

A cross-sectional study of health, hygiene and access to government and co-operative fisheries facilities of riparian fishermen community of the River Ganga in Bhagalpur district, Bihar, India

Aryan Raj*, Bharti Kumari & Dileep Kumar

Department of Zoology, Patna University, Patna, Bihar, India

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ABSTRACT

The Riverine Fishermen communities along the Ganga basin remain among the most economically marginalised occupational groups in Bihar. Yet, their Hygienic conditions and health profile are rarely documented with primary field data. This study presents a cross-sectional survey of 100 fisherman households along several ghats of Bhagalpur, District, Bihar, conducted during March- April 2026, examining sanitation and health status, access to basic amenities, and availability of government fisheries welfare support. Results show that 80 % of the respondents reported skin rashes as the most common ailment, no household had government access or paid toilets, and only 11% could access free medicine or a nearby Primary Health Centre. While 95% of households held a ration card, piped water reached only 75% of homes and monthly incomes for the majority remained below 10,000. The majority of respondents operated Self-owned country boats, 73% were indebted to the informer moneylenders (Mahajan's). Strikingly, very few respondent had received assistance from COFFED (a co-operative society that is involved in the welfare of fishermen communities in Bihar & Jharkhand), the Department of Fisheries, India, or any NGO & all 100 households expressed a desire for skill-based training. The survey revealed that the majority of Fishermen had limited knowledge of the different types of fishing nets and fishing gear they were using. Their selection of gears was largely based on traditional practices and immediate economic needs rather than awareness of sustainable fishing principles. A major concern observed during the survey was the widespread use of fine mesh nets (mosquito nets) for fishing. The indiscriminate use of these nets results in the capture of fish fry and fingerlings before they reach maturity. These findings indicate a persistent gap between welfare scheme design and last-mile delivery, and call for targeted intervention through credit facilitation, health outreach, and co-operative strengthening among Ganga riparian fishing communities.

Key Words - Riparian fishermen, Health & Sanitation, Types of fishing gears, Fishing crafts, Co-operative societies, Bhagalpur, Bihar.

***Corresponding author :** aryan07wiley@gmail.com

INTRODUCTION

Fishing has been an age-old and crucial livelihood activity of people living in the riverine belts of Bihar.

Especially in areas like Bhagalpur and Sultan Ganj, the existence of the Ganga River and its associated ecosystem support a vast section of the population

by assuring their livelihood. All the social, cultural and economic aspects of the people's life revolve around the river, from festivals, wedding ceremonies, to even funerals. Bihar is well endowed with a large number of inland waters, viz., rivers, reservoirs, ponds, tanks and floodplain wetlands, and has a large share in India's inland fisheries production, which in itself accounts for the highest proportion of the state's fish production. In Bhagalpur district, the Ganga River supports a traditional fishing economy wherein various fishing communities like Mallah, Sahni, Nishad, Bind, Kevat & Manjhi- who belong to the scheduled and most backwards class- are dependent on the Ganga River for their livelihood. Mallahs are in the region of Kahalgaon and were mostly found fishing in the Ganga. Nishad and Bind were quite common in Naugachhia. Gorhi (Mahaldar) was found in the Barari area of Bhagalpur, and some Bengali families from the refugee colony (Karna Nagar) and Hanuman ghat-Barari were also found to be among the fish vending group. But the largest chunk of surveyed vendors belongs to Sultan Ganj. These riverine fishing families, despite being nutritionally and ecologically significant, are victims of poverty, indebted to usury, have poor sanitation and negligible formal credit or institutional support. Existing literature is primarily focused on the coastal marine fisheries (Tamil Nadu, Andhra Pradesh, Kerala), but the riparian and inland fishing communities in the Gangetic belt of Bihar have remained neglected so far. The present research will attempt to cover this gap with field data from Bhagalpur, which will provide a basis for evidence-based policy-making.

RESEARCH GAP

A macro-level dataset for the middle Ganga has been developed by ICAR-CIFRI and COFFED. The ghat-level status data is limited, and it is needed as there is enormous spatial variability at the local level, which causes inequity in the allocation of welfare schemes. So, a micro-level study has been designed by collecting stratified data sets at the household level from multiple sites along the Ganges River at Sultan Ganj, Bhagalpur, Bihar.

OBJECTIVES

To assess health status and occupational morbidity patterns in fishermen's households. To catalogue the types of fishing nets and gears used by fishermen in the study area. To provide a package of policy recommendations based on evidence for the socio-economic development of fishermen and ecological conservation.

STUDY DESIGN AND AREA

The study encompasses four principal geographic zones within the Bhagalpur district:

The classification of the ghats described here has been compiled from records maintained by the BMC, articles in Dainik Jagran, and various other sources related to tourism in Bhagalpur. All these sources use their own classifications of ghats and include counts ranging from 40 to 50; there is no standard list of all the ghats.

Major Ganga River Ghats (Central Bhagalpur, BMC-managed)

1. Barari Pul Ghat / Barari Ghat
2. BCE Ghat (Bhagalpur College of Engineering)
3. Budha Nath Ghat
4. Hanuman Ghat (Ward 28)
5. Sanyasi Ghat
6. Kuppaghat (Ashram Front)
7. Smashan Ghat, Barari (cremation ghat)
8. Babupur Ganga Ghat (Deekshapuram)

Champa & Jamuniya River Ghats (Western/Suburb Zones)

9. Champanagar Ghat
10. Nath Nagar Ghat
11. Mansur Ganj Ghat
12. Jamuniya Riverfront Ghats (multiple smaller ward-level points, unnamed individually)

Registered Urban Ponds/Talabs (Ward-level, used when the main Ganga current is unsafe)

13. Lajpat Park Talab Ghat
14. Sandis Compound Pond Ghat
15. Bhikanpur Pokhar Ghat
16. Manik Sarkar Ghat (Pond Area)

17. Adampur Pokhar Ghat

18. Ishak Chak Talab Ghat

Outside BMC jurisdiction (separate Nagar Parishad/Sub-Division control)

19. Namami Gange Ghat / Ajgaivinath Temple Ghat, Sultan Ganj

20. Kahalgaon Ganga Ghat (near Vikram Shila Dolphin Sanctuary)

21. Mahadevapura Ghat (Raghopur)

22. Jahaj Ghat (Bakhtiyarpur, on Bhagalpur-Patna Road)

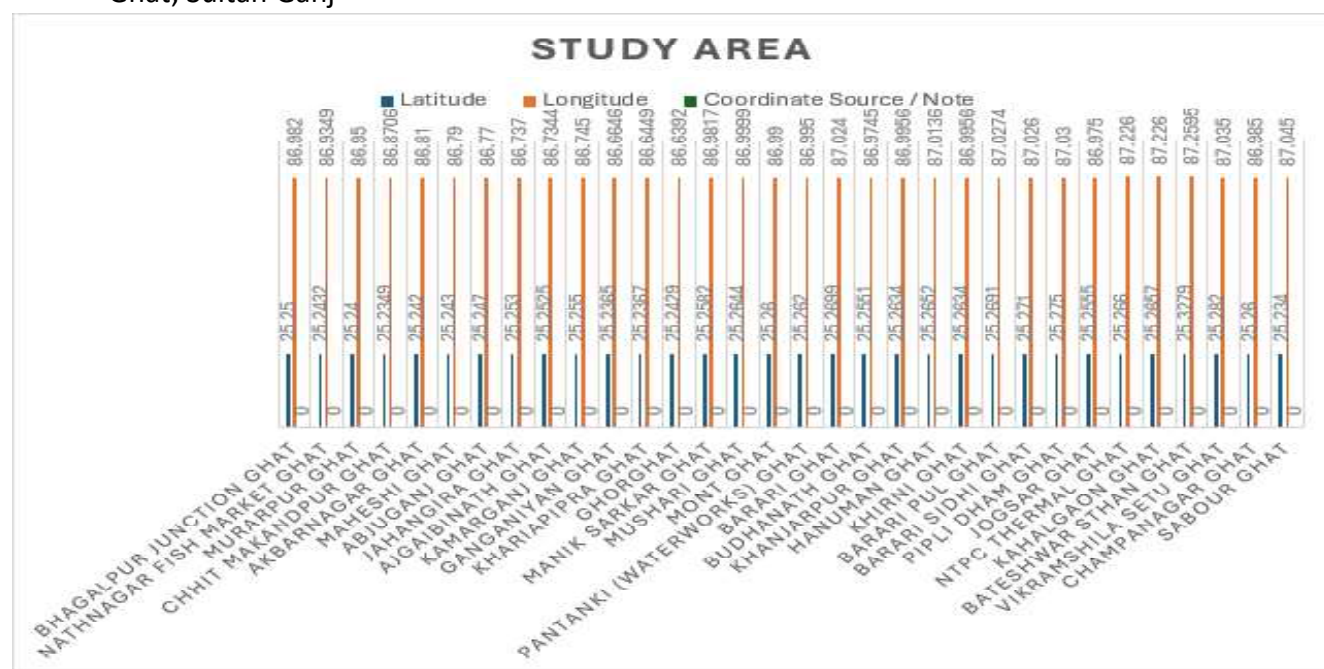


Figure-1: Study Area; List of The Ghats

Sampling and Data Collection

Primary data was collected from respondents with the use of a structured interview schedule developed for this study and pilot tested before use of its final copy for data collection in the field. The interview schedule was divided into the following themes: Module A - Health Status: incidence of anaemia, malaria, filaria, hypertension, cardiac diseases, respiratory diseases, diabetes, viral fever, hepatitis, TB, wounds and other occupational diseases. Module B - Access to welfare Schemes: Pradhan Mantri Awas Yojana (PMAY), Pradhan Mantri Matsya Sampada Yojana (PMMSY), Kisan Credit Card (KCC), gas subsidy, access to PHC, collaboration with the Fisheries Dept and cooperatives. As many as 100 fishermen respondents covering the six ghats were interviewed by personal contact (in-person interview) method using Hindi/Bhojpuri. Verbal consent for a personal interview was taken from

each respondent, and data were noted down in a structured proforma, which was later digitised. Several data were collected from COFFED regarding Bhagalpur district to know its intervention.

Data Analysis

The results were assembled into a master file, one per module. Data was analysed by descriptive statistics, with Frequencies and percentages being generated for the nominal/categorical variables (e.g., disease prevalence, type of toilet, house type, indebtedness), using MS-Excel. Continuous / range variables (e.g., Fishing facilities availed by the government) are summarised as reported ranges. Data is anonymised and not individually identifying.

RESULTS

Sanitation and Welfare Access

Describes sanitation and health status among surveyed households. 62% of households reported that they had their own toilet, and 5% used the

government, & 1% private communal toilet. 32% still practised open field defecation. Most 70% of households reported that they cleaned and managed their environment regularly, and about 7% had taken measures against mosquitoes in the surveyed area.

Basic amenities:

Type of house - the division between pucca (concrete) 51% and kachcha (mud, thatch) - 49% was roughly even. Almost all the households had an electricity supply 81% but piped water connection was available only to 28% households, while the others used a hand pump/ river. The coverage of ration card was 95%, and for almost all these 95% households, both the items wheat and rice are available through the Public Distribution System. LPG connection is available in 60% households, and most have a mobile phone connection, 90%. Majority 60% of the households, possess a bank account. Out of all the households, 80% had school-going children.

Health status

Skin rashes were overwhelmingly the most commonly reported ailment (71%), followed by fever and body ache (10%) and eye irritation (9%) - a pattern consistent with prolonged water contact and poor sanitation. Access to free medicines and to a nearby Primary Health Centre (PHC) was each limited to only 6% of respondents, and this access was concentrated among households situated closest to a functioning PHC.

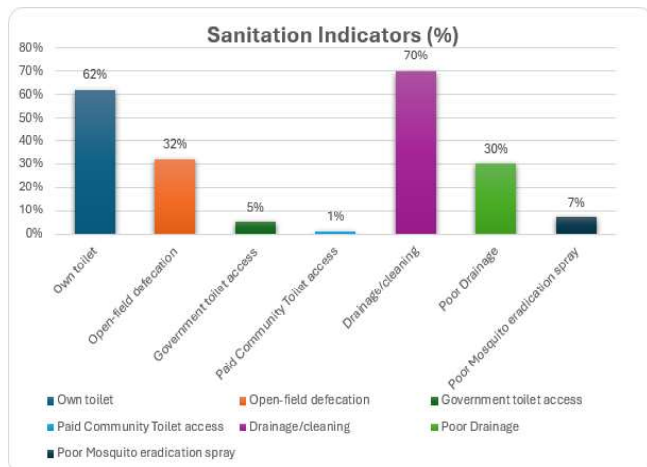


Figure-2: Sanitation and Welfare Access

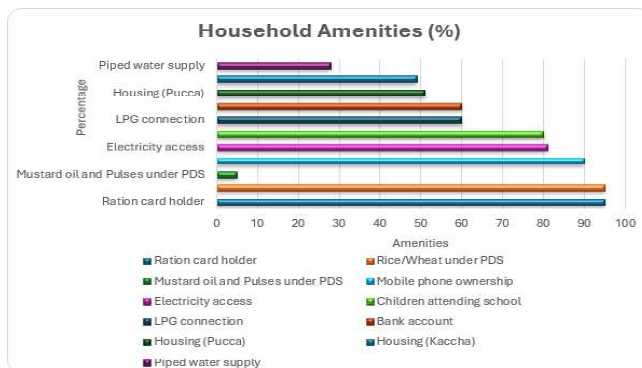


Figure-3: Basic Amenities n=100

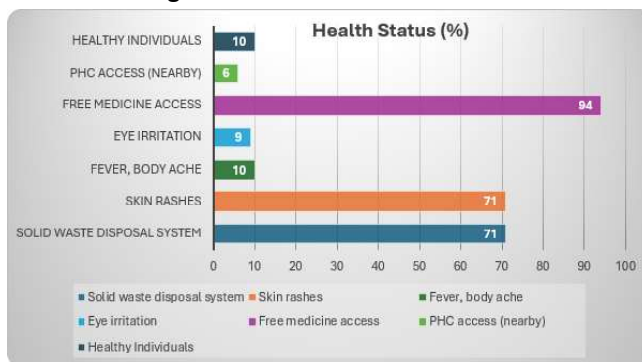


Figure-4: Health status (n=100)

भागलपुर जिला — प्रखण्ड मत्स्यजीवी सहयोग समिति लि° मंत्री एवं अध्यक्षों की सूची (FCS-435 से FCS-451)

FCS-435 — जगदीशपुर मंत्री: श्री रूपेश कुमार कोइली, खोइला, 812005, मो: 9931541734 अध्यक्ष: श्री धर्मेन्द्र कुमार योगिंदिर, जगदीशपुर, 812005, मो: 77640444943	FCS-436 — सबौर मंत्री: श्री कैलाश निषाद (पिता: स्व° जगेश्वर मंडल) लैलाख, ममलखा, 813210, मो: 7545922303 अध्यक्ष: खगदरेब मंडल (पिता: स्व° रामदास मंडल) लैलाख, ममलखा, 813210, मो: 9576017585
FCS-437 — नाथनगर मंत्री: श्रीमती रीना देवी तुलसी मिश्र लेन, चम्पानगर, नाथनगर, 812006, मो: 9473040539 अध्यक्ष: श्री चरित्र महलदार चम्पानगर, नाथनगर, 812006, मो: 8969275016, 9031494865	FCS-438 — साहकुण्ड मंत्री: श्री दशरथ प्रसाद दयाल बैलाथ, हरपुर, थाना: साहकुण्ड, 813108, मो: 9771533469 अध्यक्ष: श्री सिंगेश्वर सिंह दामोदरपुर, अम्बा, थाना: साहकुण्ड, 813108, मो: 9572305888
FCS-439 — सुल्तानगंज मंत्री: श्री अरुण बिन्द अक्षिनाथक, नोनसर, थाना: सुल्तानगंज, 813213, मो: 9065130067 अध्यक्ष: श्री चतन बिन्द दिलगौरी, सुल्तानगंज, 812513, मो: 8084132177	FCS-440 — गौराडीह मंत्री: श्री अमीर महलदार बागमारा, अमरपुर, थाना: लोधीपुर, 813210, मो: 9142715041, 9234144329 अध्यक्ष: श्री अनिल महलदार विष्णुपुर जिछी, विष्णुपुर, थाना: लोधीपुर, 813210, मो: 8804285333
FCS-441 — विष्णुपुर जिच्छ मंत्री: — अध्यक्ष: —	FCS-442 — कहलगोबि मंत्री: श्री गिरिन्द्र महलदार थाना: रसलपुर (एकचारी), 813204, मो: 9955944432 अध्यक्ष: श्री दशरथ सहनी कागजीटोला, कहलगोबि, 813203, मो: 9576625433
FCS-443 — पीरपैती मंत्री: श्री अनुराग कुमार 813202, मो: 7766086967 अध्यक्ष: श्री निखो निषाद श्रीमलपुर इज्जुलगर, मोलटोला, थाना: पीरपैती, 813202, मो: 6205864369	FCS-444 — सनहौला मंत्री: श्री समशेर कुमार सिंह अवनपुर, सनहौला, 812001, मो: 9934873606 अध्यक्ष: श्री सुरेश मंडल अवनपुर, सनहौला, 812001, मो: 9334787645, 7250946351
FCS-445 — नवगछिया मंत्री: श्री नरेश सिंह (पिता: फुचो सिंह) मक्रवाताकिया, नवगछिया, थाना: नवगछिया, 853204, मो: 7634986561 अध्यक्ष: श्रीमति मारा देवी अमघटा, श्रीपुर, नवगछिया, 853204, मो: 9801647717	FCS-446 — खरीक मंत्री: श्री अभिषेक सहनी (पिता: दिनेश सहनी) बहतारा राधोपुर, राधोपुर, 853202, मो: 9939068782 अध्यक्ष: श्री विपिन सहनी बहतारा राधोपुर, राधोपुर, 853202, मो: 9931241331
FCS-447 — विहपुर समिति भंग है।	FCS-448 — गोपालपुर मंत्री: श्री विकास सिंह गुडियारी, सैदपुर, थाना: गोपालपुर, 853205, मो: 9661727286, 9709928892, 9661727285 अध्यक्ष: श्री गुरुदेव सिंह बुधकक लिहटगा करारी, गोपालपुर, 853205, मो: 7545832596
FCS-449 — रंगाराचक मंत्री: श्री रजित कुमार सिंह सहौडा, रंगाराचक, 853204, मो: 6200591992 अध्यक्ष: श्री अखिलेश कुमार निषाद सुधआ, रंगाराचक, 853204, मो: 9934452317	FCS-450 — इस्माइलपुर मंत्री: श्री विजय सिंह मथपटोला, जेतगोबिन्द, थाना: इस्माइलपुर, 853205, मो: 8521068105 अध्यक्ष: श्री गुलाब सिंह सुदन टोला प्रवता, जेतगोबिन्द, थाना: इस्माइलपुर, 853205, मो: 9570558310
FCS-451 — नारायणपुर मंत्री: श्री गैध सिंह नारायणपुर, मो: 9835006755 अध्यक्ष: श्री निरंजन कुमार सिंह नारायणपुर	

Figure-5: Fish farmers of Bhagalpur associated with COFFED

APPENDIX A: FIELD SURVEY QUESTIONNAIRE

The following presents the structured interview schedule administered to the fishermen households in the Bhagalpur-Sultan Ganj study area. The questionnaire was administered in Hindi/Bhojpuri by trained field investigators.

SURVEY IDENTIFICATION

Survey ID: ____ | Date: ____ | Ghat Name: ____ |
GPS Coordinates: ____

MODULE A: DEMOGRAPHIC INFORMATION

- A1. Name of respondent:
- A2. Age (completed years):
- A3. Sex: Male / Female
- A4. Caste/Sub-caste:
- A5. Highest level of education completed: (a) No formal schooling, (b) Literate only, (c) Primary, (d) Upper Primary, (e) Matric, (f) Higher Secondary, (g) Graduate or above
- A6. Total family size: ____ (Adults: ____ | Children below 18: ____)
- A7. Marital status: Married / Unmarried / Widowed / Divorced
- A8. Number of earning members in household:

B: HEALTH STATUS

- B1. Has any household member suffered from the following in the past 12 months? (Please indicate Y/N for each)
Malaria ____ | Filaria ____ | Anaemia ____ |
Hypertension ____ | Cardiac condition ____ |
Respiratory ailment ____ | Diabetes ____ |
Viral fever ____ | Hepatitis ____ |
Tuberculosis ____ | Skin conditions ____ | Eye infection ____ | Wound infection ____ | Other ____
- B2. Primary healthcare source: (a) Govt. PHC (b) Govt. hospital (c) Private doctor (d) Traditional/folk healer (e) No treatment
- B3. Do you receive free medicines from PHC? Yes / No / Sometimes

MODULE C: WELFARE SCHEME AWARENESS AND ACCESS

- C1. Are you aware of RKVY (Rashtriya Krishi Vikas Yojana)? Yes / No. Have you received a benefit? Yes / No
- C2. Are you a member of any fisheries cooperative or Self-Help Group? Yes / No. Name:
- C3. Has any fisheries extension officer visited your area in the last year? Yes / No
- C4. Has any NGO worked in your community? Yes / No. Name:
- C5. Have you received any training in improved fishing or aquaculture? Yes / No. Details:

DISCUSSION

The study has provided valuable data on the health, sanitation and accessing of government Fisheries support in the riparian fishing communities in the Bhagalpur-Sultan Ganj stretch of the river Ganga. Though there are various national welfare programs, but its benefit has not percolated to a greater extent among surveyed fishing households. Poor sanitation was a great public health concern, where most of the surveyed households owned toilet facilities (62%), yet almost one-third practised open defecation, therefore exposing them to contaminated water and various infectious diseases. Poor drainage system, lack of adequate mosquito control measures and scarcity of safe drinking water availability created unhygienic conditions. High incidences of skin rashes (71%), Fever, Body ache, and eye irritation may possibly be due to exposure to polluted river water and unsanitary conditions as a direct effect of occupational hazard. Similar findings were reported in inland fishermen of other parts of India, where the occupational exposure to contaminated riverine waters has significantly affected their overall health condition. The level of access to health care services has been very inadequate among fishing communities, where only 6 % of fishermen have access to nearby PHC and free medicine, indicating poor availability and access to the health care system. Limited access to health services might lead to late and inappropriate diagnosis and treatment, therefore reducing the

productivity and livelihood vulnerability among fishermen.

Among the household amenities, there has been a mixed success, while the coverage of electricity (81%), Ration cards (95%), mobile phone (90%), whereas coverage of pipe water supply (28%), LPG connections (60%), Banking facilities (60%) has still been a concern. The findings suggest that welfare programs related to Food Security schemes have become widely covered in the scope of service, while access to other basic amenities has not reached its expected level. Though the prime occupation of the majority was fishing, government support from the fisheries-related agencies was almost nil. The traditional method of fishing has mostly been practised with minimal access to knowledge on sustainable fishing methods and fishing gear. Wide use of mosquito nets of fine mesh to catch fish is observed, and this poses a serious threat to small juvenile fish and thus to the sustainability of fisheries. There has been no attempt to impart knowledge on improved fishing methods and technologies, improved methods for storage, transport and value addition in the harvested fish through any training programs. Clearly, the finding revealed that a wide disparity exists in the implementation of fisheries welfare policies implementation in grass root level. Providing efficient fisheries extension service, healthcare facilities, sanitation facilities, banking and credit services and capacity building training programmes for fishermen can substantially improve their socio-economic conditions and inland fisheries management in Bihar.

CONCLUSION

Health, sanitation, infrastructure and institutional challenges. The study indicates that while being an important part of inland fisheries, riparian fishing communities of the Bhagalpur-Sultan Ganj stretch of the Ganga River are beset with problems concerning health, sanitation, infrastructure and institutions. Though food security programmes like PDS have considerable coverage, accessibility to safe drinking water, medical facilities, banking institutions, fisheries extension services and

technical training facilities has been inadequate. The high incidence of occupation-specific ailments associated with poor sanitation and unawareness about the sustainable fishing practices shows the need for integrated interventions that focus on health camps, access to safe drinking water and sanitation facilities, strengthened services of Primary Health Centre, easy access to institutional finance, promotion of fisherfolk cooperatives and their participation in the schemes of the Government Fisheries Department. Furthermore, capacity-building initiatives on sustainable fishing gear technology, resource conservation, post-harvest activities, and alternative sources of livelihood, which would decrease the dependency of fisherfolk on traditional practices, should be undertaken on a larger scale for sustainable livelihood and economic well-being. Data generated from the present study should be useful as a baseline for intervention planners, fisheries planners and other development organisations in the region for formulating targeted schemes for the betterment of fisherfolk and for the management of Ganga fisheries in Bihar. Future studies with a larger sample size covering different parts of the river throughout the year with proper seasonal sampling, may also be fruitful for understanding the situation of riparian fishing communities with better clarity.

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