

The humane side of data: When numbers don't speak for themselves

Ritisnata Nayak

*Fish Genetics and Biotechnology Division, ICAR-Central Institute of Fisheries Education, Versova, Mumbai, India-400061.
Email: ritisnatanayak1@gmail.com*

The prologue to my story

I grew up in Balasore, a small coastal town on Odisha's eastern coast, where life revolves around the Bay of Bengal. This shaped an early fascination with fisheries and the communities that depend on it. This passion guided my choice of study and my decision during the ICAR All India entrance and counselling process.

Wanting maximum practical exposure, I chose the College of Fisheries Science in Veraval, Gujarat. Located on the Saurashtra coast, Veraval is one of India's most prominent fisheries hubs, known for its extensive marine landings, vibrant fishing activities, and industry exposure. Moving far from home to a culturally and socially distinct coastal region was both a challenge and an opportunity, allowing me to experience fisheries beyond textbooks and regional familiarity.

During my final year, I took part in the Rural Fisheries Work Experience Programme (RFWEP), an initiative designed to bridge classroom learning with real-world fisheries scenarios. The RFWEP is part of the ICAR curriculum for the Bachelor of Fisheries Science (B.F.Sc.). It exposes students to rural fishing communities, their livelihoods, and the challenges they face, developing practical skills, improving understanding of grassroots fisheries systems, and sensitising students to the socio-economic conditions of fisherfolk.

What began as an academic pursuit rooted in curiosity would become a deeply transformative experience, reshaping my understanding of research, responsibility, and the lives behind the fisheries sector.

My professors assigned me a socio-economic survey in fishing villages on the outskirts of Veraval Harbour. The survey aimed to collect data on the socio-economic status, livelihood



patterns, and access to government schemes among small-scale fishing communities. Fishing communities in India contribute to food security and coastal economies, yet they often lack access to institutional support and new technology.

Before starting fieldwork, I approached the survey with an academic mindset, expecting structured data collection and research interactions. This article reflects on a turning point during that fieldwork, where a simple oversight transformed a routine survey into a deeply humbling learning experience, reshaping my understanding of research, responsibility, extension, and community engagement.

Sea, life, and livelihoods

Interacting with fishing communities during the survey, I began to see that grassroots fisheries were far more complex than my classroom studies had suggested. The study was conducted in and around Veraval Harbour, one

of the largest and most active marine fish landing centres on India's western coast. It is a major hub for fish landing, processing, and distribution, supporting fishermen, traders, processors, and exporters, and contributing significantly to Gujarat's marine fisheries production (CMFRI, 2020; Government of Gujarat, 2021).

As the survey extended to nearby fishing villages and landing centres - including Jaleshwar, Bhidiya, Kharakuva, Divadandi, Sutrapada, Hirakot, Kodinar, Mul Dwarka, Chorvad, Mangrol, and Patan - a clear contrast emerged. These locations represented a wide spectrum of fisheries systems, from relatively organised markets like Kharakuva and Kodinar to small-scale, village-level landing centres like Jaleshwar and Sutrapada. In many peripheral areas, infrastructure was basic, hygiene was limited, and market organisation was uneven, highlighting the gap between major harbours and smaller fishing settlements.

In villages such as Jaleshwar and Sutrapada, fisheries were predominantly small-scale and artisanal. Fishermen

relied on motorised and traditional craft for their daily livelihoods. These communities faced declining catch trends, seasonal uncertainties due to fishing bans, and infrastructural constraints. In Sutrapada and Chorvad, local fishermen's cooperatives and informal collective systems provided some organisational support, particularly for accessing fishing inputs, subsidies, and shared resources. However, their effectiveness varied across communities.

In contrast, areas like Bhidiya and Mangrol showed relatively better organisation, including active participation of women in fish marketing. In Bhidiya, the Gujarat Fisheries Central Cooperative Association Ltd. provides a more structured fisheries framework, facilitating access to cooperative services and market linkages. This also reflects Bhidiya's proximity to the Veraval industrial belt, including the GIDC area, fish processing plants, and research institutions such as the ICAR-Central Marine Fisheries Research Institute and the ICAR-Central Institute of Fisheries Technology. Such advantages improve access to infrastructure, market networks, technology, and institutional support, contributing to better organisation and economic opportunities compared to more peripheral villages.

Similarly, Mangrol showed strong development through active cooperatives such as the Shree Mahavir Machhimaar Sahakari Mandali Limited, which improve access to fishing inputs, financial support, and collective resource management. Such cooperative-driven systems enhance organisation, strengthen bargaining capacity, and improve economic resilience among fishermen. However, the variation in effectiveness across locations shows that while institutional mechanisms exist, their reach and impact remain uneven. This reinforces the need to strengthen grassroots implementation and extension support.

Despite these differences, a common thread across all locations was the heavy dependence of households on marine resources. Through these observations, it became clear that these communities faced significant socio-economic vulnerability and uncertainty. Income was largely dependent on daily catch and influenced by seasonal variability, market fluctuations, and resource availability. Limited awareness of government schemes, restricted access to education, and lack of technical knowledge further constrained their resilience. I also realised that artisanal fishermen - despite forming the backbone of the fisheries supply chain - often remain overlooked in development frameworks. This points to the urgent need for stronger extension systems and improved last-mile delivery of support.

The echo of disappointment

As part of the RFWEP, my team and I set out to survey the fishing villages on the outskirts of Veraval Harbour with a clear academic objective: to conduct a socioeconomic survey. Equipped with questionnaires, we prepared to collect structured data on livelihoods, income patterns, and access to fisheries-related schemes. Initially, the visits felt like routine field exercises, similar to what we had covered in our coursework.

However, as we began interacting with the small-scale fishermen and women, the situation unfolded very differently. The fishermen welcomed us with unexpected warmth and



seriousness. Within a short time, it became clear that some were not seeing us as students but as government officials who had come to help them. This misunderstanding, subtle at first, soon became unmistakable through their questions and expectations. They began sharing their concerns with a sense of urgency and hope.

One fisherman spoke with visible frustration about how most government benefits seemed to reach only the owners of large, mechanised boats, while small-scale fishermen like him remained overlooked: "*Ben, aa badhi sarkari yojanao to mota boat vala loko sudhi j pahochi jaay chhe... amara jeva nana machhimar sudhi to kai aavtu j nathi.*" Another described how he barely sustained his family during the annual fishing ban on the west coast, when income comes to a complete halt: "*Ban na divaso ma to aavu lage chhe ke jeevan j atki gayu chhe... kamaani bandh, pan ghar na kharcha chalu j hoy chhe.*" In another corner, a widowed fisherwoman - herself unwell - described shouldering sole responsibility for her children with little support and mounting hardship: "*Hu ekli chu ane tabiyat pan sari nathi... pan mara dikra-dikri mate roj kaam karvu pade chhe. Koi sahara nathi, pan himmat raakhu chu.*"

Their voices carried more than information; they reflected years of struggle, exclusion, and resilience. Many spoke about the lack of financial support, difficulties in accessing subsidies, and challenges in sustaining their livelihoods amid declining fish catches and rising operational costs. Some asked about schemes they had heard of but never fully understood or accessed, while others sought technical guidance to improve their fishing practices and income stability. Their expectations were deeply rooted in genuine needs and lived realities, shaped by limited access to institutional support and opportunities.

This moment marked a profound emotional turning point. I realised that despite being central to the fisheries supply chain and food security, many of these fishermen and women lacked even basic awareness of available government schemes and extension services. What struck me most was not just their lack of awareness, but their unwavering trust. They spoke openly, believing that we had the authority and ability to bring change to their lives.

Standing there, I experienced an internal conflict I had never anticipated. As a student and early career researcher, my role was limited to data collection and academic documentation. Yet, in their eyes, I represented something far greater - a source of hope and possible transformation. This gap between my actual role and their expectations left me with a deep sense of responsibility, empathy, and helplessness. In that moment, the survey ceased to be an academic exercise and became a deeply human experience that would shape my understanding of fisheries research and community engagement.

The mistakes that led to false hopes

The most significant mistake was not a technical error in data collection, but a failure to understand the human context of the survey. I had assumed that the fishermen had basic awareness of government schemes and institutional support. I also assumed that the existence of such schemes meant communities could access them. The interactions revealed a stark reality: awareness was minimal, access was fragmented, and benefits rarely reached those who needed them most.

Another mistake was treating the survey as a purely academic data-collection exercise, rather than a process of meaningful human engagement. The questionnaires, which I saw as structured information-gathering tools, unintentionally raised expectations among the fishermen. Their responses

were not just answers; they were expressions of lived struggles, aspirations, and unmet needs, which I had not fully anticipated.

A key part of this mistake was my failure to clearly introduce ourselves as students and explain the purpose and limitations of our visit. I did not explain that we were conducting an academic survey and had no authority to provide solutions or access to government benefits. Instead, I assumed the fishermen already understood what such surveys were for. This gap in communication led to a significant misinterpretation of our role. Our presence unintentionally created a sense of hope that assistance, financial support, or technical intervention would follow. In hindsight, this was deeply unsettling - our interaction, though well-intentioned, had raised expectations we could not fulfil.

There was also a clear lack of pre-field understanding of ground realities. While academically prepared, I had not adequately considered the socio-economic and cultural dynamics of the community. Most importantly, I failed to communicate clearly from the outset - who we were, what our purpose was, and what our limitations were - despite wearing our college ID cards. This lack of clarity contributed directly to the misunderstanding that we were government representatives capable of immediate intervention.

Language differences - I was a non-Gujarati student on an ICAR all-India quota seat - combined with low literacy levels, limited exposure to formal systems, and reliance on informal networks, all shaped how the fishermen perceived us. What I viewed as a routine survey interaction was, for them, a rare opportunity to voice their concerns to someone they believed could bring change.

In hindsight, the mistake was not merely procedural but conceptual: a failure to recognise that in fisheries extension and socioeconomic research, people are not just respondents, but stakeholders whose perceptions, expectations, and realities must be understood with sensitivity and responsibility.



This mistake also highlighted a deeper disconnect between academic training and field realities. While the ICAR Vth Dean's Committee curriculum had equipped us with technical tools for survey design, data collection, and analysis, it was the RFWEP fieldwork that prepared us for the ethical and emotional dimensions of engaging with vulnerable communities. I realised that a lack of reflexivity - questioning one's own assumptions, position, and impact - can lead to unintended consequences, such as raising false expectations or misrepresenting one's role. Even a simple interaction carried weight, as it influenced how the community perceived external institutions and future interventions. This experience made me recognise that responsible research in fisheries extension is not just about accuracy of data, but accountability towards the people who share their realities with us.

Analysis of the situation

The field experience showed that the challenges facing fishing communities are not merely individual hardships but reflect deeper structural issues within the fisheries governance system. A significant gap exists between policy formulation and its actual implementation at the grassroots level.

While government schemes such as the flagship Pradhan Mantri Matsya Sampada Yojana (PMMSY) aim to support fishermen through subsidies, insurance, and welfare measures, their benefits often fail to reach small-scale and artisanal fishers. This reflects weak last-mile delivery systems, where the transmission of information, resources, and services diminishes as it moves from institutions to the community level.

Several barriers compound this issue. Documentation requirements - identity proofs, registration records, and bank linkages - often become obstacles for poor small-scale fishermen who lack formal records or struggle with bureaucratic procedures. Digital illiteracy adds another layer of exclusion, especially as many schemes are now accessed through online portals and mobile applications. Language barriers also play a key role, as information is often disseminated in formats or languages not easily understood by community members, many of whom are illiterate or have only primary schooling. There is also a clear institutional disconnect, where extension systems and support agencies fail to build consistent, trust-based engagement with fishermen, limiting awareness and uptake of available benefits.

It is evident that the exclusion of these communities is not due to a lack of schemes, but to systemic inefficiencies in communication, accessibility, and implementation. Without addressing these ground-level realities, even well-designed policies remain ineffective. This underscores the urgent need for participatory, localised, and inclusive extension approaches that bridge the gap between institutions and communities, ensuring that support systems are not only available but accessible and meaningful to those they are intended to serve.

Learning outcomes and reflection

This experience was a transformative learning moment across academic, professional, and personal dimensions.



Academically, it showed that socioeconomic surveys are not merely tools for data collection but require deep contextual sensitivity. Understanding the lived realities of communities is essential to interpret data meaningfully. It also emphasised the importance of participatory approaches, where communities are treated not as passive respondents but as active stakeholders whose voices shape the research process.

From a professional perspective, the experience reinforced the importance of role clarity during fieldwork. Clearly communicating one's identity, purpose, and limitations is crucial to avoid misinterpretation and unintended consequences. It also highlighted the ethical responsibility researchers hold towards communities, especially vulnerable and marginalised ones. The situation underscored the need for interdisciplinary understanding that integrates fisheries extension, policy frameworks, rural sociology, and socio-cultural dynamics. Technical fisheries knowledge alone is not enough to address real-world challenges.

On a personal level, the experience cultivated a sense of empathy that extended beyond academic learning. Interacting with fishermen and fisherwomen facing daily uncertainties instilled a deep respect for grassroots realities. It also brought

a realisation of privilege - that as students and future professionals, we operate from a position of access and opportunity that many in these communities do not have.

A key lesson was the importance of transparent communication and managing expectations during field engagement. The realisation that data represents real human struggles fundamentally changed my perspective on research. It also clarified the extension gap - while policies and schemes may exist on paper, their reach and accessibility at ground level often remain inadequate.

In retrospect, several aspects of the fieldwork could have been handled more effectively. A pre-survey briefing to the community explaining the purpose and scope of the study would have helped set realistic expectations. Clear communication about our role as students, rather than decision-makers, was essential but overlooked. Even within the limitations of a survey, efforts could have been made to share basic awareness about available schemes and support systems. Linking fishermen to local institutions or extension agencies could have added practical value to the interaction. The focus should also have extended beyond descriptive data collection to gathering actionable insights that could contribute to meaningful interventions.

Conclusion and way forward

This field experience reshaped my understanding of what fieldwork truly means. Fieldwork is not just about data, but about people - their lives, struggles, expectations, and trust. It redefined my understanding of fisheries research and extension - from information extraction to responsibility-driven engagement with communities, where sensitivity, ethics, and impact must guide every step. What began as a routine academic exercise became a profound learning experience, showing how even unintended mistakes can become tools for growth and self-reflection. It reinforced the idea that scientific inquiry, especially in disciplines like fisheries extension and socioeconomics, must be guided by compassion, responsibility, and ethical awareness.

The student research team.

The most significant outcome was a clear shift in mindset - from data collector to responsible researcher. I learned to look beyond numbers and recognise the human realities they represent. The interactions with fishermen and fisherwomen instilled a deep respect for their resilience, hard work, and the challenges they navigate daily. This experience has had a lasting impact on how I approach research, reminding me that meaningful engagement requires sensitivity, clarity, and accountability.

At a broader level, the situation points to the need for systemic improvements. Strengthening fisheries extension systems is essential to ensure that policies and schemes effectively reach marginalised small-scale and artisanal fishermen. There is a pressing need for mobile-based and local-language awareness programmes that can bridge the communication gap. Promoting women's self-help groups and community-based support systems can further enhance resilience and inclusivity. Establishing local help centres for scheme access and improving linkages between institutions and communities can significantly improve last-mile delivery. Most importantly, bridging the gap between academia and communities is crucial to ensure that research contributes not only to knowledge generation but also to real-world impact.

This experience directly aligns with India's broader vision under initiatives such as the PMMSY, which aims to enhance fish production, improve livelihoods, and ensure inclusive growth of fisheries communities. However, the gap observed at grassroots level highlights a critical challenge: while policies are robust in design, their effectiveness depends on last-mile delivery, awareness, and accessibility. Bridging this gap is essential to achieve sustainable fisheries development, strengthen coastal livelihoods, and ensure that small-scale and artisanal fishermen are not left behind as the sector modernises.

This experience also showed me that fisheries students can play a crucial role as bridges between institutions and communities. Positioned between academic knowledge and ground realities, students have the unique ability to:

- Translate technical knowledge into locally understandable information



- Disseminate awareness about schemes and best practices
- Build trust between communities and institutions
- Identify real problems and communicate them back to policymakers

Even small actions - explaining a scheme in the local language, guiding someone on documentation, or simply listening with empathy - can create meaningful impact. When students move beyond data collection and engage with responsibility, they become catalysts for change, contributing to both knowledge generation and community development.

This experience offers an important lesson for future students and researchers. Every field engagement must begin with clear communication of identity, purpose, and limitations. Using local language, building trust, and integrating basic awareness into research activities can make interactions more meaningful and ethical. Surveys should not remain isolated academic exercises but should incorporate an extension component that benefits the community, even in small ways. In essence, this experience taught me that responsible research is not defined by the quantity of data collected, but by the integrity, empathy, and impact with which it is conducted.

References

- Béné, C., Arthur, R., Norbury, H., Allison, E.H., Beveridge, M., Bush, S., Campling, L., Leschen, W., Little, D., Squires, D., Thilsted, S.H. and Troell, M., 2016. Contribution of fisheries and aquaculture to food security and poverty reduction: assessing the current evidence. *World Development*, 79, pp.177–196. <https://doi.org/10.1016/j.worlddev.2015.11.007>
- CMFRI (Central Marine Fisheries Research Institute), 2020. Marine Fisheries Census 2016 – Gujarat. ICAR-CMFRI, Kochi. <http://eprints.cmfri.org.in/id/eprint/17502>
- Davies, C.A., 2008. *Reflexive ethnography: A guide to researching selves and others*. London: Routledge. Available at: <https://doi.org/10.4324/9780203822272>.
- Department of Fisheries (DoF), Gujarat, 2021. Annual Report on Marine Fisheries. Government of Gujarat.
- D'Ignazio, C. and Klein, L.F., 2020. *Data feminism*. Cambridge, Massachusetts: MIT press. Available at: <https://doi.org/10.7551/mitpress/11805.001.0001>.
- Emerson, R.M., Fretz, R.I. and Shaw, L.L., 2011. *Writing ethnographic fieldnotes*. 2nd ed. Chicago: University of Chicago Press.
- FAO, 2022. *The State of World Fisheries and Aquaculture 2022*. Rome: Food and Agriculture Organization. <https://doi.org/10.4060/cc0461en>
- Government of Gujarat, 2021. Gujarat Fisheries Statistics Report. Department of Fisheries, Gandhinagar. Available at: Y-464 Fisheries Statistics Book 2021-22.pdf
- Government of India, 2023. Fisheries cooperative development initiatives in Gujarat. Press Information Bureau (PIB). Available at: <https://www.pib.gov.in>
- Jentoft, S. and Eide, A., 2011. *Poverty mosaics: Realities and prospects in small-scale fisheries*. Springer. <https://doi.org/10.1007/978-94-007-1582-0>
- Nayak, A., Panigrahy, S., Pundir, S., Kumar, V., 2022. Status of Fisheries Sector in Gujarat: An Overview, *Indian Journal of Economics and Development*. <https://doi.org/10.35716/IJED/22043>
- Patel, A., 2014. Transcending religion: Socio-linguistic encounters at Somnath. *Ancient India in its Wider World*. Available at: <https://d1wqtxts1xzle7.cloudfront.net/31504894/Somnath-libre.PDF>
- Salagrama, V., 2012. Climate change and fisheries: Perspectives from small-scale fishing communities in India on measures to protect life and livelihood. ICSF. ISBN: 978-93-80802-06-0 Available at: <https://icsf.net/resources/climate-change-and-fisheries-perspectives-from-small-scale-fishing-communities-in-india-on-measures-to-protect-life-and-livelihood-2/>
- Solanki Ship Care, 2025. Veraval port, Gujarat -a hub for fishing and seafood exports. Available at: <https://blog.solankiship.com/blog-details/veraval-port-gujarat-a-hub-for-fishing-and-seafood-exports>
- The Hindu, 2023. Photo essay | Out at sea -behind the scenes at Veraval port, Gujarat. Frontline. Available at: <https://frontline.thehindu.com/the-nation/photo-essay-out-at-sea-behind-the-scenes-at-veraval-port-gujarat/article66432070.ece>

