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Study of Illegal Fishing on the West Coast of India

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Abstract

Illegal, unreported, and unregulated (IUU) fishing has emerged as a major threat to the sustainability of marine ecosystems and the livelihoods of coastal communities worldwide. In India, the west coast—extending from Gujarat to Kerala—represents one of the country's most productive marine regions, contributing significantly to national fish production and employment. Despite its importance, the region faces growing challenges from illegal fishing activities driven by fleet modernization, export-oriented market demand, weak monitoring mechanisms, and socio-economic vulnerabilities among fishing communities.

This study examines the nature, extent, and drivers of illegal fishing along India's west coast using a mixed-methods approach based on secondary data analysis, policy review, and thematic interpretation of enforcement records. The findings reveal persistent violations involving illegal gear use, encroachment into restricted fishing zones, unlicensed operations, and under-reporting of catches. The study concludes that illegal fishing is not merely a regulatory failure but a multidimensional governance issue shaped by economic pressure, institutional fragmentation, and uneven development within the fisheries sector. The paper recommends a comprehensive governance framework combining technology-based surveillance, community participation, livelihood diversification, and legal reforms to promote sustainable fisheries management on India's west coast.

Keywords: Illegal fishing, IUU fishing, West Coast of India, fisheries governance, marine sustainability

Introduction

Marine fisheries play a crucial role in India's food security, coastal economy, and employment generation. The west coast of India, stretching from Gujarat to Kerala, is particularly significant due to its high biological productivity, favorable oceanographic conditions, and long-established fishing traditions. Millions of people depend directly or indirectly on marine resources from this coastline, making it a cornerstone of regional and national development.

However, increasing fishing pressure over recent decades has raised serious concerns about the sustainability of marine resources. Rapid mechanization of fishing fleets, growth in export-oriented seafood markets, and rising population pressures have intensified exploitation of fish stocks. While technological advancements have enhanced fishing efficiency, they have also enabled widespread violations of fishing regulations.

Illegal fishing on the west coast takes several forms, including the use of prohibited gear, fishing during closed seasons, operation of unlicensed vessels, and encroachment into nearshore zones reserved for artisanal fishers. These practices accelerate stock depletion, damage marine habitats, and undermine conservation efforts. Moreover, competition between mechanized and small-scale fishers has resulted in frequent conflicts, affecting social harmony and livelihood security.

Weak enforcement capacity, limited surveillance infrastructure, and jurisdictional overlaps between regulatory agencies further compound the problem. Given the ecological, economic, and social consequences of illegal fishing, a systematic examination of its drivers and impacts is essential. This study seeks to contribute to that understanding by analyzing illegal fishing practices on India's west coast and proposing policy-oriented solutions for sustainable fisheries governance.

Objectives

1. To identify and document the various types of illegal fishing practiced along the west coast of India.
2. To analyze the socio-economic and institutional factors that drive illegal fishing activities.
3. To assess the ecological and livelihood impacts of illegal fishing on coastal communities.
4. To evaluate the legal, regulatory, and enforcement mechanisms currently in place.
5. To propose a set of comprehensive recommendations for reducing illegal fishing and promoting sustainable governance.

Literature Review

Marine fisheries have long been recognized as a critical component of India's food security, nutritional intake, employment generation, and coastal livelihoods. According to national fisheries assessments, the west coast of India, extending from Gujarat through Maharashtra, Goa, Karnataka, and Kerala, contributes a substantial share of the country's marine fish landings due to its productive continental shelf, monsoon-driven upwelling, and diverse marine ecosystems. Studies by the Central Marine Fisheries Research Institute highlight that the west coast accounts for more than half of India's total marine fish production, supporting millions of fishers, traders, processors, and allied workers (CMFRI, 2020). This region has also been historically significant for traditional fishing communities, where fisheries are deeply embedded in social and cultural systems.

Several scholars have documented the transformation of India's marine fisheries over the past five decades, marked by rapid mechanization, motorization, and technological intensification. Kurien (1998) and Salagrama (2012) observe that the introduction of trawlers, purse seiners, and advanced navigation technologies significantly increased catch efficiency but simultaneously altered fishing patterns and effort distribution. While these changes contributed to higher landings and export growth, they also led to excessive fishing pressure on commercially important species. Evidence from stock assessment studies suggests that many fish stocks along the west coast are either fully exploited or overexploited, raising concerns about long-term sustainability (CMFRI, 2018; FAO, 2022).

Illegal, unreported, and unregulated (IUU) fishing has emerged as a major challenge undermining marine fisheries management in India. Literature indicates that illegal fishing on the west coast manifests in multiple forms, including fishing during monsoon fishing bans, use of prohibited gear such as small-mesh nets, operation of unregistered or unauthorized vessels, and encroachment into nearshore waters reserved for artisanal fishers (Bavinck et al., 2018). These practices not only violate existing fisheries regulations but also intensify ecological stress by targeting juvenile fish and damaging benthic habitats. Studies emphasize that such activities reduce stock resilience and compromise conservation initiatives aimed at sustaining marine biodiversity.

Socio-economic dimensions of illegal fishing have been widely discussed in fisheries governance literature. Research by Nayak and Berkes (2014) highlights that competition between mechanized and small-scale fishers has intensified along the west coast, often resulting in conflicts over fishing space and resources. Small-scale fishers are disproportionately affected by illegal practices, as they depend heavily on nearshore resources for daily subsistence and income. Conflicts arising from illegal fishing have implications beyond economics, affecting community cohesion, traditional rights, and livelihood security. Scholars argue that inequitable access to resources and weak participation of traditional fishers in decision-making processes exacerbate compliance issues.

Enforcement and governance challenges constitute another major theme in the literature. Multiple studies point to limited monitoring, control, and surveillance capacity as a key reason for the persistence of illegal fishing in Indian waters (Sathyapalan et al., 2011; FAO, 2022). Jurisdictional overlaps between central and state authorities, inadequate manpower, and insufficient use of modern surveillance technologies constrain effective implementation of fisheries regulations. Moreover, penalties for violations are often perceived as weak, reducing their deterrent effect. Scholars increasingly advocate for co-management approaches, emphasizing stakeholder participation, community-based monitoring, and integration of traditional knowledge with formal regulatory systems.

Overall, the existing literature underscores that illegal fishing on India's west coast is not merely a regulatory problem but a complex issue rooted in ecological stress, technological change, socio-economic inequalities, and governance limitations. While several studies have examined individual aspects of overfishing and fisheries management, there remains a need for integrated analyses that link illegal fishing practices with their ecological, economic, and social impacts. This study builds on the existing body of knowledge by providing a focused examination of illegal fishing on the west coast and by proposing policy-oriented solutions aimed at strengthening sustainable fisheries governance.

Research Methodology

This study adopts a mixed-methods research design that combines qualitative and quantitative approaches. The analysis relies primarily on secondary data collected from official publications of state fisheries departments, the Department of Fisheries (Government of India), and enforcement agencies such as the Indian Coast Guard.

Data sources include vessel registration records, seizure reports, and documentation related to illegal gear usage and zone violations. In addition, media reports and policy documents were reviewed to identify recurring trends, enforcement challenges, and regional hotspots of illegal fishing.

To supplement secondary data, limited consultations with fisheries officials, cooperative leaders, and subject-matter experts were undertaken to gain insights into practical enforcement constraints and governance gaps. Data triangulation was employed to enhance reliability and validity by cross-verifying information from multiple sources. The analysis focuses on trends observed between 2020 and 2022 across the five west coast states.

Data Analysis and Interpretation

Secondary data analysis reveals clear spatial and temporal patterns in illegal fishing incidents along the west coast of India. States with larger mechanized fishing fleets, such as Gujarat, Maharashtra, and Kerala, consistently report higher numbers of violations. Illegal gear usage and zone encroachment emerge as the most frequently recorded offenses.

Table 1: summarizing seizure incidents and reported IUU cases across west coast states.

Year	State	Reported Seizures	Illegal Gear Cases	Zone Violations	Foreign Vessel Incidents
2020	Gujarat	42	18	12	4
2020	Maharashtra	35	10	15	0
2020	Goa	12	5	7	0
2020	Karnataka	28	14	9	1
2020	Kerala	31	16	11	2
2021	Gujarat	48	20	14	5
2021	Maharashtra	38	12	18	0
2021	Goa	15	6	9	0
2021	Karnataka	30	15	10	1
2021	Kerala	34	18	13	3
2022	Gujarat	45	19	13	6
2022	Maharashtra	40	13	20	0
2022	Goa	18	7	10	0
2022	Karnataka	33	17	11	2
2022	Kerala	37	20	15	4

Source: Compiled from secondary data obtained from State Fisheries Departments (2020–2022).

Figure 1: State-wise Comparison of Reported Illegal Fishing Seizures (2020–2022)

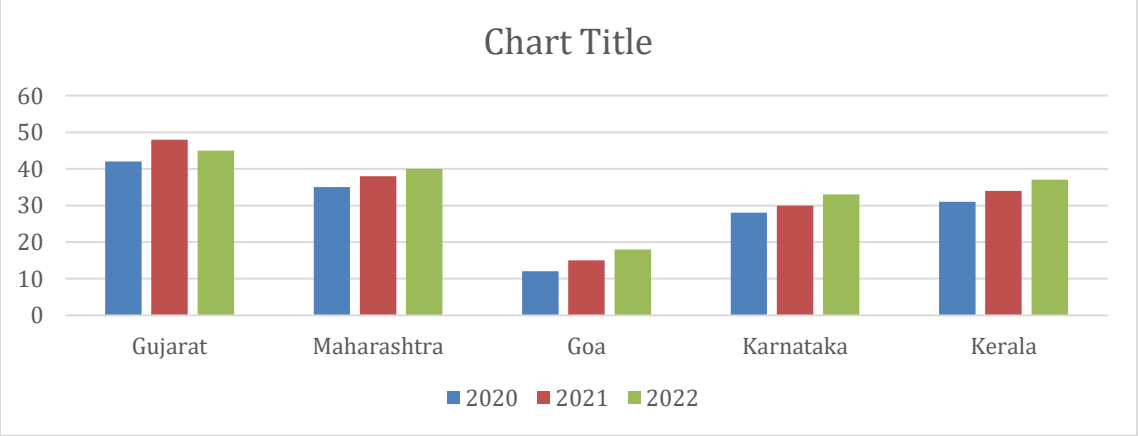

Figure 1 compares reported illegal fishing seizures across west coast states over three years. Gujarat and Kerala consistently record higher violations due to larger mechanized fishing fleets.

Figure 2: Trend of Illegal Fishing Incidents in Gujarat and Kerala (2020–2022)

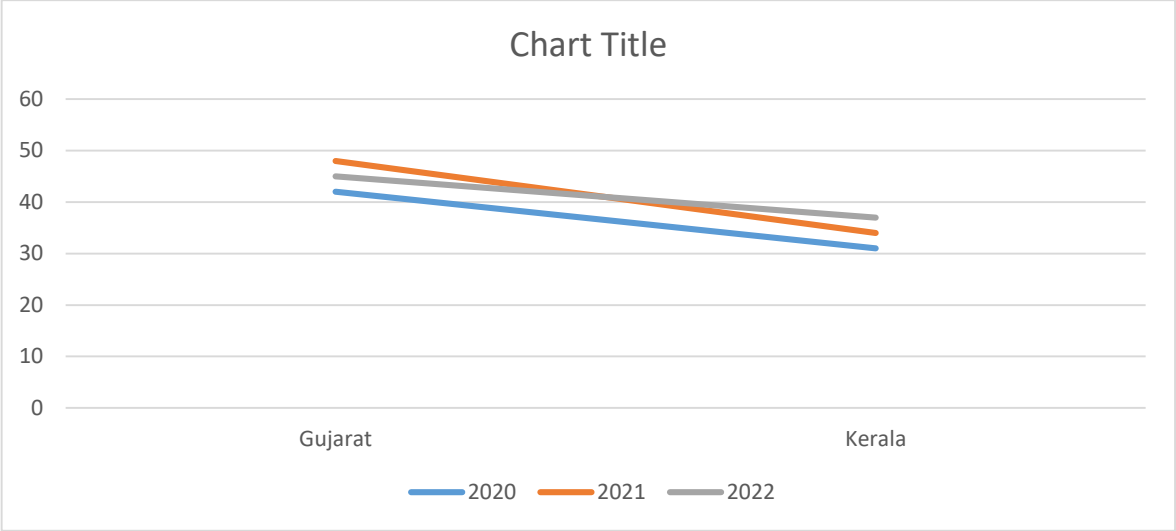

Figure 2 illustrates the temporal trend of illegal fishing incidents, showing a sustained increase over the study period.

Figure 3: Comparative Distribution of Illegal Fishing Violations by Type (2022)

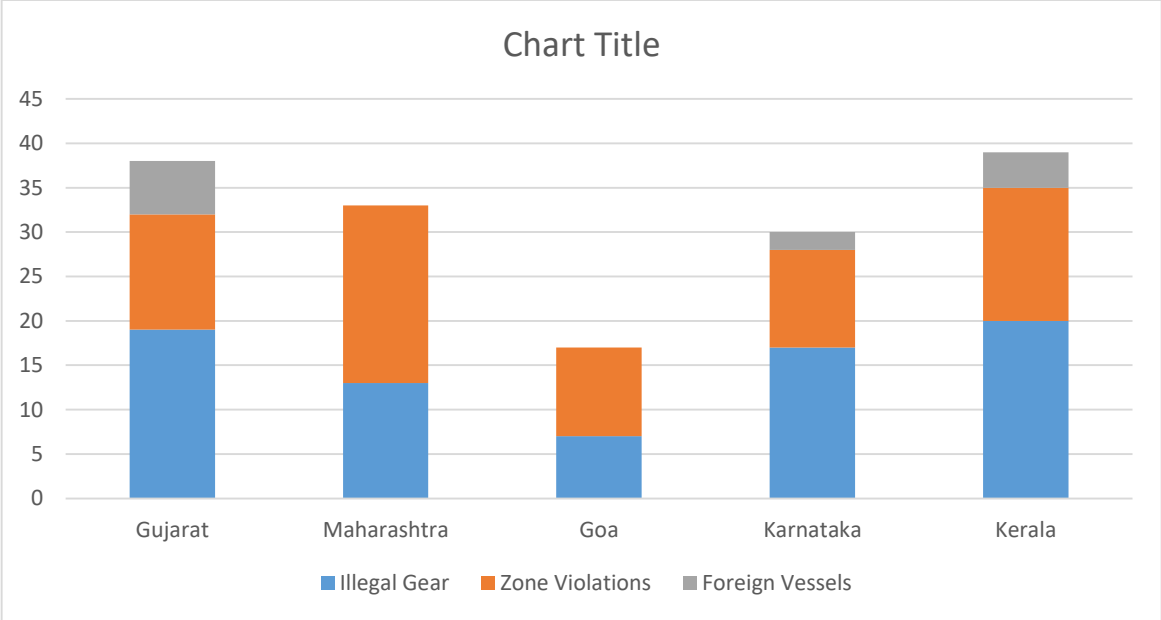

Figure 3 shows that illegal gear use and zone violations dominate across all west coast states, while foreign vessel incidents are concentrated mainly in Gujarat and Kerala.

Figure 4: Overall Distribution of Illegal Fishing Violations on the West Coast (2020–2022)

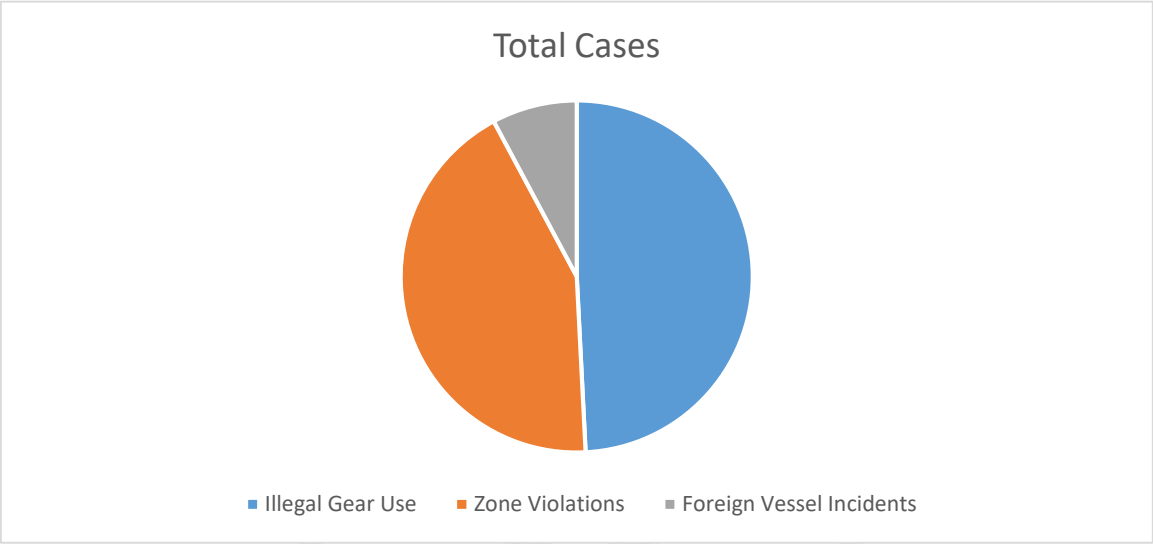

Figure 4 highlights illegal gear use as the most prevalent form of violation across the west coast

Impacts of Illegal Fishing

Illegal fishing has severe ecological consequences, including depletion of fish stocks, destruction of marine habitats, and loss of biodiversity. The capture of juvenile fish reduces stock regeneration and threatens long-term sustainability. Socio-economically, illegal fishing undermines the livelihoods of small-scale and artisanal fishers by reducing catch availability and income stability. Conflicts between fishing groups have increased, leading to social tension and legal disputes. From a governance perspective, persistent violations weaken institutional credibility and compliance with fisheries regulations.

Findings, Conclusions and Recommendations

Illegal fishing on the west coast of India is a complex and multidimensional challenge. Enforcement measures alone are insufficient unless complemented by livelihood security, community participation, and institutional reforms. Strengthening fisheries governance requires an integrated approach that balances conservation goals with socio-economic realities. As shown in Figure 1, Gujarat and Kerala exhibit consistently higher levels of illegal fishing incidents compared to other west coast states. Figure 2 illustrates the temporal trend of illegal fishing incidents, showing a sustained increase over the study period.

Key Recommendations:

1. Expansion of satellite-based vessel monitoring and mandatory tracking systems.
2. Promotion of community-based co-management and fisher participation.
3. Development of alternative livelihood opportunities during fishing bans.
4. Strengthening legal penalties and judicial processes for repeat offenders.
5. Improved coordination among fisheries departments, Coast Guard, and local authorities.
6. Awareness and conservation education programs for fishing communities.

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