

**“Women don’t fish” – or do they?
Gender and Sustainable Livelihoods in Kerala,
India’s Small-Scale Coastal Fisheries**

By
Karen M Peters

A Thesis
Submitted to the Faculty of Graduate Studies
In Partial Fulfillment of the Requirements
For the Degree of

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Of

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Dedication

This thesis is dedicated to my husband Desmond M Burke for all of his patience and support and love and to my parents Peter and Greti Peters for getting me there Thank you also to Dr Shirley Thompson for her amazing fortitude in seeing me through until the end

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Abstract

Little information about women and their involvement with fisheries is available. In fact, if women are mentioned within the context of fishing, the majority of literature proclaims that women do not fish at all. My research on fish-vendors and shrimp-catchers in the State of Kerala, India, shows that women are indeed fishers. In fact, the research shows that women are integrally and uniquely linked to fishing activities all over the world. This study examines the nature of women's and men's activity in fishing. In applying Participatory Rural Appraisal (PRA), it sets out to determine the nature of small-scale fishing and how gender roles are affected by changes in traditional livelihoods.

This study examined the livelihood activities of two traditional communities involved with the fishing industry in the Vypin Island area of Kerala. One community, the fish vendors, which includes both males and females, work at this income-generating livelihood option, often for many years, out of desperation and of last choice. The other group are the shrimp catchers. They are also a socially and economically marginalized group. In both cases, these livelihood options do not allow for respected status in the larger community, nor are they livelihood activities that parents wish to pass on to their children.

This study also examines recent environmental changes that affect the resources available to small-scale fishers in Kerala. Specifically, the study looks at how global market pressures have impacted their environment. This is evidenced by how their heavy and singular dependence on the fisheries for a livelihood makes them vulnerable to the increasing demands of the export market. More and more, these pressures limit the

availability of fish for the local market as compared to species caught commercially that are not for local consumption. The study shows that at this point any increase in exports from the local fisheries or a crash in the fish supply itself would result in great risk to the lives of fish vendors. Here also the study shows how P R A can be used as a tool to equip at risk artisanal fisheries to help address local and global social and environmental change.

1 Introduction and Statement of the Problem:

Fisheries the world over are under threat by global market demands and pressures. It is these pressures that affect food security and livelihood options at a local level. Changes in global diets, as seen in the marketing of fish and seafood products, have a large and unexpected effect on traditional livelihoods and diets. In the case of Kerala, in less than 40 years, the traditional shrimp-based diet has changed to allow for the export of this valuable commodity. Traditional livelihoods have changed to access that market. My interest in applying gender analysis to traditional fishing livelihoods was piqued by finding little information on women and fisheries to the extent that the literature proclaimed women do not fish (Pisua and Leonard 1998, Ruddle 1994). My research shows that women are fishers and are integrally and uniquely linked to fishing activities.

This thesis sets out to: 1) document resource use and livelihood activities in the Vypin Island in Kerala, India; 2) undertake a gender analysis of local economic and livelihood activities. This research will give insight into the resiliency of the local small-scale fisheries in Kerala, South India. To do this, I focused on Vypin Island's community needs, resource use, and the community's ability to adapt to economic, seasonal, and environmental change.

To address these issues, a participatory research approach was used to determine the needs of the community. The research design consists of a pilot study observing and interacting with local resource users in a selected community, starting with the Participatory Rural Appraisal (PRA) approach.

1 1 Objectives

This thesis research was conducted through participatory research that was directed by the expressed needs of local communities to strengthen food security of local peoples while working toward restoring ecological qualities of the coastal fisheries zone near Fort Cochin Kerala. In doing so, a coastal zone management plan was developed that is community-based and that provides incentives for the local population to access the resource base in a sustainable manner. This project tried to be sensitive to differences within the community that are based on gender, caste, and socio-economic standing by observing and participating in the lives and activities of the local people engaged in different activities of fisheries and noting differences.

Long-term successful resources management relies fundamentally on local people's involvement in the process. For this reason, a community-based approach was ideal for the creation and development of partnerships of stakeholders making cooperation and information sharing efficacious. Through developing partnerships and incentives for sustainable use, the responsibilities for the resources could be shared by all stakeholders resulting in long-term sustainable activity. Through working with local people to explore sustainability of the coastal resource, the project promoted the long-term health of the ecosystem. An interdisciplinary framework was used to examine social, political, economic, and environmental concerns surrounding the management of the coastal ecosystem.

The project is designed to note local priorities while simultaneously examining environmental concerns regarding the long-term and ongoing health of the coastal fisheries region. The preliminary objectives of this thesis research were

(a) Documenting resource use and livelihood activities within the pilot project community

Livelihood refers to the assets capabilities and activities essential for a means of living (Rennie and Singh 1996) This objective is to ensure priorities of the local community regarding resource use are communicated This included

Documenting seasonal cycles of resource use and

- Assessing the ability of the local community to deal with change and the dynamics of environmental change In the process of determining the local community s ability to adapt to environmental shocks supports that are key to building more resilient social-ecological systems were examined By examining formal and informal supports community responses were analyzed in terms of building capacity to adapt to environmental change for the purposes of strengthening food security

(b) Undertaking a gender analysis of local economic and livelihood activities

Applying similar methods to the first objective this objective examines through a participatory process the concerns and priorities communicated by local women and examined power and gender in relation to decision-making This included documenting women s survival coping capacities and examining division of labour and household responsibilities

These objectives were developed refined and focused further following preliminary research in June After the research priorities of the community and the local NGO were determined to be small-scale resource use of fisheries and environmental change the research focused further on the livelihood activities of two groups involved in fisheries activities in the Vypin Island area

As the preliminary objectives were broad I focused on two areas based on the priorities and concerns drawn with the local community specifically 1) the impacts on local resources and 2) environments due to the demands of the global markets I was able to document areas of resource use the livelihood activities of the community and the role that gender takes in defining and accessing the coastal resources

1 2 Background

This study attempts to understand what I consider to be a serious problem facing our world today That is the pressures of globalization/ global markets and their effects on local ecosystems and the livelihoods based on those systems Specifically with fisheries large global interests have wiped out fish and thus fisheries in many parts of the world It is the small-scale artisanal fishers and the ecosystem where they work that is most greatly affected Of importance to understanding livelihood options is an understanding of the role that gender plays in determining options available for livelihoods This study examines some of the impacts of global demands on two livelihood options within coastal fisheries in Kerala India namely fish-vending and shrimp catching It does this within the conceptual framework of the sustainable livelihoods approach that is partially rooted in common property literature

1 2 1 Common Property Framework

Common property resources (CPRs) are those resources to which exclusion or control of access is difficult and the use of the resource by each user creates a situation that subtracts from the welfare of others and the sustainability of that resource (Berkes

1996) Some theorists view this condition of CPRs as inherently susceptible to depletion and degradation also known as the tragedy of the commons This school of thought regards shared resource use as by nature a social trap and holds that rational individual choice is inconsistent with the long-term interests of society (Ostrom et al 1999) Alternatively some theorists purport that the tragedy of the commons is the result of a particular social structure and show that there are numerous examples of successful CPRs management systems throughout history possessing similar institutional frameworks (Feeny 1994) This thesis is founded on the understanding that CPRs can be managed effectively when there exists communal arrangements for the exclusion of non-owners and for allocation among co-owners (Ostrom 1990 Ostrom et al 1999) It is guided by the notion that the key to the prevention of the tragedy of the commons is found in institutional arrangements The implied importance of institutions is that they lend stability through reducing uncertainty Community based practices offset threats to sustainability through integrated systems of rights and obligations regarding use and management as well as through informal controls found in customs traditions and codes of conduct (North 1990) In affording local people greater control over the decisions that affect their lives and the resources upon which they depend the social validity of local communities historically linked to the land base is enhanced (Campbell 1996 Jentoft 1999)

The micro level conditions requisite to the management of CPRs are linked directly to institutions and capacity building These conditions include establishing trust and reciprocity and creating incentives for sustainable use This must be followed by the restriction of access to the CPRs and devising a set of rules for governance It is essential

that local users be integrally involved in the making and enforcing of these rules. Once rules are established, graduated sanctions are set to ensure compliance with the rules of the system. Also, resource users must be aware that the costs of the rules do not exceed the benefits that they provide. This is most likely when the resource users depend on the CPRs as their primary livelihood resource and have some autonomy in order to make their own access and harvesting rules as well as having a common goal for the operating of the resource system. Different levels of governments can facilitate this process through providing information that aids in identifying problems and potential solutions around governance of a resource. Further, their role can enhance enforcing and legitimizing agreements as well as effective monitoring and assisting in establishing conflict resolution mechanisms (Ostrom et al. 1999). In this way, the premise of this thesis is that resource management can only succeed when it is geared toward building communities and reinforcing the conditions that turn geographical communities into social communities (Jentoft 1999).

Common property theory requires the examination of gender and caste distinctions within the social group. Communities are not homogeneous. The project's emphasis on gender analysis and promotion of equitable participation of all members in a community in decision-making processes stems from the Gender and Development philosophy. Gender scholarship has argued that women's empowerment and full participation in all decision-making processes are a requirement of equality, peace, and sustainable development (Seymour and de Leon 1997, Reinharz 1992).

In examining development issues, one must first recognize that the resources women use, the manner in which women use them, and their relative access to the

resource base is unique compared to that of men (Mathew 1997) Women may be more dependent on common or open-access resources (Townesley 1996) Commonly added to this is the existence of a sexual division of labour This in itself is capable of hindering development The public gender-based division of labour generally stems from roles in the private sphere In some regions this public/private dichotomy has translated into a unique relationship with the environment This coincides often with their alienation and marginalization in policy development (Elliot 1996) This marginalization is problematic as the particular knowledge of women and its application is necessary for resources management and sustainable development (Grenier 1998 Agarwal 1994) This notion guided all research under this project as models for sustainable resource use must account not only for all users but also be responsible to the different gendered perceptions and values of the resource base itself

1 3 Rationale for Choosing Site

A new partnership and Memorandum of Understanding (MOU) had been established between NRI and Cochin University of Science and Technology (CUSAT) which facilitated working in the general area of Fort Cochin Kerala After meeting with Dr C T Thompson of CUSAT touring the coastal area and subsequent discussions the scope and location of the study were determined to be Vypin Island

1 3 1 Physical location

The fieldwork for this investigation took place in the coastal area near the city of Fort Cochin Kerala Kerala shown in Figure 1 is the state that forms the western part of

the southern tip of India. It is bordered by Tamil Nadu to the East, Karnataka to the North, and the Arabian Sea to the West and the Indian Ocean to the South.

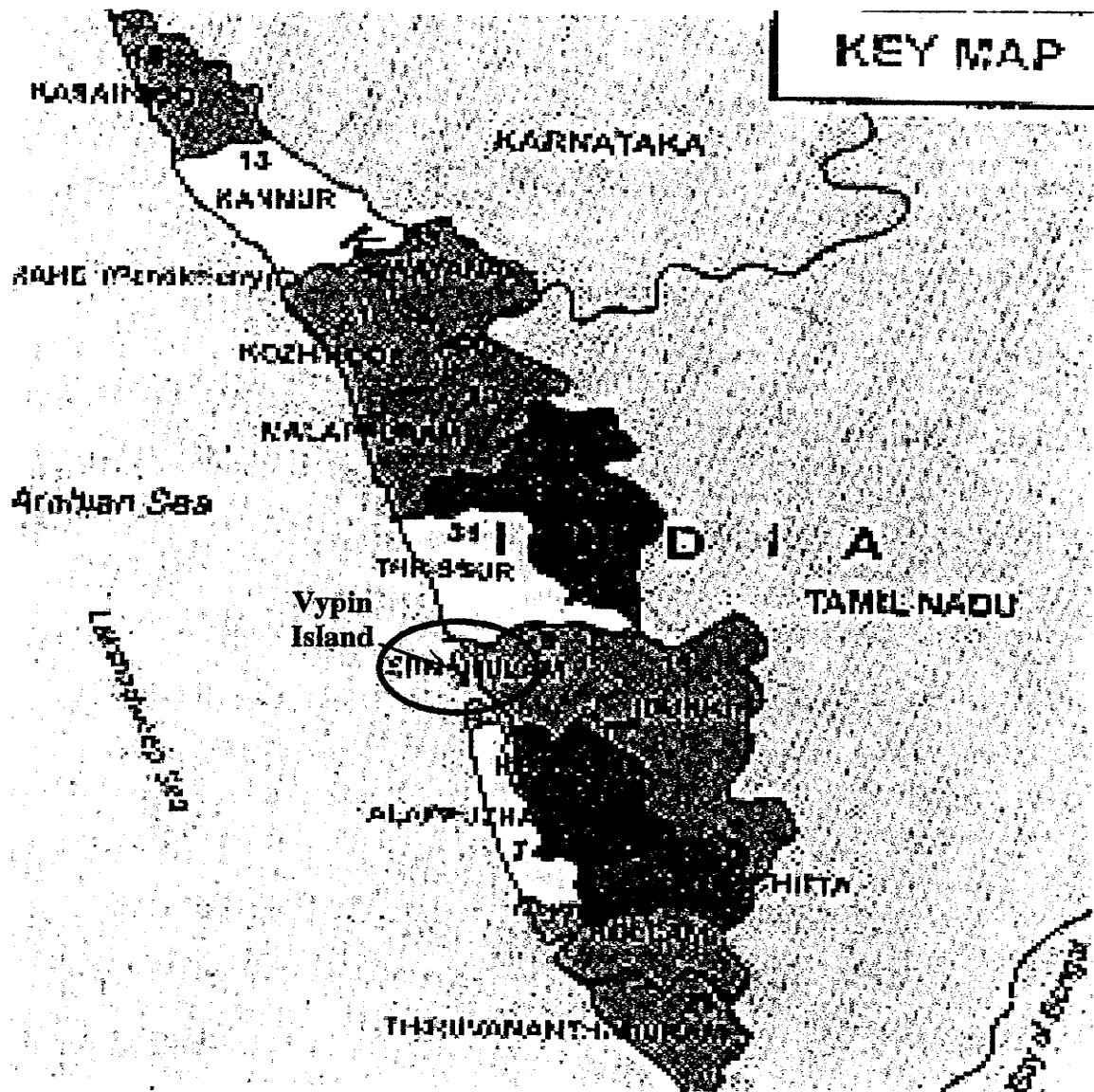


Figure 1: Kerala State (Source: <http://gallery.newkerala.com>)

In terms of fishing, Kerala is a very significant region. With 10% of India's coastline and 7% of India's continental shelf, the state produced 24% of the total marine catch and accounted for some 40% of India's seafood exports in the 1980s (Meynen

1989) In the early 1960s artisanal fishers in Kerala numbered about 85 000 (NCAER 1962) by the 1980s that figure was over 106 000 Then however there were also 17 500 workers in the mechanized fisheries sector (Kurien 1985) In the 1980s the artisanal fishers had some 34 000 water craft and produced over 60% of the marine catch while there were about 3 000 mechanized boats in the 'modern' sector (Meynen 1989) Mechanized boats are larger vessels that can cast deep nets and fish out further to the open ocean

The small-scale coastal fisheries of Kerala were studied to determine if they take a sustainable approach to adaptive management of an ecosystem Prior to 1970 Kerala s fisheries were dominated by small-scale local entities providing fish and shrimp for local consumption After 1970 global demands for shrimp changed the way communities in the area accessed and used these fisheries resources Development aid from Norway provided large trawlers and dragnets to increase the catch of the area for a global market While the introduction of larger fishing vessels brought about a depletion of the fish stock in the open coast its impacts were also felt by the communities continuing in the traditional small-scale production areas

This study was conducted on Vypin a small island off Fort Cochin situated between the Arabian Sea and the Cochin Backwater It is a narrow island 27 km long with one main road that stretches end to end length-wise The rural-urban locally called rurban nature of the island conceals what many believe to be the most densely populated area of Kerala some say of Asia Buses and trucks dominate the main road with many side roads and pathways available for pedestrian and small vehicle use Given the dimensions of the island the density and variety of industrial activities is ecologically

significant. It is an area that has a wilderness or jungle atmosphere with many plant species, small and large-scale fisheries and fishponds for aquaculture, mangrove habitats as well as a very dense human population. What is of key importance in terms of sustainable livelihoods is that within this densely populated area, local gardens and fisheries supply local markets that feed its population for the majority of its caloric intake. Local varieties of rice are integrated with the shrimp cycle and have been the traditional local diet. However, the demands of globalization have in effect changed the local diet and high protein shrimp are up to 90% yield exported.

This investigation focused on shrimp catching and fish vending activities. These activities involved the local domestic market as opposed to the shrimp processing and fish processing activities that were geared for export. This allowed for the inclusion of a large group of fish vendors, some of whom were engaged in the traditional methods of drying fish for local markets.

1.3.2 Background on Host Country Organizations (See Appendix 1)

Coastal resources management is a discipline that looks at how human communities, from the local to the global, interact with nature in these particularly ecologically sensitive areas. The goal of this thesis is to examine ways of enhancing the community health on Vypin Island in India, which is both urban, having a high population density, and rural, being dependent on subsistence and market fishing activities. This area is called rurban (rural-urban) as it is an example of how densely populated areas can integrate typically rural and urban activities to be sustainable and self-sufficient in terms of food supply, as well as to have rich intellectual capacity.

Through a community-based participatory approach this research provides a framework to examine and possibly enhance the power that local resource users have to impact their livelihoods and decisions on which that livelihood is based. After providing some background on the local culture and the physical location of the study area this paper will examine the sustainable livelihood options available through small-scale coastal fisheries.

This research was carried out in cooperation with a number of local organizations including CUSAT Grama Vikas Society Melukavumattom (GSVM) a Catholic Self-help project the South Indian Federation of Fishermen Studies (SIFFS) and SAKHI (Women's NGO). GSVM for example is an agricultural development NGO working in Kerala. Initial contact with GSVM was made by Dr. John Sinclair (one of the project advisors from the NRI) during a visit to the area in 2000. Sibi Kuriakose is the director of Grama Vikas Society Melukavumattom (GSVM) and is based in the village of Purayidathil near Kuravallangad in the Kottayam district of Kerala. It is located in Kottayam district 1.5 hr from Cochin. Based on this contact a proposal was developed in conjunction with GSVM to examine livelihood issues in Kerala. GSVM was instrumental in assisting with the selection of the pilot community and helping to orient the researchers to the region. GSVM's experience in the region with training capacity building empowerment and resource issues provides an important context to the project's attempt to examine livelihoods and the impacts of change. GSVM works on literacy and gender issues dealing with producer groups. As GSVM is affiliated with the Kerala State Women's Commission my GSVM affiliation and contacts were instrumental in facilitating meetings with government and local women who were key to the study. The

project s focus on resilience would mesh well with GVSM s work with local people and their adaptive responses to changes in technology land use and resource extraction activities

The actual site of study Vypin Island was chosen on the basis of advice from GVSM and other institutions and from preliminary site visits Criteria for this selection included use of coastal resources strong fisher association use of a mix of livelihood activities including agro forestry and other small scale agricultural production (Bailey and Pomeroy 1996) and the absence of major complicating factors such as open conflict or major industrial pollution although there were nearby shrimp processing plants

Dr A Damodaran at the IIPM was a visiting Shastri Institute fellow at the Natural Resources Institute University of Manitoba from September 2000 to January 2001 Although based in Bangalore IIPM has research units in several parts of Kerala including the Idukki District which is a short distance from Cochin and provided valuable assistance in locating a study area

CUSAT has an inter institutional agreement for academic cooperation with the University of Manitoba and served as a partner organization CUSAT is a modern university and has library and communication facilities

1 4 General Trends and Needs

I developed an understanding of local resource use systems for sustainable livelihoods through observations interviews and focus groups To date very little has been written throughout the world about women s interactions with coastal resources (Pisua and Leonard 1998 Ruddle 1994) However it should be noted that the resources

that women use within coastal communities the manner of their use and their access to these resources are unique generally compared to those of men (Matthew 1997) For this reason a gender analysis became a key part of the research in order to determine – both men s and women s – access to the resources as well as decision-making power over their use

Theoretically the project can be expected to examine how communities deal with change and their adaptive capacity (Sinclair and Ham 2000) In previous work NRI graduate students have shown the feasibility of documenting local land use systems (Berkes et al 1998) livelihood strategies (Sinclair and Ham 2000) and local perceptions of sustainability indicators (Duffield et al 1998) This project then would serve to build further on the theoretical aspects of change(Berkes and Folke 1998)

The goal of this project was to enhance the health of a regionally and globally significant area through the promotion of sustainable livelihoods for the maintenance of common property resources (Berkes et al 2000) As such it addressed two areas of critical importance to local people in the region empowerment and the need to increase the adaptive capacity of communities Through a community-based participatory approach the project sought to enhance the power local people have to impact the resource decisions and arrangements that affect both their livelihoods and the resource base to which that livelihood is explicitly linked Local people need to have a stake in conservation and management activities

The possible limitations of the study included cultural and linguistic barriers and the possible financial and time constraints in particular not having enough time to develop trust relationships with the community This proved in many instances

throughout the study not to be an issue. The setting and cultural/linguistic barriers were addressed by cultivating a close working partnership with the host organization to determine an appropriate pilot community while also relying on them to provide translation services when necessary. That the translator was male was not ideal to work with the mainly women in a society segregated by gender but his approach did not appear to conflict with the goals of examining gender issues. The translator was a student at C U S A T as well as being a local fisher. In observing his interactions with the community members both male and female he created a relaxing situation that allowed for candor in the answers. In addition my past experience in India living in Calcutta and volunteering for an international NGO was an asset in overcoming some of the cultural barriers inherent in community-based research. The field season of four months allowed for a significant period of time to be spent in the local community. The time constraints however did not allow for an accurate depiction of seasonal cycles but gave a clear indication of the fisheries activities from May – November.

1 5 Locating myself as a Researcher

With my educational background in international development studies and philosophy my work experience in local and international settings in community development as well as a strong family background in education and community development I developed a keen interest in learning from and working with communities around their resources. My interest in working with natural resources was further piqued by my undergraduate professor stating the idiom three quarters of the world's women spend three quarters of their time looking for and hauling water. That which unites

women, the world over is their labours It was then that I knew that I wanted to be involved in a meaningful way with strengthening communities around their resources management

1 6 Organization of Thesis

This thesis is organized into five chapters Following this introductory chapter the second chapter reviews literature as theoretical supports for the importance of gender analysis as a method of study and for development priorities The third chapter examines the methods used in the study Chapter four discusses the findings of the research revealed through observation interviews and focus groups Chapter five gives conclusions results and a summary of findings

2 Literature Review:

Gender Policies as they relate to the Sustainable Development of Fisheries

2.1 Objectives

The literature review considers three different areas namely 1) trends in development work that address gender issues and policies and examples 2) experiences in the developing world of how policies addressing gender issues affect sustainable livelihoods and 3) common property rights

The literature review begins with a focus on women fishing to explore the common myth that women don't fish so that my focus on women fishing in Kerala is not seen as a development anomaly but as part of a global livelihood strategy That women and men fish in the global commons requires common property rights needs to be discussed

2.2 Background

Women and men have always been engaged in complementary activities in a fishery In most regions of the developing world however the large boats used to fish offshore and deep-sea waters have male crews while women are relegated to managing smaller boats and canoes Many more women engage in fishing with small implements harvesting the shores for shellfish and other species In many countries it is predominantly the women who are engaged in inland fishing In Africa they fish the rivers and ponds In parts of India, women net prawns from backwaters In Laos they fish in canals In the Philippines they fish from canoes in coastal lagoons (Tuara 1997)

In many artisanal fishing communities women are also mainly responsible for performing the skilled and time-consuming jobs in the fishing industry that take place on-shore such as net making and mending processing the catch and marketing In Asia where fish is an integral part of the diet of many cultures women are active in both artisanal and commercial fisheries

The two trends in development work that address gender issues have been *Women in Development* (WID) and *Gender and Development* (GAD) (Humble 1998) To date little has been written about women's roles in fisheries in either regard What is available begins to illustrate that the work done so far by development agencies and national policy makers follows one or the other of these two trends

The dominant approach taken by organizations is referred to as Women in Development (WID) It tends to result in women-only policies and projects that are focused on their traditional domestic activities The other stream is known as Gender and Development (GAD) It on the other hand tends to address the social structures and processes that maintain a gender-based power imbalance Development initiatives employing GAD recognize that it is important to understand the approaches that address gender within development issues and to examine the gender division of labour in coastal marine resource use The theoretical grounding of both of these trends shapes the policies of many development agencies The theory is often combined with feedback from fieldwork to create change in policy direction within these agencies

2 3 Gender and Common Property Resources

Common property resources (CPRs) are those resources to which exclusion or control of access is difficult and the use of the resource by each user creates a situation that subtracts from the welfare of others and the sustainability of that resource (Berkes 1996) Both approaches in examining the role of gender and development note that the resources that women use in their roles as part of a community the manner in which they use them and their relative access to those resources are unique compared to those of men (Matthew 1997) As an example women are often more dependent on common or open-access resources than men (Townsend 1996) Each trend also acknowledges that there is commonly the existence of a division of labour along gender lines within a community The public gender division of labour is known to generally stem from gender roles in the private sphere In some regions this public/private dichotomy has translated into a unique relationship for women with the environment This relationship often coincides ironically with their alienation from and marginalization in policy development (Elliot 1996) This marginalization causes problems as it is often the particular knowledge of women and its application that is necessary for an analysis towards a resources management design that can enhance sustainable development (Agarwal 1994)

2 4 Women in Development

WID is the main approach to dealing with women's participation in development activities at this time WID began to be taken up at the end of the 1970s as a serious consideration in development work The 1980s experienced such a strong trend toward WID that it could be argued that no one was actually reflecting on whether such policies

were beneficial to or even desired by the women they were effecting. Basic gender role structures in a society have acquired strength by the fact of time. Over such time these roles appear to be natural in the society. This has resulted in an acceptance of gender-based divisions of labour within the society by both women and men. This gender-based division of labour in WID is not critically addressed. The approach actually tends to reinforce the rigidity of these roles. WID strategies have most often resulted in for women-only projects that focus on traditional women's roles such as domestic activities like hospitality, nursing and sewing. This approach assumes that women have been left out of development and need to be part of reintegration strategies facilitated by others in order to benefit as well (Rathgeber 1990).

It is known in the fishing industry that the primary producers are generally male. The predominant reason seems to be that it is a result of the larger role that women in almost all societies take in child-rearing responsibilities and household activities. The nature of the fishing industry physically reinforces the gender-based division of labour because the men are aboard fishing vessels away from the women who are engaged in domestic and community activities (McGoodwin 1990). These roles have become inflexible over time and now appear as natural to the society and its observers. The fact of these unquestioned social conventions precludes the possibility of women's participation as fishers even if they are not involved in community or child-rearing activities (Ibid).

Women's roles in the fishing industry have not been extensively studied but they appear to take a key role in processing and marketing. From Kochi to Fiji, from Senegal to El Salvador, from Norway to Newfoundland, women of fishing communities play a

central role in the fisheries and in maintaining the social fabric of their households and communities. However, they remain largely invisible, and the roles they play largely undocumented (Pisua and Leonardo 1998). Official surveys not only often fail to capture the gender diversity of the fishing economy around the world, but they also sometimes systematically introduce biases that underestimate and underplay the role of women in the entire gamut of fisheries-related activities. These activities are from fishing, net-making and net mending, and they are able, in some instances, to assist in the decision-making regarding fishing locations (Ibid). It should be noted that development initiatives and newer techniques could, in their zeal, obscure the importance of the generations of local knowledge gained by these women (Ruddle 1994). As a result, women's contributions remain largely unrecognized. Policy interventions directed at supporting women's roles in the fisheries have consequently been few and far between, contributing to their systematic marginalization within the fisheries (Pisua and Leonardo 1998). Policymakers have consistently failed to take account of women's potential roles in environmental and development planning. Traditionally, however, if women are active participants in fish harvesting, their roles are confined to the shorelines, collecting shellfish or other coastal marine species that do not take them far from domestic activities (McGoodwin 1990).

The WID approach is characterized by a placing of emphasis on these traditional roles with the intention of working within the given social system to improve women's lives. In India's fishing communities, for example, women often do not catch fish but are connected to the industry through other aspects such as net making, processing and marketing. Many women also work as small-scale fish traders (Mathew 1997). An

example of a WID approach would be to help the women to save money or provide them with access to credit. These policies would often be implemented without examining the structures that keep women socially and economically marginalized in the first place.

The fishing activities of Pacific Island women, as another instance, are integral to providing high protein food as well as income to numerous coastal villages (Chapman 1987). The problems inherent in the WID approach are evident as development plans have ignored the role that women take in programming the operations of their small-scale fisheries. An initiative in the Solomon Islands, with a view to longer term conservation and development needs, has recently been implemented to assist women in projects involving sewing, nursing schools and facilities for women's activities. It continues, however, to define women's activities in traditional or acceptable ways without addressing problems within the existing social structures (Aswani 2000). In Oceania, women's fishing activities are of paramount importance to the nutritional and economic needs of most coastal households but their inputs into policies concerning sustainably developing the resources are not sought (Ibid).

2.5 Gender and Development

GAD differs from WID in that it is critical of development policies. Unlike WID, it asserts that women have always participated in creating development plans. This participation has been from an unequal position and without acknowledgement, however. The crucial constraints are the social structures and processes that maintain a gender-based power imbalance. GAD recognizes that women's lives are shaped and affected by men and vice versa. Therefore, empowerment efforts must involve both men and

women Equity is possible not in isolation but in the negotiation of relations between genders GAD focuses on transforming unequal power relationships within and between women and men rather than on women's roles in isolation (Humble 1998)

The insights derived from GAD fit well with the Participatory Rural Appraisal (PRA) approach to research and policy development PRA requires for instance as part of its analysis the examination of gender and caste distinctions within the social group The emphasis of GAD on gender analysis and the promotion of equitable participation for all members of a community in decision-making processes also stems from gender focused philosophy Gender-focused scholars have argued that women s empowerment and full participation in all decision-making processes are a requirement of equality peace and sustainable development (Seymour and de Leon 1997 Reinharz, 1992)

Because GAD studies address women s daily activities they can also address policies that promote sustainable livelihoods To achieve empowerment in personal and political terms a GAD program has to address the women s immediate and practical needs for personal and family survival as well as providing long-term strategies for gender equality Improving women s opportunities requires the introduction of long-term systematic strategies aimed at challenging the prevailing structures and building the accountability of institutions to the people they serve for their decisions Short-term ameliorative approaches to improve women s economic circumstances are ineffective unless they are combined with long-term strategies that establish or reestablish control over the economic decisions that define their lives Short-term strategies need to provide adaptability in crises while building experience for developing longer-term strategies In fisheries this could mean for example policies that recognize women s essential role in

ensuring food security. As a result, the women's existing expertise in coastal harvesting, marketing and processing would be reinforced.

GAD policies can be subject to resistance. For example, women's daily activities tend to focus on their traditional role in the division of labour. The effect of time on the perception of gender role structures, seeming as 'natural', results in an overall acceptance of this division of labour. The gains here are immediate and of short-term duration. Women may resist social change in their current situation if they perceive a threat to their short-term interests or to their safety (Molyneux, 1985). Addressing the larger issues of subordination can be seen as threatening to the status quo and controversial and therefore are often avoided. This, in turn, makes longer-term priorities more difficult to address. If women's strategic gender interests are to be managed without threatening women's present condition, it is the women concerned who must be engaged in the analysis and determine the direction and pace of change.

Communities are also not only stratified by gender but also by ethnic origin, class, caste, age, etc. Women often associate more readily with the men of their own groups rather than be involved in over-arching issues that affect women across other strata.

2.6 Implications for Development

Development policies and programs are shaped by their ideological mandates. One unfortunate outcome, however, of creating such philosophies of development is that they can be relegated to non-meaning by becoming jargon. Empowerment, for example, becomes a word to avoid. These philosophies can also be manipulated by using the jargon but to continuing with business as usual.

The United Nations Food and Agriculture Organization (FAO) see gender analysis as the key to policies regarding sustainability and food security. This is due to the recognition of women's traditional role as food provider in the family as well as women's large contribution to agriculture in developing nations. Gender analysis is seen as a tool to rethink current processes such as natural resources management and use economic adjustment and transformation or demographic changes to better understand the gender issues within them. This is in order to become more efficacious in meeting women's and men's gender-based constraints, needs, and to provide opportunities (FAO 1997). Through its Plan of Action, the mandate to promote sustainable development and food security for all people, the FAO hopes to ensure that women, as well as men, have supports to continue and pursue sustainable livelihoods (Ibid). All the same, in its mandate the FAO does not appear to examine equity issues that would address the issue of gender roles as part of a natural society. Its programming, however, as seen in Vanuatu and West Africa, for example, shows that they are looking after this issue more in the field.

As the understanding of women's role in development is changing, the policy about women is changing progressively as well. The most relevant changes from a theoretical perspective that the FAO, in their Integrated Development of Artisanal Fisheries (IDAF) programming, have developed are women who were mainly considered as part of community development only in terms of reproduction, are still, but additionally considered in roles of production and works within the community.

This shifts the view from one that ignored women to one that examines the relationships between women and men. The concept of women in development is shifted to that of gender.

The shift needs to take place from the consideration of practical needs to that of strategic ones. That is, from now on, the interest is focused on relations and dynamics of power and social control between men and women or by women. This is a change in the analysis from viewing women as one class of analysis in the household to the relations between men and women within stratified social groups (FAO 1997).

I will discuss different areas where women have been recognized in the literature as fishing in Vanuatu in the Pacific Islands, the Gambia, Peru, and South India. These readings informed my investigation by showing lessons learned in practical field experiences and by the presence of large gaps in literature addressing women and fishing, emphasizing the urgent need for further study (Ruddle 1994). It is evident on a global scale that women are integrally involved in fisheries activities. It is equally evident that their efforts and labours have been largely ignored by development work and research.

2.6.1 Vanuatu

It is a common misconception that women don't fish; they just gather shells (Tuara 1996). Traditionally, women are much more involved in fishing activities in shallow near shore waters while men's fishing activities are focused on deep-sea areas. Women, however, do engage in many other types of fishing in the various Pacific Islands.

cultures from deep-sea fishing alongside men to community fishing to reef gleaning and freshwater trapping activities (Ibid)

In the western Pacific women contribute to the fisheries in many other ways as well. They collect fish and other coastal species to account for a high portion of the protein intake of their families. The women's fishing activities often provide income through marketing and fish processing. As in other fisheries locations, women are involved in maintenance of gear and nets. In Vanuatu, they are also engaged as crew on fishing boats. Aside from these roles, women are also involved in fisheries organizations, research and training (Tuara 1996)

The contributions made by women in the Vanuatu communities have been greatly underestimated in the past. Studies have usually focused on fishermen and have ignored women's work. This is evident as men's fishing is given higher social status and support by the studies. An emphasis of the studies on high technology and deep-sea fisheries, where men are active in the industry, excludes proper attention to inshore and subsistence fishing, where women are involved. Researchers and consultants thought that women did not wish to be involved in fishing or that their activities within the industry were a natural part of their activities, so why draw attention to it. Even though women were gathering shellfish, they were not considered fishers because fishing was an activity that men did (Ibid). Viewing the women's activities in subsistence fishing as a negation of a valid occupation perpetrates the view of a natural social structure, making the recognition of women's labours difficult and change an even greater challenge. As in other western Pacific nations, Ni-Vanuatu women are engaged in the three forms of fishing: subsistence, artisanal (or small-scale) and commercial. Preservation, marketing

and distribution of fish catches also remains the responsibility of women (Tuara, 1995)
However policies and programs by development agencies tended to the WID model

2 6 2 The Gambia



Figure 2: Gambian fisherwoman (Source FAO 1997)

The FAO has been involved in studying gender issues in the fisheries sector for the promotion of women s involvement in small-scale operations Women in the Gambia as with many other places hold an inferior position in society but are saddled with a heavier labour burden than that of men Traditional cultural social and religious structures as well as political and economic constraints are all factors that contribute to the lower status of women The stratification of society prevents women from sharing in equal rights and opportunities that would allow them to participate from an equal standpoint to men in the decisions that would affect the sustainable development of their

communities (Horemans 1997) Studies of women's daily activities show that they generally work from 16 to 18 hours a day in domestic activities food production and marketing (Ibid) With fishing the men are engaged in the harvesting processing and marketing while women are primarily engaged in post-harvest activities Women who are involved in fisheries development activities programs and projects make up approximately half of their population yet their involvement in the planning and decision-making is very limited The FAO had found that policies and programs addressing this inequity specifically were non-existent (Ibid) The FAO also clearly sees that while women are active in integral ways to the fishing industry customs and social structures prevent women's emancipation a goal of GAD Since women are actively involved in artisanal fisheries but they are not involved in the decision making processes the FAO recognizes that the emancipation of women defined as being able to express needs and aspirations in planning in the fisheries sector of the Gambia is yet to be realized

The theoretical perspectives have shifted in the Gambia from a WID approach that does not examine the social structures that bypassed or ignored women to a mandate of reexamining the relationship between men and women as in GAD There is also a shift from development merely in practical terms to an examination of how development is impacted by power that is exercised by women or power relationships between men and women (Ibid) This ideological shift in the FAO allowed women in the Gambia to be heard expressing their desire for training in the production aspects in the fisheries to increase their incomes

In other West African communities the FAO found other results In Senegal women partly funded the means of production and organized themselves to ensure

sustainable fishing In Cameroon and Benin they found that the relationship between men and women has developed into partnerships and dependence on each other (Ibid) The lessons that the FAO learned in West Africa indicated that women do organize themselves but are in need of supports when encountering management problems and are often without resources The recommendations of women to the FAO were that they would support women s groups by securing economic supports and by training in appropriate technology (Ibid)

2 6 3 World Food Program – Peru

It is said that if you give a man a fish he eats for a day and if you teach him to fish he eats for a lifetime But what happens if it is a woman who learns how to fish? (FAO 1997)



Figure 3 Teaching women to fish – Peru (Source FAO 1997)

The mandate of the World Food Programme (WFP) is to alleviate hunger in the poorest of the poor and to address critical food security emergencies in developing

nations. Recently, the WFP has seen a need to adjust its policies in order to break the dependency cycle that its current charity model generates. As a result, in Peru, the new programming has come in the form of training women to organize, as in a Mother's Club, to read, write, and fish. Women had been engaged in subsistence shoreline fishing in Lake Titicaca but had no access to the credit that would allow for deeper fishing. The social structures also only allowed for men to fish in the middle of the lake. The reexamination of its mandate by the WFP allowed for a new model of sustainable development that could address the social structures that kept women and men marginalized. With this new model, women such as Chata Catachura of Puno, Peru, could learn literacy skills and fishing. She now heads a company of 40 women with seven boats that fish in Lake Titicaca (http://www.fao.org/Gender/en/fish_e.htm)

2.6.4 Women in Kerala and Tamil Nadu Fisheries

The role of women in maintaining the social and cultural structures of fishing communities in Kerala is seen as indispensable. However, there is a strong taboo against women fishing in Hindu households (Kurien, 2000). Some Hindu and Christian fishermen allow the women to be active in fish processing and marketing but never in harvesting. The women of the Muslim fishing communities are generally confined to in-house activities. In these roles, the women are recognized as being integral to food security for their families. The Centre for Development Studies (CDS) in Kerala sees a role of women in fisheries but does so without examining the social structures that may impede development of women and their communities.

The situation in Tamil Nadu is similar. Women here are involved in the fishing industry as traders and processing support staff. They have difficulty organizing as there are conflicting social structures and money is hard to save. The women do not have an opportunity to exercise any decision-making power. This in combination with the inability to save presents periodic crises in many communities, food security. The goal of GAD would be to create opportunities for women to organize, develop mechanisms for them to save money and/or gain access to credit and to thereby have greater decision-making powers within their households (Mathews 1997).

2.7 Summary

Women in the developing world are involved integrally with the fishing industry. However, these same women's participation in decision-making processes around the sustainable development of these resources has been limited to date. Development agencies have created policies and initiatives around coastal fisheries development that reflect their theoretical mandates toward these gender issues. If the agencies' theoretical framework stems from the Women in Development (WID) model, it will produce programming that is women-only in focus without critiquing the gender imbalance. The initiatives will involve supporting women from within their traditional gender roles. If, however, the theoretical framework claims to be from a Gender and Development (GAD) perspective, breaking down the social structures that maintain gender-based power imbalances will be addressed throughout the agencies' programming. It is possible for these initiatives, through their fieldwork, to recognize and address changing local needs and feed this information back to the organizations. The organizations can in turn

modify their fieldwork strategies to reflect these changes thereby setting up a positive information feedback loop

As is the practice with Participatory Rural Appraisal (PRA) it is important in the sustainable development of resources to have the participation of marginalized peoples in the decisions surrounding these resources Addressing gender issues in societies where women fully one-half of the population are marginalized is therefore an integral part of the maintenance of sustainable livelihoods

3 Methodology

The methodological approach of the study was participatory in nature (Chambers 1983) recognizing that development initiatives without essential participation of communities are unlikely to succeed. In this light the focus of the study was people, their livelihoods and the interaction of socio-economic and ecological factors (Rennie and Singh 1996). The research design consisted of a pilot study observing and interacting with local resource users in a selected community starting with Participatory Rural Appraisal (PRA) approach (Pido 1996). The pilot community was located on Vypin Island near Fort Cochin Kerala South India. The selection was also based on the existence of perceived potential for community development. After selecting a community data was obtained through the following PRA methods:

- Participant observation was employed including direct observation of resource use and livelihood activity at the community level. Small group interviews and focus groups were used in order to determine patterns of resource use and livelihood activity throughout various seasons with the 35 fish vendors and the 25 shrimp catchers.
- Seasonal calendars of resource use were compiled with participation of local community members.
- A rapid market assessment was undertaken in order to determine the vulnerability of the community and resource to external factors. This put household and community activities into account and determined division of labour along gender, caste and socio-economic standing. The economic analysis was to determine a general relational level, not to determine specific income levels. For

example community economic flow charts were created with qualitative data based on the identification of major activities and fluxes. The market analysis included demand for local goods, marketability of resource products, long-term sustainability of economic activity and flexibility of activity to respond to economic and environmental changes. This was done by a rapid market assessment of what was available in the local market in comparison with what is available as a current commercial fisheries resource and an analysis of income-generating livelihood options as to communities sustaining themselves in times of environmental change.

- Pricing practices were also examined analyzing production, species, supply and source. As it examined market issues of price, supply and demand, focus groups, small group interviews, participant observation, key informant interviews and observer participation was required.

In undertaking gender analysis I interviewed key informants, held focus groups and conducted small group interviews. It was necessary to participate in activities of local women around the resource base. Gender analysis to document women's livelihood activities, resource use and coping strategies included daily activity charts indicating seasonal activities, charting household gender-based division of labour, community mapping of women's patterns of resource use, ranking women's resource priorities and compiling charts relating socio-economic standing with decision-making power. The coastal zone management plan that exists for Kerala was examined to see if it included women's resource activities consistent with my findings.

3 1 Methods and Plan of Study

A course of fieldwork was undertaken over a four month period during the summer and early autumn of 2001 to identify sustainable livelihoods the role that gender played in shaping these livelihoods and the resilience capabilities of the fisheries in the local area to the forces of change The methodological approach of the fieldwork was qualitative and participatory in nature It relied primarily on semi-directed interviews and observation as well as some background research

This investigation also placed a specific emphasis on gender analysis This research actively sought to investigate the realities of local women engaged in accessing in this case a fisheries resources base For this reason a gender analysis became a key part of the research in order to determine – both men s and women s – access to the resources as well as decision making power over their use However for the purposes of this paper on the ecological aspects of small-scale coastal fisheries of Kerala gender analysis was embedded in the participatory rural appraisal approach taken as the focus was largely on women s livelihoods As the traditional methods of shrimp catching were conducted predominantly by women gender analysis was also an important research tool

The greatest asset of the fishers of Kerala is their accumulated knowledge - about fish fish habits waves currents and stars through learning by doing which has been handed down from generation to generation (Kurien 1977)

As part of the objective of studying this activity is to ensure accurate communication of the priorities of the local community the investigation also sought to

document how seasonal cycles were related to resource use Interviews of key participants in the community were required to obtain this information

With the aid of a translator the investigation began with short semi directed interviews of the vendors at the fish landing harbours where they wait for the catch to arrive While there we asked male and female fish vendors a series of questions regarding aspects of their livelihood activities marketing fish seasonality etc The interview guide that was used for the fish vendors is shown in **Table 1**

Table 1: Fish Vendors Interview Guide

A Market Related Questions

- 1 What types of fish are bought/sold?
- 2 What months are certain fish available?
- 3 How are the fish priced?
- 4 What other factors influence fish prices?
- 5 How do you buy from the fisher?
- 6 Do you buy from the same fisher each day?
- 7 How do you handle the fish (prevent spoiling) e g ice fresh, salt
- 8 How do you transport the fish? (Cost of bus autorickshaw head load bicycle)
- 9 Are the fish graded or classified?
- 10 Are they processed (e g salting drying)
- 11 What are the marketing facilities? (E g door-to door market table, transportation)
- 12 Are there fees for a market table?
- 13 How many sellers at the market to buyers (ratio supply and demand)

B Household Related Questions

- 1 How many people in your household do you support?
- 2 At what time do you rise in the morning to begin household tasks?
- 3 Are you responsible for household tasks? (List tasks and time)
- 4 Is fish vending the main source of income for your household?
- 5 Are there other sources to supplement?

C Questions of change

- 1 How long have you been selling fish?
- 2 From where did you get the fish before the trawlers came?

Coastal fishery resources are ecologically sensitive to change be it to the environment or from economic globalization. Increased demands from a world market have direct and immediate effects on local resources. These impacts are particularly evident in fisheries most glaringly in the shrimping industry.

By employing Rapid Rural Appraisal (RRA) methodologies this investigation set out to find how people in a certain community make their livelihoods. These inquiries were made in order to assess the interaction of activities of the local community and the resources at their disposal. The first level of the investigation was observation. This was accomplished by visiting fish landing sites as well as marketing and fishing areas in the community and then asking general questions within the study site to determine who was engaged in what activities.

On Vypin Island the site of the investigation there are four basic livelihood activities -- that both men and women are engaged in -- around small-scale fisheries. These are shrimp catching (the local method known as *Thappiyedukkal* or pulse fishing) fish vending shrimp-processing (peeling and freezing) and value-added fish processing (such as making what are locally called cutlets fish products that are dried or vacuum sealed and making fish products with spices and brine. These are locally called pickles).

This investigation focused on two of the activities rather than all four. Shrimp catching and fish vending activities were chosen because they involved the local domestic market as opposed to the shrimp processing and fish processing activities that were geared for export. This decision still allowed for the inclusion of a large group of

fish vendors who were engaged in the traditional methods of drying fish for local markets

The Fish Vendors and Shrimp Catchers were then asked questions that dealt with environmental change fluctuations of fisher populations and the size of their catches They were also asked questions regarding social and cultural change life stories and market changes

Table 2 refers to the individuals and organizations contacted and interviewed for the study of fish vendors and shrimp catchers Contacts with organizations non-governmental groups and other groups were made through appointments and introductions while meetings and interviews with individual fish vendors and shrimp catchers were made on site of markets and fish landing harbours

Table 2 Vypin Island Contacts and Interviews

| | Individuals | Representatives from different Organizations | Representatives from different NGOs or other groups |
|------------------------|--|---|--|
| Fish Vending | <ul style="list-style-type: none"> • 15 male fish vendors • 15 female fish vendors • 5 fishers (comparative information) | <ul style="list-style-type: none"> • 1 <i>Panchayat</i> President • 6 <i>Panchayat</i> members • 1 <i>Matsyafed Women s Self-help Officer</i> • 1 CUSAT Researcher • 3 CUSAT Research assistants • 1 Director CIFT (Centre for Indian Fisheries Technology) | <ul style="list-style-type: none"> • 1 Grama Vikas Society member • 1 Catholic Self-help project leader • 1 Community Convener (SIFFS) • 1 retired Development officer • Director SAKHI (Women s NGO) |
| Shrimp Catching | <ul style="list-style-type: none"> • 1 male Shrimp catcher (full-time) • 19 female Shrimp catchers (full-time) • 5 female Shrimp catchers (part-time) | <ul style="list-style-type: none"> • 1 <i>Panchayat</i> President • 6 <i>Panchayat</i> members • 1 <i>Matsyafed Women s Self-help Officer</i> • 1 CUSAT Research assistant | <ul style="list-style-type: none"> • Director Kerala Fisheries Institute (Dr Purushan) |

3 1 1 Fish Vendors

Questions listed in **Table 1** on page 38, were asked in twelve weekly group meetings held awaiting the fishing trawlers at the landing sites with the fish vendors regarding formal marketing and organizational practices. Interviews were conducted with 15 male fish vendors, 15 female fish vendors and 5 fishers (for the purposes of comparative information).

3 1 2 Shrimp Catchers

I conducted one-on-one and semi-directed interviews with 19 full-time female shrimp catchers, 5 part-time shrimp catchers and 1 male shrimp catcher. I also had the opportunity to watch and participate in the shrimp catching as well as observing market activity. **Table 3** indicates the interview guide for the Shrimp Catchers. Section D refers to the questions that applied to changes in the ecosystem over time.

Table 3: Shrimp Catchers Interview Guide

A Livelihood Related Questions

- 1 How many people in your household do you support?
- 2 What time do you rise in the morning?
- 3 Are you responsible for household tasks? (List them)
- 4 Is shrimp catching the main source of income?
- 5 How do you supplement income at low season?
- 6 Are there other sources to supplement? (Husband son other livelihoods)

B Market Related Questions

- 1 What types of shrimp are caught?
- 2 Do prices change throughout the year?
- 3 How are prices fixed?
- 4 What influences price?
- 5 Are shrimp prices affected by prices of other products like meat prices?
- 6 Are there fees for market tables?
- 7 Is by-catch marketable? (Crabs other shellfish)
- 8 Is the demand for shrimp changing?

C Demographic and Cultural Questions

- 1 Are you originally from here or did you move here? (If moved when and from where)
- 2 Do you own your house/lot?
- 3 Do you have to pay a landowner to catch shrimp in a canal?
- 4 Are there boundaries?
- 5 Religion/caste?
- 6 Are there conflicts over the resource? (If yes how are they resolved?)
- 7 Have you noticed a change in catch size over the years? Taste?

D Focus Group Discussion Questions

- 1 Are there conflicts over the shrimp resource? (How are they resolved?)
- 2 Have you noticed any change in catch size over the years? Taste?
- 3 Are there environmental problems and changes you have experienced in catching shrimp?

4 Research Findings

This section is organized into discussion about the general area of Vypin before first discussing the fish vendors findings before I discuss findings regarding the shrimp catchers

Figure 4 highlights the geographical location of the study area on Vypin Island known as the local government unit or *Panchayat* of Elanikunnapuzha. Because of its location - its geographical peculiarities - the *Panchayat* of Elanikunnapuzha has provided an opportunity for the development of fisheries. The northern part of the island adjacent to the Cochin Port has the advantage of 7 km of both seashore and backwater shore. Another important feature of this *Panchayat* is the number of shrimp and *pokkali* fields. *Pokkali* is a local salt resilient variety of rice. There are ten *pokkali*/shrimp areas of significance within the study site. They range in size from 7 to 22 hectares (**Table 4**). Immature shrimp access the fields from the sea and backwater through canals. There are twelve of these canals of significance in the study area ranging from 0.6 km to 6 km in length as shown in **Table 5**. **Tables 4 and 5** show that both the canals and the *Pokkali* rice fields are significant. A large portion of the island is dedicated to these fisheries.

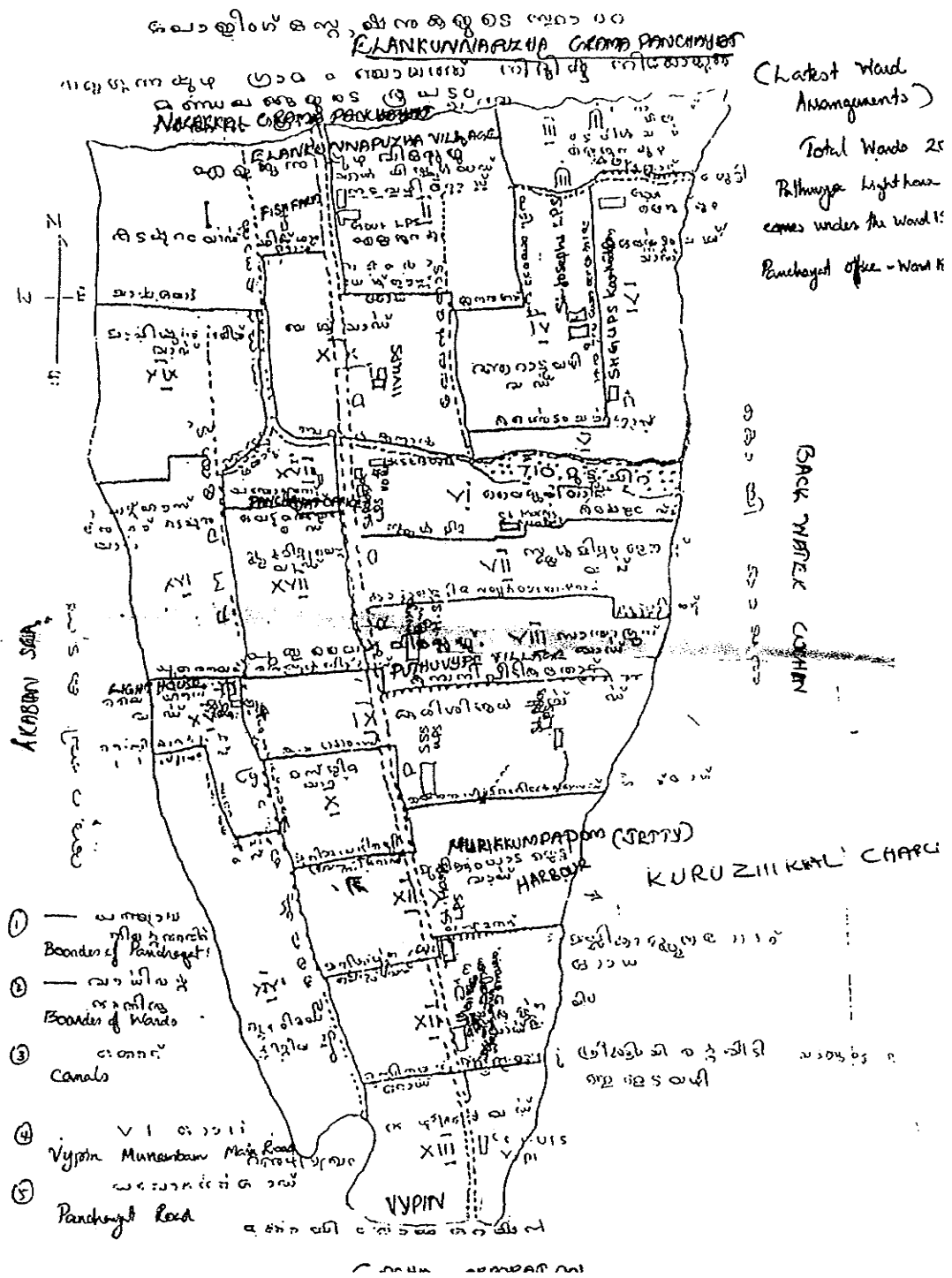


Figure 4: Vypin Study Area (hand-drawn map by local official)

Table 4: Shrimp and Pokkali Rice Fields with their production area

| | |
|------------------------------------|---------|
| Akila Vypin Malsya Toghilali Union | 22 ha |
| Bhoodana Karshata Sanghem | 12 ha |
| Elanikunnapuzha Karshata Sanghem | 14 ha |
| Sanketham Krishna Sanghem | 14 ha |
| North Puthuvypin Samithi | 6.4 ha |
| Thekkepallampilly Krishi Samajam | 15.6 ha |
| Kattachal Krishi Samajam | 16.4 ha |
| Kurichipadam Krishi Samajam | 20 ha |
| Muttapuyha Krishi Samajam | 15.6 ha |
| Vadakke Pallampilly Krishi Samajam | 7.2 ha |

Table 5: Canals of the Panchayat

| | |
|-----------------------------|--------|
| Puthuvypin Poghis | 6 km |
| Mahipuram Bandar Canal | 3.5 km |
| Company Peediska RMP canal | 1.5 km |
| Malipuram RMP canal | 1 km |
| Chappathode | 1 km |
| Venal Thode | 1.5 km |
| Elanikunnapuzha Nada Thode | 0.5 km |
| Kattachal | 0.7 km |
| Poopads Thode | 0.8 km |
| Puthuvypin West Coast Canal | 1.8 km |
| Puthuvypin Pallisthode | 2 km |
| Pulikkeppily Thode | 0.8 km |

A fish landing harbour for smaller craft such as canoes Puthuvypin Beach originates on the marine side of the island at Cochin Bay and joins a canal that connects to the backwater. Fish are landed at this harbour in the early mornings. There are also two relatively larger fish landing harbours Kalamukku and Murikkumpadam that are accessible to the larger fishing trawlers that fish on the marine side of the island. Fish are landed at these harbours early in the afternoon.

The ecosystem significance of this particular region is that in spite of heavy industry and dense populations, there exists artisanal and traditional fisheries officially protected mangrove areas along side almost on top of urban industrial activities

4.1 Cultural Background

It is important to understand the location because the physical limitations of an ecosystem play a significant role in determining the livelihood capacities of the local population. The cultural background is also important in understanding the structures and cultural conditions that shape the livelihood options. Kerala boasts the highest literacy rates in India and is home to a wide variety of cultures and ethnic backgrounds. Included among these are the largest Jewish and Christian populations in the country. Ethnography is significant in India as people's livelihoods are often determined by one's background.

The chief cultural group involved in the coastal fishery around Fort Cochin, is Hindu. Among its other attributes, Hindu society is stratified by caste distinctions and how one makes one's livelihood is to a great extent dependent on which caste one belongs to. Fishing, fish processing and fish marketing especially at a local scale are livelihoods that only the lowest castes pursue. The Hindu group of fishers was of a traditionally matriarchal society. This is not to say that the fishing industry is exclusively Hindu. Christian and Muslim fishers also came to this livelihood option by their own unique socio-economic factors/needs.

Discussions with the local government officials or Panchayat to determine the study site led to discussions of their concerns regarding environmental change on Vypin Island and whether this study could reflect their objectives as well. Fully one third of the

Panchayat consisted of traditional fishers. Of chief concern to the Panchayat was the siltation of canals. It was indicated in the development report by the Panchayat Chairperson that flooding is a problem that results from siltation. This causes problems for the area as it is a very low-lying island. It is their desire to lobby for dredging and therefore deepening of the canals on Vypin Island. This could have some negative impacts on the shrimp catcher's livelihoods as their activities lead them to catch shrimp in relatively shallow canals.

4.2 Fish Vendors

The fish vendors come to the landing harbours from various points in a surrounding area that they could commute to and from in 1 to 2 hours by canoe, walking, autorickshaw, ferry, and public transportation. The fact that the vendors did not come from one area made interviewing and observation at landing harbours and markets the most logical place to meet with them. For many, the distance, means, and costs of travel were key points in fish vendors' livelihood issues.

As a livelihood option for men and women that could be engaged in by Hindus, Muslims, and Christians and by both men and women, fish vending was chosen for a variety of reasons. Often, men came to fish vending having been pushed out of fishing by the introduction of larger trawlers. This, with the lucrative export-based fishing brought in larger numbers of fishers, increasing competition for the resource. As a Norwegian aid project in the 1970s introduced fish trawlers to the region, the shrimping industry of Kerala was moved from providing a local staple to mass catches for the export market. Some of the fish vendors had been fishers prior to the introduction of the trawlers and were forced out of their livelihoods as a result of the globalization of the

shrimping industry and the associated costs of running larger-scale fishing practices (Kurian 2000)

There also were often conflicting comments regarding the nature of managing the resource. While many concurred that the fish catch was decreasing in size and variety -- even in taste -- they also agreed that there were plenty of fish for many fishers and fish vendors. Their answers of 'fewer fish but plenty of fish' may have had to do with the seasonality of fish and timing of the interviews. That is, the four months of study might not have allowed for an understanding of seasonal activities, rather, an idea of fisher activities from May until November.

Sometimes men came to fish vending as an option by losing employment in other fields. This happened occasionally for women but more often women came to this employment through family financial need, be it from a husband's death or disability or departure, or through other desperate means.

Fish vending does not appear to be a livelihood of first choice for many of the female participants. Of the male fish vendors who had been fish vendors all of their lives, it was often also the case that many of their fathers and grandfathers, mothers and grandmothers had been fish vendors. Of the female fish vendors who had been engaged in fish vending for a long time, they were also often engaged in other traditional livelihoods that augmented the selling of fish, as in drying fish for the bi-weekly market on the mainland. One woman learnt how to dry fish from her father and grandfather and now was the sole provider for her family. She was a single mother and provided for her brother, son and mother. She did have some help from neighbours with hauling the fish and in the drying process and could also sometimes hire help in this. Some of the other

vendors saw her as crazy because of her apparent independence. Whether she was or not she ran things as much as she could in her way in a strongly male-dominated society.

Other women also specialized in fish for drying. One had been engaged in this livelihood activity for 20 years. After purchasing the fish she would wash gut and clean them. After draining the fish she added salt. The next morning she would have dried fish. She did not use autorickshaw or bicycle and she relied on help from others for the drying process and transportation. This appeared to be an informal arrangement perhaps from a son or daughter-in-law. She had her market tables on Mondays and Fridays with a fee of Rs 150/basket at the Ernakulum Corporation Market. She could sell about Rs 1000/per week. This was considered a low income due to her costs, labours and was directly attributed to the large number of sellers at the market.

Another woman came to fish vending out of desperation. Her husband left her for another woman and she was left with her baby and no means of support. She did have help from neighbours in taking care of her child while she worked and to haul drinking water for her as well. She set up at the ferryboat harbour where there were no other sellers and sold small sole on a tarp. This was a location that was also near her home and the fish landing harbour. In this way she could also keep her input and transportation costs down.

4.2.1 Themes identified in Fish Vendors Case Studies

The case studies of fish vendors revealed some themes of issues arising for male and female participants. That women worked long hours and did most of the household work was apparent. Men spent less time drying fish and on household work perhaps because they bought more desirable fish. Most men were able to purchase more valuable

fish than the women and get better prices for their fish which sold out the same day seldom require drying to save their investment

The women also strongly identified that transportation of goods was a key issue in terms of costs of business and ease of movement. The men revealed that even though many of them had been fish vendors for 10 – 30 years it was not a livelihood of choice. The men had often been working in other fields either in the fisheries or in unrelated activities prior to becoming fish vendors. Time and again to a person interviewed it was revealed that the livelihood option of fish vending was either the main source of household income or the sole source of income. As men and women had been pushed out of being fishers themselves as a result of competition in fisheries or having come to being a fish vendor by losing other occupations fish vending became the livelihood of last option. They did not want their children to have to become fish vendors and none were seen at the market or at the fish landing harbours.

Although I am not going to examine each person's life stories as told to me in interviews and discussions I chose to highlight some aspects of the lives of fish vendors in the form of case studies in order to reveal a number of issues and concerns of the male and female fish vendors.

For example the female fish vendors often were partially or solely responsible for daily household tasks. As shown in **Table 6** added to their fish vending labours female fish vendors often worked twice as many hours as male fish vendors. Many of the thirty fish vendors interviewed could easily inform me of their daily costs and fixed costs but were mostly unable or unwilling to inform on their profits.

Table 6: Average Time Spent on Fish Vendors Daily Activities (mean hours per day)

| | Household chores | Marketing fish | Travel time | Processing fish | Total |
|------------------|-------------------------|--------------------------|-------------|-----------------|--------|
| Male (x=15) | 0 | 8 range (min- max) | 2 range | 1 | 11 |
| Female (x=15) | 4 25 range (min-max) | 9 range (min- max) | 2 | 5 | 20 25* |

*Note Women did some of these tasks concurrently

4 2 2 Case Study 1 – “Annie”

Annie a female sold anything that came in to the landing harbour except export quality fish. Annie had 30 years of experience. She identified the demand and season as key factors in determining price. She purchased the fish from the middle man and not directly from the fisher and bought ice next to the landing harbour to keep the fish fresh. Annie was quite clear as to her transportation needs. I share an autorickshaw with one person. I would use the bus if allowed. The Autorickshaw costs Rs 50 per person + Rs 60 per person with fish per trip. Bus would be Rs 2 per person + Rs 10 for fish but we are not allowed on. About once a month she did not sell out of her wares so she dried the extra with salt for the dried fish market. She sold at the large fish market with about 40 other sellers. Annie began her day by rising at 4 00AM doing household chores and preparing food. She then went to the inland canoe fish landing harbour at Pudavypin to buy fish to sell at 12 30. She would return home to prepare lunch at 1 00PM and then would leave at 2 00PM for the landing harbour. She would return from the market at 7 00PM. Neighbours helped with getting her drinking water. Annie slept from 1 00PM – 4 00AM daily. She did the daily household tasks with her daughter. Her fish vending is the sole source of household income. Annie explained. I m 44 years old. I have been a

fisher for 25 years because of dire financial need Not my first choice I want my daughter to do other work

4 2 3 Case Study 2 – “Thankamma”

Thankamma a 48 year old female identified the seasonal cycle of fish vending Meat has a fixed price fish price is flexible according to demand season For example sardines and mullet are from September to October the sardines in November to December have less taste and lower demand Her autorickshaw cost her Rs 80 with fish only per trip plus Rs 50 per person She herself graded and classified the fish species She sold at the market Thankamma is charged Rs 10 – 12 at the organized market for tables but she preferred to go to the non-organized markets

At the market there are two sellers working independently It changed each day but are always two sellers there She worked alone at the market She has three children a 24 year old son and a 19 year old and 17 year old daughter and an ill husband He had been a daily labourer 6 years ago At this time her son sometimes assisted with fish vending or as a day labourer

Thankamma worked at the one afternoon market but she rose every day at 5 00AM At midnight to 2 00 AM she got water and then slept until 10 00 AM She slept and woke intermittently She and her daughters did the household tasks and food preparation She is the main income supplier for the household

4 2 4 Case Study 3 – “Abul”

Abul a 55-year old male had been a fish vendor for 20 years He purchased whatever low priced fish was available such as sole sardines and mackerel to sell to low-income households He is a headloader That is he did not use transportation and

takes his loads of fish on his head door-to-door. He worked alone and sold out every day as he only bought a small amount to sell each day. He mentioned the competition of other sellers as a problem. There were 20 other sellers on his route which made it very risky for him to afford to make larger purchases.

4.2.5 Case Study 4 – Fish Vendor Focus Group discussions

A number of themes were identified in the focus groups including transportation issues, hours of labours, increase in market place competition and despite the fierce pride in being independent and somewhat self-sufficient, a very apparent self-perception of status and a keen desire not to pass the fish vending livelihood on to their children. That is, although most fish vendors have been active in this income-generating livelihood activity for many years and rely on it for their main or sole source of household income, it is not a livelihood that fish vendors wish to see their children engaged in.

When questioned about belonging to unions or other types of organizations, fish vendors often proudly replied that they were self-employed entrepreneurs, although some fish vendors are members of the loose association of Matsyafed. Lakshmi, one female fish vendor, commented that there were 6 sellers near her. There was no cooperation between sellers, that they were all single entrepreneurs. Questions about organizing as a group to work toward common interests found answers come from the group discussions as there is no organization for us as there is a lack of leadership. Organization? No such thing. They seemed unaware of beneficial schemes for fishers, both men and women. When informed of the grants and loans available to fishers by the Matsyafed to purchase bicycles or to help make large capital purchases such as trawlers, this was at

best dismissed and at most laughed at. It was exceptionally rare to see a woman on a bicycle in the Kochi-Vypin area.

One woman in the group who had been selling fish for 22 years and one man with 35 years experience noticed that there was less catch coming in to their fish landing harbours and higher up front prices. Transportation was noted as a key issue. They are not allowed on public or private buses; there are no specially designated buses for vendors. Some men stated: Men also do the same livelihood activities and have the same problems with transportation and other problems. This was met with raised eyebrows and laughter from the women. One woman, relatively new to vending with 4 years experience, had a mother and 2 children at home. Her husband had left and her mother was ill. She had an 11 year old son and a 6 1/2 year old daughter both in school. She was the sole source of income for her household and did all of the household chores. She rose each morning at 5:00AM, arrives at 12:30 at the fish landing harbour for the fish and sells until late at night.

The female fish vendors often were partially or solely responsible for daily household tasks. As revealed in their answers to the questionnaire, in addition to their fish vending labours, female fish vendors often worked twice as many hours as male fish vendors. Many of the fish vendors interviewed could easily inform me of their daily costs and fixed costs but were mostly unable or unwilling to inform on their profits. Another man, at 34 years old, had 15 years experience as a fish vendor. Whatever he could not sell, his wife dried for selling later. In this, he relied on his wife in assisting in their livelihoods. He made rounds on his route twice daily.

4 2 6 Fish Markets

Tables 7 to 10 refer to the species types and seasonal availability of the catch. Some species cost more or had greater value due to export demands. As part of this study, pricing was difficult to fix due to its variability of availability and market demands. For example, due to export market demands, approximately 90% of locally caught shrimp are exported to Japanese and European markets. Many of the fish vendors specialized in a certain species of fish. The women who specialized in drying fish, for example, would purchase non-oily fish at the fish landing harbours. The woman interviewed whose husband had left her with a small child purchased only a small species of sole to market. Larger species of shellfish were found primarily in markets that catered to the foreign tourists. However, at the local market that was the focus of this study, it was the smaller pink shrimp that was found in local markets.

Table 7: Some of the major shrimp species found in the Vypin Island area *

| Trade Name | Scientific Name | Peak Season |
|------------------------------------|----------------------------------|--|
| White Prawn | <i>Penaeus indicus</i> | Throughout the year except the monsoon seasons |
| Tiger Prawn | <i>Penaeus esculentus</i> | November to May |
| Flower Prawn | <i>Penaeus semisulcatus</i> | October to February |
| Pink Shrimp (<i>Poovalan</i>) | <i>Panaeus duorarum</i> | July to October |
| Brown Shrimp | <i>Panaeus aztecus</i> | November to May |
| King Prawn | <i>Panaeus laticulatus</i> | November to May |
| Marine Shrimp (<i>Karikkadi</i>) | <i>Parapenaeopsis stylifera</i> | November to May |
| Scampi (Freshwater Shrimp) | <i>Macrobrachium rosenbergii</i> | September to November May to July |
| Rock Lobster (Spiny Lobster) | <i>Palinurus interruptus</i> | Throughout the year |

Table 8: Some of the major Crab species found in the Vypin Island area

| Trade Name | Scientific Name | Peak Season |
|------------|--------------------------------|------------------|
| Mud Crab | <i>Scylla serrata</i> | July to October |
| Sea Crab | <i>Portunus sanguinolentus</i> | July to December |
| Sea Crab | <i>Portunus pelagicus</i> | July to December |

| | | |
|------------|---------------------------|------------------|
| Cross Crab | <i>Charybdis cruciata</i> | July to December |
|------------|---------------------------|------------------|

Table 9: Some of the major Mollusk species found in the Vypin Island area

| Trade Name | Scientific Name | Peak Season |
|------------|--------------------------|----------------------|
| Cuttlefish | <i>Sepia officinalis</i> | September to March |
| Squid | <i>Loligo media</i> | January to March |
| Octopus | various species | September to January |

Table 10: Some of the various Fish species found in the Vypin Island area **

| Trade Name | Scientific Name | Peak Season |
|---------------------------------------|-----------------------------------|---------------------------------------|
| Indian Oil Sardine | <i>Sardinella longiceps</i> | August to December |
| Hilsa Ilisha | <i>Hilsa ilisha</i> | Aug – Dec . Feb to May |
| Commerson s Anchovy | <i>Stolephorus commersonii</i> | October to April |
| India Halibut | <i>Psettodes erumei</i> | July to September |
| Sole | <i>Cynoglossus macrolepidotus</i> | July to September |
| Sole | <i>Paraplagusia bilineata</i> | September to March |
| Barracuda | <i>Sphyraenidae jello</i> | September to March |
| Mullet | <i>Mugil cephalus</i> | April to July September to March |
| Pearl Spot | <i>Etroplus suratensis</i> | May to November |
| Indian Conger Eel | <i>Conger cinereus</i> | January to July |
| Cat Fish | <i>Arius maculatus</i> | September to March |
| Giant Marine Cat Fish | <i>Arius thalassimus</i> | March to June September to October |
| Large-headed Ribbon Fish | <i>Trichiurus lepturus</i> | July to April |
| Ribbon Fish | <i>Lepturacanthus savala</i> | July to April |
| Horse Mackerel | <i>Megalaspis cordyla</i> | September to November |
| Leatherskin | <i>Scomberoides lysan</i> | September to January |
| Naked breast trevally | <i>Decapterus ruselli</i> | October to February |
| Indian Mackerel | <i>Rastrulligar kanagurta</i> | August to November |
| Spanish Mackerel | <i>Scomberomorus maculates</i> | October to December |
| Streaked Spanish Mackerel (Seer Fish) | <i>Scomberomorus lineolatus</i> | October to December |
| Spotted Spanish Mackerel | <i>Scomberomorus guttatus</i> | October to December |
| Little Tunny | <i>Euthynnus alletteratus</i> | October to May |
| Yellowfin Tuna | <i>Thunnus albacares</i> | October to January |

* Source Kerala Fisheries Institute (Dr Purushan Director)

** Note In addition to some of these species fish vendors were dealing in several species of Groupers Bulleyes and Snappers

The fish vendors did not have access to all of the fish and seafood that are caught in the region as many of these are lucrative export items for the fishers Tables 7 to 10

indicate the variety and availability of species of fish and seafood in the Vypin area. However, these are not available to the local market. Since most of the fish is sold immediately for export, what is available for the local market are species that were not as desirable for the export market. As seen in table 11, the list of species that was available to the local market is quite a lot shorter and indicates when these species are available locally. In many cases, the peak flavour times for some species are sold for export and are not available to the local market.

Table 11 Local species of fish and shrimp available to local market *

| English name | Malayalam Name | Availability | Prices (where available)** |
|---------------|-------------------|---------------------------------------|--|
| Mackerel | Ayala | August/November | |
| Sardine | Chala | August/December | |
| Bonito Tuna | Tuna | October/May | |
| Rock Cod*** | Kalava | Year round | Rs 30/kg high time Rs 15 – 20/kg usual time |
| Sole (small) | Nanku | July/September | Rs.40/kg |
| Sole (large) | Mandal | September/March | Rs.40/kg |
| Crab | Ignananou | July/December | |
| Mullet | Kanambu | April/July September/March | |
| Tilapia | Tilapia | | |
| Pearl spot | Karimeen | May/December | |
| Thread Fin | Kilameen | | |
| Grouper | Grouper | | |
| Pink Shrimp | Telli | Year round except for Monsoon seasons | |
| Marine shrimp | Karikkadi chemmen | August/September | |
| Pomfret | Pomfret | April/June | |

*source interviews and market observations

**prices were not all attainable either through pricing variability or unavailable

***Found in local market but not in information on commercial fisheries

The fish vendors could sell sardines and mackerel from August to October. Hilsa fish from August to October, small shrimp in August and September, Ribbon fish from

July to April Sole in June and July and again in September Pomfret was sold in November and December The men and women sold different types of fish the men typically sold more valuable species such as grouper and bulleye and the women sold less valuable ones that had the option of being dried if they were not sold that day namely sole and mackerel Seasonal charts for fish vending activities was not feasible as they worked in this income-generating livelihood activity year round That is as fish vendors they did not engage in other seasonal activity other than a small variety of selling different species of fish to supplement their incomes This is not the case with the shrimp catchers who would work in the Pokkali rice fields and in shrimp peeling sheds

One of the key differences between women and men involved in fish vending activities was the access to transportation The women generally needed to rely on public transportation to a far greater degree than men and this posed problems with bus drivers often not allowing the women on the bus with their baskets of fish or charging more for the privilege of doing so Men often could afford autorickshaws Often informally women pooled their resources together to pay for an autorickshaw as a small group Casual observation at the fish landing sites also showed that men were often more likely to be able to purchase more expensive fish and have first access to them thus securing a better economic return

In order to correspond with the methodological objectives a rapid market assessment was undertaken This was conducted through focus groups interviews and market observations Pricing was difficult to determine as there were many fluctuations and variables However the market analysis included an assessment of the demand for

local goods marketability of resource products long-term sustainability of economic activity and flexibility of activity to respond to change

Figure 5 indicates the flow of goods and market demands to local and export markets as described by local fishers observation and discussions with a representative from the Central Marine fisheries Institute (CMFRI) Unfortunately a visit for observation to the fish landing harbour that sends catch out immediately for export was off limits to foreigners especially foreign researchers As seen in the figure the majority of the catch is sent to export markets This indicates global pressures on local resources as well as a potentially economically vulnerable situation of too great of a dependence on foreign markets

Pricing practices were examined but perhaps due to the heavy influx of foreign tourists local prices were difficult to fix and determine For this reason a cost/benefit analysis of labours and returns was also difficult to fix Observations on home life income supports amount of time spent on labours and apparent capitol expenditures and gains showed that the fish vendor activity brought in an income that ranged from barely subsistence level to a locally moderate income

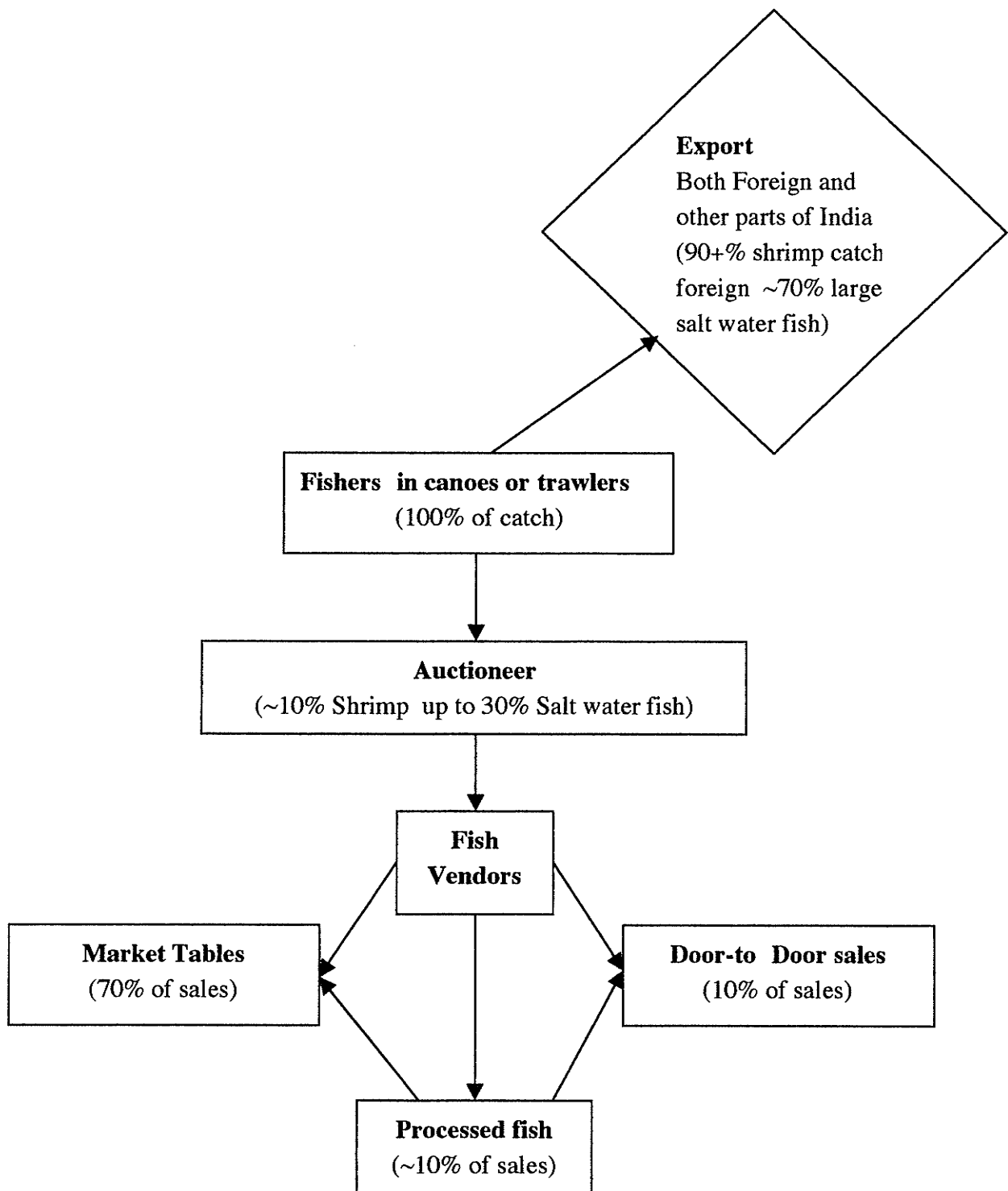


Figure 5: Flow Chart showing direction of flow of fish, Vypin Island fish landing harbours

4 2 7 Synopsis of Fish Vendors results

Both male and female fish vendors did not come to this livelihood as a first option. They came to fish vending as a last choice out of desperation from financial need. In the structure of society, fish vending is an extremely marginalized activity but is an option available to men and women of any caste or religion. For both male and female fish vendors, their incomes are either the main or the sole source of income for their households. In the rare case, sometimes a son or daughter will assist with fish vending but all vendors state that they do not want their children to work as fish vendors. Even so, each fish vendor proudly states that they are an independent entrepreneur. In spite of financial hardships, they all have a great deal of pride in their self-reliance. Given that fish vending is their main or sole source of income, working in this livelihood option would leave one open to extreme vulnerability if there were any environmental shocks to the fisheries.

It should be noted that there is a definite difference in the total number of hours of labour between male and female fish vendors. The women usually tend to the market longer than the men do and are often responsible in full or in part for the daily household tasks. In some cases, this can almost double the amount of daily labours for women as compared to male fish vendors. As women tend to hauling drinking water by waiting on the supply by truck, this increase in daily labours can also indicate heavy manual labour as well. There are also occasions where the women dry fish that are not sold fresh in the market. This labour is usually done by the women in the household and can, on these occasions, increase the day's labour to more than twice that of men's.

Transportation for fish vendors from the fish landing harbours to market is an issue that male and female fish vendors shared although it was the primary issue discussed by the female fish vendors. That is if they had access to public transport or to designated buses their costs of marketing would greatly decrease in that their transportation time would likely decrease as well as the cost of travel. The female fish vendors are both responsible for daily household tasks as well as market labours sometimes doubling the hours of labours compared to those of the male fish vendors. Any decrease in travel time and costs could decrease their total hours of labours per day. There was resistance to membership in organizations although some were members of the Matsyafed. Many proudly stated that they were independent entrepreneurs but there were informal rules that governed their activities with each other. The woman who sold fish on the tarp near the harbour only sold one species of fish and was in a place that posed no competition to other fish vendors.

The rules governing activities around the fish landing harbour as to access to the auctioneer of fish did not appear to have a gender bias through observation although the male fish vendors generally did have larger capital with which to buy fish. Also through observation male fish vendors had greater ability to haul fish to markets than the female fish vendors did. All the same the activities that were observed around the fish landing harbours on Vypin Island were less competitive than those observed near Kerala's capital Tiruvananthapuram where activities were larger scale and had a history of communalism violence. Strictly through observation the activities at the Vypin Island fish landing harbour were comparatively quite cooperative.

4.3 Shrimp Catchers

The shrimp catchers revealed that they had experienced changes in the taste of shrimp that they could attribute to the fuel of the trawlers. They also had experienced environmental changes because of the growth in factories and industries that processed fish and shrimp. These plants polluted the canals with bio-waste such as shrimp peels and spent freezing chemicals. It was felt that this pollution was often responsible for killing off entire catches. Many of the women of the shrimp catcher's community however found additional cash employment in these shrimp processing plants that polluted the area.

In interviews most of the answers to the questions regarding environmental change responded that the greatest change came from the large fish processing and freezing plants nearby. They provided effluents in the canals that resulted in many shrimp and fish dying. These effluents were the result of the freezing processes to ship fish and seafood for export. The other response that occurred most often was the problem of waste and effluents from the shrimp-peeling sheds. This crowded the canals often blocking them off from immature shrimp to enter as part of the shrimp lifecycle. One shrimp catcher who had learnt how to catch from childhood from her mother and grandmother had been involved in many livelihood activities as options for supporting the household. She had been an agricultural labourer and had worked on construction sites as headloading work. She also worked planting Pokkali rice for 2 – 3 weeks per year. She expressed global and local market demands as directly causing some environmental degradation. As she put it, the price for shrimp was high a few years ago.

and then it dropped in quantity. For her, all of the activities around the shrimping industry were to blame for environmental change.

I met one man in the community who was a shrimp catcher full-time. He came to it out of financial need. The women catchers, as well as this man, explained his participation in this livelihood option as need. He had no other employment and no one else in his family was able to work. It appeared as though the women seemed to grant him permission to catch shrimp. He confined his activities to the areas immediately surrounding the community rather than going out to other canals on the island as the women did.

Shrimp catching in this manner has the lowest input costs as they do not use any gear other than their hands to catch the shrimp. Also, in marketing, they do not require any inputs in selling other than newspapers and occasionally some plastic bags. As the catch is marketed daily, ice is not required. Any shrimp not sold are dried.

The shrimp catchers have developed a variety of informal institutions that govern their activities. Some of these, such as conflict resolution, come out of the necessity of living in a small community. Others come out of the practice of catching shrimp, such as who can catch where and at what time. These are known as first-comer's rights or rights to fish in an area by arriving first. Fishers can work in groups but at a small distance from one another and move as a group down the canal.

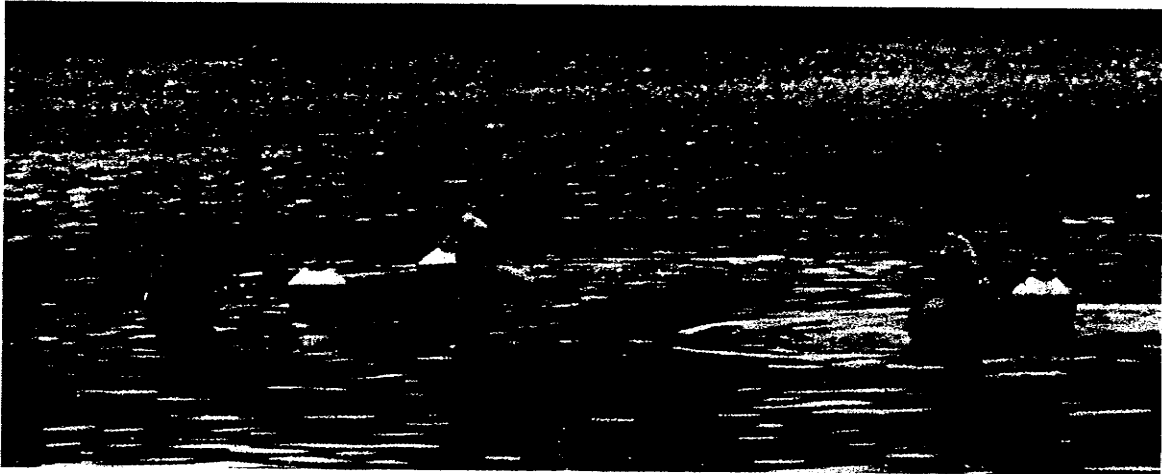


Figure 6 Shrimp Catchers entering canal Photo credit: Karen Peters, 2002

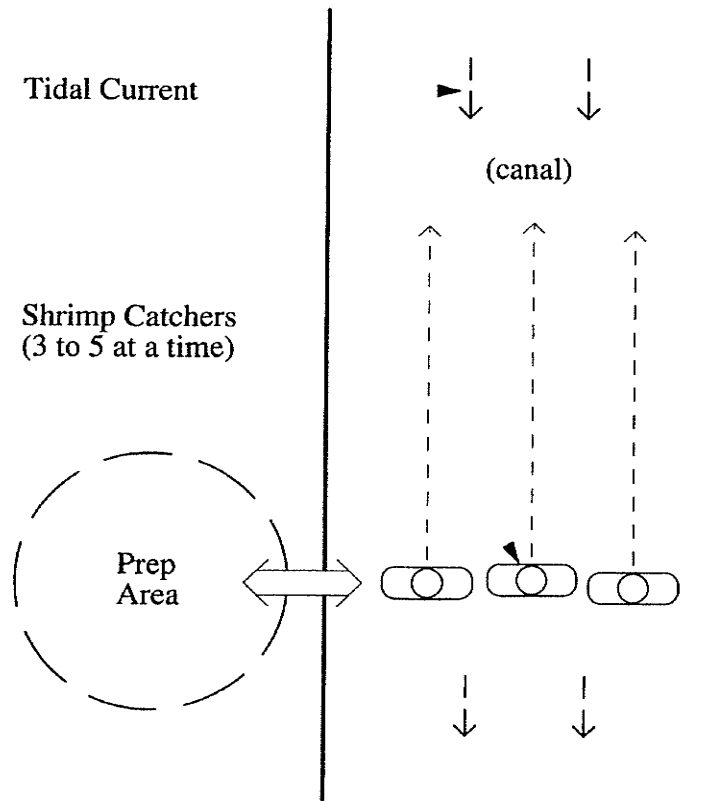


Figure 7 Shrimp Catching Practice

Economically the shrimp catchers were engaged in what is known as the household mode of production. That is in a complete market cycle they themselves were the gear for catching shrimp with no outlay of capital they did the marketing

immediately with no middleman and processing when needed was all done by the same shrimp catchers

As with the fish vendors questions to the fishers regarding the availability and management of the resource (primarily shrimp) were met with the apparently contradictory answer that there were too many fishers that the stocks were declining and yet that there was enough for all. Again this could partly be due to the timing of the questions in terms of what season the question was asked. All the same there is a marked distinction as to when things in the fishing and shrimping industries changed for the local peoples. It was when the trawlers were introduced after the 1970s.

The shrimp catchers were a group of predominantly women who have learnt the fishing technique of catching shrimp according to tidal times. The lunar calendar is vitally important, as catching shrimp is dependant on the tides. The *Thakkam* time refers to the monthly full moon period of about 4 days. At this time as seen in Table 11 the shrimp catchers are fishing almost twice as often in a day sometimes in the middle of the night. They catch the shrimp by hand without gear feeling in the canals for their movement. These techniques of catching by sense of touch or pulse fishing and fishing cycles has been learnt and taught for generations.

Table 11: Average time of Shrimp catchers' daily activities (mean hours per day)

| Activity/ Time spent (hours/day) | Household chores (hours/day) | Catching Shrimp (hours/day) | Marketing shrimp (hours/day) | Hauling water (hours/day) | Total per day (hours/day) |
|--|------------------------------------|-----------------------------------|------------------------------------|---------------------------------|---------------------------------|
| Regular catching time X=20 | 3.8 | 3.66 | 3 | 3 | 13.46 |
| Lunar cycle (<i>thakkam</i> time) | 4 | 6 | 5 | 3 | 18 |

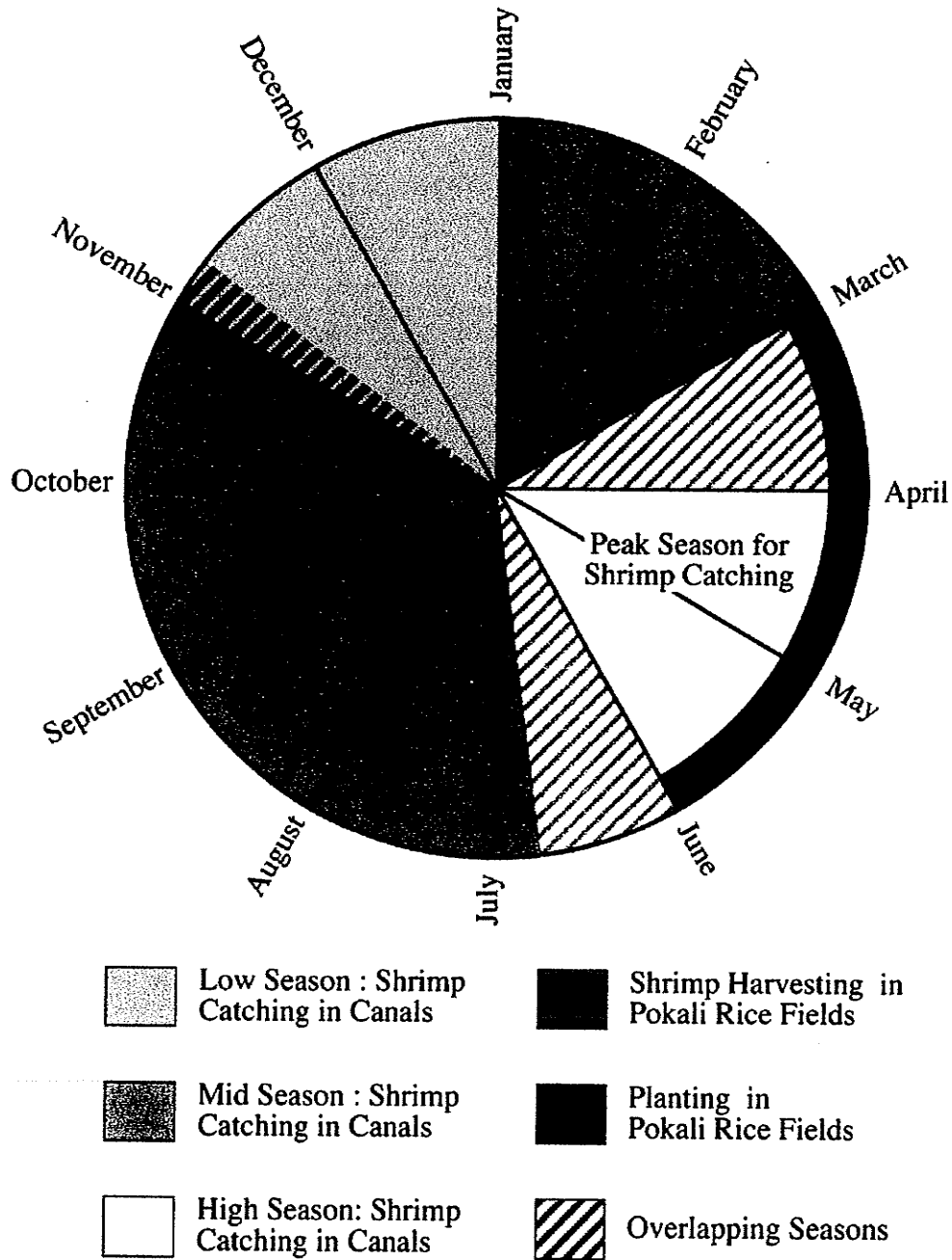
During the lunar catch time the amount of labour for all local fishers is increased. However, due to the lack of mechanized methods of catching shrimp, the labours require a greater amount of time and energy. The shrimp catchers work with an adaptive management approach to their ecosystem. In the planting seasons, they sow *Pokkali* rice for local farmers. This is a livelihood option that is available to the shrimp catchers and is part of their adaptive management of the coastal fisheries ecosystem. Part of the growing season, the rice paddies are open to the sea tides and they are allowed to catch shrimp in the fields. They also work in fishing processing plant.

Shrimp catching is traditionally an activity that women of this caste participate in. The one lone man that I observed in this activity was allowed to catch shrimp because he had lost his job and his wife was too ill to catch shrimp. He restricted his activities to the canals surrounding the community. The women proudly and fiercely stated that they were self-taught in catching shrimp but through further questioning and story telling, it became apparent that they learnt to catch shrimp from their mothers and grandmothers.

The shrimp catchers identified some activities that they engaged in to supplement their income. These included planting *Pokkali* rice, harvesting the rice, and harvesting shrimp in the *pokkali* rice paddies. They also indicated the peak catch times for shrimp as seen in table 12. Only some of the shrimp catchers engaged in different livelihood activities to supplement their incomes. More than half of the shrimp catchers relied very heavily on shrimp catching and would plant *Pokkali* rice for 2 weeks in the year. Some of the younger shrimp catchers would also be involved in the rice harvest as well as harvesting shrimp from the paddies. When they caught the shrimp in the paddies, they

would often have a payment arrangement with the owner of the field or be allowed to glean the shrimp and rice from the paddies at the end of the harvest. Catching shrimp in the canals was done without paying rents as it was open-access canals. At medium or low season, some younger shrimp catchers work in the shrimp peeling sheds as well.

Table 12 Seasonal Activity for Shrimp Catchers



Given the low input costs of shrimp catching the catch to market within a relatively short distance from each other and the close proximity to the *Pokkali* rice fields for seasonal labour the *rurban* nature of Vypin Island offered sustainable livelihood options for the traditional shrimp catcher That is without any environmental changes or degradation of the resource They are at risk if the shrimp resource crashes and if the canals are made too deep for the catchers to make their catch This a real concern because local government has a desire to deepen the canals to prevent flooding of homes in the area

4 3 1 Case Study 1 – “Sarasu”

Sarasu age 52 learned shrimp catching from childhood not from her mother but from friends who were also engaged in the activity There are eight members in her household Her husband was paralyzed and could not work She has two sons and two daughters-in-law who are also shrimp catchers Shrimp catching is the main source of income as her husband is ill and he sons have no jobs She sometimes took on daily wage jobs Sarasu was also solely responsible for household chores She rose at 6 00Am and did 1 hour of household tasks 3 hours of shrimp catching 2-3 hours at the market and then 3 hours of household tasks plus 1 hour gathering firewood Her family had no other sources of income and they could not get good prices for the shrimp at this time of year (June – November) She identified the effluents from Abad Fisheries a local fish processing company as being the cause of environmental change including finding dead shrimp and fish

4 3 2 Case Study 2 – “Malyga”

Malyga age 50 learned to catch shrimp as a child from her mother and grandmother. There were five in her household and her two daughters helped in household chores and shrimp catching. Malyga rose at 5 00AM to do some household chores and to catch shrimp. Her husband is a fish vendor and she supplemented their income in the low season by shrimp peeling. She was frustrated because there is a higher demand for shrimp but there were currently low prices. She also attributed environmental changes as coming from the shrimp peeling sheds that she also worked in.

4 3 3 Case Study 3 – “Indira”

Indira age 42 also learned to catch shrimp as a child. She resisted this as an occupation and had worked in construction work but experienced pain so switched back to catching shrimp. She was not married and supported her mother. She rose each morning at 5 00AM and began fishing at 6 00AM. She was also responsible for the household tasks which she completed in about 3 hours one in the morning and 2 in the evening. She caught shrimp for 3 hours and spent 3 hours at the market. It was the sole source of income for her household with no other supplements to her income. There are more shrimp catchers and therefore the catch decreases with more competition. Indira also saw effluents from the shrimp peeling sheds as the source for environmental change.

4 3 4 Case Study 4 – Shrimp Catcher Focus Group Discussions

Many of the shrimp catchers supplement their incomes with short seasonal work as with harvesting in the low catch seasons of October and November or planting Pokkali

rice for a couple of weeks in planting season. There were not any organizations within this group. One older woman mentioned that there had been an organization many years ago but it fell apart.

Shrimp catchers do not organize but do work together to solve problems within and outside the group. For example, a woman explained, "Conflicts are resolved by organizing around the issues. We organize as the need arises. If there were problems in finding catch as a result of siltation, then they find other canals."

Questions regarding the availability and management of the resource (primarily shrimp) were met with the apparently contradictory answer that there were too many fishers, that the stocks were declining and that there was enough for all.

4.3.5 Synopsis of Shrimp Catchers results

The shrimp catchers are a more cohesive group than the fish vendors as they are of one caste and live in one geographical area on Vypin Island. Many of the shrimp catchers indicate that they own their homes but the land is designated to their caste from a land grant. Organizations that protected or gave benefits to the fish vendors and shrimp catchers were viewed with suspicion. This was generally with regards to paying of dues for unseen benefits. In discussions with these organizations, their involvement was not concerned with managing fish stocks but in encouraging and assisting in investment of fish vendors or fishers to improve either their gear in terms of nets or boats for the fishers or transportation as in mopeds for the male fish vendors. For cultural or traditional reasons, women very rarely ride bicycles, mopeds or scooters and would therefore not access loans for which to acquire such transportation.

The shrimp catchers developed a variety of informal institutions that govern their activities. Some of these come out of the necessity of living in a small community such as how conflicts are resolved. Others come out of the practice of catching shrimp as in who can catch where and at what time. These are known as first-comer's rights or rights to fish in an area by arriving first (Lentz and Kuba 2002). They could fish in groups but at a small distance from one another and move as a group down the canal.

Shrimp catchers do not formally organize but they do work together to solve problems within and outside the group. They are more socially cohesive as they are of one caste. It is not a livelihood option for members outside of this caste.

They have experienced a great deal of environmental change directly attributed to the shrimp-peeling sheds both small and large scale, the oil refinery and human household waste. Each shrimp catcher commented on the processing plants effluents from refrigeration and shrimp peeling as the chief cause of environmental degradation. All the same, this group feels powerless against the shrimp-peeling shed waste and will also often find some employment in shrimp peeling in the low season. One shrimp catcher did mention the bad effects of environmental change as coming from a deeper channel on the west side of the island, the sea side. It is much more difficult to catch shrimp in deeper water. They also have no group savings plans. NGOs are not involved with the shrimp catchers. While they appear to take care of each other and do not see the need for organizing, this group tends to be the most financially disadvantaged in the area. All the same, there was no apparent evidence of financial hardships as shown in lack of housing and malnutrition.

5 Recommendations and Summary of Key Findings

Large global interests put a great deal of pressure on the ecosystem. Already the traditional diet has been changed as shrimp, which was once a staple food, is now being caught predominantly for export. This may have an impact on caloric intake and nutritional health if there is a reduction in proteins. The global demands have already wiped out fisheries in other parts of the world. Kerala has rejected the development of large-scale intensive shrimp farms because they have been experienced and recognized as being ecologically disastrous. All the same, the pressures remain. It is the small-scale artisanal fishers and the ecosystem where they work that is most greatly affected. Any solution that would ease the pressure would have to involve local and international efforts. Locally, strengthening the rules that govern fisheries is one step. Strictly regulating the effluents of processing plants is another step. Demanding accountability of multinational fisheries companies is a third step. The likelihood of these steps taking place before a collapse of the fisheries is unlikely.

While men involved in fish vending apparently have a greater economic and physical advantage over women, it is still a livelihood that holds few rewards. Most fish vendors, male and female, came to this livelihood option out of desperation and did not want their children to participate with them. Since Kerala boasts an excellent education system, all children have a good chance for higher education. Children are encouraged to go to school and some younger women participate in shrimp catching on a part-time basis while attending school.

While shrimp catching is reserved for the lowest caste, it also does not reap many economic rewards, but it does offer a livelihood. If there were no negative effects such as

the effluents from the fish processing plants, household waste pollution or efforts to create deeper canals, shrimp catching as a traditional livelihood would be very sustainable. It is under serious threat, however, from these stresses. Shrimp catching does not appear to be a livelihood that can be resilient for the catchers. Given their strong reliance on shrimp catching as their singular livelihood, with only brief periods of rice planting, and that the health of the canals where they catch is under threat, shrimp catching as a livelihood option is choosing to be a very precarious life.

Fish vendors in the Vypin area are also very reliant on being able to sell to local markets year round. The vendors do not rely on other income generating livelihood options for household income. The fish vendors have often come to this livelihood as their last option. Any increase in exports from the local fisheries or a crash in the fish supply itself, would result in great risk for the lives of fish vendors.

Given the precarious economic situation of many of the women engaged in either shrimp catching or in fish vending, being the family breadwinner, no cash reserves or resources, and having very limited other livelihood options, the lack of resilience of their livelihoods would be felt at an even greater extent. All the same, self-sufficiency is a point of pride for both the fish vendors and the shrimp catchers. Formal institutions that would promote organizing as a group or union seem unlikely, unless they have some resources to offer or emerge as a result of a crises, such as a crash in the food supply or the deepening of canals, although fish vendors and shrimp catchers do tend to help each other and look out for each other's interests.

The field work part of this study was very rewarding. I felt very welcomed as an outsider and honoured to be allowed in to see the lives of the people I met. My project,

with its specific emphasis on gender analysis actively sought to investigate the realities of local women. The project is grounded in gender studies theory and as such posits the notion that women have the capacity to be effective agents of change and that their participation as such agents is fundamental to the success of any long-term resources management objective. Given this the project was designed to document not only women's realities but also their priorities for development strategies for survival and sustainable livelihoods. The project was also designed to elucidate women's roles in local decision-making processes. The project was able to contribute to the empowerment of local women by acknowledging their knowledge, priorities, and concerns and communicating them back as findings in focus groups. The methodological approach reflected these objectives and therefore included activities such as focus groups and key informant analysis.

Through its emphasis on the equal participation of women in the development process and on capacity building, this project actively promotes equality of access in decision-making processes. In this sense, the theoretical framework of the study, grounded in both gender and common property theory, articulates the notion that when one group is marginalized from the decision-making process, the whole community suffers. The methodological approach of the study is participatory and designed to work with local communities toward the development of sustainable livelihood strategies. An interdisciplinary approach is utilized to address political, social, environmental, economic, and cultural concerns relevant to the management of coastal resources and food security issues. In focusing on sustainable livelihoods and capacity building for adaptation and

resilience options this project is geared toward the development of long-term management approaches that reflect the local needs of the population

The participatory approach taken in this project was designed to enhance cooperation communication and information sharing between local peoples researchers and government By working with local researchers and the Grama Vikas Society Melukavumattom the project encouraged communication between two partners interested in development issues This study lead to a larger multi-year project in which a long-term partnership between Canada and the host country was developed that was unrelated to these research findings as it has continued on without these findings

Through its focus on community-based resources management this project addressed three developmental concerns in India It addressed the social need for the development of a participatory mechanism for management the need to develop sustainable economic alternatives that are key to building more resilient social-ecological systems This project was specifically designed to address the need for community-based management of coastal zone resources Given the rapid pace of change on the coast resulting from industrialization some of the issues surrounding food security issues and adaptation strategies for sustainable livelihoods were considered by this research

The participatory approach did not always allow for access to all levels of governmental and non governmental institutions such as the export fish landing harbour Fish Vendor and shrimp catcher participants did choose the research questions and focus of the study Language barriers were a factor but the translation offered by the local researcher was invaluable The translator was also a local fisher and was keenly aware of local issues surrounding the livelihoods without personally guiding the questions or

results. The interviews were all immediately translated and written down by hand. Regular discussions and contact with both groups gave constant feedback back to the communities as to the direction of the research and findings.

Summary of Recommendations

As the research done with the two communities of fish vendors and shrimp catchers was participatory in nature, recommendations for change would by necessity require further input by a consensus model. For this reason, I have designed this section of the conclusion to reflect potential outcomes of the research.

Environmental

1. Reinforce the role of regulatory agencies in monitoring and ensuring safe clean environmental practices of the shrimp processing plants that regulate waste and effluence.
2. Enhance rules that govern fisheries to regulate catch size and frequency of catch.
3. Improve national and international efforts to monitor and regulate transnational fisheries catches.

Social-Economic

1. Examine and develop savings initiatives for the shrimp catchers and fish vendors. This would provide some retirement security and allow for pursuits of other livelihood options for the children of shrimp catchers and fish vendors. When asked, all people engaged in these livelihoods stated that they did not wish their children to work in fisheries.

2. Strengthen infrastructure that would allow for ease of transportation of fish vendors and goods to market. Public bus systems that are designated for fish vendors is one option being tested in Tiruvananthapuram, the capital of Kerala but the needs are also in other fisher communities.

Local efforts are under way to limit the timing and the catches of the trawlers and the size and type of their fishing gear to ensure that yields are sustainable. To date, little has been done to address the supporting industries, such as the shrimp peeling and refrigeration waste pollution. This is partly due to the fact that these same polluters also provide much needed seasonal income for traditional fishers. Both the Shrimp Peelers and the Fish Vendors stated a sense of powerlessness in working against the polluters since there were the larger, more powerful economies that they would be up against. Also, these traditional fishers and fish vendors are the least powerful groups, politically, in the region.

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Appendix 1

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Appendix 2

Terms

Matsyafed Self-Help organization

Panchayat Local government

Pokkali rice Local salt-resistant strain of rice Grown on the coast the sea walls are opened to allow for immature shrimp to grow in rice paddies

Thakkam time Lunar cycle for fishing in the full-moon period

Thappiyedukkal Method of catching shrimp in canals by sense of vibrations by hand without fishing gears