



**INTERNATIONAL JOURNAL OF RESEARCH AND  
ANALYTICAL REVIEWS (IJRAR) | IJRAR.ORG**  
An International Open Access, Peer-reviewed, Refereed Journal

# **SUSTAINING MARINE RESOURCES THROUGH FISHING PRACTICES: ROLE OF TRADITIONAL KNOWLEDGE AMONG FISHERMAN COMMUNITIES IN THIRUVANANTHAPURAM, KERALA**

<sup>1</sup>Anjitha M C, <sup>2</sup> Dr. Sharmistha Bhattacharjee

<sup>1</sup>PhD Scholar, Department of Sociology, Rajiv Gandhi National Institute of Youth Development,  
Sriperumbudur, Tamil Nadu.

<sup>2</sup> Associate Professor & Head, Department of Sociology, Rajiv Gandhi National Institute of Youth  
Development, Sriperumbudur, Tamil Nadu

**Abstract:** This study explores the sustainability of marine resource management through traditional fishing practices focusing on the traditional marine fisherfolk in Thiruvananthapuram, Kerala. The paper discusses the growing risks of plastic pollution, industrial fishing, and the controversial use of high-catch ring seine nets, as well as the importance of traditional knowledge in maintaining and sustaining marine resources. The study uses mixed methods such as primary data through Case studies and Focus group discussions and secondary data from various literatures during the pilot study. The study notes the contribution of Martin Heidegger's Interpretative Phenomenology to understand lived experiences of the fisherman community in Trivandrum. Major findings include the reduction in nearshore fish stocks and the socioeconomic marginalization of fishing communities are the results of the growing use of ring seine nets and mechanized industries. The study concludes that maintaining marine biodiversity and community livelihoods depends on incorporating traditional ecological knowledge into policy through co-managed marine zones and reviving cultural practices.

**Key Terms** - Traditional Knowledge, Sustainable fishing, Fishing Practices

## **I. INTRODUCTION**

Marine ecosystems are vital for global biodiversity and human livelihoods, providing food security, economic opportunities, and ecological balance. However, unsustainable fishing practices, overexploitation, and environmental degradation have posed significant threats to these resources. Kerala boasts a vibrant fisheries sector with a 590-km coastline, supporting over 10 lakh fisherfolk and contributing significantly to the state's economy<sup>1</sup>. Cities, towns, and fishing villages along the coast are the main locations for fishermen in Kerala's coastal regions. Kerala, a coastal state in India, is renowned for its rich marine biodiversity and vibrant fishing communities that rely heavily on the sea for their sustenance. Among these communities, traditional fishing practices have been integral to their way of life for centuries. These methods are often rooted in deep ecological understanding and respect for the marine environment, ensuring minimal harm to aquatic ecosystems while maintaining steady fish yields.

In Trivandrum, Kerala's southernmost district, fishermen employ time-tested techniques such as selective fishing gear, seasonal fishing patterns, and knowledge of fish behavior and migration. This traditional knowledge reflects their intimate relationship with the sea and offers valuable insights into sustainable resource management. As modern industrial fishing methods increasingly dominate the sector, there is a growing need to recognize and integrate these indigenous practices into broader conservation strategies.

This study aims to explore the role of traditional knowledge among fishermen communities in Trivandrum in sustaining marine resources. By documenting their practices and understanding their ecological significance, the research seeks to promote sustainable fishing while preserving cultural heritage.

<sup>1</sup>Kerala Fisheries. (2025, January 28). Retrieved from Testbook: <https://testbook.com/kerala-gk/kerala-fisheries>, Kerala State Coastal Area Development Corporation Ltd. (n.d.). Retrieved from <https://www.keralacoast.org/index.php>

## II. STATEMENT OF THE PROBLEM

The problem of sustaining marine resources through fishing practices in Trivandrum, Kerala, is increasingly critical due to overfishing, environmental degradation, and the impacts of modern fishing techniques. Traditional fishing communities possess a wealth of indigenous knowledge that has been passed down through generations, encompassing sustainable practices and ecological awareness. However, this knowledge is at risk of being overshadowed by industrial fishing methods and globalization, which often prioritize short-term gains over long-term sustainability.

The challenge lies in integrating traditional ecological knowledge with contemporary resource management approaches to ensure the preservation of marine biodiversity. Fishermen in Trivandrum utilize various traditional methods, such as the Koodu (fish trap) and net fishing, which are designed to minimize bycatch and maintain ecological balance<sup>2</sup> (kerala 2024). Yet, these practices face threats from habitat destruction and climate change, which alter fish populations and their habitats. Overexploitation of marine resources, driven by unsustainable fishing practices, has led to the disappearance of key fish species, impacting the economic stability of these communities<sup>3</sup>. Climate change effects, such as sea-level rise and extreme weather events, exacerbate these vulnerabilities, damaging marine ecosystems and reducing fish stocks. This situation is further complicated by development projects that alter coastlines and displace communities, disregarding their cultural heritage and traditional knowledge.

Addressing this problem requires a concerted effort to document and promote traditional fishing techniques while encouraging policy frameworks that support sustainable practices. By valuing and incorporating the insights of local fishermen communities, it is possible to create a more resilient marine ecosystem that benefits both the environment and the livelihoods of those who depend on it.

## III. REVIEW OF LITERATURE

The researcher has gone through the available literature in the form of newspapers, articles, chapters in the books, and reports. Comprehending existing literature on the sustainability of marine resources through traditional fishing practices in Coastal Fishing Communities of Trivandrum, Kerala as well as relevant secondary data, Marine resource sustainability in Trivandrum, Kerala, is deeply intertwined with the traditional knowledge systems of local fishing communities. These practices, rooted in cultural values and ecological wisdom, have shaped conservation-oriented fishing methods, policy frameworks, and collaborative management approaches.

### *Cultural and Ecological Integration*

Traditional fishing communities in Trivandrum view marine biodiversity as inseparable from their cultural identity. Their practices, such as avoiding nets that damage fish eggs and juvenile marine life, reflect unwritten conservation laws embedded in their value systems<sup>4</sup>. This biocultural linkage extends to navigation techniques like *kanicham*, a triangulation method using natural landmarks to locate reefs, minimizing seabed disruption<sup>5</sup>. Such knowledge is documented in Kerala's Marine Biodiversity Register (MBR), which codifies traditional insights on demersal species, reef ecosystems, and indicators of overfishing. Studies in Kollam district further highlight fishers' awareness of algal blooms, breeding seasons, and threats like destructive gear, advocating for seasonal trawl bans aligned with fish reproductive cycles<sup>6</sup>.

### *Sustainable Fishing Techniques*

Traditional methods like coracle fishing in Kerala's backwaters prioritize selective harvesting, reducing bycatch and habitat damage. Migrant coracle fishers report socio-economic benefits while maintaining ecological balance<sup>7</sup>. Fishing activities are timed to lunar cycles and monsoon patterns, allowing resource recovery. For example, communities oppose trawling during monsoon spawning seasons, a practice later institutionalized via Kerala's 1981 trawling ban<sup>8</sup>. Use of biodegradable materials and species-specific nets (e.g., *vala* for sardines, *thangu vala* for mackerel) minimizes ecosystem disruption<sup>9</sup>.

### *Policy and Community-Led Management*

The Kerala Marine Fisheries Regulation Act (1980) emerged from traditional demands to curb overfishing, enforcing monsoon trawl bans and gear restrictions. Community-driven initiatives, such as the MBR, empower fishers to participate in ecosystem-based management<sup>10</sup>. Local recommendations include expanding trawl bans to twice yearly and creating artisanal-exclusive zones. These policies reflect a synthesis of Indigenous knowledge and scientific assessments of Maximum Sustainable Yield (MSY)

### *Challenges and Modern Synergies*

Post-1990s economic liberalization intensified competition, with mechanized fleets exacerbating overfishing<sup>11</sup>. However, collaborations like WWF's Fishery Improvement Projects (FIPs) train fishers in sustainable practices, blending traditional wisdom

<sup>2</sup> kerala, C. (2024). *Fishing - One of the Most Fascinating Activities in Kerala*.

<sup>3</sup> K, P. (2024). Is sardine phasing out? Effects of climate change on marine ecosystem, blue economy in Kerala. *Onmanorama*.

<sup>4</sup> Jament, J., & Yesudas, L. (2019). *Marine Biodiversity & Cultural Diversity: The Coastal Communities of Trivandrum, Kerala, India. Terralingua*.

<sup>5</sup> Kerala State Biodiversity Board. (2024).

<sup>6</sup> R, A., & A., B. (2017). *Traditional knowledge of fisher folk of Kollam district, Kerala on coastal and marine biodiversity and conservation. Traditional and Folk Practices*.

<sup>7</sup> Rahman, M., Solomon, S., N R, A., & S. Manomi. (2017). *Artisanal Fishing in Kerala Backwaters: A Socioeconomic Assessment of Indian Coracles. Asian Journal for agricultural extensions, economy and sociology*.

<sup>8</sup> Kerala State Coastal Area Development Corporation Ltd. (2024).

<sup>9</sup> Sahadevan. (2016). *Indigenous technical knowledge of the fisher folk of Kerala(South India). International Journal of Fisheries and Aquatic Studies*.

<sup>10</sup> Kerala State Biodiversity Board. (2024).

<sup>11</sup> K. Ravindran, V. Vijayan, & L. Edwin. (n.d.). *Conservation and Management of Marine Fishery Resources of Kerala State, India. The ICLARM Quarterly*.

with MSC certification standards<sup>12</sup>. Recent initiatives like sea ranching (releasing 10 lakh juvenile fish) and artificial reefs under PMMSY aim to replenish stocks while leveraging traditional ecological knowledge. Such programs highlight the need to scale Indigenous practices alongside modern science.

Trivandrum's fishing communities demonstrate that traditional knowledge is not static but adaptive, offering scalable solutions for marine conservation. Their practices, from gear selectivity to seasonal bans, provide a blueprint for balancing ecological health and livelihood security. Integrating these systems with participatory policies and modern technologies remains critical for long-term sustainability.

#### IV. METHODOLOGY

The paper has been conceptualized with pilot survey collected from the field in form of case studies and focus group discussions as well as secondary data acquired from Literature reviews. Secondary data have been identified using the data published by various Government organizations such as Census data, Government Department information, Articles, Fisheries Department reports, and other information gathered for research purposes.

##### Research Questions

1. To Study various fishing practices of the traditional fishing community in marine conservation
2. To understand the role of traditional knowledge among fisherman community to sustain marine conservation
3. To recommend policies to the stakeholders for resilient and sustainable coastal communities.

#### 4.1 Population and Sample

The study is conducted in the Coastal village of Anchutheng, Thiruvananthapuram district, Kerala. Population of the study is the fishing community of Anchutheng village and the sample collected using multi-stage sampling method which includes identifying the fishing communities of the particular district and to filter the fisherman from the major population of the village.

#### 4.2 Data and Sources of Data

For this study primary source of data collected from the field in form of case studies and focus group discussions. Also, Secondary sources of data include articles, newspaper, government records, Fisherman Annual reports have been used.

#### V. THEORETICAL FRAMEWORK

##### *Martin Heidegger's Phenomenological Approach*

Martin Heidegger's Interpretative Phenomenology, also known as hermeneutic phenomenology, is a philosophical approach that focuses on understanding human existence (Dasein) through lived experience and interpretation. This Theory offers a profound framework for studying communities by focusing on lived experiences of individual within their social and existential contexts. His methodology is rooted in key concepts such as Dasein (being-there), being-in-the-world, and the hermeneutical process of interpretations. It can be applied in studying communities through understanding the shared meaning, intersubjectivity and reflexivity.

#### VI. DATA INTERPRETATION AND ANALYSIS

##### Case Studies

###### *Case -1*

The respondent is a 72-year-old traditional fisherman living in Anchutheng, Trivandrum. His co-workers left the fishing job as no economic gain they are getting from the fishing. According to him, June, July and August are the best season as they will get more fish but they are the most dangerous months also. He usually goes up to 50 to 60 km deep sea to catch fish. For him, the climate is not as 10 years before. Now fisherman cannot make use of their traditional knowledge to understand sea as it changed due to various climate changes. According to him, the Malayalam months of 'kanni' and 'Thulam' are the scariest months. Now the pattern of raining also changing. More heat is observed in the sea also they are experiencing heat waves. he put forward a serious concern about the use and throw of plastic into the sea. he shared the experience of getting more plastic than fish while they go for fishing.

###### *Case-2*

The respondent is a 58-year-old traditional fisherman from Thiruvananthapuram. His main income is from fishing. The most common technique used by him is using nets. According to him, a fisherman throws a lot of bait at once, then casts his net to catch many fish. Casting a net may sound like an easy thing to do but it requires skill to be able to do it in the right way. The most significant fishing technique, however, is using the Chinese Fishing Nets. In fact, this is one of the most popular tourist attractions in Kerala. The site of a Chinese Fishing Net in the backdrop of a sunset is scenic, to say the least.

###### *Case-3*

The respondent is a 55-year-old fisherman from Trivandrum owning 6 boats. He had his own house before 2 years but does not have his own as the sea water took away the house. He is having a nightmare regarding how the waves hit the shore. His house broken and the sheets of toilet and house flew away due to huge waves. On that day he and his wife ran for life. Many people lost their life in the nearest harbour due to strange wave pattern. He also shared how the mechanized boat called 'Ollivallam' taking over the life of traditional small -scale fisherman economically. The large industrialized boats taking huge amount of fish resources including small fishes which leads to the depletion of fish stocks in the sea.

###### *Case- 4*

<sup>12</sup> WWF. (n.d.). *Building Local Knowledge for Fishing Sustainably*.

The respondent is a 58-year-old traditional fisherman from Anchutheng, Trivandrum. His main income is from fishing. For him, the months of June and July are providing with more fishes but it is also the season of rough sea. Even though people are afraid to go to sea in those seasons, their situation forcing them. They use language which reflects their intimate relationship with marine biodiversity. Local terms like *kadalamma* (Mother Sea/Ocean) and *paru* (marine ecosystems) highlight their understanding of underwater habitats and species diversity. He employs artisanal methods such as nets with specific mesh sizes to avoid catching juveniles or fish eggs, ensuring minimal damage to marine stocks

#### Case-5

The respondent is a 70-year-old man still going for fishing to look after his family in Anchutheng fishing village in Trivandrum District, Kerala. His income varies according to seasons from fishing. He is a deep-sea fisherman who goes to sea as a daily wage. According to him, the waves were rushed near to his courtyard during the rough seasons. Even though sea balls were kept to stop the sea waves, it's of no use. During rough season and huge winds, he usually does not go for fishing as they are afraid to go for fishing. According to him, the fisherman discourages destructive practices like using nets harmful to ecosystems and protest activities that threaten biodiversity. He actively monitors algal blooms, jellyfish blooms, and other phenomena that affect marine ecosystems. They take measures such as monsoon trawl bans during breeding seasons to sustain fish population.

## ANALYSIS OF DATA

### *Various fishing Practices of fishing Communities*

Traditional fishermen often use non-motorized crafts like kattamarams for fishing. These crafts are well-suited for the coastal waters of Trivandrum, allowing fishermen to navigate rocky areas effectively. The fishermen use a variety of indigenous techniques to catch fish. The most common technique is using nets. A fisherman throws a lot of bait at once, then casts his net to catch many fish. Casting a net may sound like an easy thing to do but it requires skill to be able to do it in the right way. Trap Fishing is an eco-friendly trap made from coconut palm leaves used to catch lobsters, ensuring minimal impact on the marine ecosystem. Harpoon Fishing is an ancient technique involving using harpoons to catch larger fish species like grouper and snapper. There are other techniques too. Angling, for example, is a simple fishing technique where they use a rod, line and hook to catch fish using earthworm/batter as bait. Also famous is Bow Fishing where the fish is shot with an arrow and then reeled in. Another unique method is using a Bamboo Trap. A cone-shaped basket is placed at a narrow area in the backwaters. Fish enter from the large opening but the hole at the other end is too small for the fish to escape. Another technique is when two men wrap palm leaves around their waist with a rope and then walk through the backwaters. The leaves shine brightly reflecting the sunlight which scares the fish, making them find a hiding place in the muddy areas. Then, swimmers jump into the waters and catch these fish with bare hands. The most significant fishing technique, however, is using the Chinese Fishing Nets. In fact, this is one of the most popular tourist attractions in Kerala.

### *Economic Vulnerabilities*

Fishermen often sell their belongings to survive during the rough season. The wrecking of boats and damaging of their houses creates indebtedness to the fisherman communities and they are forced to rent boats at high prices. The life of traditional fisherman communities is worsening as they are unable to compete with the large mechanized fishing sector. The introduction of huge boats named 'ollivallam' in local language catches large number of fishes from the sea and left the traditional small-scale fisherman to come from the sea with bare hands. These mechanized fishing even led to the depletion of fish stocks. The fishermen face significant competition from mechanized vessels that employ advanced technologies such as ring seine fishing and light fishing. These practices have raised concerns among traditional fishers due to their non-selective nature, leading to overfishing of juvenile species and threatening the sustainability of local fisheries

### *Role of traditional knowledge*

The coastal community's language reflects their intimate relationship with marine biodiversity. Local terms like *kadalamma* (Mother Sea/Ocean) and *paru* (marine ecosystems) highlight how they are treating the sea as their own mother. Fishermen can track the names for endangered species (*vattakkanni*, *elappaatti*, *naviya kathi*) which indicate their ability to track biodiversity changes. They avoid using artisanal methods such as nets with specific mesh sizes to avoid catching small fishes or fish eggs, ensuring minimal damage to marine stock. They advocate for measures such as monsoon trawl bans during breeding seasons to sustain fish population.

## VII. FINDINGS

Role of traditional fishing practices are important to acknowledge as it is helping in the sustainability of marine conservation. Traditional knowledge among fishermen in Trivandrum, Kerala, plays a vital role in sustaining marine resources through ecologically balanced practices. It should be understood that more than 60% of Kerala's fishing community is below the poverty line, a sign of a severe economic crisis where basic needs are frequently ignored. Their methods prioritize species-specific fishing using nets with tailored mesh sizes to avoid catching juveniles or fish eggs, ensuring sustainable stock replenishment. This aligns with their cultural-ethical principle of "do not kill fish eggs and marine ecosystems", enforced through community-driven protests against destructive practices like bottom trawling. However, rapid industrialization and marginalization threaten these practices. The climate change which creates rising of sea waves and changes in the wave pattern results in the destruction of houses and boats of the fisherman. The fisherman losing the ability to use their traditional knowledge to understand the climate as it is changed and it became unpredictable. The fisherman community also possess threat from the mechanized fishing boats as they capture large number of fish which leads to the depletion of fisher stocks. The traditional small-scale fisherman often comes from the sea barehand as they could not compete with the large industrialized boats. It affects their economic stability and leads to livelihood challenge. Integrating their knowledge with scientific approaches could enhance marine conservation while safeguarding their cultural identity and livelihoods

## VIII. DISCUSSION

After analyzing literatures, researcher identified that there are traditional practices followed by fisherman community to sustain and protect marine ecosystem. Jamet & Yesudas, (2019) point out the various practices followed by traditional fisherman, such as



avoiding nets that damage fish eggs and juvenile marine life, reflect unwritten conservation laws embedded in their value systems. (Kerala State Coastal Area Development Corporation Ltd 2024) mentions how communities oppose trawling during monsoon spawning seasons. Sahadevan (2016) explains how fisherman communities use the biodegradable materials and species-specific nets (e.g., *vala* for sardines, *thangu vala* for mackerel) minimizes ecosystem disruption, The findings provide more lights on the condition of fisherman who are unable to go for fishing during rough season also their financial instability during those days. The challenges of small sale fisherman after the introduction of ‘Ollivallam’ or the mechanized fish boats and how it affects the fisherman can be understood from the case studies. Moreover, how the traditional knowledge of fisherman communities becoming irrelevant after the unpredicted climate changes is a matter of major concern. The role of traditional knowledge has to be given priority in order to attain marine conservation and Climate change adaptation.

## IX. CONCLUSION

The various traditional fishing practices by traditional fishermen and their adaptation strategies for marine conservation and Sustainability is highlighted in the paper “Sustaining Marine Resources through Fishing Practices: Role of Traditional Knowledge among Fisherman Communities in Trivandrum, Kerala”. Despite their efforts, these communities face marginalization and threats from industrialization, modern fishing technologies, and lack of recognition from policymakers. Rapid economic changes have disrupted traditional practices, leading to biodiversity loss and social exclusion. The fishing practices in Trivandrum reflect a blend of tradition and adaptation to modern challenges. While traditional methods remain vital for many families, the encroachment of mechanized fishing poses significant threats to their livelihoods and the sustainability of fish stocks in the region. The ongoing dialogue within the community regarding these changes is crucial for preserving their cultural heritage while navigating economic realities.

In conclusion, traditional knowledge among fishermen is vital for marine conservation. It combines sustainable practices, cultural values, and ecological awareness to protect biodiversity while supporting livelihoods. However, integrating this knowledge into formal conservation policies is essential for its preservation and broader impact.

## Figures



*Figure I Nets and ice boxes used by Traditional Fisherman*  
Photo by: Researcher.



*Figure II Traditional Method used by Fishers to catch fish*  
Photo by: Researcher



Figure III Small motor boats used by Traditional Fisherman  
Photo by: Researcher

## REFERENCES

- [1] Jament, Johnson, and Lisba Yesudas . 2019. "Marine Biodiversity & Cultural Diversity: The Coastal Communities of Trivandrum, Kerala, India." *Terralingua*.
- [2] Rahman , M. Ramees, Solly Solomon, Athira N R, and S. Manomi. 2017. "Artisanal Fishing in Kerala Backwaters: A Socioeconomic Assessment of Indian Coracles." *Asian Journal for agricultural extensions, economy and sociology*.
- [3] change, Directorate of Environment and Climate. 2022. *Kerala State Action Plan on Climate Change, 2023-2030*. Department of Environment, Government of Kerala.
- [4] Jament, Johnson , and Lisba Yesudas . 2019. "Marine Biodiversity & Cultural Diversity: The Coastal Communities of Trivandrum, Kerala, India." *Terralingua*.
- [5] K, Padmakumar. 2024. "Is sardine phasing out? Effects of climate change on marine ecosystem, blue economy in Kerala." *Onmanorama*.
- [6] K. Ravindran, V. Vijayan, and L. Edwin . n.d. "Conservation and Management of Marine Fishery Resources of Kerala State, India." *The ICLARM Quarterly* .
- [7] 2025. "Kerala Fisheries." *Testbook*. 28 January. <https://testbook.com/kerala-gk/kerala-fisheries>.
- [8] 2024. *Kerala State Biodiversity Board*.
- [9] n.d. *Kerala State Coastal Area Development Corporation Ltd*. <https://www.keralacoast.org/index.php>.
- [10] 2024. *Kerala State Coastal Area Development Corporation Ltd*.
- [11] kerala, Canoe. 2024. *Fishing - One of the Most Fascinating Activities in Kerala*.
- [12] P, Sahadevan. 2016. "Indigenous technical knowledge of the fisher folk of ." *International Journal of Fisheries and Aquatic Studies*.
- [13] R, Anitha, and Biju Kumar A. 2017. "Traditional knowledge of fisher folk of Kollam district, Kerala on coastal and marine biodiversity and conservation." *Traditional and Folk Practices*.
- [14] Sahadevan. 2016. "Indigenous technical knowledge of the fisher folk of Kerala(South India)." *International Journal of Fisheries and Aquatic Studies*.
- [15] WWF. n.d. "Building Local Knowledge for Fishing Sustainably."