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Fishing for autonomy

The making of Indian fisheries science

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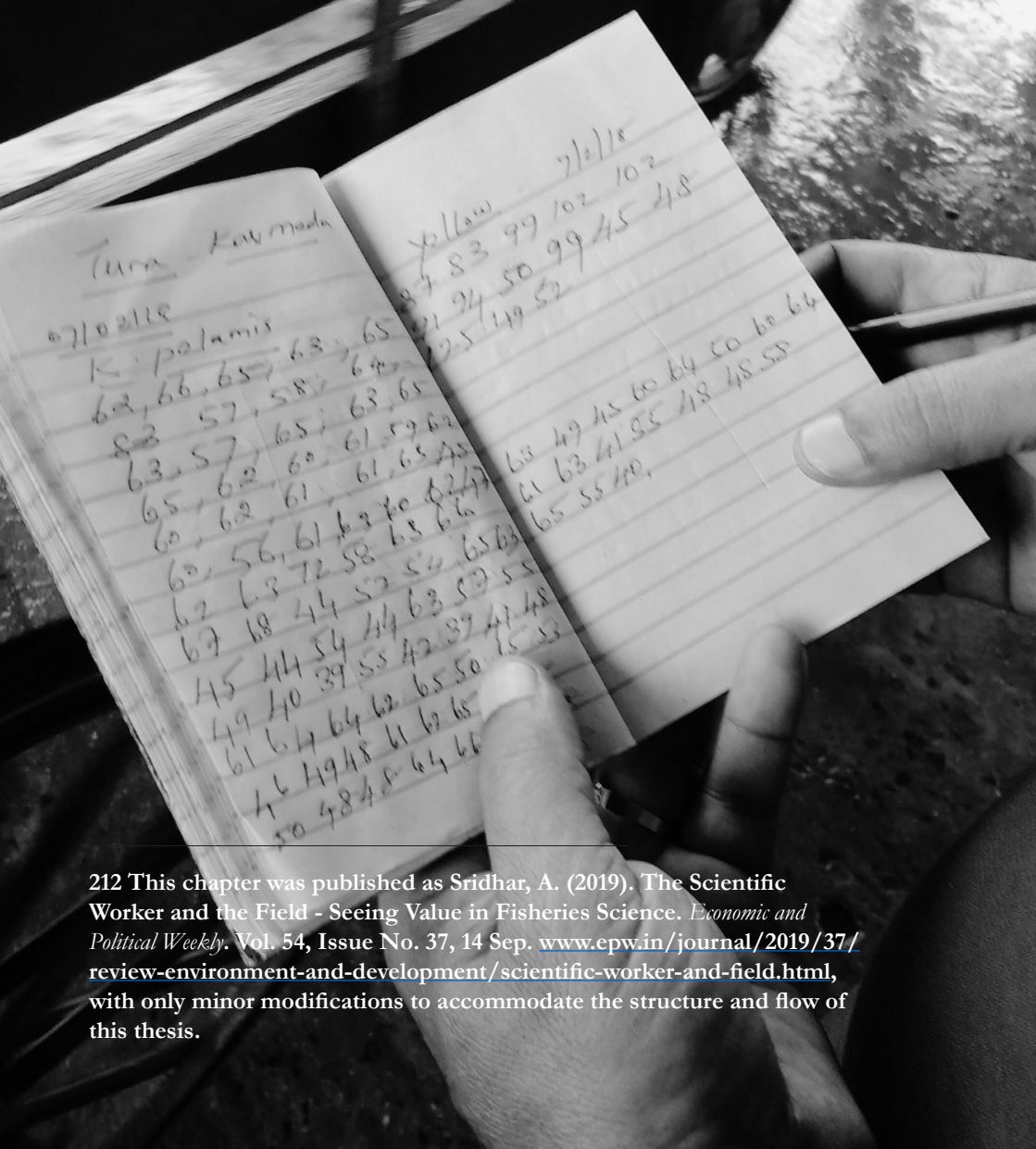
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CHAPTER 7

THE SCIENTIFIC WORKER AND THE INDIAN FIELD: SEEING VALUE IN FISHERIES SCIENCE²¹²



212 This chapter was published as Sridhar, A. (2019). The Scientific Worker and the Field - Seeing Value in Fisheries Science. *Economic and Political Weekly*. Vol. 54, Issue No. 37, 14 Sep. www.epw.in/journal/2019/37/review-environment-and-development/scientific-worker-and-field.html, with only minor modifications to accommodate the structure and flow of this thesis.

“Convincing people higher up for [us to do] this stock assessment was always a problem for CMFRI...The top person will be mostly from agricultural science and he has to be made to understand what exactly is stock assessment, why this is necessary. To my mind, there is always a question – ‘why you are keeping on doing it for the last [...] for the last few decades!...what is it that you are doing? What is the value of that? What is the conclusion, how it is helpful for anyone, fishermen, or whoever it is?’...”

– a retired CMFRI scientist
(Interview conducted on January 04, 2018).

7.1 Introduction

State investment in institutionalised science cyclically poses existential challenges for government scientific organisations such as the Central Marine Fisheries Research Institute (CMFRI). Explaining *how* their scientific labour creates value, why the scientific worker is an exemplary category of government employee and how the organisation’s expertise is irreplaceable, remains a continuing challenge for CMFRI’s leaders. The chapter brings together the histories of labour with histories of science (Hui et al., 2024; Rockman et al., 2024; Roberts et al., 2023) and enquires into how field-based practices moulded the agency and value of scientific work in postcolonial India. The chapter focuses on the production of value through scientific labour on marine fisheries generated by those at lower rungs of hierarchy of this scientific organisation. The chapter addresses the research sub-question 4 – **How do practices of fieldwork in postcolonial India produce value in scientific work and among workers?**

The scholarship on labour relations in nature has traditionally examined practices of resource dependent humans such as agricultural peasants, fishers and forest dwellers with few exceptions examining other forms of professional labour that involves fieldwork²¹³ such as scientific survey work. This chapter draws inspiration from studies of field sciences (Kuklick & Kohler 1996; Kohler, 2002; Kohler, 2011) to understand the contextualised practices in which value in ‘practical’ ‘field’ sciences such as fisheries science was produced by a class of scientific workers in postcolonial India in the last decades of the twentieth century, using Bourdieu’s field theory, especially the interplay between capital and habitus among these diverse categories of scientific workers. The rise of fisheries genetics, biotechnology, and a range of laboratory-based and modelling oriented research programmes no longer requires fisheries scientists’ professional success to be directly dependent on doing fieldwork as a demonstration of their expertise, as seen in the case of conservation

213 See Vasan (2002) and Fleischman (2012), for ethnographic studies of forest guards.

science (Ríos-Saldaña et al., 2018). Despite this trend, CMFRI scientists particularly from the older divisions of CMFRI still engage in short and long-term field-based scientific practices and produce narratives that privilege and value fieldwork. However, the forms of engagement with fieldwork vary among scientific workers. In this chapter, I focus on the practices of lower grade technical staff of CMFRI whose primary responsibility was to visit the field and collect fisheries data, a crucial step in the making of catch statistics and fish stock assessments, the mainstay of CMFRI. These practices which began in the organisation from the time of its establishment, continued in some form, until the time of my own fieldwork for this doctoral study.

Alfred Sohn Rethel argued in 1978, that labour is hardly ever only intellectual or only manual (Rethel, 1978). Within certain 'field sciences' such as fisheries science, a considerable amount of scientific labour involves physical exertions under varying field conditions. This form of labour organised under the rubric of the discipline of fisheries science and through the structure of the state agricultural research bureaucracy, is tangibly compensated for in the form of wages but also by badges of distinction through promotional pay-grades and designations. Measuring the value of scientific labour for the state has always been a knotty affair particularly when it does not translate into immediate, tangible and measurable outputs such as metrics of resource productivity. Unlike the formal discipline of agricultural science, where India saw a longer period of attempts at fixing productivity metrics albeit with limited success (Rajeswari, 1995), correlating investment in science with total 'wild' fish caught or produced is far more challenging given that biological work in tropical fisheries is more diverse than aquaculture of fish. Since CMFRI came under the centralised Indian Council of Agricultural Sciences (ICAR)²¹⁴ in the year 1967, some of its more outspoken leaders attempted to negotiate autonomy for fisheries science from the yoke of ICAR's agricultural paradigm.

Two retired directors I interviewed between 2014 and 2017 spoke of their having to repeatedly convince officials of a strongly hinterland focused, terrestrial, production-oriented Ministry of Agriculture, on the need for continued funding of specialised activities such as the collection of long-term biological data on commercial marine species and on the calculation of fishing effort and catch across more than 6,000 kilometres of Indian coastline. Arguing for a separate Fishery Data Centre in 1970, the lead statistician for CMFRI, S. K. Banerji plainly stated that 'the concealed nature of marine resources' made its estimation more important than agricultural resources and that the collection of such 'resource statistics' was a 'specialist job' (Banerji, 1970, p. 93), another layer of distinction

214 The Imperial Council for Agricultural Research was set up in 1929 and renamed Indian Council of Agricultural Research in 1946. It is at present an autonomous body connected with the Ministry of Agriculture and Farmer's Welfare.

within the fisheries science workforce. Resource estimation would require the coming together of more than one disciplinary specialist, but rather the coming together of distinguished individuals in the field of zoology as well as statistics,²¹⁵ fields that generated a multitude of graduates in Indian universities over the twentieth century in India. The hiring of specialists to estimate fish resources served to underline differences in knowledge of those who worked *in* fisheries (fishers, traders etc) from those who worked *on* fisheries (primarily scientific workers), creating hierarchies in streams of expertise on marine nature. This resource assessment field staff of the Fisheries Resource Assessment Division (FRAD)²¹⁶ at CMFRI was additionally, also a government employee obligated to perform his/her duties unlike the fisher, who possessed this knowledge on catch quantities but was under no obligation to collate, centralise and analyse it.

Aside from the directors and principal scientists, down its hierarchy, leaders in fisheries science regularly attempted to negotiate the value of their labour within the science bureaucracy, making an argument for professional distinction that combined embodied expertise as well as field-based ethics — the innovations, sensitivities, traits and practices that make for ‘good’ scientific workers. Chapters 5 and 6 cover the historical ground in detail. An alternative image of science and what constitutes value in fisheries science practices is found in the lower end of this professional hierarchy, produced in its scientific workers’ experiences of getting to, studying and staying in ‘the field’. A fuller account of what goes into making quality in data and in field sciences across varying geographies and natures is found in attending to this form of work, the subject matter of this final empirical chapter.

In the following sections, I provide a brief account of the hierarchies of field workers in the fisheries science bureaucracy in India. I draw from interviews and published records to discuss the organisational and individual importance and value of field work. Finally, I examine how survey staff negotiate with the specificities of performing routinised field work on marine fisheries in India with some concluding remarks on the value of unique relational and embodied expertise for a contextualised appreciation of fisheries science as practiced in India.

7.2 Hierarchies of data gatherers

Fish stock assessment, a combination of biological and statistical work has become the mainstay of institutionalised fisheries science across the world and is neither a simple nor an inexpensive affair. It combines

215 Initially this was mainly zoology, with a specialisation in marine biology and fisheries.

216 This division is now termed ‘Fishery Resources Assessment, Economics and Extension Division’. See <https://www.cmfri.org.in/division/fishery-economics>, accessed on 20th April 2024.

biology with statistics and requires reliable data on important life stages of fish (e.g. growth, reproduction, recruitment and mortality), drawn from an extensive biological sampling programme, and on data on fish landings or catch.²¹⁷ Despite the scientific criticisms and limitations of stock assessments as objective and putative rational measures of the abundance of marine life (Booke, 1981; Booke, 1999; Finley, 2011; Telesca, 2017), none of the maritime fish producing nations have been able to jettison these methods altogether in the absence of better means of measuring marine fish resources as eventual fungible goods. Soon after Independence, when the Central Marine Fisheries Research Station (CMFRS) was set up in Mandapam, in 1948, a sampling method and pilot survey for collecting catch data from the extensive and diverse Indian coast was trialled in 1949 by statisticians S.K. Banerji and D.V. Bal (Srinath et al., 2005; Bal & Banerji, 1951). At this time, catch data was collected for the whole country by dividing it into twelve zones each with 2-3 centres sampled per zone. These sampled centres were the beat of twelve trained graduates designated as 'survey assistants' overseen by the expert statisticians. The sampling coverage was increased to 20 zones in 1958, adding many more centres across India's diverse coastal landscape. The methodology used to estimate marine fish catch is the Multi-Stage Random Sampling Survey (MSRSS) recognised by the Food and Agriculture Organization of the United Nations (FAO).

Prior to 1975, the lowest rung of workers of CMFRI's hierarchy were Lab-cum-Field Assistants (LFA) who were B.Sc. graduates (often in Zoology). The next levels of workers were Junior Scientific Assistants (B.Sc. graduates), Research Assistants (M.Sc. and above) and Senior Research Assistants. Mobility was possible across this simple hierarchy as long as educational qualifications were met. While everyone went to the field, it was only research assistants²¹⁸ who undertook analytical work in addition to field work.

From the early twentieth century, only B.Sc. graduates were recruited to the fisheries departments, the Zoological Society of India and later the CMFRS, CMFRI's predecessor. In the early decades of CMFRI, freshly recruited assistants were sent by the directors to carry out 'survey work' (collect catch data), biological sampling and based on their qualifications undertake studies and supervise other staff. The work itself was not highly compartmentalised, and everyone across the hierarchy was expected to spend a great deal of time outdoors, in the field, to make collections and observations on beaches, intertidal areas,

217 Resource-poor countries like India use catch data for stock assessments whereas European nations and the United States obtains its data by sampling directly from the seas on-board vessels. Although more reliable, the latter is not only expensive, but also calls for seaworthiness among scientific workers.

218 Research Assistants were zoology post-graduates from established colleges under the tutelage of reputed professors.

snorkelling, swimming, going out to sea on local fishing boats, sorting and storing their data and samples. Survey assistants could shift into the role of researchers, based on acquiring an M.Sc. degree, and based on their aptitude as discerned by their seniors. In this hierarchy, it was the survey assistant (LFA) who had a peculiar set of interactions with the outdoors. In addition to identifying fish and recording their numbers using a sampling protocol, he²¹⁹ was also required to interact with fishers and faced the additional challenge of having to defend to them his practice of data collection, more than other field assistants who collected biological samples. By contrast, staff that belonged to other divisions that conducted biological studies, collected their biological samples of particular fish groups (including fish of various sizes and prices) by purchasing these fish from vendors, paying them money as, as any customer in a fish market. Gradually, the number of technical staff increased to around 120 to cover the large Indian coastline as changes in sampling procedures and coverage improved, but mobility between research work and survey data work²²⁰ was and continues to be restricted as greater centralisation and bureaucratisation set in.

7.3 Exclusive expertise for ‘Indian’ field data

The evaluative appeal of fish stock assessments since the post-war years (Finley, 2011) necessitates specialised fisheries data collection. Understood as the predictive method of estimating how much fish can be taken out sustainably from a fishery, fish stock assessment is now the backbone of marine fisheries science work across the world. In India as well, it requires the organising and oversight of several specialist workers not just at the computer and in labs, but foremost, in the field to collect statistical and biological data.

Statistical data on fish catch was valuable for the new nation as an indicator of its potential wealth but also its state of productivity (Bal & Banerji, 1951, p. 1). Even after the first pilot surveys, undertaken in only a few locations across the country with minimal survey staff, Bal and Banerji (1951) noted innumerable difficulties that they encountered in the field making such work both valuable as well as difficult. Chief among the challenges was the lack of “cooperation” from the fishermen. The authors note that survey assistants faced multiple challenges in addition to transportation problems (“The assistant may have to wade through mud, sand and paddy fields to reach a fishing village”) (Bal & Banerji, 1951, p. 1). They worked under financial constraints (twelve survey assistants were recruited to collect statistics for 250 miles on an average) and difficult conditions of work (getting leave was difficult; there was no guarantee of

219 All survey staff in CMFRI are men.

220 More recently, scientists have begun to add the names of technical staff on certain publications. This does not of course provide the same prestige associated with the designation ‘Scientist’, however lower the grade.

food or shelter in the remote villages of coastal India).

“By [the assistants] moving among them [fishermen] constantly and by explaining to them the motives of the survey, the assistants have won their [fishers’] confidence to some extent. Even now they have to face intense opposition in some places. This attitude [of not sharing information] of the fishermen arises from their fear that their century-old right to exploit the sea may be curbed by the imposition of taxes and that the survey assistants are secretly assessing their capacities for paying such a tax.” (ibid: 3)

The nature of conditions of work (remoteness, lack of proper facilities for food and water, and ‘uncooperative fishers’) persists even in present-day accounts of ‘field-work’ by survey staff, which I witnessed on the occasions when I was permitted to accompany CMFRI field staff to the fishing harbour one early morning in February 2018. Collections of catch data and biological samples are made from the coastal shore, at some of the busiest times in the fishing day and are collected from several landing centres distributed unevenly across twenty zones (Srinath et al., 2005). Each landing site is a blur of activity; almost chaotic to those unfamiliar with its patterns. Boats return from fishing often early in the mornings, and in swift succession fishworkers unload fish roughly sorted in bags or baskets. Numerous quick auctions are conducted in tight clusters of fishers and traders with little room or patience for non-participants; the fish moves hands rapidly and vanishes quickly into packing sheds and godowns awaiting distant destinations. Tempers in these sites are high, people move fast to unload, pack and send away a highly perishable and valuable item. Idle spectators are not appreciated, especially if they bring no monetary benefit; they risk being viewed by quick-tempered fishers, as harbingers of bad luck and poor catches. Fuelled by the tension in the air, bold and colourful abuses are directed at an inquisitive onlooker or those without a legitimate purpose or relation to the space or its occupants. This exceptionally sensorial coastal space is the ‘field’ of the survey staff, usually the fishing harbour or a fish landing centre along the open shorelines of the country - the main working environment of the survey staff of CMFRI.

Over the last few decades, catch statistics of the FRAD division and stock assessments have featured prominently in the Annual Reports of the Institute. Given the history, scale and method of CMFRI’s field-data operations,²²¹ the coordinated statistical estimation of catch data and

221 Included in these operations are innumerable hours of local, regional, national and international training, specificity of the multi-stage stratified random sampling methodology, the coordination of human resources for regular data collection, enumeration, verification, supervision across various states and the storage of prior data and the financial investment in the infrastructure over decades.

biological sampling from landing sites of India is not easily replicable by any other organisation at present.²²² There is no appropriate equivalent of such a wide, coordinated, direct field-based statistics collection effort by a single scientific organisation of ICAR for all agricultural products in India using field staff, for all regions of India. The peculiar practice of CMFRI sending trained workers into the field to estimate catch by undertaking direct field-based observations and data collection across the whole country, when the state fisheries departments also do their own fisheries catch and trade data collection has been a sticky issue noted by the Ministry of Statistics and Programme Implementation (CSO, 2011, p. 15). CMFRI has regularly bolstered their claims to expertise with a reference to the superiority of their sampling method, and the training and expertise of their employees in collecting both the biological and catch data.²²³

7.4 Field expertise - value through professional virtue

The introduction of professional scientific instruction in zoology actively passed on its normative underpinnings developed in nineteenth century Europe to its students in British India. Chief among these was the ethic of hard work in the outdoors, with a motivation chiefly towards reaping non-pecuniary rewards and the performance of a function that entailed a social purpose (Haskell, 1984, p.188). The importance of field expeditions and surveys to the field of ichthyology, was stressed by early educators and leaders of the Zoological Society of India and British India's first Zoology departments.²²⁴ Leaders and "legends"²²⁵ in

222 Each of the maritime state governments have also historically collected fish landings data since the time the Bureaus of Fisheries were created across the provinces. However, the rigour of their methods, expertise of their personnel and computation methods in comparison to that of CMFRI has always been a point of contention. Banerji (1970) had argued earlier that CMFRI alone had the capability for 'intelligently analysing' resource statistics for the whole country, and should house a centralised Fishery Data Centre for all forms of fisheries related statistics – both trade and resource related.

223 Notwithstanding revisions, improvements and innovations of method and analysis within the specialised work of stock assessments, few fisheries scientists would argue that nations can now stop collecting catch data or biological information on commercially important species.

224 As director of the ZSI, after Nelson Annandale, R.B. Seymour Sewell promoted the practice of college and university students accompanying the ZSI's surveys and expeditions as an important form of training and mentoring in various facets of doing science in the field.

225 Francis Day's tome *Fishes of India*, alternates as bible and benchmark within CMFRI. "There can only be one Francis Day" I was told by a former director of CMFRI. Indeed, Day had the support of a vast network of government staff and

early fisheries studies undertook extensive field surveys, data collection and publications that immortalised their efforts and the unseen labour of their assistants from the colonial period onwards. Field operations also served to signify state power in being able to command and coordinate the presence and work of personnel in far corners of state territories. Perhaps the most revered achievements in accounts about early directors of CMFRI, was their affinity for the field. Hot, humid and remote Mandapam, straddling the Palk Bay and the Gulf of Mannar, with its spectacular marine diversity, coral reefs, seagrasses and clear waters was an ideal space for new leaders of the CMFRS to demonstrate what exertions the field-based study of fisheries entailed. Dedication and leadership was recognised and enforced²²⁶ by early directors and scientists through setting an example of their own physical exertions in the field, personal discipline and self-control. Santhapan Jones,²²⁷ who was the longest serving director of CMFRI (1957-1970) required all researchers and younger staff at Mandapam to accompany him at sunrise to inspect the beach to conduct collections and make observations, driving and walking to various parts of the coast, wading in the shallows, snorkelling, physically handling dead and smelly marine species, making dissections of animals, removing its flesh, gut and body parts themselves, and later recording, analysing, writing and publishing (James & James, 2009). In accounts of initial experiences in the field, one understands how new recruits of technical staff at CMFRI came to recognise markers of such embodied expertise — time spent in the field, the easy memory of nomenclature and knowledge of fish, boats, fishing operations and relations with local people working in fisheries. It allows the technical worker to distinguish himself in the organisation as its metaphorical ears on the ground. In the absence of the prospect of simple promotions to the rank of ‘scientist’, which did not require the passing of entrance exams, technical staff could only distinguish themselves by exemplary performance of innovative and quality field labour. The embodied nature of fieldwork as a social means for distinction, allows us to see the generational operation of social practice; of “a part of yesterday’s man” in today’s individual (Durkheim cited in Bourdieu, 1977, p. 79). The following sections describe how fieldwork enables the reproduction of (in)quality among scientific workers’ relations.

departmental officials to assist him, at a time when Imperial Power ensured that people parted with data easier than with present day investigators of fisheries. Day’s Empire wide access to places and people, and financial support, authority and autonomy was recalled by scientists as the ideal conditions for science - unthinkable in present day institutionalised science.

226 The early directors were described by interviewed scientists as even being “task-masters” but these qualities were forgiven when they were seen as successful in terms of their knowledge.

227 Santhapan Jones was Director, CMFRI from 1957-1970 - the longest tenure among directors till date.

7.4.1 *Approaching the field*

I conducted detailed purposive interviews between 2014 and 2018 with scientific and technical staff (on duty and retired) who were placed on survey work. From these interviews and from published records, I was able to reconstruct the nature of survey work and the mixed reactions it evoked. Almost all survey staff joined CMFRI, attracted by the prospect of secure government employment, and the people I interviewed stated that some recruits agreed to a job that demanded extensive field work in areas other than their native hometowns for the opportunity to see parts of the country they couldn't have normally afforded to visit on their own. They recalled that when the actual work began, some survey staff were unable to come to terms with the amount of solitary travel, lack of standardised amenities across zones, the repetitiveness of the work, the physical exertions and the uncertain engagement with fishermen. A retired survey staff employee, with several years of experience of survey work told me why it was often difficult for a single staff member to “handle” being in the field.

“I don't think only one man should go, there should be two staff members. It would help him deal with the loneliness of that work. I think it would help him in his involvement there. You see, when you are facing a crowd all alone, there will be some support, isn't it? Now I think it is like that. I was not of that nature, but there are some difficulties in work that is solo and brings about loneliness. ... the fishermen crowd, their mood is different. They will always be worried that they don't get fish. They are fighting with nature. Now to go and ask them all these things, they will find it inconvenient won't they? So, there are these kinds of hardships. So when you compare with the survey staff and the staff who is working for fish sample collections, survey staff is at a loss. It is very pathetic.”²²⁸

To overcome this, survey staff build relations with fishers in multiple personalised ways. Some offer money and small gifts to fishers and traders — bringing a newspaper to share, giving news from other parts of the country and offering tea and snacks.

“I used to do this dhaana-dharma [dutiful giving] because that is what they also appreciated. Instead of keeping on asking “what fish did you get” because that just frustrates them [fishermen]! If the same survey staff keeps on going to one place, I think the fishermen stop being cooperative after some time, this is what I feel. It is best to keep changing the man I think. It's not like the way you would imagine that if

228 Interview dated February 10, 2018.

you had the same man there, you would get good data.”²²⁹

One technical officer, a high caste *brahmin*, was well-known for his practice of astrology, was sought out eagerly by fishers to assist with predictions in their personal affairs. I was told by my interviewee that he was one of the few brahmins in this job, and more surprisingly, one of the few men who actually enjoyed his work and had no problems with fishers. The perks of the job, aside from the travel and daily allowance²³⁰, was the relative freedom and autonomy of a person being alone in the field despite its physical hardships.

For remote landing centres, survey assistants sometimes had to travel a day in advance and spend the night in the bus with the conductor and driver, collect catch data in the morning and repeating an uncomfortable overnight stay in mofussil buses, on the way back. The retired CMFRI personnel I interviewed told me that in the past, survey staff sometimes stayed overnight in godowns and sheds sharing the space with malodorous fish packing material. Scientists for their part have similar accounts of fieldwork experience, and described with some pride, having endured such trials on their ‘stints’ of field work. The story of how a former director of CMFRI, followed ribbon fish migrations across multiple coastal states, catching a series of mofussil buses, walking long hours under the hot south Indian sun, sleeping overnight in fishing sheds, eating rice gruel and fish, and repeating this across various sites, is recounted by many as an example of dedication and scientific rewards (in the form of ‘reliable’ data) from extensive fieldwork. However, this form of scientific labour appeared distinctly different from the exertions of survey staff. One scientist acknowledged to me that survey work could lead to boredom, unless you did it for a short period, changed places or knew that it was not your “real work”. This possibility to mix it up is somewhat limited for survey staff, who might change locations but the overall nature of whose work remains relatively unchanged over the course of their working lives, unless they are promoted or shifted to other tasks. Many technical staff of the FRAD have spent virtually all their professional lives doing survey work, occasionally assisting in making collections of biological samples and on rare occasions being given joint authorship in publications which constitute better, although limited, opportunities for self- and status improvement.

The field is not *terra incognita*, and workers (both scientific and technical) arrive here with certain ideas of what it means to ‘toil in the sun’.²³¹ Some survey staff consider their work to be of an inferior nature preferring instead the commonly respected standards symbolised by

229 Interview dated February 10, 2018.

230 This amount has been increased over the years.

231 This term was used frequently by both scientists and technical staff in relation to field work.

regular attendance in an office, staying within the confines of an 'air-conditioned room' and a desk job. Self-referencing statements of their low status include, 'roaming like a dog', 'wandering like a madman in the sun'. At the same time, those who rushed to procure for themselves office-based comforts are ridiculed as not being wholly committed or strong-willed enough to endure the trials of the field. Some scientists also decry the avoidance of fieldwork among their ilk and upcoming generations, but unlike the technical staff on survey work, as a category of workers, scientists have diverse avenues to display expertise (including presenting at conferences, publishing, writing in CMFRI publications and taking on institutional responsibilities) and accrue higher status should the demands of the Indian field-scape prove too punishing. The time needed to generate cultural capital through fieldwork based practice in fisheries science is a crucial point of struggle for symbolic capital in the field. The relative absence of surveillance and scrutiny within an otherwise deeply structured and controlled field, as told to me by older generations of survey staff, was one of the strongest forms of symbolic capital they could muster, an expression of the unexpected ways in which autonomy was wrested in social struggles.

7.4.2 Duty in the field

Given that technical staff are allotted certain areas as their beat, once they reach their centres, and begin visiting the field, they have to ensure that they create conditions to enable them to continue staying in the field over longer durations, doing the same set of tasks of recording catch, and making observations on fisheries and sending these to the centre on time. The difficulty in achieving full surveillance of the quality of survey work is acknowledged as a limitation by heads of the FRAD division²³² and survey work itself is not easy for the most conscientious of workers. Even those attempting to meet even minimum standards of proper survey work need to go beyond scientific data collection protocols to develop a contextual set of methods, skills and sensitivities, reminiscent of anthropologists in the field (Schumaker, 1996). Rajesh [name changed] came to CMFRI through a series of encounters with poverty, struggle for employment and education, but gradually overcame these challenges and even got an M.Sc. degree, although he remained in the technical category till his retirement. One of his earliest jobs during his youth was as an 'accounts boy' to a trawler owner in the Madras harbour. Habitus, but also a circumscribed form of cultural capital appears in Rajesh's embodied familiarity and ease with fish landing centres and with fishers that 'allow' him to speak to fishers 'in their language' during survey work. His long years of service in fisheries equipped him with unique skills, compared to his peers, of being a comfortable presence around the harbour in peak hours of business. In addition, he explained (see quotations below) how being in the field over longer durations was a necessary condition of

232 These interviews were conducted with retired FRAD heads in December 2017, January and February 2018.

staying familiar with diverse tropical fish; to generate quality in data.

“When I used to go to the landing centre, it was really easy for me to immediately identify each fish, tak, tak, tak. They all used to be surprised at my knowledge of these fish. You know the thing about this field is every field observation...each opportunity you have, you should constantly keep looking at fish...only then will you be able to immediately say “this is this fish”.

Even an experienced individual like Rajesh, with his multiple contacts, friendships and connections in the landing centre, his social capital, often has to explain to fishers why he collected this data. He offered his strategy, a sensibility that expresses the delicate position of the government field worker, mediating the space between the state and its citizens. Promoting an extreme humility in interactions with fishers he cautioned against throwing one’s weight around like a “government officer”. Another colleague had once paid the price:

“He had a really rough method of ‘handling’ ...then he went to [name withheld] hamlet and acted big. Showed off saying that he was working in the government and showed like he was a big officer...They nearly beat him up when he came to collect data. Big trouble happened, he came running to this office and said ‘I cannot collect data, saying there is this [fish landing] centre where they [fishers] came to beat me up!...’ The thing is, his behaviour was not good. Instead of acknowledging that they are suffering and that they are not getting any proper fish, he just went there and acted like a government officer, ‘you have to tell me what you got’...”

Arguing for humility in approaching fishers, Rajesh stated,

“I’ll tell you one thing, if you accept a fact [fishermen’s statements to them] as if it’s just been slapped on your face ...then the other person will never get angry with you. All the ways in which a person can get angry with you, will lessen.”

Rajesh shared a few instances when the fisher was constantly worried about his catch, and often accused data collectors of being responsible for low catch rates by bringing bad luck, enquiring about the catch itself. He presented an incisive way of approaching the field in science which serves well as a personal ethic to surviving in the field.

“It is only because the fisher goes out fishing, toils in the sun and brings home the fish, that we are able to collect this data. If not for them, where would we be?”

In a similar way, he accorded fish also the same reverence; he thanked fish for giving him his job, education, his house and pension. While these

might appear as rhetorical statements rather than the agency of nonhumans that protect the data collector from personal harm during duty, it also serves as a reminder that the institutionalised edifice of fisheries and fisheries science in India emerged on the promises of social purpose, a responsibility towards organising, improving and sustaining food, fisher and in the colonial Raj (see Chapter 5) and the overall alleviation of suffering from hunger (See Chapter 6). Within this edifice, the material agency that surrounds workers matters. To this scientific worker, if the act of collecting scientific data itself causes further suffering, then the technical staff must have the grace, sensitivity, ethical and common sense to at least not exacerbate the frustrations of diminishing catch by asking and recording it openly. Given the non-monetary extractive nature of this data collection, some survey staff considered it important to 'give back' in a manner that is emotionally acknowledged by fishers than rationally understood. They highlighted the qualities of patience, empathy and non-obtrusiveness, along with the ability to negotiate physical exertion and verbal abuse, all embodied skills that cement virtue with expertise, but also 'practical' ways to express creativity and autonomy in routinised work (Hodson, 1991) with limited prospects of professional mobility. Without this embodied form of expertise, reliable data from the field cannot be generated even if one wanted to, irrespective of the presence of surveillance and inspections.

7.5 Conclusion

Given the 'applied' nature of fisheries science, as an actively policy-directing endeavour in many maritime fishing nations, there is no turning away from assessing the health of fish stocks and collecting data on the trends in fish and fisheries. As long as there is state interest in the scientific estimation of fish resources in its territories, organisational expertise and quality in fisheries science will continue to depend on how the scientific worker spends time observing and studying the field. The chapter shows how field work is more than just the disinterested performance or non-performance of scientific protocol and duty, but also a space for scientific workers to (re)produce 'practical autonomy' (Hodson, 1991) through creatively distinguishing value within hierarchies of work.

The historical disciplinary antecedents of labour in the field sciences make it evocative of physical hardship and virtue. However, for continued practice of such non-pecuniary actions or even a strong illusion or 'feel for the game' to persist, labour in the field must go hand-in-hand with reward and recognition that represents higher social status. For the fisheries scientist, fieldwork offers the possibility (although not certainty) for building reputation and social distinction as a good scientist, producing empirically-oriented publications and eventually promotion and prestige. However, for the technical staff I spoke with, field work was primarily a job requirement that entailed long years of routine work, and promotions and pay upgrades within the 'Technical' category — a limited upward mobility of social status. In the absence of wider reputational rewards, rather symbolic capital, and upward professional and social mobility, the

field is reduced to a narrow arena for survey assistants to display expertise through professional virtue and relational integrity, values with an uncertain future in this Indian scientific field.

Paying attention to the scientific worker and his engagement with the field and its nonhuman elements – whether harsh sunlight, tropical fish or mixed catch – together form a composite that illustrates the role that a relational context plays in making ‘Indian fisheries science’. Close investigation of the scientific worker’s entry and presence in the field presents alternative accounts of good or bad quality in fisheries work against the conditions and relations of its production in the field. Any attempts to evaluate expertise and support autonomy in CMFRI’s science must acknowledge how scientific fisheries data gets produced — through the necessary translation of scientific protocols into contextual practices of historical, social, cultural relations and embodied cultural expression and expertise (the interplay between *habitus* and capital) arising from the far corners, and deeply ingrained practices within an Indian fisheries field.

Seeing scientific practices as forms of labour and taking ‘the field’ as a constructed rendition of ‘nature’, the arguments presented above contribute to scholarship that theorises the relations between nature and labour in the production of value. In this account the successful production of value by workers engaged in field-data collection is shaped not just by an adherence to scientific protocols, but by the subjectivities of workers, an overlooked aspect in discourses of expertise and its rewards. Inspired by Bourdieu’s attentiveness to hierarchy, struggle and autonomy, this chapter has drawn attention to scientific work as labour and argues for a closer examination of the subjectivities of educated, trained government employees in charge of field data collection on marine fisheries. Field sciences such as fisheries science offer an opportunity to examine how workers engage in relations with the field to produce value. The chapter traces the embodied and cultural practices that continue to influence and shape dissimilar identities, experiences and outcomes for contemporary fisheries science workers in India who engage with fieldwork. It reveals how value in routinised forms of field-based scientific labour is not quite an objective category of practice, but rather better understood as an interplay between objective structures and subjective meaning expressed through embodied skills and cultural relations forged by field workers in an unequal field.