# Participatory Equality in the Governing of Marine Resources: A Gender Focused Study on Fisheries Management in Kerala, India and Southern New England, USA

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*Vita*

Laura Mattison was born in Concord, Massachusetts on October 7th, 1981. Growing up, she was influenced by the works of Henry David Thoreau and Fyodor Dostoyevsky. She received her bachelor's degree from the University of Vermont in Religious Studies. Her undergraduate degree thesis centered on ethics and continental philosophy. She was the valedictorian of the UVM 2004 class. She then served as a United States Peace Corps Volunteer in the Fiji Islands from 2004-2006.

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In 2008, I was involved with a Rhode Island Sea Grant funded project entitled "Re-Visioning Women in the Southern New England Fishing Industry." That summer, the two Principal Investigators conducted five focus groups with women from Point Judith, Rhode Island and New Bedford, Massachusetts. The work involved with that project not only directly provided data for this research, but also gave much of the inspiration for what this project would later become. I would like to thank those women who were investigators and participants in those focus groups, in particular my adviser, Caroline Karp. Others include but are certainly not limited to: Kathy Castro, Kate Pearson, Helen Mederer, Katie Okamoto, and Gail Cohee.

After reading the engaging and fascinating work of Arundhati Roy, I decided I would investigate similar issues in Kerala. I was fascinated by Kerala as a communist state amidst rapidly developing India. Its fame for progressive social indicators, especially that of female literacy, made it a unique place to compare with the already developed New England fishery. With the help of the Watson Institute at Brown University, I was able to travel to Kerala. In this regard, I would like to thank the Watson Institute at Brown University and Professor Steve Hamburg.

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**Laura Mattison**

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*Executive Summary*

How does gender effect fisheries management? It is well documented that women in fishing communities all over the world play major roles in the processing and distribution of fish, but discovering their views of and preferences regarding fisheries management is the subject of this research. While asking specifically about gender appears to be narrower in scope than asking who should participate in fisheries management, the outcome of this study reveals that a discussion of gendered preferences is intrinsically linked to a discussion of occupational and cultural preferences. The effects of gender are irrevocably tied to the effects of power and the relationship between government and local institutions. Thus, this study starts at gender but delves into recommendations as to what fisheries management as a whole should look like.

As methods to address the research question, this study used rapid appraisals, archival research, semi-structured interviews, focus groups, and quantitative surveys in two case study sites: Kerala, India and southern New England, USA. Results from the survey were analyzed using SPSS and certain archival data was analyzed using ArcGIS. Qualitative data were analyzed using key theme searches.

The results in both case studies showed that 1) men have had more access and influence in formal fisheries management decision-making; 2) women's preferences for conservation measures and their concern for intergenerational equality is not significantly different from men's preferences, although women tend to emphasize the role of community in fisheries management; and 3) an ethic of conservation is most prominent in those who control their own economic resources in traditional enterprises within management systems that are locally considered to be legitimate.

These results render conclusions and recommendations specific to the future of fisheries management in both Kerala and New England. They also, however, help to create a broad model of a fisheries management spectrum which other fisheries regimes around the world can use. The purpose of this model is to provide a framework to allow comparison of different fisheries management regimes. This is not to create a cure-all solution for fisheries management, but to allow fisheries systems to integrate their social, political, and ecological elements into an equation that aims at creating legitimate local institutions, positive government and community relationships, environmentally ethical resource users, and effective management for both socially and ecologically sustainable fisheries.

## Chapter One—Introduction to the Research

*The Research Question*

This study delves into the deep waters of co-management of marine fisheries resources. Co-management, meaning management by several stakeholders, can take an infinite number of forms. In the effort to assist different fisheries systems with what co-management should look like for them, this study asks who should participate in management and what should be the balance of power between these stakeholders. To narrow down this complex terrain, this study focuses on one such variable—how does *gender* affect fisheries management? It is well documented that women in fishing communities all over the world have major roles to play in the processing and distribution of fish, but discovering what exactly their views and preferences of fishery management issues are and the implications of these views is the subject of this research. While asking specifically about gender appears to be narrower in scope than asking who should participate in fisheries management, the outcome of this study reveals that a discussion of gendered preferences is intrinsically linked to a discussion of occupational and cultural preferences. The effects of gender are irrevocably tied to the effects of power and the relationship between government and local institutions. Thus, this study starts by examining the role of gender in two fishing-dependent societies—coastal villages in Kerala, India and fishing ports in southern New England—then uses these results to consider what roles different members of the fishing community should play in fisheries management.

*Research Sub-Questions*

In asking whether or not gender affects sustainable fisheries management, the nature of what it means to "affect" fisheries management needs to broken down. First,

men and women's roles in the fishing industries need to be explored. Second, it was determined that people could affect fisheries management in three ways: their access to participation, their voice in participation, and their influence on fisheries management.

The first layer of participation in fisheries management decision-making has to do with women and men's *access* to the process of fisheries management. This includes seats on fisheries councils and opportunities to comment on fisheries proposals. The second method of participation is the more qualitative aspect of *voice*. This study considers *voice* to be the nature of what one says, tries to convince others of and strives to achieve through participation in decision-making. Finally, *influence*, as this study defines it, is the extent to which people feel that what they say is heard, respected or acted upon by fisheries managers. Influence is an important distinction from access in that it asks whose voice, from resource users to government officials to NGOs, actually determines the ways which fish are managed.

*Significance of the Research Question*

This research is relevant for several reasons. First, many commercial fisheries are being depleted and overfished worldwide, including in the coastal waters of developed states like the U.S. and developing economies such as Kerala, India. Second, women have active roles in management of many natural resources in many traditional societies. As a result it is useful to ask whether women have any role in influencing fisheries management in these two very different societies, especially at a time when fisheries managers are actively promoting community-based and co-managed fisheries regimes (Ostrom 2006, Pomeroy 2005)

Finding a model for fisheries management is critically important in light of the ocean's limited resources and the extent to which humans have been over-exploiting them. It is recognized that in the United States, thirty percent of the fish populations that have been assessed are being overfished or are being fished unsustainably (Pew Oceans Commissions 2003, US Commission on Ocean Policy 2004). According to the Millennium Ecosystem Assessment:

> The Atlantic was the first [ocean] to be fully exploited and, eventually, overfished. This process is about to be completed in the Pacific…Most industrial fisheries are either fully or overexploited. Twenty-eight percent of the fish stocks under the various assessment programs have declined to levels lower than that at which a maximum sustainable yield (MSY) can be taken, and a further 47% require stringent management (which may or may not already be in place) to prevent their declining to a similar situation (MA 2005).

Very few places in the world have felt the effects of this exploitation more than New England. The 1980s and 90s saw a dramatic decline in some of its most important fish stocks such as northern cod and other groundfish (Davis 2000). The result was a re-authorization of the Magnuson-Stevens Fisheries Conservation and Management Act (MSA) and the creation of the Sustainable Fisheries Act which aimed to rebuild depleted fish stocks, reduce bycatch mortality, end overfishing, protect essential fish habitats and bring stakeholders into the policy-making process (16 U.S.C. § 1801(6)). Today, the Northeast Fisheries Science Center's assessments indicates that 13 of the 19 groundfish stocks in New England are being fished above maximum sustainable yield and that 13 groundfish stocks have biomasses below the threshold of maximum sustainable yield (Northeast Fisheries Science Center 2008).

In Kerala, India, comparable data do not exist. However, the Central Marine Fisheries Research Institute emphasizes that important species in Kerala such as oil sardines, mackerel and shrimp are fully exploited and that further increases in

exploitation would cause a decline in landings and population stability. In certain areas, this decline is already beginning (Central Marine Fisheries Research Institute 2003). This lack of knowledge in itself is seen as a factor that increases the risk of a major stock collapse (MA 2005).

Based on this crisis, gender and the environment has become an important area of scholarly research over the past 25 years (Allison 2001). Wangari Maathai, for instance, knew that gender could teach something about development beyond just the cause for women's civil liberties. In her 2004 Nobel Prize acceptance speech, she said,

> In 1977, when we started the Green Belt Movement, I was partly responding to needs identified by rural women, namely lack of firewood, clean drinking water, balanced diets, shelter and income. Throughout Africa, women are the primary caretakers, holding significant responsibility for tilling the land and feeding their families. As a result, they are often the first to become aware of environmental damage as resources become scarce and incapable of sustaining their families.

Researchers who focus on the cultural and social aspects of natural resource users have found that women also play a large role in sustaining a traditional way of life, even when there are major declines in resource availability (Davis 2000, Valdivia 2001).

Among international development organizations, there is no doubt that women play a substantial role as natural resource users. The Food and Agricultural Organization found in 1990 that, in developing countries, women provide 70% of agricultural labor, 60-80% of labor for household food production, 100% for processing basic food stuffs, 80% for food storage and transport from farm to village and 90% for water and fuel wood collection for households (Uma Rani, 1999). More and more, global organizations such as the UN and the World Bank are focusing on resources that women use and funding programs that involve women (Williams 2008, Yunis 2006). They do so, again, not for gender equity in and of itself, but because women's concerns consistently were found to

focus on conservation, sustainability, and intergenerational equality. "We focused on women," said Muhammad Yunis on his Grameen Bank, "because we found giving loans to women always brought more benefit to the family," (Yunis 2006). This study evaluates the extent to which gender is or should be relevant in fisheries management in the two communities examined.

*The Hypotheses*

The hypotheses presented below reflect the way in which this study began at asking, "How does gender affect fisheries management?" and moved to a broader look at how gender and questions of co-management are linked.

1. Men have had more access and influence in fisheries management decision-making.
2. Women of fishing communities tend to prefer strategies that emphasize sustainable management of fisheries resources, community well-being, and intergenerational equality.
3. Resources users who participate in making decisions regarding fisheries management tend to prefer strategies that emphasize the well-being of the community, the resources, and future generations.

*Outline of the Report*

Chapter Two discusses several philosophical frameworks, including e*cofeminism*, *environmentality*, Hardin's theory of the commons as well as empirical support for these ideas. Chapters Three and Four present the research done in Kerala, India and southern New England respectively. They detail the methods utilized and both the qualitative and quantitative results found from these methods. Each of these chapters also discusses the results and concludes with recommendations for the future of fisheries management

based on these results. Chapter Five summarizes the results and discussions of the two case studies. It also includes more specific recommendations for Kerala and New England with respect to the role of different stakeholders in fisheries management and highlights what can be learned by looking at both case studies together.

**Chapter Two—Three Theoretical Models**

This chapter considers theoretical and philosophical frameworks and several lines of empirical evidence to support the hypotheses that gender and participation in community-based management are relevant with respect to fisheries management. This chapter begins with a review key scholarship related to ecofeminism and of the role of gender in natural resource systems around the globe. Using the hypotheses presented in chapter one, the paper will then present how the theory resulted in the formulation of such hypotheses. This chapter will then move on to review scholarship on community-based resource management and "environmentality", as coined by Arun Agrawal, but expounded by co-management theorists in other works. The hypotheses of chapter one will also be re-analyzed in light of these theories. Finally, the paper will briefly review the essential components of the theory of the commons, especially as it relates to the sea. Again, the hypotheses presented by this research will be looked at through this third and final lens.

These three theoretical lenses provide a useful framework to examine observations collected about fisheries management in Kerala, India and southern New England, United States. Through this informed analysis, recommendations can be created for not only the management of these two particular fisheries systems, but for the creation of a fisheries management model into which other systems can insert their own

unique social, cultural and biological circumstances. The recommendations will not be panaceas, but examples of what can emerge from the use of this model.

*Gender and Natural Resources*

This section presents alternative frameworks for understanding the roles that women play in fisheries. Ecofeminism, as a theory, offers a gendered explanation of the relationship between humans and the environment. Ecofeminism gained world-wide attention as a practice through the Chipko movement in India in which women would hug trees in protest of deforestation. The Green Belt movement of Kenya is another famous example of women working to protect natural resources desperately needed by women (Maathai 2004). Women have long been the stewards of natural resources critical for family and community health, but only recently has this connection become theoretically important for political, cultural and economic feminists (Carson 1962, Biehl 1991, Zillah 1979, Ynestra 1983).

Ecofeminism as a philosophy formally began with a French writer named Francoise d'Eaubonne who, in 1974, insisted that women should organize to radically improve the condition of the natural environment through improved human/nature interactions (Merchant 1992). In order to change the structure of the human/environment relationship, she said the structure of the man/woman relationship must change as well. Some cultural feminists, who derive their sociological theories from feminist literature, incorporated this ecological concept into their own societal paradigm. In the 1980s, many of them began to suggest that both women and nature could be liberated from patriarchal domination simultaneously (Merchant 1992).

Since this time, various strands of ecofeminism have developed. Liberal ecofeminists believe that the improvement of social-ecological systems can occur within existing governmental structures, such as in the passing of new laws that benefit both women and the environment. Cultural ecofeminists suggest that positive change must come from a change in the culture of patriarchy that dominates both women and the natural world. This strand of ecofeminism places emphasis on the strong relationship between women and nature. Finally, social ecofeminists are concerned with the nature of "productive" versus "reproductive" labor. Productive work can be understood as work which creates goods or income. Reproductive work can be understood as work that sustains life. Patriarchy and capitalism, social ecofeminists argue, are economic systems that take advantage of women's labor and environmental systems as free services. They theorize that women's rights and environmental reform must come from escaping both of these dominating economic systems (Merchant 1992).

Philosopher Karen Waren brings these strands of ecofeminism together to highlight their common ground. "An ecofeminist ethic," she says "is both a critique of male-domination of both women and nature and an attempt to frame an ethic free of male-gender bias about women and nature. It not only recognizes the multiple voices of women, located differently by race, age class [and] ethic considerations, it centralizes these voices" (Waren 1991). In this sense, ecofeminism is an ethical theory that replaces traditional ethical concepts such as rights and rules with concepts such as care, trust and love. It insists that morally, people must treat both the human and the non-human world as equal "partners" whom are allowed to grow and develop with full autonomy (Merchant 1992, Noddings 1984).

Thus, the common theory in all forms of ecofeminism suggests that structurally, society operates around the domination of reproduction in both social and biological forms. Feminist theories note the prevalence of women in unpaid, domestic labor, despite their simultaneous full-time employment, and the overall devaluation of women's work (Reskin 1998). Similarly, social ecologists note the devaluation of unpaid for ecosystem services, such as temperature regulation or pollution filtration. This type of reproductive work provided for by women and by the natural environment are hence oppressed by often destructive, but higher valued, productive work done by men—the work that earns money and the services that cost money. Environmental degradation at the expense of future generations, the antithesis of sustainability, and poor female livelihoods are a direct result of this male-ethic domination. The ecofeminist theory therefore suggests that a shift in society's cultural and economic valuation of productive forces towards centralizing the female, reproductive values of care, will result in a more equitable and sustainable social and natural environment (Merchant 1992).

Case studies which document the world-wide valuation of men's work over women's work, as well as productive services over reproductive services, abound. Studies based in the United States and elsewhere, show a relationship between gender and pro-environmental attitudes and behaviors (Zelezny 2000, Dietz 2002). These studies place heavy emphasis on the role of gender socialization. As Dietz say of the results of his study on gender and environmentalism, "it may be the gender differences in environmentalism observed in the literature can be attributed, at least in part, to gender differences in altruism resulting from differential socialization and life experiences,"

(Dietz 2002). Similarly, Zelezny reports that females reported stronger environmental attitudes and behaviors across ages and countries.

According to Merchant, ecofeminist theory implies an emphasis, not on different socialization between men and women, but on total different conceptualizations of the world and the roles that production and reproduction play within it (Merchant 1992). One such example of the primacy that productive roles hold over reproductive roles lies in land-use in Africa. Anthropologist William Grigsby describes a case study in the villages of eastern Senegal in which women, who use the land for subsistence vegetable farming, encounter many problems acquiring land for their free, family-based labor. This activity takes secondary importance to the men's responsibilities for farming and producing grain which is sold for cash. Women, therefore, not only have trouble acquiring the fertile land which can be taken from them for grain production purposes, but also have an extremely disproportionate ability to manage and plan land-use activities. The lack of access to decision-making mechanisms has shown to progressively lead to the loss of critical vegetable farming and hence to the loss of agricultural biodiversity and the decrease in family nutrition (Grigsby 2004). In other words, the free services of nutrition and biodiversity provided for by women and natural ecosystems are valued less than the work of grain production for profit.

Further examples of the devaluation of women's agricultural labor can be found in Africa. Murray Li notes how women's work, seen as an extension of their role as wife and mother, is not seen as the work of an autonomous individual. Because of this, critical land is not passed down to women, income women do generate is often claimed by men, and women are not able to make decisions as to how agricultural land is managed.

Murray Li notes how similar meaning is also attached to women's work in Southeast Asia—for the labor that does not generate an income, there is little to no prestige attached and so little to no control over property and land. "Men's greater prestige," she says, "relates to the meanings attached to the particular practices in which they engage." Since the prevailing labor theory of property is one that states that people have a direct entitlement over that property for which they have directly labored, and women's work is most often free, women do not have entitlement to property, despite their critical contribution to family and community well-being (Murray Li 1998).

Yet often times, women do work in agricultural practices that earn an income. In these systems, such as in Sulawesi, women have a much more culturally protected claim to land, property and family income (Murray Li 1998). These examples show that only productive labor—those that produce money or property—whether it is produced by men or women, is the type of labor that is rewarded with decision-making power. "[Women's] strongest claims to property derive from engaging directly in production. Only labor rewarded by wages, or labor that directly produces property, permits women to negotiate conjugal exchanges from a position of strength," (Murray Li 1998). It is important to note here how work that produces, rather than sustains, is valued no matter who is conducting it.

Distinguishing between productive and reproductive work, as opposed to the gender of those who perform the work, does not negate the fact that in most parts of the world, women conduct most reproductive tasks. Collecting and storing water, weeding and fertilizing crops, livestock rearing, irrigating, seed collecting, fodder and medicinal plant collecting, and fish processing all tend to be the work of women. While others

besides women benefit from these tasks, wages or property is not usually given for them (Upadhyay 2005). These tasks, as the theory of ecofeminism illuminates, tend to be those that foster traditional knowledge, intergenerational equality, biodiversity and other trademarks of environmental sustainability.

Examples of women analyzed in sustainable reproductive work are extensive. For the purposes of this study, this chapter will focus on fisheries related work that women around the world produce. According to the FAO, for instance, women dominate the handling, preservation and processing of fish products. They unload boats and nets; they dry fish by sunlight; they salt, smoke and create value-added products such as snacks and pastes; and in many places, women fish from the shore and mend fishing gear. Many women work as wage laborers in fish processing plants and many work as fisheries entrepreneurs (FAO 1997). Studies in India show that women spend the bulk of their time either travelling to and from fish markets or waiting for customers at the markets. After all this income-generating work, women report spending more than 80% of their income on household expenditures (Bhatta and Rao 2003), substantiating the theory that women's work is viewed as an extension of their role as wives and mothers and not as autonomous individuals. Their productive work is used for sustaining the family, an extension of their reproductive role.

The unfortunate result of the devaluation of women's reproductive work, for the purposes of this study, is not necessarily gender inequality in and of itself. The unfortunate result lies in what is lost when women are not valued as decision-makers in land and fishery management because they are not valued as workers. The aim of fisheries managers then should be to incorporate the "perceptions, experience and

interests of women as well as men in the development agenda," (Bennett 2005). As one agro-biodiversity project notes of women's perceptions, experience and interests:

> Advances in enhancing the productivity of major crops like wheat, rice and maize have resulted in replacement of numerous minor cereals and millets, legumes, tubers, oilseeds and vegetables. This loss is also associated with changes in the local culture and dietary habits over time. Today the fate of global food security is linked to the performance of less than ten crops out of nearly 7,000 edible species. Besides threats to global and national food security, hidden hunger and malnutrition arising from dependence on too few crops are likely to have negative impacts in the future. Also, the disappearance of agro-biodiversity results in loss of local knowledge on the management and conservation of local resources. Most importantly, gender issues of roles, access, control and decision-making and related local knowledge systems have undergone changes, and marginalized women's knowledge and status and decision-making power (Rengalakshmi 2007).

This project, located in Kerala, sounds remarkably similar to Grigsby's case study of women vegetable growers in Africa. Women do not inherit land and their reproductive work, beneficial for nutrition and biodiversity, ranks after cash crops in competing for fertile lands with the crops that men grow for cash (Grisby 2004). Women's transactions in Africa, in India and in most fisheries systems around the globe, are either free or for local trade. It is generally men who become involved with external traders and cash transactions. As the quote above suggests, the high value of these cash transactions means the threatened loss of women's knowledge and skills and hence a decline in agro-biodiversity (Rengalakshmi 2007). In general then, women's roles are, as ecofeminist theory asserts, mainly reproductive roles—"time invested in the production of goods destined for the household wellbeing"—and many studies show that these roles directly increase human, social and cultural capital (Valdivia 2001, Rengalakshmi 2007, Grisby 2004). Thus their participation in natural resource management can contribute to strengthened communities and ecological sustainability.

The general gender theories behind these land management cases can also be applied to gender in fisheries systems. As women dominate the realms of growing

vegetables and more minor crops that are used for family and local consumption, so they are responsible for the small-scale processing and marketing of fish that benefit the family and the local community. They are generally not associated with the financial transactions that dominate the marine export market. Studies in Palau, for instance, show that women exchange fish in villages as well as sell it in town markets. This, along with dried fish and homemade snacks, are a major form of household support. Women also "still contribute considerable unpaid labor to the processing and support services," (Williams 2008). Women of Torres Strait, Australia not only collect marine food for their own household but are also expected to make a contribution, free of income, to a broader familial network. Not only does this provide communal food security, but it maintains "the ideal of harmonious group interrelations," (Lahn 2006).

Women in many other countries dominate the post-harvest sector as well as have home-based roles and, as mentioned above, spend their incomes on the household. As in land-use and agriculture, women are often excluded from the management process in fisheries and this lack of control makes their positions vulnerable to those who do make decisions and value production work over reproductive work. Studies in Thailand, for instance, show that women are not welcome at management meetings and do not express themselves at community meetings (Tokrisna 1996). An increased global demand for fish means that men will be catching more fish for outside the community and will be co-opting women's traditional roles as the potential profits in these roles increase (Bennett 2004, Tokrisna 1996, Valdivia 2001). In very few places, such as Gambia and Guinea Conakry, is there beginning to be a movement of women moving into management roles in order to take control over the roles and the resources they depend upon for local and

familial well-being. Such actions increase the potential for food security amongst rural families and well as the safety of bio-diversity, water, soil, and plant health (Valdivia 2001). As Ruangrai says of women in Thailand's fishery:

> While modernization of the commercial fishery has forced women out of the fisheries, community-based fisheries management regimes…will avail of greater women's participation by working within traditional fisheries. Women can participate in various traditional fisheries activities, including harvesting, post-harvest handling, processing, and marketing, as well as non-fisheries activities. Those can help augment local food supply and generate income.

Arundhuti Roy Choudhary; famous novelist, feminist, social activist, and native of Kerala, India; would agree with Ruangrai that community-based management can avail of women's skills for positive benefits, but she emphasizes the need for managers to make a concerted effort to do so. Otherwise, even community-based management can continue the pattern of male dominated work over women's work and the environment. "The simplistic notion of community cohesion," she says, "permeates much participatory work, hiding a bias that favors the opinions and priorities of those with more power and ability to voice themselves publically." The most powerful, however, are not necessarily those with the most environmental values or knowledge. The trust and reciprocity of women fish workers are examples of social capital that strengthen the community. Thus, she stresses that the participatory process must ensure that men and women have equal say in fisheries management (Roy 2001).

These gender issues in fishing communities are not only present in developing countries. Women in Europe also work in fish processing factories and are known as fishmongers. Women in Europe are also involved in marine aquaculture and to a smaller extent, marine fishing. In Spain, women who harvest shellfish on foot on the foreshore are known as "mariscadoras". In addition, women work as factory networkers, smoke-house workers and seasonal herring gutters (Thompson 1985). Similar to the cases cited above, women in Europe are largely not dominant in fishers' organizations and the EU Consultative Committee on Fisheries and Aquaculture mainly because they do not own

property—the boat, the house and the car all belong to their husbands (Rana 2003). Other studies suggest that women feel unwelcome in seagoing fish capture, experience economic discrimination and, while they make up the majority of workers in the processing sector, mainly hold "low-grade unskilled jobs where they have fewer career prospects." Despite this, there are some who recognize that fishermen's wives, because they are always ashore, are in a better position to defend the interests of the sector than their husbands." In this effort, women in Europe have been known to voice concerns about job losses and future generations in their communities (European Commission 2003).

Women in the United States face similar issues. Individual Fishing Quotas have been implemented in Alaska and the south and mid Atlantic. Others are being considered in the Gulf of Mexico, New England and the Pacific (South Atlantic Fisheries Council 2006). The concentration of rights to fish with mainly corporate, multinational fishing enterprises as a result of purchasable transfer quotas leads to women being granted even less access to fish and fisheries wealth (Davis 2000). Women thus turn away from the fishing industry to other forms of wage labor. "The smaller scale coastal fishers have had to turn from fishing to rely on wage incomes from other family members just to get by," says Davis of fishermen in the northeastern United States. Not only are wages an important contribution from women in American households, but health insurance is as well, as most small-scale fishermen are not able to afford such services (personal correspondence 2008). What Davis notes, and what the European Commission report also alludes to, is how women of developed communities have a strong role in sustaining the fishing "way of life." Paul Thompson mentions women's often militant role in

protecting communities compared to men's silence (Thompson 1985). This is true in Europe, the Americas, Iceland and in many developing countries such as India (European Commission 2003, Hall-Arber 2006). Movements such as the Green Belt movement and the Chipko movement are prominent examples. Even in New England, Portuguese and Italian women also serve as community protectors (Hall-Arber 2006). This role takes prominent importance in countries where industry failure can also mean not only poverty, but community disappearance.

Thompson sums up the importance of women's work in fishing communities in both developed and developing countries. He mentions first, "the direct productive contribution of women's labor" in the fishing industry. Second, he mentions the creation of the next generation of fishing communities "in both the physical and moral sense." Last, he talks of "the special responsibilities which women carry because of the absence of men at sea." His view of women in fishing communities is less of weakness and discrimination in management, but on the contrary, one of power and independence. "Where family boat-ownership continues," he says, "the family constitutes not merely a home, but also the basis for an economic venture; and even though the shift of women's work from the home to the factory reduces their direct participation, as long as they are processing local catch they are still caught up in a common enterprise." In other words, women have more power and independence because of the absence of their husbands at sea and because of the important role they play (Thompson 1985). This may seem as a direct contrast to the theories of ecofeminism until Thompson himself notes the varying discrepancies between women's independence and power within management decision-making. He concludes that it is only when women make their own money and create

their own property do they become able to participate in management decision-making—again, concluding that the valuation of productive versus reproductive work is even more significant than gender (Thompson 1985).

Paul Thompson's summery of power and gender in fisheries communities, along with ecofeminism and the previous theories and case studies of women's roles in natural resource management, shed light as to how this project's hypotheses were formed. The second hypothesis states that "women of fishing communities tend to prefer strategies that emphasize sustainable management of fisheries resources, community well-being, and intergenerational equality." Since case studies show that many women have roles as family providers and community guardians while men are at sea, it has been hypothesized that women would support those policies and actions that assist in supporting their family and safeguarding the community. Similarly, since the theory of ecofeminism draws a connection between the reproductive roles of women and the reproductive roles of the marine ecosystem, it has been hypothesized that women's preferences emphasize environmental health and protection of future generations.

Chapters Three and Four of this study analyze the research conducted in the two case studies presented here in light of this hypothesis and the gender theories behind it. If the theories of ecofeminism and gender dimensions in natural resource management can be applied as a general model for both southern New England and Kerala, the large discrepancies between these two fishery systems would imply that these theories are capable of containing a very wide berth of cultural and economic differences and therefore have a large possibility of being a model for almost any fisheries systems.

*Environmentality*

This section of the theoretical review will consider a variety of management styles such as co-management, ecosystem-based management, and community-based management. In all of them, the role of the community is thoroughly considered. "Environmentality," for instance, is a term coined by writer Arun Agrawal in his book, Environmentality: Technologies of Government and the Making of Subjects. It is best to define it using his language:

> Environmentality, as the term has been used in this book, constitutes a way to think about environmental politics. It attends carefully to (1) the formation of new expert knowledges; (2) the nature of power, which is at the root of efforts to regulate social practices; (3) the type of institutions and regulatory practices that exist in a mutually productive relationship with social and ecological practices and can be seen as the historical expressions of contingent political relationships; and (4) the behaviors that regulations seek to change, which go hand in hand with the process of self-formation and struggles between expert- or authority-based regulation and situated practices.

The term contains all the fundamental aspects of the modern-day movement for community-based management. The first concept that environmentality attends to is more generally referred to as local or traditional knowledge and in this case, concerns the vast knowledge that fishermen have acquired from generations spent out on the sea catching fish. The second concept concerns the degree to which central government forces attempt to control fishing practices as opposed to letting fishermen create their own regulatory measures. The third concept concerns those fishing regulations that are both expressions of conservation and community preservation and the four concept concerns the extent to fisheries policies create environmentalists out of fishermen. This is a very compact statement of what Agrawal's teacher, Elinor Ostrom, has written about regarding co-management of commonly held resource systems.

> Designing a system in a top-down fashion and imposing it on the harvesters is not as successful as working with the users of a common-pool resource over time to develop a system that is well-matched to the ecological system as well as to the practices, norms, and long-term economic welfare of the participants…

A lot is being said here. Involvement, however, could be a key term to summarize much of it. As one of Agrawal's Kumaon interviewees said, "We protect our forests better than the government can. We have to. Government employees don't really have any interest in forests. It's a job for them. For us, it is life." This phrase is significant when one knows that the person who said it had become a convert to environmental conservation after becoming more involved in agriculture and became a member of one of the forest councils. Agrawal tells a story of forest management in India where centralized control was increased in an effort to increase revenue from harvesting natural resources. Increased central control meant the central government was acquiring more land and imposing stricter enforcement. The result in Kumaon was the criminalization of traditional uses of the forest. Locals challenged this by setting large fires in the forests. With time, control over governing the forests was given to local residents under a general set of guidelines. Environmental decision-making was given to forest councils made up of local residents and the arson and government antagonism stopped (Agrawal 2005). Agrawal admits that consensus among the forest councils is not always achieved—there are disagreements among resource users in Kumaon forests just as there are in most fishery systems—but what is more significant is what Agrawal notes as the ways in which regulatory norms and institutions affect the thoughts and experiences of people so that they create new relationships with the environment. In other words, the decentralization of resource management can result in local participation which results in the making of environmental subjects that think in terms of conservation, sustainability and intergenerational equality.

Agrawal theorizes that this impact would result because of his argument that decentralized management of natural resources is more effective. "The records of forest councils," Agrawal says, "greatly expanded the realm of visibility for officials in the revenue and forest department. Today, Kumaonis control themselves and their forests far more systematically and carefully than the forest department could." Agrawal's research suggests that strong involvement leads to strong beliefs in environmental protection and that only those with little involvement break the rules intended to protect the resource, no matter how much personal interest is at stake. Agrawal notes in his visits to forest council meetings that there are differences between participants in terms of caste, gender, and wealth, but the most important difference in shaping environmental subjects is their different types of involvement levels in regulations and councils. Unlike ecofeminism then, "categories based on gender, wealth, income, and caste turn out to be less relevant as indicators of whether a particular person is likely to be interested in protecting village forests." A more relevant indicator is one's level of involvement (Agrawal 2005). Sector-type is one category in fisheries systems that may play less of a role in forestry systems but which is a large barrier to consensus amongst fisheries resource users. Whether involvement in regulations could trump the conflict of interests between sectors in commonly held fishery grounds is one critical way Agrawal could strengthen and expand the scope of his research.

Agrawal is not the only one who believes that community management is more effective than centralized, top-down control over natural resources. A project by Madeleine Hall-Arber in Gloucester, Massachusetts shows how community reports were used in developing harbor plans that created water use restriction within the inner harbor,

but that also allowed waterfront property owners to develop their property when fish stocks were rebuilding and fishing was not occurring. This compromise to assist in preserving the fishing community and identity, Hall-Arber asserts, would not have been achieved with purely centralized control using cost-benefit analysis of waterfront property uses (Hall-Arber 2007). Community management projects in Samoa show that "the main benefit of community-based fisheries management to a government is that the conservation actions necessary to exploit seafood resources on a sustainable basis becomes a community responsibility. Thus the actions, being less dependent on public funding, become more sustainable and the costs of enforcing fisheries regulations are reduced," (King 1999). In other words, community-based management not only serves as a legal foundation for gear and spatial restrictions on fishing, it also serves as a cultural basis. Not only that, but less bureaucratic involvement in regulation and enforcement means less money and less time needed to make adaptive responses (Cinner 2005). Lastly, researchers in fisheries note that "failures in the communication process have led to adversarial relations and tensions among various stakeholders and between the government sector and the fishing community, in particular. An adversarial atmosphere can result in low morale for all stakeholder groups. This can led to serious difficulties and impede the management process," (Kaplan 2004). Just as Agrawal tells the story of change from local resource users committing arson in the forests to developing a strong sense of conservation responsibility with locally based management, so many fisheries social scientists believe that trust and compliance with government being renewed through cooperative research efforts, recognition of fishermen expertise and participation in the management process (Kaplan 2004, da Silva 2005).

More than fifty countries are trying to create environmental systems under greater local control (FAO 1999). Today, the number is likely higher. In order to decentralize environmental control, Agrawal notes that three strategies must be met: the creation of local government bodies that have the capability to regulate, the creation of new boundaries and areas where these local bodies have control, and the ability of local people to view these bodies as legitimate. These are the strategies for self-regulation, but it must also be backed-up by state power. This allows not only effective regulation but also allows environmental initiatives to extend control into the smallest and most inaccessible places within communities (Agrawal 2005). These strategic theories will become important when discussing results and recommendations based on studies in Kerala and southern New England.

There has already been some discussion of Agrawal's third strategy—that localizing power over environmental regulations "environmentalisms" subjects and that those with increased involvement in monitoring, enforcement and regulation are more "environmental zed" than those with less involvement. Part of the reason for this, as mentioned by Hall-Arber's study, is that environmental subjects, unlike bureaucratic power, move beyond calculus of cost and benefits. The creation of localized regulatory bodies creates subjects who participate in management and who begin to see a more generalized need for environmental protection beyond the interests of personal economics (Agrawal 2005). While ecofeminists believe that gender is part of the making of this generalized consciousness, Agrawal firmly believes that participation is far more important.

The first strategy, the creation of local bodies that have the capability to regulate, is less of an issue of training for Agrawal and more of a leap of faith. Centralized control of natural resources is often based on expert authority and claims to scientific knowledge. A shift from this to leadership by those with traditional forms of knowledge requires acceptance that indigenous groups of people are capable of acting in their own long-term interest and that they are not obstacles to environmental conservation, but rather can shift to seeing conservation as a moral act (Agrawal 2005). Other studies have also encouraged a shift in how science views traditional communities. For instance, "communities that disintegrate socially and morally," says Svein Jentoft "are a threat to fish stocks. Overfishing results when the norms of self-restraint, prudence and community solidarity have eroded. It occurs when fishermen do not care about their resources, their community and about each other." In this way, it is suggested that environmentality is something that traditional communities already have but which is eroded by centralized control. When management responsibility are shifted from the community to a distant government, the sense of community responsibility and values erode and make fishermen more concerned with personal economics than long-term sustainability. This especially becomes true when fishermen are forced to buy and sell quota-rights and licenses from each other (Jentoft 2000). Fishermen, however, Jentoft suggests, are not competitors and so quota-rights should be given to communities rather than individuals and communities can then decide the allocation and access rules. He questions the notion that the consolidation of a community's fisheries fleet will result in all positive impacts—instead it may result in a group of individuals who do not feel tied together and to the environment by morality or by environmentality (Jentoft 2000).

So far a lot of reasons have been given as to why community management of resources may be preferable to central, top-down control. Yet they often pose the management picture as one in which government managers are on one end of the spectrum and the resource users are on the other. Theories surrounding co-management often allow for a more diverse set of resource stakeholders. "Fisheries co-management," as defined by Robert S. Pomeroy, "can be defined as a partnership arrangement in which government agencies, the community of local resource users (fishers), non-government organizations, and other stakeholders (fish traders, boat owners, business people, etc.) share the responsibility and authority for the management of a fishery." Co-management acknowledges that the government has a major role to play, mainly in giving legitimacy to local decisions, and is geared toward achieving a balance in interests. For it to achieve a balance of interests, components other than resource management must be implemented. Community and economic development, capacity building and finally, institutional support are all critical if co-management is to work (Pomeroy 1998).

Other social scientists think similarly to Agrawal, Jentoft and Pomeroy, noting the legitimacy co-management gives to rules and the decrease in cost it gives to enforcement (May 2008, Kaplan 1999, Agrawal 2005). Agrawal also notes its continuity, autonomy and transparency derived from its closeness to the objects of regulation. He also notes that where scientific expertise lacks, better understanding of the locality exists. In this better understanding, regulation is not simply a negative force that prevents people from doing certain actions, but it can take on much greater innovation and be far more adaptive. Forest councils in Agrawal's study sites, for instance, began to assess the condition of their forests and began to allocate to whom they determined to be "the right"

holder members. Innovations for allocation include allowing for certain days the resources could be extracted, allotting territories, holding auctions or determining who will monitor and when. In these innovations, the aim of regulations is no longer exclusion and prohibition, but normalization and adjustment. He says of normalization:

> Attempt to normalize require a conception of the desirable, an intimate knowledge of the object of regulation, the ability to calculate the effects of policing strategies, the capacity to distinguish between human and other causes, and the ability to modulate the nature and force of interventions.

In this, management becomes not only more effective than centralized control, but comes to be more accepted and normalized (Agrawal 2005).

Normalization is the acceptance of a new environmental ethic amongst resource users. It is a movement from resistance and coercion to involvement and awareness. It is also the knowledge amongst resource users that the goal of environmental management is not the making of large profits, but the meeting of needs (Agrawal 2005). Yet if this ethical shift is to occur, communities need to feel as if their own destinies are under their control and hence, their own responsibility. This means that some form of safeguarding the community needs to occur, as opposed to the community destruction inflicted upon fishing communities as described by Jentoft. Social objectives, however, have taken a back seat to environmental ones, thus ironically subverting those very same environmental objectives (Symes 2008). As Symes notes, "unlike most Third World countries where social issues—including food security, employment, fair trade and the protection of individual and community fishing rights—are very much to the forefront of fisheries development, in Europe, North America and Australasia the social objectives of fisheries policies have all but disappeared from view." Like Jentoft, Symes feels that the consolidation of the community is disrupting it by giving rights to a privileged few. He

argues for policies to focus on social reproduction, on informal labor and on the traditional knowledge of the local people. This argument rings a strong bell with the arguments of ecofeminism. Interestingly then, one might argue that a shift away from pure ecological conservation to both ecological and social protection would more successfully achieve the environmental goals that fisheries managers are geared towards.

When policies focus on social reproduction, it is often called ecosystem-based management. This approach "considers the entire ecosystem, including humans," (Leslie 2007). It is critical then, that there is relevant social data on fishing communities (Symes 2008, Hall-Arber 2007) and an awareness of the effects that policies have on the industry members (May 2008). Some authors have suggested that managers take a livelihood approach in order to strengthen communities from vulnerability to changes in the resources (Allison 2001). Others suggest that managers need to address "quality of life" and values that may be affected by fisheries policies (Hall-Arber 2007). Other authors have drawn ideas from anthropology that they feel should be a part of creating social impact assessments when managers propose new regulations (Ingles 2007). More often than not, however, scholars are advocating decentralization of decision-making, arguing that when policies are understood, as well as the root causes of environmental degradation, conservation will rarely be undermined by local resource users (Garnett 2007, da Silva 2005).

Not only is it necessary to understand policies, but actually participating in creating those policies may create a sense of concern and responsibility for the environment (Agrawal 2005). Agrawal believes that in comparison, social identities such as gender and caste play a very small role in shaping environmental beliefs. "To end the

analysis there," he says of gender and caste, "is to fail to attend to the many different ways in which people constitute themselves," (Agrawal 2005).

In the spirit of this advice, this paper does not end its analysis with gender. The first hypothesis, that men have had more access and influence in fisheries management decision-making, is as much concerned with women's lack of influence as it is the community's lack of influence. According to Agrawal, it would be more apt to hypothesize that men from outside the local community of resource users have had control over management and so an ethic of environmentalism has not been instilled. Agrawal would suggest that men from outside the community view management as an equation of costs and benefits and so miss community values and perceptions. Fishermen are viewed as competitors and behave as competitors when the as the resource declines. Thus communities degrade as do the fish resources.

Hypothesis three, that resource users who participate in making decisions regarding fisheries management tend to prefer strategies that emphasize the well-being of the community, the resources and future generations, stems directly from Agrawal's theory of environmentality. The validity of this hypothesis would hold a lot of weight in the argument that community members, especially those resource users who have tended to be undervalued, would have a positive impact on environmental and social sustainability if they were given greater weight in the balancing between government and local control of fisheries resources.

*Theory of the Commons*

It is not surprising to note that Arun Agrawal was a student of Eleanor Ostrom. Ostrom spent her career debating the "tragedy of the commons" theory as expounded by

Garrett Hardin in 1968. To be very brief, this theory concludes that where there is a common-pool resource, the amount of resources that is withdrawn from the common-pool with be more than what is optimal in order to sustainably maintain that resource, resulting in degradation. The theory suggests that unless there is some form of coercion, individuals will always act in their individual self-interest as opposed to the group interest, even if that results in losing the common resource completely (Hardin 1968). "The presumption that an external Leviathan is necessary to avoid tragedies of the commons leads to recommendations that central governments control most natural resource systems," Ostrom states, and she provides examples of how such recommendations have largely been followed, especially in developing countries (Ostrom 1990). One can see already how Agrawal's study of arson during the centralized control of India's forestry resources is based on problems that Ostrom finds with centralized control:

> The optimal equilibrium achieved by following the advice to centralize control, however, is based on assumptions concerning the accuracy of information, monitoring capabilities, sanctioning reliability, and zero costs of administration.

These complaints have all been discussed at length in the above discussion of arguments for community participation of marine management. Ostrom also discusses each of these problems at length.

The second possibility suggested by followers of the tragedy of the commons is that coercion may not have to be done by centralized government, but by private property holders. If resources are owned by individuals rather than as a common, then it is in that individual's interest to be sure that that resource does not degrade. It internalizes costs and benefits and increases responsibility (McCay 1987). The first problem Ostrom finds with this suggestion is, interestingly for this study, is that it is almost impossible to

privatize fisheries resource, which is one of the largest resources almost always owned in common rather than individually. Rather than getting caught up in the debate as to whether publically or privately owned resources are more effective, Ostrom says,

> Instead of there being a single solution to a single problem, I argue that many different solutions exist to cope with many different problems…Instead of presuming that the individuals sharing a commons are inevitably caught in a trap from which they cannot escape, I argue that the capacity of individuals to extricate themselves from various types of dilemma situations varies from situation to situation.

Much of Ostrom's work has been to prove how public and private institutions often work together rather than in isolation or to demonstrate how users of commonly held resources can make a contract amongst each other to create a cooperative strategy. She discusses the benefits of traditional knowledge in making such contracts and the ease in which local resource users can monitor property in comparison to regulatory agencies. In fact it is clear that Ostrom believes that there are many examples in which nationalization of common resources has actually meant their destruction, whereas resources held in common have been successful for generations. She gives empirical examples of communities that limit the behaviors of individuals in ways that enhance the returns of the whole group. She also, however, gives examples of communities that have not been able to communicate with each other to create such contracts that limit individual behavior. In comparing these successfully versus non-successfully managed commons, Ostrom is able to theorize on the traits that all successfully managed commons must have (Ostrom 1990).

Thomas Dietz, another student of Ostrom's, also writes of the failure of centralized governments to be more effective in governing common-pool resources than the community of resource users themselves. Common resources, he says, are "degraded where they are open-access or governed by top-down national regimes, leaving local and

regional officials and users with insufficient autonomy and understanding to design effective institutions." He points to the fisheries of Maine as being one example of how top-down rules do not always have the best compliance rates. Lobster fisheries in Maine have been governed by user institutions and so were credible among users and had high levels of compliance. Dietz explains how the field of "human ecology" is, in essence, the field that Ostrom is undertaking as she attempts to understand why some institutions are successful and others are not in managing the resources of a commons (Dietz 2003).

Dietz, Ostrom and others such as Bonnie McCay, all come to similar conclusions as to why some common resource management institutions are successful and others are not. To begin with Dietz, he summarizes that commons governance is achievable when i) the resource can be monitored at low cost; ii) rates of change among resources and resources users are low to moderate; iii) when there are high levels of communication and trust among resource users; iv) outsiders can be excluded at low cost; and v) users support monitoring and rule enforcement (Dietz 2003).

Ostrom's theory of what makes commons management successful is similar, although more focused on the culture of the community. According to Ostrom, successfully managed common areas all have resource users that play a role in monitoring. All individuals have the ability to craft their own institutions and improve them over time. Ostrom also explains the need for resource users to feel the importance of their reputations amongst other resource users and the need for a concern for intergenerational equality. There must not be large opportunities for excessive conflict, according to Ostrom, and so community members must be similar in many ways, such as in ownership, race, ethnicity, or other driving factors (Ostrom 1990). A study of fishing

communities in Indonesia with highly exclusive marine tenure offers empirical evidence of this notion. "This study," says principal investigator, Cinner, "found a lower proportion of immigrants in communities with highly exclusive marine tenure institutions, which is consistent with the notion of high social capital being an important component of maintaining common-property management regimes." Social capital includes concepts such as trust and consistent norms (Cinner 2005).

One of Ostrom's main arguments for successful commons governance is the need to avoid governance by a panacea, or a single answer solution to common pool resources that take a diversity of different forms.

> Advocates of panaceas make two false assumptions: i) all problems, whether they are different challenges within a single resource system or across a diverse set of resources, are similar enough to be represented by a small class of formal models; and ii) the set of preferences, the possible roles of information, and individual perceptions and reactions are assumed to be the same as those found in developed western market economies.

Ostrom's other requirements for success include effectively excluding outsiders, a congruence between management rules and local conditions, the ability for those affected by the rules to participate in modifying them, the perception among resource users that rules achieve collective benefit and that others are also complying with the rules, the ability to monitor at low cost, the ability of institutions to resolve conflicts and finally, the support of the central government for resource users to manage their own commons.

This last point has been reiterated by not only Cinner's Indonesian study, but by Agrawal's Indian study and other studies conducted in Maine and in Europe. "The lack of legal recognition of marine tenure also seemed to cause conflicts over marine resources," says Cinner of his research results (Cinner 2005). In the United States, May notes the absolute necessity for government to create legal protection for informal community mechanisms of common property resource management. They need, she

says, the formal recognition of the government if they are to have legitimate authority to exclude outsiders from common resources and have access to control (May 2008). Dietz too notices the damage done when environmental policy ignores traditional tools and community-based governance (Dietz 2003). Ostrom goes so far as to offer examples of when governments undermine community institutions which clearly results in their failure.

Bonnie McCay also demands that decision-makers recognize the ability of resource users to act cooperatively for the common good of the community. In her argument against Hardin's tragedy of the commons theory, she shows examples of how communally owned property is not to be confused with open-access. Instead, communities often have intricate and complex rules about who has access, when and how. She disagrees with the idea that the governance of commons by an external authority, such as centralized government or private property owners, will inherently solve the problems of environmental degradation. Access can be open to a smaller number of people whose notions of territorial rights are strong. Conservation measures amongst users of common property are possible under these conditions, especially under cultural norms that promote respect, humility and generosity with what one owns. "In this case," says McCay, "resource conservation is besides the point of exclusive property rights."

McCay and the other above mentioned scholars have challenged the logic of the tragedy of the commons with empirical evidence of successfully managed commons by local communities. Other stakeholders besides local communities, however, have often argued for rights in the decision-making surrounding natural resources. These

stakeholders are not always government officials or private property owners. They are, as Peter Haas calls them, epistemic communities. He defines epistemic communities as "networks of knowledge-based experts…helping states identify their interests…[and] proposing specific policies." These communities have control over knowledge and information and so have important and powerful roles in natural resource management and behavior patterns. The professionals that make up the epistemic communities have the same set of principles and values, a shared set of causal beliefs, shared notions of validity and a common policy enterprise. All these factors strongly influence state behavior and often, international policy. Haas sees the power being given to these communities because of their expert knowledge as one form of decentralization. The difference between this form of decentralization and the decentralization that gives control to local resource users, is that epistemic communities consist of individuals who have "claim to a body of knowledge that is valued by society." The do not, unlike local communities, have material interests in the areas in which they have political influence. The result of this can be both positive in putting reason over interest, or, as Haas explores, can limit access to power by the public (Haas 1992).

Giving control of decision-making to those without commercial interests but with valued knowledge may appear to be a reasonable alternative to the dichotomy of centralized control or private ownership. McCay, however, addresses this with an enlightening reminder of America's principals in escaping the intellectual hierarchy of the Old World: "The roots of North American common property law and sentiments in social class struggles seem related to a key aspect of common property in America: its claim for social equality." In the Old World, the right to fish was synonymous with

protection against class discrimination (McCay 1987). Thus, common property rights were part of the New World's revolutionary idea that there should be equal access to wild resources. McCay is clear in noting, however, that those who were dependent on common resources were motivated to set some limits as overfishing was another form of creating unequal access to the commons—if those with economic and technological advantages could harvest most of the fish, then the livelihoods and communities of those who depended upon the commons for food would be destroyed. From here, McCay goes back to providing more examples of communities that were able to manage commons in ways that represented economic and moral equality (McCay 1987).

Besides the lack of equality that control by epistemic communities may create, Dietz notes the need for knowledge about social values and on the effects of policy outcomes (Dietz 2003). Social scientists who engage in gathering social data are then more than just members of an epistemic community, they are advocates on what qualifies as valued knowledge. If society values the knowledge of fishermen and includes it in the process of management, than the goals of adaptive management and ecosystem-based management will be more easily met. On this point, Ostrom says "the individuals who directly interact with one another and with the physical world can modify the rules over time so as to better fit them to the specific characteristics of their setting." This is beyond the capabilities of the epistemic communities as Haas describes it. Management must include not only centralized government and epistemic communities, but resource users themselves.

This study is grounded firmly in the theories of the common presented above and in the notions of valuing traditional knowledge. The fisheries systems of Kerala and

southern New England are managed very differently but their similarities lie in how their "tragedies of the commons" have been theoretically managed. For both places, the tragedy of declining fish stocks has come from access to fisheries resources without moral or legal restriction. Resulting attempts at centralized control have been used to limit access. Both Kerala and New England, however, have made mild attempts at forms of co-management that have resulted in both frustration and hope for environmental and social progress in the future.

The hypotheses of this study are largely based on the failure of both Kerala and the United States to recognize the contributions of female industry stakeholders and so fail to fully realize the potential for community-based management of its marine commons. In the US, men of different fisheries sectors are appointed to the regional fisheries councils, resulting in the creation of strategically managed advocacy groups that, representing their own personal interests, engage in debilitating conflict. In Kerala, management is dominated predominantly by the interests of men in government positions who govern with all the limitations of centralized, top-down control. These conditions, according to all the theories of the commons, would and have resulted in management failure.

Women and men who have roles that represent the knowledge and values of the local community not only have more homogeneous interests, according to Ostrom and others, but they contribute significantly in ways that could more effectively address the problems and concerns that affect the long-term sustainability of the community and the resource. Similar values and interests would mean, as Cinner demonstrated, a greater ability to have strong marine tenure that could reduce the amount of those with access to

marine resources, limit the type of gear being used and continue to maintain trust and morality amongst fishermen into future generations. These theories have thus not only assisted in forming the hypotheses of this research, but the recommendations that have been formulated from the results. They create much of the lens that was used to analyze how management is currently conducted in the two case studies and where it should and needs to go for sustainable development in the future.

## Chapter Three—The Kerala Case Study

### *Introduction*

The story of the fishing communities in modern day Kerala is one that can be characterized, like so much in the rest of India, by rapid change. Yet also like so much of India, this change is marked by both contradiction and tradition. Some shore side villages along Kerala's 590 kilometer coastline harbor freshly built concrete homes that rise like skyscrapers next to their neighbors' thatched huts. Fully mechanized in-board trawling boats dock alongside traditional dug-out canoes manned by oars. Women stand for 16 hours a day cleaning, freezing and boxing squid in state-of-the-art processing factories while others sit on the sandy banks of their village, laughing with a group of women who mend nets and watch children play. India is known for these wild dichotomies of the modern and the traditional, for unabashed wealth flaunting itself in the face of extreme poverty, and Kerala's fishing villages are no exception.

This chapter will explore some of these contradictions, but not only through physical observations. Based on semi-structured interviews with fisheries experts and activists, as well as on ninety quantitative surveys conducted with the fishermen and women of Kerala; this chapter will not only explore the differences of opinions between

men and women, between young and old and between modern and traditional craft operators; it will also analyze the meanings behind the contradictory knowledge and opinions of fishermen, government officials and NGO leaders. It will theorize on the impacts of these differences and make recommendations for building increased communication that will empower the resource users, safeguard future generations of fishermen and women and lead a marine ecosystem that lies on the tipping point of degradation toward sustainability.

In order to cover this complex terrain, this chapter will begin with a description of the methods that went into this study of Kerala's fishing communities, including the overall objectives involved in using these methods and some of the limitations inherit to them. The chapter will then move into a brief background and context analysis of the fishing communities of Kerala. This background includes a literature review of past sociological studies and historical depictions of life and change in the fishing communities. It will also include quantitative data, both in raw numbers and in maps, which present a good picture of fishing in Kerala.

Once a basic contextual setting has been laid, the chapter will then head into the results of the study. These results will include the analysis of qualitative data and, using SPSS software data analysis, the results of the quantitative survey. With such results at hand, the chapter will end with a discussion of the results, including recommendations for policies and action for the future.

*Methods*

This study was done with the collaboration and assistance of the M.S. Swaminathan Research Foundation, based in the Wayanad district of Kerala and under

the direction and supervision of Anil Kumar, PhD. Ninety surveys were conducted in three different study sites along the coast of Kerala (See appendix 3.1 for survey questions). There are an equal number of survey respondents from each study site—30 in north Kerala, 30 in central Kerala and 30 in southern Kerala. Respondents were obtained through a "convenience" sampling method of those present and not busy in the village the days the survey was given. Of the 30 respondents at each site, there are an equal number of men and women and an equal number from three different age ranges. One study site, based in southern Kerala, includes the two villages of Thankasserry and Neendakara, both close in proximity to the urban center of Kollam and the largest modern fishing harbor in Kerala, Neendakara Fishing Harbor. The second study site, the village of Munambam, is close in proximity to the city of Cochin and represents the central, and very urban, region of the state. The northern study site includes three small, rural villages near the small city of Kasargode: Kasaba, Ajanoor and Thikadappuram.

Each survey was conducted orally with a Malayalam translator provided by Matsyafed, Kerala's State Co-operative Federation for Fisheries Development. The surveys were done orally to avoid potential problems with literacy and with only one translator to avoid as much translator bias in interpretation as possible. Thus, surveys were given one at a time in homes, at landing centers or within the home village of the respondents. Respondents answered each of the questions asked by the translator so that the translator could circle the correct response on the survey, but the respondents were free to include supplemental anecdotal information or opinions which were then translated by the translator for note-taking.

The occupations of the respondents ranged from traditional gill-netting fishermen, trawl boat operators, boat owners, fish processors, fish vendors and wives of fishermen. The nature of these occupations will be discussed later in the "background" section of this chapter. The only requirement for participation was that the respondent be a worker, or family member of a worker, in the sea or shore-side aspect of the fishing industry and that they be a resident of the study site under investigation.

Along with the surveys, which provided quantitative data useful for analysis by data management software, qualitative data was collected from both those participating in the surveys and through semi-structured interviews with experts and activists in the fisheries industry. Much of the contacts made for these interviews were given with the assistance of MS Swaminathan Research Foundation and Matsyafed staff members who personally knew experts and activists in fisheries. Interview respondents include members of Kerala's Fisheries Department, central government agency scientists, employees of Matsyafed, NGO leaders, fishermen union leaders and fishermen cooperative representatives. The questions for these interviews were semi-structured, meaning that questions and topics were prepared in advance, but often changed depending on the flow of the conversation and the nature of the position which the interviewee held.

A third form of this study's methodology was data collection in Kerala from achieves in the Department of Fisheries and the Central Marine Fisheries Research Institute. This type of data includes catch landings, estimated biomass of commercially important fish stocks, fishermen demographics and boat statistics. Some of the data also includes investigations in the identification of fisheries managers in government and

NGO organizations. Very little of this data can be found on the Internet and had to be collected in person, a task often met with much difficulty or resistance. The significance of this data will be explored later in this chapter.

A forth method for the study is data collection from documents that are available in the United States. These documents include existing sociological data and scholarly research on Kerala's fishing population as well as historical accounts of changes in the industry. Much of this will be discussed in the "background" section of this chapter.

Lastly, this study also utilizes data made from basic observation and rapid rural appraisals. The varying roles of men and women, urban and rural fishermen, mechanized and traditional fishermen and the effects of management on social, cultural and ecological indicators were gathered using methods known and designed by rapid rural appraisals experts. This includes more passive observation as well as observations made by community members about their own communities.

The objectives of using these five different methods in the study was to get as complete a picture as possible of the nature of community participation in fisheries management and of the varying opinions held by fishing community members of different gender, religion and occupation. The survey, for instance, has three distinct sets of questions: the first focuses on the level of involvement and influence the respondent feels they have in the decision-making of fisheries management policies and regulations; the second set concerns feelings and opinions regarding intergenerational equality and esoteric notions about the value of the marine ecosystem; the last set of questions is aimed at gathering the respondents' level of concern for resource health, community health and personal economics.

The objectives of the semi-structured interviews were supplemental to the surveys, yet critical for the level of understanding they convey about how fisheries is managed in Kerala and why. This data gives a sense as to how those in decision-making power view aspects of community-based management and how their concerns vary from those of the resource users.

Similarly, data gathering both from scholarly reports and quantitative archives gives a supplementary and yet critical understanding of the effects of different styles of management and the varying roles and opinions of men and women in the industry. This data also illuminates the impact tradition, religion and money has on concerns for the resource and the community. This study's observations and gathering of up-to-date data; in combination with the observations, studies and data of the past; create a picture of how the fishing communities and fishing management has changed overtime and what that means for a sustainable future. This picture will inform the nature of recommendations that can be made from the community surveys.

Despite the relative success of these methods in obtaining these objectives, there were some limitations that need to be taken note of for future studies. One limitation was language. Translator bias was limited as much as possible by only using one translator for each study site and yet, it remains inevitable that words get lost in translation, either by the misunderstanding of the translator or by the respondent. Future studies would do well to create the survey in conjunction, even more than this study was able to do, with the actual translators. More accurate qualitative information would be gathered if note-takers were also bilingual in English and Malayalam.

A second limitation is the effect of a lack of privacy. Lack of time made it almost impossible for the study to insure the privacy of each survey respondent. The nature of Malayalam culture is one of intellectual curiosity and community sharing. Thus, survey respondents, unless alone in their homes, were often surrounded by the friends and relatives curious about the survey and who very often felt the need to chime in. While the translator was clear to the respondent that they must only give their own, personal opinion, it remains unclear how much these curious well-wishers had an effect on respondent answers. Future studies would do well, if they could possibly manage it, to ensure the absolute privacy of each survey respondent.

*Background*

PART I: KERALA THE STATE

Kerala's fishing industry is a fascinating example of a common property resource regime in rapid transition under communist party politics. How Kerala deals with common property problems is significant given the communist rhetoric of governing for the benefit of traditional communities and the poor, working classes. In many other ways, Kerala's model of governance has proved successful. Its literacy rate, at 91%, is the highest in India, its population growth rate is one of the lowest and only 12.72% of the population lives below the poverty line (UN 2007). Kerala is also well known for its system of local village governments, called panchayats, which take an active role in preparing and implementing their own development plans (Bellarime 2007). The people of Kerala take pride in their educational system, boasting of the literacy ability of even the very poorest in the state (personal dialogues 2008).

With such a well educated and seemingly involved working class, an investigation into the actual ability for local, traditional communities to make decisions about the resources they depend upon for a livelihood is significant for other fishing communities around the world, including the first world. With India, and Kerala right alongside, speeding through economic and infrastructural development, how Kerala maintains its tradition of traditional community protection and panchayats participation in development, will provide examples for already developed fishing communities and for those also on the brink of becoming classified as developed nations. These examples, for good or bad, will be discussed in the last chapter of this paper.

## PART II: KERALA'S FISHING COMMUNITIES

Part of what makes Kerala's example so significant for both developed and developing nations is the way in which it is moving towards a fully industrialized and modern fishing fleet. Data collected from the Central Marine Fisheries Research Institute shows the way in which the fishing communities are changing. The number of landing centers for traditional country crafts, or dug-out canoes, has fallen from 222 in 1980 to 178 in 2005. The number of traditional fishing villages, out of 1,452 total traditional villages, has fallen from 304 in 1980 to 222 in 2005 and the fishing population itself has fallen from 639,872 in 1980 to 602,234 in 2005. Despite these decreases, however, the total number of full-time, active fishermen has gone up, while part-time fishing has fallen (CMFRI 2008). This would indicate that while the former numbers might have indicated a reduced pressure on the fisheries resources, the latter statistics would actually indicate that the pressure has only become concentrated and intensified—a situation that one would find replicated in the history of developed nations' fishing communities.

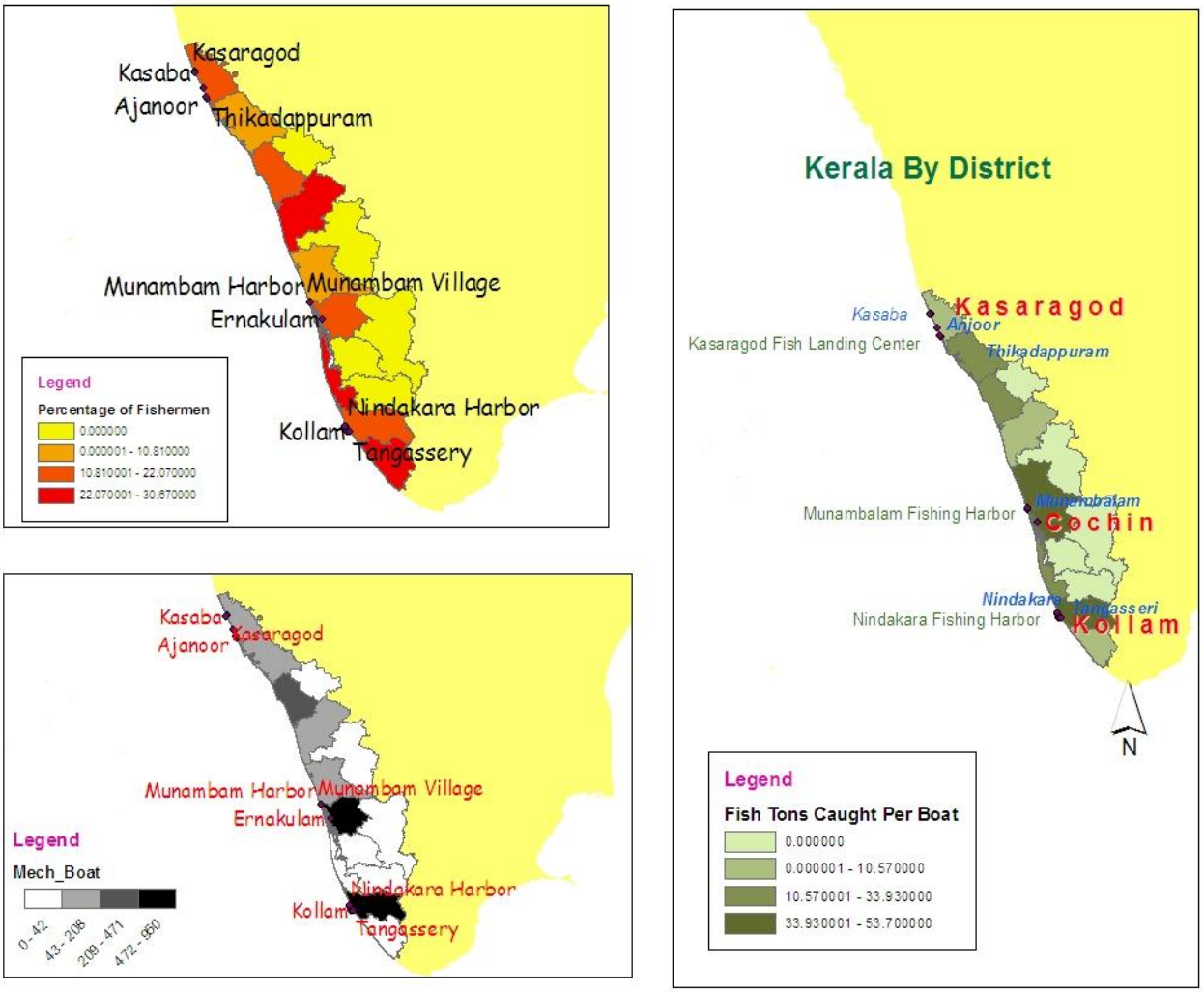
To strengthen this assertion, CMFRI's data shows that the number of trawling vessels has jumped tremendously from 745 in 1980 to 3,982 in 2005. Other forms of mechanized crafts have also increased from 238 in 1980 to 1,522 in 2005, putting the total of all boats with some form of motor (either in or out-board) in 2005 at 14,151. Non-mechanized or motorized boats have fallen from 26,271 in 1980 to 9,522 in 2005 (CMFRI 2008).

The number of modernized, more efficient boats has seen a huge increase, but the actual number of those employed in the fishing industry has plummeted. Those involved in the marketing of fish has fallen from 25,400 in 1992 to 17,976 in 2005. Similarly, those employed in making nets has fallen from 13,500 in 1992 to 9,560 in 2005 and those employed in the processing and curing of fish also fell from 8,100 in 1992 to a low of 3,881 in 2005 (CMFRI 2008).

These numbers paint a picture of Kerala's fishing communities living on two extremes: more and more people are leaving the fishing industry while more and more people are simultaneously becoming increasingly dependent on fisheries as their sole source of income. The result is that the support industries such as fish processing, fish marketing and net making are often no longer village-based practices and that those who are fishing are fishing full-time on boats that utilize efficient motors and gear, as opposed to part time fishermen with diverse sources of income who use more ecologically benign oars and gill-nets.

Below is a visual picture of the Kerala fishing industry from 2006 data supplied by the Department of Fisheries in Kerala. These maps were created by entering the data

into ArchGIS software with a layer-base of Kerala at the district level supplied by the University of California, Berkeley (http://biogeo.berkeley.edu/bgm/gdata.php).




The first of these maps shows where the highest percentages of fishermen live. Those districts, in the bright red, are Thiruvananthapuram, Alappuzha and Malappuram. The second map shows, in the darkest green, which districts are those that catch the highest amount of fish per boat. This rate is more telling than a raw number of total fish landings, which the Department of Fisheries supplies, as it factors out the reality that some districts simply have a higher population of fishermen. It is interesting to note with

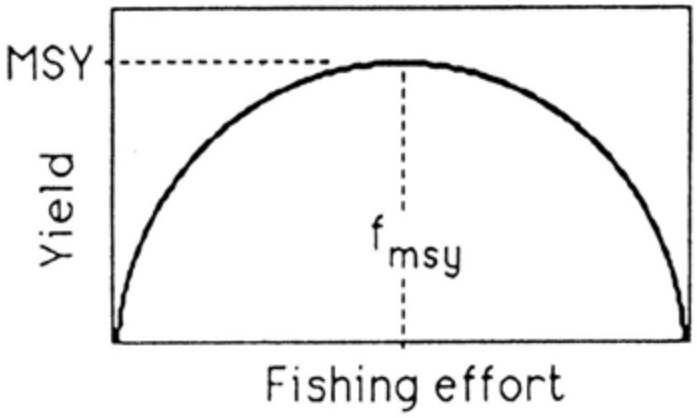
this map next to the first that the three districts with the highest rate of fish per boat; Kollam, Ernakulam and Thrissur; are three with some of the lowest percentage of fishermen in the district's population. A look at the third map offers an unsurprising possible cause for this discrepancy—the number of mechanized trawlers used in each district. Kollam and Ernakulum come out as the highest. Thiruvananthapuram and Alappuzha, come out with the lowest number of mechanized boats, Malappuram not far behind.

What these maps offer in terms of a contextual view of Kerala is a picture of districts with a small number of fishermen owning many mechanized boats and districts with many fishermen owning traditional boats. The former, however, is catching the majority of the fish. Taking into account the statistics of changes between 1980 and 2005, it becomes clearer where this picture is moving: more districts to be colored in black, dark green, and light orange in the maps pictured above—fewer fishermen, but more mechanized boats and more fish caught.

## PART III: PAST SOCIOLOGICAL STUDIES

Leela Gulati's 1984 study on the changes in Kerala's southern fishing communities and its impact on women, gives a vivid, yet neutral view on the beginning of the major technological change in Kerala's fishing industry. In 1953, the Norwegian and Indian government began what was called the Indo-Norwegian Fisheries Development Project. The aim was to introduce modern technologies of fishing and fish preservation. This meant the use of mechanized boats and "improved" gear, along with the use of ice for freezing. Mechanized boats meant the discovery of prawn beds that had not been accessible to traditional boats and this, in turn, led to an increase in employment

and income for men and women in fishing villages (Gulati 1984). When Gulati's study was conducted, the catch landings of fish and prawns had seen a tremendous increase due to mechanization. The data that this study has collected, however, from 1988 to 2006, has seen no such dramatic increase in fish and prawn landings and for many commercially important fish stocks, has even seen a small decrease (Department of Fisheries 2000, 2006). This comes as no surprise to those familiar with the MSY bell-curve of increased effort and landings.




Gulati's study concludes on a relatively optimistic note about the effects of fisheries modernization. She notes not only the economic prosperity brought about by a boom in prawn landings, but also the increased employment opportunities this has brought to women, as well as to men. The increased quality of life has also brought with it an increased quality of healthcare and in increase in family planning (Gulati 1984). Indeed, the average family size of the fishing population has decreased from 6.41 in 1980 to 5.00 in 2005 (CMFRI 2008).

Arundhuti Roy Choudhary conducted a more recent study of the fish workers of Kerala. Her picture of fish workers in 2001 is a less optimistic one, especially as mechanization relates to the lives of women in the fishing communities. After India's

independence, she explains, the country came up with a model for economic development—India's number one priority. "But unfortunately," Roy states, "the planned economic model did not question either the overcentralizing role of the state or the colonial pattern of development," (Roy 2001).

This continuation of colonial, centralized control after India's independence proves true not only in the coastal states of India, but in India's forested states as well. Says Arun Agrawal in his study of Kumaon in Northern India:

> Official policy at the beginning of the twentieth century aimed to bring forests under centralized control. The colonial state in Kumaon Himalaya had insinuated itself deeply into the process of forest making. It had created and instituted entirely new procedures to control, manage, and exploit landscapes it deemed valuable (Agrawal 2005).

The goal of centralized control, as the main priority for India, was to increase state revenue (Agrawal 2005, Roy 2001, Gulati 1984). In other words, natural resource management was moving away from the practice of sustenance and towards exports and profits. Unlike Gulati, who noticed more immediate positive effects, Roy's study indicates is that this transition did not bring the long-tem increased quality of life to the majority of fish workers, especially female fish workers.

One major difference in the above two studies is where Gulati focused on the status of personal economics and individual family health, Roy focused on the status of the marine resources and community health. Even from the time of the Indo-Norwegian Fisheries Development Project, Roy's study finds both marine resources and community health decreasing in quality. The concerns of Gulati, those of personal and familial economic situations, remain the concerns of Kerala's government today, and yet Roy

notes, “Local social, cultural and political factors play a far more significant role than just economic factors as far as development is concerned,” (Roy 2001).


The picture that Roy thus paints of Kerala’s fishing communities as it goes through the changes of modernization is one of increased top-down state control over marine resources in the aim of increased state revenue. Fish in Kerala, she says, are increasingly managed for profit as opposed to sustenance (Roy 2001). Where in 1984, Gulati sees an increase in the quality and quantity of economic opportunities, in 2001, Roy sees a decrease in both—something that is reflected in the numbers of shore side support industry workers between 1980 and 2005 mentioned above—as well as a decrease in the coastal resources themselves. She notes peak catches in Kerala occurring from 1975-1976 at 406 tons over a four year period. In 1985-1986, catch landings had already fallen to 295 tons (Roy 2001).

Besides more recent patterns of catch rates, Roy notes something that was too early for Gulati to note in the early eighties—the conflict arising between traditional and mechanized boats as a result of the diminishing number of fish. Prosperity did come as a result of increased landings and mechanization, but it came to only those who could make

the switch to the new technologies. Those who could not make the switch felt their social and economic status decrease as the select few who could afford the new technologies became wealthier (Roy 2001). Those left behind had to fight for what fish was left in the near shore grounds. In their bid to assist these traditional fishermen, the state of Kerala did not opt to place restrictions on mechanized trawlers, but instead created welfare funds for traditional fishermen to obtain out-board motors and more efficient gear (personal interviews 2008).

John Kurien of the Center for Development Studies in Thiruvananthapuram, Kerala, writes in great detail of this struggle between the traditional and mechanized boats after what he calls "the ruining of the commons". He, like Roy, notes how a majority of those involved in traditional fishing did not benefit from the modernization model. As fish stocks began to deplete, he notes how the first response of the artisanal fleet was not to attempt obtaining modern motors and gear, but to organized protests for regulations of trawling. They formed a trade union and demanded that trawling be banned during the monsoon period of June through August as this is the time when many of the important fish species spawn in coastal waters. They also demanded a trawler-free coastal fishing zone reserved solely for traditional boats and for a complete ban on the use of purse-seiners in Kerala's waters (Kurien 1991).

The result was of mixed success. As a result of the trade union's militant and confrontational means of protest, a 45 day trawl ban was enacted during the monsoon season and the near-shore areas were reserved for non-mechanized boats. This ban, however, was far shorter than what the traditional fishermen had asked for and the near shore trawling boundary was not enforced effectively. A restriction on purse-seiners,

limitations on the horse power of OBMs and the protection of estuarine areas were not acted upon by the state. As a result, traditional fishermen were forced to take advantage of the new co-operatives the government set-up at the village levels. Matsyafed provided and encouraged the use of outboard motors for these traditional fishermen (Kurien 1991). Thus, Kurien notes,

> The marine fish harvest in Kerala continued to stagnate after 1985. The average of the harvest for 1986-1987 was only about the same as the 1981-1985 average (340,000 tons), with the important distinction that the artisanal fishermen using OBMs netted the largest share of the total harvest. The limited success achieved in altering the access rights to the coastal commons through their mass actions led fishermen to focus again on their individual responses to the situation by racing forward with motorization and adoption of new fishing gear (Kurien 1991).

This comment on the difference between the group and the individual response brings back the dichotomy between the focuses of Gulati and Roy's study. Gulati, who focused on the effects modernization had on the individual level, sees a markedly positive result. Roy, however, taking into account the larger picture of the effects on fishing communities as a whole and on the resource itself, notes a race to the commons that she predicts can only end in ecological and community destruction (Roy 2001). Both she and Kurien note how had original fishing communities' demands for management been met, this race to the bottom may have been halted.

## PART IV: WOMEN IN KERALA'S FISHING COMMUNITIES

Roy's concerns with community and resource health lead her to focus on the women of Kerala's fishing communities. Like Roy, this study explores the possibility that women in these communities tend to represent larger, more communal, issues than individual economic prosperity. While Adam Smith's capitalistic theory suggests that what is good economically for the individual is what is good for society as a whole

(Smith 1759), what occurs to women in the face of increased technological and economic change, this study suggests, may refute that.

Similar to most coastal countries around the world, women in the fishing communities in Kerala dominate the roles of preserving, distributing and converting the catch into food. They play a dominate role in the making of nets and other tasks related to preparing boats to go out and fish. They also are central in household responsibilities (Roy 2001, Gulati 1984).

Roy's study suggests that mechanization has removed women completely from village-based net-making and partially from village-based processing. She also suggests that women are losing access to fish landing sites where they purchase fish from auctioneers to sell to rural homes and wayside market. With the increase in exports and foreign profits, there is a large entry of big merchants, thus pushing women out of their traditional role of fish vending. As a result of this movement out of traditional occupations, more women are taking jobs as wage laborers in processing plants and factories, subjecting themselves to the conditions of those locations (Roy 2001).

While Roy speaks about the community and about women as a whole, one aspect of Gulati's studies that is invaluable is the way she depicts with depth and detail the lives and struggles of very real, very individual women. Her story of Sara, the fish vendor, tells the story of debt and how women bear the burdens of these debts. Sara's family was not one of the lucky few who could afford to make the switch to mechanized boats. In order to make enough money, Sara had to purchase fish from other fishermen, but she was pushed out by an inability to compete in the auctions with larger merchants who

could pay more for the fish. Sara had to buy fish from a fish merchant on credit and therefore, spent much of her life paying her debt owed to him (Gulati 1984).

Kurien notes that indebtedness was not necessarily limited to those women whose families did not own advanced gear. Those fishermen with OBM needed to replace them about every two years—in investment few could make alone. Yet after enough time with "efficient" gear, many fishermen and women had become de-skilled to use anything else (Kurien 1998). He notes that it was the women in particular that began to lose their traditional social and economic roles in the community as the practice of fishing became increasing mechanized and centralized (Kurien 2000).

## PART V: MANAGEMENT OF FISHERIES IN KERALA

As mentioned above, both Roy and Agrawal note a top-down management regime of natural resources in India. Roy brings this lack of community control into the perspective of the fishing communities:

> Today, the fishing villages are in a process of transition…technologically it has undergone several changes. Along with it there is a greater degree of state intervention. As a result, there are newly emerging power and also social relations within the community (Roy 2001).

What Roy is referring to, and what was mentioned before, is the state installation of co-operatives dedicated to the development of traditional fishermen—development meaning the increased use of OBMs, efficient gear and ice. These co-operatives are run by village members but funded exclusively by the State of Kerala. The power and social relations Roy mentions are the result of this local/state dynamic. Party politics in the co-operatives and its confusion with community-based management of fisheries resources will be explored further in the results section of this chapter. These co-operatives represent a large change in the fishing communities as they are replacing the older way of making

decisions: the Sea Courts. Sea Courts in traditional Hindu villages used to make decisions ranging from what type of technology fishermen were allowed to use, martial disputes as well as disputes related to property and fish catch (Roy 2001). Sea Courts are gradually waning in Kerala, replaced by co-operative bodies than generally make few decisions other than allocation of welfare schemes. Thus, while this state support of traditional fishermen has led to an increase in purse-seining and OBMs, communities themselves have less control over what types of gear can be used and how many new entries move into the fisheries. Only in northern Kerala, as will be shown in the results, do Sea Courts still play a significant role in the making of decisions.

In 1984, Matsyafed began the replacement of these Sea Courts with its state sponsored co-operatives. Their mission is: "To improve the per capita income of producer fishermen through interventions in credit, technology, marketing and capacity building." There are 21 members on the Board of Directors. Seven are non-voting government members, three members and the chairman are nominated by the government from supporters of the party in power. Fifteen are elected by the fishermen co-operatives in the nine coastal districts. Matsyafed is subject to the Kerala Department of Fisheries which is in turn, subject to India's Ministry of Agriculture. In should be noted, however, that in 1992, all members of the Matsyafed Board of Directors were nominated by the government (Roy 2001). This change toward more involvement by the panchayats in resource management is a striking move towards decentralization of resource management.

Kerala's fishery is mainly governed by the Kerala Marine Fishing Regulation Act of 1980. This act allows for the regulation of mechanized boats and gear, latter amended

to include the monsoon trawling ban. Kerala has also begun the mandatory licensing of mechanized vessels, which halted in March 2008 when all new licensing ceased in an effort to halt the growth of the trawling fleet. Very few mechanized boats travel further than 30-50 km from the shore, although the very near shore is informally reserved for traditional fishing only. Sea Courts in northern Kerala have played a large role in maintaining these boundaries, but little else has been effective in enforcing fishing regulations elsewhere (personal discussions 2008).

*Results*

PART I: WHAT ARE DIFFEREMCES IN MEN AND WOMEN'S ROLES?

Men and women in Kerala's fishing villages have very different roles within the community. These differences in roles, however, are not stagnant throughout the state, nor are they stagnate throughout districts. The rural rapid appraisals, interviews and surveys offered evidence to suggest that gender roles are not the only factor to influence how resource users participate in fisheries management decision-making. Religion, location and occupation also play a major role in how people participate in decision-making and even shape people's opinions on conservation and management policies. Before embarking on roles within management, this study will begin with the analyzing roles within the industry.

The roles of women and the roles of men vary within the fishing industry, yet once taken together, a clear picture can be formed that link women's work to men's work throughout the state. In southern Kerala, there are large differences between villages based on what on what men use for craft and gear. Southern Kerala holds, while not the largest city in Kerala, the capital city, Thiruvananthapuram. Its three coastal districts,

Thiruvananthapuram, Kollam and Alappuzha, have far denser populations than the central and northern costal districts. It also boasts the largest and most important commercial fishing harbor in the state, Neendakara Fishing Harbor, located in Kollam district, not far from the city of Kollam itself. One survey site, Neendakara Village is clearly a product of modernization. Located across the main road from Neendakara Harbor, the homes in Neendakara Village are mainly concrete, as opposed to thatched, and have the look of wealth that comes with balconies, marble pillars and wooden doors. The Matsyafed fishermen's co-operative building is itself a concrete, two-story building with a balcony and two full-time secretaries. These elaborate details do not come from Matsyafed funds—the fishermen of Neendakara themselves have paid for this building. It is unclear whether the money in Needakara Village comes from fishing or from remittances sent from relatives in Dubai—a common occurrence throughout all of Kerala.

The men in Neendakara Village are a diverse set. Many are workers and operators on trawling boats, others still use traditional gill nets and a small segment of men described their primary occupation as hook and line tuna fishermen. Even the appearance of men was diverse—many of the young men working on trawl boats wear jeans, as opposed to the traditional male attire of a simple cloth lungi. Older men, as well as the young men working traditional gill nets, wear lungis. The women of Neendakara hold less diverse roles. Almost all mentioned they sun-dry fish in the common areas of the village and very many vend fish throughout the surrounding areas. Their appearances, unlike the men, were also less diverse, except for the appearance of braces on some of the young women's teeth. In no other fishing village was this seen.

Thangaeassery Village, located within walking distance to Neendakara, is less diverse in occupation than Neendakara. Extremely densely populated, houses are predominately thatched. Large groups of women dry fish in common village spaces and men use traditional wooden boats and gill nets. Many men sit in groups in the shade, mending their nets by hand. Other men play cards along the shore, sit on stoops reading newspapers, or drink tea from small stalls. There are no women doing such activities. Many of them are running the tea stalls, carrying wood for cooking or hanging up laundry by the fish that are drying in the sun. These women describe themselves as housewives, but clearly have other roles besides raising children. Many women also vend fish to the surrounding areas. The small co-operative office in Thangaessery, with no balcony or pillars, acts like a social center—men in lungis and women without braces come and go frequently. The women come in groups, men come alone.

Other villages along the southern coast are quite similar to Thangaeassery in appearance—densely populated with predominately thatched homes. Women dry fish and can be found in groups hanging up laundry and watching children. They are present at the harbors, purchasing fish and prawns in small groups, working together to place their purchases in baskets which they carry off to nearby villages. They will speak when talked to, but they are far quieter than the men, who shout and laugh both in the villages and at the harbors. They wait quietly behind large groups of men or they approach auctioneers when the auctioneers are alone. Even the women who come to beg come in quiet groups and approach only a few selected fishermen. It is a routine, for both the fish vendors and the beggars, which reflect both their low status as female fish vendors and a well-perfected strategy for how women can compete with male merchants for an income.

Some women, as well as men, are wage laborers in southern Kerala. They are employed by fishermen at the harbors and can be found sorting, weighing, icing and packing the fish. It is a dirty and physically demanding job. Men employed by processing companies pack and drive trucks from the harbor to the companies. Women line up by the dozens inside fish processing plants, standing at sinks peeling and washing squid and shrimp that will be exported. Other women work freezing and boxing the product. They get paid by the amount of fish they process, as opposed to the amount of hours they work. There are few men in these plants and these few are from northern India or Nepal who moved to Kerala for work. The men from Kerala who work in the plants are in management positions. There are 300 processing plants in Kerala as all fish that is exported must be processed in one of these plants as opposed to in a home setting.

Southern Kerala is a showcase for how Kerala's fishing communities are changing. Young women are hesitant about going into fish vending, hoping for an occupation with more social status; traditional landing centers are being replaced by modern harbors, allowing more people to fish when the seas are rough in the monsoon season; women are increasingly becoming employed by processing plants as opposed to village-based work; and co-operatives have a strong presence in the villages as opposed to traditional decision-making bodies. One can find the symbolic skeletons of deserted Chinese fishing nets abandoned at the sites of modern harbor construction. These themes, along with common threads such as a Christian religious tradition and densely packed living and fishing quarters, all tie southern Kerala's fishing villages together under a common bond.

Leela Gulati's studies all center on the villages of southern Kerala and while most of the fishing communities here are of Christian origin, she offers a unique insight into the roles of Hindu fishermen and women that do exist near Kollam. She notes that in the Hindu villages of southern Kerala, fewer women are house wives and more are literate. At the time of her study, the primary economic activity of women in the Hindu villages was net making, while in the Christian villages, it was prawn dealing. For men, there were more Christian men involved in mechanized fishing in the early 80s than in the Hindu villages. While the ideal norm for both Hindus and Christian women was to stay at home, she finds that large numbers of women, and even those of older generations, were involved in some form of income generation. For Hindu women in the south, she reports that mothers and grandmothers were involved in midwifery and coir defibring while the current generation was heavily involved in net making. Fish vending was and remained the main occupation for Catholic women. She notes, however, that women in the early 80s were different from previous generations in that they contribute large sums of money to the total family income and also meet, deal and compete with men outside of the home. She finds they have more freedom, better education and better access to medical facilities than previous generations. She also finds that their southern male counterparts were becoming, as a result of women's increased role outside the homes, more involved with day-to-day affairs of the household (Gulati 1984).

The roles of men in central Kerala are similar to those in the south, yet the roles of women are quite different. Central Kerala is home to Cochin, the biggest city in Kerala, and yet the region's density is less than that of Southern Kerala. Munambam, the third survey site for this study, is several miles north of Cochin, where a new harbor is being

built. Many of the homes in Munambam are concrete, a symbol of increasing wealth, and yet they are small, simple and unfurnished. Most of the male residents are owners and workers on a single boat, and point out the relatively extravagant homes down the street—owned by those who own several trawling boats but who never fish. Many fishermen in Munambam point fingers at these absentee owners when the question of fisheries depletion is raised.

Being a village of mechanized fishermen, there is no co-operative in Munambam and no one belongs to a fishermen's trade union. Many residents, however, also operate traditional Chinese fishing nets—large nets built on shore that are pulled out of the water with weights for small catches of near-shore fish and prawns. Women here describe themselves as either house wives or fish processors. Unlike the women in traditional fishing villages of the south, many of these women claim to know very little about fisheries management and most do not participate in the vending or drying of fish.

Other fishermen in central Kerala are similar to those in Munambam. They either own or work on a trawl boat or, very often, work on a traditional boat that works alongside mechanized boats. These men carry fish from trawl boats to the shore, allowing the larger boats to stay out in sea for longer periods of time. There are female fish vendors in central Kerala, however there are far fewer. Many wayside markets in the Cochin area are run by men from northern India, as fish vending in rapidly modernizing Cochin is regarded as extremely low class. Women of central Kerala who do not solely work at home are instead involved primary in fish processing and other forms of wage labor. Whether or not this fact has improved their quality of life remains contentiously debated by Roy and others (Roy 2001).

Far north of the densely populated southern villages and the modern lives of central Keralans, the coastal villages of northern Kerala are remote, beautiful and, for India, remarkably sparsely populated. Many homes are either thatched or are small concrete, single-story homes. Those that are elaborate come from remittances earned by relatives in Dubai. There are no modern fishing harbors up north, only traditional landing centers. This means that there are no trawling boats that very few fish during the stormy monsoon season. Here, Hindu women are head-load fish vendors and their presence is seen everywhere. They carry fish from the landing centers to sell at wayside markets or at individual homes. They can be seen sitting with fish at many small markets and intersections or walking along roads to rice farmers who purchase fish directly from them. There are many Muslim fishermen here, but Muslim women do not sell fish. Women also work at landing centers carrying fish from the boats to the trucks. Women stand waist-deep in water and pass baskets of fish on their heads from the men on boats to the women on land who carry them to the trucks. Men are responsible for driving the trucks.

Kasaragode is the closest city to the survey sites in northern Kerala. In Kasaragode, there is a very large fish market, where all of the vendors are local Hindu women. Smaller wayside markets are scattered throughout distant towns. The women of these markets and harbors are strikingly different from the silent women of Munambam—this market is theirs and they are assertive, they joke and they are very opinionated. They tell stories of burning down alcohol shops and harassing trade union leaders on the streets. Some women have had fights with other women who sell fish at street corners instead of at the proper markets. Police have had to come and monitor the

situation. Some women speak openly against the state government—something not observed in southern or central Kerala.

Men in these northern villages all work on traditional boats and many of them own boats in small groups. The gear they use varies from traditional gill nets to small trawls. There are many young men working on the boats and there are many young women selling fish at wayside markets—something far less common in southern and central Kerala because of status implications. In the villages where the survey was conducted, there were no co-operatives. Instead, these villages had prominent temples which still used traditional Hindu Sea Courts to make decisions and settle disputes. Temple elders make up the members of these Sea Courts and are also fishermen themselves. In all these ways, northern Kerala reflects, not just a difference in religion and culture, but a difference in population pressures and modernization rates.

The roles of the men and women in northern Kerala appear quite similar to those of traditional villages in the south: men work on traditional boats and women dry and vend fish. What differs is a lack of wage labor for women of northern fishing communities and the prominence that fish vending has in the local communities of the north. Up here, there is a strong sense of ownership over market territories and these markets have a vibrancy missing in its southern counterparts. The tradition of Hindu matriarchy is palpable here, countered by the many Muslim women dressed from head to toe in black.

Roy's 2001 study collected data on 330 women. She finds the percentage of fish vending in the north to be lower than the south because Muslim women are excluded from fish vending. Many of these Muslim women either are house wives or are involved

in fish peeling. A great many northern Hindu women, however, she finds are involved in fish vending. More Muslim women are housewives in central Kerala than northern Kerala and the reverse is true of Hindu women. Of men, she finds that all boat owners are men and that in areas where Muslim women are house wives, men are also fish vendors. Despite these variances, Roy is able to generalize her findings on the roles of men and women in Kerala by saying, "in terms of gender, one finds almost a clear division of labor—men in production and women in distributions," (Roy 2001).

PART II: ACCESS

In chapter one, when fleshing out this aspect of the research question, it was pointed out that involvement in fisheries management decision-making contained three different possible types of involvement: access, voice and participation. Access was determined to mean the amount of access men and women had to the mechanisms in which fisheries management decisions are made. In other words, how many men as opposed to women attend fisheries management meetings? How many men as compared to women are members of fisheries government bodies? How many men and women interact and communicate with those who have the power to make management decisions?

Part of answering these questions of access is simply through numbers. Investigation revealed that far more men are employed by fisheries related government bodies and NGOs than women. For instance, there are six men and zero women currently employed in senior positions in the Office of the Minister for Fisheries. In the Department of Fisheries, Secretariat, there is one woman and two men serving in upper level positions. In the Department of Fisheries Headquarters, there are 13 men and three

women. In the Department of Fisheries, Southern Zone, there are nine men and two women employed. In the Central Zone, there are five men and three women and in the North Zone there are six men and no women. The State Fisheries Resource Management Society consists of two men and no women in upper level positions. The National Institute of Fisheries Administration and Management employ one man as the Project Director and the Agency for the Development of Aquaculture employs two men and two women. There are two female voting board members out of 17 for Matsyafed, the Kerala Fishermen's Welfare Fund Board. There are two out of nine women as staff at the Matsyafed Head Office and there are two women out of ten as Matsyafed District Managers. There are no women and 14 men who are Managers of Matsyafed commercial units.

The NGO and central government offices paint a similar picture. In the South Indian Fisheries Federation Society, for instance, the office employs twelve men and no women. At the Central Marine Fisheries Research Institute, there are 19 women out of 43 total scientists. At the National Institute of Oceanography, there are 23 women and 233 men and at the Central Institute of Fisheries Technology, there are 12 women out of 40 upper level staff members. These numbers show that far more men than women are in positions that give them formal access to the avenues of decision-making.

In community-based management, however, not all decisions are made through formal employment. The surveys given to fishermen and women offer some clue as to how many men and women attend fisheries related meetings and how many interact with those government leaders and representatives who are able to translate theses interactions into more formal venues. As mentioned in the methods section of this chapter, 90

quantitative surveys were conducted by men and women in fishing communities. Half the respondents are men and half are women. One third of respondents are from the south, one third are from the north, and one third are from central Kerala. One third of the respondents also represent an 18-29 age group, one third a 30-49 age group and one third a 50 and older age group. Results of the survey were analyzed based on these differences, as well as differences of occupation, using SPSS data analysis software.

Out of the 45 men who answered the survey, 25 said that they either agreed or strongly agreed with the statement that they speak their opinions at gramasabhas (village meetings), union meetings or at local Sea Court meetings. Twenty said that they disagreed or strongly disagreed. Out of the 45 women who answered the survey, 25 also said that they agreed or strongly agreed and twenty said that they disagreed or strongly disagreed. As far as pure attendance to these meetings, out of 45 men, three said they attend very frequently, six said they attend often, 19 said sometimes and 17 said never. For the 45 women, three said they attend very frequently, nine said often, 18 said sometimes and 15 said never. For both attending and speaking at meetings then, men and women appear to be quite similar.

In order to gain a sense of the informal mechanisms of access to fisheries decision-making, it was asked how often fishermen and women interact with their elected fisheries representatives. Out of 45 men, four said very frequently, ten said often, 16 said sometimes and 15 said almost never. For the 45 women, four said very frequently, 13 said often, ten said sometimes and 18 said almost never. This is again, a relatively equal picture which, combined with the statistics given above on employment, shows that fisher women are as equally willing and unwilling as men to participate in community-level

venues of access to fisheries management decision-making. When it comes to positions of power and positions where final decisions are made, however, women face a much greater barrier of access.

The semi-structured interviews with fisheries management experts and activists do not contradict these survey results. Expert and activists' perception of fishermen and women's access to decision-making is one that is shows generally low levels of access. Almost all interviewees, in some form or another, were asked "who does" and "who should" make decisions regarding fisheries management. Of those that mentioned that scientists had access to decision-making, all were government managers or scientists and one was an NGO employee. Only two of those same respondents also made a statement on the importance of traditional knowledge. Other than those two, the others who mentioned the importance of traditional knowledge were the fishermen themselves and one female researcher in a central government agency. These believers in the importance of traditional knowledge said nothing about the importance of scientists in making decisions.

There was surprising dissymmetry among government interviewees on whether fishermen have access to fisheries management decision-making. The outcome was, in fact, almost 50/50. NGOs and those fishermen who were part of the semi-structured surveys tended to feel that fishermen were not involved in making decisions. The fishermen and government employees that did not say as such did so because they felt that fishermen trade unions have access to the decision-making process and therefore adequately represent fishermen involvement. Two government officials, however, mentioned that those trade unions that have access have it because they are of the same

party as the party in government power. Other government officials denied that assertion but many fishermen and NGO representatives re-iterated the unfortunate need for party alignment if a fisheries union is to have access to decision-making. One government researcher stated, "traditional leadership is being eroded and being replaced by political leadership. This is a problem because when a representative is only within one party, they cannot represent the whole community. Male leaders are appropriated by politics and then no one represents the community." The CEO of an NGO said that village level co-operatives, while giving the illusion of high levels of community involvement, "are basically extractive, not management oriented. They only want more money and so are controlled by political parties." They do not have the power to make rules, he re-iterated several time, unlike the traditional councils which not only made rules about who could fish and when, but was completely effective at doing so.

Despite this disagreement amongst experts and activist, most government officials and fishermen alike agreed that there should be some form of co-management that involves access from both the government and the fishermen in decision-making. Only two government officials said directly otherwise, one saying that the reason was that "villagers do not know what is good for them—they have 'unfelt needs'." One reason for the agreement for a co-management model in fisheries likely has to do with that when asked who they felt knows the most about fisheries resources, only one person from the central government did not mention fishermen. Almost all government researchers and officials said that fishermen and scientists both had valuable knowledge. Another reason might be that when asked who had the rights to the ocean and its resources, everyone agreed that the active fishermen of Kerala do. A few mentioned that the women of

fishing families do as well. No one said that fishermen and women did not want more access to participation in management decision-making, although one fishermen said that time might be a restriction to taking advantage of such access.

When it came to NGOs having access in such co-participation, two government officials said that NGOs do have access to participate, while other government officials and the NGO representatives themselves said they did not. Only the NGO representatives said that they felt NGOs should participate in a co-management model. The Chairman of Matsyafed clarified his opinion that NGOs should not be involved in co-management of fisheries by stating, "The government does not trust NGOs because they get money from foreign countries for their own welfare and not for the welfare of the fishermen." Despite this discrepancy, all of those asked said that since the monsoon ban went into effect, there is currently no clash concerning access between NGOs and the government.

If fishermen and women, and potentially NGOs, are to have access to fisheries management decision-making processes, then it made sense to follow-up by asking interviewees what the exact role of government should be within a co-management model. Each interviewee said that it should be to promote the welfare of the fishermen. There were very few further clarifications on what this might entail. Some said the government should be maintaining sustainable resources. One government worker said the government is responsible for exports, another said modernization of fisheries technology, another said the increase of production and three interviewees said that the most important role of the government is to provide education for fisheries communities. Matsyafed's written mission statement is to increase the per capita income of fishermen.

It would appear from this picture that while there is rhetoric amongst leaders for the increased welfare of fishing communities, there is no common understanding of what increased welfare actually is.

It was next asked if respondents had the same feelings about access to enforcement as they did about access to decision-making. When it came to who had the responsibility for enforcement, it was a 50/50 split amongst government managers on whether there should be some form of co-enforcement or if the government had the sole responsibility. About three-quarters of respondents, however, mentioned the effective enforcement measures of the traditional Sea Courts in fishing villages, stating that the word of the Sea Court was the "last word" and disobedience meant social ostracism. As a side note, and without being asked in the interview, a large number of interviewees made some form of comment about how government enforcement would be difficult if fishermen are breaking the fisheries regulations due to poverty, thus re-iterating the primary role of the government to secure the welfare of fisheries communities.

These questions that target amount of access in decision-making were grouped together during analysis to form a larger picture of how much total access fishermen and women feel that they have in fisheries management. The results show that both gender and the region participants come from is a significant factor in how much participation they have in management (see appendix, tables 3.2, 3.3, 3.4, 3.5). For men from the southern region of Kerala, 66.7% say they participate while 46.7% of men from the north say they participate. Only 20% of men from central Kerala feel similarly. For women in the central region, none said they feel they participate in fisheries management decision-making. For women from the north, 33.3% said they felt they participate, while 60%

from the south said they did. What becomes clear here is a similar trend for both men and women from the different regions of Kerala. Men and women from central Kerala have very low estimates of their level of participation, about a third to less than a half of northern Kerala's feel they participate, but two-thirds of Southern Kerala's feel that they do.

The occupation of respondents also proved to be a significant factor in access to management. More than 76% of mechanized fishermen felt they do not participate while 57% of traditional fishermen said that they do participate. Of the women, none who were processors said that they participated, a quarter of house wives (who also dry fish or collect shells) said they participate and more than half of fish vendors said they participate(see appendix, table 3.6). These occupations are, as was noted, intrinsically linked to the region participants come from as most of the mechanized fishermen and fish processors are from central Kerala.

PART III: VOICE

Beyond the level of access, participation in fisheries management decision-making was also described in chapter one as concerning voice. Voice determines quite literally the nature of what one says when participating. The surveys with fishermen and women attempted to determine if the content of their concerns lay more with the community, the marine resources or with personal economics. The semi-structured interviews attempted to not only determine what the concerns of experts and activists in fisheries are, but also attempted to discern what the perceptions these leaders have on the voice and concerns of the fishing communities.

When asked who they felt voiced the most concerned about conservation of marine resources, almost all of the fisheries experts and activists said the fishermen. "'Killing the hen that laid the golden egg' is a traditional Kerala saying," said one government fisheries researcher. All the fishermen interviewees also said that the fishermen were the ones most concerned with conservation and only one government manager did not say so. He, along with two NGO representatives, said that NGOs were the most concerned with conservation. Only two respondents felt that the government or that scientists were the most concerned with conservation—neither of these two respondents were fishermen.

Considering who people felt were the most concerned about conservation, it is interesting to note what people said when asked what they felt should change about fisheries management. A large range of answers were given and yet a pattern amongst certain groups of people can be discerned. For one, the need for more restrictions was commonly called for by the fishermen interviewed, including union leaders. Besides the fishermen, the two others to mention the need for more fisheries regulations were NGO representatives. The main concern of government officials was for a reduction in fishing pressure. Fishermen did not mention this need, although they did express concern with foreign fishing and foreign imports of fisheries products. Runners up for changes government officials and managers would like to see are a reduction in the middle men between the fishermen and the market as well as a reduction in the modernization of fishing technology. A scattered few mentioned the need for better enforcement.

When asked what the voice and concerns of the fishing communities consist of, government managers tended to think all relate to money. The fishermen and women themselves, however, mentioned a far greater diversity of concerns. Many of them said

that they hoped for cleaner water, improved infrastructure and an increased availability of fish for family consumption. Some of the northern fishermen said tourism development was a large concern for them while others had concerns related to their deteriorating gear. A few men and women mentioned their concerns over soil erosion and the potential loss of land and homes.

Respondents were also asked what types of concerns fishermen had that were more esoteric, or concerns that had less to do with personal well-being. The answer expressed most often by fishermen was a concern for generations still unborn. Fisheries managers thought that religion plays a large role in fishing communities and several fishermen did indeed mention the importance of their religion in guiding their opinions. Many other fishermen also mentioned a pure love for the sea, some because of their religion and other, for no particular reason.

One concern that the interview targeted with a specific question was the depletion of fish. When asked if Kerala's fisheries are being depleted, only two persons directly said no—the Director of Fisheries and the chairmen of the Board of Matsyafed. Most everyone else, fishermen included, said that fisheries are being depleted or that the variety of fish caught is decreasing. In the surveys given to fishermen and women, 37 men said that they agreed that fisheries resources are being depleted while only eight disagreed. Similarly, 41 women agreed that fisheries resources are being depleted and only four disagree (see appendix, table 3.7).

Besides this one question targeting fish depletion in Kerala waters, there were several other questions in the quantitative survey which aimed at targeting fishermen and women's concerns with conservation. These questions were averaged together to gather

an overall opinion on conservation measures. In southern Kerala study sites, 73.3% favor conservation measures. Only 16.7% highly favor conservation measures in central Kerala and 53.3% highly favor conservation strategies in the north. Overall, 51.1% of fishermen highly favor conservation measures while 44.4% of fisherwomen do as well (see appendix, tables 3.8 and 3.9).

Besides questions of conservation measures, several questions in the survey aimed at uncovering if fishermen and women are concerned with intergenerational equality or the ability of future generations to obtain and enjoy the resources from the sea and the traditional way of life in Kerala's fishing communities. These questions were also combined to find the average of fisher folk's concern for intergenerational equality. Overall, 51.1% of men have high levels of concern for future generation and 55.6% of women have high levels of concern. While gender and concern for future generations is thus not significant, age does prove to be a significant factor. Analysis showed that the more one aged, the more likely one was to become concerned for intergenerational equality. Region did not prove to be a significant factor over concern for future generations (see appendix, tables 3.10, 3.11 and 3.12).

The last concern the survey aimed to measure so as to gather a sense of voice among fisher folk participation was concern for the well-being of the community as a whole. Two questions targeted concern for community members' unemployment and ability to access fresh fish. Quantitative analysis showed that women are significantly more likely to be concerned over these aspects of the community then men (see appendix, table 3.13).

PART IV: INFLUENCE

After access and voice, the last important element of participation in fisheries management that was mentioned in chapter one is influence. Whether one has access to the mechanisms of participation and what concerns one actually voices when participating are certainly crucial, yet whether those elements of participation actually culminate into influence over the decisions being made is perhaps the most important element to the sense of participation. To gauge the experts and activists sense of this, it was asked how they saw themselves as having influence. More than half of the fishermen and women who were extensively interviewed mentioned participating in strikes and riots as being influential. Very few fishermen said that attending meetings was influential—the three that did were in their forties or older—and a mere two fishermen said interacting with their representative or union leader was a way they had influence. The women interviewees mainly said they attend self-help group meetings. These self-help groups, however, concern welfare schemes given to support women's entrepreneurship and do not directly concern fisheries regulations. Many fishermen and women said that women participate in decision-making about business and household money within the family. One union leader said that women express their concerns to him very informally on the streets as opposed to attending meetings with the men. What is interesting to note is that, contradictory to what the fishermen and women said, most of the managers interviewed said that fishermen do go to meetings or that the government solicits advice from the fishermen.

Level of influence was again measured by asking several questions in the quantitative survey that were then averaged together to create one index for how much influence men and women of the fishing communities feel they have in fisheries

management. Gender, as predicted, proved a significant variable to influence. Only 11 out of 45 women said they felt they had high levels of influence—the other 34 rated themselves as having low levels. Twenty-eight men rated themselves as having high levels of influence while the last 17 said they only had low levels. There was also a strong correlation between age and level of influence. As age goes up, so does level of influence. The last factor to prove significant for influence is occupation. For instance, despite low levels of participation, there was an almost 50/50 split on mechanized fishermen who claimed to have high and low levels of influence. For traditional fishermen, 71.4% rated themselves as having high levels of influence. Again, like participation, 100% of fish processors rated themselves as having low levels of influence. Housewives and fish dryers also were 100% in low level categories while 58% of fish vendors said they had high levels of influence (see appendix, tables 3.14, 3.15 and 3.16).

PART V: BEYOND GENDER

Before continuing with a discussion of the results of fishermen and women's access, voice and influence in fisheries management decision-making, a brief discussion of those factors that went beyond gender will be considered. These factors add context to the question of gender in Kerala and thus form a more complete picture of community-based management of fisheries. Where some of the results proved the hypotheses to be null, other results shed light as to why.

Certain results that proved interesting, especially where gender variables proved insignificant, were when analyzing the effects of voice on access. For instance, when determining if access in fisheries management has an effect on concern for intergenerational equality, it was shown to not have an effect (see appendix, tables 3.17,

3.18, 3.22 and 3.23). Similarly, level of participation in fisheries management proved to have little effect on favoring conservation measure (see appendix, tables 3.19, 3.20 and 3.24). Only participation and concern for community health have a significant correlation. Those men and women who participate in fisheries management have a greater concern for the health of the community (see appendix, table 3.21).

Despite this lack of effect of access on voice, influence does have an effect. Those who felt they have more *influence* in decision-making, as opposed to only having access to decision-making venues, do favor conservation measures more and are more worried about community health than those who do not have influence. Only concern for intergenerational equality is not affected by influence.

Not only is it not affected by influence, but concern for intergenerational equality proved to not be affected by much of anything this research measured. Women, for instance, are only very slightly more concerned about intergenerational equality than men (see appendix, table 3.22). Region and concern for intergenerational equality is insignificant—there was an almost equal split between the northern, the southern and the central regions of Kerala (see appendix, table 3.25). Occupation and concern with intergenerational equality proved insignificant as well (see appendix, table 3.26).

Unlike intergenerational equality, influence, as mentioned, did have an effect on favoring conservation. While, men and women were almost equal in their favoring of conservation measures, there did prove to be a strong correlation between influence and favoring of conservation. Similar to gender, age proved to be insignificant when it came to favoring conservation measures. Although occupation and preference for conservation measures proved to be statistically insignificant, the numbers themselves are interesting.

Unsurprisingly, almost 65% of mechanized fishermen do not favor conservation strategies, while almost 61% of traditional fishermen do. For processors, who get paid by the amount of fish they process, 87.5% do not favor conservation strategies, but 56.3% of housewives/fish dryers and 47.4% of fish processors do favor conservation (see appendix, table 3.26).

Results: Access
- Very few women in government agencies and NGOs
- Men and women of fishing communities in southern Kerala participate the most, men and women from central Kerala participate the least and men and women from northern Kerala participate moderately
- Within each region, men participate more, but not significantly so
- Of the men, traditional fishermen participate far more frequently than mechanized fishermen
- Of the women, fish vendor participated the most, home-based fish processors participated moderately and wage-laborer fish processors participated the least

Results: Voice
- Southern Keralans favor conservation measures the most, central Keralans the least and northern Keralans moderately
- Gender was an insignificant factor in preference for conservation measures
- Gender and region were insignificant factors in concern for intergenerational equality
- Women are more likely to be concerned about community well-being than men

Results: Influence
- Strong correlation between gender and influence
- Traditional fishermen perceive themselves to be more influential than mechanized fishermen
- Fish vendors felt themselves to be far more influential than wage-laborer fish processors

Results: Beyond Gender
- Access has an effect on concern for community well-being
- Influence has an effect on concern for community well-being and preference for conservation measures
- Intergeneration equality was not affected by gender, region, access or influence
- Occupation has an effect on preference for conservation measures

These results shed light onto those factors which are and are not significant in the access, voice and influence of participation in fisheries management. They show a

Kerala which is united in its concern for fishing communities' well-being but which is separated between the resource users and resource managers where other major concerns lie. Hence, there is much dissymmetry as to what solutions need to consist of. These results can thus be highly useful for fisheries project planners and those who are involved in high-levels of decision-making to gain a clearer understanding of what increased community-based management needs to entail and what it benefits it would result in.

*Discussion*

The first hypothesis of this research study is that men have had more access and influence in fisheries management decision-making. Both the archival research of gender in high-level fisheries managers and the quantitative surveys conducted with fishermen and women prove this hypothesis to be true.

The next hypothesis is that women of fishing communities tend to prefer strategies that emphasize sustainable management of fisheries resources, community well-being, and intergenerational equality. From the survey results, however, one finds that men and women have an almost equal concern for intergenerational equality. Similarly, men and women are equally split about favoring conservation methods. Only with regards to community health do women stand out as having a stronger voice of concern. Contrary to the hypothesis then, it seems that women's preferences for conservation measures and their concern for intergenerational equality is not significantly different from men. Women do tend to have preferences, however, that emphasize the role of community in fisheries management.

The third hypothesis is that resource users who participate in making decisions regarding fisheries management tend to prefer strategies that emphasize the well-being of

the community, the resources and future generations. When controlled for gender, participation did not have an effect on concern for intergenerational equality. Also when controlled for gender, participation had a minimal effect on favoring conservation. Men and women who participate in fisheries management tend to favor conservation more so than men and women who do not, but these results were not statistically significant. What did result from this hypothesis, however, is that those with more influence, not necessarily those who participated, did favor conservation measures more than those who did not have influence. It would appear then, that Agrawal's argument for what causes "environmentality", as discussed in Chapter Two, proves to be true in the fishing communities of Kerala. Influence in management, and not just gender, is a major basis for environmental thinking. What this research shows that Agrawal does not discuss, is that it there needs to be a clear discernment between those who have access and those who have actual influence in management processes.

Besides this key difference between participation in welfare schemes and influence in fisheries regulations, the results of this study show a strong correlation between region, occupation and participation in management. Central Kerala, with the majority of men being mechanized boat workers and the majority of women being fish processors, demonstrated the least amount of access and influence in fisheries management. Along with that, their voice expressed the least amount of concern for conservation. Observations in central Kerala confirmed that men and women have little interaction with village co-operatives and work as wage laborers for employers rather than in their own employment. Northern Keralans participates less than southern fishing communities. Observation, however, would suggest that this may be a result of the

erosion of traditional Sea Courts by state co-operatives and from a strong willingness to criticize union and government action by northern Keralans. The high levels of participation in the south documented by the surveys and the high levels of participation in the north documented by observation and interviews are correlated to occupations that have more control: self-employed traditional fishermen and fish vendors. Also significantly, levels of influence corresponded with these occupations. Those who controlled their own income and work environment felt they had more influence in fisheries management.

Influence also corresponded with the presence of strong locally-based institutions. The Sea Courts in the north have a history of being able to limit access and gear to the fisheries resources. The co-operatives in the south are able to determine who has access to subsidized fuel and modern gear. Co-operatives have significantly improved the economic welfare of women and fishermen, but they are unable to effectively duplicate the long-term sustainability that limited access creates. As fishermen have vehemently called for effective regulations limiting access to marine commons in the past and as they continue to call for them today, the results of this study suggest that if co-operatives were able to create fishing regulations, fishermen and women in traditional, independent occupations would influence them so as to increase conservation and community-well being measures.

*Conclusions*

These facts concerning the results of the third hypothesis, that there is a significant difference between access and influence in fisheries management and that local institutions have a huge impact, have the potential to be very significant for those who

focus on community development in Kerala's fisheries communities. The results show, for instance, that those who legally have access to participation in fisheries management, especially women, do not exhibit real influence over the decisions that are made. Their participation, as was said by interviewees, mainly takes the form of distribution of welfare schemes by the co-operatives. In this sense, women and local fishermen are active in self-help groups and village level co-operatives and the result has been greater access to modern motors, nets and ice. Yet when it comes to restrictions on who can fish and what gear can be used, neither fishermen nor women have exhibited real influence.

Leaders and experts who were interviewed all point to the one exception to this scenario and that is the 1988 monsoon trawling ban. As both one NGO leader and one researcher pointed out, the monsoon trawling ban in Kerala is the one and only effective management regulation in Kerala. Scientists discuss gear recommendations, government officials refer to a future with limitations on access to fisheries resource, and almost all people discuss ownership of the sea's resources by traditional fishermen. Yet welfare schemes abounding, nothing by the way of limiting access or gear use has ever effectively been enforced in Kerala beyond the monsoon trawl ban.

In terms of the first hypothesis, the issue of access, one can see that in high-level positions, women are largely not present and yet that on a village level, women are very much involved. If local villagers are able to participate in regulation and management as vigorously and enthusiastically as they do in welfare schemes, women, especially those whom are self-employed, would step to the forefront with men. Past studies show that this is exactly what women did when the monsoon trawl ban was being debated (Kurien 2002).

The results of the second hypothesis show that both men and women are concerned with conservation and intergenerational equality if they work independently in traditional occupations. Thus, while state welfare initiatives are helping specific individuals receive more income from modernized motors, ice, gear; if the state is to assist in the process of sustaining fisheries resources, this study would suggest that it actively promotes that men and women remain largely self-employed and in control of their own income. Those who are wage laborers tend to disconnect themselves from management decision-making and from conservation. To this end, processing industries should remain small and serve the domestic market.

Kerala has already exhibited great achievement in supporting female entrepreneurship through self-help groups, value-added trainings and buses for head-load vendors. Those who are involved in processing, however, need to be given direct support for greater access to management decision-making as their voice is largely not being heard. These women, who are often the wives of mechanized fishermen, are left out of the self-help group programs as their husbands are left out of unions. Traditional Sea Courts in these women's villages are being eroded, but they have not been replaced by co-operatives, which mainly exist in traditional fishing villages.

The problems faced by Kerala's depleting fishery, however, cannot be solved by self-help groups, welfare schemes and co-operatives alone. While this study shows that such institutions do give fishermen and women and sense of greater participation and influence, qualitative data suggests that this influence is limited. Self-help groups and co-operatives are highly politically oriented and have little access to decision-making regarding access to the commons and the use of various gear types. Co-operatives then,

need to take on a role more similar to the traditional Sea Courts. They need to eliminate orientation to political parties and they need to be able to make decisions regarding who gets to fish, along with when and how.

If these changes were to take place, the results of this study would indicate that progress toward sustainable management of fisheries resources and fisheries communities would result. Fishermen are highly concerned about the ability of future generations to obtain fish. They also have a great love and respect for the ocean and hold the opinions that there needs to be more regulations to protect it. The past has shown vehement efforts by fishermen and women to take control and impose not only the monsoon trawl ban, but also a ban on purse seining (Kurien, 1999). This research demonstrates that those fishermen who say they have influence in fisheries management, and not just participate in it, do favor conservation strategies significantly more than those who do not. Thus, for fishing communities, conservation and community health comes before money and empowerment would result in more regulations and restrictions, not less.

In other words, the access and voice that fishermen and women have must have influence. An absolute pre-requisite for effective community-based management of commons property is support from higher levels of government (McCay 1987). Village level attempts using traditional Sea Courts to ban night trawling or purse seines have all proved ineffective under lack of the state government recognition and enforcement of these limited entry demands. If cooperatives and Sea Courts are strengthened so as to make limited entry and gear use decisions, this study suggests that not only would already existing concern for intergenerational equality and community health be reflected

in regulations, but that concern and preference for conservation measures amongst community members would increase.

## Chapter Four—The Southern New England Case Study

### *Introduction*

Fishing today in southern New England holds an unclear future. The complications surrounding the attempts to recover a struggling ground fishery amongst a community whose destiny is not their own creates a context where management schemes are both ecologically critical and yet emotionally volatile. As a result of long-standing land and wildlife management policies, fishermen are some of the last communities in the United States to depend wholly upon wild animals in commonly held property. New ideas on management schemes to protect these wild animals, however, may be changing these common areas to closer resemble the private property and conservation area landscape of America's terrestrial wilderness. These changes are not without consequences on the communities that have lived for generations harvesting from these marine commons. Leaders and activists in these communities are vehemently challenging fisheries management policies so as to protect local resource users' access to marine resources. Despite this activism, however, there is very little optimism that the traditional fishing communities of southern New England will persist much longer into the future. This study does not aim to analyze the social or ecological successes or failures of these management practices, but rather aims to address participation by local resource users in the making of management decisions. It analyzes some of the discrepancies between managerial and community opinions, yet does so in the attempt to uncover not only the level of access and influence local fishing communities have in

management decision-making, but to also discern the voice of fishermen who attempt to gain access to management bodies. As in chapter three, this study analyzes the role of women in fisheries management and looks to find if women have had a different voice from men that could perhaps be significant for high-level fisheries managers and project planners.

Before stepping into the results of this study, the methods of this research, along with its successes and limitations, will be laid out. Following this, there will be brief look into the demographics of southern New England and its fishing communities. As in chapter three, certain quantitative characteristics of these communities will be explored so that a better picture of these communities might be made. Also necessary is references to certain critical past sociological studies which give added scope and insight into the results of this study. Past analysis of women in these fishing communities will be looked at, as will a brief examination of how fisheries are currently managed in southern New England.

With this background provided, the results of this study will be explored and will be done in a similar fashion to the results of the Kerala study in chapter three. First, the differences between the roles of men and women, our first research question, will be laid out. Then, the differences between men and women's participation in management will be laid out, categorized, as in chapter three, by access, voice and influence. A discussion of these results will be conducted based on the results of the hypotheses, followed by a conclusion that attempts to glean specific management recommendations for sustainable fisheries and fisheries communities.

*Methods*

This study began as part of a larger study aimed at uncovering the roles of women in southern New England's fisheries with Principal Investigators at Brown University and the University of Rhode Island. For this study, five focus groups composed entirely of women were conducted: one with fisheries managers and scientists based in New England; one with women working in fisheries support industries around Pt. Judith, Rhode Island's major commercial fishing harbor in Galilee; one with women working in fisheries support industries in New Bedford, one of New England's oldest fishing ports located in Massachusetts; one with family members of fishermen working in Pt. Judith; and finally, one with family members of fishermen working in New Bedford. Focus groups were composed of three to nine women and were facilitated by a professional hired by the Principal Investigators. These focus groups form a major part of the data collected for this study and for this purpose, as for the purposes of the larger study at Brown University, they were tape recorded and transcribed.

After these focus groups were conducted in the summer of 2008, semi-structured interviews were conducted with both fishermen and women as well as with fisheries managers. As in the Kerala study, the results of these semi-structured interviews supply critical qualitative data that add depth and substance to the quantitative data. Many of the interviews with managers were conducted on the phone while interviews with fishermen and women were generally conducted in person at their places of business. Questions were prepared in advanced but many were changed based on conversation tone or profession of the interviewee.

The quantitative data that these interviews help to flesh out is based off of quantitative surveys conducted in three distinct geographical locations in southern New

England—Stonington in southeastern Connecticut, the nearby towns of Pt. Judith in southern Rhode Island and New Bedford in southeastern Massachusetts. Forty-eight surveys were conducted between these three study sites (see appendix 4.1 for survey questions). All respondents had English literacy levels that enabled them to read and answer the surveys themselves, thus eliminating the need for a translator to orally conduct the surveys.

Along with the surveys, the interviews, the focus groups and the past sociological studies, this study uses archival data on regional fisheries management councils in order to make estimates on gender and representational discrepancies. The bulk of this information was found on the Internet, yet some needed to be sought out from archives within council databases. Historical information on the identity and affiliations of past council members was, interestingly, extremely difficult to locate. Professions and affiliations of past New England Marine Fisheries Council members, for instance, are not kept track of and efforts to find the identities of state council members resulted in piece-meal data. Despite this, the identity of current council members paints a picture of who has access to fisheries management in New England which will be discussed further in the results section of this chapter.

Finally, a last component of the methods used for this study is observations made at Marine Fishery Council meetings. These observations included collecting and categorizing comments made by both managers and fishermen, along with observing different roles between the men and women present at these public meetings. This allowed for first-hand observation into the nature of voice and influence in fisheries management processes.

These methods were successful in revealing a picture of management in southern New England that can inform managers and project planners on the concerns of local fishing communities and the on the possible outcomes of their increased inclusion into decision-making. There were many limitations to these methods, however, that leave open plenty of opportunities for future research. Interviews and surveys were done by a convenience sample, for instance, making the results skewed from only obtaining the answers of those willing and able to participate at the time the surveys were distributed. Those working at sea or at home were therefore not able to participate. Those who were occupied on the processing floor and did not speak English were also unable to participate. Future studies would reveal much by accessing the opinions of these community members.

*Background*

PART I: SOUTHERN NEW ENGLAND

One of primary reasons why southern New England offers a fascinating case study of community participation in fisheries management is because of the dichotomy between the long history of fishing communities in the area and the extent to which they believe they no longer have control over their community's future. Not even northern New England offers similar contradictions, as Maine lobstermen are famous for their ability to control access, limit gear use and impose effective regulations (Acheson 1987). Southern New England communities have long existed within the immense urban pocket between New York City and Boston. In the early stages of American history, these were the areas with the highest population rates, both in raw numbers and in density. In recent history, however, New England is no longer the fastest growing portion of the country

and dropped from 7.3 to 5 percent of the country's total population between 1900 and 2000. Connecticut and Massachusetts make up the largest proportion of the region—70% of New Englanders live in these two states. New England has a greater proportion of Caucasians than the rest of the United States and a smaller percent of those are of Hispanic origin. In southern Now England states, however, diversity is far more prevalent than in its northern neighbors. Educational achievement in New England has long been higher in New England than in the rest of the United States. Thirty-one percent of New Englanders held college degrees in 2001, while only 25% of all Americans did (FRBB 2000). It is in these states that made up part of the original 13 colonies, fishing has become a symbol of New England culture and way of life.

## PART II: SOUTHERN NEW ENGLAND'S FISHING COMMUNITIES

Southern New England, as was said, holds a greater range of ethnic diversity than its northern neighbors. This is true in the fishing communities as well. Besides ethnicity, in fact, southern New England's fishing communities host a diverse range of gear types, target species, size of vessels, ownership patterns and fishing styles. New England's primary source of income is also diverse. Reliance on farming and fishing is dwindling as the tourism industry has grown and professionals have been attracted to owning ocean-side homes. Thus, property once owned by fishing industry participants is now largely owned by infrastructures related to leisure activities. This has had the dual effect on fishing communities of minimizing the community and its infrastructure, as well as driving up the coast of living (Hall-Arber 2007).

To paint a picture of the fishing industry in the Northeast, in 2006 there were 1,400 groundfish permits of which 500 caught 90% of the total catch (da Silva, 2005).

These groundfish include cod, haddock and flounder. Other important fisheries include squid, herring, mackerel, whiting, scallops and lobsters. The fisheries community, however, is made up of much more than the fishermen who catch these fish. Settlement houses are especially important community institutions in New Bedford, Massachusetts (Kaplan 1999). Gear technicians, lumpers, welders, electricians, drivers, traders and other fisheries support industries are all recognized as people who make up the larger fisheries community (Hall-Arber 2007).

The three surveys sites for this research are southern Rhode Island, southeastern Connecticut and southeastern Massachusetts. Southern Rhode Island includes the major port of Point Judith in South Kingston, as well as smaller ports in Wickford and Newport. Most fishers who fish out of Point Judith live within a 20 miles radius of the port, but as there is no residential housing near the port, fishermen and their families are mainly scattered throughout southern Rhode Island. The majority of fishermen are white males while the majority of fish processing workers are ethnic minorities from Puerto Rico and Southeast Asia. As of 2004, there were 230 vessels berthed in Point Judith—twelve in the 60 to 70 foot range—and six processing plants. Dockside fuel pumps, bait shops, marine suppliers and vessel repair shops line the main street. There are also many seafood restaurants in the area as well as the Block Island Ferry.

In describing the fisheries communities of southern Rhode Island, it is important to note that the Sound off of Point Judith was fished out of groundfish around 1994 and that lobster and shellfish were harmfully impacted during a 1996 oil spill off of Cape North, Rhode Island. These incidences have caused large scale changes in where and how fishermen land their catch (NOAA 2004). The changes in Rhode Island can also be

seen in raw numbers. In 2007, National Marine Fisheries reported Rhode Island as having total landings of 34,301.9 metric tons. This is the lowest total landing in the state since 1977. After 1977, landings began to steadily increase, reaching a peak at 65,120.1 metric tons in 1992. In the mid-nineties, landings began to dip slowly, yet even in 2006, total landings were 51,203.9 metric tons. These changes reflect fishing capacity changes, regulation changes, environmental changes and community changes.

New Bedford, Massachusetts is similar to Point Judith in that the major commercial fisheries catch is groundfish and scallops. It is much larger than Point Judith, however, holding one of the largest fishing fleets in the eastern United States. In 2007, National Marine Fisheries reported Massachusetts's landings to be 142,381.9 metric tons, much larger than Rhode Island's. A second difference is that New Bedford can trace its history in fishing much farther back than Point Judith. In this sense, fishing is not only an industry and a way of life, it is a legacy. While the majority of fishermen in New Bedford are also white males and they often have strong connections to backgrounds as Norwegians, Portuguese and, to a smaller extent, Nova Scotians. Fish processing workers are mainly from Central America. NOAA's community studies profile finds that "between five and eight percent of the people in the New Bedford SMSA (Standard Metropolitan Statistical Area) --far higher when we include members of their families-- receive their livelihood primarily from fishing. Even a conservative estimate, assuming two other individuals are supported by each fisher and fishing-related worker employed, places the proportion of the population dependent on fishing at between 11 percent and 18 percent." The town itself has a distinctly blue collar feel and blue collar pride that is

attempting to arm itself against the pressures of globalization and gentrification (NOAA 2004).

Stonington, Connecticut is far smaller than New Bedford, but boasts a similarly long history in whaling and fishing. All the towns around Stonington at one point used to be ports but today, Stonington is the last commercial fishing port in Connecticut. Many fishermen in Stonington also trace their roots back to Portugal. Like Point Judith, the Town Dock extends from one main road which is lined with fisheries support industries, clearly competing for space with the incoming businesses for tourism and leisure activities. The Stonington fleet is also fishing for groundfish, whiting and other New England stocks. As of 2000, there were 18 draggers and 14 lobster boats with assigned berths there (Stonington Harbor Management Plan, 2000). Bomster Scallops also sits on the dock and sells its products directly in front of its office. In 2007, National Marine Fisheries reported the total landings of Connecticut, and hence of Stonington, to be 4,655.1 metric tons. This is also Stonington's lowest catch since 1988. Similar to Rhode Island, the peak of Stonington's landings was in 1993 at 12,676.7 metric tons. Overall, however, these numbers illustrate the small nature of the fishing industry in Connecticut when compared to Rhode Island and Massachusetts.

Below is a map of southern New England to portray a visual image of the three study sites and their proximity to each other:


PART III: PAST SOCIOLOGICAL STUDIES

Many of the social scientists who have conducted studies in New England have noted a great dearth of social data gathering, blaming the fact that fisheries management is far more focused on purely ecological information. Those social scientists have made a case for social data gathering to ensure that management policies correctly match social and cultural conditions. They argue that this will reduce community deterioration and enforcement costs while simultaneously increasing regulatory cooperation and support (Jentoft 2000, Kaplan 2004, Symes 2008, Hall-Arber 2007). Some examples of social data collection include Pollnac's work on fisheries communities. Through social data, Pollnac has been able to draw conclusions on issues as specific as job satisfaction among fishermen in Alaska (Pollnac 2006) and as broad as social and cultural characteristics of fishing people all over the world (Pollnac 1988). His research on communities has the potential to greatly assist managers understand the future successes and failures of their policies.

Studying communities is fairly complex, especially in the developed world. Community is an elusive term in the United States, as its boarders are not always geographically defined. As opposed to set village boundaries, Kaplan has defined fishing communities in New England as consisting of "those who fish and those who are involved in auxiliary activities before, during and after fish is caught." This concept of community includes those who not only fish, but those who have an economic and social investment in the industry (Kaplan 1999). According to the Magnuson-Stevens Fisheries Conservation and Management Act, "'fishing community' means a community which is substantially dependent on or substantially engaged in the harvest or processing of fishery resources to meet social and economic needs, and includes fishing vessel owners, operators, and crew and United States fish processors that are based in such community," (MSFCMA 16 U.S.C. 1801). May explains the perpetual barrier of including this definition of fishing communities from fisheries management decisions as "the inability to delineate essential participants." In other words, the management system has been unable to identify commercial fishermen and fishing communities. She explains what a fishing community in New England is more specifically than Kaplan and the Magnuson-Stevens Act. According to May, there are two categories of fishermen:

> The first are territorial: they are delineated by specific, geographic locations where fishermen or those associated with the industry live and work and as a result share common values, norms and beliefs created through a history of shared experiences. The second type of fishing community is relational: they are called communities of interest or virtual communities. These communities consist of groups of people who share common interests or activities that are not associated with specific, geographic locales.

She notes that geographical communities are more likely to be homogenous and therefore more likely to fit Elinor Ostrom's first recommendation for successful commons'

management. Her main point in identifying fishermen and fishing communities however, is to ensure that these actors are involved in co-management

Kaplan's study of fishing community centers on the role of settlement houses in New Bedford, one of this study's survey sites. Settlement houses are small businesses that "settle" the financial accounts, such as paying bills and determining of crew paychecks, of commercial fishing vessels. Her study finds four significant changes occurring in the fishing community between 1986 and 1998. One is the greatly reduced strength of the fishermen's union. The main result has been a variance in the lay that boat owners and laborers receive as opposed to a strict amount set by the union. She also notes important changes in tax audits and tax laws that have created strong adversarial relationships between the government and the fishing community. Thirdly, she notes the fading of the once strong tradition of children to follow the family fishing business. The fading of this tradition has resulted in less fishing boats and less settlement houses. In 1999, when Kaplan published her study, the US had made a quarter of New Bedford's fleet's inactive from its buy-back programs. The last major change that Kaplan notes in the culture of the fishing communities is the result of major increases in marine regulations. This, she says has resulted in less fishing newcomers and a decrease in traditional fishing in New England (Kaplan 1999). These changes, although noted by Kaplan in 1999, are the subject of much of this study's 2009 findings from informal and semi-structured interviews. Clearly, the adversarial relationship with the government and the increase in marine regulations is still affecting the fishing communities in ways that are socially harmful and emotionally charged.

The efforts of certain New England fishing sectors to deal with this increases in marine regulations is the focus of Patricia Pinto da Silva's 2006 study. She discovers eight groups that are in the preliminary stages of developing co-management proposals. The Georges Bank Hook Sector was developed as restrictions emerged that were thought to make this sector completely unviable. They wanted to ensure continued access to the fishery while simultaneously participating in decisions regarding their business and the conservation of their fishery. The New England Red Crab Harvesters created a limited entry provision to protect the red crab resource and prevent an influx of fishery participants from the Pacific Coast. Their vessels also stagger their landings so as to protect the ocean bottom and to accommodate processing plants. The Montauk Tilefish Association also coordinates their fishing strategy so as to avoid derby fishing. The East Coast Pelagic Association does the same. These groups, da Silva explains, are responses to "a perception that traditional groundfish management has focused on sustaining an aggregate population of groundfish in the Northeast region while not paying sufficient attention to localized depletion issues and does not provide incentive for local stewardship." The study of these groups shows that fishing culture in New England is not only concerned with economic goals, but intergenerational access, distributional equality, healthy coastal communities, biological sustainability and local participation. They advocate innovation, decentralized management and resource protection. They are dedicated to including the traditional ecological knowledge of fishermen in decision-making while keeping the central government involved in enforcement (da Silva 2006). Clearly this defies cultural concepts of fishermen that include economic greed and ecological ignorance.

Beyond these studies that focus on social data in fishing communities for purposes of community-based management of fisheries, the eight regional management councils are required to conduct social impact assessments of their regulations. National Standard Eight of the Magnuson-Stevens Act says, "Conservation and management measures shall, consistent with the conservation requirements of the Magnuson-Stevens Act (including the prevention of overfishing and rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities in order to: (1) Provide for the sustained participation of such communities; and (2) To the extent practicable, minimize adverse economic impacts on such communities," (16 U.S.C. § 600.345). In the effort to meet this standard, the National Oceanic and Atmospheric Agency has hired anthropologists such as Jules Pretty and Tracy Dalton to conduct Social Impact Assessments.

Of all of these Social Impact Assessments, there is very little written specifically about women in the fisheries communities in New England. Kaplan makes note of the fact that settlement houses are owned and operated by women (Kaplan 1999) and one of NOAA's community studies reports makes mention of the fact that women in more recent times have become more involved in crew and shore side support (NOAA 2004). More complete research as to the role of women in the fisheries industry must be conducted and made available to managers and project planners if their understanding of the local community is to be complete.

## PART IV: MANAGEMENT OF FISHERIES IN SOUTHERN NEW ENGLAND

Fisheries management in New England can be characterized as a top-down approach. Before 1976, fisheries were open-access, leading to drastic fish stock

depletion by foreign fishing vessels. In 1976, the Magnuson Stevens Fisheries Management and Conservation Act (MSA) was enacted and the United States' Exclusive Economic Zone (EEZ) was established from three to 200 nautical miles off the US coastline from which only American vessels could fish. The Act also established the eight regional management councils who are responsible for the development of the regions' fisheries management plans (FMPs). The MSA created national standards for what must be included and accounted for in these regional FMPs. Each of the eight councils are to see that their region's FMP incorporates these standards, are to monitor that these national standards are being met and are to revise the FMP if they are not met (16 U.S.C. § 1801). The national standards dictate that FMPs must: prevent overfishing while achieving optimum yield, be based on the best scientific information available, contain measures that shall consider efficiency in the vitalization of fisheries resources, minimize costs as much as possible, contain measures that take into account the importance of fisheries resources to fishing communities in order to provide for their sustained participation and minimize adverse economic impacts and finally, minimize bycatch and bycatch mortality (16 U.S.C. § 1851).

Each regional council has representatives composed of stakeholders such as fishermen, environmentalists and government agency representatives. All of these representatives are appointed by the governor of each state in the region. New England holds several state and federal fisheries science centers which informs the New England Marine Fisheries Council of stock assessments and other information needed to make decisions. According to da Silva, "regulations passed, with attempts to take into account the diversity and differences among fisheries participants, often apply to the entire fleet in

question and have a 'one fit fits all approach.' Within the current regime, most fishermen are seen as objects of management as opposed to active actors in the process of marine stewardship," (da Silva 2006). An example of such a regulation in New England occurred in May 2004 when Amendment 13 of New England's groundfish FMP came into effect. Amendment 13 proposed measures to implement formal re-building programs for overfished stocks. One of the most controversial actions of the amendment, however, was a freeze on the number of Days at Sea (DAS) allowed to fishermen at 20% below that of what was allowed to them from 1996-2000 (Hall-Arber 2007). The Total Allowable Catch (TAC) of New England groundfish for all fish industry landings was also restricted, along with certain

| Stock Status | 2004 (GARM II) | 2007 (GARM III) |
|---|---|---|
| Overfished and Overfishing<br>Biomass $< \frac{1}{2} B_{MSY}$<br>AND<br>$F > F_{MSY}$ | GB Cod<br>GB Yellowtail<br>SNE/MA Yellowtail<br>GOM/CC Yellowtail<br>SNE/MA Winter Flounder<br>White Hake<br>GOM Cod | GB Cod<br>GB Yellowtail<br>SNE/MA Yellowtail<br>GOM/CC Yellowtail<br>SNE/MA Winter Flounder<br>White Hake<br>Pollock<br>Witch<br>GB Winter Flounder<br>GOM Winter Flounder<br>No. Windowpane |
| Overfished but not Overfishing<br>Biomass $< \frac{1}{2} B_{MSY}$<br>AND<br>$F \leq F_{MSY}$ | GB Haddock<br>GOM Haddock<br>So. Windowpane<br>Plaice<br>Ocean Pout | Ocean Pout<br>Halibut |
| Not Overfished but Overfishing<br>Biomass $\geq \frac{1}{2} B_{MSY}$<br>AND<br>$F > F_{MSY}$ | GB Winter Flounder | GOM Cod<br>So. Windowpane |
| Not Overfished and not Overfishing<br>Biomass $\geq \frac{1}{2} B_{MSY}$<br>AND<br>$F \leq F_{MSY}$ | Pollock<br>Redfish<br>No. Windowpane<br>GOM Winter Flounder<br>Witch | Redfish<br>Plaice<br>GB Haddock<br>GOM Haddock |

types of gear use, so as to address re-building requirements. Amendment 13 revised the status of determination criteria, making quantitative definitions of terms such as "overfishing" more easily applicable to critical New England fish stocks. Finally, Amendment 13 also increased the minimum biomass threshold so that more fish were required to remain in the ocean as part of a sustainable population rate (Amendment 13 2004). Displayed here is a chart from the New England Marine Fisheries Council on the status of commercial important fish from 2004 to 2008 which shows how more species came to be categorized as overfished.

Amendment 13 in the New England groundfish FMP was controversial among stakeholders for several reasons. First, because of groundfish restrictions, was the potential for the mortality of healthy fish stocks that were not considered in the FMP to increase with heavier fishing pressure. The amendment also allowed vessels for tuna, shrimp and scallops to continue fishing in areas closed to groundfish fishing. The Amendment thus actually increased the risk that groundfish would be killed as bycatch and that their habitat would continue to be harmed by these other types of vessels. Others, however, felt that the Amendment's decrease in DAS allowed to fishermen, as well as gear restrictions, would reduce overfishing and increase the protection of habitat as compared to a No Action option.

Amendment 13 was extremely controversial not only because of its questionable ecological impacts, but because of its economic and social impacts on fishing communities. The New England Fisheries Management Council determined that 25% of New England vessels would lose one-third of their gross revenues. For vessels that relied on groundfish for 75% or more of their revenue, the medium revenue loss would be 35%.

Similar types of social and economic impacts by other fishing regulations are often the source of much controversy at fisheries council meetings. Whether these effects can be minimized while simultaneously providing sustainable fisheries protection can only be discovered when the involvement of those who are affected by the regulations are a meaningful part of the decision-making process. Part of this study's research is targeted at uncovering whether heavier fishermen involvement would have a positive effect on sustainable communities and sustainable ecosystems.

*Results*

PART I: WHAT ARE DIFFERENCES IN MEN AND WOMEN'S ROLES?

Women are highly present in the fishing communities of southern New England and yet, because of their flexibility in roles, remain largely invisible. Finding women to survey in New England was often a challenging task. Women are largely not present on commercial fishing ports and, unlike in many developing countries, fishing families and communities do not live in the immediate vicinity of the ports. The areas surrounding the commercial fishing ports of the three survey sites are either commercial or scattered with affluent homes that are valuable for their waterfront property. Stonington, CT and Wakefield, RI are examples of areas with expensive New England homes that surround commercial ports. The families of fishermen in southern New England are thus often not linked geographically. There is no "fishing village" to walk through and survey men and women. Fishermen often drive to the ports from their homes and can be found mingling with each other in coffee shops, settlement houses and bait shops. Many can be found relaxing together at the docks at the end of the day, but who then drive home separately. Some fishermen carpool to the docks together, reflecting that while they may live close

together, the fishing community is not one that is bound together by neighborhoods or villages—it is bound together by a common occupation. Discussion of who is in the fishing community is mainly centered on businesses: grocery stores, banks, ice and fuel supply shops are all examples of community members that focus group participants mentioned. These are occupational centers that support the fishing occupation both materially and socially.

In this type of occupational community, surveys must be given at the work place, making it difficult to find participants at convenient times and nearly impossible to find female family members of fishermen who do not work formally in the fishing industry. It is no wonder then that these women remain invisible to those who are not actively searching for them. They are integrated into the larger communities of schools, hospitals and offices and their associations with the fishing industry are far more informal, based on family and friendship ties.

This form of occupational community is less clear in New Bedford, MA, however, where a long history in the whaling and fishing industry makes the community as a sense of place stronger. The town itself remains staunchedly blue-collar, resisting the development of affluent homes and luxury-related businesses that come with waterfront property. It is no coincidence then that women appear to be more visible in New Bedford than at Point Judith and Stonington. They are teachers, but they teach the sons and daughters of fishermen. They are accountants, but their clients are fishing boat owners. With such a long history of fishing as an occupation imbedded in the town as a geographical place, geographical and occupational communities are separated less easily.

The future of New Bedford, with an identity as a fishing town, remains unclear as the industry shrinks.

Even in New Bedford, where there appears to be more women directly associated with fishing support industries, women are not usually found on the docks in southern New England. Where exceptions to this do exist, those women often work for larger fish processing and distribution companies. They do not work for themselves, purchasing fish and selling at a profit, nor is individual-scale processing of fish conducted. Thus, with the exception of the settlement houses in New Bedford and one woman, also in New Bedford, who worked for herself making and selling scallop bags, women who work in the fisheries industry work directly alongside men.

These roles of women are relatively similar in New Bedford, Stonington and Rhode Island. Not only that, but in all three study sites, women were often found as the only woman within the company. One respondent is the only woman in a lobster distributor and one is the only women in a fishing gear company. In small companies, such as two in Stonington, there is only one woman employed and they serve roles in office and management tasks. Both of these women, interestingly, had male family members who worked as fishermen. Thus, while women are not often on the boats or on the docks with men, their roles often require that they work in jobs that men also do or in jobs that require they be surrounded by men. It is likely that this situation impacts their views regarding fisheries management.

Women in Rhode Island and New Bedford also work alongside men. Women work in bait companies, in seafood wholesale companies and in gear production. There are some, abiet very few, who work as dock hands, skippers or boat crew members.

There are many women, however, who work in fishing support roles, often providing fishermen with health care, pensions and safety training. Many women work in fisheries sales and processing companies, usually as office managers or in sales. Many, as has been said of New Bedford, work as attorneys and settlement clerks for boat owners and captains.

Beyond these roles that are directly within the fishing industry, women are family members of fishermen. According to informal interviews, women who work the above roles, as well as women who hold other positions within the towns of fishing communities, are more often than not, the wives, daughters, mothers and sisters to fishermen and thus have not only a professional, but personal stake in the success of the commercial fishing industry. These more personal connections to the industry, as has been said, remain largely invisible to outsiders as a result of the more occupational definition of the community. The result is that their situations as mothers and wives are often not taken into consideration when management decisions are made. One result of this study, as will be discussed in more detail, is that informal "occupations" in the fishing community need to be represented as stakeholders in the decision-making process as well.

PART II: ACCESS

As was said in chapters one and three, access in this study refers to the amount of access men and women have to the mechanisms in which fisheries management decisions are made. In this case, the number of men and women on formal decision-making bodies is significant as it represents access to power. This study reviewed who is part of these bodies, both in terms of gender and in terms of occupational affiliation. Surprisingly, this

information was not easy to find. The affiliations of past fisheries council members are not kept in a record and the affiliations of current council members were only discovered through relatively rigorous research efforts. Many members of the fishing community learn who council members are through frequent attendance to meetings, but this study has found that it would be difficult for another member of the public to learn who is making important decisions regarding fisheries and marine resource management without significant amounts of effort.

That having been stated as an interesting research result on its own, this study found that there is a significantly disproportional amount of men to women as members of fisheries councils in southern New England. When adding up all the total amount of years that New England Marine Fisheries Council members have served, 375 years, it was found that women account for only 22 of those years. In Massachusetts, out of 180 total years served by individual members of the council, 13 of them have been served by women and in Rhode Island, there have been no women council members. The members of these councils, however, very often base their decisions off the research done in the Northeast Fisheries Science Centers based out of Narragansett, RI; Woods Hole, MA; and Milford, CT (da Silva 2006). In these centers, it was found that only slightly less than half of scientists were women. Within the Rhode Island Department of Environmental Management Fish and Wildlife staff, when excluding freshwater fish employees, it was found that two marine fisheries employees out of twelve are women. In Massachusetts's Division of Marine Fisheries, there are 22 women out of 79 total people serving as personnel in programs other than administration. These numbers would seem to indicate that while there are few barriers to women becoming scientists,

there remain significant barriers for women in positions that hold more direct decision-making power over fisheries management.

Despite the low numbers of women in state and regional marine fisheries councils, the focus group participants revealed that there are a number of ways that women exhibit access to fisheries management decision-making. These women mentioned attending fisheries council meetings, raising issues to bring to town meetings, making phone calls to ask questions and make comments to managers, recording fisheries landing data for future use in management planning, organizing and participating in rallies and finally, having informal conversations with people who have more direct influence.

In the quantitative survey, two-thirds of both men and women reported almost never attending fisheries council meetings, but a higher rate of women than men said that they sometimes did. Only two men said they often attended meetings and two men said they frequently did (see appendix, table 4.2). Observations show that almost no women attend monthly state council meetings while a fairly high rate of women attend the larger, but more infrequent, New England Council meetings, thus explaining why more women than men said that they sometimes went to meetings. Despite their attendance however, 88% of women said that they almost never speak at these meetings, the rest saying that they sometimes do. For men, 77% say that they never speak and a higher percentage than women says that they sometimes or often speak. Only one man surveyed says that he speaks very frequently at fisheries council meetings (see appendix, table 4.3). Finally, as a last form of access to decision-making, two-thirds of women surveyed said that they sometimes interact with council representatives while 55% of men said that they never

did (see appendix, table 4.4). This would indicate that while most fishermen do not participate much at council meetings, when they do, they do so in formal ways by attending and speaking at meetings. Women, tend to gain access to decision-making in more informal mechanisms.

When looking beyond gender into who is represented on fisheries councils, it was found that council members must disclose their financial interest in the fishing industry to the public (16 U.S.C. 1852 MSA § 302). Beyond that, however, they do not need to reveal information, such as if they are recreational fishermen or what non-government organization they represent. There are 18 voting members on the New England Marine Fisheries Council. One is the Regional Administrator of the National Marine Fisheries Service; five are principal state officials with marine fishery management responsibility for Maine, New Hampshire, Massachusetts, Rhode Island and Connecticut; and twelve are nominated by the governors of the New England coastal states and appointed by the Secretary of Commerce for three-year terms. At the time of this writing, six of the twelve appointed members have commercial fishing interests, two have recreational fishing interests, two work for non-governmental conservation organizations, and one works for a non-governmental advocacy organization. On the Rhode Island Marine Fisheries Council, there are three recreational representatives, three commercial fishing representatives and two scientists. In Massachusetts, there are six representatives of the commercial fishing industry and two recreational representatives. It would seem from these numbers that fishing community members do have access to decision-making bodies.

PART III: VOICE

This research aims to uncover not only whether women and community members have access to fisheries management decision-making, but also aims to present their voice in this decision-making. The quantitative surveys were able to paint a clear picture as to the major concerns of those in the fishing community while the qualitative interviews and conversations added depth and understanding to those concerns. The questions in this survey were based off of observations made at state fisheries council meetings that audience members appeared to make comments that could be categorized under three different levels of concern: concern for personal economics, concern for the welfare of the community and concern for the fisheries resource itself. The survey then asked questions that fit in these three categories in order to draw conclusions about who had which concerns and why.

One such category targeted survey participants' concern for intergenerational equality. When five questions concerning intergenerational equality were combined, it was discerned whether participants had high or low levels of concern for intergenerational equality. It was found that three-fourths of the women surveyed had high levels of concern for future generations' ability to utilize and enjoy the ocean and marine resources, while slightly less than half of men shared the same high levels of concern (see appendix, table 4.5). Similarly, about half of the men surveyed were strongly in favor of conservation management techniques such as trip limits, catch limits and individual trade quotas. Almost 60% of the women were in favor of these conservation techniques (see appendix, table 4.6). Finally, three-fourths of the women surveyed were found to have high levels of concern for the well-being of the fisheries

community, while only about half of men shared similarly high levels of concern (see appendix, table 4.7).

In terms of occupational relationships with these concerns, it is interesting to note that fishermen, when compared to other occupational categories, held the lowest concern for intergenerational equality. Those involved in sales, seafood wholesale and recreational fisheries had the most concern (see appendix, table 4.8). This was less true when it came to favoring conservation measures. While only slightly less than half of fishermen favored conservation measures, respondents in recreation, gear and bait also did not highly favor conservation management techniques. Those in sales favored it the most (see appendix, table 4.9). Finally, those in settlement houses, healthcare, bait, gear and seafood wholesale were the most concerned about the well-being of the community. Fishermen and sales people were split about half and half between high and low levels of concern, while recreational fishermen were not highly concerned (see appendix, table 4.10).

The results of this quantitative survey reflect that which was said in the focus groups, semi-structured interviews and at fisheries management meetings. When discussing major concerns community members had, the most frequently mentioned concern was the loss of community. As one woman in Rhode Island said nostalgically, "people were so well connected to the fisherman part of Narragansett years ago. The whole world. You'd walk into Jerry's Hardware or you'd walk into Kenman's, you know, and it was a good thing. People were proud of their fishing heritage that is, in Narragansett." Part of the concern for the future of the fishing community is related to people's perception that more affluent home owners or tourists are replacing fishing

infrastructure. "If we closed the industry," said a man in the audience at a New England Marine Fisheries Council meeting, "infrastructure would be lost and condos would replace it." Another perception of the future is that regulations that create hardship and limit economic motivation push the sons and daughters of fishing families away from the industry. "Where's the next generation gonna come from?" said a women at a focus group near Point Judith. "I mean, with things as bad as they are for their fathers, you know, there are no new fishermen going into it. And the handful of mates that I knew, you know the young 20s, 22 year-olds, 28 year-olds, they don't stay!"

A close second to community concerns were economic concerns, but interestingly, even economic concerns were framed within the larger scope of concern for the community. One woman from New Bedford frames her own economic concerns as the wife of a draggerman into a larger picture of draggers all over New England: "You take these dragger boats, they're going out and, we were talking about skate—they don't wanna buy skate! These guys are coming in, they're working seven, eight days—you know how much they're making? Sometime they don't make a penny." The men who attended and spoke at Rhode Island Marine Fisheries Council meetings also phrased their personal economic concerns within a context of concern for the whole community. As one vessel owner said, "any financial subtraction from the budget that supports commercial fisheries hurts the community. The MSA makes provisions to protect the community and the state should mirror that."

More personal economic woes did, of course, crop up at meetings and in interviews. "Shutting down the industry for five years may be good for the fish but it would destroy my kids," said one man at a NEMFC meeting. Similar pleas concerning

children came up at nearly every state and regional council meeting, echoing both male and female concern for intergenerational equality. One angry man said, "Are my children and everybody else's children going to have to go to big businesses and pay ten dollars for a piece of fish?! Big business is taking over everything from our government all the way down to us! It's a fraud!" Another scalloper mentioned how his two sons go out with him to sea now, but when the day comes that they want their own business, he predicts it will be impossible. Other concerns mentioned are related to health, conservation of fisheries resources, wasting fuel and environmental injustice. This last concern is implied from comments concerning Rhode Island fishermen who lose out to fishermen from other states, as well as to comments concerning wealthier people being able to acquire access to fisheries resource at a disadvantage to those with less money.

Fishermen and women also made many comments relating to their concerns about conservation. "Fishermen wouldn't want to catch the last fish," said one New Bedford fisherman, "because they make a living off of having a healthy fish resource." Wasting fish by dumping it overboard so as to comply with Total Allowable Catch regulations is frequently viewed as not only irrational, but immoral. Several times, both men and women conveyed their wish to give away fish for free rather than dumping it overboard. Also conveying modern ecological awareness, one lobsterman conveyed his concern that climate change is sending lobsters too far north. He noted that in the past, lobsters stocks in Rhode Island had been adversely affected by oil spills and water pollution. Several scallopers also depicted their sincere belief that dragging on sandy bottoms is an ecologically friendly way of providing air for lobster's underground homes and churning up nutrients critical for ocean plant life. "I've been dragging for a long time now," said

one scalloper, "and I've seen areas closed to dragging that start to lose sea life." Similarly, the concern over wasted fuel due to regulations requiring Days At Sea limits is often frustrating to fishermen and women not only because of the loss of money, but because of its inefficiency and excess carbon emissions.

In general, the main thrust of fishermen's conservationist concerns is markedly different than NGO and other non-resource user's environmentalist rhetoric. Their theoretical environmental science behind dragging and boating is certainly not what is unique about fishing community culture. What is unique is what conservation means and where it comes from for fishermen—it is people, not resource, centered. It is based on ethics and not on science. As one fisherman said,

> Nine out of ten fishermen are morally upright and most violations are accidents. Fishermen do not want to catch the last fish because it is not economically viable and they want to preserve the fish because they are all family, because it's a way of life and because you learn it. There's a pride in character and culture. The creeps and idiots get out because they are pushed out by the good fishermen. They break the violations and it costs others so they get verbally abused and turned in.

This statement is the backbone of all the qualitative data given by fishermen and women regarding their concern for fisheries resources. It is not animal-centered, it is culturally-centered. It is a perception of conservation that includes humans in the ecosystem and where resource users are stewards of morality and intergenerational equality. It is ecosystem-based management (Leslie 2007).

Despite these environmentally aware attitudes, non-resource user environmentalists are often regarded distrustfully by community member interviewees. Environmentalism by those outside of the fishing community, and primary by those making a living from it, is seen as disconnected from family, culture and hence, from where morals come from. Several comments were made in focus groups distaining how

fish are protected more than the fishermen. The prime motivation of environmentalists was thus often felt to be financial. "Environmentalists make their money off making sure that other people can't," said one fisherman. He recounted the year when groundfish stocks in New England collapsed and the fishery was shut down. Prior to that, he said, scientists were getting laid off because of budget cuts. After the collapse, however, money for scientists was back on track. Similarly, one woman said, "As long as there's a crisis, there's money to be made," insinuating an almost conspiracy-like situation behind fisheries science and management. Other fishermen, who do not go so far as to question the ethical motives of environmentalists, made comments such as, "there is no depletion of the fish [fishermen] catch, but the treehuggers just want more and more and would like to see the fishermen all disappear." These qualitative results are not significant in their accuracy, but rather in their illumination of the antagonism between the local resource users and resource managers. While the fishermen hold conservationist ethics relating to moderation and efficiency for the purposes of community and family well-being, their perception of those whose environmental ethic comes from outside of those human-based, ethical parameters is one that views them as deceitful, greedy and antagonistic to fishing communities.

Interviewees in fishing communities have other concerns with management decision-making beyond just their distrust of environmentalists. Many said that they felt council meetings had decided their agendas before-hand and so never considered the opinions of those in the public audience. "Public meetings are a horse and pony show," said one lobsterman. "People shout, but it's all decided by DEM [Department of Environmental Management] who has a political agenda." This sentiment, as well as the

phrase, “nobody listens” was reiterated over and over again by interviewees. Other sentiments concerning management are that decisions are made using false information, that fishermen have better information than managers but are not utilized, and that management regulations are changed at such a rate that the results of decisions are not made know to those affected by them in an adequate or timely manner. Many women regarded council meetings as stressful. It is worthy to note, however, that most interviewees, both men and women, prefaced their negative quotes by regarding the need for some form of regulation.

Interviewees who hold positions as managers and scientists hold vastly different opinions on the management process. None of them felt that decisions are decided before council meetings and most of them feel that audience members are heard adequately when participating at public meetings. “Saying that the agenda is decided before-hand is just an excuse for not participating,” said one manager. “It’s an investment to be part of the process and they just don’t want to do it.” The same manager pointed to the fact that many council members do not agree and hence could never decide anything before-hand. Another manager felt that council decision-making “flies by the seat of its pants” too much and another cited evidence that regulations are amended, struck down and often written right at council meetings with the public present.

Just as fishing community members felt that management is biased towards environmentalists, so many managers feel that there is a heavy emphasis on commercial fishing interests. They also feel that fisheries science is very trust worthy. “The science is very good. We have more data than most people in the world,” said one manager. “As cod declines, its range contracts—in this instance it contracts to Cape Cod Bay—so the

people fishing there won't notice the change in the resource as a whole. They see localized effects, but we're looking at the resource coast-wide." This statement shows not only a different view on fisheries science but a different value on local, traditional knowledge.

The purpose of this study is, again, not to assess the accuracy of these statements but to display the often polar dichotomy between perceptions of managers and resource users in southern New England's fishery. A perfect and simple example exists in one fishermen's assertion that NOAA utilizes out-dated equipment to conduct its scientific surveys and one manager's rebuttal that the boat it uses is brand new. Fishermen at council meetings assert that many fish stocks are healthier than they have ever been while managers make comments such as, "they've [fishermen] never seen a healthy resource as they've been overfished for hundreds of years now." Finally, as it was noted that fishermen made comments concerning the lack of communication on new regulations, one environmentalist involved in fisheries policy claims, "there is a lot of communication between fishermen and managers. There are so many opportunities to read what's going on and participate, but fishermen work and are on the water, but it's not a matter of communication." The striking differences in the voices of those who are involved in fisheries is very likely, as the literature on the successes of co-management would indicate, one reason why management in New England is considered the quintessential story of the failure of a fisheries management regime.

PART IV: INFLUENCE

The last aspect of participation in fisheries management decision-making is influence, or whether ones access and voice actually has an impact on decisions that are

made. In order to evaluate survey participants' perception of their influence, three questions regarding influence were asked and then added together for a mean result. Men were split—half perceiving themselves as having high levels of influence and the other half perceiving themselves as having low levels of influence. Two-thirds of the women surveyed felt that they had low levels of influence. In terms of occupation, fishermen were split, with only slightly less than half feeling as if they had high levels of influence. Seafood wholesalers, however, ranked the highest of those who felt they had the most influence. Those in settlement houses, sales or clerical positions were occupations with the least amount of people who felt that they had high levels of influence. Those in bait, gear and recreation also felt that they had little influence (see appendix, tables 4.11 and 4.12).

Immediate feelings on levels of influence, as reflected in the survey, often came out to be low. Within the setting of the focus group, however, where women sat and discussed amongst each other for some length of time, attitudes often shifted. These women often found themselves reflecting upon times when they felt they may have had some influence. One woman recounted bringing a health and clean water issue to a town meeting which ended up being acted upon. Another woman fondly recounted her involvement with organizing and participating in rallies. A woman in New Bedford recalled speaking on issues regarding scallops at a fisheries meeting which ended up being concluded in her favor. These single incidences of influence usually came up toward the end of focus groups, reflecting upon the almost knee-jerk response of claiming to have no influence. Other forms of influence women at the focus groups said they had was making phone calls and having informal conversations with managers about fisheries

regulations and policies. Two women mentioned having influence through the data that they kept while on the job—one concerning landings of a fish used for lobster bait which was then used to assist in creating a management plan for that species, and another that kept data on the days at sea of her clients. She was able to use this data to prove that her clients should be allowed to get more days. Despite these influences, more than half of the women at the focus groups simultaneous stated that they did not have any influence. They felt, as mentioned above, "no one listens", "everything is decided before hand" or that "environmentalists have all the power." Other women mentioned feeling uncomfortable at meetings as the source of their lack of influence. Women recounted being called "a big mouth" or being "stressed out" by fisheries meeting settings. Men who were interviewed also claimed that they were told to "shut up and sit down" at fisheries council meetings. Observations at these council meetings often coincided with these feelings that speaking at meetings is intimidating and often hostile towards audience members. Women especially rarely speak up, a fact also reflected in the surveys. Managers, on the other hand, stated that "council members are very accessible" and that "industry members make up the majority of the advisory committees, not environmentalists."

Who makes up the members of councils and advisory committees is, as this last comment exposes, often how stakeholders perceive who has influence. The question of access to these councils was discussed above and it was noted that six out of the twelve appointed members of the NEMFC had financial interests in fishing. While to managers, this reflects industry's large influence, industry members maintain their lack of influence. Interviewees made comments about fisheries representatives' betrayal: "Cape Cod Hook

and Line Fishermen sold out to environmentalists!" They also made comments about the personal characteristics of those individuals representing the fishing industry, questioning their actual "belongingness" to the fishing community. Managers, however, remarked that belonging to the fishing community should not matter: "council members are not supposed to represent a constituency, their job is to manage a public resource for all interests." Clearly then, just as inclusion in a community effects one's views about conservation, views about influence are also shaped by the level of importance community plays in one's identity.

PART V: BEYOND GENDER

As in Chapter Three, the results of this survey were analyzed in ways that moved beyond gender to determine if issues of access, voice and influence had an effect on each other. The level of influence one had did not play in role in determining how much one favors conservation management strategies. Those who felt they had high levels of influence were split on their views and those with low levels of influence actually favored conservation measures more often than not. The same was true of influence and concern for future generations. Influence also had no effect on concern for the well-being of the community as both those with high and low feelings of influence were more concerned than not about community well-being (see appendix, tables 4.13, 4.14 and 4.15).

Participation levels, which reflect access to management decision-making as opposed to influence, also had little effect. It was first examined whether those who participated also felt as if they had influence. Sixty percent of those who participated through attending meetings, speaking at meetings and interacting with council members said that they felt they had low levels of influence (see appendix, table 4.16). In terms of

voice, there was about a 50/50 split between high and low concern for future generations and concern for community well-being amongst those who had high levels of participation. Almost 60% of those with high levels of participation favored conservation measures in fisheries management (see appendix, tables 4.17, 4.18 and 4.19).

Despite the fact that these survey results would appear to indicate a lack of correlation between influence, participation and voice, it is important to integrate the results from of the qualitative research in order to gain a more complete picture as to why. The qualitative data from community members

Results: Access
- Disproportionally more men than women on management bodies other than scientific research bodies
- Women have lower rates of participation than men except in informal interactions

Results: Voice
- Women were more concerned about intergenerational equality and community well-being than men and only slightly more in preference of conservation measures
- Most frequently mentioned concern was loss of community
- Importance of conservation framed around ethical responsibility to community, not to esoteric values
- Distrust of environmentalists and fisheries management process

Results: Influence
- More men felt that they had high levels of influence than women
- Seafood wholesalers felt they had the most influence, fishermen were split, and those who worked in settlement houses, fish processing, bait or gear felt they had very little influence
- Strong feelings of a lack of legitimacy in fisheries management processes and inadequate fishing community representation

Results: Beyond Gender
- More than half (60%) of those who said they participated in fisheries management also said that they has low levels of influence
- Access and Influence had no effect on voice (concern for intergenerational equality, preference for conservation measures or concern for community well-being)
- BUT, participating or having influence in what community members consider to be an illegitimate process may not produce the same results in voice if one were to have influence in management decisions that were widely considered to be fair

indicates that management processes are illegitimate, even if managers would disagree. Participating or having influence in what community members consider to be an illegitimate process may not produce the same results in voice if one were to have influence in management decisions that were widely considered to be fair. In other words, the impact on voice that this research was attempting to study may have deeper causes than both gender and management participation. As qualitative data on opinions about conservation and council representation are affected by loyalty to the community, so too might inclusion in the community have deeper effects on voice than level of influence. According to community interviewees, conservation means preserving enough fish that those in the community get a good price on what they have caught and it means making sure that one's sons, as well as other fishermen's sons, have plenty of fish to catch. It does not mean rebuilding stocks to abstract baselines. Similarly, influence in management does not mean representing a public interest, it means representing and being loyal to the community. Thus, while there remain antagonistic relationships between resource users and managers, it is likely that those who participate and have influence in fisheries management will continue to hold loyal community views about conservation techniques. As several fishermen stated, if they do not remain loyal, they get pushed out of the community.

*Discussion*

Based on the results given above, the study now returns to the hypotheses posed in Chapter One. The first hypothesis of this research study is that men have had more access and influence in fisheries management decision-making. This hypothesis is true in both access and influence. While there are almost an equal number of men and women

fisheries scientists, there are far fewer women on fisheries councils, signifying a large barrier remaining for women in the field of marine resource management. Survey results also indicate that fewer women participate than men and even less feel as if they have influence.

The study's second hypothesis is that women of fishing communities tend to prefer strategies that emphasize sustainable management of fisheries resources, community well-being, and intergenerational equality. In southern New England, a greater percentage of women surveyed than the percentage of men surveyed were highly concerned about intergenerational equality, the well-being of the community, and favored conservation measures. The results were too small to have statistically significant results, so further research still needs to be done. Based on the results of the qualitative data, men did show concern for intergenerational equality, conservation of the resource and the well-being of the community. They were, however, more antagonistic about other sectors of fishermen and appeared more concerned about personal economics than women. This data therefore suggests that women's preferences for conservation measures and their concern for intergenerational equality is not significantly different from men but that women do tend to have preferences that emphasize the role of community in fisheries management.

Finally, the last hypothesis theorizes that resource users who participate in making decisions regarding fisheries management tend to prefer strategies that emphasize the well-being of the community, the resources and future generations. Qualitative and quantitative data suggests that participation and influence in fisheries management in southern New England will not follow this third hypothesis based on complications in

regulation legitimacy and community loyalty. Based on the fact that many of those who participate in management view those with influence as community outsiders or community traitors means that participation will often take the form of "anti-environmentality". In other words, participation by resource-users will be antagonistic to regulations based on principal rather than actual anti-environmental opinions or knowledge. Just as Agrawal's study community set fires to their forests during periods of centralized control, so fishermen are likely to feel antagonist about environmentalism so long as they feel disconnected from the processes of influence. If those few with influence are to remain loyal to the community, an important component of community inclusion, they are likely to be antagonistic as well. Thus, environmentality is going to be prominent only within management systems that are locally considered to be legitimate.

*Conclusions*

The results of this southern New England study imply that there is something even more fundamental to environmentality than gender and participation in management decision-making. The Magnuson-Stevens Act demands both access to decision-making and the inclusion of social impact in regulation assessment. Managers generally feel that the process in New England is sufficiently participatory and that fishing industry members are highly represented. They feel that fisheries science is effective, but that critical fish stocks are highly depleted and that fishing regulations need to reflect this. They often hold the perspective that fishermen are too concerned with short-term economic gain as opposed to long-term ecological health. Fishing industry members, on the other hand, feel that participatory processes are not effective, that community members have little representation, that traditional knowledge is not taken seriously by

scientists and that fishing regulations are highly destructive of community structures. The results of this study suggest that this extreme difference in outlooks is not based on the accuracy of one group of stakeholders over another. It instead has to do with the strength of local institutions and the clarity of goals behind co-management goals. The recommendations of this report are thus based on these two agendas.

The first recommendation is to strengthen local fisheries institutions in ways that are perceived to be legitimate and loyal to the community. Both quantitative and qualitative data portray weakness in the local institutions of southern New England's fishing communities. A vast majority of those in the fishing community feel that they have skills and knowledge to give to fisheries management but that these skills and knowledge are not utilized. This may be because they are not considered part of the epistemic community that has influence over political leaders. Managers often alluded to weaknesses in fishermen knowledge. Weak local institutions may also be due to the fact that the community is largely occupational as opposed to geographical and so are not considered traditional communities with traditional knowledge. Overall, however, the research results indicate that community members do not participate in what local institutions do exist because they do not consider them legitimate. In other words, they feel that those who have influence in making decisions are not part of the community even if they are representatives of the commercial fishing industry. This lack of community participation leads to regulations that cause the breakdown of community, which, for fishermen and women, leads to the breakdown of environmental ethics. Environmental ethics are, for New England fishermen, the direct result of community inclusion. Intergenerational equality and resource protection is for the sake of

community. Managers, however, who obtain environmental ethics through other means, do not generally associate environmental ethics with community.

In terms of relating gender to the strengthening of local institutions, this study shows that women have a tendency to have a broader definition of community and therefore, do not single out various fishing sectors. To include this type of whole-community concern is the first step towards strengthening the local institutions that would make community created rules and regulations legitimate. Women mimic men's concerns about the inclusion of traditional knowledge and the future of the fishing community. Increasing women's access to decision-making institutions would therefore not change the views that are expressed by fishing communities, but would strengthen local institutions through the building of community solidarity. This solidarity would create the legitimacy necessary for the shift in environmentality that Agrawal emphasizes and also create the homogeny that Ostrom lists as a requirement for successful co-management.

Strengthening local institutions means more than community solidarity, but also accessibility. The voice of community members needs to have impact if people are to take advantage of having access. Local institutions need to incorporate more sophisticated tools in participatory approaches that are non-stressful to locals, including women and those with less formal education. The process needs to do more than allow for public comment and have industry members on councils, it needs to "reconcile multiple actors," (Lynam 2007). There are many approaches and tools for strengthening participatory institutions. The bottom line is that once management institutions are considered legitimate by local resource users, not only will there be higher rates of

regulatory compliance, but there will be higher rates of the type of participation that leads, not to solidarity in anger toward managers, but that leads to environmentality-minded subjects.

The second recommendation based on this study's finding is clarifying the goals of co-management. This recommendation is based off the evidence that managers and resource users hold different meanings behind the purpose of conservation and what it means to be represented on a fisheries council. For this reason, ecological and community goals should be decided upon ahead of time by representatives who are considered legitimate by stakeholders. One way to ensure this may be to have representatives of local resource users voted upon by community members rather than appointed by the government. Base levels of fish stocks would have to be agreed upon as would the social landscape of fisheries communities. With proper goals lined out by council members who are agreed upon by all stakeholders, there is a greater chance that there will be less disagreement on the state of fish stocks, on how science and traditional knowledge are blended and on whether decision-making processes are fair.

## Chapter Five—Research Conclusions and Recommendations

### *Overview of the Research*

This research has analyzed the effect of participation by stakeholders in fisheries management from the angles of occupation, level of participation, level of influence and gender. It did so in the attempt to greater understand who should participate in fisheries management decision-making and why. With all the attention paid to women in environmental management by international development organizations, this research studied what effective co-management should look like by asking, does gender affect

natural resource management? This question is pertinent and timely as many fisheries systems find themselves in a period of mandatory transition. Critical fisheries stocks are declining; species diversity in landings is being lost; the availability of fresh, local fish to local people is becoming more precarious; and communities, along with the morals and knowledge embedded in it, are slowly fading. Managers in both Kerala and southern New England recognize the failures of current management regimes and speak of inevitable change (personal conversations 2008). What that change will entail is the subject of passionate debate in both locations.

The aim of change, for those on all sides of the debate, is sustainable social-ecological systems. This study focused on three critical aspects of sustainability—intergenerational equality, ecological conservation, and community well-being—and conducted both quantitative and qualitative data to uncover who has and who should participate in management decision-making in order to achieve that goal. In looking specifically at gender, however, the recommendations for co-management went far beyond where the research started. In asking about gendered perceptions of fisheries management, this study was also asking about the perceptions of previously ignored roles in the fishing industry and what it would mean if those in those roles were to have greater influence.

*Key Findings from the Literature Review*

Answering the research question began with a study on the theoretical literature of women in natural resource management, community-based management, and the ocean and its resources as commonly held property. The primary authors of the literature review on these topics are Caroline Merchant, Arun Agrawal, and Elinor Ostrom

respectively. Beyond these authors, however, the literature review includes many case studies and other prominent authors such as Thomas Dietz, Peter Haas, and Bonnie McCay. The major findings from this research informed and shaped the hypotheses for the study.

The major findings from the theoretical review on gender and natural resource management are centered on society's valuation of productive and reproductive work. Case studies show that many societies, from Africa to Southeast Asia to Europe, place more value on those goods and services that produce and cost money. Thus, women's domestic labor and nature's ecosystem services, both of which are often free, are devalued and placed in positions which threaten their ability to continue. When decisions are made concerning management, the protection of women and nature's reproductive work often takes a back seat to the productive work of men and cash generating activities. Women are often left out of decision-making both for traditional reasons and because their roles surrounding the natural resources are seen as less important. As was discussed however, women conduct a large variety of vital roles of which there is no exception within fishing communities.

The major findings of theory concerning community-based management of natural resources are almost always in support of increased community participation. Case studies and theory discuss the reduced cost in enforcement measures, the increased rates of regulatory compliance, the widened scope of influence, and perhaps most significantly, the change in mindset of resource users towards environmental conservation when management shifts to a more participatory approach. Writings also suggest, however, that there are requirements for systems if community participation is to

be successful. There must be local institutions that are strong enough to make regulatory decisions, there must be set boundary areas that local institutions are granted control over, and the central government must support and legitimize the decisions of these local institutions. When these requirements are met and when community-participation is enacted, social as well as ecological objectives are met. This is especially important in fisheries communities where norms of morality and ethics are preserved along with community structure. These ethics contribute towards the sustainable management of fisheries and can be strengthened through increased responsibility in decision-making.

The final major results of the literature review are based on Ostrom's argument against Hardin's theory of the tragedy of the commons. She, as well as others, provides examples of failed attempts at centralized control of the commons. She argues that the answer is not privatized control, but limited access control based on local managers who use traditional knowledge and rules to ensure the sustainability of the resource. This form of management is not to be confused with open-access management. Instead, this form of management can combine the unique knowledge of local people with the expert knowledge of epistemic communities to create regulations that are legitimate and supportive of both ecological and social communities.

These three sets of major findings from the literature review resulted in three hypotheses for the case studies conducted in this research. They are:

1. Men have had more access and influence in fisheries management decision-making.
2. Women of fishing communities tend to prefer strategies that emphasize sustainable management of fisheries resources, community well-being, and intergenerational equality.

3. Resource users who participate in making decisions regarding fisheries management tend to prefer strategies that emphasize the well-being of the community, the resources and future generations.

All three hypotheses incorporate the theories of ecofeminism, environmentality, and common property regimes.

*Key Findings from the Case Studies*

The key findings from both of the case studies presented in Chapters Three and Four show that the hypotheses presented here were too simplistic in their conclusions of what co-management should look like. Access to the mechanisms of participation is dependent upon not just gender but on occupation, the occupation of spouses, and local institutions. In other words, it is the total accumulation of community cultural factors that determine community members' level of access to participation. Women as a whole, however, do experience barriers to formal avenues of participation and hence have less direct influence. In terms of voice, women and men are equal in their concern for intergeneration equality and preference for conservation measures. Women, however, voiced more concern for community well-being.

The role of occupation proved most striking in the Kerala case study. Mechanized boat owners and wage laborers in processing plants, the former being men and the latter being women, have the least amount of access and influence in fisheries decision-making. They also voice the least the amount of preference for conservation measures. Fish vendors and traditional fishermen, the former being women and the later being men, felt they had the most access, the most influence, and voiced the most preference for conservation measures. These results would suggest that self-employment,

economic control, and strong local institutions have a large effect on access, influence and voice in fisheries decision-making. In conclusion, those who maintain their own traditional occupations recognize the negative ecological effects of modernization and actively support efforts to regulate access to the fisheries resources and the use of destructive gear. Those who are employed as wage laborers and who are hence disconnected from traditional forms of employment, are also disconnected from management participation and from the effects that unrestricted access and gear use has on the social-ecological system. This is true of both women and men.

In southern New England, the strongest findings are that, for both men and women, local institutions are weak. They are not considered legitimate by community members who largely do not participate. Those who do participate are often considered traitors to the community. The result is that management decisions result in the breakdown of community values that maintain ecological integrity. Managers who define conservation as something other than reverence to the community do not recognize the potential impacts of the loss of these values.

Women in southern New England have similar voices to men concerning intergenerational equality and conservation. They have less of a tendency, however, to place blame between fisheries sectors and so, have a stronger concern for the whole community's well-being. Their roles on the shore place them in greater contact with fishermen of various sectors and their continual presence in the community while men are at sea means that they are often the guard-dogs of the entire community. Despite their role and long history as community solidifiers, they largely do not participate in decision-making on the government level because of an atmosphere of stress and

hostility. Many women from within the community work in non-fishing related industries and so thus, because of the occupational nature of the community, are largely invisible to the central management eye.

- Men have had more access and influence in formal fisheries management decision-making
- Women's preferences for conservation measures and their concern for intergenerational equality is not significantly different from men
- Women tend to have preferences that emphasize the role of community in fisheries management
- Environmentality is most prominent in those who control their own economic resources in traditional enterprises within management systems that are locally considered to be legitimate

These major findings in both case studies show how looking at the effects of gender on management preferences point to important findings regarding *occupation* and the role that occupation should play in contributing toward successful co-management of fisheries. In turn, gender and occupation in fishing communities in tied closely with community cultural norms: When are women most outspoken? When are women most likely to favor conservation measures? Why are women, the watch-dogs of the community, often anti-environmentalists? These cultural questions are tied to gender and the results of this study show that they are also tied to the nature of men and women's occupation and to the relationship between local and government institutions. Thus the results lead to recommendations that not only suggest how more women could become involved as partners in co-management, but also which occupations should be more involved and what the balance of power should be between them and the government.

*Recommendations for Kerala*

As was just stated, the recommendations for Kerala involve gender dimensions, but go beyond where the research hypotheses began. First, the study found that if the

majority of fishermen in Kerala were given greater control of fisheries management decision-making, they would create stricter regulations that limit access to fisheries resources and they would limit the use of destructive gear. The Keralan government thus needs to actively support and enforce the regulatory decisions made by northern Sea Courts and do the same for the co-operatives which currently do not make such regulatory decisions. Co-operatives are institutions run by community members. This needs to be maintained, but it also needs to be separated from political party affiliations. These co-operatives should then be encouraged to create regulations and rules on access to fishing grounds by holding public meetings that utilize formal participatory tools. Currently, meetings are only conducted a few times a year by central government representatives. When the co-operatives decide upon rules, they need to be strictly enforced with the help of the central government. If they are not, neighboring villages may commit infractions that will discourage villagers from placing rules upon themselves. Boundaries for each local institution will have to be set and at first, because of the migratory nature of Kerala's fisheries, the local impacts of these changes will not be noticeable. Over times, however, if Kerala promotes men and women maintaining high levels of economic independence in traditional occupations, then many villages will create conservation-minded regulations and state-wide ecological changes will be able to be observed.

The recommendation for the maintenance of independent fisheries work fits wells with Kerala's primarily agenda for improving the economic well-being of its fisheries communities. Towards this end, the government is focused on improving education and fisheries technology. The results of this research suggest that if the government were to

focus on encouraging independent work by men and women, ecological and social sustainability would be improved. Improved education can take place with the option that community schools provide an education in jobs such as being a small boat owner using environmentally benign gear, maintaining a debt-free business in fish vending, or running small locally-operated fish processing plants that are run and maintained by women. These options would increase the quality of life for those in the fishing industry, it would increase the food security of local communities, it would encourage community participation in fisheries management, it would promote the ecological sustainability of Kerala's fisheries and finally, it would even help increase the social status of those in fishing communities. All of this would simultaneously preserve the culture, values and knowledge of fishing communities as their children become more enthused to continue the family tradition. If Kerala, with its history of successful development initiatives, could refocus the goals of its already established village-based co-operatives and schools, it could be a shining example of how a developing country could continue economic development along with local community protection and participation.

*Recommendations for Southern New England*

New England's fishing industry has not been such a shining example. The outcome of the government's promotion of commercial fishing after 1976 has already arrived as a full-on ecological crisis simultaneously matched by a social crisis in fishing communities. The crisis has put New England's fisheries management system, however, in a situation where it must and will change. This change could mean either the doom or the revival of healthy fisheries resources and healthy fishing communities.

The recommendations based on this study's findings are based around strengthening weak local institutions. New England's fishing communities have experimented with trade unions and co-operatives but both were eventually weakened or eliminated. These results would thus recommend that fishing communities become more geographical in nature. In doing so, more recognition would be given to the community as a culture as opposed to an industry, and informal participants would more likely be made visible to government managers. A strong sense of place combined with greater visibility of informal community members will create the foundations for strong local institutions. Debates between sectors will become less significant and thus create greater homogeny between stakeholder groups.

In this effort, it is recommended that state government maintain fishing infrastructure and ensure that housing nearby ports is made affordable for those in the fishing community. There will be pressure from tourist and leisure businesses to prevent this, yet in the long-term, the survival of geographical fishing communities is likely to enhance the tourist industry. Local municipal government will need to work with state and federal agencies to provide community social services and social events that maintain pride in the fishing community as a geographical place. There will be enhanced economic opportunities for fishermen and women created by this strong sense of place. Marketing of local seafood that is sustainably caught is already enjoying popularity in local grocery stores and farmers markets in southern New England. Maine lobsters have been a marketing niche for generations. A strong geographical community will support economic, ecological, and community sustainability long into the future.

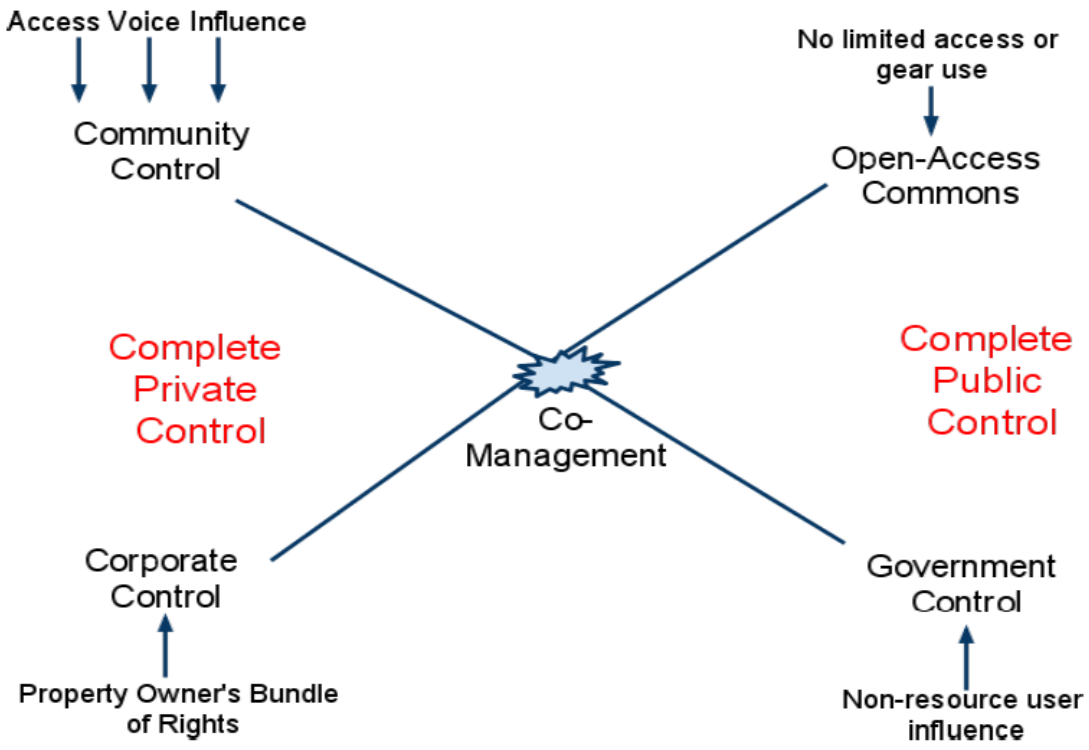
With increased recognition of all stakeholders based on a stronger sense of place, local institutions will have a base from which to become strong. Local communities need to take ownership of these institutions and be able to alter their decision-making style in a way that is conducive to local and female participation. The results of this study suggest that if that were to occur, women of fishing communities would take a primary role in participation. The research suggests that these women, as well as local men, would maintain limitations on access to the fisheries but that they would alter the regulations in ways that reduce fuel use and eliminate throwing bycatch overboard. The research also suggests that if fishermen and women felt that local institutions were legitimate, they would participate more and would feel less antagonistic towards environmentalists, as being one would not imply a lack of community loyalty. The beginning steps towards legitimacy is fully disclosed information on the exact nature of each council member's interests, both financial and otherwise, that is easily accessible to the public. Increased communication will begin to dissolve the sense of conspiracy many community members feel concerning management councils. The second step would be community election of council members, as opposed to appointed members. This would begin to create a sense of ownership and responsibility over management in the way that Agrawal predicts.

If management institutions were under the control of community members, informal, reproductive occupations would more likely be represented as stakeholders. Women with jobs outside the fishing industry would participate by voicing the opinions of men at sea, but they would also ensure the protection the community. This would ensure the continuation of conservation traditions and knowledge and would greatly aid the ability of environmental NGOs to work with local fishing communities. Science and

traditional knowledge can inform each other when legitimate leaders are the messengers to the community. As management in New England moves forward and as the debate on the use of sector-based management continues, managers would do well to consider what would occur if the community watch-dogs were to able to participate more actively. They might find that a focus on the community as a whole would bring the community together in ways that encouraged a mentality of environmental stewardship.

*Looking at the Two Case Studies Together*

These recommendations are only the beginning of what can be accomplished. Those for Kerala are very different from those for southern New England, but in their vast differences, that which is similar emerges even more distinctly. This is the benefit from conducting similar studies in social-ecological systems that could not be more different. It is from what is similar between these two case studies that forms the outline of a model that other fisheries systems can use to discern their own recommendations. Both Kerala and southern New England follow this broad model. Case studies and literature from other fisheries systems imply that this model could be used applied to any fisheries system:




Southern New England moved from an open-access commons to government control in 1976. The sea and the resources within it have a long tradition of being considered a public resource. The use of regional councils with industry members is an attempt, however, to incorporate aspects of community control. As this research noted, however, that attempt ignored the parts of the community where many women exist, thus forming an incomplete picture. The introduction of sector-based management would lead New England towards corporate control—a transition that is hotly debated because of the belief that the ocean is a public resource. The move towards community control, however, would also mean a movement from public ownership to private ownership—not by sectors, however, but by the whole community as determined by rights-based property ownership. If New England is to move towards either one of these options, this leap of

faith of how ocean resource ownership is viewed will have to be made. The co-management model, placed in the center of the spectrum, encompasses the recommendations of this report that the central government will have a role to play in legitimizing and enforcing community control as well as assisting the initial transition towards more geographically oriented communities.

Unlike New England, Kerala is only just moving away from the sea as an open-access commons. The common rhetoric is rights-based management and government enforcement, but the reality is that most anyone can and does fish in Kerala's waters. Kerala, from the enactment of the monsoon trawling ban, has shown its ability to implement the community's demand for regulations. It will have to develop greater capacity for enforcement if it is to assist local communities in taking control over management. Communist political leaders will also have to resist the temptation to remain within a government controlled system once open-access has officially ended. They will need to ensure that anyone in the community, no matter of what party, will be able to represent the community in local co-operatives. This will then also create a better environment for Keralan women to turn informal access and into legitimate influence.

Both Kerala and New England, despite their differences, can locate themselves on this model and alter their management schemes based on where they want to go. As was said of New England, they will also need to adjust their philosophical outlook on the ocean in order to shift from the right side of the model towards the center. Other fisheries systems will also need to locate themselves on this basic model and strengthen the infrastructure on the opposite end of where they lie in order to move themselves towards the center. Many developing states like Kerala will need to develop government

capabilities for enforcement but already have the advantage of pre-existing strong geographical communities with strong traditional institutions and a history of community controlled access to the ocean. Moving towards a co-management model will mean keeping those local institutions and values strong while simultaneously strengthening government capabilities. On the other hand, developed countries have strong government capabilities but face the challenge of strengthening community and shifting marine ideology. There is no panacea for how fisheries systems will move towards the co-management, but this very basic model will assist in determining unique recommendations for unique social-ecological systems.

## *Appendix*

Chapter 3

*3.1*
**Fisheries Management Survey**

1. Gender: male ___ female___ Age: _____ Religion: _____ Occupation: _____

2. In your role in the fishing industry, how much influence do you have on decision-making in the areas listed below?

| | **no influence** | **some influence** | **a lot of influence** | **sole decision-maker** |
|---|---|---|---|---|
| Equipment purchases……..1 | 2 | 3 | 4 | |
| Managing household money……...1 | 2 | 3 | 4 | |
| Managing business money…….…….1 | 2 | 3 | 4 | |
| Fishing restrictions like monsoon ban……...1 | 2 | 3 | 4 | |

3. These statements express some views about your involvement in the fishing industry. On a scale from 1 for 'strongly agree' to 5 for 'strongly disagree', please circle the number that best reflects your opinion on each statement.

| | **strongly agree** | **agree** | **disagree** | **strongly disagree** |
|---|---|---|---|---|
| I contribute substantially to making decision concerning fisheries rules and policies.....……..…1 | 2 | 3 | 4 | |
| I speak my opinions at gramasabhas, union meetings and local courts.....…..……..1 | 2 | 3 | 4 | |
| Local and government leaders listen to my concerns and try to address them…..1 | 2 | 3 | 4 | |
| The state incorporates the traditional knowledge of fisherfolks in their decision-making....…….1 | 2 | 3 | 4 | |
| I have great skills and knowledge to contribute to fishing management……1 | 2 | 3 | 4 | |
| Fisherfolk unions have a positive influence on our lives…….1 | 2 | 3 | 4 | |

4. How often to you interact with your elected representatives?
__never or almost never
__sometimes
__often
__very frequently

5. How often do you attend and speak at gramasabha or union meetings?
__never or almost never
__sometimes
__often
__very frequently

6. How many times a week does you and your family eat fish at a meal?
__Never
__Less than once a week
__Once
__2-4 times

__5-6 times
__7 or more

7. Has the availability of fresh fish for purchase noticeably changed since you have been involved in the fishing industry?
__yes, it has noticeably decreased
__yes, it has noticeably increased
__no, it has stayed the same
__unsure

8. . These statements express some views about fisheries in the future. On a scale from 1 for 'strongly agree' to 5 for 'strongly disagree', please circle the number that best reflects your opinion on each statement.

| | **strongly agree** | **agree** | **neither agree nor disagree** | **disagree** | **strongly disagree** |
|---|---|---|---|---|---|
| I would like my children to work in the fishing industry……..1 | | 2 | 3 | 4 | 5 |
| I worry about there being enough fish for my grandchildren and their children.....……...……1 | | 2 | 3 | 4 | 5 |
| I think the traditional fishing lifestyle should stay the same for future generations….....……..1 | | 2 | 3 | 4 | 5 |
| The ocean has other important qualities besides a source of income and food……1 | | 2 | 3 | 4 | 5 |
| People today have a responsibility to keep the ocean and the fish healthy for future generations……..1 | | 2 | 3 | 4 | 5 |

9. . These statements express views about concern for the fishing community, for he fishing resources and for your own personal livelihood. On a scale from 1 for 'strongly agree' to 5 for 'strongly disagree', please circle the number that best reflects your opinion on each statement.

| | **strongly agree** | **agree** | **neither agree nor disagree** | **disagree** | **strongly disagree** |
|---|---|---|---|---|---|
| One should always try for more catch and high returns.....1 | | 2 | 3 | 4 | 5 |
| The most successful fisherman is one who makes maximum profit.....1 | | 2 | 3 | 4 | 5 |
| The fisheries resources are being depleted.....1 | | 2 | 3 | 4 | 5 |
| Government restrictions like the trawl ban are needed to conserving fisheries resources.....1 | | 2 | 3 | 4 | 5 |
| Recommended fishing gear, such as nets with large mesh sizes, should always be used, even if it reduces catch to a small extent.....1 | | 2 | 3 | 4 | 5 |
| There should be a limit of fish that fisherfolk can catch from the sea.....1 | | 2 | 3 | 4 | 5 |
| I am worried about employment | | | | | |

of other people in my village.....1 2 3 4 5

I am worried that there is not enough available fresh fish for people in my village to eat.....1 2 3 4 5

**Gender * I speak my opinions at gramasabhas, union meetings and local courts Crosstabulation**

| 3.2 | | | I speak my opinions at gramasabhas, union meetings and local courts | | | | |
|---|---|---|---|---|---|---|---|
| | | | Strongly agree | Agree | Disagree | Strongly Disagree | Total |
| Gender | Male | Count | 10 | 15 | 17 | 3 | 45 |
| | | % within Gender | 22.2% | 33.3% | 37.8% | 6.7% | 100.0% |
| | Female | Count | 8 | 17 | 19 | 1 | 45 |
| | | % within Gender | 17.8% | 37.8% | 42.2% | 2.2% | 100.0% |
| Total | | Count | 18 | 32 | 36 | 4 | 90 |
| | | % within Gender | 20.0% | 35.6% | 40.0% | 4.4% | 100.0% |

**Gender * How often do you attend gramasabha or union meetings? Crosstabulation**

| 3.3 | | | How often do you attend and speak at gramasabha or union meetings? | | | | |
|---|---|---|---|---|---|---|---|
| | | | Never or almost never | Sometimes | Often | Very frequently | Total |
| Gender | Male | Count | 17 | 19 | 6 | 3 | 45 |
| | | % within Gender | 37.8% | 42.2% | 13.3% | 6.7% | 100.0% |
| | Female | Count | 15 | 18 | 9 | 3 | 45 |
| | | % within Gender | 33.3% | 40.0% | 20.0% | 6.7% | 100.0% |
| Total | | Count | 32 | 37 | 15 | 6 | 90 |
| | | % within Gender | 35.6% | 41.1% | 16.7% | 6.7% | 100.0% |

**Gender * How often do you interact with your elected representative? Crosstabulation**

| 3.4 | How often do you interact with your elected representative? | Total |
|---|---|---|

| | | | Never or almost never | Sometimes | Often | Very frequently | |
|---|---|---|---|---|---|---|---|
| Gender | Male | Count | 15 | 16 | 10 | 4 | 45 |
| | | % within Gender | 33.3% | 35.6% | 22.2% | 8.9% | 100.0% |
| | Female | Count | 18 | 10 | 13 | 4 | 45 |
| | | % within Gender | 40.0% | 22.2% | 28.9% | 8.9% | 100.0% |
| Total | | Count | 33 | 26 | 23 | 8 | 90 |
| | | % within Gender | 36.7% | 28.9% | 25.6% | 8.9% | 100.0% |

| 3.5 Pearson Chi-Square=.004 (Significant) | | | Participation and gender | | | | |
|---|---|---|---|---|---|---|---|
| | | | Men who participate | men who do not participate | Women who participate | Women who do not participate | Total |
| Central, South or North | Central Region | Count | 3 | 12 | 0 | 15 | 30 |
| | | % within Central, South or North | 10.0% | 40.0% | .0% | 50.0% | 100.0% |
| | Southern Region | Count | 10 | 5 | 9 | 6 | 30 |
| | | % within Central, South or North | 33.3% | 16.7% | 30.0% | 20.0% | 100.0% |
| | Northern Region | Count | 7 | 8 | 5 | 10 | 30 |
| | | % within Central, South or North | 23.3% | 26.7% | 16.7% | 33.3% | 100.0% |
| Total | | Count | 20 | 25 | 14 | 31 | 90 |
| | | % within Central, South or North | 22.2% | 27.8% | 15.6% | 34.4% | 100.0% |

| 3.6 | | | Participation and gender | | | |
|---|---|---|---|---|---|---|
| Pearson Chi-Square=.000 (significant) | | | Men who participate | men who do not participate | Women who participate | Women who do not participate |
| Occupations | Mechanized fishermen | Count | 4 | 13 | 0 | 0 |
| | | % within Occupations | 23.5% | 76.5% | .0% | .0% |
| | Traditional fishermen | Count | 16 | 12 | 0 | 0 |
| | | % within Occupations | 57.1% | 42.9% | .0% | .0% |
| | Processors | Count | 0 | 0 | 0 | 8 |
| | | % within Occupations | .0% | .0% | .0% | 100.0% |
| | Housewives/fish dryers/shell collectors | Count | 0 | 0 | 4 | 12 |
| | | % within Occupations | .0% | .0% | 25.0% | 75.0% |
| | Student | Count | 0 | 0 | 0 | 2 |
| | | % within Occupations | .0% | .0% | .0% | 100.0% |
| | Fish vendors | Count | 0 | 0 | 10 | 9 |
| | | % within Occupations | .0% | .0% | 52.6% | 47.4% |
| Total | | Count | 20 | 25 | 14 | 31 |
| | | % within Occupations | 22.2% | 27.8% | 15.6% | 34.4% |

| 3.7 | | | The fisheries resources are being depleted | | | | |
|---|---|---|---|---|---|---|---|
| Pearson Chi-Square=.616 (not significant) | | | Strongly agree | Agree | Neither agree nor disagree | Disagree | Total |
| Gender | Male | Count | 8 | 29 | 2 | 6 | 45 |
| | | % within Gender | 17.8% | 64.4% | 4.4% | 13.3% | 100.0% |
| | Female | Count | 7 | 34 | 1 | 3 | 45 |
| | | % within Gender | 15.6% | 75.6% | 2.2% | 6.7% | 100.0% |
| Total | | Count | 15 | 63 | 3 | 9 | 90 |
| | | % within Gender | 16.7% | 70.0% | 3.3% | 10.0% | 100.0% |

**Central, South or North * Highly favors conservation measures or low Crosstabulation**

| 3.8 Pearson Chi-Square=.000 (significant) | | | Highly favors conservation measures or low | | |
|---|---|---|---|---|---|
| | | | Favors conservation strategies | Does not favor conservation strategies | Total |
| Central, South or North | Central Region | Count | 5 | 25 | 30 |
| | | % within Central, South or North | 16.7% | 83.3% | 100.0% |
| | Southern Region | Count | 22 | 8 | 30 |
| | | % within Central, South or North | 73.3% | 26.7% | 100.0% |
| | Northern Region | Count | 16 | 14 | 30 |
| | | % within Central, South or North | 53.3% | 46.7% | 100.0% |
| Total | | Count | 43 | 47 | 90 |
| | | % within Central, South or North | 47.8% | 52.2% | 100.0% |

**Gender * Highly favors conservation measures or low Crosstabulation**

| 3.9 Pearson Chi-Square=.527 (not significant) | | | Highly favors conservation measures or low | | |
|---|---|---|---|---|---|
| | | | Favors conservation strategies | Does not favor conservation strategies | Total |
| Gender | Male | Count | 23 | 22 | 45 |
| | | % within Gender | 51.1% | 48.9% | 100.0% |
| | Female | Count | 20 | 25 | 45 |
| | | % within Gender | 44.4% | 55.6% | 100.0% |

| | | | | |
|---|---|---|---|---|
| Total | Count | 43 | 47 | 90 |
| | % within Gender | 47.8% | 52.2% | 100.0% |

**Gender * High or Low feelings on IGE (Intergenerational Equality) Crosstabulation**

| *3.10* Pearson Chi-Square=.673 (not significant) | | | High or Low feelings on IGE | | |
|---|---|---|---|---|---|
| | | | Is concerned with IGE | Is not concerned with IGE | Total |
| Gender | Male | Count | 23 | 22 | 45 |
| | | % within Gender | 51.1% | 48.9% | 100.0% |
| | Female | Count | 25 | 20 | 45 |
| | | % within Gender | 55.6% | 44.4% | 100.0% |
| Total | | Count | 48 | 42 | 90 |
| | | % within Gender | 53.3% | 46.7% | 100.0% |

**Correlations**

| *3.11* | | | Participant Age | Intergenerational Equality(the average of these 5 survey questions) |
|---|---|---|---|---|
| Spearman's rho | Participant Age | Correlation Coefficient | 1.000 | -.195* |
| | | Sig. (1-tailed) | . | .033 |
| | | N | 90 | 90 |
| | Intergenerational Equality(the average of these 5 survey questions) | Correlation Coefficient | -.195* | 1.000 |
| | | Sig. (1-tailed) | .033 | . |
| | | N | 90 | 90 |

*. Correlation is significant at the 0.05 level (1-tailed).

**Central, South or North * High or Low feelings on IGE (Intergenerational Equality) Crosstabulation**

| *3.12* Pearson Chi-Square=.669 (not significant) | | | High or Low feelings on IGE | | |
|---|---|---|---|---|---|
| | | | Is concerned with IGE | Is not concerned with IGE | Total |
| Central, South or North | Central Region | Count | 18 | 12 | 30 |
| | | % within Central, South or North | 60.0% | 40.0% | 100.0% |

| | | | | | |
|---|---|---|---|---|---|
| | Southern Region | Count | 15 | 15 | 30 |
| | | % within Central, South or North | 50.0% | 50.0% | 100.0% |
| | Northern Region | Count | 15 | 15 | 30 |
| | | % within Central, South or North | 50.0% | 50.0% | 100.0% |
| Total | | Count | 48 | 42 | 90 |
| | | % within Central, South or North | 53.3% | 46.7% | 100.0% |

**High or low levels of concern for community health * Gender Crosstabulation**

| *3.13* Pearson Chi-Square=.024 (significant) | | Gender | | |
|---|---|---|---|---|
| | | Male | Female | Total |
| High or low levels of concern for community health | High level of concern for community health | 28 | 36 | 64 |
| | Low level of concern for community health | 17 | 7 | 24 |
| Total | | 45 | 43 | 88 |

**High or low levels of influence * Gender Crosstabulation**

Count

| *3.14* Person Chi-square=.000 (significant) | | Gender | | |
|---|---|---|---|---|
| | | Male | Female | Total |
| High or low levels of influence | Low levels of influence | 17 | 34 | 51 |
| | High levels of influence | 28 | 11 | 39 |
| Total | | 45 | 45 | 90 |

**Correlations**

| *3.15* | | | Participant Age | Mean of 4 influence survey questions |
|---|---|---|---|---|
| Spearman's rho | Participant Age | Correlation Coefficient | 1.000 | .359** |
| | | Sig. (1-tailed) | . | .000 |
| | | N | 90 | 90 |
| | Mean of 4 influence survey questions | Correlation Coefficient | .359** | 1.000 |
| | | Sig. (1-tailed) | .000 | . |
| | | N | 90 | 90 |

**. Correlation is significant at the 0.01 level (1-tailed).

Strong correlation

**Occupations * High or low levels of influence Crosstabulation**

| *3.16* Pearson Chi-Square=.000 (Significant) | | | High or low levels of influence | | |
|---|---|---|---|---|---|
| | | | Low levels of influence | High levels of influence | Total |
| Occupations | Mechanized fishermen | Count | 9 | 8 | 17 |
| | | % within Occupations | 52.9% | 47.1% | 100.0% |
| | Traditional fishermen | Count | 8 | 20 | 28 |
| | | % within Occupations | 28.6% | 71.4% | 100.0% |
| | Processors | Count | 8 | 0 | 8 |
| | | % within Occupations | 100.0% | .0% | 100.0% |
| | Housewives/fish dryers/shell collectors | Count | 16 | 0 | 16 |
| | | % within Occupations | 100.0% | .0% | 100.0% |
| | Student | Count | 2 | 0 | 2 |
| | | % within Occupations | 100.0% | .0% | 100.0% |
| | Fish vendors | Count | 8 | 11 | 19 |
| | | % within Occupations | 42.1% | 57.9% | 100.0% |
| Total | | Count | 51 | 39 | 90 |
| | | % within Occupations | 56.7% | 43.3% | 100.0% |

**High or Low feelings on IGE (Intergenerational Equality) * participation or low participation Crosstabulation**

| *3.17* | | | High participation or low participation | | |
|---|---|---|---|---|---|
| Pearson Chi-Square=.097 (not significant) | | | High Participation | Low participation | Total |
| High or Low feelings on IGE | Is concerned with IGE | Count | 14 | 27 | 41 |
| | | % within participation or low participation | 41.2% | 60.0% | 51.9% |
| | Is not concerned with IGE | Count | 20 | 18 | 38 |
| | | % within participation or low participation | 58.8% | 40.0% | 48.1% |
| Total | | Count | 34 | 45 | 79 |
| | | % within participation or low participation | 100.0% | 100.0% | 100.0% |

**Correlations**

| *3.18* | | | Mean of 6 participation questions | Intergenerational Equality(the average of these 5 questions) |
|---|---|---|---|---|
| Spearman's rho | Mean of 6 participation questions | Correlation Coefficient | 1.000 | -.077 |
| | | Sig. (1-tailed) | . | .235 |
| | | N | 90 | 90 |
| | Intergenerational Equality(the average of these 5 questions) | Correlation Coefficient | -.077 | 1.000 |
| | | Sig. (1-tailed) | .235 | . |

| | | | |
|---|---|---|---|
| | N | 90 | 90 |

No significant correlation

**Highly favors conservation measures or low * Participation and gender Crosstabulation**

| *3.19* | | Participation and gender | | | | |
|---|---|---|---|---|---|---|
| Pearson Chi-Square =.617 (not significant) | | Men who participate | men who do not participate | Women who participate | Women who do not participate | Total |
| Highly favors conservation measures or low | Favors conservation strategies | 12 | 11 | 7 | 13 | 43 |
| | Does not favor conservation strategies | 8 | 14 | 7 | 18 | 47 |
| Total | | 20 | 25 | 14 | 31 | 90 |

**Correlations**

| *3.20* | | | Mean of 6 participation questions | Conservation |
|---|---|---|---|---|
| Spearman's rho | Mean of 6 participation questions | Correlation Coefficient | 1.000 | .098 |
| | | Sig. (1-tailed) | . | .180 |
| | | N | 90 | 90 |
| | Conservation | Correlation Coefficient | .098 | 1.000 |
| | | Sig. (1-tailed) | .180 | . |
| | | N | 90 | 90 |

**Participation and gender * I am worried about community health Crosstabulation**

| 3.21 | | | I am worried about community health | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Pearson Chi-Square=.012 (significant) | | Strongly agree | Agree | Neither agree nor disagree | Disagree | Strongly disagree | Total |
| Participation and gender | Men who participate | Count | 4 | 11 | 0 | 5 | 0 | 20 |
| | | % within Participation and gender | 20.0% | 55.0% | .0% | 25.0% | .0% | 100.0% |
| | men who do not participate | Count | 1 | 12 | 2 | 10 | 0 | 25 |
| | | % within Participation and gender | 4.0% | 48.0% | 8.0% | 40.0% | .0% | 100.0% |
| | Women who participate | Count | 2 | 8 | 0 | 2 | 2 | 14 |
| | | % within Participation and gender | 14.3% | 57.1% | .0% | 14.3% | 14.3% | 100.0% |
| | Women who do not participate | Count | 2 | 24 | 0 | 5 | 0 | 31 |
| | | % within Participation and gender | 6.5% | 77.4% | .0% | 16.1% | .0% | 100.0% |
| Total | | Count | 9 | 55 | 2 | 22 | 2 | 90 |
| | | % within Participation and gender | 10.0% | 61.1% | 2.2% | 24.4% | 2.2% | 100.0% |

| 3.22 | | | Gender | | |
|---|---|---|---|---|---|
| Pearson Chi-Square=0.673 (not significant) | | | Male | Female | Total |
| High or Low feelings on IGE | Is concerned with IGE | Count | 23 | 25 | 48 |
| | | % within High or Low feelings on IGE | 47.9% | 52.1% | 100.0% |
| | Is not concerned with IGE | Count | 22 | 20 | 42 |
| | | % within High or Low feelings on IGE | 52.4% | 47.6% | 100.0% |

| | | | | |
|---|---|---|---|---|
| Total | Count | 45 | 45 | 90 |
| | % within High or Low feelings on IGE | 50.0% | 50.0% | 100.0% |

**Highly favors conservation measures or low * Gender Crosstabulation**

Count

| *3.23* | | Gender | | |
|---|---|---|---|---|
| | | Male | Female | Total |
| Highly favors conservation measures or low | Favors conservation strategies | 23 | 20 | 43 |
| | Does not favor conservation strategies | 22 | 25 | 47 |
| Total | | 45 | 45 | 90 |

Pearson Chi-square=.527 (not significant)

**Correlations**

| *3.24* | | | Mean of 6 participation questions | Conservation |
|---|---|---|---|---|
| Spearman's rho | Mean of 6 participation questions | Correlation Coefficient | 1.000 | .098 |
| | | Sig. (1-tailed) | . | .180 |
| | | N | 90 | 90 |
| | Conservation | Correlation Coefficient | .098 | 1.000 |
| | | Sig. (1-tailed) | .180 | . |
| | | N | 90 | 90 |

No correlation.

**High or Low feelings on IGE (Intergenerational Equality)* Central, South or North Crosstabulation**

| *3.25* Pearson Chi-Square=.669 (no significance) | | | Central, South or North | | | |
|---|---|---|---|---|---|---|
| | | | Central Region | Southern Region | Northern Region | Total |
| High or Low feelings on IGE | Is concerned with IGE | Count | 18 | 15 | 15 | 48 |
| | | % within High or Low feelings on IGE | 37.5% | 31.3% | 31.3% | 100.0% |
| | Is not concerned with IGE | Count | 12 | 15 | 15 | 42 |
| | | % within High or Low feelings on IGE | 28.6% | 35.7% | 35.7% | 100.0% |
| Total | | Count | 30 | 30 | 30 | 90 |
| | | % within High or Low feelings on IGE | 33.3% | 33.3% | 33.3% | 100.0% |

**Occupations * Highly favors conservation measures or low Crosstabulation**

| 3.26<br><br>Pearson Chi-Square=.193 (not significant) | | | Highly favors conservation measures or low | | |
|---|---|---|---|---|---|
| | | | Favors conservation strategies | Does not favor conservation strategies | Total |
| Occupations | Mechanized fishermen | Count | 6 | 11 | 17 |
| | | % within Occupations | 35.3% | 64.7% | 100.0% |
| | Traditional fishermen | Count | 17 | 11 | 28 |
| | | % within Occupations | 60.7% | 39.3% | 100.0% |
| | Processors | Count | 1 | 7 | 8 |
| | | % within Occupations | 12.5% | 87.5% | 100.0% |
| | Housewives/fish dryers/shell collectors | Count | 9 | 7 | 16 |
| | | % within Occupations | 56.3% | 43.8% | 100.0% |
| | Student | Count | 1 | 1 | 2 |
| | | % within Occupations | 50.0% | 50.0% | 100.0% |
| | Fish vendors | Count | 9 | 10 | 19 |
| | | % within Occupations | 47.4% | 52.6% | 100.0% |
| Total | | Count | 43 | 47 | 90 |
| | | % within Occupations | 47.8% | 52.2% | 100.0% |

Chapter 4

*4.1*

*The following survey is an attempt at uncovering views about access and participation in fisheries management decision-making. The results will be aimed at informing and improving the management process. It falls under a larger project, funded by Sea Grant and conducted by Caroline Karp at Brown University, which focuses on the roles and opinions of women in the fishing industry.*

*This survey is confidential and your name and other identity revealing information will not be used or published. Once you have started the survey, however, you have the freedom to stop at any time. If you have any questions about this project, do not hesitate to contact me, Laura Mattison, at laura_mattison@brown.edu or (802) 363-1007. If you would like to speak to Caroline Karp, you can do so at ckarp@brown.edu.*

1. Gender: male ___ female___ Age:_____ Occupation:_____
Boat owner/self-employed? Y/N

2. In your role in the fishing industry, how much influence do you have on decision-making in the areas listed below?

| | **no influence** | **some influence** | **a lot of influence** | **sole decision-maker** |
|---|---|---|---|---|
| Equipment purchases……..1 | | 2 | 3 | 4 |
| Managing household money……...1 | | 2 | 3 | 4 |
| Managing business money……1 | | 2 | 3 | 4 |
| Fishing restrictions and regulations…...…...1 | | 2 | 3 | 4 |

3. How often to you interact with fisheries council representatives?
__never or almost never
__sometimes
__often
__very frequently

4. How often do you attend fisheries council meetings?
__never or almost never
__sometimes
__often
__very frequently

5. How often do you speak at fisheries council meetings?
__never or almost never
__sometimes
__often
__very frequently

6. These statements express some views about your involvement in the fishing industry. On a scale from 1 for 'strongly agree' to 5 for 'strongly disagree', please circle the number that best reflects your opinion on each statement.

| | **strongly agree** | **agree** | **disagree** | **strongly disagree** |
|---|---|---|---|---|
| I contribute substantially to making decision concerning fisheries rules and policies.....……..…1 | | 2 | 3 | 4 |
| Local and government leaders listen to my concerns and try to address them…...1 | | 2 | 3 | 4 |
| Managers incorporates my knowledge on fish stock health and availability when making decisions.……...1 | | 2 | 3 | 4 |
| Managers incorporate my knowledge on management strategies that work and do not work…….…..…….…….1 | | 2 | 3 | 4 |
| I have great skills and knowledge to contribute to fishing management……1 | | 2 | 3 | 4 |

8. How has the availability of fresh fish for personal consumption changed since you have been involved in the fishing industry?
__It is harder for me to get fresh fish to bring home for personal consumption
__ It is easier for me to get fresh fish to bring home for personal consumption
__The variety of fresh fish that I bring home for personal consumption has changed
__ Availability of fresh fish for personal consumption has stayed the same
__Unsure

9. These statements express some views about fisheries in the future. On a scale from 1 for 'strongly agree' to 5 for 'strongly disagree', please circle the number that best reflects your opinion on each statement.

| | **strongly agree** | **agree** | **neither agree nor disagree** | **disagree** | **strongly disagree** |
|---|---|---|---|---|---|
| I would like my children to work in the fishing industry……..1 | | 2 | 3 | 4 | 5 |
| I worry about there being enough fish for my grandchildren and their children.....……...……1 | | 2 | 3 | 4 | 5 |
| I think the fishing lifestyle should stay the same for future generations….....……..1 | | 2 | 3 | 4 | 5 |

The ocean has other important qualities besides a source of income and food……1 2 3 4 5

People today have a responsibility to keep the ocean and the fish healthy for future generations……..1 2 3 4 5

10. . These statements express views about concern for the fishing community, for he fishing resources and for your own personal livelihood. On a scale from 1 for 'strongly agree' to 5 for 'strongly disagree', please circle the number that best reflects your opinion on each statement.

| | **strongly agree** | **agree** | **neither agree nor disagree** | **disagree** | **strongly disagree** |
|---|---|---|---|---|---|
| One should always try for more catch and high returns.....1 | 2 | 3 | 4 | 5 | |
| The most successful fisherman is one who makes maximum profit.....1 | 2 | 3 | 4 | 5 | |
| The fisheries resources are being depleted.....1 | 2 | 3 | 4 | 5 | |
| Government restrictions like TAC and DAS are needed to conserve fisheries resources.....1 | 2 | 3 | 4 | 5 | |
| ITQs aimed at conservation should be used even if it reduces one's catch……..……..1 | 2 | 3 | 4 | 5 | |
| I am worried about a lack of jobs for others in my community…….....1 | 2 | 3 | 4 | 5 | |
| I am worried about the health and safety of those in the fishing community.....1 | 2 | 3 | 4 | 5 | |

**Participant Gender * How often do you attend at fisheries council meetings? Crosstabulation**

| *4.2* | | | How often do you attend at fisheries council meetings? | | | | |
|---|---|---|---|---|---|---|---|
| | | | Never or almost never | Sometimes | Often | Very frequently | Total |
| Participant Gender | Male | Count | 24 | 8 | 2 | 2 | 36 |
| | | % within Participant Gender | 66.7% | 22.2% | 5.6% | 5.6% | 100.0% |
| | Female | Count | 8 | 4 | 0 | 0 | 12 |
| | | % within Participant Gender | 66.7% | 33.3% | .0% | .0% | 100.0% |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Total | | Count | 32 | 12 | 2 | 2 | 48 |
| | | % within Participant | 66.7% | 25.0% | 4.2% | 4.2% | 100.0% |

**Participant Gender * How often do you speak at fisheries council meetings? Crosstabulation**

| *4.3* | | | How often do you speak at fisheries council meetings? | | | | |
|---|---|---|---|---|---|---|---|
| | | | never or almost never | Agree | often | very frequently | Total |
| Participant Gender | Male | Count | 28 | 5 | 1 | 2 | 36 |
| | | % within Participant Gender | 77.8% | 13.9% | 2.8% | 5.6% | 100.0% |
| | Female | Count | 10 | 2 | 0 | 0 | 12 |
| | | % within Participant Gender | 83.3% | 16.7% | .0% | .0% | 100.0% |
| Total | | Count | 38 | 7 | 1 | 2 | 48 |
| | | % within Participant Gender | 79.2% | 14.6% | 2.1% | 4.2% | 100.0% |

**Participant Gender * How often do you interact with fisheries council representatives? Crosstabulation**

| *4.4* | | | How often do you interact with fisheries council representatives? | | | | |
|---|---|---|---|---|---|---|---|
| | | | Never or almost never | Sometimes | Often | Very frequently | Total |
| Participant Gender | Male | Count | 20 | 13 | 1 | 2 | 36 |
| | | % within Participant Gender | 55.6% | 36.1% | 2.8% | 5.6% | 100.0% |
| | Female | Count | 3 | 8 | 1 | 0 | 12 |
| | | % within Participant Gender | 25.0% | 66.7% | 8.3% | .0% | 100.0% |
| Total | | Count | 23 | 21 | 2 | 2 | 48 |
| | | % within Participant Gender | 47.9% | 43.8% | 4.2% | 4.2% | 100.0% |

**Participant Gender * Concern for Future Generations Crosstabulation**

| 4.5 | | | Concern for future generations | | |
|---|---|---|---|---|---|
| | | | High intergenerational concern | Low intergenerational concern | Total |
| Participant Gender | Male | Count | 17 | 18 | 35 |
| | | % within Participant Gender | 48.6% | 51.4% | 100.0% |
| | Female | Count | 9 | 3 | 12 |
| | | % within Participant Gender | 75.0% | 25.0% | 100.0% |
| Total | | Count | 26 | 21 | 47 |
| | | % within Participant Gender | 55.3% | 44.7% | 100.0% |

**Participant Gender * Concern for conservation Crosstabulation**

| 4.6 | | | Concern for conservation | | |
|---|---|---|---|---|---|
| | | | Highly favors conservation measures | Does not favor conservation measures | Total |
| Participant Gender | Male | Count | 18 | 17 | 35 |
| | | % within Participant Gender | 51.4% | 48.6% | 100.0% |
| | Female | Count | 7 | 5 | 12 |
| | | % within Participant Gender | 58.3% | 41.7% | 100.0% |
| Total | | Count | 25 | 22 | 47 |
| | | % within Participant Gender | 53.2% | 46.8% | 100.0% |

**Participant Gender * Concern for community health Crosstabulation**

| 4.7 | | | Concern for community health | | |
|---|---|---|---|---|---|
| | | | Highly concerned about community health | Not highly concerned about community health | Total |
| Participant Gender | Male | Count | 17 | 18 | 35 |
| | | % within Participant Gender | 48.6% | 51.4% | 100.0% |
| | Female | Count | 9 | 3 | 12 |

| | | | | |
|---|---|---|---|---|
| | % within Participant Gender | 75.0% | 25.0% | 100.0% |
| Total | Count | 26 | 21 | 47 |
| | % within Participant Gender | 55.3% | 44.7% | 100.0% |

**Participant Occupation * Concern for future generations Crosstabulation**

| *4.8* | | | Concern for future generations | | |
|---|---|---|---|---|---|
| | | | High intergenerational concern | Low intergenerational concern | Total |
| Participant Occupation | Sales, Clerical | Count | 5 | 3 | 8 |
| | | % within Participant Occupation | 62.5% | 37.5% | 100.0% |
| | Fisherman | Count | 10 | 14 | 24 |
| | | % within Participant Occupation | 41.7% | 58.3% | 100.0% |
| | Aquaculture | Count | 0 | 1 | 1 |
| | | % within Participant Occupation | .0% | 100.0% | 100.0% |
| | Attorney/Settlement House/Healthcare | Count | 3 | 1 | 4 |
| | | % within Participant Occupation | 75.0% | 25.0% | 100.0% |
| | Bait | Count | 1 | 0 | 1 |
| | | % within Participant Occupation | 100.0% | .0% | 100.0% |
| | Gear | Count | 1 | 0 | 1 |
| | | % within Participant Occupation | 100.0% | .0% | 100.0% |
| | Wholesale Seafood | Count | 5 | 2 | 7 |
| | | % within Participant Occupation | 71.4% | 28.6% | 100.0% |
| | Recreational industry | Count | 1 | 0 | 1 |

| | | | | | |
|---|---|---|---|---|---|
| | | % within Participant Occupation | 100.0% | .0% | 100.0% |
| Total | | Count | 26 | 21 | 47 |
| | | % within Participant Occupation | 55.3% | 44.7% | 100.0% |

**Participant Occupation * Concern for conservation Crosstabulation**

| 4.9 | | | Concern for conservation | | |
|---|---|---|---|---|---|
| | | | Highly favors conservation measures | Does not favor conservation measures | Total |
| Participant Occupation | Sales, Clerical | Count | 7 | 1 | 8 |
| | | % within Participant Occupation | 87.5% | 12.5% | 100.0% |
| | Fisherman | Count | 10 | 14 | 24 |
| | | % within Participant Occupation | 41.7% | 58.3% | 100.0% |
| | Aquaculture | Count | 1 | 0 | 1 |
| | | % within Participant Occupation | 100.0% | .0% | 100.0% |
| | Attorney/Settlement House/Healthcare | Count | 2 | 2 | 4 |
| | | % within Participant Occupation | 50.0% | 50.0% | 100.0% |
| | Bait | Count | 0 | 1 | 1 |
| | | % within Participant Occupation | .0% | 100.0% | 100.0% |
| | Gear | Count | 0 | 1 | 1 |
| | | % within Participant Occupation | .0% | 100.0% | 100.0% |
| | Wholesale Seafood | Count | 5 | 2 | 7 |
| | | % within Participant Occupation | 71.4% | 28.6% | 100.0% |
| | Recreational industry | Count | 0 | 1 | 1 |

| | | | | |
|---|---|---|---|---|
| | % within Participant Occupation | .0% | 100.0% | 100.0% |
| Total | Count | 25 | 22 | 47 |
| | % within Participant Occupation | 53.2% | 46.8% | 100.0% |

**Participant Occupation * Concern for community health Crosstabulation**

| *4.10* | | | Concern for community health | | |
|---|---|---|---|---|---|
| | | | Highly concerned about community health | Not highly concerned about community health | Total |
| Participant Occupation | Sales, Clerical | Count | 4 | 4 | 8 |
| | | % within Participant Occupation | 50.0% | 50.0% | 100.0% |
| | Fisherman | Count | 10 | 14 | 24 |
| | | % within Participant Occupation | 41.7% | 58.3% | 100.0% |
| | Aquaculture | Count | 1 | 0 | 1 |
| | | % within Participant Occupation | 100.0% | .0% | 100.0% |
| | Attorney/Settlement House/Healthcare | Count | 4 | 0 | 4 |
| | | % within Participant Occupation | 100.0% | .0% | 100.0% |
| | Bait | Count | 1 | 0 | 1 |
| | | % within Participant Occupation | 100.0% | .0% | 100.0% |
| | Gear | Count | 1 | 0 | 1 |
| | | % within Participant Occupation | 100.0% | .0% | 100.0% |
| | Wholesale Seafood | Count | 5 | 2 | 7 |

| | | | | | |
|---|---|---|---|---|---|
| | | % within Participant Occupation | 71.4% | 28.6% | 100.0% |
| | Recreational industry | Count | 0 | 1 | 1 |
| | | % within Participant Occupation | .0% | 100.0% | 100.0% |
| Total | | Count | 26 | 21 | 47 |
| | | % within Participant Occupation | 55.3% | 44.7% | 100.0% |

**Participant Gender * Influence Crosstabulation**

| *4.11* | | | Influence | | |
|---|---|---|---|---|---|
| | | | High levels of influence | Low levels of influence | Total |
| Participant Gender | Male | Count | 18 | 18 | 36 |
| | | % within Participant Gender | 50.0% | 50.0% | 100.0% |
| | Female | Count | 4 | 8 | 12 |
| | | % within Participant Gender | 33.3% | 66.7% | 100.0% |
| Total | | Count | 22 | 26 | 48 |
| | | % within Participant Gender | 45.8% | 54.2% | 100.0% |

**Participant Occupation * Influence Crosstabulation**

| *4.12* | | | Influence | | |
|---|---|---|---|---|---|
| | | | High levels of influence | Low levels of influence | Total |
| Participant Occupation | Sales, Clerical | Count | 3 | 5 | 8 |
| | | % within Participant Occupation | 37.5% | 62.5% | 100.0% |
| | Fisherman | Count | 12 | 13 | 25 |
| | | % within Participant Occupation | 48.0% | 52.0% | 100.0% |
| | Aquaculture | Count | 1 | 0 | 1 |
| | | % within Participant Occupation | 100.0% | .0% | 100.0% |

| | | | | | |
|---|---|---|---|---|---|
| | Attorney/Settlement House/Healthcare | Count | 1 | 3 | 4 |
| | | % within Participant Occupation | 25.0% | 75.0% | 100.0% |
| | Bait | Count | 0 | 1 | 1 |
| | | % within Participant Occupation | .0% | 100.0% | 100.0% |
| | Gear | Count | 0 | 1 | 1 |
| | | % within Participant Occupation | .0% | 100.0% | 100.0% |
| | Wholesale Seafood | Count | 5 | 2 | 7 |
| | | % within Participant Occupation | 71.4% | 28.6% | 100.0% |
| | Recreational industry | Count | 0 | 1 | 1 |
| | | % within Participant Occupation | .0% | 100.0% | 100.0% |
| Total | | Count | 22 | 26 | 48 |
| | | % within Participant Occupation | 45.8% | 54.2% | 100.0% |

**Influence * Concern for conservation Crosstabulation**

| *4.13* | | | Concern for conservation | | |
|---|---|---|---|---|---|
| | | | Highly favors conservation measures | Does not favor conservation measures | Total |
| Influence | High levels of influence | Count | 10 | 11 | 21 |
| | | % within Influence | 47.6% | 52.4% | 100.0% |
| | Low levels of influence | Count | 15 | 11 | 26 |
| | | % within Influence | 57.7% | 42.3% | 100.0% |
| Total | | Count | 25 | 22 | 47 |
| | | % within Influence | 53.2% | 46.8% | 100.0% |

**Influence * Concern for future generations Crosstabulation**

| 4.14 | | | Concern for future generations | | |
|---|---|---|---|---|---|
| | | | High intergenerational concern | Low intergenerational concern | Total |
| Influence | High levels of influence | Count | 10 | 11 | 21 |
| | | % within Influence | 47.6% | 52.4% | 100.0% |
| | Low levels of influence | Count | 16 | 10 | 26 |
| | | % within Influence | 61.5% | 38.5% | 100.0% |
| Total | | Count | 26 | 21 | 47 |
| | | % within Influence | 55.3% | 44.7% | 100.0% |

**Influence * Concern for community health Crosstabulation**

| 4.15 | | | Concern for community health | | |
|---|---|---|---|---|---|
| | | | Highly concerned about community health | Not highly concerned about community health | Total |
| Influence | High levels of influence | Count | 12 | 9 | 21 |
| | | % within Influence | 57.1% | 42.9% | 100.0% |
| | Low levels of influence | Count | 14 | 12 | 26 |
| | | % within Influence | 53.8% | 46.2% | 100.0% |
| Total | | Count | 26 | 21 | 47 |
| | | % within Influence | 55.3% | 44.7% | 100.0% |

**High or Low participation levels * Influence Crosstabulation**

| 4.16 | | | Influence | | |
|---|---|---|---|---|---|
| | | | High levels of influence | Low levels of influence | Total |
| High or Low participation levels | High levels of participation | Count | 12 | 18 | 30 |
| | | % within High or Low participation levels | 40.0% | 60.0% | 100.0% |
| | Low levels of participation | Count | 10 | 8 | 18 |
| | | % within High or Low participation levels | 55.6% | 44.4% | 100.0% |
| Total | | Count | 22 | 26 | 48 |

| | | | | |
|---|---|---|---|---|
| | % within High or Low participation levels | 45.8% | 54.2% | 100.0 % |

**High or Low participation levels * Concern for future generations Crosstabulation**

| *4.17* | | | Concern for future generations | | |
|---|---|---|---|---|---|
| | | | High intergenerational concern | Low intergenerational concern | Total |
| High or Low participation levels | High levels of participation | Count | 15 | 14 | 29 |
| | | % within High or Low participation levels | 51.7% | 48.3% | 100.0% |
| | Low levels of participation | Count | 11 | 7 | 18 |
| | | % within High or Low participation levels | 61.1% | 38.9% | 100.0% |
| Total | | Count | 26 | 21 | 47 |
| | | % within High or Low participation levels | 55.3% | 44.7% | 100.0% |

**High or Low participation levels * Concern for community health Crosstabulation**

| *4.18* | | | Concern for community health | | |
|---|---|---|---|---|---|
| | | | Highly concerned about community health | Not highly concerned about community health | Total |
| High or Low participation levels | High levels of participation | Count | 14 | 15 | 29 |
| | | % within High or Low participation levels | 48.3% | 51.7% | 100.0% |
| | Low levels of participation | Count | 12 | 6 | 18 |
| | | % within High or Low participation levels | 66.7% | 33.3% | 100.0% |
| Total | | Count | 26 | 21 | 47 |

| | | | | |
|---|---|---|---|---|
| | % within High or Low participation levels | 55.3% | 44.7% | 100.0% |

**High or Low participation levels * Concern for conservation Crosstabulation**

| *4.19* | | | Concern for conservation | | |
|---|---|---|---|---|---|
| | | | Highly favors conservation measures | Does not favor conservation measures | Total |
| High or Low participation levels | High levels of participation | Count | 17 | 12 | 29 |
| | | % within High or Low participation levels | 58.6% | | |
| | Low levels of participation | Count | 8 | | |
| | | % within High or Low participation levels | 44.4% | 55.6% | 100.0% |
| Total | | Count | 25 | 22 | 47 |
| | | % within High or Low participation levels | 53.2% | 46.8% | 100.0% |

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