



Ethnobiological survey and documentation of traditional knowledge from the coastal areas of Thrissur district, Kerala

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Abstract

Ethnobiology is an interdisciplinary study of how human cultures interact with and use plants and animals to meet their livelihood needs since time immemorial. Presently due to changing of living habits, modernization, urbanization, mechanization of fishing and use of accessories made of synthetic materials, etc., the Traditional Knowledge (TK) practiced over generations are fast disappearing from the life of fisherfolk in the coastal areas of Kerala. The remaining traditional knowledge has to be documented before they are lost forever. The ethnobiological survey and documentation systematically carried out in the coastal areas of Thrissur district throws light on many hitherto unknown aspects of life and living habits in the fast-changing coastal belt of Kerala.

Keywords: Coastal communities, Biodiversity, Systematic documentation, Bio-fencing

1. Introduction

India is considered as the home land of the most diverse and richest traditional and folk knowledge systems which are still alive, vibrant and widely practiced by millions of people in many ways for various means. Its unique cultural expressions which are directly or indirectly connected with environment, ecology, biodiversity, etc., ranging from coastal, desert and plains to mountainous regions. The diversity that occurs in the flora and fauna have played a major role in the development of a unique livelihood among the people. Kerala, one of the biodiversity rich states of India is well diverse in traditional and cultural practices also. Traditional and folk practices in Kerala are directly linked with the traditional knowledge system prevailing in the coastal areas known as *Kadalarivu*, knowledge from the plains (*Nattarivu*), and the knowledge from the hilly and forest areas especially from the tribal communities (*Kattarivu*). These knowledge systems are directly or indirectly associated with ecology, biodiversity, agriculture, food, medicine, bio-techniques and cultural expressions.

Under the aegis of Ministry of Environment and Forests, an exhaustive ethnobiological study was conducted among the tribal areas of India to survey and document the fast disappearing traditional/indigenous knowledge particularly medical care and food health of the people through AICRPE (All India Co-ordinated Research Project on Ethnobiology) programme (Anonymous, 1992-1998). As part of AICRPE, extensive field research was carried out among the tribal communities, inhabiting in the Western Ghats of Kerala. As a continuation, numerous field research were conducted in the tribal areas of Kerala.

Ethnobotany of religious and supernatural beliefs of *Kurichya* tribes of Wayanad (Prמוד *et al.*, 2003); ethnobotanical documentation among *Kadar* Tribal community of Thrissur district (Udayan *et al.*, 2005; Chaithanya *et al.*, 2015); ethnomedicinal exploration of botanical knowledge from the *Kani* tribes of Agasthiyamalai Biosphere Reserve (John and

Mahesh, 2007); ethnomedical knowledge among the *Malamarasar* tribe of Parambikulam wildlife sanctuary (Yeshodharan and Sujana, 2007); ethnomedicinal plant knowledge of the *Mullu Kuruma* tribe of Wayanad district (Silija *et al.*, 2008); studies on wild edible fruits used by the tribes of Pathanamthitta district (Binu, 2010); ethnomedicine of *Kurichiyas*, Kannur district, Western Ghats (Ramachandran, 2010); ethnobotany of *Kattunaikka* tribe of Kerala (Ratheesh *et al.*, 2011); ethnogynaecological studies of *Mannan Tribes* (Ajesh *et al.*, 2012); ethnobotanical studies of *Koraga* tribal community of Kasargod district (Rajith and Mohanan, 2013) studies on the plants used by *Paliya* tribal community of Idukki district (Angala *et al.*, 2016); ethnobotanical survey of *Malakurava* tribals from Kollam district (Archana, 2018) are very few examples. These ethnomedico botanical studies conducted among different tribal communities of Kerala resulted in the generation of huge data, which could not only preserve the age old tradition, but also for the basics for further studies. Though India has a coastal belt of 7500 km having diverse culture

of traditional fishing and associated practices, ethnobiological/ethnobotanical studies are very less or scant. A few among them are studies conducted by Bhagya and Sridhar (2009), Sahu *et al.*, (2011), Bhandary and Chandrasekar (2014), and Mohanty and Kumar (2017).

Ethnobiological studies in the coastal areas of Kerala is also considerably very less except, Thomas and Fernandez (1993), Radhakrishnan *et al.* (2016) and Biju Kumar and Anitha (2017). In this background, the present ethnobiological survey is to carry out the systematic documentation of TK in coastal gramapanchayaths of Kerala.

2. Materials and Methods

2.1 Study area

The study area encompasses the coastal belt of Thrissur district, Kerala, which comprises of 58 km long stretch from Azhikode to Andathode (Fig. 1). The current study was conducted in Eriyad, Edavilangu, Perinjanam, Kaipamangalam, Nattika, Thalikkulam, Engandiyur and Kadappuram Gramapanchayaths of Thrissur district.

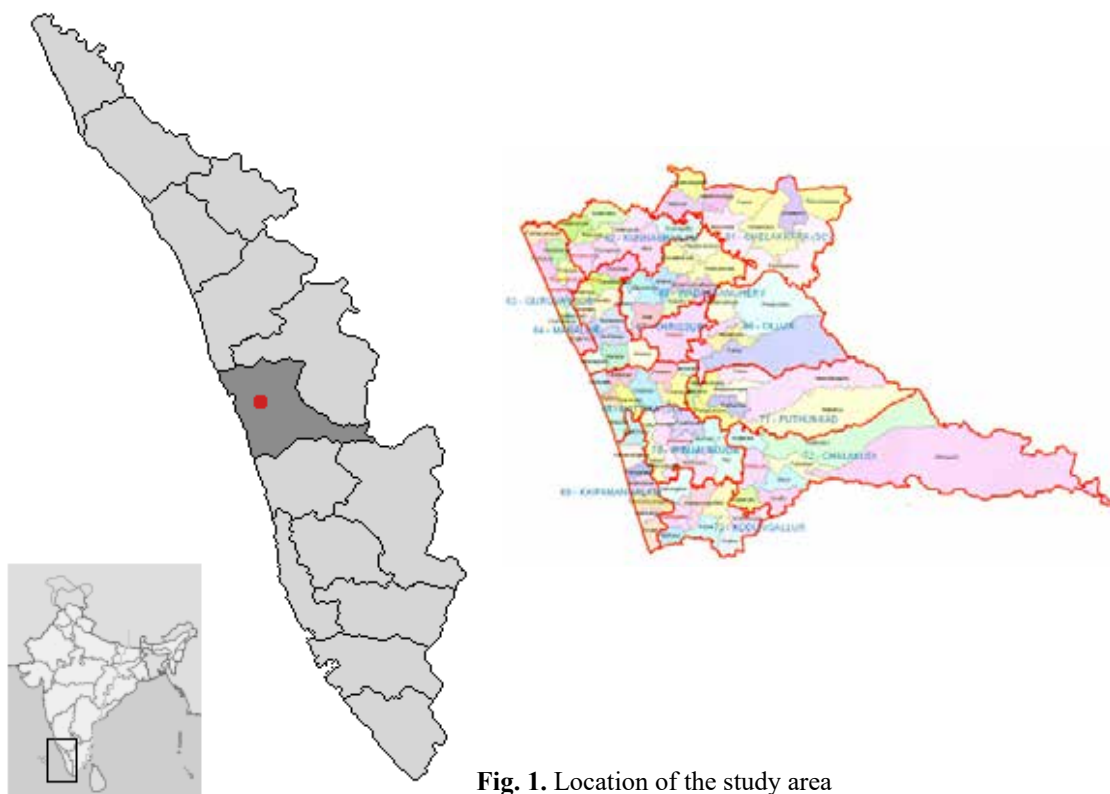


Fig. 1. Location of the study area

2.2. Methodology

The present study was conducted in a planned and systematic manner from January 2018 to March 2019. Contact and awareness programmes were conducted with the President, elected local body members and other local TK holders as part of the action plan for field research. Ethnobiological field surveys were conducted once or twice every month for a period of ten days each, covering the coastal and adjacent wards of each panchayaths, including sea shores and backwater areas. Interviews were conducted after obtaining Prior Informed Consent (PIC) with traditional folk belonging to fisherman communities, vaidyas and other knowledgeable persons in the study area using modern technical parameters with the help of standard questionnaire-based interviews, open-ended field discussions and

also by observation of their actual practices, wherever possible. Duration of the discussion varied depending on the informant's knowledge, approach, interest and availability. In the case of medical care, recording of information on various aspects of treatment practices such as diseases treated, method of treatment, vernacular names of plant used, method of herbal collection and medicine preparation, etc., were also collected and recorded. Relevant photographs and short video clippings were taken. Voucher specimens were also collected for future reference and authenticated using different standard Floras. Data pooling and analysis of the information were carried out. The information were uploaded in the electronic data base for further reference and research (Fig. 2-5).

2.3. Action plan

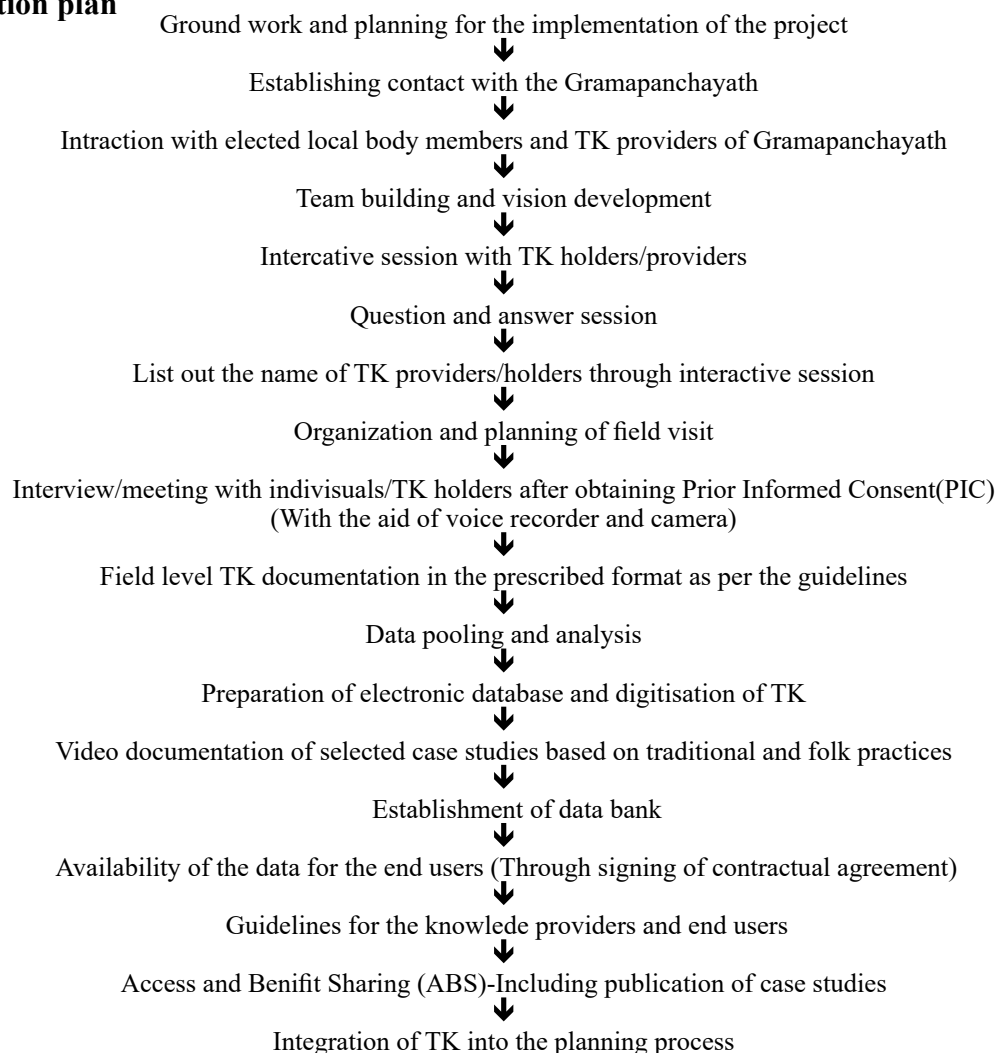




Fig. 2-4. Panchyath level meetings, awareness programmes and personal interviews with knowledge holders; Fig. 5. The electronic database developed for the digitization of TK

3. Results and Discussion

Ethnobiological survey on utilization of plants/animals used for medicine (single and combinations), food, tools and artefacts in 8 coastal Gramapanchayaths (Eriyad, Edavilangu, Perinjanam, Kaipamangalam, Nattika, Thalikkulam, Engandiyur and Kadappuram) of Thrissur district were carried out. Awareness on TK and its importance was provided to 234 people including Presidents and other local body members of Gramapanchayaths and TK holders. In total, 168 TK holders were interviewed (Fig. 6-9). 497 information on single drugs, 536 information on combination drugs, 264

information on food plants and 327 information on tools/artefacts were documented.

3.1. Food

From the field level survey, 264 information on plants/animals used for food were obtained. Earlier coastal inhabitants mostly depended on tuber crops to meet their livelihood needs as staple food. Nowadays, the younger generation of fisher folk use only tapioca and other tuber crops are rarely used. Along with the dish prepared using various fishes and other marine organisms such as *Njandu*, Squid (*Kanava*),



Fig. 6. Soman



Fig. 7. Velayikkutty



Fig. 8. Bhavani



Fig. 9. Karthyayini

Fig. 6-9. Selected TK holders/ Informants from the study area

Shrimps, etc. they use greens like *Velicheera*, *Muringa*, *Sambarcheera*, etc., that are cultivated within their surroundings. 'Pakkittambadi', a peculiar dish prepared in the Engandiyur Gramapanchayth, made using *Manihot esculenta* Crantz (Tapioca) and *Goldstripe sardinella* (Sardine fish (*Mathi*), documented was found to be unique to the area.

Plants such as *Abelmoschus esculentus* (L.) Moench, *Boerhavia diffusa* L., *Capsicum annuum* L., *Carica papaya* L., *Centella asiatica* (L.) Urban, *Colocasia esculenta* (L.) Schott, *Lagenaria siceraria* (Molina) Standl., *Manihot esculenta* Crantz, *Moringa oleifera* Lam., *Piper nigrum* L., *Plectranthus rotundifolius* (Poir.) Spreng., *Sauropus androgynus* (L.) Merr., *Solanum capsicoides* Mart., *Solanum melongena* L., *Talinum fruticosum* (L.) Juss, etc., are the common food plants grown in their home yard and widely used.

3.2. Medicine

In total, 1033 information (including repeated) were obtained on single and combination medicinal preparations used by the fisher folk. Plants such as *Acorus calamus* L. (*Vayambu*), *Aegle marmelos* (L.) Corrêa (*Koovalam*), *Asparagus racemosus* Willd. (*Sathavari*), *Cardiospermum halicacabum* L. (*Uzhinja*), *Clitoria ternatea* L. (*Shankhupushpam*), *Cyperus rotundus* L. (*Muthanga*), *Euphorbia thymifolia* L. (*Nilamvaranda/Nilapaala*), *Gliricidia sepium* (Jacq.) Walp. (*Sheemakonna*), *Hygrophila auriculata* (Schumach.) Heine

(*Vayalchulli*), *Lindernia crustacea* (L.) F.Muell (*Nilakanjiram*), *Talipariti simile* (Blume) Fryxell (*Thaliparithi*), *Thespesia populnea* (L.) Sol. ex Corrêa (*Poovarasu*), etc. are widely used for medicinal purposes as they are locally available within their surroundings.

Besides plants, various marine species such as *Rhizoprionodon acutus* (*Paalsravu*), *Rhinoptera javanica* (*Therandi*), *Stolephorus indicus* (*Chooda*), *Hippocampus* sp. (*Kadalkuthira*), *Scylla* sp. (*Njandu*), to be identified (*Pachakkannan sravu*), etc. (Fig.10-13) are used for the treatment of various ailments like breathing issues, anaemia, dryness of skin, etc.

Coastal inhabitants follow a systematic medicinal practice for pre-natal and post-natal treatments (Table 1; Fig. 14-17). They use marine organisms for rejuvenation of body, along with traditional treatments of natal care. For example, *Rhizoprionodon acutus* (*Paalsravu*) is used for preparing curry along with *Garcinia gummi-gutta* (*Kudampuli*) to increase lactation (hence the local name); *Stolephorus indicus* (*Chooda*) used as pharma-food because of its rich calcium content, and so on.

3.3. Tools and Artefacts

In total, 327 information on tools/artefacts were obtained from the knowledge holdres. Various tools namely *kooda*, *pankayam*, *mukkal*, *paruthinool vala*, *vanchi*, *thandu*, *elakkol*, *pongu thadi*, etc., artefacts including *thondu*, *panayolathoppi*, *thazhappaya*, coir and colouring agents/natural dyes for colouring fishing net

Table 1. Medicinal plants used for post-natal care by the coastal communities

Combination Pharmafood	Combination Medicine	Single Medicine
1. <i>Allium sativum</i> L. (bulb) 2. <i>Allium cepa</i> L. (bulb) 3. <i>Oryza sativa</i> L. (endosperm) 4. <i>Cocos nucifera</i> L. (endosperm) 5. Sugar Cane Jaggery	1. <i>Calotropis gigantea</i> (L.) Dryand. (leaves) 2. <i>Artocarpus heterophyllus</i> Lam. ((leaves and petiole) 3. <i>Ricinus communis</i> L. (leaves) 4. <i>Cocos nucifera</i> L. (rachis) 5. <i>Pongamia pinnata</i> (L.) Merr. (bark) 6. <i>Justicia gendarussa</i> Burm.f. (leaves)	1. <i>Bacopa monnieri</i> (L.) Wettst. (whole plant) – for treating constipation (both mother and child) 2. <i>Asparagus racemosus</i> Willd. (rhizome) – for leucorrhoea 3. <i>Curculigo orchioides</i> Gaertn. (tuber) – for leucorrhoea 4. <i>Trigonella foenum-graecum</i> L. (seed) – to increase lactation
Used for rejuvenation of mother's body after child birth (part used is given in parenthesis).	Used to prepare medicated water for treating postnatal backache (part used is given in parenthesis).	



Fig. 10. *Hippocampus* sp.
Used to treat breathing trouble in children



Fig. 11. *Stolephorus indicus*
Used as food as well as medicine (rich in calcium content)



Fig. 12. *Rhinoptera javanica*
For restoring mother's health after childbirth



Fig. 13. *Rhizoprionodon acutus*
Used as food to increase lactation



Fig. 14. *Curculigo orchiooides* Gaertn.
Used to treat leucorrhoea



Fig. 15. *Justicia gendarussa* Burm.f.
Used for the preparation of medicated water



Fig. 16. *Cissus quadrangularis* L.
Used in the treatment of earache



Fig. 17. *Bacopa monnieri* (L.) Wettst.
Used to treat constipation

(Plate 1) and boat are prepared/extracted from various plant parts (Table 2). These products are environment friendly and durable.

Due to modernization, fishermen in the coastal belt particularly younger generation are utilizing the easy-to-get products made of plastic such as hat, net, fibre boats, carry bags, water bottles, coir, etc., during fishing. These modern practices bring serious damage to the marine as well as terrestrial eco-system as these products are non-degradable and non-reusable.

3.4. Biofencing in the coastal areas

Biofencing is a way of creating boundary by planting trees and/or shrubs at relatively close spacing (Mishra *et al.*, 2011). Coastal inhabitants of the study area have created bio-fencing using plants such as *Gliricidia sepium* (Jacq.) Kunth ex Walp (*Sheemakkonna*), *Talipariti simile* (Blume) Fryxell, (*Taliparithi*) and *Thespesia populnea* (L.) Sol. ex Corrêa (*Poovarasu*), interwound with leaves (woven or as such) of *Cocos nucifera* L. Introduced plants like *Phyllanthus myrtifolius* (Wight) Müll.Arg. and *Pedilanthus tithymaloides* (L.) Poit. are used for fencing garden boundary. Biofencing using edible greens like *Moringa*

oleifera Lam., and *Sauropus androgynus* (L.) Merr., etc. are also very common in the coastal belt.

During the field visits, it is documented that, the people have been using the biofencing practice to create boundary between two houses and between house and public road. They followed this technique, since it is ecofriendly, cost effective, can be easily grown and be trimmed to any height desired. Currently, this trend has been replaced by the usage of plastic materials such as tarpaulin, PVC net, plastic net, etc., instead of coconut leaves, indicating that the TK on biofencing existed among the community changed over the years and is causing damage to natural ecosystem and biodiversity (Fig. 18).



Fig. 18. Biofencing using *Taliparithi* trees along with tarpaulin, a proof of changing TK



Plate 1. Traditional tools and artefacts used by the fisherfolk

Table 2. Plants used for making fishing tools and other artefacts

Sl. No	Tool/Artefact	Source Plant		Part(s) used
		Scientific Name	Local Name	
1	<i>Panayolathoppi</i>	<i>Borassus flabellifer</i> L.	<i>Pana</i>	Leaves
2	<i>Thondu</i>	<i>Cocos nucifera</i> L.	<i>Thengu</i>	Coconut shell
3	<i>Pankayam</i>	<i>Artocarpus hirsutus</i> Lam.	<i>Anjili/Ayini</i>	Wood
4	<i>Kooda</i>	<i>Bambusa bambos</i> (L.) Voss	<i>Mula</i>	Stem
5	<i>Mukkal</i>	<i>Artocarpus hirsutus</i> Lam. or <i>Artocarpus heterophyllus</i> Lam.	<i>Anjili</i> <i>Plavu</i>	Wood
6	<i>Thandu</i>	<i>Artocarpus heterophyllus</i> Lam.	<i>Plavu</i>	Wood
7	<i>Elakkol</i>	<i>Bambusa bambos</i> (L.) Voss or <i>Cocos nucifera</i> L.	<i>Mula</i> <i>Thengu</i>	Mature bamboo stem Midrib
8	<i>Paruthinool vala</i>	Yet to be identified	<i>Vakku chedi</i>	Bark
9	<i>Kayar</i>	<i>Cocos nucifera</i> L.	<i>Thengu</i>	Coconut husk
10	<i>Ponguthadi</i>	<i>Quassia indica</i> (Gaertn.) Noot.	<i>Karingotta</i>	Wood
11	<i>Kori</i>	<i>Areca catechu</i> L.	<i>Kavungu</i>	Leaf sheath
12	<i>Vallam</i>	<i>Cocos nucifera</i> L.	<i>Thengu</i>	Leaves
13	<i>Mathikooda</i>	<i>Cocos nucifera</i> L.	<i>Thengu</i>	Leaves
14	<i>Ola medanjath</i>	<i>Cocos nucifera</i> L.	<i>Thengu</i>	Leaves
15	<i>Thazhappaya</i>	<i>Pandanus odorifer</i> (Forssk.) Kuntze	<i>Thazha/Kaitha</i>	Leaves
16	<i>Vanchi</i>	<i>Artocarpus hirsutus</i> Lam.	<i>Anjili</i>	Wood
17	Natural Dye	<i>Lannea coromandelica</i> (Houtt.) Merr. <i>Mangifera indica</i> L. <i>Terminalia chebula</i> Retz.	<i>Karasu maram</i> <i>Maavu</i> <i>Kadukka</i>	Bark Leaves Dried fruits

4. Conclusion

Traditional knowledge of coastal communities include knowledge related to agro-techniques, fisheries, taxonomy, ecology, biodiversity and associated knowledge, therapeutic knowledge, geological, climate, nutritional, culinary practices, knowledge on waves and tides, etc. Several such elements are relevant and could successfully be integrated with the scientific knowledge for proper fisheries conservation and management. Hence, efforts are needed to develop an effective system to collect, classify, document and inventorize TK without losing its essential native content and value.

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