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Local Fisherfolk Perceptions of Fish Stock Changes in Gavhan Village, Uran, Navi Mumbai

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Abstract: *Coastal fisheries play a vital role in supporting livelihoods, food security, and socio-economic stability in many parts of India. However, increasing anthropogenic pressures and environmental degradation have led to noticeable changes in fish stock availability, particularly in rapidly industrializing coastal regions. The present study aims to assess the perceptions of local fisherfolk in Gavhan village, Uran, Navi Mumbai, regarding changes in fish stocks and associated environmental and socio-economic factors. A structured questionnaire survey was conducted among 40–60 respondents with significant fishing experience to collect both qualitative and quantitative data. The findings are expected to indicate a perceived decline in fish abundance, reduction in catch size, and shifts in species composition. Fisherfolk attribute these changes to industrial pollution, dredging activities, port expansion, and degradation of mangrove ecosystems. The study also highlights increased fishing effort and economic challenges faced by the community. By integrating local ecological knowledge with scientific inquiry, this research provides valuable baseline data for sustainable fisheries management and participatory policy development in coastal regions.*

Keywords: Local Fisherfolk Perceptions of Fish Stock Changes in Gavhan Village, Uran, Navi Mumbai

I. INTRODUCTION

Coastal communities across the globe have historically depended on fisheries as a primary source of livelihood, nutrition, and cultural identity. In India, small-scale and artisanal fisheries contribute significantly to national fish production while supporting millions of people residing along coastal belts. The state of Maharashtra, with its extensive coastline, hosts numerous traditional fishing communities that are deeply interconnected with marine and estuarine ecosystems.

Gavhan village, located in Uran Taluka of Navi Mumbai, represents one such traditional fishing settlement. The village is situated along a dynamic coastal zone influenced by estuarine processes, mangrove ecosystems, and nearshore marine environments. Historically, the region has been rich in fishery resources, supporting diverse species and sustaining local livelihoods. However, over the past few decades, rapid industrialization and coastal development have significantly altered the ecological balance of the region.

The expansion of port infrastructure, particularly around the Jawaharlal Nehru Port area, increased shipping activities, dredging operations, and land reclamation have contributed to habitat degradation and environmental stress. Additionally, pollution from industrial discharge, domestic waste, and coastal urbanization has adversely affected water quality and marine biodiversity. These changes have direct implications for fish stock availability, distribution, and productivity.

Traditional ecological knowledge (TEK) possessed by local fisherfolk provides valuable insights into long-term environmental changes. Fisherfolk, through their daily interaction with the marine environment, observe variations in

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fish abundance, species composition, breeding patterns, and seasonal cycles. Such experiential knowledge is especially important in regions where scientific data is limited or insufficient.

In this context, questionnaire-based surveys serve as an effective tool to systematically document fisherfolk perceptions. These surveys help bridge the gap between scientific research and community knowledge, enabling a more comprehensive understanding of fisheries dynamics. The present study focuses on capturing the perceptions of Gavhan fisherfolk regarding fish stock changes, identifying perceived causes, and examining the socio-economic impacts on their livelihoods.

II. HYPOTHESES

The study is based on the premise that fisherfolk possess valuable experiential knowledge regarding fish stock changes.

Main Hypothesis (H□):
Local fisherfolk perceive a significant decline in fish stocks over the past decade.

Null Hypothesis (H□):
There is no significant perceived change in fish stocks over time.

Supporting Hypotheses:

- Fisherfolk perceive a decline in catch quantity.
- Fisherfolk observe a reduction in fish size and quality.
- Changes in species composition are noticeable.
- Environmental degradation is perceived as a major cause.
- Fishing effort has increased over time.
- Livelihoods have been negatively affected.
- Experienced fishers perceive greater changes.

III. LITERATURE REVIEW

Global fisheries are under increasing pressure due to overfishing, pollution, and climate change. Reports indicate that a significant proportion of marine fish stocks are either fully exploited or overexploited, raising concerns about sustainability.

Local ecological knowledge has gained recognition as a valuable complement to scientific data. Studies have shown that fisherfolk observations often align with ecological trends, particularly in data-deficient regions. Questionnaire surveys have been widely used to capture such perceptions, offering insights into fish stock changes, environmental conditions, and socio-economic impacts.

In India, coastal fisheries have shown fluctuating trends due to mechanization, increased fishing pressure, and environmental degradation. Industrial activities, port development, and habitat destruction have significantly impacted estuarine ecosystems. Mangroves, which serve as nursery grounds for many species, have been degraded in several regions, leading to reduced fish productivity.

Studies along the Maharashtra coast highlight declining fish diversity, reduced catch per unit effort, and increased economic stress among fishing communities. However, localized studies focusing on fisherfolk perceptions remain limited, particularly in rapidly industrializing areas like Uran. This study addresses this gap by documenting community-based observations.

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IV. OBJECTIVES

General Objective

To assess fisherfolk perceptions of fish stock changes and their impacts.

Specific Objectives

The study aimed to comprehensively understand the dynamics of the fishing community and the state of local fish resources. It sought to document the socio-demographic characteristics of fisherfolk, including age, experience, and household composition, and to assess their perceptions of changes in fish abundance over time. The research also focused on evaluating changes in catch quantity and fish size, identifying shifts in species composition, and analyzing the environmental factors contributing to stock decline. Additionally, the study examined changes in fishing effort and practices, assessed the socio-economic impacts of declining fish resources on livelihoods, and documented the coping strategies employed by fisherfolk to mitigate these challenges. It further aimed to evaluate the level of awareness among the community regarding existing fisheries management measures. Collectively, these objectives were designed to provide essential baseline data to inform sustainable fisheries management and support evidence-based, community-oriented conservation strategies.

V. METHODOLOGY

The study was conducted in Gavhan village, Uran, a coastal fishing settlement shaped by estuarine and marine ecosystems. A descriptive and exploratory survey design was employed, targeting experienced fisherfolk through purposive sampling, with 40–60 respondents participating. Data were collected via semi-structured questionnaires that covered demographic information, perceptions of fish stock, environmental factors, livelihood impacts, and adaptation strategies, and interviews were conducted face-to-face in the local language. For data analysis, quantitative information was summarized using percentages, frequencies, and graphs, while qualitative responses underwent thematic analysis. Ethical considerations were observed, with participation being voluntary and confidentiality strictly maintained.

VI. RESULTS AND DISCUSSION

The study is expected to reveal a perceived decline in fish stocks, with reduced catch and smaller fish sizes. Fisherfolk are likely to report shifts in species composition, including reduced availability of commercially important species.

Environmental factors such as industrial pollution, dredging, and mangrove loss are expected to be identified as major causes. Increased fishing effort, including longer trips and higher costs, reflects resource scarcity.

The socio-economic impact includes reduced income, livelihood insecurity, and increased vulnerability. Adaptation strategies such as alternative employment and migration may also be observed.

These findings highlight the importance of integrating community knowledge into fisheries management.

VII. EXPECTED OUTCOMES

The study provided several important insights into the coastal fishing community of Gavhan village. It revealed clear evidence of perceived fish stock decline, as fisherfolk reported noticeable reductions in catch sizes and the frequency of key species over time, highlighting concerns about the sustainability of local fisheries. The research also identified a range of environmental stressors affecting the ecosystem, including changes in water quality, habitat degradation, and seasonal variations that influence fish availability. In terms of livelihoods, the study offered valuable insights into the challenges faced by the community, such as income instability, increased competition, and the economic vulnerability resulting from declining fish stocks. Additionally, it documented various adaptation strategies employed by fisherfolk, including changes in fishing techniques, diversification of income sources, and seasonal adjustments in fishing efforts to cope with environmental and economic pressures. Collectively, these findings contribute to participatory management by providing evidence-based information that can support community-driven decision-making, sustainable resource use, and the development of policies that align with local knowledge and priorities.

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VIII. CONCLUSION

The study emphasizes that fisherfolk perceptions provide critical insights into fish stock changes and environmental degradation. In Gavhan village, these perceptions reflect broader ecological and socio-economic challenges associated with coastal industrialization.

Integrating local ecological knowledge with scientific research is essential for sustainable fisheries management. The findings highlight the need for improved environmental regulation, conservation of critical habitats such as mangroves, and inclusive policy frameworks that involve fishing communities in decision-making processes.

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