result, they must abide by the treaty's conditions. Governments can form treaties with one another or other aspects of international law. Hundreds of treaties deal with various aspects of marine affairs, including navigation, fisheries, pollution, maritime boundaries, security, scientific research, exploration and exploitation of natural resources, conservation of biodiversity, and other themes associated with marine affairs.<sup>4</sup>

## II. THE SIGNIFICANCE AND SUCCESS OF UNCLOS IN INTERNATIONAL LAW

The "United Nations Treaty on the Law of the Sea (UNCLOS)" is a treaty that is considered to be the most fundamental and comprehensive in international maritime law. It was founded in 1982 after nine years of discussions among more than 150 states, which took place under the auspices of the United Nations during the entire process. Because it provides a comprehensive legal framework for all matters about the ocean, the UNCLOS is commonly called the "constitution for the oceans." "This is because the United Nations established it. About various maritime zones, the UNCLOS outlines the rights and obligations of countries. The territorial sea, the contiguous zone, the exclusive economic zone (EEZ), the continental shelf, and the high seas are all included in these maritime zones."<sup>5</sup> The UNCLOS addresses a wide range of concerns and activities that are associated with the ocean. These activities and issues include navigation, fishing, the protection of the marine environment, marine scientific research, resolving disputes, and cooperative mechanisms.<sup>6</sup>

The UNCLOS is primarily regarded as a historic success in international law. This is partly because it balances the interests of coastal nations, marine states, and rich and developing countries. In doing so, UNCLOS can strike a balance. In addition to the preservation of the ocean's resources and the use of those resources in a sustainable manner, UNCLOS has also helped contribute to the promotion of peace, security, and cooperation in the ocean. This is in addition to the conservation of the ocean's resources. As of the month of August in the year 2021, the United Nations Convention on the Law of the Sea (UNCLOS) has a total of 168 parties, which includes 167 states and the European Union.<sup>7</sup>

While the UNCLOS is significant and applicable in all regions, it comes with challenges and constraints. Some of these

challenges are brought about by the intrinsic complexity and dynamism of the ocean, which requires continual adaptation and innovation to deal with new circumstances and evolving problems. To address these challenges, we must continue to adapt and invent. Various governments and players interpret and use the UNCLOS inconsistently, leading to disagreements and confrontations. Some of these challenges are also the result of this inconsistency. In addition, some of these problems are generated by gaps and ambiguities in UNCLOS itself, which can lead to legal ambiguity and inconsistency. This is a problem since it makes the law less clear. There is an issue since the gaps and ambiguities in the law might result in legal uncertainty and inconsistency.<sup>8</sup>

## III. CHALLENGES AND CONSTRAINTS OF UNCLOS IMPLEMENTATION

This article aims to analyse UNCLOS from the perspective of marine sociology critically. More specifically, the focus will be on how it impacts and is influenced by human-ocean relations' social, cultural, economic, and political aspects. In particular, this article investigates how UNCLOS affects and is influenced by the IUU fishing business.<sup>9</sup>

This article will investigate the connection between marine sociology and the UNCLOS. UNCLOS is an international legal framework that regulates the use of the ocean and the administration and management of the ocean's resources. The purpose of this article is to investigate the connection that exists between marine sociology and UNCLOS. Marine sociology is a speciality of sociology that focuses on the study of the social elements of interactions between humans and oceans. Its primary objective is to investigate these social dynamics. This branch of sociology explores topics such as marine livelihoods, ocean conservation, and ocean justice. Other topics studied in this subfield include ocean governance's cultural, political, and economic aspects.<sup>10</sup> By viewing the UNCLOS convention through the lens of marine sociology, this blog post aims to draw attention to some of the convention's positive and negative aspects. In addition, it will emphasise some of the opportunities and challenges for enhancing and complementing it in light of the existing and developing issues facing the ocean and the people who live there. The subfield of sociology, known as marine sociology, came into being during the latter half of the 20th century as a direct response to the growing awareness of the importance of the ocean to the well-being, growth, and security of humans. The multidisciplinary field of research known as marine sociology has only been around for a few decades. The area of study known as marine sociology seeks to

<sup>3</sup> "Mascia, M. B., Claus, C. A., Naidoo, R., & Pailler, S., 'Impacts of marine protected areas on fishing communities,' 24 Conservation Biology 1424-1429 (2010)."

<sup>4</sup> Nielsen, K. N., "Combining science and local knowledge to develop management recommendations for deep-water corals and sponge ecosystems in the North Atlantic," 5 Frontiers in Marine Science 44 (2018).

<sup>5</sup> Ostrom, E., "Governing the commons: The evolution of institutions for collective action," (Cambridge University Press 1990).

<sup>6</sup> Glaser, M., Breckwoldt, A., & Purwanto, D. H., "Social-Ecological Innovation in Marine Protected Areas in Indonesia," 24 Ecology and Society 7 (2019).

<sup>7</sup> Cudney-Bueno, R., Basurto, X., & Moreno-Báez, M., "Local and scientific knowledge for assessing the success of marine protected areas in an artisanal

fishery: The case of the Loreto marine park, Baja California Sur, Mexico," 52 Ocean & Coastal Management 207-218 (2009).

<sup>8</sup> Alexander, K. A. & Richardson, L. B. (Eds.), "Marine Sociology: Understanding Human-Ocean Interaction in a Changing World," (Routledge 2020).

<sup>9</sup> Agardy, T., "Ocean Zoning for a Sustainable Future: The Role of Marine Sociology in Ecosystem-Based Management," 103 Marine Policy 8-15 (2019).

<sup>10</sup> Leach, M., & Scoones, I., "The social and political lives of zoonotic disease models: Narratives, science and policy," 129 Social Science & Medicine 49-55 (2015).

understand how human societies interact with the ocean. This includes how human societies shape and are affected by the sea, as well as how human societies may contribute to the ocean's ability to remain healthy. The field of research known as marine sociology investigates how different social groups view, place value on, interact with, and relate to the ocean. It also explores how other groups are affected by issues relating to the sea and how they react to those difficulties. Some investigated problems include overfishing, pollution, coastal erosion, marine protected areas, maritime conflicts, piracy, climate change, and ocean acidification.<sup>11</sup>

A growing body of evidence points to marine sociology's growing applicability and significance for various reasons. It provides a more comprehensive and human-centred take on the ocean. It is a welcome addition to the natural science-based approaches predominating in ocean study and policy. This is an essential step in the right direction for ocean research and policy. Second, it assists in determining the socioeconomic causes and impacts of ocean problems, such as poverty, inequality, conflict, corruption, ignorance, indifference, and power imbalances, which is necessary to develop solutions to solve these problems. Thirdly, it assists in developing a critical and reflexive knowledge of the assumptions, values, interests, and ideologies that form the basis of many different ocean views and visions. The fourth advantage is that it fosters a participative and inclusive approach to ocean governance, one that values a diversity of perspectives and interests and gives those voices and interests more agency. This is a significant improvement over the status quo, a top-down approach. Fifthly, it proposes a method of ocean governance that is normative and ethical and defends human rights, social justice, and environmental stewardship as essential values. These are the core principles that are supported by this approach.<sup>12</sup> The UNCLOS was finally accepted in 1982 as an all-encompassing and legally enforceable agreement, following over a decade of discussions among 160 countries. As of the year 2021, there have been 168 states that have ratified it, and it went into effect in the year 1994. The UNCLOS establishes a legal framework for the ocean that considers all aspects of its utilisation and management. These aspects include marine research, fisheries, navigation, and environmental protection.<sup>13</sup> A comprehensive understanding of marine sociology, which plays a significant part in this attempt, is required to fully comprehend the intricate relationship between people and the marine environment. Ocean sociology studies societal attitudes, behaviours, and actions that impact the oceans to encourage a more sustainable future for marine ecosystems. The study of ocean sociology aims to build a more sustainable future for marine ecosystems. The critical analysis presented in this paper explores the issues facing marine sustainability, the role maritime law plays in

addressing these concerns, and the demand for effective legal interventions to ensure the conservation of marine resources.<sup>14</sup>

#### IV. LEGAL FRAMEWORKS FOR MARINE CONSERVATION AND SUSTAINABILITY

The implications of human activities on marine ecosystems have been significant, and economic and social considerations have driven these effects. Human activities have had a considerable impact on marine ecosystems. The practice of overfishing and the subsequent depletion of ocean resources is one of the most important causes of the difficulties that we face today. Because the pursuit of profit often drives the fishing industry, it frequently needs to consider the long-term repercussions of practices involving overfishing. This can hurt the health of marine ecosystems. This directly leads to reduced marine biodiversity, which leads to the depletion of fish supplies and the disruption of food systems. Following an in-depth investigation of the matter, it has become abundantly evident that more regulations concerning fisheries administration are required. These regulations should include catch quotas, the establishment of marine protected zones, and the encouragement of sustainable practices for fishing.<sup>15</sup> Ocean pollution, specifically plastic garbage, is another detrimental to marine ecosystems' health. The improper disposal of waste plastic leads to accumulating that garbage in the oceans, which in turn poses threats to marine life and the ecosystems they occupy. This problem can be avoided by properly disposing of waste plastic. The absence of sufficient waste management systems worsens the situation, further stressing the demand for legal actions to regulate rubbish disposal and boost recycling programmes. In other words, legal activities are required to address the problem. A comprehensive analysis of the current legal frameworks must be carried out to identify legal loopholes and suggest potential changes to improve pollution prevention and control.<sup>16</sup> As more time has passed, the consequences of climate change on the world's oceans have become increasingly apparent. These repercussions include an elevation of the sea level, an acidity of the water, and extreme weather occurrences. To examine the consequences of climate change on marine habitats, it is necessary first to develop effective legislative procedures that can be used to adapt and mitigate the adverse effects of climate change on marine environments. The incorporation of considerations of climate change into maritime law is an absolute must if there is to be any hope of creating resilience and sustainability.<sup>17</sup>

The idea of mining in deep oceans brings an additional layer of complication to the equation that must be solved to keep marine ecosystems in good health. As more advanced technology is developed, extracting valuable minerals from the ocean floor becomes increasingly practical. However, the

<sup>11</sup> "Gleich, S., Buckley, P., Pinnegar, J. K., Chilvers, J., Lorenzoni, I., Terry, G., ... & Duarte, C. M., 'Public awareness, concerns, and priorities about anthropogenic impacts on marine environments,' 111 Proceedings of the National Academy of Sciences 15042-15047 (2014)."

<sup>12</sup> James, A., "Marine Conservation Agreements: Foundations and Insights," in *The Ocean of Life*, 113-138 (Allen Lane 2012).

<sup>13</sup> "Jentoft, S., McCay, B. J., & Wilson, D. C., Social theory and fisheries co-management, 22 *Marine Policy* 423-436 (1998)."

<sup>14</sup> Howard, J. A., "Defining the future of marine sociology: A review of the literature," 12 *Sociology Compass* e12579 (2018).

<sup>15</sup> Chuenpagdee, R., & Jentoft, S., "Governability of small-scale fisheries: Theory and applications," 18 *Maritime Studies* 371-381 (2019).

<sup>16</sup> Ban, N. C., & Davies, T. E., "Factors affecting the ability of area-based management to reduce risk to Canadian coral reefs," 24 *Conservation Biology* 611-621 (2010).

<sup>17</sup> Armitage, D., Marschke, M., & Plummer, R., "Adaptive co-management and the paradox of learning," 18 *Global Environmental Change* 86-98 (2008).

implications of deep-sea mining on the surrounding area's ecology are not fully understood, and any possible problems must be carefully explored before moving forward with the practice. To safeguard marine ecosystems from damage that cannot be undone, the critical analysis needs to underline how crucial it is to have strict rules and rigorous environmental impact assessment.<sup>18</sup>

Within the realm of maritime law, international conventions and treaties have been an essential component in the process of addressing problems that are present in oceans all over the world. On the other hand, critical inspection frequently exposes gaps in implementation and concerns relating to enforcement and compliance. The level of commitment exhibited by participating governments to uphold the terms of the agreements and carry out the obligations stipulated within them is directly proportional to the level of success that international accords achieve. Because of this, it is of the utmost need to evaluate the advantages and disadvantages of the preexisting international legal frameworks to locate the areas in which enhancements are required.<sup>19</sup>

At the national level, marine regulation and policy are quite heterogeneous; although some nations have comprehensive frameworks, others still need suitable enforcement measures. A critical assessment of national methods should focus on understanding the factors that have allowed some countries to construct good maritime laws while others continue to struggle effectively. This is because of the significant disparity in the levels of success between the two groups. It is crucial to stimulate the sharing of knowledge and the construction of capacity across nations to create a collaborative effort towards conservation and raise the likelihood of attaining a sustainable future for marine habitats. This is because it is essential to foster a joint effort towards conservation to promote a sustainable future for maritime habitats.<sup>20</sup>

The significance of regional cooperation can't be stressed when it comes to finding solutions to problems that affect multiple countries' maritime environments. The critical analysis needs to emphasise the value of collaborative governance to

facilitate the harmonisation of maritime policies, the sharing of scientific knowledge, and the construction of marine protected areas that straddle international borders. Establishing regional alliances can help the overall sustainability of marine ecosystems and increase the efficacy of the efforts made by individual nations, which can be improved through the formation of regional alliances.<sup>21</sup>

## V. CONCLUSION

Both maritime sociology and sustainable development have the concept of recognising and utilising indigenous populations' traditional knowledge and practices as an essential component. This is done in the name of sustainable development. Indigenous peoples have long relied on the rivers of their homelands as a source of both material and spiritual nourishment. This practice dates back many years. Their traditional methods typically display a profound grasp of marine ecosystems and the management of marine resources in a sustainable manner. The objective of critical analysis should be to advance collaborative governance and co-management solutions, as well as recognise indigenous rights and incorporate traditional knowledge into marine conservation strategies. This should be done in conjunction with protecting marine ecosystems.<sup>22</sup>

If we will have a sustainable future, the critical analysis needs to focus on the requirement of public understanding and engagement. When education and awareness activities are put into place, individuals have the potential to acquire the empowerment necessary to make well-informed decisions and advocate for sustainable practices. In addition, encouraging public participation in making policy ensures that marine conservation initiatives consider diverse views and involve stakeholders at all levels of society. This is accomplished through increasing public involvement in the process of formulating policy.<sup>23</sup>

<sup>18</sup> Heck, N., & Thomsen, M., "Marine co-management and legal pluralism: How an interdisciplinary approach can help to understand processes for natural resource management," 136 *Ocean & Coastal Management* 139-147 (2017).

<sup>19</sup> Bavinck, M., "The social life of marine tenure: From fishers' rights to human rights," (Routledge 2016).

<sup>20</sup> Gutiérrez, N. L., Hilborn, R., & Defeo, O., "Leadership, social capital and incentives promote successful fisheries," 470 *Nature* 386-389 (2011).

<sup>21</sup> Hatcher, A., & Zavestoski, S. (Eds.), "Sociology of Environmental Health," (Rowman & Littlefield 2019).

<sup>22</sup> Fanning, L., & Munro, G. (Eds.), "Ethnographies of Conservation: Environmentalism and the Distribution of Privilege," (Berghahn Books 2018).

<sup>23</sup> "Costanza, R., de Groot, R., Sutton, P., van der Ploeg, S., Anderson, S. J., Kubiszewski, I., ... & Turner, R. K., Changes in the global value of ecosystem services, 26 *Global Environmental Change* 152-158 (2014)."