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Transmission and Erosion of Local Knowledge Practices in a Fishing Village in South India



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ABSTRACT

Fishermen acquire knowledge through kin or other members of the community in an informal way, as well as through personal experience. The knowledge thus acquired is viewed as an asset, but the dangers of its erosion are well understood by the fisher communities. This study documents local knowledge based on the experience, observation, and experimentation of the Jalari fishing community in South India. We focus on wave/ocean colors, sea currents, reading the weather, and availability of fishes in different seasons. Cultural transmission and factors potentially influencing the sustenance and erosion of knowledge practices are briefly considered.

INTRODUCTION

Fishing has been a source of employment opportunities in India for millennia. It provides employment to the members of both the fishing community and other communities that depend on fishing activities. The decrease in fish yield and changes in marine ecology in India, as elsewhere, have had a profound impact on the livelihood patterns of fishing people and others (Mathew 2011; Venkatesh 2012).

Fisher communities all over the world possess knowledge that not only make their vocation less risky but also give greater opportunity to increase their returns vis-à-vis the time and energy spent onshore and offshore. This knowledge is transferred to varying degrees from one generation to the next through the

process of socialization (Ruddle 1994; Ohmagari and Berkes 1997; Berkes et al 2000; Mathur 2008). Research has provided an understanding of the application of local knowledge practices of fisherfolk in assessing the weather forecast, fish behavior and its movements, seasonal variations, coordination skills to increase fish yield, processing and storage of fish, and the livelihood dynamics within the fisher communities (Ruddle 1994, 2000; Kurien 1998; Mathur 2008; Mathew 2011; Venkatesh 2012; Srinivasu 2017; Dalibandhu and Sharma 2018; Dalibandhu and Rama Mohan 2020).

The shift from traditional boat fishing to motorized and mechanized boat fishing brought changes in fishers' operations of fish hunting. These changes naturally forced them to revise or acquire new knowledge in

regard to assessment of marine ecological conditions, operating boat and fishing equipment during the fishing expeditions, identification of fishing grounds, etc. (Kurien and Willmann 1982; Srivastava et al 1986; Hapke 2001; Ramanaiah 2006; Bindu 2011; Dalibandhu and Rama Mohan 2020).

Some studies covering utility and adoption of local knowledge practices within communities have observed that these practices have supported livelihoods and countered adverse socioeconomic issues (Ruddle 1994; Chadwick et al. 1998; Zarger 2002; Reyes-García et al. 2007; Hoeppe 2007; Eyong 2007; Cecilia et al. 2008). Thus, there is a process by which fisherfolk assess their local knowledge and attempt integration of local knowledge with that from non-local sources—with goals varying from short-term profit to long-term sustainability to timing of labor demands.

This Data Note documents local knowledge based on the experience, observation, and experimentation for successful fishing expeditions of a fishing community—the Jalaris in South India. We mainly emphasize local knowledge of the Jalaris about the colors of the waves/ocean, sea current, the reading of weather, and availability of fish in different seasons.

The Jalaris are a Telugu speaking fishing community living in the north coastal area of Andhra Pradesh in South India. The Jalaris depend heavily on marine fishing for their livelihood. Their population is especially concentrated in the districts of Srikakulam, Vizianagaram, Visakhapatnam and East Godavari of Andhra Pradesh, India. The Jalaris, like the Vadabali-ja—the other marine fishing people who live in the same geographical region—are part of multi-caste villages. The Jalaris attracted the attention of the social science scholars concerning their social organization, ritual and religion (Rao 1990; Nuckolls 1996), and aspects of changes in economic organization (Suryanarayana 1977; Sridevi 1989).

METHODOLOGY

The study was carried out in Peda Jalaripeta in Visakhapatnam of Andhra Pradesh from January to June 2017. Though the data has been collected by employing different anthropological tools, the key informant interview was the principal technique. The key informants were selected by the respondents themselves as many in the community know or believe that such members have greater knowledge in matters of interest to the researchers. The key informants numbered about ten that included three women and all of them are aged above 40 years. The formal interviews with some prior appointment with each one of them varied between one and three occasions. The interviews sometimes were conducted in phases too as the length of interviews varied between 30 minutes to 90 minutes according to the time given for any one sitting. The key informant interviews with men focused especially on the social process of knowledge acquisition, while they focused on the marketing and food processing in the interviews with women.

Group discussions too were used for eliciting data. Such discussions were conducted at the workplaces of the respondents since some of them preferred to engage in their work while being participants of the group discussion. During the course of the six-month period of the fieldwork, five such formal group discussions were conducted and the number of participants varied between six to ten in the groups. Since the fishing is exclusively conducted by the men, the participants of group discussions were men. These group discussions mainly covered their hours of work, routine, division of labor, occupational risks of fishing, fish availability, and the impact of motorization/mechanization of fishing on their livelihoods. After such general discussion, an effort was made to draw attention to the information on local knowledge practices. The senior members of the group were more involved while dealing with matters of knowledge and

practices. However, the younger members participated through affirmations of their agreement with older fishers, or by supplementing what the senior members had shared.

Participant observation by the principal author was helpful to confirm the data provided by the key informants and participants in the group interviews. Participant observation occurred during the times of repairing boats and nets on the seashore. Similarly, the narratives by the fishermen and the women about their experiences of past weather conditions, perceived cyclones, past and current marketing practices, etc. added to the richness of the data as these narratives gave details of the riddles, proverbs, and local terms used in addition to some specific details about knowledge and activities surrounding equipment, fish catching, fish preservation, and marketing.

FORECAST OF WEATHER AND FISH AVAILABILITY

The fisherfolk in this population predict rain and cyclones. Taking note of rising seawater levels, the movement of seawater further inshore than usual, and sea tide directions, they forecast cyclones. They say that a day before the cyclone, the change in sea conditions can be observed based on the wind directions. If **kaccingali** comes from east to west during monsoon season and the wind is hot, that is an indication of heavy rains. If clouds (**mammulu**) are formed on the eastside of the village, it is an indication of heavy rain fall and also of a possible cyclone. If clouds are formed in the directions of the Gangavaram hills and towards the Pudimadaka hills, it is inferred that there would be heavy rains along with winds of abnormally high velocity.

These winds in the above-stated direction in April to June are thought to be good since they stimulate the reproductive activity of the fish. Further, the density

of seawater that suits the growth of fish is believed to increase during this time. However, the fishermen say that although the availability of fish would be good after such weather conditions, it is also a difficult time for harvest due to heavy winds and rains, and so it is considered as a time of very adventurous fishing expeditions.

The interviewed Jalaris believed cyclones are good for fish varieties since they trigger migrations of schools of fishes towards the shore. Further, they believe that cyclones provide an opportunity to change marine ecological conditions such as the sea current, colors, and temperature. They also shared that cyclones are instrumental for the change of marine water conditions—particularly the centrifuging of seawater. This helps clear some dirt from the sea as it is pushed to shore. In fact, Jalari fishers expressed that cyclones are supportive mechanisms for the cleaning of the oceans, although cyclones often cause loss of fishing-related properties.

SEA COLOR AND AVAILABILITY OF FISH VARIETIES

The Jalaris try to predict of fish varieties likely to occur depending on the color of the seawater. The sea color may change from time to time, or at any time, although these colors are believed to have some kind of association with a month. They have identified seven colors of seawater along with the associated fish varieties. These colors help them to carry the suitable nets, hooks or lines for catching the fish varieties that are expected to be available on that day. The chances of small fish varieties are high when the color is **pac-ciburada neeru** and chances for the big fishes are high when the color is **telivi neeru**.

The fishermen said that fish generally prefer to live in moderate temperature water. As such, a school of fish moves towards seashore and moves back into the

deep sea depending on the sea current and temperature. In sea currents called **nevara odi**, the temperature of the water would be low for the fish and during **karakattu**, the seawater would be warmer for the fish. Karakattu predict good yield, while the nevara odi predict low yield.

The knowledge of which fish variety is available in which season/month is of utmost importance for the fishermen for making necessary preparations and getting the equipment ready. The targeting of different species also needs different arrangements in regard to the formation of teams, division of labor, planning for the marketing of fish, the timing of fishing, etc. We found that the Jalaris have extensive knowledge in regard to the varieties of fish available in different months and also on the targeting of specific species depending on the human and other resources they have (Table 1; some species names from Luther et al. 1988; Seshagiri Rao 1991).

THE MANAGEMENT AND STORAGE OF FISH AND FISH PROCESSING THROUGH LOCAL KNOWLEDGE

The fishermen often are able to predict the impending cyclones or rains by their understanding of weather fluctuations. Accordingly, they take care of their fishing materials such as nets, ropes, boats and other things; they keep all materials in one place on a sand dune and cover it with small bags that protect the nets and ropes from the rain. They keep traditional boats far away from the seashore to save them from the big tides and heavy winds. Their local knowledge helps them identify the weather and to predict changes and thus save their property.

The storage and management of fish are important aspects of fishing communities. The fishing communities have mastered the art of storage and processing of the fish. While the men go fishing and explore different techniques in the fishery so as to refine their

skills, the women have a significant role in the processing of fish, marketing, preserving, and management. When the catch is good, they either sell it or they store it after processing. It is said, among the Jalaris, that properly processed and stored fish is more valuable than fresh fish.

If market and transport facilities are available, the fisherfolk prefer to sell their fish yield immediately. There are a few reasons to justify the quick sale of fish—it helps to avoid delay in sharing of benefits; instant money transfer is possible; and it helps save manpower required for the storage and process of fish yield. In fact, the role of women in processing and storage of fish is reduced because of demand for fresh fish by the general population and for export. They said that storing and processing of the small fish varieties is easier, and that they will also have high value when sold in dry condition. Big fish are sold immediately after the expedition since the storing and processing of these varieties is cumbersome and involves drudgery for women.

During times of utilization of the traditional boat, the Jalaris used to depend more on the local weather conditions and fishing grounds and hills. Appropriate identification and use of fishing grounds and hills helped them to identify the particular location of the place in the sea and also to plan for further fishing expeditions. After adoption of motor boats along with Geographical Positioning System (GPS), their knowledge of fishing grounds and hills was felt to be redundant. The loss of such knowledge from the community is thus leading to the loss of opportunity to integrate local traditional knowledge with outside technological knowledge.

The Jalaris used to employ traditional boats made of wood. The skilled members of their own community would make them and sell them to their kinsmen for a reasonable price. They have adopted the motor boats for various compelling reasons. With the adoption of

Table 1. Availability of 44 fish varieties, by month (most months can contain additional other and unnamed fishes)

Local Fish Name	Scientific Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
anti kayalu									X	X	X	X	X	5
appili								X						1
angula nettallu		X												1
avulosulu	<i>Coryphaena hippurus</i>						X	X						2
bade mottalu	<i>Saurida undosquamis</i>			X										1
bandigulimindalu	<i>Nemipterus mesoprion</i>							X						1
bokkodugulu	<i>Megalaspis cordyla</i>	X												1
chandavalu		X	X	X										3
dondavulu									X	X	X	X	X	5
elapa motta							X	X						2
erra gorasulu						X								1
erra gulimindalu			X											1
erra savallu			X											1
erra suralu					X									1
gopiringalu	<i>Cypselurus cyanopterus</i>						X	X						2
gorakulu									X	X	X	X	X	5
gorasulu	<i>Johnieops vogleri</i>					X								1
kali mindalu			X											1
kalimoyya								X						1
kana garthalu	<i>Rastrelliger kanagurta</i>	X	X	X										3
karalu	<i>Lelognathus bindus</i>	X							X	X	X	X	X	6
kavallu		X												1
kommi konalu	<i>Istiophorus platypterus</i>				X		X	X						3
konalu	<i>Scomberomorus commerson</i>	X	X	X	X									4
kunureyya	<i>Acetes indicus</i>	X												1
motta baralu				X										1
namma karalu						X								1
navilelakulu				X										1
nettallu	<i>Stolephorus indicus</i>	X												1
olikanasa						X								1
pallasuralu							X							1
paralu					X	X			X	X	X	X	X	7
pedda mottalu					X									1
poravalu	<i>Thryssa anchovy</i>								X	X	X	X	X	5
pyapili						X								1
rakalu									X	X	X	X	X	5
rekka suralu					X		X	X						3
reyyalu				X		X								2
semika reyya				X										1
senangulu					X									1
sollava								X						1
sorrallu							X							1
thelavulu					X									1
vanjaralu	<i>Scomberomorus guttatus</i>		X		X									2
Species/Month		9	7	8	9	7	7	9	7	7	7	7	7	—

motor boats, the skill in making the traditional boat gradually declined in the community. This is not just a loss of livelihood for some members of their own community, but also an increased expenditure for others—potentially making livelihoods less sustainable.

SOCIAL PROCESSES OF KNOWLEDGE ACQUISITION, LEARNING, AND IMPARTING SKILLS RELATED TO FISHING

The social process of learning and acquiring knowledge plays a significant aspect living in a fishing community. The fishing knowledge gets passed from senior fishermen to younger fishermen about the strategies and practices under different circumstances and situations based on their experiences over the years through fishing successes and failures. The younger fishermen learn through training and, of course, after training they experiment on their own. They commit mistakes sometimes, but the failures also teach them, and thus it becomes experiential knowledge.

As such, learning is not only through observation but also through trial and error—taking the theory given by the elders and practicing it on their own. The knowledge is stored in the form of narrations of past events, and some knowledge remains manifested in proverbs and riddles. Some knowledge also remains hidden in certain ritual practices. The younger generation acquires such knowledge through participation and by listening. Listening is a supportive mechanism for the promotion of the social process for acquiring knowledge by younger generations.

Today, one can notice a cleavage between the older and younger generation of fishers. Earlier the fishermen used to have expert knowledge related to traditional boat fishing in which traditional methods were employed using traditional nets, hooks and lines. But modern fishing equipment provides more yield in simpler ways. Here, one has to note that the tradition-

al knowledge has gone well with the traditional methods, and now the employment of modern methods demands a different set of knowledge.

Earlier, the cultural transmission of knowledge or socialization process that created the knowledge utilization corresponded to each other, but today the traditional knowledge at times runs comes into conflict with the construction of knowledge of the fishermen. Currently, construction of knowledge often has to be delinked from the socialization process and community engagement in fishing. The current generations are faster as far as adopting the technological knowledge in fishing expeditions for their safety and getting high fish yield is concerned. However, the question is about how the social production of knowledge of traditional methods which are relevant to modern fishing can be utilized?

The narratives of the fishermen reveal that there is a need of synchronization of traditional and modern fishing related knowledge that promotes knowledge sustenance. In addition, there can be a gap between current knowledge and knowledge of the past that may create conflicts. The lack of current knowledge by the members of senior generation may result in less respect by the younger generation toward the authority of these members, which has an effect on the senior members' social status within their community. Such status changes will in turn have an effect on the transmission of traditional knowledge to the younger generation.

CONCLUSION

The Jalari fishers identified a variety of fishes in the sea on the basis of experience and acquired knowledge from their elders. They identified fish behavior and predicted weather conditions and seasonal variations, which helps to obtain a high fish yield and more fish varieties. The way in which the events are organized is also helpful to a novice fisherman who

wants to learn to carry out various tasks such as catching the fish, driving the boat against tides, and handling the boat in rough weather to take it to the destination safely.

The Jalari fishermen noted that the decrease of fish varieties in the sea is due in part to unsuitable nets for catching different types of fish and because of the pollution caused by motorized boats. In the past when there were only a few kinds of nets for different fish types—which they caught using the traditional boat—they say it had no negative impact on the fish varieties or the marine ecology. After the introduction of motorized/mechanized boats, there has been an increase in pollution that has impacted the marine ecology negatively.

Beyond pollution and incongruent fishing techniques, the Jalari fisherfolk said the main reason for diminished fish production is climatic variations leading to unpredictable weather or sea conditions to which they feel they have less ability to respond. This state of affairs seems to have come from the acquisition and use of current knowledge that changed their perceptions and brought changes in socialization, cultural transmission, and social production of knowledge.

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