DISSERTATION

# VISIBILITY, LEGITIMACY, AND POWER:
# A NORTH CAROLINA FISHING COMMUNITY AND GOVERNANCE OF THE COMMONS

Submitted by

Candace K. May

Department of Sociology

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Doctoral Committee:

Advisor: Peter Leigh Taylor

Michael S. Carolan
Michael G. Lacy
Dimitris Stevis

ABSTRACT

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Researchers studying common pool resource (CPR) governance argue that the participation of natural resource dependent people in formal processes of natural resource governance is essential for the sustainability of those resources. In accord with the vast body of related research and political activism, the United States fisheries management system promotes co-management practices as the pathway to sustainable fisheries governance. Nevertheless, empirical evidence illustrates that local fishers are increasingly disappearing from the fishing industry and their communities at the same time as the degradation of fisheries is increasing. I examine this contradiction through a case study of a community of commercial fisherpeople in Two Rivers,[1] North Carolina. I develop the concepts of visibility, legitimacy, and power to capture the multiple levels and scales of structure and agency that shape the participation of local fishers in governance activities and lead to environmental degradation. Data was collected through interviews, observations, and review of policy documents and local archives. An important finding from this study is that many local fishers practice *active non-*

[1] Two Rivers is a pseudonym chosen by my stepfather, a commercial fisherman from the area.

*participation* – intentional non-involvement in formal political activities while instead engaging in informal fisheries governance activities. However, the political inactivity associated with active non-participation decreases the legitimacy and power of local fishers, hastening their disarticulation from the fisheries, further decreasing the efficacy of formal political processes and ultimately resulting in unsustainable fisheries governance. Through the active political participation of commercial fishers, there is hope and a way forward for the future of fisher livelihoods and the sustainability of the nation's fisheries.

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## DEDICATIONS

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# CHAPTER ONE

# THE CONTRADICTIONS OF FISHERIES GOVERNANCE IN THE UNITED STATES

A broad array of research on commons governance has illustrated that the democratic participation of natural resource dependent local people and communities in formal[2] processes of natural resource governance is essential for sustainable resource management and effective environmental governance. Swayed by the evidence from such research, as well as pressure from diverse political sources, governments across the world have implemented policies to decentralize natural resource governance arrangements. In the United States, the greater participation of local user groups in fisheries management is encouraged through co-management practices. The participation of local fishers[3] and their communities in the formation, monitoring, and enforcement of regulations and in the collection and analysis of data through cooperative research strategies is widely promoted as the pathway to sustainable fisheries governance. Nevertheless, empirical evidence illustrates that fishers and their communities are

[2] The term formal is used to delineate government promoted rules and regulations from the informal methods of governance based on the traditional knowledge and practices of local communities.
[3] The term 'fisher' and fisherpeople is used to identify all people engaged in commercial fishing activities – when discussing recreational fishers the relevant terms will be used. The vast majority of such people are men; and, as Kitner (2006) found, fisher-women identified with, and preferred the term fishermen. However, the gender neutral term fisher is used unless specifically referring to a fisherman or fisherwoman.

increasingly displaced from the fisheries they depend on, which are, at the same time, experiencing substantial degradation.

**The Fisherpeople of Two Rivers: A Contradiction to Commons Research**

I explore the contradiction between promotion of local fishers' participation in fisheries governance processes and the political and economic disarticulation of fisherpeople from the fishing industry, along with the increased degradation of fisheries and fisheries habitat from the perspective and experience of the fisherpeople of Two Rivers.[4] Two Rivers is located in the Albemarle-Pamlico estuary region of North Carolina. Although these fisherpeople are steadily losing their livelihoods, they are rarely involved in formal fishery governance processes. Furthermore, while they are very aware of the damage to the fishery and fishery habitat from coastal development, population growth and industrial phosphate mining, they are not involved in formal political activities to protect the resources they depend on for their livelihoods.

The fisherpeople of Two Rivers appear to be an anomaly with regard to commons governance research. Commons research has focused predominantly on cases where local natural resource dependent people have effectively organized to collectively govern the resources they depend on (Acheson 2006). This has encouraged the assumption that communities will collectively act, given certain characteristics, when their access to and authority over the natural resources they depend on are threatened (Ostrom 1990).

The fisherpeople of Two Rivers have many of the characteristics identified by Ostrom (1990; 2001; 2008) as contributing to successful collective action to govern common resources. These characteristics include: shared values, trust, small size, homogeneity, and attachment to and dependence upon the resource. The fisherpeople

[4] Two Rivers is a pseudonym chosen by my stepfather, a commercial fisherman from the area.

also have shared norms of reciprocity and trust, which exist as the "social capital" necessary to communicate, make binding agreements and arrange for monitoring and enforcement of access rights. Furthermore, the fisherpeople of Two Rivers have the ability to acquire accurate, relevant and timely information about the condition of the resource. The fisherpeople of Two Rivers also share motivation for self/group preservation and equality in the recognized right to participate in governance processes.

**Theoretical Framework: Visibility, Legitimacy and Power**

Going beyond Ostrom's (1990) model, the contradiction in fisheries governance in North Carolina raises questions of visibility, legitimacy and power. The links between visibility, legitimacy, and power capture multiple levels and scales of structure and agency that affect the participation of local fishers in governance activities and the environmental degradation that threatens the sustainability of the nation's fisheries. Visibility determines the issues up for debate and who participates and how in governance processes, as well as who is targeted by regulations and how. The visibility of resource user groups determines who has a legitimate right to participate in governance practices; and, finally, legitimacy consigns political power to actors. Visibility and legitimacy are flexible historical, political, and social characteristics, susceptible to manipulation by the referenced user-group or opposing user-groups.

The power of fishery stakeholder groups to manage their visibility and legitimacy is differentiated according to access to and control of resources. Furthermore, power represents more than political influence in particular decision making contexts; power is more broadly and deeply embedded in social structures. Power is a characteristic of bureaucratic imperatives and systemic processes, as well as groups. The manifest

structural power of bureaucratic imperatives and the latent structural power of systemic processes provide opportunities and constraints, which groups vie to use to manage their own and others' visibility and legitimacy in attempting to influence formal and informal governance of fisheries.

**Research Methods and Questions**

The data collection methods used for this project included: interviews with local fishers and non-fishers in Two Rivers, non-local fishers from the surrounding region, and fishery management personnel; participant observation in the community and during public fishery meetings held by the National Oceanic and Atmospheric Administration and North Carolina Division of Marine Fisheries; and, review of fishery and environmental legislation, policy documents and local archives. The research questions were designed to illuminate the agentic and structural components of power across three levels and two analytic scales of analysis.[5] The levels of analysis for this study are fishery stakeholder user-groups, the organizational level of the North Carolina fishery governance system, and systemic level processes as they are experienced in Two Rivers, North Carolina. The scales of analysis are the formal realm of fishery governance in North Carolina and the informal realm of fisheries governance in Two Rivers, North Carolina.

Within the formal realm of governance I examine the user-group and organizational levels of analysis. The user-groups I examine at this scale are conservation and recreational fishing interest groups and commercial fishers. Within the

[5] Scales are the spatial/geophysical, temporal, quantitative or analytical dimensions used to measure and study phenomena; levels are units of analysis at different points on a scale (Cash et al. 2006). Cross-level interactions are the vertical linkages among levels within a scale, while cross-scale interactions occur across different scales, which may be vertical or horizontal.

informal realm the levels of analysis are the group and systemic level processes; the groups here are local commercial fishers, local non-fishers, which include natives and older and newer non-native residents of Two Rivers, and conservational and recreational interest groups.

The first set of questions focus on the organizational level of formal fisheries governance.

I. What are the structural opportunities and constraints to the political participation of local fishers and other user groups?

    a. Who is involved in decision-making processes?

    b. How are opportunities and constraints used as resources by user groups to leverage influence in the decision-making process?

    c. What mechanisms exist for local fisher involvement in fishery management practices and how is local participation encouraged?

The second set of questions focus on the political competition of user groups within the formal governance system.

II. What is the capacity of local fishers and other groups to act?

    a. How do user groups negotiate their own and others' political visibility and legitimacy?

    b. How visible are the fisherpeople of Two Rivers and other groups to the fishery management structure; what does each groups do to acquire visibility or invisibility?

    c. In what ways do the Two Rivers fishers and other groups work to gain political legitimacy?

    d. What are the outcomes of political competition over visibility and legitimacy?

The third set of questions focus on informal governance activities within Two Rivers and the effects of systemic level processes on fisher livelihoods and the health of fisheries.

III. How is power to govern the natural and social commons demonstrated among the fisherpeople and other residents within Two Rivers?

   a. How are socio-economic transformations in the area affecting the health of the fishing commons and the agency of local fishers?

   b. How are the fisheries affected by the displacement of Two Rivers fishers from the fishing industry?

   c. How have socio-economic and demographic changes in the community altered the potential for informal local fishery governance?

   d. What are the benefits and costs for the commons of the loss of local forms of community based natural resource management?

**Chapter Overview and Summary of Findings**

The focus of this study is the empirical contradiction in fisheries governance in the United States. While the participation of local fishers is promoted for the sake of the sustainability of the nations fisheries, local fishers and their communities are increasingly disappearing from the fishing industry at the same time as the nation's fisheries are increasingly degraded. This contradiction leads to the logical question: if local participation and sustainability are the goals of fisheries management in the United States, why are local fishers unable to maintain their place in the industry and why is the sustainability of the nations fisheries threatened?

Based on field research conducted among the fisherpeople of Two Rivers and the surrounding areas, this study identifies the multi-level and scalar barriers and opportunities local resource dependent people face in collectively acting to maintain their place in the commons and govern the resources their livelihoods depend on. The concepts of visibility, legitimacy and power are used to explain the factors of structure and agency across levels and scales of analysis. These themes are further elaborated in the following chapters.

Chapter Two situates this research within the body of literature and research on commons governance and common pool resource (CPR) management. The focus of Chapter Three is the theoretical and methodological approach of this study. A more thorough introduction to the fisherpeople of Two Rivers, conceptualization of visibility, legitimacy and power as used in this study, and explanation of the research design and data collection methods are also presented in Chapter Three.

Chapters Four, Five, Six, Seven, and Eight present analyses of several levels and scales of governance in North Carolina fisheries. I start in the 'analytic middle.' The primary research question focuses on the contradiction between current fisheries policies that advocate local participation in management decisions and empirical evidence of the political and economic disarticulation of fisherpeople from the fishing industry, along with the increased degradation of fisheries and fisheries habitat. I want to know why Two Rivers fisherpeople are not involved in formal fisheries politics to protect their way of life. Therefore, Chapter Four is an analysis of the barriers and opportunities for local fisher participation created by the formal fisheries governance structure.

However, the structural barriers and opportunities of the formal fisheries governance system not only shape political activities, they serve as resources and platforms for competing user-groups. Political competition is the focus of Chapter Five, which examines how legitimacy and visibility are negotiated among recreational fishers, conservationists, and commercial fishers in relation to the opportunities and constraints of the formal fisheries governance. Examples are drawn from a current case where the attempts of conservation groups to protect sea turtles and the attempts of recreational fishers to win gamefish status for spotted seatrout converge with potentially disastrous

consequences for the commercial gill net fishery and, as a result, the entire coastal commercial fishing sector of North Carolina. A significant finding from this chapter is that there is a general, and intentional lack of formal political participation among commercial fishers.

In the course of my research I realized that a lack of formal political participation does not mean a lack of political activities or a lack of power. The informal governance system, therefore, is the topic of Chapter Six. I focus on the local fishers' relationship to fishery resources in Two Rivers. I explain the active non-participation of local fishers as a rational exercise of transformative power in response to their disadvantaged position in formal fisheries politics. Where local fishers lack the context-specific forms of capital necessary to successfully participate in formal processes of fisheries governance, they have an abundance of material and non-material resources essential for informal fisheries governance. This chapter also discusses the influence of conservation and recreational interest groups in the social realm, outside the formal fishery governance system, in the everyday lives of commercial fishers.

While the informal governance activities of Two Rivers fishers are quite discernable, so are the rapid changes brought about by population changes, coastal development, industrial phosphate mining, the transition from commercial to recreational resource use, and international seafood competition. Chapter Seven, therefore, focuses on the social, environmental, and economic consequences of these broad scale, systemic processes, which are experienced in the everyday lives of commercial fishers. Chapter Eight discusses the potentials and possibilities available to commercial fishers seeking a greater degree of control over the processes determining their lives and livelihoods and

the need to expand fisheries governance to environmental governance of fisheries to more effectively account and control for the broader systemic factors that affect the health of fisheries resources. Chapter Nine concludes with the implications of this projects for commons scholarship, as well as the practice of collaborative natural resource and environmental governance.

**Contributions to the Literature and Policies on Natural Resource Governance**

The concepts of visibility, legitimacy and power illuminate how political-economic processes and local socio-economic, demographic and political changes interact to shape local political capabilities and environmental and natural resource impacts. This study contributes to the literature on commons governance and common pool resource management (CPR) by examining three important factors that have been relatively neglected by commons scholars. First, whereas the CPR literature has predominantly focused on successful cases of community-based CPR management, this study seeks to learn from an unsuccessful case. Second, this study contributes a systemic explanation of how local participation in CPR management is influenced by broader socio-structural factors. And, third, this study adds an explicit analysis of power as a factor in unsuccessful collective action.

Furthermore, issues of participation and non-participation have broader ramifications for natural resource management policy and environmental governance. Governments across the world are implementing decentralized natural resource governance measures (Larson and Soto 2008). It is widely believed that involving local resource dependent people decreases the transaction costs of governance and increases the effectiveness of regulations, thereby promoting sustainable natural resource

management. Nevertheless, the present research reveals that local fishers often choose to refrain from participating in the formal political system by engaging in active non-participation. The result is a lack of legitimacy and political power among local fishers and their communities, thereby further decreasing their involvement in United States fisheries management, potentially lending to unsustainable natural resource management.

The great emphasis placed on democratic participation of local user groups as necessary for natural resource and environmental sustainability demands a greater focus on who is and who is not participating, and the associated consequences. Environmental sustainability rests at the juxtaposition of local agency and broader social, political and economic forces. The role that resource dependent people play in either ensuring or failing to ensure environmental sustainability is linked to their ability and/or willingness to engage the political system to maintain their place in the commons. Greater understanding of the factors that influence the political engagement of local actors in the midst of broader socio-economic changes is a necessary step toward understanding how tragedies of the commons occur and, thereby, how to design new forms of socially and environmentally sustainable development. My hope for this project is that it contribute not just a road map of the significant barriers faced by commercial fishers, but that it serve as an outline of the possibilities and potentials available to commercial fishers seeking a greater degree of control over the processes determining their lives and livelihoods.

# CHAPTER TWO

## LITERATURE REVIEW:
## GOVERNANCE OF THE COMMONS IN THEORY AND PRACTICE

The extensive body of research and political activism advocating commons governance has significantly influenced the implementation of collaborative natural resource governance arrangements across the world, including co-management of fisheries in the United States. The main tenet of collaborative governance is that the sustainability of natural resources is dependent upon the participation of natural resource dependent people in formal governance processes. This study presents a case where collaborative natural resource governance is promoted; but, essential resource dependent people are not involved in formal governance processes.

The literature and research on commons governance is comprised of two approaches to studying commons governance, one dominant and one critical. The dominant approach follows the neoinstitutional work of Eleanor Ostrom (1990) on common pool resources and common property regimes (CPR). The main objective of the CPR approach is to construct a generalizable framework for commons governance. The critical approach to commons governance focuses predominantly on the socio-historical contexts of commons governance, with the purpose of richly describing specific place-

based governance regimes (Klooster 2000; McCay and Jentoft 1998; Taylor 2010). This group includes those looking critically at decentralization projects (Agrawal and Ribot 2000; Larson 2003; Ribot 2003). While based on distinctly different explanatory models, both approaches developed out of a critique of Hardin's (1968) "Tragedy of the Commons" and Olson's (1965) "Logic of Collective Action." Critical commons scholars and CPR scholars share the goal of demonstrating the importance of local communities and institutions for sustainable societies and natural resource use. As a result, commons scholars often collaborate across approaches.

The first section of this chapter provides a review of the literature and research on commons governance with an emphasis on the CPR approach. The second section discusses the policies that have resulted from CPR research. The third section presents criticisms of the CPR research program, most of which stem from critical scholars of commons governance. The last section situates this study within the critical approach to commons governance and describes the contributions of this study to the literature and future research on commons governance.

**Common Pool Resources and Common Property Regimes**

Ostrom (1990) defines a common pool resource as a natural or man-made resource from which it is difficult to exclude or limit users once provided; and in which, one person's consumption of the resource decreases the quantity available to others. These are the excludability and subtractability problems of natural resource governance, respectively. Fisheries are a classic example of a common property resource. The ability to exclude harvesters is impeded by the difficulty of identifying and monitoring boundaries and populations; fish are a mobile, temporally and spatially variable resource

that exists in opaque, vast habitats (Policansky 2001). And, fish are finite; extraction by one user diminishes the amount available to other users. This characteristic is often assumed to create the incentive to overexploit the fishery as fishers compete to maximize harvest potential. The perceived problems of excludability and subtractability have resulted in policy prescriptions of privatized user rights or state control to ensure the conservation and, therefore, economic viability of the resource. These prescriptions have followed from two theoretical models.

The best known model is Hardin's (1968) "Tragedy of the Commons," which argues against the invisible hand thesis of Adam Smith (1937). Hardin (1968) depicts a fictitious situation where individual cattle herders maximize their own self interest by continually adding another cow to the grazing commons without regard to the impact on others. While the benefits gained from each additional cow are privately enjoyed, the damage to the commons is shared by the entire group. In contrast to the invisible hand thesis which claims that widespread social benefits are produced by the widespread pursuit of self-interest by individual actors (Smith 1937), Hardin (1968) claims everyone acting to maximize their own self-interests will result in the decimation of the commons to the detriment of all. Hardin (1968) used this example to make the argument that population growth needed to be controlled; but, his general thesis that the self-interest of individuals needs to be externally and coercively controlled has become predominant in natural resource policy discussions.

Before Hardin (1968), Gordon (1954) and Scott (1955) made a similar argument about fishery management, often referred to as the 'Fishermen's Dilemma' (Clark 1981). Similar to Hardin (1968), Gordon (1954) and Scott (1955) claimed that unlimited access

to fisheries will result in the decimation of the resource. As long as a fisher can earn above initial cash expenses plus opportunity costs there will be a tendency to exploit the resource to the point where the value of the catch falls below the cost of the effort (Scott 1955). "Wealth that is free for all is valued by none because he who is foolhardy enough to wait for its proper time of use will only find that it has been taken by another" (Gordon 1954: 135). In rational pursuit of self-interest, individuals enter a Hobbesian war of all against all, which leads to the overexploitation of resources.

The tragedy of the commons thesis and the 'Fisherman's Dilemma' explain resource and environmental degradation as a function of the rational action of individuals maximizing their own welfare. Mancur Olson's (1965) *Logic of Collective Action* explains why it is irrational for people to act collectively to ensure their mutual and continued benefit, including conservation of resources. Rather than the atomized, rational maximizer of Hardin (1968), Scott (1955) and Gordon (1954),Olson (1965) introduces a social perspective of the rational maximizer who considers the actions of others as they calculate the costs and benefits of their own actions. Olson (1965) wrote purposefully to counter the assumption of interest group theories that individuals with common interests would voluntarily cooperate to further those interests. He claimed the drive to maximize self-interest is inconsistent with voluntarily cooperating to further the interests of the group. Rational egoists will not act in the common interest because interest groups work to promote public goods, which are characterized by non-excludability. If one member of the group procures access to the good, all members have access. This characteristic makes it highly rational to free-ride, to enjoy the benefits of the collective good without contributing to the costs.

Olson claims that the propensity to free ride is a function of the size of the group. Free riding is least likely to occur in small groups where social pressure from interpersonal relationships based on friendship, status and prestige matter. As the size of the group increases the relative importance of each person's contribution to collective action decreases and anonymity increases, decreasing interpersonal forms of social control. Hence, Olson's (1965: 2) most cited passage:

> "Unless the numbers are quite small, or unless there is coercion or some other special device to make individuals act in their common interests, rational self interested individuals will not act to achieve their common or group interests."

These understandings of commons governance and collective action highlight the rationality of behavior that produces irrational outcomes, necessitating one of two policy alternatives. The first prescribes working with the self-interested nature of humans by privatizing access rights. Privatization is assumed to create incentives for sustainable stewardship in order to maintain profit margins. The second policy alternative recommends instituting centralized government control to mediate the destructive tendencies of egoistic behaviors.

According to CPR scholars, however, the rationale for relying solely on state control and/or privatization is premised on faulty assumptions about the nature of human actors and confusion between open access and common property regimes (Feeny, Berkes, McCay, and Acheson 1990; Ostrom 1990). The tragedy of the commons thesis and free-rider models over-emphasize the view of humans as *homo economicus*, rational maximizers seeking optimal fulfillment of short term self interest, without regard for the negative effects their actions visit upon others (Feeny, Hanna, and McEvoy 1996). *Homo economicus* is an abstract conception of human nature that has never existed in reality.

The real world is composed of individuals and social groups whose behavior may change across time and space according to complex interconnections between individual attitudes, beliefs, and motivations on the one hand, and the influence of historically constituted societal structures and relations, on the other (Polanyi 1957). While humans may indeed, in certain structural situations, act as 'rational' maximizers of self interest, multiple social influences actually govern, promote or constrain both individualistic and collective behavior (Ostrom 1990).

Simultaneously, the overemphasis on the rationality of self-interested actions obscures the differences between common property regimes and open access regimes. Under open access regimes, no one can be excluded and no limits exist on harvesting strategies, which results in overcapitalization and over-harvesting of the resource. In common property regimes, by contrast, a community of individuals develop enforceable means of limiting access and informal rules and understandings affecting harvesting strategies, without the external involvement of the state or privatized user rights. Documented methods used by communities to control access to common fishery resources and limit harvesting include: secrecy and information management about prime fishing locations, local ecological knowledge, tricks of the trade, group membership, sanctions against outsiders, and limits on gear (Acheson 1981; Leal 1998). Policies that promote centralized control or privatization of common pool resources ignore these existing social institutions. As a result, social bonds and responsibility are eroded, relationships are depersonalized, and resource users are transformed into the atomistic, self-interested, maximizing actors of Hardin's tragedy (Feeny, Berkes, McCay, and

Acheson 1990; Jentoft 2000), reinforcing the conditions favorable for free-riding behavior.

Centralized forms of management are criticized for displacing and disempowering local resource dependent communities (Jentoft 2007). Centralized, command-and control forms of natural resource and environmental management consist of policies that are implemented in a top-down manner through an extensive regulatory framework over a broad region that ignores the diversity of localized environments (Berkes, Feeny, McCay, and Acheson 1989; Charles 1994; Feeny, Berkes, McCay, and Acheson 1990; Feeny, Hanna, and McEvoy 1996; McCay and Jentoft 1996; Ostrom 1999). Centralized management is based on efforts to control an exceptionally complex system of resources, user groups, processors, and communities. Additionally, user groups and others with a stake in the resource have, at the most, limited decision-making power in the design and implementation of polices and regulations.

Market-based management measures, on the other hand, such as privatization of user rights are criticized for restructuring power relationships at the local level and permanently changing the social relationships between user groups (Jentoft 2007). While privatization has been noted to create some benefits in the fishing industry, there are numerous tradeoffs. Increased sustainability of fish population and increased profits are immediately offset by loss of jobs, decreased opportunities for young people to enter the field and, along with hired captains, a decreased chance to become vessel owners (Policansky 2001). Longer-term tradeoffs include concerns about the accumulation and concentration of privatized entitlements to resources, increased trends in unemployment, the loss of cultural heritages (Policansky 2001), and the equity of allocating a public trust

resource for private benefit (Macinko 1993). There is also significant concern over the loss of local ecological knowledge and local forms of governance and social control, which contribute to ecological sustainability (Berkes and Folke 1994; McCay and Jentoft 1996).

In opposition to Hardin (1968) and Olson (1965) and their subsequent policy prescriptions, Ostrom (1990) claims that rational actors are not necessarily self-interested maximizers. The choices people make about resource use and whether to collectively act to govern the commons are based on cost-benefit calculations of situational factors. Ostrom (1990; 2001; 2008) lists an extensive set of factors involved in whether people will act collectively. These include: a shared judgment that action is necessary for self/group perseverance; relative equality of costs and benefits; and, relatively low transaction costs. It is also important that shared norms of reciprocity and trust exist as "social capital," which includes a capacity to communicate and make binding agreements, the ability to arrange for monitoring and enforcement provisions, and shared norms of propriety, concepts of self-worth, social censure, and patterns of reciprocity. Other important factors include: well defined access rights, equality of access to participation in governance processes, access to conflict resolution arenas, minimal recognition of rights to organize by external authorities, and nested enterprises (Ostrom 2001; 2008). The ability to acquire accurate and relevant information and the ability to adapt and change are also listed as essential (Ostrom 2008).

These factors have been incorporated into one of the most used and developed methods for studying CPR governance, the Institutional Analysis and Development (IAD) framework (Carlsson 2000; Gibson, Andersson, Ostrom, and Shivakumar 2005;

Imperial and Yandle 2005; Rudd 2004; Stern, Dietz, Dolsak, Ostrom, and Stonich 2002). The focal level of analysis consists of an action arena, composed of actors in action situations, affected by a set of external variables. Interactions among actors within action situations lead to outcomes, which feedback into the external variables and the action arena. The external variables represent nature, society and the rules that govern nature-society interactions. The external variables are: the biophysical conditions (the physical environment of the action arena), the attributes of the community, and the rules-in-use. The ways the biophysical conditions affect the action arena depends on several characteristics of the resource. These include: subtractability and excludability (Ostrom 1990), scale, abundance, and complexity (Wilson 2002), resilience and vulnerability (Janssen and Anderies 2007), and mobility and containability. The nature of the resource is an important determinant of the design of institutional arrangements for access and use. Community attributes that are important include shared values, level of common understanding or trust, the size, and extent of heterogeneity. Rules-in-use are the shared understandings of formal and informal proscribed and prescribed actions.

The IAD framework has been widely tested and adapted. Much of the research has focused on the ability of communities to sustainably manage the resources upon which their livelihoods depend, without external interference. Sustainable management refers to the durability of social institutions that manage CPRs and resulting use practices that do not compromise the future use of a resource or the existence of the larger ecosystem (Berkes and Folke 2000; Ostrom 1990). Utilizing this parameter, CPR research has documented the successful collective action of communities to govern

forestry (McKean 1992), fisheries (Leal 1998), rangelands (Gilles, Hammoudi, and Mahdi 1992), and water irrigation systems (Ostrom 1990) across the world.

These success stories have forcefully challenged the models of Hardin (1968) and Olson (1965) and refocused attention on the importance of local level institutions. They have shown that legitimate regulation is more likely with decentralized management arrangements that give resource users, their organizations and their communities a clear stake in managing local resources, a degree of decision making power, and the responsibility, in coordination with the government, to ensure the sustainability of natural resources and the environment. CPR research has also illustrated that local participation decreases the high monitoring and enforcement costs of the regulatory structure. Most significantly, the work of Ostrom (1990) and similar approaches to research on CPR (Baland and Platteau 1996; McKean 2000) have demonstrated that the rationality of individuals can be harnessed for socially and environmentally beneficial outcomes by changing the rules-in-use and thereby the incentives and constraints that structure the actions of actors.

**Decentralizing Natural Resource Management: The Rise of Governance**

Over the last few decades, the extensive body of work by commons scholars illustrating the successful governance of natural resources by local communities and groups has influenced natural resource policies across the world (Agrawal 2003; Larson and Soto 2008). As Agrawal (2001) stated, although it is hard to argue that research on common property is solely responsible for the evident policy shifts toward decentralized, collaborative natural resource management across the world, the vast body of research and involvement of common property scholars in policy development has surely

informed current natural resource governance trajectories. Research on commons governance gained even greater credence when Elinor Ostrom was awarded the 2009 Nobel Prize in Economics. The Royal Swedish Academy of Sciences referred to the great extent and value of Ostrom's work on the ability of local user groups to sustainably manage common property resources without external involvement as the reason for the award (RSAS 2009). In addition to the work of commons scholars, a diverse array of political interests have also been influential in bring about a significant transition in the treatment and thinking of natural resources on a global scale, from management to governance.

Defining Governance

Larson and Soto (2008) define governance as the formal and informal institutions through which authority and power are conceived and exercised; it involves political-administrative, economic, and social organizations through which power and authority are held, negotiated and exerted. Natural resource governance (NRG) consists of those formal and informal institutions and organizations within which actors and groups of actors negotiate access, use and allocation of natural resources. Management has traditionally been an activity of government, undertaken in an exclusive and top-down manner with a focus on defining regulations, procedures and technologies based on a generalized/undifferentiated view of the relationship between and among humans and nature (Rist et al. 2007). Governance, on the other hand, is not government; it may include the actions of state organizations and institutions, but also encompasses actors across multiple levels and scales, such as resource user-groups and other stakeholders, communities, businesses, and non-governmental organizations (Lemos and Agrawal

2006). While there are many forms of governance consisting of any combination of collaboration between market actors, state agencies and communities, this study is focusing on those instances where the participation of, or collaboration with communities and local populations are explicitly considered important.

Collaborative or participatory natural resource governance challenges the customary separation between advocacy for nature and advocacy for people. People are seen less as a problem and more as part of the solution to land and natural resource degradation; when local populations are involved in the formation, implementation and enforcement of rules and regulations, those rules and regulations gain greater legitimacy, effectiveness and efficiency (Larson and Soto 2008). Collaborative governance challenges the top-down, command-and-control approach of the contemporary environmental regulatory framework by fostering decentralized decision making, stakeholder collaboration and citizen participation. It entails local, place-based projects, programs, and polices that aim to meld ecology with economics and the needs of the community in pursuit of symbiotic sustainability. According to Hibbard and Madsen (2003), the movement toward collaborative forms of natural resource governance in the United States is potentially the first resource management paradigm shift since the beginning of the 20$^{th}$ century when President Theodore Roosevelt, Gifford Pinchot and other conservationists invented a set of principles for management of public resources that resulted in the United States national park system.

The Movement for Natural Resource Governance in the United States

In addition to the research of commons scholars, the new era of collaborative natural resource governance in the United States is in many ways a direct response by a

variety of political interest groups to the landmark environmental policies of the 1970s and 80s (Weber 2000). A general consensus exists among advocates of collaborative natural resource governance that the command-and-control regulation instituted by the environmental legislation of the 1970s needs to be restructured (Kraft and Scheberle 1998). Many standards and overall management duties were centralized at the federal level, which delegated day-today programmatic responsibilities to sub-national states (Kraft and Scheberle 1998). Sub-national states chaffed at the increased costs of implementing the environmental regulations, the degree of federal micromanagement, and limited flexibility. The new environmental regulations instigated strong opposition from corporate interests, who saw them as causing unnecessary expenses and irrational constraints on operations (Sousa and Klyza 2007). Many natural scientists and conservationists were also dissatisfied. Command-and-control natural resource management focused on single species management; it did not take into account the complexity of ecosystems. Meanwhile, the notice-and-comment processes instituted by the National Environmental Policy Act (NEPA), Federal Advisory Committee Act (FACA), and National Forest Management Act (NFMA) were seen as causing inefficiency, excessive costs, delays, and an entrenched adversarial climate that focused debate on procedural questions rather than problem solving (Fairfax et al. 1999).

The notice and comment approach consists of the requirement of agencies to publish all new proposed regulations in the *Federal Register* at least 30 days before they take effect; and, they must provide a way for interested parties to comment, offer amendments, or to object to the regulation (Sousa and Klyza 2007). In this way, decision making processes were opened to greater participation by public interest groups who

could bring lawsuits against government and business agencies to enforce accountability and environmental protection. The general idea was that the policy process would be more democratic if interest group conflict occurred in the legislative process, and potentially courts, rather than excluding some interests in the name of streamlined processes governed by scientific and technical experts and economic interests.

Critics point out that while the notice-and-comment process provides a control on agency capture by special interest groups, it often restricts, limits, and constrains public involvement in decision making processes (Brunner 2002; Bryan 2004). The process can be unjust for those who feel disenfranchised by administrative procedures, lack easy access to the courts or appeal processes, or lack the expertise to understand complex issues explained through technical language. The win/lose outcomes of the process exclude opportunities to share information and gather indigenous and experiential knowledge. The process does not lend itself to uncertainty, learning, or adaptation; outcomes are frozen by legal and administrative procedures. Furthermore, progress is often gridlocked as decisions are appealed and litigated. Overall, conventional decision-making does not foster shared ownership of the larger problem; it perpetuates a compliance culture focused on rule adherence (Bryan 2004). Collaborative governance by contrast is expected to mitigate this conflict and lead to more effective, efficient and flexible policy choices by "bringing society back in" (Brunner 2002; Sousa and Klyza 2007).

*The Arguments for Decentralized Natural Resource Governance*

Mirroring the arguments of commons scholars, the environmental politics of the 1990s were characterized by an emerging skepticism about the efficacy of centralized

federal environmental management and the belief that local and regional efforts would be more successful (McCarthy 2005). This was accompanied by increased recognition of the need to manage across scales and territorial borders. Social scientists and pressure groups advocating for collaborative management criticized the separation between advocacy for nature and advocacy for people in attempts to link environmental degradation to problems of social justice, rural poverty, and indigenous rights (Brosius, Tsing, and Zerber 1998). The collaborative management movement was also directed against free market environmentalism, which argues against the involvement of states in the regulation of environmental and natural resources, and neoliberal environmentalism, which claims state-backed privatized property rights of all valuable environmental assets is the best way to ensure rational, efficient management (Berkes, Armitage, and Doubleday 2007; Hay 2002).

Collaborative natural resource governance has been advocated as the alternative to the either-or of states and markets (McCarthy 2005; Ostrom 1990). Collaborative efforts are premised on the idea that decentralized decision making involving states, markets and communities increases the legitimacy of governance systems and decreases the transaction costs of governance: the costs associated with information gathering, monitoring, and enforcement (Ribot, Agrawal, and Larson 2006). Local communities and local actors are believed to have a greater interest in the sustainable use of resources than distant corporate interests. They are more aware of the intricacies of local ecological and social practices and processes, which encourages more effective information gathering, monitoring and enforcement. Collaborative efforts are also described as having qualities that remedy the failures of traditional command-and-control

management processes; they are more responsive, flexible, and likely to work toward compromise and workable solutions, as opposed to state bureaucracies that are slow, rigid, and paralyzed by diverse constituents.

Furthermore, decentralized governance arrangements are said to promote better and more accurate data collection. Command-and-control forms of natural resource management depend on accurate information about stocks, flows, and processes regarding social-ecological interactions (Dietz, Ostrom, and Stern 2003). However, the great extent of variance among regions and systems, the complexity of natural and social systems, and a great extent of uncertainty make predictions based on such information highly suspect (Frid et al. 2006). Decentralized governance arrangements are better adapted to an understanding of the limited capacity to monitor, predict, and control natural systems (Wilson 2007). Decentralized management arrangements not only reduces transaction costs and increase the legitimacy of regulations, but encourage the sharing of knowledge and information, which leads to systemic learning between all parties and quicker response rates to ecological changes.

As the epitome and heart of this process, the institutions of local resource dependent people are believed to have developed from intimate experience with small scale, local ecologies and long time series of many successes and failures (Dietz, Ostrom, and Stern 2003). Local-level institutions learn and develop the capability to respond to environmental feedbacks faster than centralized agencies (Davidson-Hunt and Berkes 2003). They are physically closer to, and directly dependent upon the resource, which fosters the accumulation of practical, local ecological knowledge based on extensive learning by doing. Armitage, Berkes, and Doubleday (2007) explain that the transference

of local knowledge and learning across scales and levels of social organization is accelerated through a double loop process. Transformative learning resolves fundamental conflict over values and norms, and promotes change in the face of significant uncertainty. This creates feedbacks of iterative problem solving, involving a learning-by-doing element and giving rise to flexible, adaptive, effective, and efficient natural resource governance.

Notions about the effectiveness of decentralized natural resource governance within the commons literature and associated policy prescriptions stem from the work of pragmatists, such as Dewey (1960) and institutional economists, such as Ayers (1961) and Tilman (1987). Democracy is seen as a self-correcting process of inquiry. Fundamental errors of outlook are corrected as awareness of their discordance with reality becomes more pronounced with the passage of time. While scientific understandings of coupled human-biophysical systems are always incomplete, this incompleteness allows room for further learning and adaptation (Dietz, Ostrom, and Stern 2003). Loasby (1986: 44) referred to science as an "imperfectly specified contract;" the confrontation between an interpretive framework and the phenomena it is intended to comprehend leads to the strengthening, adaptation or replacement of that framework. In this way, knowledge is expanded through failure in a process North (1990) terms adaptive efficiency; the greater the number of people involved, the greater the number of trials attempted, the greater the diffusion of knowledge and the probability of determining best governance practices.

Various terms used to discuss decentralized collaborative natural resource governance projects include social and community forestry, community wildlife

management, cooperative or co management, buffer zone management, participatory community projects, communal area management, and community-based collaboration (Kellert et al. 2000). All of these collaborative governance arrangements share essential characteristics. They all aim to create a management plan that satisfies local needs and concerns while conforming to state and federal laws. They all demonstrate a commitment to involve relevant stakeholders/and or community members, depending on the scale of the issue, in management and conservation of natural resources. Each advocates to some extent the decentralization of power, authority, and responsibility from central and/or state government to more local institutions and people. They all aspire to link and reconcile the objectives of socioeconomic development and environmental conservation and protection. And, collaborative methods promote incorporation of traditional values and ecological knowledge in modern, scientific natural resource management. In sum, they emphasize stakeholder access to and benefits from natural resources; local participation in all stages of conservation and management; flexibility, innovation, and voluntary compliance rather than rigid command-and-control conservation strategies; and attention to place-specific conditions and local knowledge (Armitage et al. 2009).

*The Practice of Decentralizing Natural Resource Governance in the United States*

Importantly, the push for decentralized natural resource governance efforts in the United States did not emerge from social and natural scientists working within the commons framework and assorted advocacy groups alone. As Buttel (2003) noted, much of the thrust for collaborative environmental and natural resource governance in the 1990s originated from within the federal government. The introduction, diffusion and

institutionalization of collaborative management occurred largely during the Clinton Administration (McCarthy 2005). The Reinventing Government task force headed by United States Vice-President Gore made significant reforms to NEPA to allow for public-private partnerships and collaborative relationships across agencies, communities and businesses (Brunner 2002; Dryzek 2005). A few outcomes of this era of "reinvention initiatives" included Habitat Conservation Plans (HCPs) and the Negotiated Rulemaking Act of 1990 (Sousa and Klyza 2007).

HCPs came out of an amendment to the Endangered Species Act (ESA) in 1982; Section 10 created flexibility in regulating the incidental take of endangered and threatened species. Resource managers, resource dependent people or land owners could submit a HPC, which documented potential harm and means of mitigating that harm to threatened species in order to acquire an Incidental Take Permit (ITP). ITPs permit the potential harming of protected species or habitat in order to allow the continuation of important economic activities.

HCPs were supported by ecologists as a means to foster broader ecosystem-based governance and political strategies (Sousa and Klyza 2007). Ecologists approved of the broader focus on habitat protection, rather than the sole focus on species protection of the ESA. In accord with ecosystem-based management strategies, effective species protection requires participation by private landowners, resource dependent people and natural resource managers; but, it was considered unlikely that property holders or resource dependent user groups were going to accept sharp restraints on the use of resources or that resource-strapped federal agencies would be able to compel compliance with ESA. HCPs create incentives to participate in species and habitat protection.

Politically, whereas HCPs met the Clinton Administration's desire to combine economic and environmental interests, conservatives in Congress saw them as means to curtail the role of federal government in species protection, relying instead on states, voluntary compliance, economic incentives, and conservation through commerce (Sousa and Klyza 2007). Thereby, HCPs became a core component of emerging collaboration efforts.

The Negotiated Rulemaking Act further transformed the formal process of natural resource management by instituting more flexible and participatory voluntary programs. Clinton's Executive Order 12866 of September 30, 1993 directed federal agencies to use consensual mechanism for developing regulations, including negotiated rule making whenever possible (Sousa and Klyza 2007). Congress mandated that all parties significantly affected by a rule would be allowed to participate in the development of the rule. Instead of the formal notice-and-comment process instituted by NEPA, interested parties are brought together to negotiate the text of a proposed rule before that rule is published in the *Federal Register*. The benefits of the process are cooperation, shared information, knowledge, expertise, and technical abilities. This process, sometimes called front-loading, also smoothes over conflicts that might arise after a consensus on a rule is reached, and before the rule is published in the *Federal Register*. Front-loading speeds up implementation of policies and smoothes the way though court and litigation processes, where judges take the extent of collaborative efforts into account.

Subsequently, several federal agencies issued guidebooks that promote decentralized, consensus-oriented policymaking (Leach, Pelkey, and Sabatier 2002). For example, in 1999 the EPA issued *Community-Based Environmental Protection*. NOAA issued *Watershed Restoration: A Guide for Citizen Involvement in California* in 1995,

which calls for a new cooperative approach to watershed protection involving state, tribal, federal, local governments and the public in identifying watersheds with the most critical water quality problems and working together to focus resources and implement effective strategies to solve those problems. The United States Forest Service and the Department of the Interior have called for a greater role for citizen stakeholders in completing watershed assessments monitoring pollution sources, and planning and implementing restoration efforts through collaborative stewardship approaches.

The G.W. Bush Administration embraced and accelerated many of the central tenets initiated by the Clinton Administration – devolution, voluntary participation, and public-private partnerships (McCarthy 2005). Executive Order 13352 of August 26, 2005 promoted bottom-up use of cooperative conservation methods (Nie 2008). This initiative was rooted in the concept of the citizen conservationist who cares for the land, while still living and working on land. Charter forests were proposed; one or two national forests would be removed from the jurisdiction of the Forest Service and managed by local groups (McCarthy 2005). In 2002, the proposed Healthy Forests Initiative advocated waiving portions of NEPA to remove excessive red tape and excessive litigation in order to alter the hands-off approach to forest management that was blamed for the prevalence of costly forest fires. The Forest Service was ordered to reduce bureaucracy and speed up on thinning of forests on public lands. Interestingly, while the initiatives of the Clinton Administration were seen as advancing participatory democracy, many of the Bush initiatives were criticized for advancing the interests of extractive industries (Nie 2008).

Collaboration in fisheries management has evolved in many similar ways as other forms of natural resource management. The primary fisheries legislation, the Magnuson Act and its amendments, the Sustainable Fisheries Act and the Reauthorized Act have instituted collaborative management into United States fisheries governance. Cooperative management arrangements have been implemented through Community Development Quotas for tribal people in Alaska and the Northwest Pacific region (Pinkerton 2003) and cooperative groups in New England and Maine (Hartley, Gagne, and Robertson 2008), cooperative research projects (Hartley and Robertson 2006), and the creation of extensive platforms for public participation in public forums and councils, commissions and committees (Hanna 2003).

**Problems with Decentralization: Criticisms of Commons Research**

The importance of local ecological knowledge and decentralized governance processes involving the participation of local communities and populations for sustainable governance of natural resources and the environment has infiltrated governments across the world, including the United States fisheries management structure. However, decentralization rarely results in greater democracy, authority or power for local level user groups, which has direct consequences for the sustainability of natural resources. This fact has been extensively documented in developing and developed countries (Agrawal and Chhatre 2007; Andersson, Gibson, and Lehoucq 2006; Lane 2003; Larson and Soto 2008; Nelson and Agrawal 2008; Ribot 2003).

In Africa, Asia and Latin America, decentralized forest management policies have not resulted in more efficient or equitable-use and management; a lack of accountability and representation have created barriers to realizing the promises of decentralized

governance (Ribot 2003; Ribot, Agrawal, and Larson 2006). Cases of decentralization in irrigation water sectors have also shown shortcomings in performance, equity and impacts on agricultural production and farm income (Meinzen-Dick 2007). Similarly, while fisheries governance in the United States involves the decentralization of responsibility for monitoring and enforcement, these efforts have been criticized for consolidating the authority and power to make decisions at the federal level. Pinto da Silva and Kitts (2006) criticize the role of advisory groups as legitimating the governance process with no real input into decision-making. In this process, most participation by fishers is limited to occasionally attending regional council meetings and keeping up with the ever-changing regulatory environment. Furthermore, decentralization polices have continued to exclude rural communities in many cases (Larson and Ribot 2007).

The majority of decentralization projects have failed to live up to the expectations created by the vast number of successful cases of commons governance documented by CPR scholars. CPR researchers have always recognized the dangers of panaceas or generalized blue-print approaches to decentralized natural resource governance (Baland and Platteau 1996; Meinzen-Dick 2007; Ostrom 1990; Ostrom 2007). However, there are a few tendencies inherent to CPR research that encourage generalized blue-prints, thereby promoting support for less than successful decentralization projects. These tendencies include an overwhelming emphasis on success stories, a goal of constructing universal design principles, and limited theoretical and methodological tools.

There are two reasons for the strong focus on successful cases in CPR research. First, CPR researchers aimed to prove that communities could successfully manage common resources without external government control or privatization of user rights,

thereby disproving the "tragedy of the commons" (Hardin 1968) and the free-rider (Olson 1965) perspectives (Agrawal 2002; Feeny, Hanna, and McEvoy 1996). While CPR research is to be lauded for demonstrating the importance of local level institutions, the predominant focus on success cases does not allow for a full understanding of why some communities are unsuccessful. The result is an incomplete understanding of the factors that contribute to successful collective action for the governance of the commons and faulty policy prescriptions.

Second, CPR research sought to construct universal design principles intended to encourage community empowerment and sustainable resource use (Goldman 1997; Ostrom 1990). The Institutional Analysis and Development framework is the outcome of this mission. However, critics have observed that in addition to being premised on incomplete information, CPR scholarship and the IAD framework suffer from theoretical and methodological problems (Goldman 1998; Johnson 2004; McCay 2002; Scoones 1999; Taylor 2003).

CPR scholars tend to employ a deductive model of individual decision-making and rational choice to explain the ways different types of property rights arrangements emerge and change over time (Baland and Platteau 1996; Ostrom 1990) and space (Wade 1987). The methodologies vary widely from case study research to cross sectional analysis, controlled experimentation, and comparative historical analysis. The explanatory models that underlie these techniques include rational choice, game theory, and what some have termed historical institutionalism (Johnson 2004), all of which fall under neoinstitutional economic and political theory. While neoinstitutionalsim improves upon the homo-economicus model of human behavior by adopting a view of rationality

as bounded – by situational contexts and personal histories (North 1990; Von Hayek 1945; Williamson 2000), it is still rooted in methodological individualism, which privileges individual rationality over historical and cultural contexts as drivers of actor's behavior (Rutherford 1994). The reliance on methodological individualism and formal modeling sacrifices historical specificities in favor of a scientific frame capable of testing falsifiable propositions about human behavior. As a result, communities and their governing institutions are seen as the aggregate outcome of individual action, readily manipulated by changes in incentive structures (McCay 2002; McCay and Jentoft 1998; Scoones 1999).

Scholars of the critical approach to commons studies describe the analytic perspective of CPR as "thin" (Klooster 2000; McCay and Jentoft 1998; Taylor 2000). Generalizing the rules and incentives necessary for successful management regimes decontextualizes common property arrangements and portrays communities and local institutions as static and locally bounded (Taylor 2010). Whereas communities and institutions are the product of contested social practices that are culturally and historically embedded, the neoinstitutional and rational choice literatures often represent them as decontextualized, fixed organizations (Scoones 1999). The internal differences and asymmetries that guide the interactions of individuals within communities are ignored, including the plurality of beliefs, norms, and interests that stem from differences in gender, race and class (Agrawal and Gibson 2001; Ilahiane 2001; Meinzen-Dick and Zwarteveen 2001). Attention to historical contexts is traded for generalizability. As Johnson (2004) explained, when the past is used to inform the creation of generalizable principles of commons governance, the peculiarities of place-based history are sacrificed.

The drive toward generalizability creates a tendency "to ignore how the local is often created in conjunction with the external non-local environment" (Agrawal 2001: 1657). Although there is much discussion of the need to consider polycentric governance arrangements (Andersson and Ostrom 2008: 1657; Ostrom 1990), cross-scale linkages (Berkes, Armitage, and Doubleday 2007), or networks (Carlsson and Sandstrom 2008), there has been relatively little work in these areas. Yet, analysis across multiple levels is important. Local capabilities and possibilities shape and are shaped by extra-local political-economic structures and circumstances. Scholars who neglect this fact risk attributing the successes or failures of commons management exclusively to the community, or to flaws in collective action more generally, without full consideration of contributing factors (Taylor 2000). As Goldman (1998: 21) stated:

> "Among many of the well-established (and mostly northern) scholars and commons professionals, there is a fundamental tension between knowledge production and historical consciousness, a tension between casting a blind eye towards the destructive forces of capitalist expansion onto the commons and a broad smile that beams at the ''underskilled'' local commoner who defies all odds by protecting the commons."

The result is an incomplete understanding of why a community may have characteristics defined by Ostrom (1990) as essential for successful commons governance, but still represent a failed case of collective action.

Critical commons scholars call for "thicker" explanations following Geertz's (1973) classic "thick descriptions," where investigators supply rich textual accounts of complex cultural phenomena (Klooster 2000; McCay and Jentoft 1998; Taylor 2000). Thicker descriptions enable a more explicit linking of the many dimensions of CPR management situated in socio-political and historical contexts. It illuminates the constraints and opportunities for local common property arrangements created by the

political economy, while also giving greater insight into struggles over norms of resource use and the motivations underlying collective action (Taylor 2000). Thick analyses that explain the multiple levels, within which CPR regimes are embedded contribute to theory by illuminating social institutions as historical processes of conflict and cooperation rather than static complexes of roles and incentives for individual action (Taylor 2000; 2003; 2010).

**The Contributions of this Study to CPR Research: Thick Description**

I followed the advice of critical scholars for thicker descriptions by exploring the linkages between visibility, legitimacy and power as factors in the participation of local fishers in Two Rivers, North Carolina fisheries management. As a result, this approach makes three contributions to the literature and research on CPR. First, this research examines a local group of fishery dependent people who have not acted collectively to maintain their place in the commons. CPR research has not only documented successful cases of commons governance, but has focused predominantly on such situations (Acheson 2006). There are very few explanations of why resource dependent people do not collectively act to protect their place in the commons.

Unsuccessful cases are automatically assumed to be cases of locally-originating collective action problems, without consideration of ties to external political structures and economic markets, changes in population, or political conflict (Agrawal 2001; Campbell, Jong, Luckert, and Matose 2001). For example, Taylor and Singleton (1993) claimed that collective action problems stem from *insufficient community*, defined as a lack of stable relations across a broad range of social arenas based on shared beliefs and preferences. Taylor and Singleton (1993) considered any external interventions as signs

of insufficient community, rather than potential sources of those problems. This focus on community failure ignores the fact that communities are socio-historically situated in multiple levels and scales of governance.

Second, this project examines factors that affect local involvement in governance processes across multiple levels and scales of analysis. The levels include social groups, the organizational structure of the North Carolina fisheries governance system, and systemic level processes. The scales are the formal and informal realms of fisheries governance. In this study, the formal governance system is comprised of state organizations and institutions, and the actions of resource user-groups and other stakeholders directed to influence the actions of state organizations and institutions. The informal governance system consists of the activities and institutions that govern the relationship of local actors with the resources of the fishery but are not purposefully directed toward influencing the formal management of fisheries. These activities and institutions may oppose, replicate, or exist outside the purview of the formal governance system. Although scholars of environmental and natural resource governance recognize the coexistence of both the formal and informal realms, distinguishing between the two is important.

The differentiation between informal and formal systems of governance directs attention to the issue of participation. The assumption within CPR research and participatory natural resource management in practice is that stakeholder participation is a process where individuals, groups and organizations choose to take an active role in decision-making processes that affect them (Reed 2008). This conception of stakeholder participation is problematic for determining whether the relevant and important actors are

involved. While much is said of the importance of ensuring the 'right' participants are involved, there is a general lack of discussion in the research and policy prescriptions of how actors are chosen, drawn in to, or legitimized to participate in commons governance. Consequently, there is little discussion of how actors are excluded from participation in formal governance activities. Some communities actively choose to forgo formal organizational activities, rendering their part in governing the commons invisible, yet in no way less important. The traditional focus of commons research on groups and communities that are visibly and actively engaged in governance activities overlooks this important aspect of commons governance, the informal realm of governance as separate and consisting of seemingly inactive participants. This raises important questions regarding assumptions about the relationship between democratic participation and sustainable governance of natural resources and the environment.

Third, in addition to contributing a thick description of a negative case of collective action, which considers multiple levels and scales of analysis and processes of stakeholder legitimation, this project adds an explicit analysis of power in fisheries management to both the CPR and critical approaches to commons governance research. Within the critical approach to commons research, analyses of power are implicit in critiques of centralized forms of natural resource management (Charles 1994; Feeny, Berkes, McCay, and Acheson 1990; Feeny, Hanna, and McEvoy 1996; McCay and Jentoft 1996; Ostrom 1999), market-based initiatives and property rights (Jentoft 2007; Macinko 1993; McCay and Jentoft 1998; Policansky 2001), and the replacement of local ecological knowledge by scientific knowledge (Bennett 2000; Berkes 1999; Durrenburger and King 2000; Nadasdy 1999; 2005; Palsson 1991). However, explicit

analyses and acknowledgement of power as a determinant of collective action and effective local governance have been relatively neglected (Clement 2010; Jentoft 2007).

Power is also implicit in the emphasis on individual agency by neoinstitutional and rational choice perspectives, which are prevalent in CPR research. Yet, power exists as more than the agentic capabilities of actors. Power is entrenched in the legislated imperatives of organizations and systemic processes of domination; and, it is perpetuated by a variety of means and motives (Weber 1978) in the daily enforcement of social and political practices (Foucault 1980). As early as the 1980s, scholars criticized studies of the commons for overly focusing on local rules and overlooking underlying socio-economic and historical change and extra-local political forces (Bryant and Bailey 1997; Muldavin 1996). Discontent with these shortcomings led, in part, to the development of political ecology (Blaikie 1985; Blaikie and Brookfield 1987), while an area of study developed specifically to study the results of the decentralization policies.

Political ecology built on political economy to link environmental change and the decisions of local resource users with existing political, economic and social inequities (Blaikie 1985; Blaikie and Brookfield 1987; Bryant and Bailey 1997). Largely inspired by neo-Marxist theories, early political ecology studies denounced capitalist economies as responsible for enclosing the commons (Muldavin 1996). The enclosure movement consisted of the appropriation of commonly managed natural resources away from locals, leading to land degradation and community disempowerment.

Decentralization studies also give politico-economic contexts a central role in the decisions of local civil servants and institutional performance (Andersson, Gibson, and Lehoucq 2006; Larson 2003; Ribot 2003). Such studies in Africa, Asia and Latin

America illustrate that centralized power over decision-making, information and financial resources are rarely transferred to local governments (Ribot 2003; Ribot, Agrawal, and Larson 2006). Furthermore, when aspects of power are actually decentralized from state to local organizations, it does not necessarily lead to the greater participation and empowerment of all stakeholders (Agrawal and Ribot 2000). Central governments often retain control of implementing decentralization projects by limiting the kinds of power that are transferred and choosing the local institutions and/or representatives that serve and answer to central interests (Ribot, Agrawal, and Larson 2006).

Both of these types of studies illustrate the need for CPR research, and commons governance research in general, to explicitly consider how the design and sound implementation of adequate rules at the local level is significantly constrained by power located at higher governance levels and within the structure of the political-economy. Implicit considerations of structural power does not adequately explain the relationships between agency and structure that affect commons governance. While recognizing the agency of local actors is important, there is a need for commons research to explicitly consider structural forms of power. The concepts of visibility, legitimacy and power capture multiple levels and scales of structure and agency that shape the participation of Two Rivers fishers in governance activities and lead to environmental degradation. The following chapter introduces the fisherpeople, place and significance of Two Rivers, North Carolina and explains the theoretical approach and data collection methods used in this study.

# CHAPTER THREE

## STUDYING VISIBILITY, LEGITIMACY AND POWER AMONG THE PEOPLE AND PLACE OF TWO RIVERS, NORTH CAROLINA: THEORIES AND METHODS OF DISCOVERY

The fisherpeople of Two Rivers, North Carolina are losing their livelihoods to increasing fishery regulations and environmentally destructive development practices. However, they are not collectively acting to protect their place in the fishery commons or the environmental health of fishery habitat, even though there are ample opportunities for participation in formal fishery governance processes. When asked why, the fishers of Two Rivers consistently state that participation in fishery governance processes is a waste of time. They claim the fishery governance system is biased against them; the course of action is already decided before meetings are held; and, where there is room to influence policy, the sports fishers and environmentalists get their way. As will be discussed below, these claims illustrate what Mann (1993) would term the infrastructural and despotic power of the fisheries governance system, as well as political competition over visibility and legitimacy among user-groups with differential transformative capacities.

The concepts of visibility, legitimacy and power are used in this study to explain why the fisherpeople of Two Rivers are not actively involved in formal processes of

fisheries governance in order to protect their place in the fishing industry and the sustainability of the fisheries they depend upon for their livelihoods. First, I discuss my relationship to the community. I then introduce the place and people of Two Rivers, and explain their significance for this study. Third, I conceptualize power as it is used in this study; visibility and legitimacy are conceptualized and their connection to power in fisheries governance is explained. The fourth section presents the data collection methods I used to empirically explore the way these factors are affecting the role of Two Rivers fisherpeople in fisheries governance processes, and the causes for the decreased sustainability of fisheries.

**My Relationship to, and Interest in Two Rivers, North Carolina**

I gained access to the people and place of Two Rivers through my mother and stepfather, who are members of the community. My mother has lived in the area since the early 1990s. While my step-father grew up in the area, he was born in Virginia Beach, Virginia and moved to Two Rivers when he was a child. My personal interest in this case is a driving force behind this research project. My step-father is a commercial fisher in the area; and, he and my mother have been effected by the socio-economic transformations in the fishery and community.

My initial interest in conducting a research project on the experiences of Two Rivers fishers began with the stories and snippets of current events gleaned from my step-father. In the 1960s, when my step-father and his family moved to Two Rivers, his father and uncle brought the first crab pots[6] to the region with them from Virginia. In the 1950s, crab pots were used to harvest roughly 30 percent of the total blue crab landed in

[6] Crab pots are enclosed wire cubicles with four openings to allow crabs to enter, lured by bait. Once through the openings the crabs cannot escape. Cull rings are inserted in the wire mesh of the pot to allow small crabs to escape. The pots are 2ft by 2ft by 2ft and weigh approximately 15 pounds.

North Carolina. Today, there are approximately 800,000 crab pots, which are used to harvest 95 percent of the total blue crab landed in the state. North Carolina is ranked first in blue crab harvest in the United States with 28.8 million pounds harvested in 2009 (NCDMF 2010b). Before crab pots, the locals trout lined[7] for crab and harvested fish and crabs with beach seines[8]. My step-father was six or seven when he first started crab lining, 11 or 12 when he started gill netting[9] for trout before school in the winter time, and 13 when his father gave him his first crab (trout) line boat.

Times started getting tough for the local fishers of Two Rivers in the 1990s. Regulations were increasing faster than the fishers could adapt. Areas were closed completely to all commercial fishing or to specific harvesting techniques, such as trawling[10]; restrictions were placed on the times and days commercial fishers could be on the water; and, new requirements for bycatch reduction devices to reduce the unintentional catch of non-targeted species, such as turtle excluder devices (TEDs)[11] were put in place. My step-father explained how the frustration of local fishers was expressed

[7] Trout lines, also known as a trotlines, are a baited, long stout lines, weighted on the bottom with two to three feet of galvanized chain and attached to buoys at either end. Bait, often salted eel or bull lip is tied to the line with a slip knot every four to five feet. The line is usually set parallel to shore, in water five to 12 feet deep. The line is either pulled in by hand or with a mechanical pulley system. A dip net is used to collect the crabs off the line.

[8] Seines are nets. They are typically four feet high, by eight feet long with mesh openings of 1/8 of an inch. Small floats are tied to the seine along the top and one-half ounce lead weights are attached at the bottom. Two five to six foot hard wood poles are tied to each side of the seine. Two people holding onto the poles move parallel to each other from deeper water toward the shore, slowing moving toward each other, catching fish in the pocket created in the net.

[9] Gill nets consist of a net set vertically in the water; they entangle fish by the gills as they swim through the mesh. There are three types: set nets, float nets, and strike nets. These are explained in more detail in Chapter 5.

[10] Trawling consists of towing a net, called a trawl, which is cone-shaped, closed by a bag and extended at the opening by wings; doors, chains or rakes are often attached to the net to stir up the sea floor. It is used to harvest shrimp or flatfish, and can be specially rigged with outriggers to tow up to four trawls at the same time.

[11] TEDs, or turtle shooters as N.C. fisherpeople call them are bycatch reduction devices specifically for sea turtles. TEDs are oblong aluminum rings with seven vertical tubes approximately 6 inches wide that run front to back. They are inserted in trawl nets at a maximum of a 55 degree angle, slanting down toward an escape hatch. Turtles are shot out the escape hatch, while shrimp and fish fall through the bars into the net.

at the public meetings held by the North Carolina Division of Marine Fisheries (DMF). Commercial fishers, recreational fishers and conservation groups were simultaneously competing to influence the fishery decision-making process, while the fisheries administrators appeared to have their own agenda.

My step-father recounted how recreational fishers blamed commercial fishers for taking all of the fish. Conservationists blamed commercial fishers for killing sea turtles and destroying habitat. Yet, while commercial fishers were becoming increasingly regulated, other, more serious problems for fish populations and water-based and land-based habitat essential for fisheries were and are occurring. Coastal development in the area is increasing; the populations of coastal communities are growing; and, a local phosphate company is destroying wetland habitat and poisoning the rivers.

Gaining Entry

After years of hinting at how the experiences of the Two Rivers fishers would make for a great research project, my step-father finally gave me permission to conduct the study in 2006. He said, "Well, if you don't do it soon, there won't be anything left to study." I was told that members of the community, fishers, non-fishers, and former local fishers were receptive to my research interests. My step-father's permission and the receptiveness of community members to my presence as a researcher was extremely important.

There is a history of antagonism between scientists and fishers. The overwhelming use of scientific information in conventional top-down decision-making processes has marginalized local fishers. Centralized fisheries management agencies often take the roles of 'educating' fishing people about the value of the resource through

establishing rules and institutions, which often bear no resemblance to existing local norms or cultures (Berkes et al. 2001). When fishers rebel against regulations, such as privatized fishing rights, resource economists blame the inherent conservatism and irrationality inherent to fishing culture (Olson 2005).

However, my relationship to the community did not guarantee my total acceptance by the Two Rivers fishers. Although I have ties to the community, my time there was short, approximately two years, twenty years ago when I was between the ages of 18 and 20. Nevertheless, my family ties and the community residents memories of me were a strong factor in my having access to the people I was able to interview. As a result, I was able to obtain the breadth and depth of information necessary for authentic, accurate and precise data collection, the bed rock of validity in qualitative research according to Guba and Lincoln (2005) and Becker (1996).

**Welcome to Two Rivers, North Carolina: People, Place, and Significance**

Two Rivers is located within the Inner Banks of the Albemarle-Pamlico Estuarine Region of North Carolina. The Albemarle-Pamlico Estuary System is the second largest estuary[12] in the United States. A map of coastal North Carolina is illustrated in Figure 1.[13] The Inner Banks is a new term created in 2005 as a marketing tool by real estate developers to distinguish the area from the Outer Banks. The Outer Banks is popularly referred to as the portion of the barrier islands extending from Currituck Beach to Cape Lookout. The Inner Banks refers to the mainland coastline along the Albemarle and

[12] An estuary is a body of water where freshwater from rivers and streams flows into the ocean, mixing with the seawater. Estuaries and the lands surrounding them are places of transition from land to sea, and from freshwater to saltwater. Although influenced by the tides, estuaries are protected from the full force of ocean waves, winds, and storms by the reefs, barrier islands, or fingers of land, mud, or sand that surround them, which makes them ideal nurseries for a wide array of fish (NEP 2008).

[13] The shaded region of the map indicates state fisheries jurisdiction, which extends three nautical miles out from the coast line.

Pamlico Sounds, internal to, and surrounded by the barrier islands. The coast line of North Carolina consists of 20 counties, with over 3,000 miles of inland coastline and over 2.5 million residents (Deaton et al. 2010).

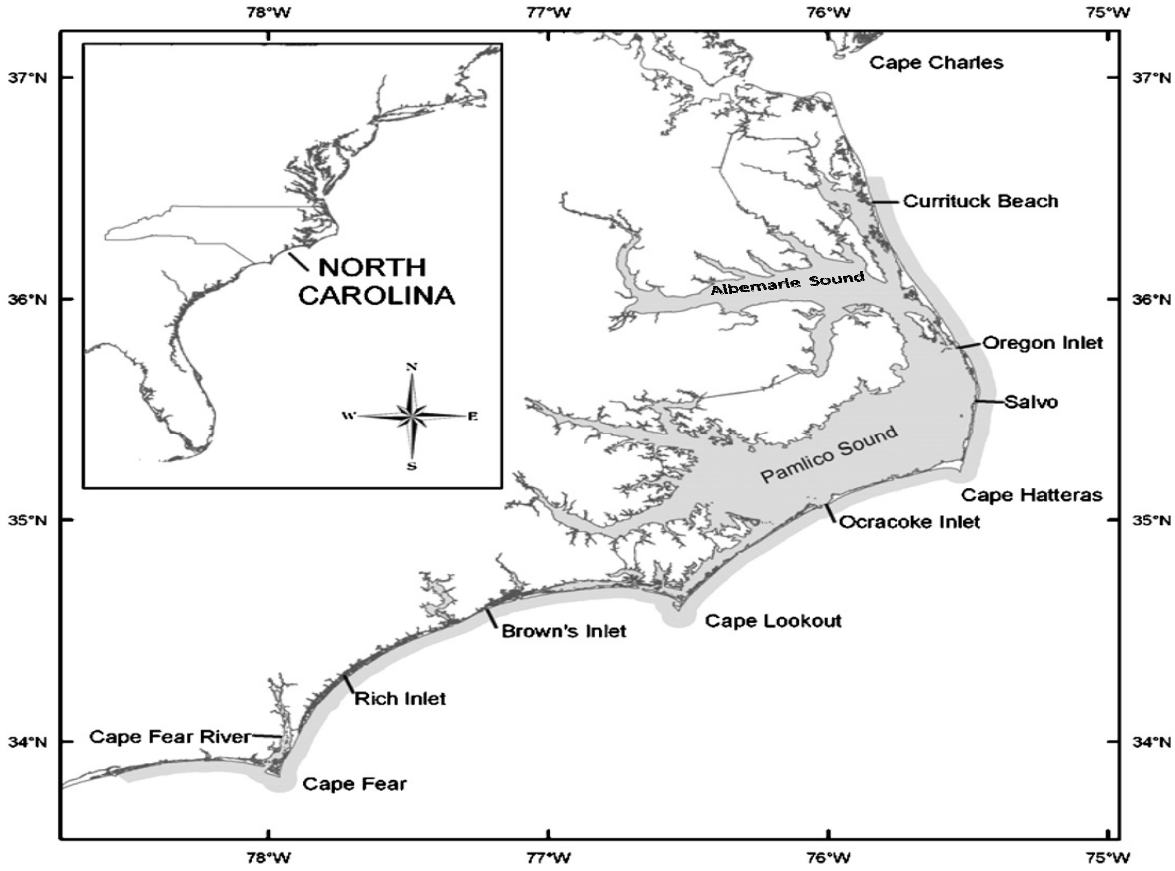


***Figure* 1**. Map of Coastal North Carolina with Pertinent Landmarks Labeled (McClellan et al. 2011: 242).

Two Rivers is geographically and socially isolated; it is situated on a peninsula at the junction of two rivers, with one road into and out of the area. The old timers of Two Rivers tell stories of a time (early to mid-1900s) when it was faster to travel by boat to the town 20 miles away than drive because the one road into and out of the community was not paved, when floating dance halls traveled up and down the rivers, and fishing was done from sail or row boats before they had motors. At one time shrimp were so plentiful they would jump into the boat; but, the local people would feed them to the

hogs, believing they were not fit for human consumption. The water was so clear you could harvest soft shell crabs by hand from the shore, which the "beachers"[14] would buy for a penny a piece. And, the oysters were so plentiful; you could make a good living off twenty-five cent a bushel.

Current descriptions of the community and fishery are very different. Regulations have restricted where, when and how fishing occurs and the size, type and quantity of fish that can be caught. Whole creeks and rivers, which were fished before the community had a name, are now closed to fishing. These regulations were premised on the need to conserve depleted fish stocks. Yet, when asked about the condition of fish populations, the local fisherpeople say, "It's not that there are no fish to catch, but that we aren't allowed to catch them;" and, "There's more fish out there now than there has been in 20 years or so." The increased regulations have decreased the ability of local fishers to earn an income, while increasing the costs of fishing.

However, local fisherpeople recognize the need for regulations to curtail fishing effort and protect fish populations. Most everyone in Two Rivers agrees with the need to set size limits and area restrictions on gear use to protect juvenile fish and sensitive habitat. Many have also come to see the benefits of bycatch reduction devices, and have avidly participated in their design, such as turtle shooters and a crate that culls crab by size. The fishers even abide by and enforce a few norms not imposed by the state, such as a no harvest rule on female crabs bearing eggs. And, the vast majority of fishers in Two Rivers and across the region want a regulation to restrict how many crab pots one person could operate at any given time.

[14] Beachers is a term that that refers to part-time residents. While historically a commercial fishing community, recreational hunting, fishing and tourism have existed in the area for almost as long. There are a few families that have been consistently visiting the area for three to four generations.

For the most part, the local fishers claim "the government takes a few good ideas about fishery regulations too far," to the point where they create inefficiencies and make it impossible and dangerous to make a living from fishing. For example, there is a regulation on how many scallops[15] can be harvested at a time, which causes inefficiencies and dislocation of fishers from one fishery to another. A local fisher explained this regulation:

> "We're allowed to catch 2,400 lbs or so; but, we can only catch 400lbs a day. It's damn stupid mess. Why come they can't give them 2500 lb a week? Then you could catch it in a couple of days. No – they got to run in and out of a congested harbor that don't have no facilities for them to tie up or nothing else; got to waste that fuel – it takes six hours out, six hours back, three hours to pick the scallop. So now they done that – between weeks we got great big boats out here in the sound – like 105 foot shrimping boats, which shouldn't be here. Because why – they can't do nothing else. So then that hurts the smaller boats shrimping because the big bastards are out there."

Another local fisher described a similar law on oyster harvesting:

> "You can't go out and work like you used to – like see what you used to do you go out on Monday morning you come back Wednesday whatever. Work Monday and Tuesday and part of Wednesday and come in and unload them, now you gotta run back and forth everyday – burning more fuel, wearing your rig out, running back and forth – a lot of wear and tear on your engine and stuff."

These regulations waste fuel, man-hours, and increase the wear and tear on gear; others increase the danger of the job. For example, an ex-law enforcement officer with the Division of Marine Fisheries (DMF) explained the dangers of rules about culling[16] at sea:

> "In the pound net fishery, those fellas would get into it; you weren't supposed to bring any small flounders in. So, you are bringing 9,000 pounds of fish into the

[15] The scallop fishery is a federal fishery – regulated by the federal government through a Limited Access Privilege Program. Access is possible only with a permit, which can cost as much as $5 million dollars as a result of a limitation on the number of permits in existence at any one time. There are a few fishers in the area involved.

[16] Culling refers to separating the harvestable fish from the fish that have to be discarded because they are too small, too large, or otherwise illegal to keep.

> boat; it's blowing 20 mph and its rough as hell and you're up at the edge of the sound out where the seas are cockling up and wanting to break on you. And you are doing all you can to get those fish in the boat because if you don't get them out you are going to lose them. They are going to get chaffed and they won't bring any money. So are you going to sit out there and cull those fish or are you going to bale them straight in the boat. I have had boats sink in the net because they were out there trying to save fish."

These regulations increase the difficulty of fishers to earn a livelihoods, which has broader repercussions for the community and surrounding area. Where the majority of people in the community used to make their living out of the river, out of approximately 700 residents today, only 20 or 30 continue to fish for a living. Young people are being discouraged from entering the industry; fishing is not seen to have a future in the area. The average age of local fisherpeople in the region today is 52 years, with a range of 17 to 87 and median of 35, which illustrates the ageing of fisherpeople and the declining number of young people entering the industry (Crosson 2007).

Many people in Two Rivers are selling their waterfront property, which is being bought quickly by retirees and second home owners. Gated communities are being developed on large parcels of land. The building of houses has barely begun; but, gates, video cameras, security lights, and electronic locks have been installed. Not only do these gates and security measures send a message of separation to local community members, but they signal drastic changes. The land and resources of Two Rivers, which have historically been defined by common access, are increasingly enclosed. The number of "strangers"[17] in the community has increased greatly. Meanwhile the commercial infrastructure is shrinking. The closest town, which was built on the commercial fishing industry now has ordinances against docking fishing vessels over

[17] Strangers is a relatively new term, indicating the increase in new visitors and inhabitants in the community.

night. The fish houses and rail yards – place where boats could be pulled from the water and worked on have closed down, and condominiums are being built.

To compound matters, the health of the fishery is severely affected by phosphate mining in the area. Potash Corporation of Saskatchewan, Inc. (PCS),[18] a phosphate mining corporation is the largest source of waste water and the second, single, largest source of wetland destruction in North Carolina (Deaton et al. 2010).[19] Waste water from the plant has caused shell disease in blue crabs found in the Pamlico River and hormone alterations that affect the reproduction of fish and shellfish, habitat destruction. Meanwhile, current expansion plans will impact 11,909 acres, including 3,953 acres of wetlands and over 5 miles of streams (NOAA 2010b). This expansion represents the largest destruction of wetlands ever permitted in North Carolina (Deaton et al. 2010), and the largest single source of disturbance to wetlands in the southeastern United States in several decades (NOAA 2010b).

The local fisherpeople recognize the negative environmental impacts from increased development, population growth and industrial phosphate mining and the consequences for the fishery. They point to the oily murkiness of water, the dark brown sludge that covers the riverbed by the shore, which used to be clean sand, and talk of crabs and fish with sores, water that burns your hands and eyes, and air that burns your throat. Water quality, loss of habitat, and the health of the fish populations are major

[18] PCS is the world's largest fertilizer company by capacity, producing the three primary crop nutrients – potash, phosphate and nitrogen. They are responsible for about 20 percent of global capacity (http://www.potashcorp.com/about/overview/).

[19] The primary source of wetland destruction is water control projects; the third source is upland development (Deaton et al. 2010: 293). Water control includes the construction of impoundments, reservoirs, ditches, canals, water intakes, storm drains, storm water ponds, and other activities designed to alter water flows. Note: some water control projects are related to transportation. Upland development includes isolated ponds, residential lots, commercial facilities, utility cables/pipelines, wastewater treatment plants, schools, churches, and other activities converting wetland habitat to uplands or supporting upland development.

concerns of the local fisherpeople. Nevertheless, they are not involved in attempts to stop the degradation caused by population growth, coastal development and phosphate mining.

The fisherpeople of this community have every apparent reason to engage the formal fishery management system to maintain their livelihoods, as well as the local and state political system to maintain the health of the fishery. Although fishers live in a constant state of uncertainly, risk, and danger, fishing is far more than an occupational choice. The fisherpeople of Two Rivers are highly dependent upon the fishery, socially and culturally, as well as economically. The Two Rivers fisherpeople are very similar to fisherpeople in the Albemarle-Pamlico region in this regard. Overall, fishing accounts for 67 percent of the income of the commercial fishermen in the Albemarle-Pamlico region (Crosson 2007). In the region, fishing is the sole source of income for 39 percent, while 67 percent consider themselves full-time fishermen even though many have additional sources of income. Of fishers who have additional sources of income, twenty-one percent rely on a pension or social security. Many work in other sectors of the coastal economy, most often in construction (10%), other fishery-related jobs (8%), government (5%), maintenance (3%), or non-fisheries maritime, including ferry or dock work (3%).

The fisherpeople who leave the industry because they are not able to make a living off fishing and those who are forced to take alternative jobs still refer to themselves as commercial fishers. When asked why, they say commercial fishing is their life; it's who they are; it's in their blood. As a local former-fisher said, "I always been a

fishermen, all my life. Even now I would – if someone asked me what is your profession – right now I am a tug boater but I still feel like a fisherman."

While the median commercial fishing heritage for the Albemarle-Pamlico region is three generations (Crosson 2007), Two Rivers fisherpeople have a longer heritage of commercial fishing. Many can claim five generations of commercial fishing in their family. Their sons fish, their fathers fished, their grandfathers fished, and their great, great grandfathers fished, and in some case, mothers, grandmothers, and great grandmothers. Not only is fishing in their blood, but their historical attachment to the community is deep.

In most cases, interviewees reported that their ancestors settled in the area in the late 1700s and early 1800s. One worn tombstone in what was once possibly a family plot or local cemetery, but is now an overgrown parcel of land on the river is dated 1700. The local cemetery was moved several times after being washed away by rising water brought in from storms. The current local cemetery was donated by a community member in the 1800s; it is situated on the highest piece of land in the community. The oldest legible tombstone is dated 1875. On average, the families of the local fisherpeople of Two Rivers have been in the area for several generations; and, even the families that did not become commercial fishers were and are heavily involved in fishing. While farming, lumber and fishing were predominant industries in the surrounding area by the mid-1800s, the early inhabitants of Two Rivers existed off subsistence farming and fishing.

The history and extensive experience working with the resources of North Carolina fishers contributes to extensive local ecological knowledge, which makes the fisherpeople of Two Rivers potentially essential assets to the broader fishery governance

system. The addition of the local ecological knowledge of fisherpeople to the scientific methods employed by the National Marine Fisheries Service (NMFS) and the state Division of Marine Fisheries (DMF) has the potential to increase the efficiency and effectiveness of fishery regulations. As Berkes et al. (2001: 4) explained, "Scientific knowledge is a complement to, not a substitute for, traditional knowledge. Common ecological knowledge, [especially] that of people who fish, is crucial."

Fisherpeople have knowledge about and notice differences between locations of fish according to a variety of environmental factors. This is so for the simple reason that the success of fishing depends on information pertaining to the habits of fish, such as the specific locations they repeatedly visit or the affect of weather patterns on migration. However, the local ecological knowledge of fisherpeople is not solely applied to profit. Their lives revolve around the pursuit of fish, which has profoundly shaped their culture, skill sets, family structure, and social relationships. The fisherpeople of Two Rivers, as well as the surrounding communities have a strong conservation ethic based on a desire for intergenerational equity. Fisherpeople want to maintain their livelihoods. They also want their children and grandchildren to be able to fish for a living. And, fisherpeople are more than aware that the perpetuation of fisher livelihoods is dependent upon a healthy and viable resource. This conservation ethic is the reason local fishers agree with the need for regulations and informally enforce a few norms about fisheries-fisher relations outside the purview of the formal fishery governance system. Unfortunately, as it becomes harder for fishers to earn a living, they increasingly adopt a pessimistic outlook on the future viability of fisher livelihoods, which decreases their motivation to conserve fishery resources for future generations.

The fisherpeople of Two Rivers have the capacity to significantly influence the broader ecology of the area. The incorporation of the vast ecological knowledge of the fisherpeople of Two Rivers, and promotion of their conservation ethic would greatly enhance the efficacy and sustainability of formal fisheries governance. Furthermore, the local ecological knowledge of the Two Rivers fishers does not just pertain to the fish they hunt, but also to land and water-based habitat, which is a further potential asset to the formal governance system. Two Rivers is located within one of the most important estuaries in the United States for commercial and recreational fisheries, as well as endangered and threatened animals. The sensitivity and unique importance of estuaries for land and marine ecologies and economies positions the people of Two Rivers in a profoundly strategic location and potentially important role in governing the commons. Understanding the factors that influence the political engagement of the Two Rivers fishers is a necessary step toward understanding how tragedies of the commons occur and, thereby, how to design new forms of socially and environmentally sustainable development.

**Conceptualizing Power: Structure and Agency Across Levels and Scales**

> "The fundamental concept in social science is Power, in the same sense in which Energy is the fundamental concept in physics."
>
> (Bertrand Russell 1938: 4)

The first place to begin to understand why the fisherpeople of Two Rivers are not collectively acting to protect their livelihoods is with power. Power is a capacity to act, as well as a structuring force. I analyze the operation of three different types of power across three levels and two scales of analysis. Analysis of power across levels and scales is important for studies of natural resource management. Local actions shape cumulative

environmental conditions and policy-making at larger scales and higher levels, while market signals, institutional structures, and technology portfolios at larger scales and higher levels affect actions at smaller scales and lower levels. However, these processes are differentially and discontinuously experienced and produced across levels and scales according to the type and extent of power held or exerted.

Scale represents the spatial/geophysical, temporal, quantitative or analytical dimensions used to measure and study phenomena; levels are units of analysis at different points on a scale (Cash et al. 2006). The levels explored in this study are fishery user-groups, the organization of the formal fisheries governance system, and the systemic level processes of development and social change affecting coastal communities and fisheries habitat. I examine two analytical dimensions of scale, the formal and informal realms of fisheries governance.

Natural resource governance (NRG) consists of those formal and informal institutions and organizations through which authority and power are conceived and exercised and within which actors and groups of actors negotiate access, use and allocation of natural resources. While informal and formal institutions are part of the definition of governance, most research examines one or the other or does not distinguish between the two. This study examines both the formal and informal realms of fisheries governance, separating them analytically in order to understand where they converge, diverge, or exist distinctly separate from each other.

The formal fisheries governance system is comprised of the formal institutions and organizations linking the North Carolina fisheries governance system to the broader complex of federal fisheries and environmental governance, and the activities of

organized fisheries stakeholders directed to influence fisheries legislation and policies. Informal governance processes consist of institutions and the activities of user groups that govern the relationship of local actors with the resources of the fishery but are not purposefully directed toward influencing the formal management of fisheries. These activities and institutions may oppose, replicate, or exist outside the purview of the formal governance system.

The context for the examination of formal governance processes is the North Carolina fisheries governance system, while the community of Two Rivers is the context for the examination of informal governance processes. This study examines power within the formal realm of fisheries governance at the organizational and group levels. Within the informal realm of fisheries governance, power is examined in Two Rivers at the intersection of the group and systemic levels. As will be explained below power is conceptualized at the group level as "differential transformative capacity" (Bourdieu 1985b; Bourdieu 1986; Giddens 1984), at the organizational level as "infrastructural and despotic power" (Mann 1993), and at the level of systemic processes as "domination" (Foucault 1977; Weber 1978).

Differential Transformative Capacity: Making a Difference in Governance

The ability of fishery user-groups to take advantage of opportunities and navigate the constraints offered by the organizational level of fisheries governance and systemic level processes is dependent upon their transformative capacity. The transformative capacity of groups is differentiated by the types and amount of resources, to which they have access or control. To explain this differentiation among groups, I use a combination

of Giddens's (1984) concept, transformative capacity and Bourdieu's (1985a; 1986) forms of capital to create the concept of "differential transformative capacity."

Power is, according to Giddens (1979; 1984), agency, which is the transformative capacity to achieve outcomes. Giddens (1984) rests the ability to achieve outcomes on control over the structures of domination, which consist of two types of resources. One type, allocative resources are the material resources derived from dominion over nature; the second type, authoritative resources are the non-material resources derived from the dominion of some actors over others (Giddens 1984). These resources exist only in that they are instantiated in action, continually created and recreated in social interactions as a property of agency. Thus Giddens discusses two forms of power, that which all agents have in the capacity to act and that which some actors have over others as a result of asymmetric control of resources.

Giddens' (1984) structures of domination highlight the importance of access to and control over resources, which is central to explanations of different extents of power among actors. However, Giddens (1979; 1984) stops short of theorizing the socio-historical and structural sources of power, which determine the value of allocative and authoritative resources and who has access to them. Bourdieu (1980; 1998), on the other hand, firmly anchors the characteristics of actors and the resources they have access to in socio-historical structures and social contexts.

Bourdieu (1998) describes the global social space as a field, that is both a "field of forces," which imposes on the agents engaged in it, and a "field of struggles" within which agents confront each other with differentiated means and ends according to their positions in the structure of the field of forces. Fields are relatively autonomous spheres

of social interactions where individuals with varying resources struggle for prestige, wealth and power. The resources people have access to depends on their habitus,[20] the dispositions of actors built through experience, which produce individual and collective practices (Bourdieu 1985a). Different fields value different forms of resources. Bourdieu (1986) calls these resources capital. Different forms of capital provide for different forms of power. The extent of the power that capital provides depends on the field in which it is applied (Bourdieu 1986).

Bourdieu (1986) discusses three forms of capital, which are convertible into other forms of capital. Economic capital is immediately and directly convertible into money and may be institutionalized in the form of property rights. Cultural capital is both material and non-material; it is material goods, such as art and technology, but also knowledge, credentials, and dispositions. Human capital is a part of cultural capital, consisting of the knowledge, tools, and techniques applied directly to occupational or practical tasks. Cultural capital also includes knowledge of the operations of institutions and organizations and specialized forms of knowledge, such as local ecological knowledge or formal scientific knowledge. Cultural capital is transmitted across generations; it is conditioned by economic capital/socio-economic status, geographic region, and demographic characteristics.

Both cultural capital and economic capital in turn affect social capital. Social capital derives from social relationships, bound by obligations and norms of reciprocity, which provide actors with access to other forms of resources, such as knowledge, techniques, tools, or money. As such, social capital is potentially convertible into economic capital and the further transmission of cultural capital, in the form of human

[20] Habitus is tacit, durable and transposable; people carry it with them across fields.

capital. All of the forms of capital together constitute a person's habitus, which determines various levels of agency as transformative capacity across different fields.

Bourdieu's (1986) forms of capital are important because they link the actions of individuals to broader cultural and economic structures, a perspective which balances Giddens' excessively agentic perspective. The benefit of Bourdieu's approach is that it distinguishes differences in agents' transformative capacity according to context, as well as their access to and control over resources. The power of struggling groups is differentiated not just by the forms of capital they have, but by the context within which those resources are leveraged. In the case of Two Rivers fishers, I am examining the distribution and use of power among contending groups across two Bourdieuian fields, the formal and informal fishery governance systems.

For example, the fisherpeople of Two Rivers are disadvantaged in formal governance arrangements where scientific forms of knowledge are most valued. However, they have the local ecological knowledge necessary for effective governance in the informal realm of their community. Nevertheless, as will be discussed below, the capacity of fisherpeople to informally govern their local fisheries is complicated by the latent power of systemic level processes, which are now increasing the power of new residents in the community.

Taking the above into account, the term "differential transformative capacity" captures three structural characteristics of agentic power. First, agency is the transformative capacity of groups to act, whether in cooperation, opposition, or separately from other groups or structures. Second, transformative capacity depends on differential access to and control over economic, cultural, and social forms of capital. Third, the

transformative capacity of groups depends on the larger context, the arena in which agency is exercised. In sum, the differential transformative capacity of groups within the fisheries governance system can be seen as agentic power, mediated by access to resources and the context of action. The differential transformative capacity of groups shapes their ability to negotiate their visibility and legitimacy in relation to other groups, to the organizational structure of fisheries governance and to systemic level processes.

## Conceptualizing Visibility and Legitimacy

Visibility and legitimacy denote aspects of structure and agency at the group level; each is a relationship with the governance structure as well as between groups. Visibility refers to the relationship between a user-group and the governance system, which shapes participation and subjection to regulations. Legitimacy is a recognized right to participate in governance processes. Legitimacy is to a large extent dependent upon the visibility of the user-group. The visibility and legitimacy of a group are susceptible to the political and social activities of that, or other, user-groups. Competing groups seek to influence the visibility and legitimacy of their own, as well as, other groups.

### *Visibility*

The concept of visibility refers to who participates and how in governance processes, as well as who is targeted by regulations and how. Visibility is partly determined by Bourdieu's (1985a; 1985b) habitus. The historical relationship of Two Rivers fishers and other user groups with fishery resources and governance structures is accompanied by specific dispositions and forms of capital, both material and non-material, which denote power in context specific situations. However, where Bourdieu

(1998) does not allow agents to escape their habitus, visibility is susceptible to the transformative capacity of groups. Groups actively manipulate their own visibility, as well as the visibility of other groups. Thus, visibility emerges from the historical characteristics of the user groups and their relationship to the resource, as well as active representations projected through social networks, media, or political campaigns and engagement with the formal governance system.

To elaborate, there are three types of visibility: historical, political, and social visibility. First, the historical visibility of a group is the product of their historical relationship with the resource. User groups are identified according to their socio-historical use of the resource by the management structure and other user groups. In United States fisheries governance, stakeholders consist of commercial fishers, recreational fishers, and local non-fishers who use and value the habitat essential for fisheries. However, the formal fisheries governance system developed historically to promote and manage commercial fishing. As a result, commercial fishers are most often the targets of regulations designed to increase conservation of fishery resources, although all fishery stake-holder groups ultimately fall under the laws and legislation of the formal governance system.

Second, political visibility is produced by a group's active relationship with the governance system. A group becomes politically visible when it actively engages the formal governance system to define its own or another group's relationship with the resource and governance structure. Politically inactive groups are not necessarily invisible when they decide to abstain from formal political processes. Politically inactive groups become susceptible to having their visibility – relationship with the resource and

governance system defined for them by competing groups. Only those that actively engage the formal political system have the opportunity to influence decision-making processes and outcomes by defining their own visibility, or that of other groups. In the absence of active political visibility, historical visibility is the default, where the relationship between a user-group and the regulatory system is determined by historical precedent.

Third, the social visibility of a group emerges from active engagement of the broader public to build political momentum behind a cause. In North Carolina, conservation and recreational fishing interest groups actively employ negative images of commercial fishers as wanton exploiters and destroyers of marine resources and the environment through the social media, such as the internet, public advertising, and printed text. At the same time, these groups advertise themselves as appropriate stewards for the conservation of fisheries and marine resources. While a few commercial fisherpeople have tried to rectify the damaging portrayals of their livelihoods by taking control of their social visibility, they are not as organized and do not have the same access to many of the resources required to launch visibility campaigns.

*Legitimacy*

Legitimacy refers to a recognized right to participate in political processes, a right which confers political power to influence decision-making. The legitimacy of user groups is determined by the historical, social and political visibility of resource user groups. Traditionally, legitimacy has been treated as a characteristic of governance systems. Weber (1978) discussed legitimacy as the acceptance of a social order by individuals based on habit, rational self interest, or custom and a sense of obligation.

Subsequently, Lipset (1959) discussed legitimacy as an essential component of democracy, which involves the capacity of a political system to engender and maintain the belief that existing political institutions are the most appropriate or proper ones for the society. According to Meyer and Rowan (1977), organizations build legitimacy to strengthen support and secure survival. Suchman (1995) discussed organizational legitimacy as a generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate.

The arguments for co-management of fisheries governance build on these conceptions of legitimacy. Incorporating local level user groups, especially those who depend on the fishery for their livelihoods, would supposedly increase the efficiency and effectiveness of regulations because of an increased perception of the legitimacy of the governance system among participating groups. However, incorporating local user groups as stakeholders raises questions about participant legitimacy and legitimate participation. This is important. A general premise of environmental and natural resource collaborative governance is that those most affected by management decisions are the most important participants in management processes.

While the legitimacy of participants has been studied with regard to stakeholder theory in research on management and business (Mitchell, Agle, and Wood 1997), relatively little research has examined participant legitimacy in environmental and natural resource management. In some areas of natural resource management and development, stakeholders are classified according to whether they are the primary targets of regulations or secondarily affected (Grimble and Wellard 1997; ODA 1995). In others, stakeholder definitions are broad, covering almost everyone and everything (Billgren and

Holmen 2008). In North Carolina, the "public trust doctrine" has been adopted; all user groups are potentially legitimate fisheries stakeholders (NCGA 1997)[21]. Theoretically, everyone is a stakeholder but in practice not everyone is recognized as such.

Often, only those that organize to politically engage formal governance structures, or only those that are politically visible are recognized as legitimate stakeholders. While the historical (visibility) relationship between the user-group and the governance structure is a significant source of legitimacy, legitimacy is also affected by the actions of other groups as they attempt to alter perceptions of their own and other's relationship with the resource and governance structure through political and social visibility. Groups that make the active decision to become or remain politically inactive in the formal fisheries governance system forfeit their legitimate right to participate in formal governance processes, thereby, losing their power to influence formal fishery governance processes.

Politically and socially inactive groups are susceptible to having their political and social visibility defined for them by opposing groups. A group's capacity to manage their own and others' visibility and legitimacy is shaped by the resources they have access to and control over, as well as the context within which the resources are employed. As discussed below the organizational structure of formal fisheries governance and systemic processes create barriers and opportunities, as well as resources for the political engagement of user groups.

[21] The Public Trust Doctrine is implemented as part of North Carolina's constitution; it is applied in management of North Carolina's coastal lands, surface waters, and the resources in those waters. The doctrine states, "public trust lands, waters, and living resources in a State are held by the State in trust for the benefit of all the people, and establishes the right of the public to fully enjoy public trust lands, waters, and living resources for a wide variety of recognized public uses" (Deaton et al. 2010: 543). The doctrine also sets limitations on the State, the public, and private owners, as well as establishes the responsibilities of the State when managing these public trust assets.

Manifest Power at the Organizational Level: Despotic and Infrastructural Power

The organizational level consists of the institutions and organizations of the formal North Carolina fisheries governance system. Structural power is manifest in the legislative mandates and organizational imperatives that determine the appropriate use of knowledge, policy alternatives, avenues of participation, and actors in fisheries governance. Following Weber (1978), administrative organizations are instruments of power, which transform, or harness amorphous social action into rationally organized authority relations.

Mann (1993) differentiated between two forms of structural power at the organizational level, "infrastructural power" and "despotic power." Infrastructural power in fisheries governance consists of the extension and dispersion of multiple points of political leverage throughout an administrative territory, which increase the authority of bureaucratic administration even as avenues and platforms for political engagement are created. Avenues and platforms for political engagement consist of contentious rules, regulations or policies that spark the formation of political organizations, or more direct means of stakeholder participation, such as the co-management structure of United States fisheries governance. Thus, infrastructural power derives from the extension of legitimate authority and the production of avenues or platforms for civil society participation.

Despotic power, on the other hand, refers to the range of issues and topics relatively closed to debate within routine realms of participatory management processes within formal fisheries governance. Despotic power emerges from fisheries and environmental legislation and related organizational imperatives within fisheries

management agencies that delimit the management processes and protocols and, thereby, the roles and actions of administrators and political actors. Whereas infrastructural power creates public space and opportunities for political action in formal fisheries governance processes, despotic power constrains the transformative potential of that political action.

In addition to creating opportunities and constraints, infrastructural and despotic power represent resources that can be used to leverage influence in the fishery political system. The ability of user-groups to use environmental and fisheries legislation and organizational imperatives as resources causes change in seemingly intractable legislation, protocols, and bureaucratic imperatives (despotic power) over time. Laws, institutions, and expectations change in accord with relations to societal groups and among representative parts of government (Skocpol 1985; Skocpol and Amenta 1986). However, user-groups have varying capacities to take advantage of the opportunities, navigate constraints, and use the resources created by the organizational imperatives and legislative mandates of the formal fisheries governance system.

For example, as will be seen, commercial fishers in North Carolina are less able than recreational fishers and conservationists to set the agenda for fisheries governance. The traditional focus of the formal fisheries governance system in North Carolina, as well as nationally has been the regulation of commercial fisheries. As a result, over capacity – too many fishers in the commercial fishing sector has been defined as the ultimate threat to fish stocks, habitat and marine animals. Conservationists and recreational fisheries reinforce this emphasis by leveraging conservation mandates to increase regulations on commercial fishers. In doing so, these groups employ economic, cultural, and social

forms of capital to manage their own visibility and legitimacy in opposition to commercial fishers.

Groups that choose not to engage the formal fishery governance structure forfeit their legitimate right to participate in formal governance activities, and they lose the power to influence decision-making processes. I call this active non-participation. The fisherpeople of Two Rivers practice active non-participation in relation to formal fisheries politics. At the same time they actively engage in the informal governance of their community and the fishery. However, while the fisherpeople of Two Rivers have historically been able to effectively exert differential transformative capacity in the informal governance arena, even as they forfeit their legitimate right to participate in the formal fisheries political system, they are increasingly challenged by systemic processes of domination.

Latent Power at the Systemic Level: Domination over Fisheries Governance

Power at the organizational level is manifest, easily observable in regulations, objectives and goals. At the systemic level, on the other hand, structural power is latent; it is diffuse, embedded in the relationships, institutions, strategies and technologies of domination (Foucault 1980). I employ Weber's (1978)[22] and Foucault's (1977) use of the term domination to discuss latent structural power at the systemic level.[23] As

[22] Weber (1978) discusses domination as an overarching systemic characteristic and a characteristic of bureaucratic organizations, which constrain and enable the activities of administrative staff as well as the populations and territories under their auspice. I use the term only for the latent structural power of systemic processes so as to avoid confusion when discussing manifest structural power.
[23] Lukes (2005) discusses domination as the ability of a person or group of people "to prevent [other] people, to whatever degree, from having grievances by shaping their perceptions, cognitions, and preferences in such a way that they accept their role in the existing order of things." My treatment of domination is notably different. I focus only on systemic processes of domination, not the domination of one person or group of people by others.

Foucault (1978) explained, power is not always a choice, decision, or characteristic of an individual or group of individuals; often time it is a process of series of processes.

> "[L]et us not look for the headquarters that presides over its rationality; neither the caste which governs, not the groups which control the state apparatus, not those who make the most important economic decisions (none) direct the entire network of power that functions in a society."
>
> (Foucault 1978: 95)

Domination shapes values, norms and preferences, and is situated in the daily enforcement of social and political practices[24] (Foucault 1978).

The larger political-economic context of the United States exerts a dominating influence on the formal and informal fisheries governance systems. This systemic power constrains and enables environmental and natural resource governance and trajectories of development by defining appropriate notions of modern social and economic development, as well as the resources groups need to succeed in influencing these processes. Weber (1958) imagined an inherent compulsion of modern capitalism to rationalize economic life would come to dominate over society by creating ways of knowing and ways of organizing social life needed for its reproduction – formal, practical and theoretical rationality, a high utilization of scientific innovations, and bureaucratization.[25] Modernist tools and techniques become systemic as they are increasingly spread to non-capitalist/traditional spaces through the further development and utilization of science and technology, bureaucratization (Scott 1998), and disciplined social practices (Foucault 1980). In Two Rivers, North Carolina, and many other coastal

[24] While domination may limit actions and desires, it also makes successful endeavors possible. Those groups with access to forms of capital, or groups willing to abide by the rules and norms, valued by the system are able to take advantage of the opportunities associated with domination.
[25] Formal rationality is decision-making based on sets of universally applied rules, laws, statutes and regulations. Theoretical rationality is the mastering of reality through systematic thought and conceptual schemes. Practical rationality is the incorporation of means-ends calculation into every day activities.

communities, these modernist tools and techniques are spread through scientific forms of management, coastal development, industry, population growth, and international markets.

The current organizational structure of formal fisheries governance, costal development, phosphate mining, and international seafood competition in the Two Rivers area are agents and products of systemic processes. Formal fisheries governance is highly bureaucratic; it centralizes control over fisheries through rationalized scientific principles of management, data collection and analysis. Coastal development and recreational use of resources is promoted as the most profitable and rational means of economic development. And, the existence of PCS Phosphate, as well as its impact on fisheries habitat is rationalized by the benefits generated by employment opportunities to local people. In addition, while economic competition is valued for lowering prices through competition, depreciated prices for local seafood increase the difficulties commercial fishers face in maintaining their livelihoods.

Systemic processes also define the value of the material and non-material forms of capital user-groups have access to or control over. The forms of capital most often defined as valuable within society include scientific and technical knowledge and skill sets, weak forms of social and political capital,[26] and large amounts of monetary forms of capital. These forms of capital contrast with the experiential, local ecological knowledge and fishing skills sets, dense social capital, and high amounts of fishing related capital equipment of fisherpeople. The value ascribed to the material and non-material resources

[26] Weak social and political capital consists of widespread and diverse social ties, as opposed to strong social ties, which are often less diverse and more close-knit (Fukuyama 2000; Granovetter 1973). Weak ties offer greater access to diverse material and non-material resources.

of user-groups determines their success in influencing formal processes of fisheries governance.

In the informal realm of fisheries governance in Two Rivers and the surrounding area, systemic processes are encroaching on the livelihoods of fisherpeople through micro-political relationships with the new residents that are swelling coastal areas. On an interpersonal level, people are agents of domination; they discipline others into desired behaviors by reinforcing their notions of what is the rational and expected norms of social behavior, work and development within the community. The result is the erosion of 'traditional' resource-dependent livelihoods and ways of knowing and the natural basis for fishery-based livelihoods. Meanwhile, phosphate mining, coastal development, and the transformation from commercial to recreational use of resources are furthering the degradation of essential fishery resources.

However, the despotic power of organizational structures and the dominating influence of systemic processes are not immutable. Just as there are extensive opportunities for the political involvement of fishers in formal fishery political processes, opportunities also exist for local groups to affect systemic level processes. To understand where the opportunities and constraints are, it is essential to ground an analysis of power across scales and levels in the lived experiences of real people. The following section outlines the methods used to gain an understanding of the linkages between visibility, legitimacy and power from the perspective of the fisherpeople of Two Rivers.

**Methods of Data Collection**

I explored the political dimension of fisheries in North Carolina, focusing in particular on the opportunities and constraints for the political engagement of Two Rivers

fishers created by the fishery management structure; the agency of local actors; and the social and environmental impacts of the displacement of local fishers from the fishery. The research for this project employed a case study method involving three data collection techniques. These included: analysis of historical and contemporary documents and archives; field research involving participant observation in the community and during forums conducted by the National Marine Fisheries Service (NMFS) and North Carolina Division of Marine Fisheries (DMF); and, semi-structured and unstructured interviews. Interview participants were recruited through a purposive sampling technique.

Archival and Document Analysis

Analysis of documents and archival materials included local development plans and various historical records from a variety of sources, including the North Carolina State Archives, North Carolina Maritime Museum, Core Sound Museum, and county courthouse. I also extensively studied national and state fisheries legislation and policies, federal environmental legislation as it pertains to fisheries, North Carolina Marine Fisheries Commission meeting minutes from January 2009 to December 2010, and NCDMF proclamations, stock status reports and issue papers. These documents illuminated the constraints and opportunities of the fisheries governance system, at the national and state levels, and helped construct a socio-economic history of Two Rivers and the history of the fishing industry in the region. In this respect, the addition of field research involving participant observation is important, as are interviews with a diverse set of community members and relevant non-community members.

Participant Observation in Two Rivers, North Carolina

I spent four months, May through August of 2009, in Two Rivers. During this time I observed and participated in the life of the community. This fieldwork gave me the firsthand experience necessary to begin to understand the lives of Two Rivers fishers, the opportunities and barriers they face in participating in the fishing industry and formal fishery governance processes, their informal governance practices, and how they are being impacted by the systemic level processes occurring in their community. A significant portion of the field observations for this study involved mapping. Mapping has been utilized extensively by the Chicago School of Sociology in ethnographic studies, as well as studies of social ecology (Deegan 2001). It is also used in social research on natural resource management (Russell and Harshbarger 2003).

Mapping is used to identify environmental problems, key areas where certain activities are undertaken, resources and resource-use sites, sub-populations, and characteristics of the built environment. Therefore, mapping Two Rivers served several functions in this study. These are: (1) creation of a purposive sample of interview participants; (2) documentation of the demographic statistics of the area and dispersal patterns of the population by socio-economic characteristics; and, (3) identification of local resources and habitat and local employment and leisure activities. Mapping these factors resulted in in-depth, detailed observations and field notes of general community life, the activities of fishers, and everyday interactions in and around the fishery, as well as the socio-ecological impacts from changes in demographics, the built environment, and other social, economic, and ecological transformations.

Unobtrusive Observation of Public Fishery Meetings

I attended eight public fishery forums as a complete observer, abstaining from all interactions with attendees and discussions. One was a public scoping meeting conducted by the NMFS on an Environmental Impact Statement for sea turtles in relation to Atlantic Ocean and Gulf of Mexico commercial fisheries. The other seven were NCDMF meetings. One was a North Carolina Marine Fisheries Commission business meeting, two were Regional Advisory Committee meetings and, four were specific Finfish Advisory Committees convened to discuss spotted sea trout and flounder. The Fishery Management Plans for spotted sea trout and flounder were under review during my time in the area; thus, the topics under consideration in all the meetings for the year were related to these species. In all, I spent a little more than 19 hours observing meeting processes, with an average of slightly more than 2.5 hours per meeting.

The focus of these observations were the general processes of information exchange among fisheries Commission and Committee members – scientists, management personnel, and stakeholders – and between fisheries officials and meeting attendees. These observations added to my understanding of management processes at the state level and the political dynamics among stakeholders and between stakeholders and the formal fisheries governance system. The actions and discussions of specific individuals were not recorded. Recording of meeting processes occurred through handwritten notes; electronic recording devices were not used for this process. I gained knowledge of these meeting through the North Carolina Division of Marine Fisheries and National Marine Fisheries Service websites and list serves.

In-Depth Interviews

I conducted 40 semi-structured interviews. Interview participants included: local fishers (13); local non-fishers (9); non-local fishers (9); and scientists, administrative personnel, and stakeholder members directly involved in fishery management councils and committees (9). The interview protocols are located in Appendix A. I spent a total of 58.5 hours interviewing respondents. The average interview lasted approximately 1.5 hours, with the shortest interview lasting 17 minutes and the longest lasting three hours. Eight of the respondents were women, thirty-nine were white. The average age was approximately 61, with the youngest being 27 and the oldest at 86. Informed consent was procured from all interviewed participants (Appendix B).

*Two Rivers Fishers*

The local Two Rivers fisher group included current and retired fishers and fisher's wives. These interviews illuminated the experiences of fishers in the area, changes in the industry and community, and formal and informal political involvement in fishery governance. Out of the 13 local fishers interviewed, I spoke to six retired fishers, three of which recently left the industry because of the difficulty of making a living. Three fisher's wives gave me interviews, one of whom runs a crab shedding operation. Of the five fishers interviewed currently making their living from the water, one was a woman. The average age of this group was approximately 61; the youngest was 36 and the oldest was 84.

*Two Rivers Non-Fishers*

Interviews with local non-fishers in Two Rivers helped in determining the affects of changing demographics on the community, informal governance processes, and formal

fishery governance processes. Many local non-fishers have a stake in fishery management as recreational fishers, boaters, or concerned citizens. Fishing and recreational activities on the water are integral components of the regional cultural. Although many people would not consider themselves to be recreational fishers, all fish. Out of the nine local non-fishers interviewed, four were women. One woman has lived in the area all her life; she has extensive family ties in the area and to the fishing industry going back several generations. Another women has been living in the area for over 30 years; her and her family moved to the area to live on the water. The two other women interviewed have been in the area for a long time, one married into the community, the other grew up in the area. Of the five men interviewed, two were born in Two Rivers and have extensive family histories going back generations. Two are not native to the area but have extensive family histories of visiting the area and now have permanent residences in the community. The last of the men interviewed is a relatively new resident, having only been in the area a few years. The average age of this group was 63; the youngest was 36 and the oldest was 86.

*Ex Local and Extra Local Fishers*

In addition to Two Rivers residents, I interviewed people strongly tied to the fishing industry in the northern and southern coastal regions, as well as fishers that have left Two Rivers. This group offered a point of comparison and linkage to broader factors affecting fishers in the region. All nine of the people interviewed in this group were men. I spoke to two fishers who left Two Rivers and quit fishing; one retired and one transitioned to an alternative job. Two of the non-local fisheries are currently in working as fishers. I interviewed one seafood dealer and one gear supplier. I was also able to talk

to the president of a national fisherman's association and the president of a local fisherman's association. And, I interviewed a retired North Carolina Division of Marine Fisheries (DMF) law enforcement officer with extensive family ties to the fishing industry and the region. The average age of this group was 65; the youngest was 56 and the oldest was 86.

*Scientists, Administrators, and User-Group Representatives*

Finally, interviews with DMF scientists, management personnel, and stakeholder representatives supplied relevant information about the relationship between fishers and the fishery management structure and between state, regional and federal levels of fishery governance. I interviewed nine people in this group, one was a woman. Five of the people I interviewed in this group worked for the DMF; these included a fishery biologist; a statistician; a district supervisor; and a Department of Environment and Natural Resources, Habitat and Water Quality representative. I was also able to interview a DMF representative to the Mid Atlantic and South Atlantic Fishery Management Councils and Atlantic States Marine Fisheries Commission. The other four people I interviewed were stakeholder members on councils and advisory committees. Three were recreational fishing representatives and one was a commercial fisher representative. The average age of this group was 55; the youngest was 27 and the oldest was 72.

Purposive Sampling

A purposive sampling technique was used to ensure variance among participants by gender, race/ethnicity, age and relationship to community, fishing industry, and fishery governance system. Purposive sampling is effective in selecting participants for

in-depth interviews to maximize information requirements for a study (Berg 2007). The participants selected through purposive sampling produces "Intensive interviews [that] are a device for generating insights, anomalies, and paradoxes" (Hochschild 1981). Recruitment of fishery scientists and researchers occurred through email; there are complete contact lists for fishery scientists, personnel, and stakeholder council members on the DMF website. Interviewees with DMF personnel were also helpful in referring further people to interview. While websites listing all DMF employees and stakeholder members were readily available, demographic statistics for the Two Rivers area do not exist.

Two Rivers is a is a class code U6 populated place (USGS 2008). Class code U6 identifies a populated place as located wholly or substantially outside the boundaries of any incorporated place or census designated place with an authoritative common name recognized by the U.S. Geological Survey (USGS 2003). In other words, although Two Rivers can be located on most maps, it is not a town or part of a town. While new GIS technologies are useful in obtaining a narrower range of census data from a broader geographic region, these technologies are less than useful for Two Rivers because of the prevalence of U6 designated places. Out of 104 populated places in the county, only seven are incorporated, census designated places with available census information (NC Hometown Locator 2008).

Social mapping produced information about the social characteristics of the area necessary to construct the sample. As Watters and Biernacki (1989) explained, more rigorous sampling techniques, such as stratified, cluster, and quota methods require considerable a priori knowledge about the population. They are ineffective in

constructing a sample from populations, of which relatively little is known. Also, participant recruitment of essential interviewees with experience and knowledge about the community's and fishers' political experiences in fishery management was extremely helpful. Across the board interviewees were eager to recruit more people for me to interview. This was especially important in locating former local fishers and non-local fishers. Non-local fishers were also located through visits to fish houses and docks outside the community.

My Role in the Field

As a result of my relationship with the Two Rivers community, my role in the field was participant-as-observer (Gold 1958). This role minimizes problems of role-pretending (Gold 1958). The people of Two Rivers know me and my research intentions. As Adler and Adler (1987) pointed out, the Chicago School of researchers believed field researchers should enter their settings, announce their intentions, and begin to interact with people they encounter. Forthrightness is one of the benefits of the participant-as-observer role, which allows informal and formal observation, increased trust between informants and researcher, increased friendliness (Gold 1958), and reduced role conflict for the researcher (Adler and Adler 1987). However, all research is secret in some ways; subjects can never know everything about a research project, because researchers rarely know everything (Fine 1993). Much of the insights about a project occur during the writing and analysis process, once the field work is finished.

Internal Validity: Triangulation and Researcher Bias

The personal nature of my field research in Two Rivers represented a potential threat to the internal validity of this study. Gold (1958) cited the potential of the

researcher to "go native," [27] as well as researcher bias and reactive effects as problems associated with the participant-as-observer role. Gold (1958) prescribed a need to preserve elements of "strangeness" in order to maintain objective researcher neutrality. Adler and Adler (1987) claimed strangeness is embedded in the role of the researcher through, as Emerson, Fretz, and Shaw (1995) explained, the activities of research, and the process of writing field notes.

To control for researcher bias and reactive effects, Marshall and Rossman (2006) advocate critical self-reflection on the part of the researcher of their role and influence in the field and Denzin (1970) recommends triangulation. Along with critical self-reflection, triangulation acts as a control on the data to ensure the most accurate collection of information and portrayal of reality as possible, the hallmarks of validity for quality research according to (Becker 1996; Guba and Lincoln 2005). Therefore, to increase the validly of my research and analysis, I documented my interactions within the field daily to facilitate awareness of changes in me, as the research instrument, and the setting as a result of my field activities. Meanwhile, I built triangulation into the research design through the use of multiple methods of analysis and data sources. The comparison of different data sources, such as interviews among participants, interviews and documents, and interviews and observations revealed anomalies, misinformation, partial stories, and areas for further research and analysis.

**Summary Overview**

Understanding the factors that influence the political engagement of local actors is one step toward understanding how to avoid tragedies of the commons and how to design

[27] Adler and Adler (1987) defined "going native" as developing an over-rapport with the research subjects, which could result in the loss of analytic perspective, influence of the phenomena under investigation, and loss of self, whereby the researcher abandons the task of analysis and fails to return from the field.

new forms of socially and environmentally sustainable development. There are four important tasks toward this goal. The first is to analyze the constraints and opportunities of the organizational structure of the governance system for political participation. The second is to explore the political competition among user groups within the confines of the organizational structure. The third is to examine the activities and political competition of local resource user groups as they occur outside the formal political system. The fourth is to consider the political economic context within which fishery governance and political competition occur. These are the topics of the next four chapters.

# CHAPTER FOUR

## "COMMERCIAL FISHERMEN: AN ENDANGERED SPECIES"[28]: OPPORTUNITIES, CONSTRAINTS AND HISTORICAL VISIBILITY IN THE FORMAL GOVERNANCE OF NORTH CAROLINA FISHERIES

The North Carolina state, as well as the United States federal fisheries governance system are significant representations of co-management involving local user-groups, government officials, and natural resource management agencies. However, participatory or collaborative governance does not automatically involve democratic sharing of power and responsibility. The legislative and organizational imperatives of the fishery governance system exert a manifest structural power, which shapes the opportunities (infrastructural power) and constraints (despotic power) user-groups face in influencing fishery governance processes. While the infrastructural power of the system creates extensive opportunities for the participation of local fishers in the governance processes that affect their livelihoods, despotic power is exerted by legislative requirements to increase conservation of marine resources by using the best available science, which restricts the extent of fisher influence. Meanwhile, the historical relationship between fishers and the governance structure has resulted in an inordinate emphasis on regulating

[28] This phrase is printed on hats made by the North Carolina Fishermen's Association, a commercial fishers interest group.

commercial fishing through harvest reduction strategies. The result is drastic declines in the number of commercial fishers at the same time as pathways, opportunities, and encouragement for fisher involvement in formal fisheries governance processes are at a historical high.

This chapter begins with a general overview of fisheries governance in the United States. The second section of this chapter maps the opportunities available to local fishers to participate and influence fishery decision-making by sketching the co-management structure of North Carolina fisheries governance. The third section outlines the conservation requirements of the 1996 and 2006 Amendments to the Magnusson Act and the Endangered Species Act as structural constraints on the influence of fishers and administrators in the formation and outcomes of state fisheries policies. The fourth section discusses the problems with best available science-based conservation mandates and presents the fishery management plan for spotted seatrout and measures to conserve sea turtles in North Carolina as illustrations. The fifth section links the constraints fishers face in influencing fisheries policies to the historical visibility of commercial fishing, which has resulted in strategies to reduce the harvesting capacity of the commercial fishing industry. Empirical data on recent trends in commercial fishing, in North Carolina and across the United States are presented.

**Fisheries Governance in the United States: A Historical Overview**

Infrastructural power, according to Mann (1993), consists of two processes: the extension of legitimate authority and the creation of avenues or platforms for civil society participation. The primary federal legislation governing fisheries in the United States, the Magnuson Fishery Conservation and Management Act was passed in 1976. Its main

purpose was to extend the legitimate authority and, thereby, consolidate the control of the federal government over the nation's fisheries. This was achieved through policies to promote full domestic utilization and Americanization. Full domestic utilization entails the elimination of foreign fishing operations within United States jurisdiction. Americanization refers to the development and promotion of the United States fishing industry. In the process, the Magnuson Act developed a co-management structure for fisheries governance with extensive opportunities for the political participation of fishery user-groups.

Full Domestic Utilization and Americanization

The Magnuson Act was, in part, a response to a dramatic increase in foreign factory trawler fishing[29] near United States coasts in the 1950s and 1960s (Hobart 1996). In order to claim legitimate authority over national waters, the Act defined the United States Exclusive Economic Zone (EEZ) as extending between three and 200 nautical miles from the United States coastline. Several amendments further consolidated United States control, while promoting the growth of the fishery economic sector. In 1978, the Processor Preference Act encouraged the growth of the American processing sector by denying permits to foreign processing vessels.[30] The development of the United States fishing industry was further encouraged through protection from international authorities and imports; loans for financing or refinancing the costs of vessels and gear; technical support and monetary assistance for the development of underutilized fisheries; and disaster relief assistance to the fishers, charter fishing operators, United States fish

[29] Factory trawlers are integrated harvesting and processing vessels. The ability to process at sea allows the vessel to travel farther from port and stay at sea up to months at a time.
[30] In 1980, the American Fisheries Promotion Act allowed foreign fishing privileges on the basis of a nation's reduction of trade barriers to U.S. products.

processors, and owners of related fishery infrastructure affected by disasters (MFMA 1976; NOAA 2010a).[31] As a result, foreign catch from the United States EEZ declined from about 3.8 billion pounds in 1977 to zero in 1992 (Buck 2007), while domestic offshore[32] catch increased dramatically, from about 1.6 billion pounds in 1977 to 8.3 billion pounds in 2008 (NMFS 2010b).[33]

Co-Management Fisheries Governance

The Magnuson Act created an extensive co-management structure to oversee the processes of full domestic utilization and Americanization. Co-management is a hybrid arrangement that emphasizes sharing responsibility for natural resource management among government and user groups (Berkes 2009). In the fisheries governance system, co-management is illustrated by the participatory nature of the regulatory structures and legislative mandates to increase participation of fishers and other user groups. (See Appendix C for an organizational chart of the federal governance system.)

Co-management is instituted through eight Regional Fishery Management Councils[34] created by the 1976 Act. The Magnuson Act mandated that the Councils consist of "States, the fishing industry, consumer and environmental organizations, and other interested persons" (MFMA 1976: Sec. 2: [b-4]). Whereas general responsibility for implementing the Magnuson Act is vested in the Secretary of Commerce, acting

[31] Much of this was due to reinforcement of the 1954 Pelly Act/Fishermen's Protective Act and the 1956 Fish and Wildlife Act.
[32] A term referring to EEZ waters past the jurisdiction of states.
[33] It is interesting to note that while commercial fishing in the United States is subsidized by the federal government to an extent, these programs have very little impact on adding additional fishing capacity or making United States fisheries commodities more competitive in the world market (NOAA 1999). The gross value of direct United States subsidies in 1999 was cited as $25 million, or slightly more than 0.5% of the gross ex-vessel value of commercial landings, which is much less than other fishing nations (FAO 2004).
[34] The eight Regional Fishery Councils are: New England, Mid-Atlantic, South Atlantic, Gulf of Mexico, North Pacific, Pacific, Western Pacific, and Caribbean.

through the National Oceanic and Atmospheric Administration (NOAA) and the National Marine Fisheries Service (NMFS), planning decisions are entrusted to the regional councils with the scientific guidance of the NOAA science centers.[35] Each council has authority over the fisheries adjacent to the states represented on that council, and is responsible for creating fishery management plans (FMPs) for each fishery within its jurisdiction. The Act also requires councils to hold public hearings, and to take into consideration the comments of hearing attendees when developing fishery management plans. The fishery management plans are expected to meet several National Standards (NS), which describe national conservation and management measures.

**Co-Management and Other Opportunities in North Carolina Fisheries**

The legislative and organizational structure of the North Carolina State system mirrors the structure of the federal system. Where the federal system governs the fisheries between three and 200 nautical miles from the United States coastline, each coastal state is responsible for the fisheries between their coastlines and three miles from the shore. The primary regulatory agency responsible for the stewardship of North Carolina's marine and estuarine resources is the Division of Marine Fisheries (DMF). The DMF has existed since 1822 when the North Carolina General Assembly enacted legislation to impose gear restrictions on the oyster fishery (NCDMF 2010a). In 1915, separate fish and shellfish commissions were combined to form a commercial fishery regulatory agency; and, the scope of the DMF was expanded to include regulatory authority over recreational fishing activities in coastal waters in 1965. However,

[35] The regional NOAA science centers are located in Northeast, Southeast, Northwest, Southwest, Alaska, and Pacific Islands.

significant expansion of regulatory authority in the state did not occur until 1997 when the Fisheries Reform Act (FRA) was passed.

The FRA was passed at a conflictual time in North Carolina fisheries governance. Throughout the 1980s and 1990s conflicts between user-groups were increasing in number and intensity in North Carolina (Johnson and Orbach 1996). The number of recreational fishers was growing along with the population of coastal areas (Deaton et al. 2010). At the same time, fishing regulations designed to decrease conflict between recreational and commercial fisheries, while decreasing commercial harvesting capacity caused commercial fishers to move into other fisheries (Johnson and Orbach 1996). This added to conflict and fishing pressure in those fisheries, creating a vicious circle of more regulations, further displacement, and increased conflict.

Concomitantly, Atlantic coastal states were implementing more stringent conservation measures to comply with the federal regulations. Florida instituted a state-wide gill net ban and several states implemented limited license and limited access privilege programs[36] (Johnson and Orbach 1996). North Carolina fishery administrators were concerned that the state's fisheries would be perceived as relatively unregulated, which, in conjunction with the abundance and diversity of fish in state waters, would draw fishers from other states, thereby increasing conflict and adding to over capacity in fishing effort (Johnson and Orbach 1996).

Hence, the FRA was designed to consolidate authority over state waters in order to decrease conflict among user-groups, control access, and match the harvesting effort of

[36] Limited License Programs limit the total number of commercial fishing license allowed to exist at any one time. Limited Access Privilege Programs limit the number of fishers allowed to harvest a specific fish, or species group.

commercial and recreational fisheries to the maximum sustainable yield[37] of fishery resources. This required increasing the capacity of the management agency to monitor and enforce approved use-strategies and improving data collection and scientific oversight of the biological and ecological effects of fishing. Toward these purposes, the FRA mandated the development of fishery management plans (FMP), required the state to adopt coastal habitat protection plans, instituted a limited license program to reduce harvesting capacity in the commercial fishery, mandated research into the implementation of a coastal recreational fishing license, and significantly restructured and expanded the role of local participants in state fisheries management (NCGA 1997). Increased participation in structured and regimented governance processes was seen as a way to funnel local user-group conflict through legitimate channels of the formal political system.

User-group conflict is institutionalized within the North Carolina fisheries governance system by the state adoption of the public trust doctrine. The public trust doctrine is a traditionally common law doctrine (judicially developed, rather than statutory) that defines resources, such as "the air, running water, the sea and consequently the shores of the sea" as public resources, incapable of private ownership (Macinko 1993; NRC 1999: 40; Sax 1970). As it developed within the United States, this principle was extended to fisheries, which were defined as belonging to the public, and held in trust by the government.

[37] Maximum sustainable yield (MSY) is the largest average catch or yield that can continuously be taken from a stock without hampering the ability of the stock to reproduce itself.

However, the public trust doctrine is not just a common law in North Carolina; it is legalized within the state Constitution. Article XIV, Section 5 of the Constitution of North Carolina states:

> "It shall be the policy of this State to conserve and protect its lands and waters for the benefit of all its citizenry, and to this end it shall be a proper function of the State of North Carolina and its political subdivisions to . . . preserve as a part of the common heritage of this State its forests, wetlands, estuaries, beaches, historical sites, open lands, and places of beauty."

The public trust doctrine is reinforced within the North Carolina fisheries governance system. The Fisheries Reform Act (FRA) explicitly requires the Division of Marine Fisheries (DMF) to manage fishery resources for the equal benefit of all uses and user groups, in recognition of the importance of fishing and fishery resources for commercial and recreational fishing industries, tourism and as a cultural heritage for state residents (NCGA 1997).

During the development of the FRA, the North Carolina General Assembly charged the DMF with the "responsibility to manage conflicts between citizens using its public waters and [. . .] vested [it] with the general police power necessary to resolve such user conflicts" (NCDMF 2010f: 203). However, the DMF was designed to manage fish populations using specialized fisheries science and statistics to determine general state-wide trends in fish populations (NCDMF 2010f). Recognizing the limited ability of science to solve political issues of access and allocation, the DMF designated the management of fishery competition and conflict as a joint endeavor of the DMF, Marine Fisheries Commission (Commission), advisory committees (Committees), and local user-group participants (NCDMF 2010f). Hence, the politics of allocation and access to fishery resources are the responsibility of the Commission, Committees and public

participants, while the science used to make those decisions is supplied by DMF scientists. DMF administrators ensure that rules, procedures and the general legislation are followed.

The Commission is primarily responsible for establishing fishery regulations; the purpose of the Committees is to aid the Commission in development of specific fishery management plans. The Commission has nine members; each Committee may have a maximum of 11 members. Both are required to be representative of stakeholder user-groups from the recreational and commercial fishing sectors and general public. Recreational fishing representatives may be fishers or sport-fishing industry representatives; commercial fishing representatives include fishers, dealers, processors, or distributors; and, at-large positions consist of commercial or recreational fishers or concerned non-fisher citizens. In addition to representing the interests of stakeholders, Commission and Committee members must represent each of the three coastal regions, the northeast, central and southeast. The Commission and Committees also have scientist representatives. (See Appendix D for an organizational chart of the North Carolina governance system.)

While the governor appoints all members of the Commission, the Commission appoints members of the Committees. There are three types of Committees. These include: regional, standing, and ad hoc subject matter. The Regional Committees are organized for the Northeast, Central, Southeast, and Inland areas. The standing Committees consist of finfish, crustacean, shellfish, and habitat and water quality. Ad hoc subject-matter Committees have been formed for sea turtle bycatch, Core Sound stakeholders, public information, law enforcement/civil penalty remissions, blue crab

scientist, strategic habitat areas, conservation fund, and spiny dog fish compliance. The Commission convenes other Committees as necessary to deal with emerging issues. Committees are also formed for specific species of finfish and shellfish when fishery management plans are up for review. All of the Commission and Committee meetings are open to the public and include a public comment process.

In addition to the nine Commission positions, there are approximately 225 Advisory Committee positions. Many advisors sit on more than one committee resulting in an average number of advisors in the system at any time of approximately 150 (Mirabilio and Baker 2006). With 16 advisory committees, North Carolina currently has one of the most expansive co-management state fishery governance systems in the United States. There are many opportunities for the political involvement of local fishers created by the federal and North Carolina fisheries governance structures. These opportunities are sources of infrastructural power, which give local fishers a way to enter into and, thereby, influence the decision-making processes that determine their livelihoods. However, the existence of co-management structures does not automatically imply equal responsibility for decision making.

Empirical Circumstances of Co-Management Processes: The Experience of Fisherpeople

During the summer of 2009, a great deal of frustration with the formal fisheries governance processes existed among Council[38] representatives and meeting attendees with the processes of developing fishery management plans. Each fishery management plan is produced and reviewed by following an established protocol of events that normally takes two years to complete, after which the plans are reviewed every three

[38] The terms council, council representative(s).member(s), or user-group representatives will be used here on out to discuss interviewees that serve on the Commission and Committees without distinction so as to increase protection of anonymity.

years. The process starts with the Advisory Committees. At each meeting throughout the process, the DMF provides scientific information on the status of the fish stock under consideration, social and economic assessments, and possible management options to address the issue, including maintaining status quo or no action. The fishery management plan Committee then discusses and selects its preferred options by majority vote, which are then presented to the Commission. The meetings of the Commission follow the same format, eventually resulting in a final decision. (See Appendix E for a chart of the FMP process).

Many of the council members expressed frustration with the set processes and procedures of fishery decision-making. For example, one interviewee said:

> "All the meetings follow the same rational about data collection, analysis, presentations, and arguments for and against. They are all based on the same arguments. Red drum was the same as trout which is the same as flounder."

In many instances, the procedural nature of the decision-making process creates a sense of futility among council representatives. Even long term, stakeholder veterans of the fishery political process were despondent.

> "It's all just a formality. They already know what's going to happen because they have a goal in mind. I was on the Marine Fisheries Commission 20 years ago and other Advisory Councils since; it does no good. I just do it to satisfy myself. The young guys won't even get involved. I could have carried five with me but no one would come."

Council members, likewise, view public input through the meetings as a formality and waste of time. One Council member elaborated this point:

> "And the thing of it is and I didn't know it either before I got on the Committee – when they do call public meetings it's useless to say anything. It's already been through all of it – its already passed. It's been through the commission right on through Raleigh by the time they call a public meeting. So people can get up there and raise cane all they want to; it's not going to do one bit of difference. It's already gone through the legislature. That's what I am pretty sure has happened

> numerous times and that's why people – the commercial people have quit going to any meetings. You don't see hardly anybody from the commercial at any of our meetings. You are going to see some recreational people there; but mostly there is hardly anybody there unless there is a special issue coming up like the spotted trout and drum. Very few times you see anybody at the meetings; three or four people sometimes unless it is a special interest thing; and, then, we don't see a bunch of people, 10 or 20 people at most."

Administrators are more optimistic. They view the low attendance rates at public meetings as a sign that user-groups are in agreement with the processes and outcomes of fishery governance. As one administrator explained, "By the time it goes to public meeting no one comes. We pretty much compromised to something that seems to be reasonable." However, meeting attendees are as frustrated as the Committee and Commission members. The following sentiments are echoed among user-group attendees at public meetings.

> "I have been to a few until I found out they aren't going to listen to you so I just quit going. They are going to do what they want anyway. That is just the way it is. Your fighting a losing battle so we seldom go because if you go and have an effect on it they just have another one."

These comments highlight a sense of frustration among commercial fishers as a result of their limited ability to influence fisheries policy outcomes in a meaningful way, which speaks to the despotic power of the fisheries governance system. Despotic power, in Mann's (1993) sense of the term, limits the influence of local user-groups in fisheries governance. Despotic power emerges from the legislative and organizational imperatives that restrict the range of issues and topics open to debate within routine realms of participatory management processes by dictating the roles – duties and obligations of administrators and user-group participants.

In formal processes of fisheries governance, the role of user-group participants is to debate and choose among science-based policy options developed by fishery

administrators. While administrators develop the policy options, fishery and environmental legislation set the processes and procedures of fisheries governance by defining the problem and solution. Legislation clearly defines the problem as commercial fishing and the solution that agencies must pursue as conservation based on the best available science. These legislative and organizational imperatives impose constraints on the participation of local fishers, as well as administrators.

**Despotic Power in Fisheries Governance: Legislative Imperatives as Constraints**

Although North Carolina state fisheries administrators are reluctant to admit it, the federal fisheries governance system is a significant factor in the governance of North Carolina fisheries. Administrators openly recognize the influence of the Endangered Species Act (ESA) on state fisheries policies, but refute the influence of federal fisheries legislation. The management of fisheries in the United States has traditionally been divided between state managed coastal waters and the federally managed Exclusive Economic Zone. The Magnuson Act specifically preserves the autonomy of states to regulate all fishing within their boundaries (MFMA 1976: Section 306[a]). Conversely, Section 306[e] of the Magnuson Act states the authority of the Secretary of Commerce to take control of a fishery in state waters where the state in question has failed to create, or has created a fishery management plan that compromises a federal fishery management plan.

In 1976 Section 306[e] of the Magnuson Act was not a significant influence on the authority of states. However, the 1996 amendment to the Magnuson Act, the Sustainable Fisheries Act (SFA) fundamentally altered fisheries management in the United States. The SFA turned the tide of fisheries management in the United States

from economic imperatives to environmental stewardship with the incorporation of ecosystem-based management, the precautionary principle,[39] and mandates to end overfishing and rebuild overfished stocks (Gray and Hatchard 2007). As a consequence, the coastal fishery policies of states have also become progressively more conservation oriented. And, commercial fishing became the predominant focus of policies designed to end overfishing,[40] rebuilding overfished stocks, reduce bycatch,[41] and protect threatened and endangered marine species and habitat.

The Problem Defined: Commercial Fishing

In 1976, there were seven National Standards (NS) that guided fishery governance. The most important was NS 1:

> "conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery for the United States industry;" where "optimum yield" is defined in terms of the amount of fish which will provide the greatest overall benefit to the Nation."
> (MFMA 1976: Sec. 301[98-623(1)])

Essentially, NS 1 defined the primary purpose of fishery management plans as encouraging economic growth within the maximum possible confines of sustainable use. The fisheries management structure was harshly criticized for minimizing conservation, while essentially hastening the depletion and destruction of marine resources (Fairlie and Hagler 1995). Throughout the 1980s and 1990s the mantra was "Too many vessels are

[39] The precautionary approach calls for risk averse decisions that err toward conservation. The burden of proof is shifted from having to prove that damage is being done before commerce and sport are changed to having to prove that damage is not being done before expansion of existing or creation of new fisheries is allowed. In the meantime, measures to prevent overfishing are implemented regardless of scientific certainty.

[40] Overfishing occurs whenever a stock or stock complex is subjected to a rate or level of fishing mortality that jeopardizes the capacity of a stock or stock complex to produce maximum sustainable yield (MSY) on a continuing basis (Blackhart et a. 2006).

[41] Bycatch is defined as the portion of a catch taken incidentally to the targeted catch because of non-selectivity of the fishing gear to either species or size differences. Bycatch can be divided into two components: incidental catch and discarded catch. Incidental catch refers to retained or marketable catch of non-targeted species, while discarded catch is the portion of the catch returned to the sea as a result of regulatory, economic, or personal considerations.

chasing too few fish" (Fairlie and Hagler 1995: 65; MSA 1996). The collapse of the New England groundfish[42] fishery in the 1990s was promoted as a 'tragedy of the commons' caused by unregulated, open-access fisheries, giving credence to the need for greater conservation measures in fisheries management (NOAA-NEFSC 2004).

*Amendments to the Magnuson Act: From Commercial Fishing to Conservation*

In response, the 1996 and 2006 amendments to the Magnuson Act strongly reaffirmed the importance of conservation. As the former director of the NOAA Fisheries Service, Hogarth (2007) explained,

> "In the initial years, after we eliminated foreign fleets from our waters, the goal was to build domestic fisheries with a focus on efficiency and economic growth. It wasn't until the 1990s that we realized the need to balance this growth with conservation for long term sustainability."

Thus, the 1996 Sustainable Fisheries Act (SFA) amended the Magnuson Act to protect marine fish stocks with requirements to prevent and stop overfishing, rebuild overfished stocks, minimize by-catch,[43] and protect essential habitat. While the conservation of fish was defined as a predominant goal, the focus of fisheries governance was broadened to protection of other marine animals and habitat. The SFA required fishery management plans to include environmental assessments reviewed by the Environmental Protection Agency[44] (EPA 2005).

The 2006 Reauthorized Act further supported the goals of the SFA by setting a firm deadline to end overfishing, and start rebuilding overfished stocks by 2011 (MSRA

[42] Groundfish are fish that live on, in, or near the bottom of the body of water they inhabit. Some typical groundfish species are sole, flounder, cod, haddock and halibut.
[43] By-catch refers to non-targeted and prohibited marine species incidentally captured along with targeted species; but, by-catch also refers to marketable and non-marketable species.
[44] Environmental impact statements for fishery management plans and amendments are prepared by NMFS and Regional Fishery Management Councils in accordance with NEPA, Council on Environmental Quality regulations, and NOAA Administrative Order 216-6. EPA reviews environmental impact statements in accordance with the goal of Section 309 of the Clean Air Act to achieve "fishable" waters wherever attainable.

2007). The Reauthorized Act also required compliance with the National Environmental Policy Act (NEPA) (NOAA 2010c). Although the SFA increased the role of EPA in fisheries governance, the Reauthorized Act institutionalized NEPA processes throughout fisheries governance. The revised procedures proposed a single environmental review procedure and impact assessment consistent with the higher standards of NEPA. Greater coordination with NEPA ensures broader stakeholder participation and a processual and interdisciplinary science-based approach that more fully incorporates environmental protection and conservation in the development of fishery management plans beyond the sole management of fish to land-based and water-based marine-dependent habitat and animals.

*The Endangered Species Act: NMFS in North Carolina*

While the greater incorporation of NEPA through the 2006 Reauthorized Magnuson Act strengthens and broadens conservation goals in fishery legislation, the Endangered Species Act (ESA) has historically influenced fishery management. As one North Carolina state fishery administrator stated, "the Endangered Species Act trumps all fisheries policies." The purpose of the ESA is to conserve threatened and endangered species and their ecosystems. Under the ESA, it is illegal to *take* protected species. Section 3 of the ESA (1973) defines take as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." In fisheries governance, take is often simply referred to as *interaction*, denoting a general proximity between protected species and commercial fishing activities, which may be defined as harassment. The broadness of this definition places many facets of commercial fishing,

as well as other components of private industry, in violation of the ESA, which are, as a result, illegal activities.

In 1982 Congress amended the ESA to create flexibility in regulating the incidental take of endangered and threatened species. Section 10 allows private individuals or public agencies to submit a Habitat Conservation Plan (HCP), which documents potential harm and means of mitigation of that harm to threatened species in order to acquire an Incidental Take Permit (ITP). Incidental take is defined as the accidental taking of a protected species in the course of otherwise lawful activities. NMFS is responsible for implementing the ESA in relation to all marine resources, as well as the coordinating entity for the process of acquiring an ITP in relation to marine resources.

Currently, NMFS is responsible for 69 endangered or threatened marine species. The Regional Fishery Management Councils are required to develop take reduction plans to reduce the mortality or serious injury of ESA protected species incidentally taken in the course of commercial fishing operations. The Councils are also required to amend federal fishery management plans to include provisions for the protection of essential habitat. NMFS implemented an Observer Program in 1972 to monitor compliance with habitat protection and take reduction plans and collect data on fisher interactions with protected species; federal and state fisheries found out of compliance with the ESA face possible closure. The ESA and NMFS are most evident in North Carolina regarding endangered and threatened sea turtles, for which the state of North Carolina runs a large portion of the coastal commercial gill net fishery under a Section 10 permit.

**Best Available Science-based Conservation: The Solution to Commercial Fishing**

NEPA and the ESA not only increase the conservation requirements of fisheries governance; they also increase the importance of science-based decisions. NMFS actively promotes the separation of science-based conservation measures from the politics and economics of fishery allocation and access (Wilson et al. 1994). National Standard (NS) 2 of the Magnuson Act (MFMA 1976; MSA 1996; MSRA 2007) states that all conservation and management measures shall be based on "the best scientific information available." The ESA (1973: Section 1533[b](1)[A]) also requires regulatory decisions rest "solely on the basis of the best scientific and commercial data available." This strong emphasis at the federal level means that states are also bound by the best available science mandates. Therefore, while North Carolina does not have a best available science mandate for fisheries governance, the best available science requirements are implemented to ensure the congruence of state fishery management plans with federal fishery and environmental legislation. However, the best available science is not necessarily the best possible science.

The Problems with the Best Available Fisheries Science

There are two primary types of scientific fisheries data, independent and dependent. Fishery-independent data is collected directly by fisheries scientists, independent of the activity of the fishing sector (Blackhart et al. 2006). The size of fish populations is measured through the harvesting of fish in randomly, computer selected areas through a variety of harvesting techniques, such as gill nets, trawling, or crab pots. The majority of data is fishery-dependent, collected directly on a fish or fishery from commercial or sport fishermen and seafood dealers (Blackhart et al. 2006). Common methods include logbooks, trip tickets, port sampling, phone surveys, and observer

programs where researchers travel with fishers on their vessels. The primary source of dependent data comes from landings, the commercial catch of each species calculated from numbers that seafood dealers are required to report to the government.

Commercial fishers criticize the predominant use of fishery-dependent data to arrive at policy conclusions. Landings data only really explains the general characteristics of the fish that are caught. Fishers claim there is no way to know the true state of fish populations. Fish are a mobile, temporally and spatially variable resource that exists in opaque, vast habitats (Policansky 2001). Acquiring a representative sample of fish is not possible, much less controlling for the multitude of factors which affect population distributions and sizes. Furthermore, a decrease in fishing effort as a result of weather, market prices, or broader socio-economic factors appears in landings data as a decrease in fish populations.

Fishers are highly skeptical in general of fisheries science; the empirical circumstances they observe on a daily basis often do not match the results of fisheries scientific data analysis. As the president of a national fishers association, who actively participates on federal and state fisheries councils stated:

> "there are so many problems with the research and nobody believing what [NMFS and NOAA] are saying because it is contrary to everything we are seeing. [. . .]. The bottom line is that I am seeing abundances of fish that I have not seen in my lifetime and I can't make anybody understand that they are there."

This is a recurring sentiment among local fishers in interviews and during the public comment periods of the North Carolina Advisory Committee and Marine Fisheries Commission meetings. During one council meeting, a commercial fisher representative asked "how can there be a problem when people are catching more than ever?" The

scientist's response to this question was, "often times catch per unit effort[45] will increase even though there is a decrease in the population." This explanation rests on the assumption that catch per unit effort, which is determined from landings data – the number of fish caught, increases as a consequence of increased fishing effort. However fishers on both sides of the fence are confused by this explanation. A recreational fisher representative on a council stated:

> "I wasn't confident in the science, in the stock assessment. The science says the stock has been overfished so long, but it hasn't totally collapsed. Also, one year the recreational catch doubled even though we had just imposed stricter size limits. I asked how that happened and was told it had to do with more trout anglers reporting flounder. It didn't add up."

History has often proven the empirical observations of fishers right. Several times over the history of fisheries management in North Carolina, as well as at the federal level, a fish stock was predicted to be at the point of collapse, but landings increased from year to year. A fishery biologist pointed out:

> "Trout is going to be a good example. They did the first stock assessment using data up to 2006 and the model predicted that in 2007 and 2008 the stock will just collapse – but we had our best years ever."

While fishers are frustrated, the best available science mandate is also a source of consternation for fisheries administrators and scientists. Administrators agree that the estimates on catch per unit effort are not an exact science. As one fishery scientist explained:

> "What we don't have is information on the fishermen – are they setting more gear, are they setting more pots, more nets? Are they doing that because that is what it takes to make ends meet – fuel prices and everything else? Unfortunately, our trip ticket information does not give us information that allows us to get Catch per Unit Effort. We don't get how much gear they are setting; we just get the landings and where the fish are caught."

[45] Catch per unit effort is the quantity of fish caught per hour; it is estimated through the percentage of observer coverage and extrapolated by total landings.

Furthermore, the methods of fishery data analysis are parametric, the validity of which is jeopardized by several characteristics of fisheries systems (Frid et al. 2006). These include: a great extent of variance among regions/systems, the complexity of natural and social systems, and a great extent of uncertainty, which makes prediction highly suspect. One fisheries biologist explained that:

> "Even within the [Marine Fisheries] Division there is a lot disagreement on it. There are certain people that think it is the greatest thing in the world. They're probably the majority. Other people say this is the worst thing that has ever happened to fisheries management. We are selling stock assessments as numbers from God – and no they ain't. We don't know – if you really look at it we've violated half the assumptions of the models. Normal distributions – there is no fishery in the world that is normally distributed. Same with mortalities, regardless of the age of fish, the mortality is assumed to be the same. That is not the case; but, that is a very critical component of the model. Smaller individuals have a lot higher mortality than larger individuals. Recruitment[46] is also assumed to be the same. It is assumed that no new recruits are coming in and nobody's leaving. Well shit there's fish moving in and out of areas all the time. When I went to school if you violated an assumption you don't go forward; but, now it doesn't seem to matter to anybody. To me that's bad science and that, I really think in the long run is doing more damage than good to the managers-public relationship."

Although fisheries scientists and administrators are aware of the problems with fishery science, they are constrained by the duties and obligations of their roles in the fishery governance system. Rules and regulations must be implemented, regardless of the capacity of the science to predict the actual state of fish populations. "The best available science does not mean the best possible science." Fisheries administrators and scientists are pragmatic about this fact. "Everybody realizes that we don't really have the science we need but we have to do something." There is relatively little scientists and administrators can do about this situation. "It has been so engrained into the legislation and management of fisheries – especially among the feds. It's the word – you can't

[46] Recruitment is the amount of fish added to the portion of the stock that can be harvested each year due to growth and/or migration into the fishing area.

really argue with it." And, management today is less management tomorrow. As user-group representatives and administrators often explained:

> "A lot of people say your science is terrible – your information is terrible. You need better information and you shouldn't do anything until you get better information. We hear that a lot and we can't do that. You can't sit back and do nothing until some wonderful information that everybody would love to have but has been a long time coming and probably will be a long time coming in the future before we get the perfect information that everybody would like to have – the perfect science."

"[W]e don't have that knowledge. And, if you don't do something, the damage will be done and we won't be able to undo it."

Fishery scientists and administrators are very aware of the massive information problems created by the complexity and chaotic nature of the biological marine environment, even in the seemingly simple assessment of stock populations. Relatively simple marine stocks, either fish or sea turtle populations may be characterized by chaotic population patterns where the species has no equilibrium tendency, but varies over time as a result of the underlying stability of the wider marine ecosystems (Wilson et al. 1994). Habitat, migrations, spawning, growth, predation, climate change, water quality, and endless other attributes govern the life stages of, and interrelations among species. This makes long-term prediction and control of species populations practically impossible (Wilson et al. 1994). However, when the data illustrates that a species is depleted or in danger of becoming depleted, action to reduce the impact from fishing is required, even if administrators know fishing is not the cause of the problem. The recent fishery management plan processes for spotted seatrout and methods of turtle management in North Carolina are excellent examples.

Spotted Seatrout and the Best Available Science: Chaos, Complexity, or Overfishing?

In 2009, North Carolina started the process to develop the state's first fishery management plan for spotted seatrout. Spotted seatrout are harvested commercially and recreationally year round throughout North Carolina's estuarine and near shore coastal waters with a peak occurring in the fall and winter when the populations are most abundant. In early 2009, the DMF determined that spotted seatrout were overfished[47] and overfishing was occurring; and, a 50 percent reduction in mortality was required to achieve sustainable population thresholds. This assessment was based on data up to 2006. Commercial and recreational fishers vehemently attacked the age of the data and the predominant reliance on fishery-dependent, landings data. For the 2010 management plan, the stock assessment was updated with fishery-independent data and landings data for 2007 and 2008.

The results are illustrated in Figure 2 below. As can be seen, landings increased dramatically in 2007 and 2008, illustrating, according to the methods applied by fisheries scientists, an increase in the population of spotted seatrout between 2004 and 2008. However, spotted seatrout are a peculiar and highly unpredictable fish. According to the scientific conclusions that served as the basis for the spotted sea trout FMP:

> "Projections have been deemed unusable for management, and as such it is not possible to identify with relative certainty a level of harvest reduction that will give a 50 percent likelihood of success preferred by the MFC. While it is not unique to spotted seatrout to lack a stock-recruit relationship, this stock is different from other species because of its large amount of variability in recruitment and the fact that, currently, most fish only live to age 1 or 2 (a very short generation time). In addition, we know that if we have a cold stun we are very likely to have very poor recruitment, but we cannot predict future cold stun

[47] The spotted seatrout fishery designation of overfished and experiencing overfishing was determined by a spawning potential ratio (SPR) below a threshold of 20 percent. The SPR represents the ratio of the reproductive (spawning) potential of an average individual fish over its entire lifetime in a fished stock to that in an unfished stock.

events. These factors make it nearly impossible to predict with even relative certainty what the recruitment will be next year and the SSB[48] in two years."
(NCDMF 2010f: 162)

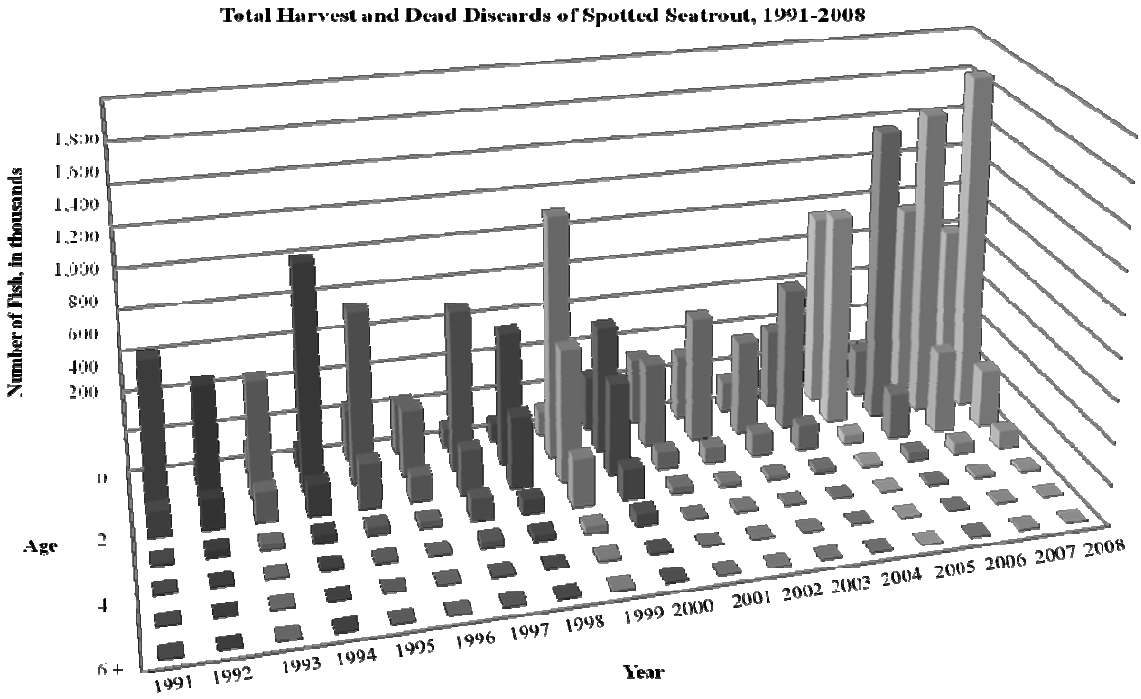


***Figure* 2.** Catch at age matrix for total harvest (recreational and commercial) and dead discards of Spotted Seatrout, 1991-2008 (NCDMF 2010f: 292).[49]

Spotted seatrout are highly susceptible to 'cold stun' or 'cold kill' events. As one fisheries biologist explained:

> "We have some size limits on it and stuff like that but the thing with speckled trout is cold kills. You grew up around here; you probably heard the old timers talk. You get a really cold winter; they're all going to go belly up and die. Well how do you manage something like that. You can do everything management wise and if you get a real cold winter it puts us back to square zero. The model can't account for that cold kill so it puts it as fishing mortality."

[48] SSB, or Spawning Stock Biomass is the total weight of all sexually mature fish in the population, which depends on year class abundance, the exploitation pattern, the rate of growth, fishing and natural mortality rates, the onset of sexual maturity and environmental conditions.

[49] Fishery scientists were concerned that the majority of seatrout caught are 2 years old or younger. A biologists explained during a meeting that "You see more underage fish in an overfished stock; 83% spotted seatrout are 1 year or less. There's a lot of fish right now but they're young – not all age 1 fish are sexually mature." According to the stock report, nearly all spotted seatrout are mature by age 1 [93% of females, 100% of males, and 96% of sexes combined; the length at which 50% of spotted seatrout were mature was 7.9 inches for males and 9.6 inches for females (NCDMF 2010f: 18).

When the rivers in North Carolina reach freezing temperatures, seatrout become stunned; they float to the top of the water, upside down, gasping for breath, and apparently expiring. Local fishers often use a dip net to harvest the stunned fish during these periods.

The 2009 stock status report officially documented cold stun events for the years of 1995, 2000, 2001, and 2003 (NCDMF 2010f). These events were identified to have a significant effect on seatrout populations, which can be seen in Figure 2. Stocks are much smaller the year following the events; but, they rebound rapidly in the following years. In the stock status reports, cold stun events appear as increases in fishing mortality in the model, which are not quantifiably distinguishable from other forms of mortality, such as that caused by harvesting or discarding[50] of live fish, or in other words, fishing. Therefore, the spotted seatrout stock assessment indicated that spotted seatrout are "overfished" and experiencing "overfishing." Once a fish stock is designated as overfished or undergoing overfishing, action by the DMF and Marine Fisheries Commission (Commission) to end overfishing and rebuild overfished stocks mandated by the Fisheries Reform Act (NCDMF 2010f: 162).

> "Despite the absence of reliable projections, the MFC is still faced with choosing a level of harvest reduction that will end overfishing and achieve sustainable harvest within 10 years. . . . The larger the reduction, the greater chance there is of reaching that goal [. . . ] Harvest reductions determined to end overfishing are not dependent upon projections and their inherent uncertainty."
>
> (NCDMF 2010f: 162)

The result of inadequate and incomplete information about fish populations is increased regulations on fishers for a circumstance they have not created and have no

[50] Spotted seatrout are discarded (released alive) for a variety of reasons including catch under the legal size limit, over the creel limit, or catch and release for conservation practices. However, not all discarded fish released alive survive. The mortality rates for live-released spotted seatrout are three times higher for the recreational industry than the commercial industry (NCDMF 2010f: 171).

control over. However, the problems with the best available science mandate are not confined to management of fish species. They also exist within the ESA in relation to endangered and threatened sea turtles.

Sea Turtles and the Best Available Science: Threatened and Endangered Species?

In North Carolina, the ESA and the role of NMFS is most apparent in fisheries governance in relation to threatened and endangered sea turtles. Since 1988, researchers with NMFS have been monitoring the distribution of sea turtles in North Carolina estuarine and near-shore waters (Sea Turtle Advisory Committee 2006). There are seven sea turtle species worldwide; five of the six protected species are found in North Carolina state waters (Sea Turtle Advisory Committee 2006). These are the green, loggerhead, Kemp's ridley, leatherback, and hawksbill. The green and loggerhead turtles are listed as threatened, while the Kemp's Ridley, leatherback and hawksbill are listed as endangered (NOAA 2010d).

In 1999, between November and December a mass stranding[51] event occurred along the Outer Banks where 97 sea turtles were found either dead, alive but debilitated, or injured (Gearhart 2001). NMFS identified three active fisheries predicted to have high interaction rates with sea turtles. These are the shrimp trawl fishery, large mesh (≥ 5-inch stretched mesh) flounder gillnet fishery, and small mesh (< 5-inch stretched mesh) multi-species gillnet fishery. The Pamlico Sound large mesh flounder gillnet fishery consists of two major components (Brown and Price 2005). A deep water fishery occurs in depths

[51] A stranded sea turtle is defined as any sea turtle found dead, alive but debilitated, or injured on any beach, ocean or sound side, or floating in the water. Sea turtles found within or caught in fishing gear or power plant mechanisms are classified as "incidental captures" and are not categorized as strandings. However, a turtle injured or killed during an interaction with fishing gear, which later washes ashore and is observed, is classified as stranded (Sea Turtle Advisory Committee 2006).

ranging from 10 to 20 feet; and, a shallow water fishery operates in depths of six to 11 feet.

Upon investigation, NMFS found the shrimp trawl fishery in compliance with ESA requirements. Subsequent at-sea monitoring aboard gillnet vessels revealed two sea turtle takes in the large mesh, deep water flounder fishery and no takes in the shallow water, large mesh or the small mesh, multi-species fisheries. Considering these data, NMFS issued an emergency closure of both components of the large mesh flounder gill net fishery in the southeastern Pamlico Sound from September 1 to December 15 of every year to protect endangered and threatened sea turtles (Gearhart 2001; Sea Turtle Advisory Committee 2006).

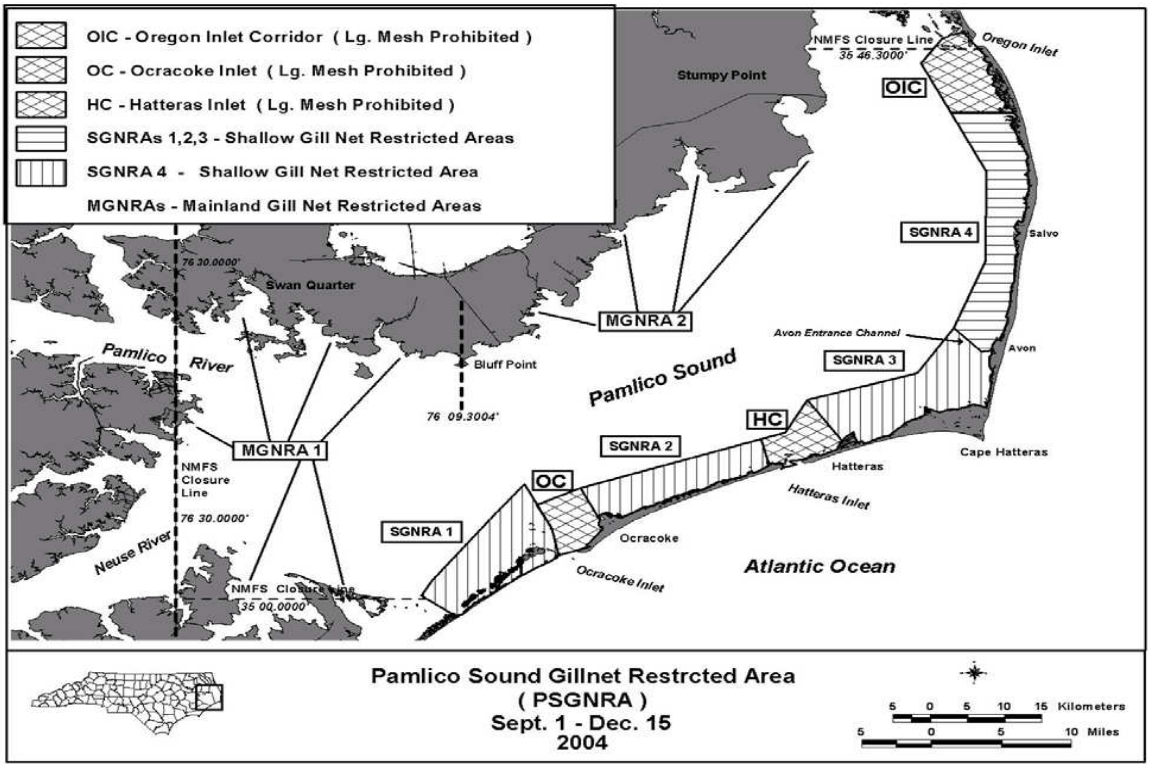


***Figure* 3**. Map of Southeastern Pamlico Sound and 2004 Pamlico Sound Gill Net Restricted Area (Sea Turtle Advisory Committee 2006: 11).[52]

[52] The Mainland Gill Net Restricted Areas extend out 200 yards from the mainland shore.

After the 1999 closure, the DMF worked with NMFS to acquire an Incidental Take Permit under Section 10 of the ESA (1973). In 2001, ITP 1528 was issued to the DMF by NMFS to allow the restricted operation of the flounder gill net fishery from September to December as shown in Figure 3 above (Gearhart 2001; Sea Turtle Advisory Committee 2006). Under the ITP, the gill net fishery in the Pamlico Sound has become known as the Pamlico Sound Gill Net Restricted Area (PSGNRA). The deep water flounder fishery has been permanently closed in the Pamlico Sound; but, the ITP allows restricted and conditional operation of the shallow water, large mesh flounder fishery in the fall season (September – December).

The conditions listed in the Habitat Conservation Plan (HCP) for ITP 1528 included: established sea turtle take levels; permitted entry requirements for fishers; restricted fishing areas; 2,000 yard limits on small and large mesh nets; mandatory weekly logbook reporting by fishers including port, area, flounder pounds, yards of gillnet, soak time, sea turtle captures and condition of sea turtles; DMF weekly reporting; mandatory observer coverage on vessels; mandatory sea turtle interaction reporting by fishers; sea turtle resuscitation training for fishers; handling and tagging requirements; violation protocols; and immediate closure of the fishery should authorized sea turtle take levels be reached (Sea Turtle Advisory Committee 2006). These conditions allow the operation of the flounder fishery, which is valued at $1 million per year (*Federal Register* 2005); but, the costs to fishers is tremendous. Area, season, and gear are restricted; and, observe coverage and weekly reporting is mandatory. Space and time are severely limited, so that while there is no monetary cost to attain a permit to fish the PSGNRA, it is an exclusive right, which is conditional. Refusal to take an observer or failure to report

accurate and timely information results in permit suspension, the severity of which ranges from 10-days to 6-months (Price 2009). The season is not just limited, it is unpredictable. The ITP for the PSGNRA allows 65 lethal and 185 nonlethal incidental takes of sea turtles during the fall season (Price 2009).[53] Once the allowable incidental take limits are reached, the fishery is closed immediately. This increases the unpredictability of fisher incomes.

***Figure* 4**. Loggerhead Turtle Escaping from a Shrimp Net Installed with a TED (NOAA Fisheries 2011).

In addition to closed seasons and areas, gear restrictions and increased oversight associated with Section 10 permits, commercial fishers are required to use bycatch reduction devices in other fisheries, such as the use of Turtle Excluder Devices (TEDs) in the shrimp trawl fishery. (See Figure 4 above for an operational picture of a TED in use.)

[53] By species, the lethal and nonlethal incidental take is 14 and 27 Kemp's ridley, 48 and 120 green, and 3 and 38 loggerhead turtles, respectively (Price 2009).

By-catch reduction devices are designed to release non-targeted and prohibited species. For example, TEDS, or turtle shooters as North Carolina fisherpeople call them, are bycatch reduction devices specifically designed to protect sea turtles in the shrimp trawl fishery. TEDs are installed in trawl nets; they consist of oblong aluminum rings with seven vertical tubes approximately six inches wide that run front to back, slanting down toward an escape hatch. Turtles are shot out the escape hatch, while shrimp and fish fall through the bars into the net.

The costs imposed on fishers because of TEDs include increased gear costs, increased fuel costs from the added weight and drag on the boat, and a loss of approximately 38 percent of the catch. Furthermore, commercial fishers express feelings of persecution and criminalization. As one commercial fisher explained:

> "We had coast guard come. They were regulating turtle shooters. They were boarding everybody – checking your boat, checking your equipment, and that was fine. They pulled out the turtle shooter and got the net down. The entrance on the turtle shooter has to be three foot but it was a little stiff and it got torn a little bit over the years and we had to patch it by hand. That dude wanted to take our catch, take our boat, take everything just because we were ½ inch short. And we bought the turtle shooter; it was regulation size. They ain't allowed to sell you one that ain't. It's against the law – we know this. They were being butt heads about it and they were all on the boat with their guns and everything. There we were – getting treated like a criminal again. It's big business; they will confiscate your boat, take your boat, and your boat's going to be auctioned off. You lose your gear, your catch, get a $6,000 fine. We couldn't take that kind of blow. We were out there to start with because we were hungry. We weren't doing anything illegal, just making a living."

Commercial fishing is strictly regulated in order to protect endangered and threatened sea turtles. However, fishers argue that the protected status of sea turtles needs to be reevaluated; they are seeing more sea turtles than they have ever seen before, which, they claim, implies sea turtle populations are no longer endangered or threatened. As one administrator explained, "We hear all the time how there is more sea turtles than

there is sea." Crab potters consistently complain that they cannot work for the number of sea turtles in sounds. "The turtles right now are so thick in the sound out here they are destroying the crab pots.[54] The turtles get right on top of them and mash them flat – ruin them. Crab pots are $25-27 right now – they are high."

The truth is that no one knows how many turtles actually exist. In an extensive study, the National Research Council (2010) decisively concluded that the current status and trends of sea turtle populations are unknown; and, current statistical methods used to estimate population size are flawed. The data collection and analysis techniques used to determine the abundance of sea turtles are the same as that used to determine the abundance of fish species and are as prone to error based upon chaotic population parameters and complex and uncertain environmental conditions.

Nevertheless, commercial fishing is increasingly regulated for the protection of sea turtles. Administrators recognize that:

> "If we do a good job and bring the sea turtles back to a point where they are no longer threatened or endangered, we are going to have more critters out here that we are going to have to deal with and the fishermen are going to have to deal with – which is good for the critters but it is going to mean more and more restrictions on the part of the division on the commercial sector."

Furthermore, not only is there no way to know how many turtles exist at any one time; but, it is difficult to estimate how many interact with commercial fishing operations. One administrator explained:

> "We strive for 10 percent observer coverage: 10 percent of the nets hauled in have observers on board. We use the actual observer coverage and the number of sea turtle interactions that occurred and extrapolate by multiplying by the number of landings. It is a measure of effort and what we really want is Catch per Unit of Effort – how many turtles are caught per hour. But we can't come up with that so we try to use error data per takes and use the percentage of observer coverage and extrapolate by total landings."

[54] Sea turtles are destroying the crab pots to get to the bait.

The total take of sea turtles in the PSGNRA is estimated using the stratified ratio method (Sea Turtle Advisory Committee 2006). The bycatch rate (sea turtles caught per unit of fishing effort) is estimated from observer data; the number of observed interactions is multiplied by the total fishing effort reported by the fishermen. Fishing effort is the product of yards of net in the area and the number of days the nets are in the water. Total bycatch estimates are calculated weekly by adding estimates for each species within each restricted area. In 2008, there were 17 sea turtle interactions observed in the large mesh gill net fishery, comprised of 15 green sea turtles (eight live and seven dead), one live loggerhead, and one dead Kemp's Ridley (Price 2009). The 17 sea turtle interactions were extrapolated to estimate that a total of 103 sea turtle interactions had occurred. The eight live and seven dead green turtles were estimated to represent 59 live and 36 dead, while the one live loggerhead and one dead Kemp's Ridley were estimated to represent four of each.

Numerous studies have illustrated that observed catch rates are not representative of the population, of either turtles or fish (Harley, Myers, and Dunn 2001; Hilborn and Walters 1992). A number of factors affect catchability, the constant that relates abundance to catch per unit effort (Epperly, Braun-McNeill, and Rischards 2007). These include changes in the efficiency and placement of gear, the species of fish targeted, non-random and overlapping sampling effort, and environmental factors.

For example, out of the 17 sea turtle interactions (nine live, eight dead) observed during the 2008 large-mesh gill net season in the PSGNRA, more than 40 percent of all the sea turtle interactions and 56 percent of all the sea turtle mortalities occurred during the second week (Price 2009). This was one week out of a four month period in which

fishers reported approximately 1.9 million yards of large mesh gill net and landed over 121,000 pounds of flounder (Price 2009). After the second week, approximately one sea turtle interaction was observed each week for the rest of the season. The inconstancy of catchability creates a problem with predicting how many sea turtles are actually caught, possibly overemphasizing sea turtle interactions and unduly penalizing commercial fishers.

Meanwhile commercial fishers consistently report very little interactions with sea turtles. As one fisher reported:

> "You catch one once in a while, but it's seldom you catch one. They get thick in Pamlico Sound. You got Pamlico Sound and out here is Bay River and all these places are full of logger heads. In Pamlico Sound, in five years I've only caught one turtle."

However, the growing sea turtle population promises to result in greater regulations for commercial fishers.

**Historical Visibility: Reducing Excess Harvesting Capacity**

Commercial fishers have a highly visible relationship with marine resources and an extensive historical relationship with the fisheries governance system, which was once premised on the objective of commercial development and expansion. As a result, commercial fishers are the target of regulations designed to increase conservation. In addition to bearing the brunt of conservation measures to protect sea turtles, commercial fishers are also the primary target of polices to conserve fish stocks. Regardless of the uncertainty of fisheries science and knowledge of fishery administrators and scientists of the multitude of factors beside fishing which affect fish populations, the cause of depleted fish stocks in the United States has been defined as overfishing.

While the Reauthorized Magnuson Act requires an end to all overfishing and the rebuilding of all overfished stocks under federal purview by 2011 (MSRA 2007), the North Carolina Fisheries Reform Act (FRA) requires an end to overfishing and the rebuilding of overfished stocks within 10 years of the development of a state fishery management plan (NCGA 1997). The stock status designations of overfished and overfishing places all of the blame for decimated fish populations on the activities of fishers. The affects of habitat destruction, water quality and pollution, and even climate change, all activities which affect fish populations, are not distinguishable in these designations. Non-fishing factors only add to the extent of regulations on commercial fishers.

In 2007, the North Carolina Division of Marine Fisheries (DMF) attempted to amend the historical emphasis on overfishing as the cause for depleted fish stocks . New designations were created to acknowledge factors other than fishing that contribute to low fish populations, such as water quality, habitat loss, disease, life history, predation, or extreme weather events. Rather than overfished or overfishing, the DMF recommends the use of the terms "concern" and "depleted" (NCDMF 2010k). Depleted refers to fish stocks where the spawning stock abundance is below a predetermined threshold or where low stock abundance precludes an active fishery; concern implies a situation where a fish stock is in danger of becoming depleted.

However, the path-dependent influence of the terminology of overfished and overfishing remain. The terms overfished and overfishing are used in the Fishery Reform Act (FRA). Section 12b of the FRA defines overfishing and overfished as "A rate or level of *fishing* mortality that jeopardizes the capacity of a fishery to produce the

maximum sustainable yield on a continuing basis" (NCGA 1997: italics added). And, the traditional terms of overfished and overfishing are frequently used in fish stock reports and management plans.

The reason for the continued use of the terms overfishing and overfished stems from the difficulty of quantifying the chaotic and complex nature of fisheries. Fishery administrators claim:

> "The biggest issues we face is knowing how to adequately assess how much different factors are contributing to depleted stocks from what we are trying to sustain. There is very little really good science to show the linkages between them – if I develop this bit of marsh or I have these boats and piers and marinas – what does that mean for fish populations – we don't have that knowledge. By the time you are going to be able to see it, it's going to be there and you can't undo it."

Where environmental factors are beyond the control of the DMF, human fishing effort is not. The result is an emphasis on reducing the harvesting capacity of fishers in order to meet the conservation goals set forth in fishery legislation.

The 1996 Sustainable Fisheries Act (SFA) and the 2006 Reauthorized Act explicitly call for a reduction in the harvest capacity of the commercial fishing sector to meet conservation goals, and specifically promote market-based management strategies for this purpose (MSA 1996; MSRA 2007). Market-based management mechanisms decrease the number of commercial fishers in either a specific fishery or in total, across all fisheries. These mechanism include: license limitation programs (LLPs), which limit the number of commercial licenses in circulation at any one time; limited access privilege programs (LAPPs),[55] which limit the ability to fish for specific species; and, government

[55] There are currently16 LAPPs in six different regions from the Gulf of Mexico to the North Pacific. The total ex-vessel value of these fisheries was greater than $854 million in 2007, which is 21% of the total ex-vessel value for all U.S. commercial fisheries (NMFS 2010b). Ex-vessel refers to activities that occur

buy-back programs (Balsiger, Risenhoover, and Boreman 2008; MSA 1996; MSRA 2007). Buy-back programs consist of subsidizing the purchasing and, subsequent, destruction of vessels and gear to ensure a decrease in fishing effort, rather than redeployment to other fisheries anywhere in the world (Balsiger, Risenhoover, and Boreman 2008). These mechanisms have resulted in a radical reduction in the number of commercial fishers across the United States.

Disappearing Fishers in North Carolina

North Carolina has historically supported a strong commercial fishing industry, traditionally ranking in the top-10 of seafood producing states across the country (NCDMF 2010a). In the South Atlantic region, North Carolina fisheries have traditionally ranked first in landing's revenue and second in economic impacts (NMFS 2010b). However, recently, North Carolina has also ranked first in the South Atlantic region in the extent of decline in the commercial fishing industry (NMFS 2010b).

Between 1997 and 1999 there was roughly a 50 percent reduction in the number of licensed commercial fishers (NCDMF 2009f). This was the result of a market-based mechanism to reduce harvesting capacity. In 1997 a moratorium was placed on the issuance of commercial licenses. When the moratorium was lifted in 1999, all commercial licenses were required to have an endorsement to sell license costing $200; one year later, a Limited License Program (LLP) was implemented (NCDMF 2009f). The endorsement to sell requirement restricted commercial fishing licenses to fishers with the ability to sell their product, thereby defining a commercial fisher as a person who makes money from selling seafood. The LLP capped the number of commercial

when a commercial fishing boat lands or unloads a catch. For example, the price received by a captain (at the point of landing) for the catch is an ex-vessel price (Blackhart et al. 2006).

licenses that could exist at any one time at 8,896 (NCDMF 2009f). The cap number was derived from the number of people who bought the new endorsement to sell license in 1999.

Since the implementation of the new licensing system, the number of fishers with Standard Commercial Fishing Licenses (SCFLs) or Retired Standard Commercial Fishing Licenses (RSCFL) declined by an additional 13 percent between 2000 and 2008, from 8,396 to 7,337 (NCDMF 2009f). However, the actual number of commercial fishers is much less. While the total number of licenses to sell finfish or shellfish[56] issued in 2008 was 8,711, the total number of licenses with reported landings was 3,902 (NCDMF 2009f: II-148). The LLP has created a situation where fishers are holding onto their licenses regardless of whether they are using them. Time and gain I was told by fishers who had not fished in years, that they renewed their license every year. As one fisher explained:

> "It cost me $200. I bought it a couple of weeks ago, because I knew if I didn't buy it before June 30, I would never get it again. My family, my boys or anybody in my family or anybody that wanted to fish would be out of it. You don't get it back."

The 63 percent overall decline in commercial fishers is only a part of the picture. Between 1999 and 2008, finfish landings decreased 68 percent and shellfish landings decreased 36 percent (NMFS 2010b), while the total value of commercial landings has decrease by 30 percent since 1997 (NCDMF 2010e). As a result, the number of licensed fish dealers has declined by 13 percent (~738 in 2008) (Deaton et al. 2010; NCDMF 2009f). Approximately 33 percent of the fish houses open in 2000 had shut down by

[56] In addition to the SCFLs (5,947) and RCFLs (912), licenses to sell fish include shellfish licenses (1,706); land or sell licenses for non-resident or non-state territorial waters (104); recreational fishing tournament license to sell (32); and Menhaden License for Non-Residents without SCFL (10). These are data for 2008 (NCDMF 2009f).

2006 (Garrity-Blake and Nash 2007). Overall, there was a 57 percent decrease in commercial fishing related industries in North Carolina between 2001 and 2007 (NMFS 2010b).

Not Just an Occurrence in North Carolina

The circumstances of the North Carolina commercial fishing sector are not isolated events. The repercussions of harvest reduction strategies for commercial fisherpeople across the country have been severe. The Bureau of Labor Statistics (BLS 2009) reports a 33 percent decrease in the number of commercial fishers and commercial fishing vessel operators between 2000 and 2008 with a projected further decrease of 8 percent through 2018. In 1996, the number of people working as commercial harvesters was estimated at 300,000, with approximately 100,000 commercial fishing vessels on the water (Hobart 1996). By 2008, these numbers decreased by approximately 60 percent to 115,000 commercial harvesters (NMFS 2010b) and approximately 35,600 vessels (BLS 2009).[57]

The Results: Fishers Lose Faith In the System

The incongruities between what fisheries science predicts and what fishers observe, the limited ability of fishers to affect the information used to develop management options, and the consequent increases in regulations on fishing amplify the distrust local fishers have for fisheries scientists, administrators, and fisheries policies. Distrust leads to resistance among commercial fishers to the fisheries management

[57] These boats harvested 8.3 billion pounds of finfish and shellfish, worth over $4.4 billion in 2008, which supported approximately 1.5 million full- and part-time jobs and generated $104 billion in sales and $45 billion in income for employees. The commercial seafood industry includes commercial harvesters (115,000), seafood processors and dealers (105,000), seafood wholesalers and distributors (155,000), and seafood retailers (1.1 million) (NMFS 2010b).

structure. As one local fisher, and veteran participant on federal and state Councils, Commissions and Committees explained:

> "When they tried to make us submit trip forms[58] to say where we have caught fish and stuff – nobody did it right because we were smart enough – well we felt like we were smart enough that we could see what they were trying to do. They didn't have the know how – they didn't have the science – they didn't have the people that even with what little bit of fishery knowledge they had to know what was going on and where the fish were at. They wanted to learn where the fish was at, where they were being harvested, what depth of water they were being harvested in and the whole nine yards so they could do the same thing they're trying to do now, which is lay off bottom and designate it as closed areas that you couldn't fish in, closed as hatching ground, as spawning ground and call it whatever they want to. So when they found out two or three years after this started they would check the coordinates of the stuff and they could tell it wasn't right because a lot of it would be downtown Norfolk; it could be up a street New Jersey somewhere. And I knew. I'd done it. I was not going to tell them. I was not going to sit across that table and tell them where I was making my living and me being an independent soul."

Ultimately the function of co-management to build legitimacy for the governance system and regulations is jeopardized. As another commercial fisher and veteran of federal and state Councils, Committees, and Commissions stated, "All the councils are is rubber stamps for NMFS. They have an agenda; and, I am nobody's puppet. I wouldn't go back to that process if they came to me and begged me."

**Conclusion**

Although there are extensive opportunities for the participation of commercial fishers in formal fisheries governance processes, commercial fishers face inordinate constraints in attempting to maintain their livelihoods. These constraints are mandated science-based conservation measures, which limit the participation and influence of local fishers, and a definition of the problem, which places the onus for degraded marine

[58] DMF instituted a mandatory trip ticket program (NCTTP) in 1994 that provides reliable harvest information at the trip level. The program requires dealers to complete a trip ticket on each transaction (amount of landed fish) and to submit these tickets to DMF.

resources on commercial fishing. The result is a concerted effort to decrease the number of commercial fishers, even as local fisher participation in governance processes is encouraged and pathways and opportunities are created.

Part of the reason for the contradiction between increased opportunities for the political engagement of local fishers and their disappearance from commercial fisheries is the historical relationship between commercial fishing and the fisheries management structure. Initially, management measures were designed to increase the economic optimization of federal and state fishing sectors. The 1990s switched this emphasis to conservation; and, commercial fishers were designated the culprit responsible for depleted fish stocks and other marine animals. This emphasis is reinforced through political conflict among fishery user groups.

The co-management structure of the fisheries governance system has expanded with the greater incorporation of NEPA. The result is greater infrastructural power – as avenues for participation are created and expanded, a broader range of actors are designated as legitimate fishery stakeholder participants, which gain greater access to resources that can be leveraged in the fisheries political process. All user-groups are as constrained as commercial fishers by the legislative imperatives to base all management decisions on the best available science. However, user groups have different capacities to not only navigate around constraints but leverage the infrastructural power – opportunities – and despotic power – legislative and organizational imperatives – as resources in political conflict with other user-groups.

The political conflict of user-groups revolves around attempts to influence their own, as well as others' visibility and legitimacy. Visibility – the relationship between

user groups, the resource and the regulatory structure – and legitimacy – the recognized right to participate in decision-making and other governance processes – are susceptible to political manipulation. Conservation and recreational fishing interest groups have been instrumental in defining the problem of fisheries governance as overfishing and perpetuating the high visibility of commercial fishers in such a way as to maintain the focus of regulations on the commercial fishing industry by delegitimizing the involvement of commercial fishers in governance processes. The next chapter examines the competition among user-groups over visibility and legitimacy through an analysis of three issues with potentially monumental consequences for North Carolina coastal commercial fisheries: sea turtles, a proposed bill to designate spotted seatrout as gamefish, and the use of gill nets in North Carolina coastal waters.

# CHAPTER FIVE

## TURTLES, GAMEFISH, AND GILL NETS: POLITICAL VISIBILITY AND LEGITIMACY IN THE FORMAL GOVERNANCE OF NORTH CAROLINA FISHERIES

The preceding chapter illustrated that although there are extensive opportunities for the political participation of commercial fishers in fisheries governance, the political influence of commercial fishers, as well as the actions of fisheries administrators are constrained by legislative and organizational imperatives, particularly those that require conservation strategies and goals based on the best available science. These constraints, along with the historical visibility of commercial fishers – the historical relationship between commercial fishers, the resource and the formal governance structure – have resulted in an inordinate emphasis on regulating the activities of commercial fishers, and a drastic decrease in the number of commercial fishers. This circumstance was not produced solely by the legislative and organizational imperatives of the fisheries governance system. Legislative and administrative structures are not just determining forces in political life, they create opportunities, resources and platforms for the activities of political associations and pressure groups (Skocpol 1985). Conservationists and recreational fishers take advantage of the opportunities and leverage the constraints of the

formal fisheries governance system to become politically visible and manage their own legitimacy – right to determine fisheries governance in opposition to commercial fishers. In this way, conservationists and recreational fishing interest groups define their own visibility and legitimacy, as well as that of commercial fishers.

This chapter examines political competition among conservationists, recreational fishers and commercial fishers in North Carolina over sea turtles, a proposed bill to designate spotted seatrout as gamefish, and the use of gill nets. The first section of this chapter describes the socio-environmental context of North Carolina fisheries governance. The second section introduces the political conflict surrounding sea turtles, spotted seatrout and gill nets. The third section discusses how user-groups leverage the opportunities and constraints of the fishery governance system to become politically visible and manage their own, and others' visibility and legitimacy in the governance of sea turtles, spotted seatrout, and gill nets. The fourth section presents the outcomes, to date, of the political competition over defining the problem and solution to the issues of sea turtles, gamefish, and gill nets in North Carolina state waters. Lastly, the relative lack of involvement by commercial fishers in establishing their own visibility and legitimacy is explained.

**The Socio-Environmental Context: North Carolina Fisheries**

Fisheries are complex socio-environmental systems, which give rise to complex governance systems. A fishery is traditionally defined as one or more stocks of fish that can be treated as a unit for the purpose of conservation and management, and is identified on the basis of geographic, scientific, technological, recreational, and economic characteristics, as well as any fishing of such stocks (Blackhart et al. 2006; Policansky

2001). In addition to fish and modes of fishing, it is also important to note the broader environmental *and* social aspects of fisheries.

Fisheries are part of boarder environments, which include a plethora of non-fishery related marine animals and habitats, many of which are protected under parallel environmental legislation. Berkes et al. (2001) add to these characteristics of fisheries, the social, cultural, and political actors and institutions, which constitute the governance of fisheries. The complexity of the socio-environmental context of fisheries contributes to the complexity of the North Carolina fisheries governance system. The coastal fisheries of North Carolina are primarily estuarine, consist of recreational and, for the most part, small-scale commercial fishing, and interact with species and essential habitat protected under the Endangered Species Act (ESA).

The Estuary

North Carolina has over 4,000 miles of shoreline and 2.5 million acres of coastal water, 2.3 of which is estuarine (Deaton et al.2010). A large portion of the North Carolina estuary system is the Albemarle-Pamlico Estuarine System (APES), the second largest estuary in the United States. Between the mainland and the fragile strand of barrier islands lie shallow waters where the land and sea gradually merge forming estuaries, brackish swamps and mud flats that serve as nursery areas for shrimp, crabs, finfish, and shellfish. This area is composed of seven sounds and five major river basins, as well as beaches, marshes and bottomland forests. Figure 5 depicts the major water bodies and coastal fisheries management region of North Carolina (everything in the shaded region).

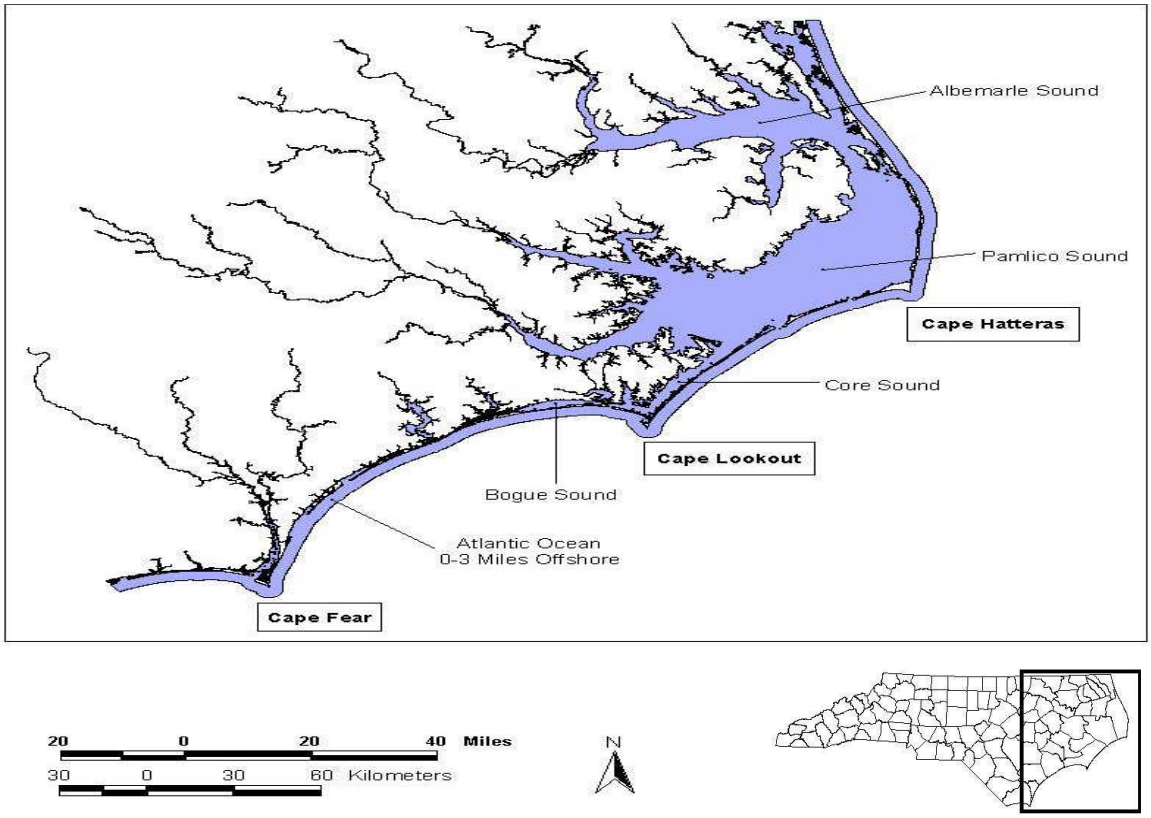


***Figure* 5**. Map of Major North Carolina Water Bodies and Coastal Fisheries Management Region (Burgess and Bianchi 2004: 4).

The North Carolina portion of the APES stems from the Outer Banks, at the Virginia border (the very upper portion of the map in Figure 5) down to, but not including, the Core Sound area (Crosson 2007). In all, the water bodies of the North Carolina portion of the APES comprise approximately 1.9 million acres of water, or 3,061 square miles. The North Carolina Division of Marine Fisheries (DMF) divides this into twelve interconnected water bodies, which includes the Neuse, Tar, Pamlico, Roanoke, Chowan, and Alligator Rivers, and the Albemarle, Pamlico, Currituck, Croatan, and Roanoke Sounds. The boundaries of these water bodies include over twenty counties.

Commercial and Recreational Fisheries

The coastal fisheries of North Carolina are highly enriched by and dependent on the APES. The APES provides more than 50 percent of the area used as nurseries by commercial and recreational fish species from Maine to Florida (Burkholder et al. 2004). Nationally, approximately 75 percent of recreationally and commercially important fish species depend on estuaries at some stage in their life cycle (Nelson 1991; NOAA 2007). More than 90 percent of North Carolina's commercial fisheries landings and over 60 percent of the recreational harvest (by weight) are comprised of estuarine-dependent species (Deaton et al. 2010).

North Carolina commercial landings accounted for 21 percent of the total weight and 23 percent of the total value landed along the Atlantic coast of the United States (from New York to Florida's east coast) in 2007 (McInerny and Bianchi 2009). In the South Atlantic region in 2008, North Carolina fisheries ranked first in landing's revenue with $87 million for 71 million pounds landed,[59] and second in terms of economic impacts with $636 million in in-state sales, $340 million in income impacts, and 15,000 full- and part-time jobs (NMFS 2010b). Similarily, North Carolina recreational fisheries are also ranked high.[60] The overall value of recreational fishing activities in North Carolina in 2008 also ranked second in the South Atlantic region; trip and durable equipment expenditures were estimated at more than $1.8 billion and there were 22,000 recreational fishing related jobs (NMFS 2010b).

[59] In 2009, the commercial fishing industry harvested 68.9 million pounds of fish. The top commercial species by pounds were: blue crabs (28.8 million), croaker (6.1 million), shrimp (5.4 million), summer founder (2.86 million) and southern flounder (2.4 million) (NCDMF 2010f).

[60] In 2009, recreational fishers harvested 13.6 million pounds of fish. The top recreational fish in pounds harvested were: dolphinfish (3.7 million), bluefish (971,132), Spanish mackerel (892,641), King mackerel (864,237), and spotted seatrout (833,577) (NCDMF 2010b). The top three coastal fish species targeted most frequently by recreational fishers are flounder (83%), spot (70%), and spotted seatrout (69%) Crosson (2010).

*Commercial Fishers*

There are approximately 4,000 commercial fishers in North Carolina (NCDMF 2010a). North Carolina commercial fishers are unique in relation to commercial fishers in other states in that they are highly versatile and flexible. The location of North Carolina at the convergence of the mid-Atlantic and south Atlantic biogeographical provinces, contributes to a mix of both northern and southern fish species in coastal waters (Deaton et al. 2010). The diversity of fish found in North Carolina along with the expansive area of coastal waters allows local fishers to participate in several different fisheries with several different types of gear without traveling far from home or relying on fisheries in federal waters (Crosson 2007).

The majority of coastal fishing operations in North Carolina are classified as small-scale;[61] they are primarily small, family owned businesses that depend on the ability to switch across fisheries depending upon environmental conditions, regulatory constraints and market prices. Ninety-two percent of all commercial vessels in the state are no larger than 38 feet long, while 32 percent are classified as small (less than 19 ft. in length) and only 8 percent are considered large (over 38 ft. in length) (Crosson 2007). These vessels are owner-operated with an average of one additional crew member. Almost all fishers (97%) in the Albemarle-Pamlico region own boats, with 50 percent owning one, thirty-four percent owning two, and 11percent owning three or more (Crosson 2007). The gear most commonly used by small-scale coastal commercial

[61] Large scale-fishers in North Carolina fish far from home (from Georges Bank down to Florida or the Gulf of Mexico), are gone for extended periods of time (from a couple of weeks to six months), and use larger boats (55 feet or larger) and more capital intensive gear, such as trawls or dredges. Also, the large scale-fishing sector predominantly consists of a few very large vessels, with hired captains and crew.

fishers are fish, eel or crab pots (43%), followed by gill nets (22%) and trawls (8%) (McInerny and Bianchi 2009).

*Recreational Fishers*

Recreational fishing in North Carolina has drastically increased in recent years. North Carolina just recently instituted a Coastal Recreational Fishing License (CRFL) in 2007 (Crosson 2010), so exact statistics on the increase do not exist; but, NMFS reports a 69 percent increase in the number of recreational fishers in the South Atlantic since 1999 (NMFS 2010b). NMFS (2010) reported that 2.1 million recreational fishers fished in North Carolina in 2008, of which 55 percent (1.1 million) were from out-of-state, attesting to the richness of the state's recreational fishery.

According to North Carolina Division of Marine Fisheries (DMF) estimates, there are 803,308 North Carolina residents with Coastal Recreational Fishing Licenses (CRFL)[62] (Crosson 2010). More than 66 percent of state-resident recreational fishers fish primarily from May through October, while 27 percent fish year round. Less than half (44%) of recreational fishers own boats, while 8 percent own two and 1 percent own three or more. The mean and median boat length is 19 feet, with a minimum length of 10 feet and a maximum of 41 feet.

The highest reported value of a recreational fishing vessel in 2009 in North Carolina was $320,000, with a mean of $17,054 (Crosson 2010). The average annual expenditures of recreational fishers in North Carolina in 2009 was $3,727 per person, with an average number of trips taken of 27. However, the average annual expenditures

[62] The requirement that recreational fishers must have a CRFL to fish in coastal waters was implemented in 2007. There are exemptions to purchasing a CRFL for certain anglers: minors under the age of 16, anyone fishing from a fishing pier or a charter boat with a blanket license, and resident members of the Armed Forces on leave in North Carolina. Additionally, the Fourth of July is a free fishing day. A CRFL is not required to harvest shellfish or crabs, only finfish.

is almost three times higher than the median ($870), while the average number of trips taken is almost double the median (15) (Crosson 2010). This indicates that the majority of the money spent recreationally fishing is spent by a few fishers.

Protected Species and Essential Habitat

In addition to consisting of rich recreational and commercial fisheries, North Carolina's estuary system is essential habitat for endangered and threatened species. Protected fish species, such as the shortnose sturgeon, and mammals, such as bottlenose dolphin are found yearly in coastal waters. Others, including the most endangered species, the Northern right whale migrate annually through North Carolina waters (Deaton, Chappell, Hart, and O'Neal 2010). In addition to marine-dependent species, protected land-based reptiles and birds inhabit ocean beaches and inlet shorelines, including the Carolina diamondback terrapin, Carolina salt marsh snake, and piping clover (Deaton, Chappell, Hart, and O'Neal 2010).

Sea turtles are one of the most historically significant and contentious protected animals in North Carolina for the management of the commercial fishing industry. Of the seven sea turtle species worldwide, five are found in North Carolina state waters throughout the year (Sea Turtle Advisory Committee 2006). These are the green, loggerhead, Kemp's Ridley, leatherback, and hawksbill. The green and loggerhead turtles are listed as threatened, while the Kemp's Ridley, leatherback and hawksbill are listed as endangered under the ESA (NOAA 2010d).

**The Conflict Surrounding Sea Turtles, Gamefish, and Gill Nets**

The importance of estuaries for an abundance of wildlife, as well as commercial and recreational fishing activities, brings user groups into conflict with nature and each

other. Current user-group conflict between conservationists, recreational fishers, and commercial fishers revolves around the use of gill nets in coastal waters. On one side, sea turtle conservationists are working to increase regulations on the use of gill nets, which inadvertently capture sea turtles. One the other side, recreational fishers are attempting to win gamefish status for spotted seatrout. While protection of sea turtles and attempts to win gamefish status for spotted seatrout are seemingly separate issues, both campaigns focus on the commercial gill net fishery with potentially drastic consequences for commercial fishing in North Carolina.

The relationship between sea turtles and gill nets is straightforward. The incidental take of sea turtles is illegal under the ESA and can result in the closure of the gill net fishery. The affect of gamefish status for spotted seatrout on gill nets is less obvious. Gamefish status allocates the harvesting of a species solely to recreational fishers, which would make the commercial harvesting of seatrout illegal, a highly problematic outcome for gill net fishers. Gill nets are the most commonly used type of commercial gear in the state for the targeted, and non-targeted harvest of spotted seatrout. Gill nets have ranked first in pounds landed (76%) (NCDMF 2010f), number of trips (78%), and value landed (69%) for the commercial harvest of spotted seatrout since 1994 (McInerny and Bianchi 2009). As a consequence of the predominant use of gill nets to harvest spotted seatrout in the commercial fishery, the arguments of recreational fishing interests about access and allocation in the spotted seatrout fishery involve efforts to increase regulations on the use of gill nets.

At the same time, similar to efforts to protect sea turtles, the gamefish bill also has the potential to result in a ban on the use of gill nets in North Carolina. As one fisheries administrator explained:

> "The commercial guy is still going to catch them. You can't tell a net not to catch them. So what they have to do is throw them back overboard, dead or alive. Then what you're going to see is the recreational industry try and get all the nets out of the water because they're killing these gamefish that were set aside specifically for them. So basically what you'll see – and chances it will be in five or 10 years – is the beginning of a net ban in North Carolina. That will be the end of commercial fishing as we know it. And, all the heritage and all those small communities down east that have survived for 100 years on commercial fishing will be gone."

The Commercial Gill Net Fishery

The gill net fishery is a multi-species fishery, which operates year round depending on the species targeted. The majority of gill net landings come from the Albemarle-Pamlico Estuarine System, where they are deployed in creeks, along banks and at the mouths of rivers. There are a large number of commercially valuable species targeted by gill nets throughout the year. Gill net fishers use specific mesh size nets depending on the species they intend to target. While multiple species are most often landed for a single trip, a target species often represents the majority of the catch. Out of 16 species, flounder is most often the primary species targeted by gill nets; spotted sea trout is the ninth (NCDMF 2010f).

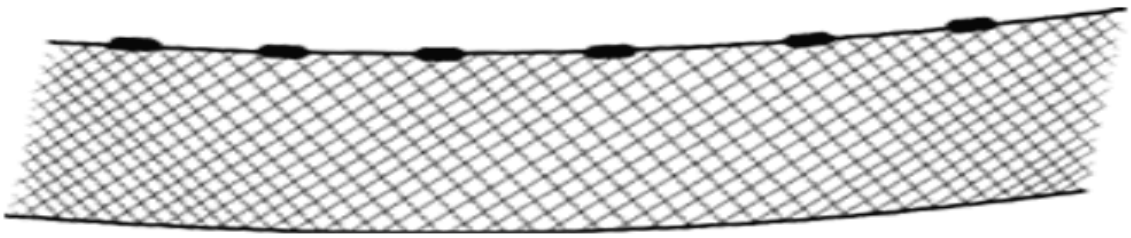

***Figure* 6**. Image of a Gill Net

Gill nets consist of a net set vertically in the water; they entangle fish by the gills as they swim through the mesh (see Figure 6). They are basically a series of panels of meshes with a weighted 'foot rope' along the bottom, and a 'headline' along the top, to which floats are attached. By altering the ratio of floats to weights, buoyancy changes, and the net can be set to fish at any depth in the water column, thereby selecting, to some extent, the type of fish caught. While gill nets are somewhat indiscriminant in type of fish caught, often capturing multiple species at a time, the meshes of a gill net are uniform in size and shape, hence highly selective for a particular size of fish. Fish smaller than the mesh of the net are able to pass through unhindered, while those too large to push through the mesh as far as their gills are not retained.

There are two types of gill nets predominantly used in North Carolina: set nets and runaround nets. Runaround gill nets, also referred to as drop or strike nets, account for 33 percent of gill net use in the commercial fishery (NCDMF 2010f). They are employed in two ways. In one method, the net is attached to a point on the shore and deployed parallel with the terminal end finishing at another point along the shore to block a section of the shoreline. The boat is driven into the blocked section and the fish are frightened into the deeper water and caught in the net. In the other method, the net is set to encircle or wrap up a school of fish. An oar or other instrument is struck against the side of the boat to chase the fish into the net. Runaround nets are cast and hauled in; they are not left to soak in the water for extended periods of time. As a result, they are not a noteworthy source of fish or non-fish bycatch (NCDMF 2010f; Sea Turtle Advisory Committee 2006).

Set nets are the most frequently used type of gill net, accounting for 65 percent of net use (NCDMF 2010f). They are anchored gill nets that are deployed and left to fish from a few hours to a few days depending on water temperature and season. Set nets can be further divided into float and sink categories. Float nets fish the entire height of the water column, while sink nets fish a fixed distance off the bottom and do not extend into the upper portion of the water column if the water is deeper than the height of the net. Tie-downs and nets without floats are used in some areas of the state to reduce the height of the net in the water column in order to avoid non-target species.

The extended soak times of set nets increases the chances that non-targeted fish and marine animals can become entangled. In 1998 a regulation was passed that required 100 percent attendance for shallow water, small mesh gill nets (< 5 inches stretch mesh) (NCDMF 2010f); this regulation was updated in 2009 to require attendance at all gill nets during certain seasons and in certain areas. The attendance requirement ensures that non-targeted species, especially sea turtles are released from the nets, thereby reducing bycatch rates. However, estimated sea turtle interactions in the gill net fishery have increased. As a result, pressure from conservationists for greater regulations has also increased.

Furthermore, gill net fishers on average set their nets for 12 hours at a time, usually from sundown to sun-up. The attendance requirement has caused some fishers to switch from using set nets to runaround nets.[63] The attendance requirement and the increased use of runaround gill nets has increased the presence of commercial fishers on

[63] The importance of runaround gill nets in North Carolina has steadily increased since 1972 and a continued surge in the mid 1990's may have been caused by the 1995 gill net closure in Florida state waters, as some of Florida's commercial fishermen moved their operations to North Carolina (NCDMF 2010f).

the water. The increased presence of commercial fishers, along with the increase in the number of recreational fishers has resulted in increased competition between recreational and commercial fishers for space and fish. As one recreational fisher and council representative explained:

> "Probably the biggest reason for the increased conflict between recreational and commercial fishers is that there's an apparent increase in the effort in the recreational side. So there are more recreational anglers, more anglers with boats that are now in areas where commercial fishermen have not encounter too many anglers in the past. I think anglers are in some cases more vocal than they have in the past as well. The guide industry – the for-hire sector in our state has increased quite a bit. Because those guys are on the water every day or almost every day they tend to be a little more vocal so we are hearing from them. They are having some conflicts with some of the net fishermen in some small areas. It just depends with how people deal with the problems that they have. If it were me and I went into an area that I had been fishing recreationally or guiding and there happened to be nets in there I understand that they are set legally and I got no problem with it. I would just go somewhere else. But some of these guys use it as a platform or an opportunity to complain and try to get something done about it."

Visibility and Legitimacy: Political Conflict over Access and Allocation

The political conflict surrounding sea turtles, the gamefish bill and gill nets takes the form of visibility and legitimacy campaigns. Legitimacy refers to a recognized right to participate in governance processes, a right which confers political power to influence decision-making processes and outcomes. In natural resource governance, legitimacy is associated with perceptions of who is an appropriate steward of the resource. Groups that prove they have greater abilities to act as stewards are awarded greater access and allocation rights to the resource and, as a result, greater ability to affect governance decisions. Visibility is a significant factor in a user-group's legitimacy, and vice versa.

Visibility refers to who participates and how in governance processes, as well as who is targeted by regulations and how. The historical basis for the legitimacy of a

stakeholder groups is rooted in that group's historical relationship with the resource and, as a result, the governance system for that resource. However, visibility is malleable as was illustrated in the preceding chapter. Initially, the historical visibility of commercial fishers consisted of a beneficial relationship with the United States fishery governance system, which resulted in greater access to fishery resources. With the 1996 and 2006 amendments to the Magnuson Act, the focus of fisheries shifted from promotion and expansion of commercial fishing to conservation and reduction in the harvesting capacity of the commercial fishing industry. As a whole, the commercial industry lost a degree of legitimacy to determine fisheries policies. This shift was in large part due to the efforts of opposing fishery user-groups.

Conservationists and recreational fishers attempt to maintain and increase regulatory focus on the commercial fishing industry by becoming politically visible so as to delegitimize commercial fishers as stewards of fishery, and other marine resources. User-groups become politically visible by taking advantage of opportunities to be involved in fisheries governance processes. Politically visible actors are legitimate participants who have the power to influence political processes. Thus, user groups attempt to increase their influence in political processes (legitimacy) by altering their own or others' relationship with the governance structure (visibility).

**Leveraging Opportunities and Constraints: Political Visibility and Legitimacy**

Conservationists and recreational fishing interests wage political visibility campaigns to enter political debates, introduce topics, or (re)direct regulatory attention. In essence, political visibility campaigns are used to define the situation and the solution. Conservationists and recreational fishing interests become politically visible by taking

advantage of opportunities granted by fisheries and environmental governance systems (the infrastructural power), and manage their legitimacy in relation to commercial fishers by leveraging the organizational and legislative imperatives of fisheries and environmental legislation (the despotic power). In the case of sea turtles, conservationists are drawing on the tools provided by the ESA. In order to gain greater access and allocation rights to spotted seatrout, recreational fishing interests are utilizing the tools supplied by fisheries and state legislation.

The Political Visibility of Conservationists: The ESA and Fisheries Governance

The ESA legitimizes the right of conservationists to participate in fisheries governance to ensure the protection of sea turtles and supplies the resources necessary for politically visibility. The ESA (1973) contains a broad citizen suit provision that allows any person to initiate a law suit against any other person or government agency in violation of any portion of the ESA. NMFS supplied the precipitating information for a North Carolina sea turtle conservation group to utilize the citizen suit provision. The conservation group obtained leverage against commercial fishers through the legal statutes that define the parameters of lawful interactions with protected species. All five species of sea turtles found in North Carolina are protected under the ESA, which means unauthorized takes are illegal.

In June of 2009, NMFS began a six-month alternative platform observer program for the Core Sound component of the large-mesh flounder gill net fishery to determine the impacts to sea turtles (NOAA 2009). On July 7, 2009, the North Carolina DMF received a letter from NMFS explaining that 11 illegal takes of sea turtles were observed

in four of five trips in the Core Sound (NOAA 2009).[64] The Core Sound is not covered under an ESA, Section 10 permit, such as the one that allows restricted operation of the Pamlico Sound large-mesh flounder gill net fishery. All sea turtle interactions not covered by a Section 10 permit are illegal, and can result in the closure of the fishery. In the letter, NOAA advised the North Carolina DMF to:

> "evaluate proactively whether there are other North Carolina inshore gill net fisheries that are interacting with sea turtles and that would benefit from section 10 permits to avoid exposing fishermen and the State to illegal take prosecution under the ESA."
>
> (NOAA 2009)

This letter galvanized conservationists in North Carolina to increase the focus of regulators on gill nets across the state for the protection of endangered and threatened sea turtles.

On November 20, 2009, four months after the DMF received the letter from NMFS, the Karen Beasley Sea Turtle Rescue and Rehabilitation Center (Center) became politically visible when it filed a 60-day intent to sue notice, which charged the DMF and Commission for being in violation of the Endangered Species Act (ESA). The Center is one of four facilities in North Carolina that have permits to conduct sea turtle rehabilitation and release. On February 23, 2010, the lawsuit was filed in the United States District Court for the Eastern District of North Carolina (EDNC) by the Duke Environmental Law and Policy Clinic on behalf of the Center. In the lawsuit, the Center accused the DMF of "authorizing and issuing licenses allowing the use of gill nets, which have resulted in significant take of multiple species of endangered and threatened turtles"(EDNC 2010). The lawsuit noted an increase in interactions between sea turtles

[64] These takes consisted of six green, three Kemp's ridley, and two loggerhead turtles, of which one green and one loggerhead were confirmed dead and one Kemp's ridley and one green were of unknown status (NOAA 2009).

and gill nets in the Pamlico Sound Gill Net Restricted Area (PSGNRA), which currently operates under Incidental Take Permit (ITP) 1528, as well as across the state.

ITP 1528 allows the conditional operation of the large mesh flounder gill net fishery in the Pamlico Sound. From September to December, the deepwater, large-mesh fishery is closed, while the shallow water, large-mesh gill net fishery is allowed to operate under restricted conditions. The lawsuit claimed that the DMF violated ITP 1528 and ESA regulations governing sea turtle interactions, in general, across the state (EDNC 2010). The lawsuit stated:

> "ITP 1528 covers only a portion of the Pamlico Sound estuary in North Carolina and does not apply to any other portion of North Carolina coastal waters. Consequently, if gill net fishing results in the taking of sea turtles outside the PSGNRA, it is not authorized by an ITP and therefore violates the ESA."
> (EDNC 2010)

The PSGNRA accounts for 1.9 million yards of gill nets, which is five percent of the estimated total gill nets in state waters, which according to the Center leaves 95 percent of gill net fishing in North Carolina state waters not covered by a Section 10 permit.

Consequently, the Center argued gill net fishers in state waters are engaging in illegal activities every time they interact with a sea turtle. "Therefore, despite the fact that the gill net fishery in North Carolina is a state managed fishery, state agencies must answer to NMFS regarding endangered and threatened species" (EDNC 2010). The potential repercussions from this lawsuit are loss of management responsibility by the DMF to NMFS and increased regulations on, if not closure of the gill net fishery to protect sea turtles across the entire state of North Carolina, thereby barring commercial gill netters from all fishery governance processes.

*The Sea Turtle Lawsuit: Arguing Against the Legality and Legitimacy of Gill Net Fishers*

The ESA supplied the tools for the Center to become politically visible in North Carolina fisheries governance, which then provided a platform to argue against the legitimacy – the right of gill net fishers to participate in the governance processes that affect sea turtles. These governance processes include all fishing activities, which come under the authority of the ESA. The ESA and the Section 10 permit, which allows the operation of the PSGNRA, defines the parameters of legal interactions with sea turtles in North Carolina. All interactions outside these parameters are illegal and, therefore, illegitimate.

ITP 1528 requires that commercial fisherman report all incidental takes of sea turtles. The Center argued that "not a single fisherman has reported the incidental take of an injured or dead sea turtle since the permit was issued in 2005, unless an observer was on board the vessel;" only those interactions witnessed by observers were reported. Citing 2007 data, the Center argued that 20 interactions were observed in 2007 in the PSGNRA, which when extrapolated by fishing effort is 156 estimated interactions, but "[o]f the 136 unobserved interactions estimated in 2007, *not a single one* was reported" (EDNC 2010: original italics) by a commercial gill netter.

Charges that gill netters do not report sea turtle interactions defines the visibility of commercial gill netters as deceitful and a threat to sea turtle welfare, which is an attempt delegitimize the participation of commercial fishers in governance activities and increase oversight of gill net activity. The ESA has the potential power to rescind the governance rights of the North Carolina DMF, as well as gill net fishers. The lawsuit did not just attack the legitimacy of gill netters, it questioned the management abilities of the

DMF, which has the potential to delegitimize the entire commercial gill net fishery based on the inability of the DMF to adequately carry out the objectives of the ESA.

The Political Visibility of Recreational Fishers: Working Across Political Venues

Where the interaction between sea turtles and gill nets is a legal issue prosecutable under the ESA, the gamefish bill and the attack of recreational fishing interests on gill nets is a political issue of access and allocation. The competition between recreational fishers and commercial gill netters for spotted sea trout has existed since at least 1994 when recreational fishers asked the North Carolina Marine Fisheries Commission (Commission) to close several creeks to the commercial harvest of spotted seatrout with gill nets from September through October and March through April (NCDMF 2008a). Recreational fishers claimed that commercial gill netters were overexploiting the fish and blocking recreational fishers from accessing the resource. At that time, the Commission and DMF ruled that there was a lack of scientific information to warrant the season closure (NCDMF 2009a). Therefore, no action was taken.

However, the opportunities and tools for recreational interest groups to leverage for greater allocation and access rights have recently developed. Spotted seatrout were designated as overfished and experiencing overfishing in the 2009 stock status report (NCDMF 2010f: 162). The FRA requires the DMF and Marine Fisheries Commission (Commission) to implement measures to end overfishing and achieve sustainable harvest within 10 years. The subsequent fishery management plan process created opportunities for recreational fishers to negotiate access and allocation, while the stock assessment supplied scientific evidence of overfishing to leverage against the access and allocation rights of commercial gill netters. In addition, data collected from the recreational fishing

license program, which was implemented in 2007, supplies recreational fishers with an important tool to gain a greater degree of visibility and legitimacy.

*The Actors: Coastal Fisheries Reform Group and Coastal Conservation Association*

Currently, there are a number of recreational interests involved in the campaign to win gamefish status for spotted seatrout and greater regulations on gill nets in North Carolina. However, there were two primary recreational interest groups mentioned most by the people interviewed for this study. These are the North Carolina Coastal Fisheries Reform Group (CFRG) and the Coastal Conservation Association (CCA). The CFRG is run and organized through a web blog (CFRG 2010). The CFRG formed in 2008 around the issues of red drum, spotted seatrout, and the use of gill nets, and describes itself as a local, North Carolina grassroots organization for recreational fishers.

While the CFRG is new on the scene, the CCA (2010) formed in 1977 to advocate against the commercial overfishing of red drum and spotted seatrout in Texas. Since that time, the CCA (2010) has won gamefish status for spotted seatrout in Texas, Alabama, and South Carolina. The CCA (2010) has also won greater restrictions on or the banning of gill nets in Alabama, Florida, Louisiana, Mississippi, New York, Oregon, Texas, and Virginia, along with several rivers in Maine.

The CCA (2010b) is a national association that describe itself as a grassroots political action organization representing recreational fishers and the recreational fishing industry on marine fisheries issues. The CCA (2010) describes its operations "as a three-tiered organization, affecting issues on the local, state and national levels." The CCA (2010) has more than 206 coastal state chapters throughout 17 coastal states, and a combined membership of over 100,000.

*Tools for Visibility and Legitimacy: The FRA and Recreational Fishing License*

The CCA was involved in the development off two legislative tools that have given recreational fishing interests a greater degree of legitimacy in North Carolina fisheries governance. A CCA member explained these accomplishments:

> "In North Carolina we had the Fisheries Reform Act in 1997. It was major battle to get that passed. From the time that was passed in '97 it took us over 10 years to get the salt water fishing license which was a major component of the Fisheries Reform Act. We needed to start licensing salt water anglers and start getting good data because they don't have a clue how many people are fishing, what they're catching, what the impacts are and it took over ten years for us to get that through the legislative process even though they passed the Fisheries Reform Act in 1997 and one of the major components was the salt water fishing license."

The FRA created the opportunities for recreational fishers, as well as other user groups to participate in co-management fisheries governance processes. The institutionalization of the recreational salt water fishing license supplied a major tool for the visibility and legitimacy of recreational fishers in fisheries governance.

Before 2007, recreational fishers did not need a license to fish in North Carolina coastal waters. As a result, recreational fishers were, for the most part, invisible to the fishery governance system, although subject to fishery regulations. The license supplies political visibility for recreational fishers, what Scott (1998) calls 'legibility.'[65] The statistical information tied to the licensing system allows the DMF to collect data on number of fishers, number of trips, money spent, number of fish caught and kept, and general socioeconomics. These statistics are used by the DMF to calculate catch rates and the socio-economic impacts of regulations on recreational fisheries. While Scott (1998) argues that government entities use legibility to gain greater control over the

[65] Scott's term legibility refers to the way centralized bureaucratic administrative units use information about people and natural resources to control them. He does not recognize how this information is also useful to political groups in gaining influence in political processes.

population, legibility also supplies power to actors. Recreational fishing interests use the data supplied by their legibility to illustrate the strength of the recreational fishing presence in North Carolina and the importance of spotted seatrout for the recreational fishery, thereby giving recreational fishers greater credence in debates over access and allocation.

*Visibility and legitimacy of Recreational Fishing Interests at Work*

Armed with data from the recreational fishing license program, recreational fishing interests took advantage of opportunities to directly engage the fishery governance system during the 2009 fishery management plan (FMP) process for spotted seatrout. The presence of the CCA, CFRG as well as other groups was evident in the audience at fishery meetings and on the fishery councils throughout the development of the spotted seatrout fishery management plan. In addition to direct participation in fishery governance processes, recreational interests took advantage of state legislation to gain political visibility in fishery decision-making.

On January 21, 2009 the CFRG petitioned the Marine Fisheries Commission to ban the use of gill nets to harvest spotted seatrout from October through April each year. Although the Commission legally has 30 days to review a petition,[66] it was returned the next day. The Commission attorney returned the petition to the group with an explanation of where the petition failed to meet the criteria and directions for resubmission.

According to the CFRG (2010), their petition was declined by the Commission, which allowed the CFRG and CCA to become politically visible on a broader scale.

[66] Chapter 3 of Title 15A of the North Carolina Administrative Code defines the processes whereby a petition for rule-making can be submitted to the Marine Fisheries Commission.

North Carolina General Statue 150B, Article 4 allows for the judicial review of rulemaking petitions denied by the Commission. In February, 2009, the CFRG (2010) introduced House Bill 918 to the North Carolina General Assembly (2009), which was quickly supported by the CCA (2010). The bill goes one step further than the petition's request for a season closure on the harvesting of spotted seatrout with gill nets by proposing the designation of spotted seatrout as gamefish.[67]

House Bill 918 was referred to the Marine Resources and Aquaculture Committee, a standing committee of the North Carolina House of Representatives on April 1, 2009; it has not been passed, yet. Gamefish designation would completely delegitimize – remove the participation rights of – commercial fishers in governance decisions on spotted seatrout. While the bill sits before the House Committee, recreational fishers used the opportunities of the spotted seatrout fishery management plan process to consistently argue for reduced allocation and access rights to spotted sea trout for commercial fishers.

*Delegitimizing Gill Net Fishers: Economic Value, Conservation and Conflict*

The arguments of recreational fishing interests revolve around the economic value of spotted seatrout for the recreational industry and overall economy of North Carolina, the conservation characteristics of recreational fishing, and the barriers to conservation and access created by gill nets. The greater economic value and participation rates in the recreational sector of the spotted seatrout fishery were leveraged to delegitimize the overall importance of commercial fishers as governance participants. The necessity of conserving the fish was leveraged to decrease the legitimacy and, as a consequence, the

[67] The bill also included a proposal to designate red drum as gamefish; this study focuses exclusively on spotted seatrout, which was the focus of a series of meetings to develop a fishery management plan during the period of the field research for this study.

influence of commercial fishers in decisions about allocation. Recreational fishers promoted gill nets as the cause of area conflicts to leverage the role of DMF as arbitrator, thereby delegitimizing the role of commercial fishers in determining access rights.

The significant economic impact of spotted seatrout for the recreational fishery, and diminutive value for the commercial industry was used to argue for decreased allocation rights for commercial fishers. Spotted seatrout are the most sought after fish by recreational coastal fishers; but, are relatively insignificant for the commercial fishing sector. Data collected by the DMF through the recreational fishing license program were called forth to support this argument. Spotted seatrout accounted for less than one percent (0.94%; $5 million) of the total value of commercial finfish[68] landings from 1994 to 2007 (McInerny and Bianchi 2009). In 2008, the total economic impact of the commercial spotted seatrout fishery was nearly $3.9 million, consisting of $1.3 million in economic impacts, $1.3 million in proprietary income, $1.2 million in additional economic activity generated, and 34 jobs (NCDMF 2009e).[69] In contrast, the total economic impact of the recreational spotted seatrout fishery in 2008 was nearly $49.5 million, consisting of $32.3 million in economic impacts, $17.2 million in additional economic activity generated, and 490 jobs (NCDMF 2009e).[70]

Recreational fishers consistently argued that greater conservation measures for spotted seatrout would benefit the recreational fishing sector, and have relatively little

[68] Finfish is a term used to distinguish between shellfish and finned-fish.
[69] The economic sectors most affected by commercial catch of spotted seatrout are wholesale trade, oil and gas sales, domestic trade, homework and repair, government spending, boatbuilding/repair, realty, medical services, and international sales. The economic impact of the commercial spotted seatrout fishery consists only of the business inputs from commercial fishers, data to calculate the economic effects on dealers, seafood markets, restaurants, and shipping were not available.
[70] The economic sectors most affected by the recreational fishery are food stores, wholesale trade, oil and gas sales, domestic trade, ice manufacture, hotels, charter fees, realty, home work and repair, business management, food service, and medical services.

effect on the commercial industry. At the same time, recreational fishers argued for a decreased recreational bag limit, from 10 to five spotted seatrout, and an increased size limit, from 12 to 15 inches. A recreational fisher explained this decrease in recreational allocation by saying, "can't fish and can't keep aren't the same thing. People want to preserve the fish so that they can keep fishing." This fisher was referring to the practice of catch-and-release and the willingness of recreational fishers to keep less fish in order to catch more.

Recreational fishers projected a willingness to sacrifice their allocation rights for long term viability of the spotted seatrout and, therefore, the recreational fishing sector. In addition, recreational fishers consistently pointed out that the sustainability of their fishing practices were also lucrative for the economy of the state. Following this line of reasoning, recreational fishing interests argued that management measures have to start to favor the recreational industry. A recreational fisher and council representative elaborated on this point:

> "Sooner or later there has to be a shift because people will spend a lot of money to go fishing for fish if they got a good chance of catching that fish. For example, my two sons and myself spent $500 going fishing with an inshore guide in Florida. We did not keep a single fish. We fished all day and had the time of our lives. You'd struggle to do that kind of fishing in North Carolina with the numbers of fish we caught. Now the fact that we were willing to spend that much money – we may have killed 10% of the fish we caught; we might have killed 30 fish if they died but out of the 300 we caught there are still 270 swimming around out there. My point is, eventually the value of that fishery – the tourism draw, the willingness of people to spend money to have the opportunity to fish in a world class fishery will have to win out."

Recreational fishing interests argued that gill nets worked against their attempts to conserve the resource. This sentiment was expressed by a recreational fisher council representative:

> "The area conflict happened last fall where rec[71] guys were going in catching these really huge fish – trophy quality fish – and com guys would see them and strike net – a very directed, low bycatch gear – you know there's fish, you set the net, wrap the net around that area and haul the net in – and the rec guys who catch one fish every two weeks can't catch any fish. Somewhere they have been very successful and now all of a sudden that aggregation of fish has been wiped out by a couple of guys with nets. . . . So you have guys out there catching 10 or 11 lb trout that are maybe four or five years old and they release it thinking this is a big sow; she's going to be more valuable as brooding stock than a 15 inch fish or 14 inch so I'm going to turn her loose and as soon as he does, the guy catches that fish and harvests it and sells it."

Recreational fishing interests also claimed that set "gill nets are very nonselective and destructive, which is why most of the states in the country have pretty good restrictions on gill nets, especially in inshore waters." These interests asserted that gill nets indiscriminately catch all types of fish, not just the species targeted, and marine animals, including sea turtles. A council representative noted, "the voices are getting louder and louder over the last couple of years – the indiscriminate catch in gill nets. I am hearing it from more and more people and a broader audience."

In addition to allocation and conservation issues, the meetings for the spotted seatrout fishery management plan focused on user-group conflict over access. "The problems between gill netters and hook-and-line fishermen" were treated by the DMF as a significant source of conflict requiring mediation. Recreational fishers claimed the "biggest problem is beating on the side of the boat and hogging areas." A recreational council representative explained this problem:

> "I have not had any run-ins with commercial fishers on the water but have heard through the councils that they were occurring; and these mostly involved gill netters wrapping up[72] a river with 3000 yards of net or strike netting."

[71] Recreational and Commercial were often shortened to rec and com, respectively, by interviewees and during meetings.

[72] Wrapping up a river or creek refers to a net is set in such a way that there is no room for anyone else to fish, or hope for someone else to catch fish.

In addition to 'hogging' an area by 'wrapping' it up in nets, recreational fishers consistently complained about the technique of strike netting. The following sentiment was echoed among several recreational fishers at the meetings as well as council representatives.

> "The biggest issue is rudeness. Boats come up in the middle of a group of recreational fishers and bang their boats with paddles. It is a legal maneuver but creates the potential for serious confrontations. But, we can't do anything about it because it's not illegal."

In addition to rudeness, recreational fishers were "concerned with harassment and intimidation" on the part of commercial fishers. Thus, recreational fishing interests argue that gill nets are a space consuming gear and strike netting involves disconcerting fishing techniques, which creates conflict and hinders the ability of recreational fishers to access and enjoy the fishery.

Overall, these arguments attempted to define the visibility of commercial gill netters in such a way as to delegitimize commercial fishers in the governance of spotted seatrout, thereby decreasing their ability to influence management decisions. The first argument is based on the diminutive impact of spotted seatrout for the commercial industry, as well as the state economy. This argument attempts to delegitimize commercial fishers as important stakeholders by defining the visibility of commercial gill netters as an inconsequential component of the spotted seatrout fishery. The second argument defines gill netters as Hardin's (1968) rational maximizers, seeking to overexploit and destroy the spotted seatrout population for the purpose of profit maximization, which is an attempt to affect the legitimacy of gill net fishers by leveraging the conservation requirements of fishery and environmental legislation against the governance participation of gill net fishers. And, the last argument attempts to define

the visibility of gill netters and the practice of strike netting as confrontational and potentially violent. Recreational fishers were extremely vocal on any situation that could be discerned as conflictual in order to leverage the role of the DMF as arbiter, thereby delegitimizing the role of gill netters in negotiating access rights.

**Policy Outcomes: A Settlement for Sea Turtles and Management Plan for Seatrout**

Conservationists and recreational fishing interests became politically visible to argue against the legitimate right of commercial fishers to participate in the governance of the gill net and spotted seatrout fisheries. The extensive co-management framework of the North Carolina fisheries governance system provided ample opportunities for the direct and indirect involvement of both groups. Although best available science-based conservation requirements are constraints on the influence of user-groups, the inherent complexity of marine populations lends to incomplete and uncertain scientific knowledge, which creates space for user groups to influence the policy process. Conservation and recreational fishing interests take advantage of the uncertainty inherent in fisheries science to argue for greater regulations on the gill net fishery in North Carolina. These groups do this by defining the visibility of commercial fishers in such a way as to decrease their legitimate right to participate in determining fishery governance processes, thereby rationalizing the need to increase regulations on the commercial fishing industry.

<u>The Lawsuit Settlement: A Sea Turtle Advisory Committee and Section 10 Permit</u>

The Center argued in their lawsuit against the DMF that no commercial fishers have reported sea turtle interactions since 2005. Statistics on interactions between sea turtles an gill nets were cited to substantiate the claim that interactions were occurring

and commercial fishers were failing to report the occurrences. However, the best available science provides estimated interactions, which are a best guess about what might be occurring based on what has been observed; they do not represent what has actually occurred.

As explained in Chapter Four, the accuracy of interaction estimates are complicated by a number of factors, including gear placement and environmental factors. The estimated interaction/bycatch rate assumes a constant interaction rate across time intervals and environmental, geographic, and fisher characteristics. Commercial fishers consistently argue that they do not catch sea turtles because they know where and when to place their nets so as to avoid them. As one commercial fisher explained, "I have been out there my whole life and I ain't caught but maybe one turtle and he was alive. I mean that is 20 years."

In addition to problems with the best available science used to estimate sea turtle interactions, the Center's own website counters their claim that commercial fishers have not reported interactions with sea turtles, and that gill nets are a serious threat to sea turtles. The following was posted on the patient information page of the Center's website for Sunny, a Kemp's Ridley sea turtle admitted October 19, 2009: "Caught in a net. The fisherman contacted wildlife officials, who in turn delivered the distressed turtle to the KBSTRRC"[73] (Center 2011).

Furthermore, the vast majority of the 'patient' listings[74] on the Center's website are unrelated to gill nets or other commercial gear. Out of 38 turtles admitted to the Center in 2010, the injury or illness listed for 15 was cold stun, nine were viral, and eight

[73] Karen Beasley Sea Turtle Rescue and Rehabilitation Center.
[74] Sea turtles in the care of the Center.

were ingestion of fishing hooks (Center 2010). Only two sea turtle injuries were listed as resulting from nets or gill nets. Between 1996 and 2009, out of approximately 300 turtles admitted to the Center, thirty-two were listed as injured by "Hook, Entanglement or Other;" only three were listed definitively as resulting from gill nets.

Moreover, according to sea turtle monitoring programs, the DMF has successfully managed the interactions between sea turtles and gill nets in the Pamlico Sound Gill Net Restricted Area (PSGNRA) since 2001 (Price 2009; Sea Turtle Advisory Committee 2006). Observed levels of sea turtle interactions in gillnet fisheries remained below thresholds as established by the ITPs issued since 2001. And, sea turtle strandings declined and remained well below the peaks observed in 1999 (Brown and Price 2005; Price 2009; Sea Turtle Advisory Committee 2006).

Regardless of the little scientific evidence that gill nets are harming turtles, sea turtles interactions are a federal legal issue, which conservation groups use to enter into discussions about fishery management and sea turtle protection. Once in the discussion, these groups are able to make arguments and claims that require acknowledgment and further elaboration by both NMFS and the DMF, regardless of proof. DMF Director, Dr. Daniel explained this in a newspaper interview:

> "I think it's important for people (in our state) to understand the ESA is a very important piece of legislation. In the ESA you are guilty until proven innocent. If you don't have the information to prove (unlawful interactions) aren't happening they will close you down."
>
> (Weeks 2010b)

Although these is no evidence that sea turtle populations are harmed by gill nets in North Carolina waters, there is no proof that they are not harmed. Therefore, the DMF and Commission were forced to compromise with the Center. In addition to applying for

a statewide Section 10 permit, the DMF and Marine Fisheries Commission (Commission) agreed to a lawsuit settlement with the Center to avoid potentially more severe measures, such as complete closure of the gill net fishery. All charges and claims of ESA violations were dropped in exchange for greater regulations on the state's gill net fishery, an extended multi-platform observer program, and the formation of a Sea Turtle Advisory Committee to the Commission (NCDMF 2010c; 2010h). The settlement was signed on May 13, 2010 and the new restrictions went into effect on May 15, 2010.

*Increased Restrictions on Gill Nets*

Under the settlement, gill nets were restricted to 12 hour soak times and limited to week nights – set no sooner than one hour before sunset on Monday, Tuesday, Wednesday and Thursday and retrieved no later than one hour after sunrise the following morning. All nets must be low-profile, no more than 15 meshes; and, fishers are limited to a total of 2,000 yards of gill net per vessel, which can only be set in 100-yard lengths with at least 25 yards between the separate lengths of net. These restrictions apply to all gill nets between 4-inches and 6 ½-inches stretched mesh that are fished as set nets in internal coastal waters, except in the Albemarle and Currituck sounds and their tributaries (NCDMF 2010c).[75]

The new regulations do not apply to run-around/strike or drop nets that are used to surround a school of fish and then are immediately retrieved (NCDMF 2010c; 2010h). Although the lawsuit had initially argued that strike and drift nets are an endangerment to sea turtles (EDNC 2010), the Center was not able to substantiate these claims (Cooper

[75] Gill nets in the Albemarle and Currituck areas are already heavily restricted under the North Carolina Estuarine Striped Bass Fishery Management Plan and the North Carolina Red Drum Fishery Management Plan (NCDMF 2010g). Only set gill nets between 3-inches and 3 ¼-inches are allowed in these areas.

2010). Also, the Pamlico Sound Gill Net Restricted Area is exempt from these regulations while it operates under a Section 10 Incidental Take Permit.

*Extended Observer Program*

An extended multi-platform observer program was implemented to observe the gill net operations across the state. Participation in the observer program, which involves carrying observers on vessels is mandatory for all gill net fishers. Observers consist of DMF staff, North Carolina marine patrol, and volunteer observers certified by DMF's observer training program (NCDMF 2010h). The target coverage of the observer program was set at 10 percent with a seven percent minimum of all gill net fishing in coastal waters. If the DMF is unable to provide minimum coverage as a result of financial, budget, and staffing constraints, the fishery will be closed until the coverage is resumed.

*Establishment of a Sea Turtle Advisory Committee*

The Sea Turtle Advisory Committee (STAC) was established as an advisory committee to the Commission (NCDMF 2010h). The STAC has a great deal of authority over the operation of the commercial gill net fishery, and can only be disbanded at the mutual agreement of the Center and DMF (NCDMF 2010h). The STAC consists of 12 members appointed by the Commission Chairman and the Center. Jean Beasley, director of the Center was appointed to the committee, along with the sea turtle veterinarian for the Center, three marine biologists, district manager for the North Carolina Division of Coastal Management, the president of Friends of State Parks, one recreational fisher, and three commercial fishers and a former director of a commercial fishers association (NCDMF 2010c). The duties of the STAC include: reviewing observer reports, assisting

with fisher education, bycatch reduction measures, oversight of the observer program, and review of all future Section 10 applications and provisions (NCDMF 2010h).

The Spotted Seatrout Management Plan: Closures, Harvest Reductions and Cold Stuns

The absence of proof that sea turtles were not harmed by the gill net fishery resulted in greater oversight and regulations on gill netters and, as a result, a decrease in the legitimate right of commercial fishers to determine the regulation and use of gill nets, thereby solidifying the visibility of commercial gill netters as a threat to sea turtle populations. In the spotted seatrout fishery, the application of political pressure by recreational fishing interests to the roles and responsibilities of the DMF effectively decreased the legitimate right of commercial fishers to determine access and allocation rights to the spotted seatrout fishery. The DMF is charged by the General Assembly to mediate resource conflicts and ensure conservation of the resource within the parameters of the best available science. Regardless of the incomplete and uncertain science used to determine the stock status of spotted seatrout, as explained in Chapter 4, the Fisheries Reform Act (FRA) mandates an end to overfishing and the restoration of overfished stocks within ten years of the adoption of a fishery management plan. Therefore, the DMF was compelled to resolve the area conflicts, determine allocation within the parameters of best available science-based conservation measures, and manage both through cold stun events. In the absence of scientific certainty, the visibility of gill netters was effectively defined as inconsequential in the spotted seatrout fishery, a threat to spotted seatrout populations, and conflictual.

*The Fishery Management Plan: No Gamefish Status for Spotted Seatrout, Yet*

Recreational fishers argued that gamefish status for spotted seatrout would enhance conservation and economic development, while regulations on gill nets were necessary to reduce conflict. In 2009, the DMF openly stated their opposition to the gamefish bill. Dr. Louis Daniel, director of the DMF stated, "My position is that the bill is inconsistent with the Fisheries Reform Act" (West 2009a), which mandates the equitable management of the state's marine resources for the benefit of all user groups. Delegating a resource, or species of fish solely to one group is in direct conflict with this mandate. However, presentation of the gamefish bill to the state legislature ensured that some form of management measure would be implemented to increase conservation of spotted seatrout and reduce user conflict. As was stated by a Commissioner during a Marine Fisheries Commission (MFC) meeting, "the gamefish bill is not dead, it is sitting in the General Assembly and that bill can come back if legislators feel the MFC is not addressing the issue. [I do] not want the issue legislated" (NCDMF 2009c).

"On November 22, 2010, the Marine Fisheries Commission authorized interim management measures to ensure the viability of spotted seatrout until final approval of the Spotted Seatrout Fishery Management Plan" (NCDMF 2010j). The interim measures included an increased minimum size limit from 12 inches to 14 inches for both recreational and commercial fishers. The bag limit for recreational fishers was decreased from 10 fish per trip, with unlimited trips, to six fish per person per day. New size regulations were also imposed on recreational fishers; no more than two of the six fish are allowed to be greater than 24 inches in length. Commercial fishers were prohibited

from harvesting spotted seatrout year-round from midnight on Friday to midnight on Sunday each week.[76]

*Weekend Closure of the Gill Net Fishery: Resolution of Area Conflicts*

The year-round weekend closure of the commercial spotted seatrout fishery was implemented to reduce conflicts between commercial and recreational fishers. However, while recreational fishers were consistently presenting area conflicts with gill netters as a problem, none of the commercial or recreational fishers interviewed had experienced or witnessed conflicts. One commercial fisher explained, "Some of us who have worked these areas for years all the time have not experienced or heard about conflicts." Results from a survey of commercial and recreational fishers in the spotted seatrout fishery demonstrate little existing conflict between commercial and recreational fishers. Less than 30 percent of recreational fishers and little more than 30 percent of commercial fishers in the spotted seatrout fishery reported having conflicts with fishers of the alternative type (NCDMF 2009e). In a statewide survey of all recreational fisher across all fisheries, less than 12 percent reported conflicts with commercial fishers (Crosson 2010).

According to DMF administrators and scientists "it is hard to say how many people have had conflicts." Administrators explain that:

> "conflicts have only been a problem in the last five years as recreational fishers have entered into areas traditionally fished by commercial fishermen and where recreational fishers were fishing for the same fish at the same times as commercial fishers. Where recreational fishers were engaged in hunting from November through March; they are now fishing during those times."

[76] The weekend closure under the sea turtle settlement was predominantly an area specific closure; the weekend closure under the spotted seatrout management plan is a species specific closure.

The most recent conflicts between commercial gill netters and recreational fishermen concern fishers in the Newport and White Oak rivers, and attempts to get the parties to mediation[77] had not been successful. (NCDMF 2009c). The Newport and White Oak areas have traditionally been characterized by commercial fishing, but are increasingly a draw for recreational tourism. One particular incidence was often discussed during the fishery management meetings, as well as in interviews. A group of recreational fishers reported a conflictual interaction with a group of gill net fishers in the Newport River area. The commercial fishers wanted mediation and showed up at the designated time and place. Meanwhile, the recreational groups that filed the complaint were resistant to mediation. In three attempts to bring the groups together for mediation, the recreational fishers had not shown up.

The DMF and Commission have authority to close areas to all fishing until mediation takes place. However, it is often difficult to determine what is and is not a valid complaint. "Some people will complain just because a gill net is set . . . Others, because there is a dead fish in one (NCDMF 2009b). A marine patrol office explained that:

> "24 hour dispatch and local law enforcement and calls to DMF means the complaints are spread out among a large number of sources. A lot of conflicts are handled by return calls explaining rules and regulations and the right of gill netters to be there. A lot of the complaints are by people that do not realize that gill netters have a legal right to be there."

Many of these complaints are focused on fishing territory. A council representative explained an incidence of conflict over territory that came to life during a fishery council meeting during an interview:

[77] The DMF offers opportunities for conflictual groups to resolve disputes outside the official regulatory process through mediation with a independent, neutral third party to manage the process.

> "A guide down there in New River was fussing about the guys nets. The guy was sitting right there in the audience. It was not provable what he was saying. The man was fishing the nets; he wasn't just leaving them; he was fishing the nets every day. That's what he makes his living from. He was setting nets where he could catch fish and that's why the guy on the committee running the guide service wanted to fish there because he knew there were fish there. It was all about territory. It wasn't about anything illegal. They were both legal to do what they were doing."

The difficulty for fisheries administrators in managing these conflicts is in determining culpability. This was explained by an administrator:

> "we don't know who was there first. So we can't say who is being rude. Or just being selfish. Maybe they aren't there yet but the commercial fishermen have wrapped the creek up and the recreational fishermen are saying why does he get to have it all."

The weekend closure of the commercial spotted sea trout fishery reduces chances for conflict and increases recreational access by reducing the presence of commercial fishers on the water during peak recreational fishing times. However, commercial fishers feel unduly prosecuted. Commercial fishers lose days they could be working, which are essential for livelihoods dependent on the weather. At a Commission meeting, a Commissioner said, "Every time we come to a meeting, the commercial people lose. . . . if the numbers were run you would see the recreational mortality is not conservation. . . . [T]he commercial fishermen are being persecuted and the recreational sector is exploding" (NCDMF 2010d).

*Harvest Reductions: Reducing Recreational Bag Limits and Increasing Size Limits*

While commercial fishers lost days fishing, the recreational sector experienced a greater decrease in allocation rights. The recreational fishery constitutes 71 percent and the commercial sector comprises 27 percent of the total spotted seatrout harvest (NCDMF 2010f). The recreational fishery harvests younger, smaller fish than the commercial fishery. As a result, the average recreational fishing mortality rate from 2004 to 2006

was over three times greater than the commercial fishery (NCDMF 2010f: 171). Approximately 88 percent of the 1.7 million spotted seatrout discarded[78] by recreational fishers in 2008 were because the fish were too small to keep (NCDMF 2010f).

The data used for the 2010 fishery management plan illustrated that while the mesh size of gill nets selects for larger fish, hook-and-line fishing is indiscriminate in the size of fish caught. This directly contradicts the arguments of recreational fishers that gill nets are non-selective and overexploitive. Undersized fish are rarely caught in gill nets, therefore there is no associated mortality rate for discards (NCDMF 2010f). However, the mortality rate from discarding undersized fish in the recreational sector is problematic for conservation of spotted seatrout. Not all fish discarded alive survive. Approximately 10 percent of the fish discarded alive in the recreational fishery do not survive (NCDMF 2010f). The larger the minimum size limit, the more fish are discarded, and the higher the mortality rate.[79]

The larger size limit and decreased bag limit were advocated by recreational fishing interest groups to illustrate a willingness to sacrifice for the greater good of conservation. The size limit for spotted seatrout was increased from 12 to 14-inches in order to ensure the majority of spotted seatrout were able to spawn once before they were harvested. At a size of 14-inches, 100 percent of male and 98 percent of female spotted seatrout are mature (NCDMF 2010f). As a result of the tendency of recreational fishers to catcher smaller spotted seatrout, the recreational industry is predicted to experience the greatest reduction in harvest from the increased size limit. The recreational fishery were

[78] Spotted seatrout are discarded (released alive) for a variety of reasons including catch under the legal size limit, over the creel limit, or conservative catch and release practices.
[79] These facts also call into question the conservation arguments for gamefish status, as well as the designation of no-harvest fisheries. A no-harvest fishery for recreational fishers consists of catch-and-release; recreational fishers can catch but not keep fish from a no-harvest fishery.

predicted to experienced a 20 percent decrease; and, commercial fishers were predicted to experience a decrease of 4.3 percent (NCDMF 2010f).[80] The decrease in total harvest and dead discards for both commercial and recreational spotted seatrout fishers was estimated to be 129,311 pounds; 128,547 pounds were from the recreational sector.

In relation to in the increased size limit, the recreational bag limit is superfluous. The recreational bag limit decrease from 10 to six fish was predicted to result in a 12 percent (89,478 pounds) decrease in recreational harvest (NCDMF 2010f). The vast majority, approximately 85 percent of recreational fishers harvested six or less spotted seatrout per trip between 2004 and 2006 (NCDMF 2010f). The decreased bag limit has no effect on decreasing the recreational harvest in conjunction with the size limit change, and does little to affect the morality rate from catch-and-release fishing. The primary benefit of the bag limit change is as a tool for recreational fishing interests to demonstrate their willingness to sacrifice allocation rights, which is leveraged for reduced commercial harvest limits. As a recreational council representative stated, "it shows they're willing to give something up."

Recreational fishers experienced a decrease in harvest rights; but, they gained greater access rights from the weekend gill net closure; and, since there is no limit on catch-and-release fishing, dead discards may very well increase. Commercial fishers, on the other hand, are constrained by a decrease in total days fishing and in harvest totals from the increased size limit. The days lost fishing for commercial gill netters were not calculated in the total harvest and dead discard decreases for spotted seatrout. Therefore,

[80] The 14-inch size limit was estimated to result in a 20 percent (141,214) decrease in the recreational harvest of spotted sea trout, but a 19 percent increase (12,666 pounds) in dead discards. While commercial fishers do not have associated dead discards, a 10 percent retention rate of undersized fish was calculated for commercial fishers; there is no such retention rate calculated for recreational fishers.

commercial fishers experienced a greater decrease as far as the ability to fish, harvest and, thereby, earn a livelihood.

*Cold Stun Events: Controlling Fishing Effort in lieu of Controlling Nature*

Recreational fishers successfully petitioned for decreased access and allocation rights for commercial fishers during the development of the spotted seatrout fishery management plan. They have also successfully influenced the DMF to regulate the activities of commercial fishers in exchange for an inability to control natural events. The Coastal Fisheries Reform Group (CFRG 2011) and the Coastal Conservation Association (CCA 2011; Weeks 2010a) pushed for closure of the commercial and recreational spotted seatrout fisheries during the cold stun events of 2011. Their motives for closing the fisheries was to protect the stunned seatrout from harvest on the hope they might survive with increases in the temperature of the water.

The affect of cold stun events on the spotted seatrout population are a great unknown for fishery biologists; but, cold stun events are a significant factor in population decreases, which are treated as fishing mortality. For the spotted seatrout fishery management plan, fisheries biologists calculated the expected decreases in spotted seatrout harvest for a range of size and bag limits to predict the combinations that would most successfully result in an end to overfishing and rebuilding of the fish stock within ten years. These calculations attempted to account for the need to have enough of a cushion in the population of spotted seatrout to control for the affects of cold stun events. However, as the fishery biologists explained, there is no way to know how many fish die from cold stun events or when the events will occur.

The DMF was faced with the challenge of managing spotted seatrout through cold stun events almost immediately after the fishery management plan measurers were implemented. There were three weeks of cold stun events documented in January 2010, which claimed approximately 10,000 pounds of spotted seatrout (Hitchcock 2010). While commercial fishers were authorized under the new management plan to harvest the dead and dying fish, they had to abide by the new 14 inch size limit. In a newspaper article, DMF Director Daniel said, "Guys are calling me saying they are leaving a lot of 12 and 13 inch fish out there and asking if there is any way we can benefit from that instead of letting fish just go to waste." The director explained that it is a difficult issue; some stunned trout may be able to survive.

> "One of the problems is distinguishing between a cold stun and a cold kill. If they are still moving there is a chance they could survive. But it's a tough situation. You hate to waste fish, but you hate to let them be taken if they could live."
> (Weeks 2010a)

Director Daniel did not close the spotted seatrout fishery in 2010, although the CCA and CFRG pressured for closure (Weeks 2010a). However, during a clod stun even in January of 2011, Dr. Daniel issued a proclamation to close the spotted seatrout fishery indefinitely to all commercial and recreational fishers to prevent the harvest of vulnerable cold stunned fish, which may recover with warming temperatures (NCDMF 2011b). The closure was scheduled for review and possible extension at the next meeting of the Commission in February (NCDMF 2011a). In a news release, Director Daniel stated, "On the heels of two cold stun events, one in 2010 and now in 2011, and pretty large commercial and recreational catch rates in 2009, I believe this is the best thing for the fishery" (NCDMF 2011a).

By the directors own words, the fisheries administration has never attempted to manage spotted seatrout through cold stun events in the past (Weeks 2010a). Yet, the population has always rebounded. The current management measures for spotted seatrout are more heavily influenced by the elevated interest in spotted seatrout as important recreational fish stock than they are by scientific evidence. In an interview in 2010 Director Daniel stated:

> "The cold stun events have occurred in the past, even in the time that the current Fisheries Management Plan was being considered. We are taking them into account. No previous administration has ever tried to do anything about it, but I recognize that there is an elevated interest now for such an important fish and we'll be watching."
>
> (Weeks 2010a)

The problem is there is no way to know the impact and extent of cold stun events; yet, historically, the population has always rebounded. Commercial fishers traditionally would use a dip net to harvest cold stunned and dying fish, benefiting off fish that would otherwise be wasted. They would not attempt to harvest live fish during cold stun events. Conversely, in an interview during the 2010 cold stun event, Director Daniel pointed out that despite the fish kill, many anglers were still catching spotted seatrout. "There are a lot of guys out there fishing for specks today and the trout are knocking the rods out of their hands" (Weeks 2010a). This contradicts the arguments of recreational fishing interests that commercial fishers are serial exploiters of fisheries resources, and recreational fishing is inherently conservative of fishery resources. In reality, commercial fishers have traditionally practiced conservation of spotted seatrout during cold stun events, while recreational fishers continued to exploit the resources.

Consequently, the enforcement of the increased size limit during the 2010 cold stun events caused a great deal of waste. In early February after the January, 2010 cold

stun event, commercial fishers reported recovering spotted seatrout in gill nets and oyster dredges, which had been dead for some time (Hitchcock 2010). These fish were either on the river bottoms, and had not floated to the top of the water during the cold stun event; or, they were fish that commercial fishers were unable to harvest because of size limit regulations. As a result of the pressure from recreational fishing interests, the closure of the spotted seatrout fishery during cold stun events caused a waste of resources, as well as constraints on the ability of commercial fishers to secure their livelihoods.

Regardless of, or because of, a lack of scientific specificity, the political visibility campaigns of conservationists and recreational fishers were successful. The Center effectively leveraged the power of the ESA to become politically visible and decrease the legitimacy of both commercial gill netters and the DMF in fishery governance processes by defining the visibility of commercial gill netters as threatening to sea turtle populations and the visibility of the DMF as inadequate to the task of sea turtle protection. Gill netters gained greater restrictions, the DMF was burdened by increased budgetary and staffing requirements, and the Commission and DMF lost a degree of authority over fisheries governance decisions.

Recreational interests were similarly successful in decreasing the legitimate role of commercial fishers in formal governance decisions on spotted seatrout, as well as the traditional methods commercial fishers use to govern spotted seatrout during cold stun events. Recreational fishing interests achieved political visibility through fisheries and state legislation and predominantly attacked the legitimate right of commercial fishers to govern spotted seatrout based on economic, conservation, and gear-conflict premises. Recreational fishing interests defined the visibility of commercial gill netters as

inconsequential fishery participants, greedy over-exploiters, and conflictual and a threat to recreational fisher safety. As a result, commercial fishers lost the legitimate right to decide when to fish and what size fish to harvest.

**The Historical Visibility and Political Inactivity of Commercial Fishers**

Conservation and recreational interests were able to reinforce the focus of fisheries management on the regulation of commercial fishers, thereby further constraining the legitimate right of commercial fishers to participate in the governance of the gill net and spotted seatrout fisheries. However, the historical visibility of the gill net fishery also protected the commercial fishing industry to a certain extent. The importance of the gill net fishery for the commercial industry of North Carolina compelled the DMF and Commission to negotiate on behalf of commercial fishers, who were otherwise absent from the political processes. For their part, regardless of the potentially severe consequences for fishing livelihoods, commercial fishers were relatively politically inactive throughout the sea turtle lawsuit and spotted sea trout management plan.

Historical Visibility: Fisheries Management and the Gill Net Fishery

A significant characteristic of the historical visibility of commercial fishers is the historical relationship between the commercial industry and fisheries management structure. Consequently, in addition to regulation of the commercial industry, a major bureaucratic imperative of fisheries management is maintenance of the commercial industry. The DMF and Commission worked to keep the gill net fishery from complete closure by compromising with the Center on the sea turtle lawsuit and taking a stance against the gamefish bill. Both campaigns had the potential to result in a ban on the use

of gill nets in North Carolina and, as a result, drastic restructuring of the commercial fishing industry.

The gill net fishery is an extremely important part of the small-scale commercial fishing sector. Gill nets rank third in most economically important gear type in landings value (12%), after fish, eel, and crab pots (35%) and trawls (28%) (McInerny and Bianchi 2009). Gill nets are second (22%) behind pots (43%) in number of trips, or type of gear used (McInerny and Bianchi 2009). In 2008, 3053 fishers reported using gill nets, which is 78 percent of the total number of fishers licensed to sell finfish or shellfish[81] who reported landings for 2008 (NCDMF 2009f).

The historical visibility of commercial fishers insulated the gill net fishery from complete closure; yet, the operation of the commercial gill net fishery has become increasingly restricted. Area and season closures and gear restrictions, such as those implemented by the sea turtle lawsuit settlement and spotted seatrout fishery management plan severely limit the options and, thereby, livelihoods of small-scale local fishers in North Carolina. The flexibility to use multiple gears to target multiple species of fish across seasons is essential for these fishers. As an administrator stated, "North Carolina fishermen aren't a single fishery people. The most common thing that a fisherman uses is gill nets." A local fisher explained, "To make it a full-time career you had to have crab pots, a trawler, gill nets and oystering gear. Then you could get by. But, you aren't going to get rich out of it."

[81] While the total number of licenses to sell finfish or shellfish issued in 2008 was 8,711, the total number of licenses with reported landings was 3,902 (NCDMF 2009f: II-148). The licenses issued in 2008 that allow fishers to harvest and sell their catch include: standard commercial fishing licenses (SCFL) (5,947); retired standard commercial fishing licenses (912), shellfish licenses (1,706), and assorted other (146). The other category includes: menhaden licenses for non-residents without a SCFL (10), recreational fishing tournament license to sell fish (32), and land or sell licenses (104) (NCDMF 2009f).

A retired local fisher explained the consequences of regulations that limit the flexibility of local fishers, such as closed seasons and areas and restrictions on gear:

> "The regulations have got so bad that they can't fish. They can't jump from fishery to fishery no more. Therefore, the boats look like crap. If you ride down here and go across the creek here and look at those boats, they're junk, pure junk simply because they can't do but one or two things with them because they got to wait until that fishery comes in season. And they can't live and pay their bills. They simply can't do it.

Furthermore, many of the rules and regulations placed on commercial fishers force them to fish illegally. A local fisher experiencing his first season as an ex-commercial fisher explained the consequences of the new net attendance regulations:

> "They passed laws on gill nets that if you are sitting within 200 yards of shore you have to stay with that net and can't leave it. That has forced the boys to do it illegal. They have to work illegal if they are going to make a living. They have no choice. Either that or get out of it and find another job. . . . Now they can't catch a speckled trout without stealing. They can't leave the nets. Used to you could set a stand of nets and go down here a little ways and set another stand and down a little further and so on. Now you can't do that. You set a strand and you have to stay within 100 yards of that strand of nets. The only way they can do it is to go out there and string their net out and maybe not put any floats or anything on it. I call 'em sneak nets."

Another commercial fisher responded to the current attack on the commercial fishing industry by saying, "This is a problem. We need to get off our ass. We have been too busy to worry about what is going on but if we don't do something to counter this we are done."

The Political Inactivity of Commercial Fishers

Considering the importance of the commercial gill net fishery for the small-scale commercial fishery, commercial fishers have been, for the most part, politically inactive in relation to conservationist and recreational fishing interests. Outside participation on councils, commercial fishers do not take advantage of the opportunities to become

politically engaged to define their own visibility and reinforce their legitimacy as governance participants. A commercial council representative summed up the extent of political involvement among local fishers:

> "The only thing that can be done is if some of these guys get involved. I have even asked my brother to go and he wouldn't go. You have to get involved. I told them if you don't get involved they are going to take your livelihood away. There's a lot of people that I know. I have been up and down this coast; I have been from one end to the other. It's just like [Two Rivers], Belhaven, . . . Hoboken, Oriental, down to Wanchese. I know every one of them and the people aren't getting involved. Most of them say it wouldn't do no good anyway. But you don't know until you go. The commercial fishing outlook doesn't look good."

In Two Rivers, as well as up and down the coast, the commercial fishers consistently explained that they did not get involved in formal fishery politics or fishers associations because it would not do any good. The sentiment, "the fishermen can't do nothing; they are too weak," was common. Many claimed:

> "I've been to many a meeting and I never come across a time when it's made a difference. When you go to a meeting – that is a parliamentary procedure. They already know what the law is gonna be; and, you're not gonna do anything to change it. When they make up their mind to do it; they're gonna do it no matter what."

Former and present commercial council representatives also often explained that, "after several years I realized that we [commercial fishers on the councils] are nothing but a rubber stamp for the agency and don't do a damn bit of good."

In addition to a perceived lack of efficacy, commercial fishers explained their non-involvement as a protective measure from the potential for more regulations. In response to questions concerning why fishers do not attend and speak for themselves during council meetings, many fishers explained they "don't like to talk to nobody

because it don't do no good to talk to anybody and because every time you do, it goes against us." This sentiment was often followed by an example, such as the following.

> "At a meeting in Atlantic Beach in the 90s, the council was talking about closing one area for trout fishing. The fishermen in the audience laughed and one stood up and said we are not even trying to catch trout there. He showed them on a map exactly where they were fishing for and catching trout. Two weeks to one month later that area was closed. It wasn't even an area that was being considered for closure before that meeting."

Commercial fishers "don't have a lot of faith in the system. They don't feel that what they say is necessarily going to be listened to," as an administrator stated. Feelings of ineffectiveness and distrust have caused commercial fishers to recede from the formal fisheries governance realm.

**Conclusion**

Commercial fishers are caught between the political activities of conservation and recreational fishing interests and the legislative and organizational mandates of the formal fisheries governance system. In the case of sea turtles, gamefish and gill nets, conservation and recreational fishing interest groups effectively leveraged the opportunities and constraints of the formal fisheries governance system to manage their own politically visibility, as well as the political visibility of commercial fishers to decrease the legitimate right of commercial fishers to participate in the governance of North Carolina fisheries. While the historical relationship of the fisheries management system protected the gill net fishery from complete closure, counter pressure against the campaigns of conservation and recreational fishing interest groups to mitigate the severity of new gill net regulations was lacking. Commercial fishers were politically absent throughout the sea turtle lawsuit and spotted seatrout fishery management plan

process, which gave conservation and recreational fishing interests a greater ability to define the visibility of commercial fishers for them.

In general, commercial fishers practice active non-participation – intentional withdrawal from formal fisheries governance processes. The decision to actively withdraw from formal fisheries politics is premised on the rational calculation of available resources, capabilities and outcomes. Commercial fishers recognize that they are relatively disadvantage in formal processes of fisheries governance in relation to conservation and recreational fishing interests. Therefore, commercial fishers apply their resources and capabilities to the informal realm of fisheries governance, where their differential transformative capacity – agency as a result of context specific resources has traditionally afforded them an advantage over the decisions and activities that affect local fisheries. The next chapter examines the differences in the differential transformative capacity of conservationists, recreational fishers, and commercial fishers as the underlying reason for the political inactivity of commercial fishers. The relative advantage commercial fishers gain from their specific resources in informally governing local fisheries in Two Rivers is explained, as is the activities of conservation and recreational interest groups outside the formal governance realm.

# CHAPTER SIX

## ACTIVE NON-PARTICIPATION AND SOCIAL VISIBILITY: INFORMAL GOVERNANCE OF THE FISHERY COMMONS IN TWO RIVERS, NORTH CAROLINA

In the formal realm of fisheries governance, commercial fishers in North Carolina are caught between legislative and organizational imperatives and the political maneuverings of conservation and recreational interest groups. Fisheries and environmental legislation have defined overfishing and fishing practices as the predominant threat to the sustainability of marine resources, and reductions in fishing capacity as the solution. Conservationists and recreational fishers work to maintain and increase regulatory focus on the commercial fishing industry by becoming politically active to define the visibility of commercial fishers in such a way as to delegitimize commercial fishers as stewards of marine resources. Commercial fishers, on the other hand, are relatively inactive within the formal political system. While the opportunities to become involved in formal processes of fisheries governance are extensive, the ability of a user-group to negotiate their visibility and legitimacy in relation to other groups and within the constraints of the formal fisheries governance system is differentiated by access to material and non-material resources necessary for successful goal achievement.

Commercial fishers have less of the resources necessary to effectively participate in formal governance processes in comparison to conservation and recreational interest groups. Based on a rational calculation of the expected rewards versus the costs of political participation, commercial fishers choose to engage in active non-participation– intentional withdrawal from formal fisheries governance processes. Yet, where commercial fishers in Two Rivers are relatively disadvantaged in the formal governance system, their material and non-material resources give them a comparative advantage in the informal realm. The local ecological knowledge of Two Rivers fisherpeople contributes to successful fishing; but, it also contributes to the perpetuation of fisher livelihoods by ensuring the sustainability of fishery resources. Nevertheless, conservation and recreational interest groups also work in the informal governance realm, in the social sphere to influence broader public perceptions of the legitimacy of commercial fishers. The social visibility campaigns of these groups have broader consequences for local fishers than the potential for fishery regulations; they are experienced in the everyday lives of commercial fishers.

This chapter explores the informal realm of fisheries governance from the perspective of local fishers in Two Rivers, North Carolina. The first section explains the different abilities of conservation and recreational interest groups and commercial fishers to compete in formal processes of fisheries governance as a product of access to and control of material and non-material resources. The second section discusses and illustrates the specific capabilities and resources that give Two Rivers fisherpeople a comparative advantage in governing the local fisheries commons. The third section discusses the social visibility campaigns of conservation and recreational fishing interest

groups. The broader consequences of the social visibility campaigns for fisherpeople are also discussed briefly.

**Differential Transformative Capacity: Commercial Fishers' Political Inactivity**

Conservationists and recreational fishing interests are highly active in formal fisheries politics; but, commercial fishers are relatively inactive. The lack of political participation among commercial fishers is not the result of a lack of opportunities to engage the fisheries governance structure, but largely a rational choice based on calculation of the costs and benefits of the expenditure of available resources. To effectively engage in formal processes of fisheries governance user-groups must become legitimate stakeholders by effectively managing their political visibility in relation to other user groups. The ability of user groups to manage their own, and others', visibility and legitimacy depends on the differential transformative capacity of the group. Following Giddens (1984), everyone has agency and power, the capacity to achieve outcomes through action. Giddens (1984) calls this "transformative capacity." However, following Bourdieu (1985a; 1986), groups do not have equal capacities to achieve transformative outcomes. The transformative capacity of groups varies by the forms of capital – material and non-material resources to which groups have access or control and the larger context, the arena in which agency is exercised and resources are applied. Thus, while all user-groups have the ability to participate in formal processes of fisheries governance, in practice, not all user-groups have an equal capacity to effectively participate.

According to Bourdieu (1985a; 1986), the general forms of capital, or resources are cultural, economic, and social. In the context of formal fisheries governance, an

important type of cultural capital includes formal education, which imparts the institutional knowledge relevant to traversing the formal political field. Important types of economic capital include monetary and durable resources, which provide greater time for political endeavors, as well as access to technology, such as computers and the internet. And, an important type of social capital is political capital, the social contacts necessary to gain political support and momentum.

***Table* 1**. Education Level and Household Income for Commercial and Recreational Fishers in the Spotted Seatrout Fishery (NCDMF 2009e).[82]

| | | Commercial n = 338[83] | Recreational n = 110 |
|---|---|---|---|
| Education Level | | Average or Percent (%) | |
| | Less than High School | 31.0 | |
| | High School Graduate | 47.3 | *23.0 |
| | Some College | 14.9 | 31.0 |
| | College Graduate | 6.8 | 26.0 |
| | Graduate School | | 21.0 |
| Household Income | | | |
| | Less than $15,000 | 9.7 | 1.0 |
| | $15,0001 - $30,000 | 37.7 | 3.0 |
| | $30,001 - $50,000 | 24.0 | 11.0 |
| | $50,001, - $75,000 | 16.7 | 16.0 |
| | More than $75,000 | 7.0 | 50.0 |
| | Prefer not to answer | | 21.0 |

* Includes Less than High School

Socio-economic data and membership in associations can help gauge the cultural, economic, and political capital of groups. Data on the education and household incomes for commercial and recreational fishers in the spotted seatrout fishery is presented in Table 1. The data come from a socio-economic survey of fishers in the spotted seatrout

[82] On average, commercial and recreational fishers in the spotted seatrout fishery are similar in age (50), sex and race. The vast majority or both groups are white (97%) and male (97% of commercial and 89% of recreational fishers).

[83] This sample was generated from a data base of commercial fishers involved in a series of in-depth interview style surveys since 2001, and includes all of the commercial fishers in that data base with reported landings of spotted sea trout.

fishery conducted by the DMF for use in the development of the spotted seatrout fishery management plan (NCDMF 2009e). The data from this survey are very similar to a statewide survey of all recreational fishers in North Carolina. The spotted seatrout fishery data was used specifically to speak to the preceding discussion of recreational and commercial fisher competition over spotted seatrout. I do not have information on the socio-economic characteristics of the Karen Beasley Sea Turtle Rescue and Rehabilitation Center (Center) or other conservation groups, although I do have information on the political capital of the Center.

Cultural Capital: Education and Navigating Formal Institutional Settings

As shown in Table 1 above, the vast majority of commercial fishers in the spotted seatrout fishery have a high school degree (47%) or less (31%). In contrast, recreational fishers in the spotted seatrout fishery are more likely to have a college education (57%) or graduate degree (21%) (NCDMF 2009e). The difference in educational attainment between commercial and recreational fisherpeople clearly does not represent a difference in intelligence, or knowledge essential for fisheries governance. It does, however, signify a cultural difference, which is reinforce through occupational opportunities and experiences.

The educational experiences and livelihoods of commercial fishers impart human capital – experiences, knowledge and skills sets that are different than those developed through experience with formal institutions and bureaucratic organizations. Fisherpeople are more attuned to living their lives by boxes, trips and tows,[84] the natural cycles of the

[84] Boxes, or baskets are a measurement of fish caught, typically referring to 100 pounds. Trips refer to the time fishing and are measured from the time a vessel leaves the dock to when it returns. A tow is the individual periods of time that a trawl net is lowered into the water before the net is hauled up and unloaded, usually for two hours at a time.

fish, and seasonal gear changes than the regiment of a time clock or series of board meetings. It was very common for local fisherpeople to explain that they have never or seldom held a land-based job. As on local fisher stated:

> "Far as myself, I don't like working on the hill.[85] I've been on the water ever since I was 6 years old. Well I never really worked a land job. It's all been water – everything I've done. It's hard to get out of your blood. You get started into it and it gets into your blood."

A fishermen's wife and mother explained that making a living from fishing was getting tough enough that her son was looking into alternatives. She said, he had grown up on the boat fishing with his father and "loves it more than anything in the whole world. He'd rather fish than eat when he's hungry." "He could sew up a shrimp try-net[86] by the time he was 12 years old;" and, "he didn't g to college [because] he wanted to go on the boat full-time." But, now "We don't know if he even will be able to work next year or not." She went on to say, "he's looking into a captain's license so he could work tug boats – anything to avoid working on the hill."

Conversely, recreational fishers are overwhelmingly more likely to hold occupations within the formal institutions of society. In a statewide survey of recreational fishers in North Carolina conducted by the DMF, respondents were asked to classify their primary jobs using a list from the United States Department of Labor's 2000 Standard Occupational Classification (SOC) System (Crosson 2010). Seventeen percent checked "other" and another 17 percent indicated they were retired. Of those able to find an appropriate classification; the most common jobs were in management (11%),

[85] 'Hill' is a local term that refers to land, town, city, or anything not associated with fishery or water-based location, activities, or employment.

[86] A try-net is a small trawl equipped with miniature doors, which is used to sample the bottom for shrimp before the main trawls are set out, and to monitor the catch rates during a tow. Being light and easily handled, the try-net may be set, towed and lifted by one man.

followed by construction (10%), installation and repair (7%), sales (4%), and protective services like firefighters and police (4%). Out of the recreational fishers I interviewed, one was geologist, one was a marine biologist, and one taught computer science at a local community college.

As a result of these different experiences, recreational fishers are more likely to have greater confidence in the ability of fisheries administrators and fisheries science to effectively manage marine resources. During interviews, recreational fishers commonly stated, "I think there is a value in having people that are on the water and listening to them. But, there is bigger value in using the best science you got; and, funds are becoming available for research because recreational guys are buying licenses." Commercial fishers, on the other hand, were more likely to criticize scientific fisheries management and explain the difficulties of managing fisheries by pointing to the complexity of marine ecologies. As one local fisher explained:

> "I would challenge anybody that tries to manage something to put ten fish in an aquarium – ten different kinds – two of them hard crabs and see how well you do managing that. You're not going to do shit. They're going to do whatever they want. What about in that ocean when you can't control it. You could always let the water out of the tank or pin them in a corner but you can't do much in that ocean when you can't see them. You got to add some level of reality to some of this. But right now reality and common sense don't exist."

Commercial fishers are more than aware that they bear the brunt of regulations poorly designed to deal with uncertainty and complexity. The following sentiment was consistently expressed by local fishers during interviews:

> "We need regulations but the fish can't be regulated. That's the Lords work. Man can't regulate the fish. Fish are not fenced in; they go where they want to go. And, the regulations that are being passed are harming the fishermen and the fish. The consequences of trying to regulate the unregulated falls on the fishermen."

In general, local fisherpeople lack confidence in the formal institutions of fisheries governance, which favor scientific forms of knowledge over fishers' extensive and experiential knowledge of fish and fisheries habitats. The fisherpeople were quick to point out that while they don't have extensive educations, they are well schooled in the ways of fishing. A local fisher explained that the education and training of fisherpeople occurs on the water:

> "I ain't never seen an educated fishermen out-fish a [fisherman that grew up doing it]. Damn it he growed up on the water doing it – fishing. It is something you learn by doing behind somebody. It's something that you have to learn how to do. And the first damn thing you have to have is a lot of push in you at times. It ain't always hard but sometimes it is hard and sometimes it is the most enjoyable job you can do; but, not all the time. I never seen no educated person that is a real good fisherman. Fisherman aren't dumb people; but, they didn't go to school to do paper work or work on the hill. They went to school to learn how to fish."

More often than not, local fisherpeople were highly critical of scientists and the "so called educated people" making the rules and regulations. As a local fisher with extensive experience participating on councils and in cooperative fisheries research projects explained:

> "These so called educated people say this is what you are supposed to do. Well hell, we have been doing all this stuff for years but they're not happy. They think we are lying SOBs. They want to send this dummy down here called observers that don't know nothing about nothing and then what he writes down they take back and stand around like they want to. They don't know more about the truth. They twist that around like they want. It is just a bunch of crooked junk."

As explained in Chapter 4, the results of fisheries science often do not correspond with what fishers observe on the water every day.

In addition to a highly critical attitude toward fisheries science and "so called educated" people, some local fishers lack self-confidence in formal institutional settings.

In discussing the participation of commercial fishers at fishery council meetings, a former commercial fisher explained:

> "A lot of them wouldn't go. A lot of them were scared to talk in front of somebody. A lot of them just wouldn't go because they didn't feel like they could do any help; they felt like they couldn't speak like they normally should, or wanted to. That was the main thing."

Another local fisher explained that while he does not mind going to the meetings to listen, he never speaks up. He said:

> "I don't get up there. I'm not too much into getting up there in front of people, never have been. The way people talk, they just don't understand; they hear what you're saying but – you got certain words for certain things and it may not be what's in the dictionary, but it's the way things are taught. Like down around Harker's Island, Sea Level, Atlantic everybody's got a different word but everybody's means the same things."

The lives of commercial fisherpeople are shaped by their educational experiences on the water. They know the art of fishing and have extensive knowledge of local fisheries, but have little confidence in the efficacy of fisheries scientists and feel uncomfortable speaking in formal institutional settings. In contrast, recreational fishers have higher levels of education and forms of employment, which indicate skills necessary for traversing the formal political institutions of the fishery governance system. They also have greater confidence in the efficacy of scientific fisheries management.

<u>Economic Capital: Time and Access to Information</u>

Along with a greater amount of skills for navigating formal institutions, recreational fishers also have higher incomes (see Table 1), which corresponds to more time for political activities and greater access to information technologies than commercial fishers. In the spotted seatrout fishery, two-thirds (66%) of recreational fishers had household incomes greater than $50,000, while 50 percent had household

incomes greater than $75,000.[87] In contrast, slightly less than half (47%) of commercial fishers in the spotted seatrout fishery have household incomes of $30,000 or less, while 24 percent have household incomes between $30,000 and $50,000 and 22 percent have household incomes greater than $50,000.[88] Income from commercial fishing accounts for 73 percent of the total household income for fishers in the spotted seatrout fishery, and is the sole form of income for 46 percent (NCDMF 2009e).[89] In general, recreational fishers are wealthier than most North Carolina residents, while commercial fishers fall below the median in household incomes. The median family income in North Carolina for 2008 was $46,549 (U.S. Census Bureau 2009).

*Time for Political Participation*

Income, as well as the nature of the work, is related to the time commercial and recreational fishers have available to participate in political activities. Recreational fishers on average have higher household incomes and forms of employment which enable higher levels of political participation. Commercial fishers, on the other hand, have lower household incomes and livelihoods, which revolve around their occupations. Fishing livelihoods are unpredictable, highly dependent upon the weather and the fugitive nature of fish, and require constant capital reinvestment in time and money, which leaves commercial fishers little time or resources for political activities.

[87] Recreational fishers specific to the spotted seatrout fishery are very similar to the average recreational fisher in North Carolina. In a statewide survey, slightly more than two-thirds (68%) of the recreational fishers in North Carolina reported household incomes over $50,000/year, and 25 percent had incomes of $100,000 or more in 2009 (Crosson 2010).

[88] Commercial fishers in the spotted seatrout fishery have similar incomes to commercial fishers in the APES region in general. In the APES region, 40 percent of commercial fishers have household incomes of $30,000 or less, nearly 30 percent have household incomes between $30,000 and $50,000, and 28 percent have household incomes greater than $50,000 (Crosson 2007).

[89] Fishing accounts for a larger portion of the incomes of commercial fishers in the spotted seatrout fishery than in the APES region in general. In the APES region, fishing accounts for 66 percent of the income of commercial fishers, and is the sole income for 39 percent (Crosson 2007).

Commercial fishers consistently explained how "you have to work the water just like any other job."

> "Everybody thinks it's easy money. They don't realize it is back breaking job to work that water. Ain't no two days alike. Every day is different. You have to be out there every day. I have been out there at six in the morning and been back at the dock at 1pm and had me $1,000 but that doesn't happen every day, or very often at all. You got to take the good with the bad and bad with the good."

Unlike most forms of employment, the economic rewards of fishing are highly unpredictable. As one fisher explained:

> "We left Georgia one time – come home and put crab nets on and started crabbing. The first week I made 50 bucks. The next week, it was so disheartening, we didn't do a bit better. We were going in the hole. The next week I made $500 bucks."

However unpredictable, the tools of the trade require constant investment in the forms of time and money. Commercial fishers often explained the need to reinvest in their boat and equipment.

> "If you were making $200 or $300 a day, they thought you were getting that all in a wad. You know, that you keep it all, but you can't do that. There's a lot of expense. You got to put your motors back and stuff you tear up. You have to keep it up. It's hard work and you don't – people think you get rich but you don't. By the time you pay expenses and buy the pots, the nets and keep the boat going the cost is a lot of money. And, you have to spend it. You don't want to go out there and get left out there broken down and all."

The unpredictability of profits from fishing, but constant required capital reinvestment reinforces the necessity of commercial fishers to work every available possible day, which makes political involvement in formal fishery governance processes extremely difficult. A former local fisher, who is now a fisheries administrator expanded on the difficulties these commercial fishers face in participating in formal fisheries governance processes. He said:

> "It's hard for them to come to meetings. The meetings are at night during the week. The guys that I know that go out every day, they get up at four o'clock in the morning, 3:30 and some of them are driving two hours before they ever put their boat in the water in order to get to where the crabs or the fish are. They get up at 3:30 and they don't even get to their first pot until 7:30 or 8 and then they fish 4-5-600 hundred pots. Then they have to take their boat out of the water and they have put their crabs on the truck and haul them to dealer. It's tough."

While it is difficult for fishers who leave and return to the dock every day to attend the fishery council meetings, attending meetings is practically impossible for trawl fishers who work several days at a time on the water. A retired local trawl fisher explained that:

> "I didn't have time to do nothing. Sunday – you leave out at 3pm and you work until Friday afternoon. You spend the rest of the day Friday unloading the boat at the fish house, all day Saturday making repairs, and Sunday morning and afternoon preparing to go out again – buying groceries, stocking ice, refueling, and rounding up the crew. That'll burn you out. You do that day after day after day you don't have time to do anything else. It was a bitch for me to go to the meetings."

Another fisher explained that, "If you got a house up on the hill that's not your home when you get on a boat you live there. We lived there from Sunday night to Saturday morning. Then we came home – had one night at home or two nights home. Either Friday or Saturday we come in and we then pack out Sunday."

Many commercial fishers perceive the timing and location of the meetings as a bias against them by the fisheries administration. In a discussion about the fishery council meetings and why commercial fishers are not participating, one local fisher explained that:

> "Most times that they have them we are out working. They don't have them on the weekends so we don't have no say in it. And they know this. They know we have to work during the week and that is when they have their meetings. And, then they are likely to be two or three hours up the road just to get to it. Some of those fellows to Wanchese have to drive all the way to Newbern – that's four hours on the road. Four hours there and four hours back; and, that's not including the hours spent in meeting. The DMF is totally unfair and biased against us. We have been discriminated against since I have been running a boat."

In some case the wives and daughters of fishers take on the roles and responsibilities necessary to maintain the business of fishing or political involvement. Many local fishers discussed how their wives take care of the business end of commercial fishing, as well as the household:

> "She manages everything for the house and boats as far as paying bills and keeping up with information that NMFS and the North Carolina Division of Marine Fisheries needs: licenses, surveys, changes in regulations and proclamations."

Many fishers also explained how their wives kept the fisheries associations running, while they worked on the water:

> "She was very involved in the Ladies' Auxiliary of the North Carolina Fisheries Association. The women organized all the monthly meetings, events, and fundraisers while the men worked Sunday through Friday on the water and Saturday getting ready for the next trip."

However, today, the increasing difficulty of earning livelihoods from commercial fishing paired with the increasing costs of fishing and life in general has increased the need for two-income households in many commercial fishing communities. The wives of commercial fishers no longer have the time to contribute to fisheries politics. As one long-time resident of Two Rivers explained, "Of course now most of the girls work. They have babysitters. They couldn't make it if they didn't. You have to have insurance on this and that and the other and it makes it hard on the commercial fishermen because they don't make a lot."

*Access to Information*

In addition to decreased time for political participation, low economic capital also decreases the resources available for information technology. Lack of access to information technology is a problem for local fishers. Information on fisheries rules

changes and issues, the schedule of meetings, and lists of fishery council representatives is all available on the DMF website; this information is also sent out via list serves. A retired DMF law officer explained the problems of internet access:

> "When we used to get what we call proclamations – notices of openings, closings, changes in size limit. When I got those I would go give those to the people and underline the main topic in that thing and put it on their doorstep, in his boat, at the fish house, posted it. Now they don't do that anymore. They (DMF) tell them to check it on-line. We have fishermen that aren't on line and will never be."

The internet is the predominant mechanism for information dissemination used by the DMF. As an administrator explained:

> "There is a distribution list for the news releases and there's distribution for the proclamations. The proclamations are those laws, rules, and proclamations. The proclamation list is also used for the public notices. Those proclamations go to the fish houses and then if we have a public notice that we are going to have a public meeting those also use the same distribution list. But they have to get signed up for the distribution list; and, to do that you have to have a computer."

The DMF sends out several emails a day. Between February 10, 2009 and December 28, 2009, The North Carolina DMF sent out well over 200 emails, roughly five a day throughout the work week explaining rule changes on gear, harvest and size limits, season and area openings and closings, and announcements of fishery council meetings and itineraries. Often times, multiple proclamations and assorted notices were sent out at once, and multiple emails were sent out in a day. Once a proclamation implementing a rule change is sent out, fishers have 48 hours before it goes into effect. It is essential that fishers stay informed of rule changes, as well as meeting schedules.

The vast majority of the commercial fishers I interviewed did not have a computer and/or access to the internet. As one commercial fisher said, "Regulations are piling up. Every day marine fisheries is sending out information on new regulations over the

internet, but I don't have internet." The fisherpeople of Two Rivers often explained that they had what they needed, but little extra.

> "I mean we always had what we needed but we never had no extra. We always paid the light bill and kept the power but everything kept getting run down. You got to do repairing but you ain't got no money. You know – do I pay my car insurance or do I fix the starter and lose my car and can't drive or do I buy some wood to fix up my trailer or do I pay the light bill."

Many fisherpeople expressed similar sentiments to these words of a fisherman's wife: "As long as I got money to pay my bills and put food on the table that's as good as it can get." Internet access is a non-essential utility for people with little extra for luxuries. This situation is further hampered by the underdevelopment of the infrastructure for internet services in Two Rivers, and many of the remote rural areas of North Carolina, which increases the service costs per family.

Administrators recognize that many commercial fishers do not have access to the internet, and are struggling to figure out alternatives for information dissemination. As an administrator explained:

> "The problem is getting all the right people to participate when they should. Even though when we finally do go to rule, we say alright you can't set nets within ten feet of shore, which was developed for two years and talked about, when it actually hits the street people say where did this come from. So we have a real problem of using imaginative ways of getting the word out. If you look at our advisor list that is on the website; if they have an email it is there and if they don't it's not. A lot of fish houses aren't electronic either. We have been thinking about given the budget cuts and how hard it is to get information and how we are not always timely on our information to try to mail everything. I don't know how to handle that. They used to mail them but I don't know if they still mail certain fish houses that don't have electronic mechanism or fax. We just settle with our website and notices that may or may not get published in the newspaper."

In addition to the internet, meeting notices and rule changes are also printed in local newspapers. However, many fishers do not subscribe to a newspaper. Fisher's consistently complained about newspapers printing the wrong dates or placing fisheries

information in obscure sections. A local fisher explained some problems with staying informed of fishery issues through the local newspaper:

> "They (DMF) might put it in the paper, but everybody don't sit there and read the whole paper. I mean some people's got certain parts that they read every day when they get it. You just don't know when it's going on or it's already over when you find out about it. I know they've had meetings down in Hyde County and the crowd up here never even knew nothing about it."

A recreational council representative also discussed the problems the administration has with newspapers and information dissemination:

> "We struggle forever at the state level with hometown newspapers putting notices in. We send them out but we can't make them publish it. If people call the division they can gain access to that information."

Often times a more reliable source of information about fishery meetings and rules changes is social networks. I asked every commercial fisher I interviewed how they learned about fishing meetings and stayed informed about fishery issues, such as rule changes. The majority explained that they heard about them through word of mouth. "People talk about it. Everybody will be talking about it when a new law comes out." Hearing about fishery information through social networks may be the most effective means for some fishers. A former commercial fisher explained that:

> "Half the commercial fishermen when I was doing couldn't even read anyway. They have been doing it all their lives and the way they understand the laws is the man (marine law enforcement) coming out there and writing up people and then word of mouth. Ya know, the dude wrote me up for this. Oh really, I have been doing that all my life."

Most fishers learn about rule changes in their communities. Many of the fishing communities have a central meeting place where the locals get together to discuss local politics related to fishing or other issues. In some fishing communities I visited, the local meeting place was a fish house, in Two Rivers, the local meeting place is a community

store. The owner of the community store is a former fishermen's wife who at one time owned several fishing vessels. Although retired from the fishing business, the store owner still receives proclamations, rule changes and meeting notices in the mail from the DMF, which she makes available to the community.

Political Capital: Membership in Associations

In general, recreational fishers have greater levels of education and forms of employment, which indicate greater experience with navigating formal institutional settings, and greater amounts of economic capital, signifying potentially more time and access to information than commercial fishers. That the Center, CCA and CFRG operate, to a large extent, via websites, shows their greater access to information technologies and a way to maintain and extend political relationships. In addition, these groups have greater political capital than commercial fishers.

Just as commercial fishers are not getting involved directly in fishery politics, they are not involved in political associations. In general, commercial fishers are unorganized politically. Legal and political issues tend to be local, and differ from region to region around the vast coastlines of the United States. The interests of commercial fishers are divided by the difference between federally managed and state managed fisheries, which involve different regulations, different fish, and different issues of concern. This is compounded by the nature of fisher occupations, which accrue little time or resources to wage political battles. As a result, until recently a national organization representing commercial fishers did not exist. The Commercial Fishermen of America (CFA) was organized in 2003 and incorporated in 2006 to give voice to the

concerns of commercial fishers on a national scale. However, not one commercial fisher interviewed in North Carolina had heard of the CFA.

While there are commercial fishing associations specific to North Carolina, very few of the fishers interviewed for this study, or people they knew were current members. Some had recently dropped their membership as a result of the high cost of the membership dues, which were, on average, $250 per year. Most of the commercial fishers who recently dropped their membership did not feel that their interests were served by the associations. As one fisher explained:

> "I was a member for 20 something years. To be honest with you we don't see eye to eye on a lot of things. In my opinion that association does not represent the small-time fishermen anymore. It is more of a dealers association meaning the big fleet groups. The little guys that they started out presenting are no longer represented."

This lack of representation was also observable to non-commercial fishers. A recreational council representative supplied a broader view of the problem:

> "I am not convinced that the average commercial fisherman is being adequately represented in the political process. There is one trade group that I have heard a number of commercial fishermen say that it does not represent them and they are not members. It is funded primarily by big dealers and I think that is the representation provided by that group and that does not always mirror the concerns of the individual fishermen. There have been a number of grass roots groups pop up here recently but there has not been a statewide group other than [that trade group] involved in the management process since I have been involved in it."

Conservation and recreational fisher interest groups, on the other hand, represent relatively unified, broad-based constituencies. All but one of the recreational fishers interviewed for this study, and the majority of recreational council representatives were members of a recreational fishers association, predominantly the Coastal Conservation

Association (CCA). A few were also members of the Coastal Fisheries Reform Group (CFRG). As one recreational council representative explained:

> "I am a member of the CCA. . . . I have been a part of the CCA since they got active in the state and always felt that the recreational and commercial folks needed an organization to represent them and try to come to terms with what they would like to see done and try to impress the management folks with their opinions. Too many people just sit back and complain – you have to get involved."

The CCA is an extensive source of political capital for recreational fishers. A few self described facts from the CCA (2010) website include:

> "CCA has a registered lobbyist in Washington D.C. and has been active in critical fisheries debates since 1984. We currently retain as many as 17 professional state and federal professional lobbyists."

> "CCA members include a former U.S. President, former Cabinet members, Congressmen, Senators, ICCAT[90] Commissioners, Fishery Management Council members, Governors, State Legislators, and state and federal fisheries managers."

While the political assets of the CCA are extensive in their own right, in the current political conflicts surrounding sea turtles, spotted seatrout and gill nets, the Center, the CCA and the CFRG expanded their political capital by collaborating on the war against gill nets. The CFRG, CCA and several other recreational fishing and non-fishing groups and industries created a website in 2008 called NoMoreGillNets.Org to unite the interests of different groups across the state in the banning of gill nets (The Angry Fisherman 2008). Furthermore, in simple numbers and potential political force, commercial fishers are at a disadvantage. There are approximately 4,000 commercial fishers in North Carolina (NCDMF 2010a), compared to 803,308 licensed recreational fishers who are residents of North Carolina (Crosson 2010).

[90] The International Commission for the Conservation of Atlantic Tunas (ICCAT) is an inter-governmental fishery organization responsible for the conservation of tunas and tuna-like species in the Atlantic Ocean and its adjacent seas.

In addition to the combined efforts of the CCA and CFRG through NoMoreGillNets.Org and sheer number of recreational fishers, both groups were also involved with the Center's lawsuit against the DMF. The CCA (2010a) explained in a newsletter that they "worked closely behind the scenes with the Duke litigation team in preparing and prosecuting the Beasley lawsuit." In an article in the *North Carolina Sportsman*, the director of the CFRG stated that the CFRG "is working closely with the Karen Beasley Turtle Rehabilitation Hospital on their efforts to remove all gill nets from N.C. waters" (Dilsaver 2010a). The CCA and CFRG were added sources of political capital for the Center; but, the lawsuit was also the product of political capital particular to the Center's director, Jean Beasley. The following was published in a newspaper article:

> "Michael Nowlin, a longtime friend of Jean Beasley's, joined the Duke Environmental Law & Policy Clinic two years ago, and a chance meeting of the two, who had worked together earlier, set the wheels in motion for the lawsuit." (Holt 2009)

Commercial fishers, then, are at a disadvantage in fishery politics. Recreational and conservation interest groups have greater levels of confidence and experience in formal institutions, more time to become politically visible, greater access to information, and greater levels of political capital gained from membership in associations. These forms of capital give recreational fishers and conservationists a comparative advantage over commercial fishers in taking advantage of opportunities and navigating the constraints of the formal fisheries governance system.

Commercial fishers recognize their relative disadvantage in the formal political arena. As a commercial fisher, veteran council member, and commercial fishers association president explained:

> "They have beat us down to where we have gone to council meeting after council meeting after council meeting, public hearings and our voice is ignored. They give you lip service – thank you for your comments, go away and they do whatever they want. They got us to a point now that we don't want to participate with that process. Now it has been taken over completely by special interest groups and NGOs. We are still participating at some levels but the majority of your heart and core fishermen have no confidence in the process and they are so beat down by it that they are just saying why the hell should I go to a meeting; they are just going to do what they want anyway. That is the mindset and it is bad. It is to a point now that it is as bad as I have seen it in all my years."

**Active Non-Participation: Informal Governance, LEK & Intergenerational Equity**

In response to their relatively disadvantaged position in relation to conservationists and recreational fishing interests, Two Rivers fisherpeople, as well as many commercial fishers along the coast of North Carolina, engage in active non-participation – intentional withdrawal from the formal political activities of fisheries governance. Commercial fishers actively choose to become politically inactive. However, a lack of participation in formal processes of fisheries governance does mean a lack of participation in fisheries governance in general. While local fishers may not participate in formal processes of fisheries governance, they are actively involved in informal fisheries governance in their own communities.

Active Non-Participation: Neither Satisfaction, Ambivalence or False Consciousness

The fisherpeople of Two Rivers, and many of the fishers from surrounding communities are not involved in formal fisheries political processes to protect their way of life or the resources they depend upon for a living. This directly contradicts a proposition of Common Property Resource (CPR) scholarship, which states resource dependent people will collectively act to govern the commons they depend upon for their livelihoods. We need to understand why a group people are not acting protect their place

in the commons to determine how tragedy of commons occur, as well as the best strategies for sustainable governance.

According to Weber (1978: 212), a lack of overt resistance to the existing social order stems from habit, rationality or a belief in the legitimacy of the system of control. In other words, people do not challenge existing social circumstances because of unconscious and uncritical acceptance of the existing social order, a rational calculation of what is gained or lost, or utter belief that the governing institutions are the most legitimate – appropriate and proper ones for society. Marcuse (1991) promoted the first argument, complacency based on uncritical acceptance and habit in his book *One Dimensional Man*. Gramsci (1971) and Lipset (1959; 1963) presented opposing views of the third explanation of a lack of resistance to the existing social order. Where Lipset (1963) explained lack of political conflict as satisfaction and belief in the existing order, Gramsci (1991) explained this complacency as false consciousness. According to Gramsci (1991), subordinates are disciplined to actively believe in the values that explain and justify their subordination through the ideological domination perpetuated in the religious, political, economic and educational institutions of society.

Scott (1985; 1990) criticizes the habit and legitimacy perspectives of willing compliance for ignoring the capacity of subordinate groups to penetrate and demystify the prevailing ideology and overlooking the way subordinate groups evade or challenge the existing order on a daily basis. Scott (1985; 1990) argues that ideological domination is not inevitable; people retain considerable autonomy to construct a life and culture not entirely controlled by dominant groups or structures in society. Scott's (1985; 1990) own

explanation for apparent compliance to structures of domination is closer to Weber's second basis – rational calculation.

According to Scott (1985; 1990), a lack of overt resistance to structures of domination, which gives the appearance of compliance, stems from a rational response to objective circumstances. A lack of overt resistance does not imply agreement with the existing order, or contentment. This argument fits the circumstances of the fisherpeople of Two Rivers. The active non-participation of Two Rivers fishers is a realistic, pragmatic response to their relative disadvantage in relation to the despotic power of science-based conservation mandates and the differential transformative capacities of conservation and recreational fishing interests.

Active non-participation is, according to Lukes' (2005) interpretation, an act of power in that fishers are responsible for their own inaction; it is an active choice. Fishers' active non-participation is not the product of satisfaction with or ambivalence about the existing social order as Polsby (1963) and Lipset (1963) argued. Neither is it the product of false consciousness, which creates acceptance of the existing social order as natural and inevitable as Marcuse (1991) alleged, or which makes subordinates actively believe in the values that explain and justify their subordination as Gramsci (1971) contended. Fishers are highly aware of the issues debated in and processes of the formal governance system, and care about the outcomes. They are also highly aware of their relationship to the formal fisheries governance system and opposing user-groups, which results in an inordinate regulatory focus on commercial fishing activities. Furthermore, commercial fishers are not completely inactive, passive bystanders; they are actively and vigorously engaged in informal governance processes.

For commercial fishers, political inactivity in the formal realm is a form of rational resistance to the political inequities of the formal fisheries governance structure. Commercial fishers recognize the limits of their abilities to influence the formal processes of fisheries governance in relation to the despotic power of science-based conservation mandates and the greater differential transformative capacities of conservation and recreational fishing interests. Thus, fishers choose instead to exert their energy and expend their resources in the informal governance realm where they have a greater chance of success in determining resource use, access, and allocation on their own terms. Where commercial fisherpeople are relatively disadvantaged in the formal fisheries governance realm, the material and non-material resources of local fishers are ideally suited to governance activities in the informal realm.

Informal Governance and Fishers' Resources: Economic, Social and Cultural Capital

Informal governance consists of the activities and institutions that govern the relationship of local actors with the resources of the fishery but are not purposefully directed toward influencing the formal management of fisheries. These activities and institutions may oppose, replicate, or exist outside the purview of the formal governance system. However, informal governance institutions are never completely separate from the formal governance system; each exists in relation to the other. The active non-participation and informal governance activities of commercial fishers does not involve evasion of the rules and regulations of the formal governance system; commercial fishers are still subject to, and for the most part abide by the authority of the formal system. As an ex-DMF law enforcement officer said, "well they will work within the regulations if they can at all;" and, the majority of fishers explained, "you have to have law – you can't

do away with the laws. They are your own worst enemy; but, we know there has to be rules and regulations." Fishers employ their context specific resources to work with, around, and creatively alongside the formal regulations of the fisheries governance system.

Commercial fishers have forms of capital specifically equipped to commons governance within their communities. Although monetary forms of economic capital are in short supply, all commercial fishers have the durable equipment necessary for fishing livelihoods, such as boats, equipment and tools. And, while the political capital of local fishers is minimal, social capital – access to the resources of people in their social relationships and networks augments personal resources that may be limited. As explained above, one of the resources fishers access through their social networks is information about fisheries rules and regulations. Social capital, such as the time and economic capital of friends and associations are also essential in times of trouble. For example, as one fisher in Two Rivers explained:

> "When there is somebody that can't work and he was down we would crab his pots and take them to sell in his name and give him the money. So we done that. Like I would fish them one day and them my brother would fish them one day and then my uncle might fish them another day and friends might get them the next day. We'd take care of it for him. We done it a lot. One guy that lost his boat, I let use my boat every other day for a week and another friend of mine did it the next week until he could get his boat fixed."

Another fisher explained the importance of social relationships when you work on the water:

> "Anybody gets into trouble out there everybody goes to try to help. Like the other day one of the guys run onto one of the shoals. I ran up there and towed him in. I wasted $100 worth of fuel pulling him in and didn't charge him nothing. He was broke down and I am sure if I broke down I could call one of the boys up and they would come and get me. I've been pulled in before. Everybody helps when you

> get into trouble – and you can get into big trouble out there. And you might need some help. So you need friends."

The social capital of commercial fishers is not reserved solely for close associations, however. Commercial fishers often engage in search and rescue operations, sacrificing their time, energy, resources, and even safety in order to help complete strangers lost or endangered on the water. As a local non-fisher in Two Rivers explained about fishers, "anybody will tell you watermen are no good so-of-a-bitch until some idiot gets lost or something happens and then the watermen are the first ones to go out there and spend their time." Another said, "they will put their lives at danger to save the lives of anyone else on the water, instantly. They don't even think twice about it." A local fisher recounted an instance where

> "Two boys got drowned around here in the winter time. They caught one right quick but they couldn't find the other one for a while. The commercial fisherman stayed out night and day until they caught that boy. Every time something like that happens the watermen pull right together."

In addition to the economic and social capital necessary to engage in the act of fishing, the cultural capital of local fishers contributes to sustained and successful livelihoods, as well as successful search and rescue operations. The human capital – knowledge, skills and experience of local fishers is highly diverse. Local fishers are mechanics, net builders, boat builders, electricians, inventers, navigators, and whatever else they need to maintain the durable tools of their trade. The economic survival of fishers is dependent on self-sufficiency in servicing their own boat, gear and mechanical equipment. More importantly, the lives of fishers are often reliant on the ability to attend to any problems that may arise with the boat, gear, motor, or electrical system while on the water, far from land. These forms of cultural capital are essential to fisher

livelihoods; however, the most important forms of cultural capital that Two Rivers fisherpeople have for informally governing the local commons consist of local ecological knowledge (LEK) and a conservation ethic founded on intergenerational equity.

LEK of Commercial Fishers and Informal Governance of the Commons

Also referred to as popular knowledge (Foucault 1980) or mētis (Scott 1998), local ecological knowledge (LEK) is practical knowledge derived from contextualized and experiential local practices, which form the basis of informal governance processes (Berkes et al. 2001). Where the human capital of fishers allows them to maintain their boat and gear, the LEK of local fishers derives from intimate knowledge of fish and the local ecosystem. Fisherpeople know where to find specific fish species based upon the temperature of the air and water, the current, and vegetation.

I was continuously told by local fishers that "you can't just go out there and set a net anywhere to catch a fish. You got to learn those spots."

> "Some people think you drop hook and line over in that floor and catch a fish but it's never been that way – never will be that way. You got certain places you can catch something, places you're not. It's certain spots that you catch the shrimp, certain places you can't. Places you can go catch oysters and places you can't find one. Same way with the hook and line fishing. They're not everywhere. They go where they feed and what they feed on too. That's it."

In order to be successful, fishers have to know the behaviors of specific fish and the conditions most favorable to catching them. For example, one fisher described the conditions favorable for catching shrimp:

> "Shrimp are very funny about the conditions. In the daytime, if the water is real clear and calm you're not going to catch them. But, if it is blowing 25 or 30 and the river is muddy you'll catch them in the daytime. If it's clear you will catch them at night. We have been doing all night until this week because it has blown 20 to 25 every day down there. White shrimp are only day time shrimp. I have seen them once or twice at night and that was out in the ocean at the beach. Shrimping is based all on the weather conditions. You'll catch them during the

> day if it is muddy and rough or at night if it's clear unless they see your nets and they outrun you. Shrimp are pretty fast."

It is also important for fishers to know the underwater topography and landscape of their fishing grounds. Local fishers constantly stated, "I know where I am at all the time. I don't need a computer. I probably don't even need a loran[91] but a loran is nice because you got shoals and hangs[92] and stuff out there." Another local fisher described how he knows the local waters and the places where fish go when local weather conditions change or the cycles of fish cause them to migrate.

> "I was raised up into it. I know every damn part of that sound. I know where every oyster rock and every hang is out there. When the wind changes around, when the shrimp gets a certain size, I know where to go."

As a result of experience, fishers also understand how the normal behaviors of fish change depending on long-term environmental changes. A local fisher described it as:

> "a mind game of what you could do as far as knowing the fishery. If we go fishing for fish and can't find the species we target we target something else until the fish replenish themselves and come back if that's the problem. A lot of the time it's not that kind of a problem. They just move and go other places with the climatic changes. You know if we didn't find fish here this year – you might go a hundred miles and find them there. The same species that normally would have been here because of the temperature and the salinity of the water. If they didn't go that year it may be because you may had a real wet year or a real dry year or a real cold year which would drive them further south or maybe further north."

Local fishers often do not know why certain environmental conditions occur or why fish respond in certain ways and not others; but, they do know how fish respond and where fish go. For example, a local fisher described a situation where prime fishing grounds for flounder has changed in the past 30 years. He said:

[91] A loran consists of a nautical chart that fishers use to mark hangs, shoals, prime fishing grounds, and other important information.
[92] A hang is anything under the surface of the water that a boat or net can get hung up on.

> "With changes and stuff and the weather or whatever you call it. I know it's got warmer and cold water doesn't come as far south as it used to. So we figure that's why the fish are not coming in the same areas as they did 30 years ago. Well I don't know why they don't come ashore like they used to come; I'm not sure whether – I'll give you an example. We fished from Cape Hatteras on the Outer Banks to Virginia – we could fish within the 3 mile limit – North Carolina fishermen could. We fished within a half mile of the bank. Well in years go by we have caught no telling how many millions of pounds of flounders along that line from that Virginia boarder to the North Carolina boarder. Today we don't even fish there anymore. You can't even find fish there. We don't know why. We don't know why they're not there; we don't understand why they're not there. We find fish off 40 fathoms or 50 fathoms or still along that same continental shelf edge but we don't understand why those fish don't come ashore. All we know is the fish ain't there. We do know that. But we also know that the same – if it is the same fish – and it *is* the same species and the same kind – we know they have doubled and tripled in other places."

The LEK of local fishers is intergenerational, as well as experiential. It continually develops and changes, along with climatic conditions, fisheries habitat or changes in the topography of the land. While all fishers eventually develop LEK, not all fishers have the same knowledge and skill. As one retired fisher said, "You got to be raised up into it and sometimes that is not good enough." Fisherpeople protect their knowledge to maintain a competitive advantage over other fishers, as well as control access and allocation. A local fisher described this process as a science. He said:

> "A lot of these guys – the good fishermen – there is a science to it. There's an intangible – you can't say why he catches more fish than the other guy. The best fishermen are the hardest workers. The guys that understand limits but aren't satisfied with status quo. They really want to catch more fish than his buddies – healthy competition. They'll talk to each other all the time – where you at man? The good ones you won't hear on the radio very much. One of my buddies daddies – considered by almost everyone as one of the world's best fishers. He had some guys that no matter what you did they were going to follow you out there. So he went out that day; but, he didn't go where he always went. He went somewhere and they didn't catch anything. He said it must have been a bad day that day. He was willing to waste a whole day to not show them where he was fishing."

Although fishers guard their knowledge, most fishers are willing to share information with friends. For example, one fisher said, "Now if you were a friend of mine and was in the same fishery I might would say come on and go. And we might take a little trip some place like that. But as far as me telling someone sitting across this table from me or over the radio where I was catching fish at, I don't think so."

Of course, fishermen also ensure the perpetuation of their specialized knowledge. While many fishers learn their trade from family members, often times a fisher's mentor is a community member. As a local fisher explained:

> "A lot of them would match up with an old man that was not fishing so much anymore and he would try to teach them – like an apprenticeship. And, he would take them under their wing and show them how to run the inlet, or show them how to fish the sound, show them how to look at the river, how to set nets, what to do."

The knowledge passed down from one fisher to another extends beyond the social scope of the original mentor. A popular teacher in Two Rivers, who had just returned after 20 years away from the community told me:

> "Bob learned a lot from me.[93] Anybody that got on the boat with me I tried to teach them the best of my ability. You ask a lot of boys – a lot of boys will tell you that I taught them a lot. I go out to the docks and people I never met before talk to me like they know me. They say that all they hear is Joes this, Joe that, Joe said. They say it's like they had known me for years and years and I never met them. I've taught them how to set doors, sew nets, splice cable, tie knots, the best places to crab, fish, shrimp and so on."

During our interview, Joe even taught me how to tie a few knots and gave me tips on how to cook different fish.

Local fishers often say, "If you can fish, you can catch fish;" but, it is not quite that simple. To successfully catch fish, knowledge of fish behavior, the area, and the affects of weather and climate on fish populations is essential. This knowledge is

[93] The names in all quotes are pseudonyms.

contextual and localized. Extensive fishing experience is not enough. A recreational fisher relatively new to Two Rivers, Tim Boyd[94] reported he had been fishing since he was five years old. Tim had more than 20 years of fishing experience before he moved to Two Rivers 10 years ago. Yet, regardless of his extensive fishing experience, Tim said, "had it not been for some of the commercial people around here I would never have learned how to fish in this river." Tim went on to say:

> "One in a while they will tell me where the fish are. But you got to realize when you are asking somebody where the fish are – now, they are going to tell you; but, the trick will lie in the answer. You have to know how to take the truth. For instance I had a fella tell me that he caught a drum and big old flounder and some big trout and he was out at Rose Bay. Well he was close to Rose Bay – he wasn't in Rose Bay. One fella tells to go to Judith Island to catch fish – no I am going to Jordan Creek."

Intimate knowledge of fish behavior, the currents and geography of the area is essential to know exactly where to go in the general areas suggested by fishers.

Just as knowledge of fish behavior and the area is important, simply having the tools of the trade is not enough. Tim told me:

> "Once in a while I use a throw net, a cast net. It's a big pain in the ass. You know Bob went shrimping one night and came back with 20 pounds of shrimp. We bought it from him and I asked him how he got them. He told me so I went out with my cast net. I got five shrimp – five. And I was muddy from head to foot and wet to boot. I put that net up and said the heck with it. I will buy them from Bob if I want them."

The LEK of local fisherpeople does not just contribute to successful fishing practices, it sensitizes fisherpeople to alterations in habitat and marine life. Commercial fisherpeople do not use this knowledge solely to catch fish, and make money. The local fisherpeople apply their LEK to ensuring the perpetuation of their livelihoods for future generations of their families. The perpetuation of fisher livelihoods depends on the

[94] Tim asked me to use his real name.

perpetuation of fishery resources. Thus, fisherpeople have a conservation ethic based on motives of intergenerational equity. While the LEK of local fishers contributes to successful fishing, the conservation ethic of local fishers has the potential to contribute to sustainable use practices of marine resources well into the future.

Intergenerational Equity: Conserving Fisheries Resources for Future Generations

Fishers express intergenerational equity in their desire for their descendents to have the ability to continue to fish for a living long into the future. This motivation results in actions that conserve fishery resources. Where fishers traditionally regulated themselves on the size of fish they harvested, the locations where fish were harvested, and the means by which fish are harvested, today, fishers agree with many of the regulations enforced by the formal fishery governance system. Local fishers also work to conserve marine resources by innovating new harvest methods to reduce the collateral damage of commercial fishing techniques. And, where fishers chafe at the ever increasing list of regulations enforced by the DMF, they actually enforce and promote conservation through local fishing norms, outside the purview of formal governance.

*Holding out for the Future: Holding onto Licenses*

The continuation of fisher livelihoods is extremely important to all of the commercial fisherpeople in Two Rivers. Time and again I was told by retired and former commercial fishers, "I just got my commercial fishing license because I am scared to let them go. If you let them go – that is it – they are gone." As explained in Chapter Four, North Carolina implemented a limited license program (LLP) in 1999, which capped the number of commercial licenses that could exist at any one time. An unintentional consequence of the LLP is fishers are keeping their licenses, even if they are no longer

using them. One retired commercial fisher reported that he spent $556 every year to keep his license and his boat permitted. He said:

> "That is my standard commercial license. That's the one that cost me $200. So I bought it a couple of weeks ago, because I knew if I didn't buy it before June 30, I would never get it again. It woulda been somebody else's. I would never get it again. My family, my boys or anybody in my family or anybody that wanted to fish would be out of it. You don't get it back."

Another retired fisher explained that he has:

> "a standard commercial just like Bob's got. I have had it ever since 1956. I got it when you could buy them – you can't do that anymore. You have to either inherent them or buy them from somebody. I could sell mine or Bob could sell his. But he would never sell it and I would never sell mine because I will pass it down to my grandchildren. They could use them. You could sell a license for $2500."

*Local to Formal Regulations: Conserving the Resource*

Commercial fisher want their children and grandchildren to have the opportunity to fish; and, fisherpeople understand that this involves more than just the ability to fish granted from having a license, the tools of the trade, and the knowledge to find fish. The resource has to be healthy and viable for fisher livelihoods to exist. Fishers consistently told me, "you can't kill a little a fish and they get big," meaning the sustainability of fish populations depends on fish living long enough to mature and propagate the species. The maturity of fish is directly related to their size. So, harvesting fish when they are small, and thus immature, threatens the longevity of the species. A local fisher discussed how fisherpeople always regulated themselves on how big a fish should be when it was harvested:

> "They got to be so big or can't be over this size – can't be under a certain size. We always used our own common sense when something was too small. Used to you could (legally) catch flounder you know about like that (size of his hand) we always threw it back."

As a result, the vast majority of fisherpeople agreed with formal regulations on size limits of fish. Another fisher said, "Size limits are not that much of a problem. Nobody wants to catch something too small that you can't eat it. Let them go ahead and set the size limits; you get a better price later on." Fisherpeople were also in agreement on the benefits of other formal regulations. As one fisher told me:

> "The regulations that are good are the ones that closed some of the creeks to other forms of fishing. It gives the crab and other fish time to mature. Also, FEDs, size limits, restrictions on where to set nets and pots."

The formal rules about what size fish to keep or where fishers should harvest are not strongly enforced among fisherpeople; but, they are informally supported. A fisher explained that:

> "Nobody ever ratted on people (to law enforcement). If you had the gall to go into a creek or somewhere you weren't supposed to go – more power to you. There is a lot of them go by the rule of making sure they don't keep anything too small but there is some them that don't. It's like that anywhere."

In addition to regulations on size limits and restricted areas, many fishers also said they were in agreement with many regulations requiring by-catch reduction devices. Although fishers complained about the loss of 30 percent of their catch, many fishers supported the use of turtle excluder devices. As one fisher said, "TEDS. Nobody wants to kill a turtle. I don't want to kill a turtle." Many fishers also supported the use of fish excluder devices (FEDs). The following statement was often expressed by local fishers:

> "FEDs in our nets. That's fine we didn't care as long as it didn't let go of our shrimp. We put FEDs in our shrimp nets and when we pulled the tail bags up little fish come out of the hole. That wasn't a bad idea."

*Conservation through Innovation*

Fishers do not want to catch fish that are too small, or other non-marketable species. The larger the fish, the more the resource is repopulated and the more money at

market. In addition, the time spent culling the harvest of non-marketable by-catch is time for the marketable portion of the catch to spoil, extended time in hazardous conditions, or more time at sea away from family and other duties. For this reason, local fishers are extremely inventive in designing ways to conserve marine resources, as well as their time.

The best known example of the inventiveness of commercial fishers includes the development of TEDs. One of the earliest TEDs was developed by a commercial shrimper named Sinkey Boone in the 1970s (SCDNR 2010; Steiner 2010). Sinkey called it a "trawling efficiency device" because it helped reduce the unwanted catch of many species besides sea turtles. The device was adapted from an earlier invention Sinkey called the "Jelly-ball excluder," a device used to keep "cannon-ball" jellyfish from clogging shrimp nets and damaging the target catch of shrimp (Steiner 2010).

In North Carolina, the innovation of commercial fishers was evident around every corner. A local fisher explained:

> "I experiment all the time – trying a better mousetrap, trying something different, trying to save fish – not catch fish – save fish. Like this eliminator trawl – my brother helped design that. It reduces bycatch by 83 percent."

The "eliminator" was awarded the $30,000 first prize in the World Wildlife Federation's 2007 international Smart Gear Competition (Gaines 2008).

In another example, a local gear supplier showed me a culling tool used by crabbers. It consisted of a hinged box-like wooded frame. On one side it is open; the other is divided horizontally by PCP pipes. The store owner explained how it worked:

> "This is hinged. When they are working they have two boxes sitting on the floor. They set this against the side of the boat with a box under it. They set another box under this one. When they pull the pots they dump the crabs onto the sifter. The little ones will go through. I don't know who done it but it was a commercial

> fisherman and they played with it a long time and figured out how wide it needed to be to allow the small crabs through. Once they give them time to get through they take it and pop it over and it dumps the good crabs into the good box. Then the boys stop to see if there are any peelers or anything in there that need to be culled further."

*Runaway Regulations*

Although fishers agree with the need for fishery rules and regulations that conserve fish and other species, and actively participate in developing the means to increase conservation, fishers consistently claim that the rules and regulations are getting out of hand. Fishers are angry with the way rules and regulations are increasingly encroaching into their lives and constraining their livelihoods. Local fishers often complained about the sheer extent of new regulations. The following sentiment was common during interviews:

> "They send them in the mail. Well, when I go to my post office box there is new regulations – 4 or 5, 7 or 8 every week – new regulations. I'm scared to sneeze for a new regulation. I'm sure there's one against it somewhere. If there ain't there will be in week."

I was often told that:

> "You have to have a lawyer to go out there with you so you won't get in trouble. There is so much to keep up with. There is always something new; every week they come out with something."

As one fisher explained, "They are going overboard. . . . They start off half decent and then keep making things worse. It started out for a good thing. I really think that." For example, a local fisher explained how laws on the flounder fishery have steadily increased:

> "It was a little bit, now it's just a big bit. They'll get away with it. You see when they started out on the flounder fishing they come out with this law of 4½-inch tail bagger – a net that holds the fish when you're dragging it. And we reasoned it because we never liked the small fish and that was alright. The they come out with a 11-inch flounder law. I said well we can live with that cause I caught some

> about that size but I always put on a five inch extender when I was trawling so I wouldn't catch them. But then they come up with the 5-inch bag, then a 5¼-inch bag, then 5½. The a 13 inch flounder law. We always measured from inside the knot to outside the knot. When the government wrote the law up, they measured between the knots, which made it a 6-inch net. Every which way we went they went more, went more. Now it's a 14 inch flounder and they're considering a 15-inch flounder law."

As the size limit increases, the number of fish that has to be discarded, dead or alive, also increases. Fishers chafe at the increased waste of marketable fish, and criminalization of commercial fishers. A local fisher recounted the following incidence:

> "I would go fishing and caught a hundred pound of fish and I couldn't bring to the docks, had to dump it back over and watch it die. You bring a fish – a black sea bass from300 ft down and bring him up to the top – he's gonna blow his bladder right out – decompression is gonna blow his bladder right out of his mouth and he'll float right to the top. He can float around and die but you can't bring him in. How many pounds of fish are wasted a year?. I know a guy been gill netting in the ocean off Chincoteague. He got in his gill net 100 pound of roc (black sea bass). He's allowed to bring two to the dock. That's all he's allowed to bring to the dock is two fish. He put two in his boat and put two in a bag; when he's going in he throwed the bag with a brick to hold it to the bottom. And he went back out in his speed boat and get his two roc he'd thrower over board to bring home to his family. You know when he got back the fish guard got him, the marine fisheries was there, the coast guard, the sheriff. He'd been better if he had brought in two bales of marijuana than he was with two fish. He wound up on TV for illegal contraband."

Another local fisher explained that there should be some reasonable tolerance – leniency and flexibility with fishery regulations on size limits. He said:

> "The onliest thing I do totally disagree with is when you pull a legal bag[95] you should reduce the size limit. In other words, a lot of fish that we throw back over board are 12 and 13-inches – they moved the size limit up from 12 to 14 inches. And if you pulled a legal bag and stuff why don't they let you sell the little fish. They think the big fish is the one that spawns anyway. So, if you're pulling a legal bag and you got the little fish but it's a small percentage you got to throw them over board – dead . So if you pull a legal bag why can't we sell within reason. It looks like to me you would let more big fish go. I'm not saying they should let you keep all of them; but, in two or three times they should make you

[95] By legal bag, fisherpeople mean a legal size net. The size of the meshes determine what size fish is retained in the net. Fish that are smaller than the mesh are released, while fish bigger than the mesh are retained.

> be right the last time – there has to be some reasonable tolerance. They should let you take away from you next trip and the last trip you have to be right. If you do four times and you miss four boxes each time they should let you make it right on the last trip. The whole thing is based on estimates anyway."

Allowing the fishers to keep, rather than discard some undersized fish would contribute to fewer dead discards, less waste and more efficient use of resources on the part of commercial fishers. For the most part, commercial gear is highly selective for the size of fish caught, in contrast to the recreational sector which consistently has a higher percentage of discarded fish. Leniency would not only decrease waste but encourage fishers to innovate their harvesting methods further to decrease the potential for waste.

*Informally Governing where there is a Lack of Formal Governance*

Fishers are, for the most part, in agreement with many of the rules and regulation enforced by the formal fishery governance system. In general, fishers claimed, "we are OK with laws that are based on good science, good common sense – like everything else." Many parallel fishing norms were enforced locally before they were formalized as laws. While there is consternation about the pace of rule creation and changes and the waste caused by the rigidity of the rules and lack of leniency, the local fishers of Two Rivers overwhelmingly support formal rules and regulations. There is even a healthy dose of aggravation over a lack of regulations on some fishing practices.

One such situation on every commercial fisher's mind in Two Rivers involves the lack of regulations on catching sponge crabs – crabs with visible eggs, commonly called egg crabs or puff crabs in Two Rivers. Many commercial fisherpeople in Two Rivers expressed the following sentiments:

> "What I am against with the crabs that they have never done anything about is them boys going down there and catching them egg crabs. That hurts the crabbing industry more than anything in the world. Ain't nobody doing nothing

about it. Them boys are hauling out thousands of boxes of crabs in full blossom of eggs on them and carrying them to the cooking house. That burns me up. We never kept them – they shouldn't be able to keep them either. That has hurt the industry more than anything and they are carrying them to the cooking house to get cooked. That one crab might have 10 million babies on her and they are roasting her. They catch all the female crabs and bring them in by the boat load and sell them. To think of the crab that would have been there if they had laid and hatched – that hurts."

Local fishers often pointed to the regulations of other states in their exacerbation with North Carolina regulations. As one fisher stated:

> "Delaware, Maryland and Virginia have a law where you don't catch females crabs after a certain time of the year. North Carolina doesn't have a law like that. You catch the female crabs with eggs – you kill the population."

Another local Two Rivers fisher expressed his disgust as he explained why people continue to harvest the sponge crabs:

> "Puff crabs – she is going to die after she lays her eggs – all of them do. And that was how they were justifying their reason for catching them. They are heavy and we get paid by the pound and they are just going to die. I went up to the cooking house in Belhaven and seen truck load after truck load of sponge crabs. I saw that and thought I guess nobody even gives a fuck."

An ex-crab house owner and current fisheries administrator gave a more detailed explanation of the reasoning behind the lack of regulations on harvesting sponge crabs. He said:

> "There is not a law in North Carolina. Sponge crabs is what we call them. There is a law in Virginia and that law is based on the color of the eggs – after they get to be – the bright orange is OK but once they start getting darker and turn brown and then black you gotta throw them back because that's when they're getting ready to slough them off. North Carolina had always gotten round that because a crab one day will have no external sponge and still be just as pregnant as all get out. The next day she'll have a sponge. What's the difference between the two crabs? There's not any – and so unless you put restrictions on females in certain times of year – on all females it doesn't make sense in my mind or the mind of most fisheries managers to release those sponge crabs. There's been a lot of work done – research – most of those crabs once they come out of the water – once they go through that shock – where the crabs exposed, they're going to die anyway. So, you might make yourself feel good or you might make somebody down the

> street feel good but you don't want those crabs going back over board. To me you're looking at a forty-eight hour difference between internal and external eggs."

While administrators think it is useless to try to regulate the harvest of sponge crabs, many fishers in Two Rivers think a harvest season should be in place to protect the egg-crabs. A local fisherwoman and crab potter said:

> "I think they ought to limit the crab season. Make it a season like they do oystering. Last of October to January is for oystering. But I think they ought to put a limit on crabs. Because those suke crabs – the blossom crabs – they were catching them by the cart loads February through March. Now everybody is complaining there ain't no crabs. Well if you would have let those blossom crabs lay their eggs –. So, I think there should be a season on them. Like April to October and close it November through March."

She went on to say that the closure would save the crab population and cause minimal costs for crabbers because "for that two weeks your pots get real dirty so you are going to have to take the pots up anyway and let them dry out."

Although there are no laws against harvesting sponge crabs, there is an informal agreement among the fishers of Two Rivers against the harvesting of egg-crabs. The fishers of Two Rivers constantly explained that:

> "My daddy, my brothers, everybody around here – if we catch one, we let them go. If she is blossoming and that apron is bust on and full of eggs we will not throw them in the culls. I say hey that crab ain't worth but $0.10 anyway. I let him go – that is 10 million babies."

Local fishers are willing to sacrifice the income from harvesting sponge crabs in order to ensure the health of the crab population. They also take steps to protect the sponge crabs from harvest by other fishers and, at the same time, increase the crab population in their own communities. A couple of local fishers recounted the following:

> "When we used to catch crabs when we were shrimping – the puff crabs, the last day I would take them and put them in the shade and wrap them up and bring them – the crabs with the eggs on them, back here and let them go right in the

> creek. Let them all go. And do you know? That next year after I did that was the best crabbing them boys has ever had. Maybe – I don't know if I contributed to it or if it was a freak of nature but I know I hauled probably 500 lbs of crabs busting with eggs up here an just let the go. I could have sold them. It may have been extra money in my pocket but I let them all go."

Commercial fishers have the knowledge, experience, skills, and motivation to effectively govern the fishing commons, to both ensure the perpetuation of their livelihoods and the sustainability of fishery resources. Where local fishers are relatively disadvantaged in their capacity to manage their legitimacy and visibility, while also navigating the opportunities and constraints of the formal fisheries governance system, they rationally choose to engage in active non-participation. Local fishers become politically inactive, and instead apply their resources to informal governance activities. However, in addition to waging political visibility campaigns to delegitimize the governance activities of commercial fishers within the formal governance realm, recreational and conservation interest groups also work in the social realm to affect public perceptions of commercial fishers and the commercial fishing industry.

**Social Visibility Campaigns: "Another Black Eye for North Carolina"**

Just as commercial fishers do not actively work in the formal governance realm to define their own visibility, they are also relatively inactive in defining their visibility in the social sphere. Social visibility is achieved through active engagement of the public to build political momentum among a broader portion of society for a cause. The social inactivity of commercial fishers allows recreational and conservation interest groups greater leeway in projecting negative images of commercial fishers to the public. As a result, the affects of social visibility campaigns have potentially broader and more severe consequences on the everyday lives of commercial fishers.

Social Visibility as a Response to Historical Visibility

The social visibility campaigns of conservation and recreational interest groups are partly a response to the limits placed on their political influence by the fisheries governance structure. For example, the historical relationship between the commercial fishing industry and the fishery management structure has imposed limits of the gamefish bill and gill net ban. Speaking of the historical relationship between commercial fishers and the fisheries management structure a CCA representative stated:

> "North Carolina fisheries have been dominated in the management structure of the state by DENR,[96] which has historically evolved out of maximizing the harvest – all about maintaining the commercial fishing industry."

Thus, user-groups increase their chances of successfully influencing formal governance decisions by engaging the public. As the CFRG director threatened in a newspaper interview:

> "If H918 (the gamefish bill) does not pass or is killed in committee, then you will see who the commercial fisherman's worst nightmare is, and it isn't us! Those little old ladies in tennis shoes with their hurt sea turtles and dead harbor seals make me look like a Sunday school boy! Trust me, if we can't work this out for the common good of all of us, there is a growing storm out there against gill nets, and that is not what we are about. I believe that H918 would resolve most of the user conflict and take the steam away from this other group."
>
> (Nolan 2009)

Bandwagoning: Conservationists and Recreational Interests Against Gill Nets

In North Carolina, the purposes and tactics of conservationists and recreational fishing interests have converged in the social sphere. The separate issues of sea turtle conservation and access and allocation to spotted seatrout have narrowed to a combined attack on the use of gill nets. Recreational and conservation interests group achieve visibility through the internet, bill board signs, and written media to raise public support

[96] DENR is the Department of Environment and Natural Resources; the DMF is the section of DENR that manages fisheries.

for banning gill nets in the state of North Carolina. These visibility campaigns attack the legitimacy of gill netters on moral grounds through the depiction of brutal images, and attempt to goad the broader public to participate in revoking the rights of gill netters to participate in fisheries governance.

In a newspaper article, Jean Beasley, the director of the Karen Beasley Sea Turtle Rescue and Rehabilitation Center (Center) was quoted as saying, "When you tolerate something, you empower it, and through inaction, you can allow it to grow. Sea turtle deaths in gill nets can no longer be tolerated" (Holt 2009). This message was reiterated in a petition sponsored by the Center, which was sent to the director of NMFS to protest the Section 10 permit for the Pamlico Sound Gill Net Restricted Area (PSGNRA) (Austin 2009). The petition was entitled "Gill Nets Equal Death Traps for Marine Animals" and explained:

> "N.C. Division of Marine Fisheries has applied for a permit for a gill net flounder fishery to be allowed to KILL more than 100 sea turtles in this one fishery each year for SIX years! . . . As citizens and stakeholders in our resources we REFUSE to let our waters become KILLING FIELDS for endangered and threatened sea turtles, for birds, fish, other aquatic turtles, and any other species that might encounter the gill net death traps."
>
> (Austin 2009)

In solidarity with this sentiment, a spokesman for the CFRG stated in a newspaper interview:

> "The most glaring issue that most people need to understand is this: The request for a statewide Section 10 permit will require the National Marine Fisheries Service to enable North Carolina commercial fishermen to kill literally thousands, not hundreds, of endangered and threatened sea turtles. I suspect that the public comment on this will be an enormous obstacle . . ."
>
> (Dilsaver 2010a)

The CCA (2010) and CFRG (2010) became socially visible on the issue of gill nets, specifically and irrespective of their effects on spotted seatrout, when they

bandwagoned with the Center's cause. Both recreational groups publically pronounced their support of, and worked behind the scenes to facilitate the Center's lawsuit. However, recreational interests were working on banning gill nets in North Carolina before the Center filed the lawsuit. The CFRG, CCA and several other recreational fishing and non-fishing groups and industries created a website in 2008 called NoMoreGillNets.Org (The Angry Fisherman 2008).

The website depicts sea turtles and other animals stranded and entangled in what appear to be gill nets and reports inflammatory and dubious statistics on gill net by-catch. The site claims "[s]ea turtles, pelicans, ducks, and other sea birds along with numerous other kinds of fish are killed as by-catch in gill nets and dumped overboard;" and, reports that 65 percent of the catch in gill nets is bycatch of this nature. The caption at the bottom of the page reads "if this make you angry, then join the fight to remove gill nets from North Carolina."


***Figure* 7**. Bill Boards Erected on Interstate 40 near Benson and U.S. 70 in Kinston by NoMoreGillNets.Org.

In addition to the website, the groups involved with NoMoreGillNets.Org erected billboards on Interstate 40 near Benson and U.S. 70 in Kinston, North Carolina (Figure 6). The billboards advertise turtle entanglements in gill nets as "Another Black Eye for

North Carolina Politics." The message of the billboards equates the entanglement of sea turtles in gill nets with the physical abuse of women in an attempt to illicit a heated and emotional response from viewers.

The recreational fishing interests and conservationists campaigning for greater regulations on commercial fishers and the banning of gill nets claim their campaigns are not personal against commercial fishers or the commercial fishing industry. The director of the CFRG explained in a newspaper interview that:

> "Most saltwater recreational anglers who want gill nets removed from coastal waters are aligned against the destructive nature of gill nets and not against commercial fishermen personally. We believe they take it as an attack on their way of life and heritage, but that is not the intent. Destructive fishing gear such as gill nets has no place in modern day fisheries management."
>
> (Weeks 2010c)

Similarily, the director of the Center was quoted in a newspaper article as saying, "The goal was always to preserve the fishing industry in North Carolina and at the same time give sea turtles and other wildlife greater protection" (Dilsaver 2010b).

Nevertheless, the political and social visibility campaigns are attacks on the legitimacy of the people using the gill nets. In the formal political venues, the Center explicitly implied gill nets fishers were lying about interactions with sea turtles, and recreational fishers claimed gill netters aggressively caused conflicts and the overexploitation of the fishery. The social visibility campaigns of both groups project brutal imagery of gill nets and, as a consequence, gill netters wantonly destroying sea turtles and other marine animals. Furthermore, the social visibility campaigns of recreational conservation interests groups have consequences beyond creating laws on the gamefish designation of certain fish species or against the use of gill nets. As discussed in Chapter Five, a ban on the use of gill nets would fundamentally restructure the small-

scale, coastal commercial fishing industry of North Carolina by pushing the majority of local fishers out of the industry. In addition, the incomplete and misinformation spread through the social visibility campaigns has broader and longer lasting consequences on the everyday lives of commercial fisherpeople.

Consequences: Misunderstandings and Misperceptions

The broadness and effectiveness of social visibility campaigns against the commercial fishing industry are illustrated by the influence they have on the formal institutions of our society. The most profound example of this influence is the existence of overly simplified and one-sided information, as well as misinformation about commercial fishing and fishers in the education system. A local commercial fisher from Two Rivers recounted a situation where:

> "Teachers over there in the school talk against commercial fishing. The boy next door come home one time crying; his daddy asked what the problem was and he told him that the teacher was talking about the commercial fishermen and what they were destroying and all this stuff."

Another commercial fisher up the coast from Two Rivers described a similar event. He had been invited by a teacher, a friend of his daughter's to talk to her class about commercial fishing. The class was a natural science course for 12th grade high school students. In preparation, the local fisher looked over the sections in the textbook on commercial fishing and marine conservation. During the interview, he became visibly upset and pulled the book out to show me where the textbook describes gill nets as "curtains of death," which kill sea turtles, birds and marine mammals (Miller 2002: 285).

> "They got statements in here about how we are destroying the bottom. And how our gear is totally ruining it and our [trawl] nets are big as football fields and big enough to encompass 12 jumbo jets in a single gulp.[97] All of that is in here. The same garbage that we have been hearing all along but it is in this text book"

[97] This is an actual quote from the book.

He was outraged when he pointed to a passage that stated, " Most fish population estimates are based on fishers reporting their catch, and they may be lying or underreporting their catch for financial gain" (Miller 2002: 647).

> "This industry has a proud heritage. There is nothing wrong with what we do. There are bad players in every industry, but the onslaught of what we are dealing with on a daily basis where a text book calls us liars. I don't know about your stepdad but here are a lot of fishermen that are extremely honest and extremely religious. And that is terribly offensive to me. It is nothing but propaganda. We didn't even know it was out there. We didn't even realize it. Nothing can be further from the truth and it bothers me."

For many people these negative images of commercial fishers is all they know about commercial fishing. The profound benefits of the informal fisheries governance system are left invisible. The local ecological knowledge of commercial fishers and their conservation ethic is never mentioned in the social visibility campaigns against commercial fishers. The ambiguity of fisheries science, the scientifically proven truth about the low by-catch rates of gill nets, and the ever innovative practices of commercial fishers to decease by-catch rates are never discussed. Instead, commercial fishers are portrayed as Garret Hardin's (1968) rational maximizers, incapable of acting to achieve their common interests as Mancur Olson (1965) theorized. The example of Two Rivers fisherpeople's informal governance of sponge crabs disproves both theories. Not only do fishers sacrifice monetary rewards to conserve resources, but they collectively act to do so.

The Social Visibility of Commercial Fishers

Unfortunately, the resources that contribute to the successful informal governance activities of commercial fishers are not as effective in waging political visibility campaigns in the formal political realm, and are relatively invisible in the social sphere.

The relative disadvantage of commercial fishers in the political realm extends to the social realm. Just as the effectiveness of political visibility campaigns are dependent upon context-specific forms of capital, the ability to wage social visibility campaigns also depends on monetary capital, time, access to information technology, and political capital. These are all resources that commercial fishers have in short supply. However, where the historical visibility of commercial fishers acts as somewhat of a buffer against the political visibility campaigns waged by conservationists and recreational interests, the social visibility of commercial fishers is nearly completely manufactured by opposing fisheries stakeholders.

Furthermore, commercial fishers have, for the most part, been unaware of the broad based influence of the social visibility campaigns against them. Although highly aware of the political visibility campaigns waged by conservation and recreational interest groups, commercial fishers have not realized the extent of the social visibility campaigns or considered that the broader public could believe them. As the local fisher that presented to the science class said about the negative portrayals of the commercial fishing industry, "We didn't even know it was out there. We didn't even realize it." During the interview, he recounted what he told the class:

> "I read the text book that you have been reading and evidently the people that wrote the book have it in their minds that fishermen go out and catch all the fish they want and don't have to report to no one. You have no idea about the requirements that we deal with on a daily basis to go fishing and what we are allowed to catch and what we are not allowed to catch and what we have to throw back overboard, whether it be dead or alive. Issues as far as environmental impact – if our gear is destroying the bottom how is it that we can go to the same places year after year after year for over 100 years and catch fish when they show up certain times of the year? What we are doing is probably disturbing the bottom. Our impacts are 10 times less than one Northeastern storm. The entire commercial fleet couldn't impact that ocean negatively anywhere near as what one Northeaster can do. Go to the beach and put your foot in the sand – stand in

> the surf – your foot covers up with sand – pull it out and it covers back up. That is exactly what happens when we pull a net across the bottom.

The fisher told me how he showed the class a video of a trawl net being towed over the sea floor, told them about the regulations, his time on the councils and how "he had to take time off work to go to meetings to help the regulators know how many fish were out there and what is going on." The fisher explained that his experience with the class told him "that people who have never encountered someone to encounter the truth with them never learn the truth." He said:

> "This is the biggest fear I got. I was able to counter it a little bit, but, what about in Iowa, Illinois, Nebraska and places like that? The kids got a natural bias against commercial fishermen the minute they read that book. It will always be there and the minute the pick up a newspaper that says 'commercial fishermen blockading ports protesting against regulations' right away we are the bad guy. If half the class goes on to be scientists and some fishery scientists it is in their mind that we are the bad guys. Nothing can be further from the truth. That bothers me. This is a problem; we need to get off our ass. We have been too busy to worry about what is going on but if we don't do something top counter this we are done."

Fishers have a Reason to be Worried: The Broadness of Social Visibility Campaigns

Local fishers have a reason to be worried about the political and social visibility campaigns against commercial fishers. While the current social visibility campaigns of the CCA, CFRG, and the Center are localized to North Carolina, there is a broader attack underway against commercial fishing, nationally and globally. Oceana (2010), one of the largest marine conservation organizations in the world, promotes commercial fishing as the primary threat to the existence of sea turtles, and marine resources in general; even though, most other sources site destruction of land-based habitat and water quality as the primary threats (Deaton et al. 2010; NOAA 2006). Other powerful environmental organizations, such as Greenpeace (2010) and the World Wildlife Federation (WWF

2010) also promote overfishing as the number one threat to the sustainability of marine resources. There are also countless websites, such as Overfishing.Org (2010), which condemn commercial fishing practices for the damage they cause to marine resources, and countless YouTube videos, which depict inflammatory images of fish and other marine animals caught in nets, damage to the seafloor caused by trawl gear, and statistics on the state of the world's fishers.

Furthermore, the specific tactics used by the CCA, CFRG and the Center in their political and social visibility campaigns against gill nets in North Carolina have been successful in other states. Fritchey (1993) documented a similar fight between recreational fishing interests, also involving the CCA, and commercial fishers in Louisiana, which resulted in the statewide banning of gill nets. The campaign began in the formal political venues with a proposed gamefish bill for spotted seatrout and incorporated bill boards and other advertisements depicting fish and other marine animals entangled and dead in gill nets. Eventually the issue of gamefish and a ban on gill nets was taken out of the hands of the fishery governance structure and placed in the hands of the people in a statewide vote. The vote did not result in the designation of spotted seatrout as gamefish in Louisiana, but the commercial harvest of spotted seatrout is restricted to rod-and-reel and gill nets are banned across the state. Similar campaigns are currently occurring across the coastal Unite States.

**Conclusion**

The political inactivity of commercial fishers is the result of rational calculation. Commercial fishers decide to engage in active non-participation based on existing knowledge of: (1) their own differential transformative capacity – political efficacy as a

result of context-specific resources; (2) the opportunities (infrastructural power) and constraints (despotic power) of the formal fisheries governance system; and, (3) the differential transformative capacity of their competition, recreational and conservation interest groups. While there are extensive opportunities for political participation in fisheries governance, that participation occurs within the constraints of legislative and organizational imperatives. The ability to take advantage of political opportunities, while navigating and leveraging the constraints of the formal fishery governance system is dependent upon access to, and control of context specific resources. Recreational and conservation interest groups have more of the forms of capital necessary to effectively engage the formal fisheries governance system. As a result, commercial fishers recede to the informal realm of fisheries governance, where they apply their material and non-material resources to the continuation of their livelihoods from the vantage of their communities. Local fishers apply the tools of their trade, rely on their social networks, and use their local ecological knowledge and conservation ethic to work towards the sustainability of their livelihoods and fishery resources well into the future.

However, the less commercial fishers participate in formal fisheries governance processes, the more influence conservation and recreational fishing interests gain over the formal governance of North Carolina fisheries. Meanwhile, the traditional authority of local fishers is eroded by the misunderstandings and misperceptions of the commercial fishing industry disseminated through the social visibility campaigns of recreational conservation interest groups. Where the consequences of political visibility campaigns are mediated, to some extent, by the organizational imperatives of the fishery management structure, the broader affects of social visibility campaigns are experienced

in the everyday lives of commercial fishers through the micro-politics of community life. At the same time, the impact of coastal development, population growth, recreational fishing, and industrial phosphate mining on fish populations, habitat, and endangered and threatened marine animals remain relatively invisible. The next chapter examines the challenges to local fisher authority caused by the changing demographics of coastal areas, coastal development, the ongoing transition from commercial to recreational use of coastal resources, phosphate mining, and competition from imported seafood as specters of societal domination in Two Rivers, North Carolina.

# CHAPTER SEVEN

## DOMINATION AND THE INVISIBILITY OF SYSTEMIC PROCESSES: WEARING AWAY THE ABILITY AND MOTIVATION OF LOCAL FISHERS TO GOVERN THE FISHERY COMMONS

Commercial fishers are highly visible to the fisheries regulatory structure, as well as the broader population. However, the visibility of commercial fishers is not of their own design. While fishers in Two Rivers practice active non-participation, conservation and recreational interest groups wage political and social visibility campaigns to delegitimize commercial fishers by defining them as inappropriate stewards of marine resources. The visibility campaigns of conservation and recreational fishing interests promote overly stylized representations of the commercial fishing industry as consisting of atomized, rational maximizers, wantonly destroying fish populations, marine animals and habitat in the pursuit of profit. Nevertheless, the true injustice of these visibility campaigns is what they leave invisible. These campaigns disregard and leave invisible the destruction of coastal resources and fish populations caused by population growth, coastal development, and industrial phosphate mining, as well as the ongoing transition from commercial to recreational use of fisheries resources. Meanwhile, the profound benefits of the informal governance systems of local fishers, which are premised on a

conservation ethic informed by local ecological knowledge and motivated by a desire for intergenerational equity are also left invisible.

The focus of this chapter is the impact of systemic power on the community of Two Rivers, the viability of fisher livelihoods, and the ability and motivation of commercial fishers to engage in informal fisheries governance activities. Systemic power is structural, but latent; it is diffuse, embedded in the relationships, institutions, strategies and technologies of domination (Foucault 1980). I employ Weber's (1978)[98] and Foucault's (1977) use of the term domination to discuss latent structural power.[99] Domination shapes values, norms and preferences, and is situated in the daily enforcement of social and political practices[100] (Foucault 1978). However, as Foucault (1978) explained, domination is not always a choice, decision, or characteristic of an individual or group of individuals; often time it is a process or series of processes.

Systemic processes exert a dominating influence on traditional livelihoods, power structures, and the environment through processes which create and extend new relationships, institutions, strategies and technologies. The systemic processes examined in this chapter are population growth, coastal development, and industrial phosphate mining, the ongoing transition from commercial to recreational use of fisheries resources and competition from imported farm-raised seafood. Population growth in coastal areas

[98] Weber (1978) discusses domination as an overarching systemic characteristic and a characteristic of bureaucratic organizations, which constrain and enable the activities of administrative staff as well as the populations and territories under their auspice. I use the term only for the latent structural power of systemic processes so as to avoid confusion when discussing manifest structural power.
[99] Lukes (2005) discusses domination as the ability of a person or group of people "to prevent [other] people, to whatever degree, from having grievances by shaping their perceptions, cognitions, and preferences in such a way that they accept their role in the existing order of things." My treatment of domination is notably different. I focus only on systemic processes of domination, not the domination of one person or group of people by others.
[100] While domination may limit actions and desires, it also makes successful endeavors possible. Those groups with access to forms of capital, or groups willing to abide by the rules and norms, valued by the system are able to take advantage of the opportunities associated with domination.

is slowly eroding the social basis necessary for fisher livelihoods, while the environmental basis is increasingly degraded by coastal development, industrial mining, and recreational use of coastal resources. The social and environmental impacts of these processes are compounded by foreign seafood imports, which decrease local seafood prices and the economic viability of fishery livelihoods. The ability and motivation of commercial fisherpeople to ensure sustainable fisheries governance is slowly eroded along with the social, environmental, and economic foundations of fisher livelihoods.

The first section of this chapter examines population growth in coastal areas of North Carolina and the ways fishing livelihoods in Two Rivers are increasingly disciplined according to the notions of new residents. The second section discusses the ongoing transition from commercial to recreational fishing, and the relative invisibly of recreational fishing impacts on fish populations. The third section discusses the impacts of coastal development and industrial phosphate mining on the habitat and resources of coastal fisheries. The fourth section briefly presents information on the affects of coastal development and recreational activities on sea turtle populations. The fifth section discusses the affect of imported farm raised seafood on the prices of locally caught wild fish. The last section focuses on the ability and motivation of local fishers to govern fishery resources as the social, environmental, and economic bases for fishery livelihoods are eroded.

**From Fishers and Beachers to Strangers: Challenging Local Fisher Authority**

The populations of coastal regions is exploding, and the population of Two Rivers is transforming from local fishers and families of non-fishers who have lived in the area for generations to retirees, second homeowners, and people in search of affordable

coastal living. Conflict between new and old residents in Two Rivers has increased. New residents attempt to enforce their views about the appropriate use of coastal resources and what community life should be by challenging local customs and introducing new values. The social basis of fisher livelihoods is undermined as new residents challenge local, traditional perspectives on everyday life, common access rights, and the use of coastal resources, ultimately hastening the transformation from commercial to recreational use of fisheries resources.

Socio-Demographic Transformations: From Fishers and Beachers to Strangers

Although Two Rivers has traditionally been a commercial fishing community, recreational fishing, boating and hunting have always been popular in the area. As a result, "beachers" – non-fisher, seasonal residents have historically been a fixture of the community. Many beachers have been recurrent visitors for generations. As one local, long-time visitor and current full-time resident explained:

> "I have been actually coming down here for 66 years – before they had paved roads. We would come down fishing. I have been on boats – I was in diapers when I first went on boats. So we would come down here two or three times a year fishing. My daddy would rent a fishing skiff and we would fish the Pungo and Pamlico Rivers. We would come down for the day and fish – get to know the people. I just fell in love with the place. My children have grown up coming here too."

Another long-time visitor to Two Rivers explained that he was introduced to the area by his wife and her parents. He said:

> **"**Since the early 50s I been coming down here. I wasn't raised here now. She came a lot before I did because she came with her mom and dad. They would rent a cottage down here for $20 a week."

He went on to say he and his wife bought a permanent vacation home in 1972.

> "We came down here and saw the for sale sign. . . . It was $1,200 for two lots. We came down here every weekend for years. . . . We raised our children down here. . . . Now, we usually come around Easter and stay until October 1st."

Historically, the relationship between the local fishers and beachers has been quite compatible. A fisherwoman in her late 80s recounted her experiences with beachers when she was a child. She said:

> "There is a piece of land up towards the old hills; it is higher ground. There has never been water over the old hills, never. All the people would take everything – their ox, horse, belongings or whatever. There were some cottages down there that belonged to people that had a little bit more money than the people that were raised here on the river that would come down here in the summer months. They always opened their houses and told the people to go there and stay when the winds started blowing."

While fisher and non-fisher residents of Two Rivers have traditionally existed in harmony, population shifts occurring in coastal areas are causing substantial changes in the lives of commercial fisherpeople in Two Rivers, as well as other fishing communities.

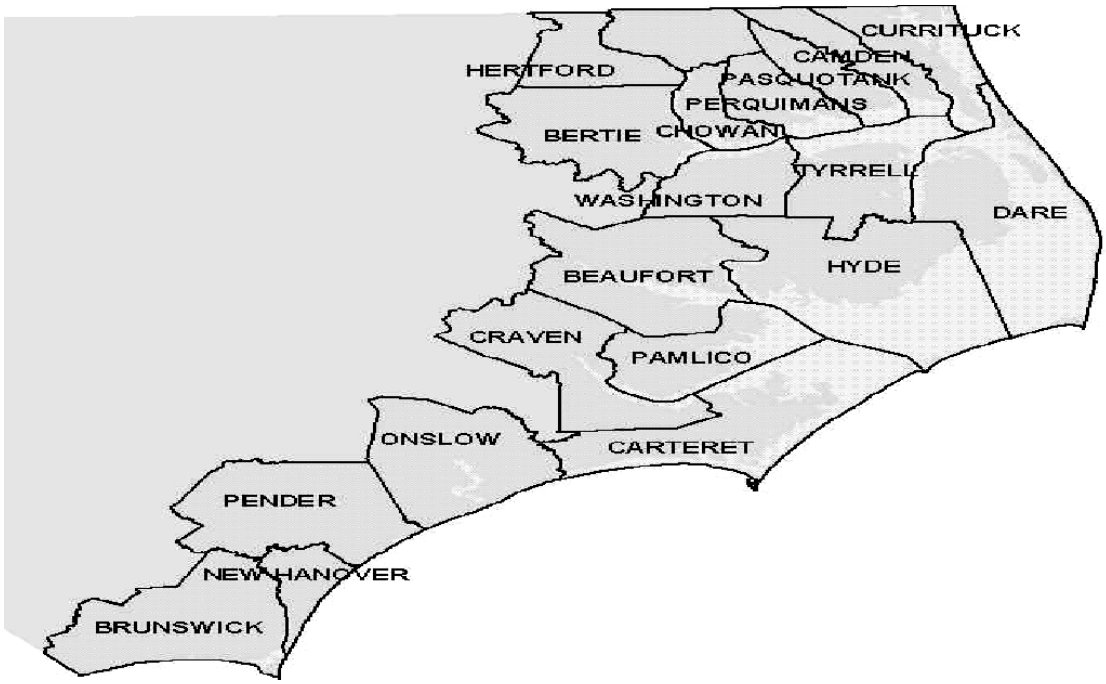


***Figure* 8**. Map of Coastal Fishing Counties in North Carolina (Bianchi 2003: 3)

The overall population of North Carolina has increased 31 percent since 1990, making it and many of its 20 coastal counties among the fastest growing areas in the country (Deaton et al. 2010). Figure 8 is a map of the 20 coastal counties in North Carolina. Brunswick (77%), Pender (68%), Currituck (54%), New Hanover (52%), Camden (47%), and Dare (41%) counties have experienced the most rapid increases in population. However, even the historically sparsely populated western Pamlico Sound region has shown population increases of 10 and 13 percent since 1990 (Deaton et al. 2010), and 40 percent since 1970 (Garrity-Blake and Nash 2007). Since 2005, Carteret, Pamlico, Beaufort and Hyde Counties, which constitute the western Pamlico Sound region have been marketed as the Inner Banks, an alternative tourist destination to the Outer Banks (Deaton et al. 2010). (See Appendix F for a table of human population, density, and growth of coastal counties in North Carolina from 1990 to 2010).

Where older generations of beachers opened their homes to the locals during hurricanes and other times of need, newer residents distance themselves from the locals. Locals call the new residents and visitors "strangers." This term signifies the increasing anonymity of social relations in a community where everyone has traditionally known everyone else. As anonymity has increased in the community, so has distrust. As one local fisher explained, "They build their houses with the fences around them and at the gates they have this card to get in and video cameras to watch who comes and goes."

The distrust of new residents is challenging the taken-for-granted freedoms of locals. A local fisherwoman explained how new residents often complain about teenagers being out and about at night. She said:

> "Used to you could walk the road. The youngins could gather up and walk up and down the roads and nothing be said. Now – you know there is nothing here for

> the youngins to do – if they are walking the road after dark they are being accused of stealing or up to no good. Used to even my mother-in-law and her best friend would walk the roads up to 1 and 2 am and that hasn't been too long ago. Now with all the outsiders coming in someone is always calling "your youngins are up and down the road." We know they are up and down the roads because there is nothing else for them to do. I figure if they are staying on that road they are not bothering nary a thing wrong. There is just not anything for the youngins to do. It's just outsiders have so much to complain about – things we used to do. I reckon we took it for granted and now with people coming in and building these houses and stuff they don't want you messing with it. They are always complaining. "You're up to no good, your youngins walking the road – he'll be up to no good if you don't get him home." I know where he's at. Most of the time they gather here to start with. You can hear them hooting and hollering and giggling. Used to when we were young we would sneak up and down the roads and smoke a cigarette. Now the youngins couldn't even do that if they wanted to."

*Political Conflict: Contrasting Perspectives of Coastal Living*

Complaints of teenagers out at night is part of a larger process of change brought about by new residents. New residents are increasingly redefining everyday life in Two Rivers, from the appropriate behavior of teenagers to the appropriate use of resources. New residents are enforcing a perspective of coastal living as peaceful and oriented toward recreation and relaxation. The use of coastal resources are redefined away from work and a source of livelihoods. Local fishers often recount how the new residents in the community constantly complain "we are messing up their view of the water" when out working with nets or crab pots or "the trawlers dragging at night are keeping them awake." A former fishermen's wife described the conflict over trawling in the rivers:

> "People that just moved down and built new houses. They just don't understand what is going on. All they know is that they hear a boat out there this morning. We got to make a living just like the rest. We got to eat just like the rest. But, they just call Morehead[101] and complain. But these people are trying to feed their families. What's the harm? If you live out on the highway there is traffic and you live in a city there are sirens and patrol cars. Get used to it."

[101] Morehead City is the location for the DMF main office.

A local fisher further explained that while the new residents were quick to complain about the commercial fishing boats, "they aren't complaining about the speed boats or the jet skis."

Conflicts between newer, non-fisher and older residents in Two Rivers evolve from verbal complaints to political action from time to time. Many new residents become involved in local fishery politics. One newer, non-fisher resident said:

> "I wrote editorials to the paper because I was disgusted about the fishing. The fact that we did not have anywhere close to what we had (in quantity of fish) when I first came down here on the weekends. It was disappointing. I got involved in it to where I was called by Basnight[102] and invited to several (fishery) meetings."

The user-conflicts between local fishers and newer residents have also developed into more direct, personal, and less than legal tactics. The local fisherpeople of Two Rivers have not idly sat by while, according to one local fisher, "people out there are making laws – moving here telling us we can't make a living doing what we have done all our lives – telling us to get out of the river." As a long-time non-fisher resident explained, "the fishers of Two Rivers – the originals – have developed a reputation for having their own laws." However, new residents have also taken matters into their own hands.

A common source of conflict between local fishers and newer residents is over the placement of fishing gear. A local fisher explained:

> "Commercial fishermen have to watch their crab pots because the sports fishermen or people living on the waterfront lots would run over the crab pot or cut the buoy and then you've got $25 dollars on the bottom invested in a crab pot you can't find because the buoy was cut off."

[102] Marc Basnight served as a North Carolina Democratic Senator from 1984 to 2011.

Another local fisher stated, “The 50 pots might be two miles from where they were set and you might think you lost all of them. $20 in each pot that is $1000 you lost and you have no money to replace them.”

A long-time resident and non-fisher of Two Rivers explained that crab pots were often set in creeks in such a way that they blocked the passage of sail boats. He described an instance where crab potters retaliated against sail boaters who cut crab pot buoys. He said:

> “Last Saturday there were six or eight right in the middle of the creek where the sailboats come in and out. Some days people will cut the lines on the crab pots and then they would take your seacock on your sailboat and plug it up so you would sink. . . . [The sea cock] is what drains the water. When it’s plugged the water comes in instead of going out. It would sink your boat. A friend of mine had a sail boat. They cut the lines so she would drift and they opened the seacock. It drifted four miles off shore before she sunk. He finally sold his cottage and moved away.”

The conflicts between new and old residents in Two Rivers are not confined to the resources of the fishery. Newer residents challenge the authority of Two Rivers locals on their own private property by attempting to redefine norms of appropriate land use. One incidence in particular was recounted by several people in the community, fisher and non-fisher. In the words of a newer non-fisher resident:

> “About three years ago, some cat moved down there and was writing letters to the editor and eventually got burned – some of his stuff got burned. That has happened over the years more than once. He bought a lot and the guy next to him had a bunch of trash sitting out. Well trash has been there for years and nobody had any problem with it until this guy moved down there and he started making trouble because he didn’t want to look over his property line and see trash. The guy complained to the county and there is no ordinance against keeping trash in your yard in this county and we don’t have any zoning laws in this county. He knew it was like that before he moved there and started that crap. He wrote a bunch of letters to the editor and wasn’t long before some threats were made. And he wrote some more letters to the editor and pretty soon – I think he is back in New York now.”

This is a common problem. The yards of fisherpeople are often used to store crab pots, nets, boats, motors, and other capital equipment in need of repair. To the undiscerning eye, defunct equipment appears to be trash. Where a garage or other structure may be the more attractive method to store such equipment, the fisherpeople of Two Rivers use the space and resources they have at their disposable. Challenges to the use of land for the purpose of storage of capital equipment is more than a challenge to individual rights, it is a challenge to local livelihoods.

*Incomplete and Misinformation about Fishery Regulations and Livelihoods*

A lack of understanding and knowledge on the part of new residents is most often cited as the source of the conflicts. As law enforcement officials explained during the fishery management plan meetings for spotted seatrout, most of the complaints received by the DMF about gill nets were based on a lack of understanding of fishery rules and regulations. Often times people were lodging complaints against perfectly legal fishing practices. According to a local commercial fishing association president, lack of knowledge about rules and regulations on the part of the non-commercial fisher population is one of the biggest problems facing commercial fishers. He explained:

> "They just don't know any better. You know they'll grumble about and say this guy hasn't lifted his nets out in two weeks. I ask what color the buoys are. They say I didn't look at that. I said if they haven't been lifted in two weeks it is a recreational weekend warrior down here from Raleigh. That person calls me up and says they are pink buoys. I say well pink are recreational. She was so mad at the commercial fishermen but it was a recreational fisherman doing it."

Many local fishers report that they rarely have conflicts with new residents, but when they do it involves a lack of knowledge about fishing regulations. As one fisher said:

> "In fact I have not had any conflict at all with them. The only thing is – and it is not even a conflict – I saw a guy trying to go into where my nets were and I said man there's a net setting there. You see those buoys? They're clearly marked.

> Nine out of ten of them do not realize the difference between a crab pot buoy and a net buoy."

While local fishers are tolerant of the ignorance of newer residents about fishing regulations, Two Rivers fishers and native non-fishers consistently expressed anger toward newer residents trying to change the community. Ignorance about fishing regulations can be rectified through education, and local fishers are more than willing to educate new residents on appropriate fishing protocols. Outright disregard and disrespect, followed by direct challenges to local norms and customs, on the other hand, are not tolerated. Many residents of Two Rivers, old and new expressed the following sentiments:

> "It's wrong to go into a place and then try to change it. Most people move here because it is different from where they are coming from – lifestyle's better, air is cleaner, the people are nicer. Buy yet, they can't totally shuck away that deal of having to take control and try to change the place."

Many of the local fishers explain that not all of the new residents are causing problems. In general, the relationships between old and new residents is amiable. In the words of a local fisher:

> "Some of them know what the deal is and some of them don't care as long as they can get you out of the business. Then there's some good people that's moved here. Like the guys that come in the store, they know what the real deal is because they talk to the crowd – the boys that fish and whatnot. Well it's always been that way. You got some that's good and some that think they're beyond everybody."

In the past, locals applied their own laws and methods of dealing with people who refused to respect local traditions, those "who think they're beyond everybody." Recently, however, the pace of change in Two Rivers has accelerated, and locals are steadily losing the ability to govern, both their community and the resources of the fisheries. According to a long-time non-fisher resident, the locals of Two Rivers:

> "are kind of wild. But if you respect them they will be the first people to look after you. There is a lot of gentrification down here but the people don't usually stay long because the ones that refuse to respect that way of life that is there –. The problem is that many of the people . . . are gone now – it is getting to be more and more mainstream all the time."

Informal and Formal Enclosure of the Local Commons: Loss of Waterfront Access

As the community of Two Rivers becomes "more and more mainstream," the purposes of coastal living and coastal resources are increasingly redefined and local fishers are increasingly excluded from areas traditionally held in common and accessed by everyone in the community. A local fisher explained, "there are people that have just moved down here and want to stake their claim – they want this little piece of water and they don't want to share." Another local fisher described an account where he:

> "was out there hook and line fishing, wading out there into the river and a woman came out of the house raising cane at me. I weren't on nobody's land. The river doesn't belong to them; they think it does. People out there setting nets. They go out there and raise cane out at you; call the man onto you. It's not their water but they think it is just because they own that land and they don't really own the land to the water. You could walk along the beach front; it's always been that way. It's always been a thing where they can't really stop you from just walking across the beach. We used to do it all the time and people never said anything to you about it. Some of the crowd now they don't even want you looking at them much less walking across it. Most of the crowd that used to come down here – you still had some people that were kind of aggravating but 99 percent of them were good people. They'd sit there and talk to you just like they know you all our life. The new ones cause a lot of problems for the fishermen."

The enclosure of the fishery commons is also happening on a grander scale through the loss of water access and fishing infrastructure. A local fisherwomen elaborated more fully on these changes:

> "Many years ago people didn't want to be around the water. Water work wasn't nothing. It was somewhere to go and make a living and that was it. Then people started moving in for summer places and now you see what the water works is. Everybody in the world is trying to get on the water so they can have a boat and so they could go out there and recreational fish. That's what the water works is about now. It's not about commercial fishing. It's about retiring and coming

> down here and buying property and having a boat so they could recreational fish. It's like everything in the world is about recreation and tourists. Just like Washington and Belhaven. Belhaven used to be a commercial fishing town. Look at it today."

Belhaven used to be a central hub for the commercial fishing industry. Today, all of the fish and crab houses are closed and there are laws against fishing vessels docking in town over night. The rail yards in Belhaven, the closest infrastructure necessary to lift a boat out of the water for maintenance in the central coastal region of North Carolina have been dismantled and condominiums have been built in their place.

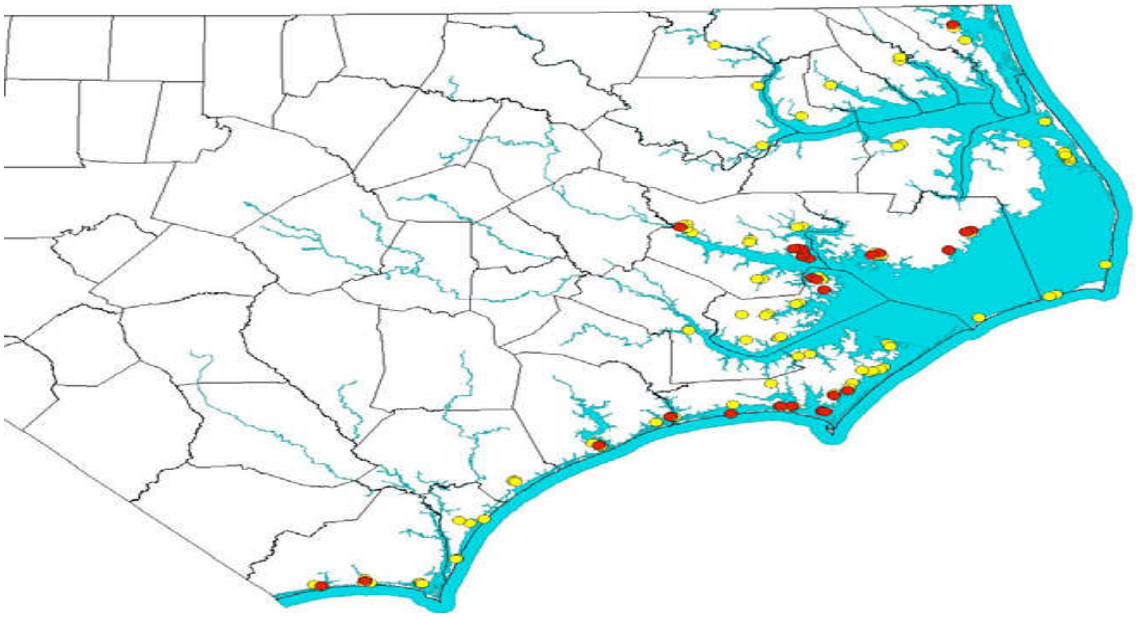

***Figure* 9**. 2006 Sites of Inventoried Fish Houses in North Carolina, Showing Closures (in Red) (Garrity-Blake and Nash 2007: 17).

The loss of commercial fishing infrastructure in Belhaven is not an isolated occurrence. Figure 9 below is a map of fish houses inventoried in 2006; closures are shown in red, or black if not in color. In 2006, Garrity-Blake and Nash (2007) inventoried 117, including 78 fish houses in operation and 39 businesses that had recently closed or were sold and under contract. This represents a 33 percent reduction in seafood

packing capacity since 2000. Most of the closures occurred in the central region of the state.

The loss of fishing infrastructure in North Carolina is mainly the result of the rising value of coastal waterfront. A non-fisher resident explained that the biggest change he has seen in the community is the rise of property values and the decrease in the number of fisherpeople in the area. "The original people down at Two Rivers – especially now that the commercial industry is not as viable as it was – are selling their land that has been in their families for 150 years. You see the gradual decline of the people that were originally here."

Access to water has become increasingly competitive in North Carolina as new residential developments and associated commercial developments, such as retail, lodging, dining, and exclusive recreational services flourish along coastal creeks, rivers and sounds (WASC 2007). Competition for waterfront property has resulted in soaring property values and property taxes in coastal areas. Over the past decade, residents in communities such as Ocracoke, Topsail Island, and Emerald Isle experienced property value increases of 300 percent or more (Garrity-Blake and Nash 2007). These circumstances put fisherpeople who depend on historically-established but informally-held landings, creeks, and community harbors at high risk of losing access to the water (Garrity-Blake and Nash 2007).

For example, fish houses provide a variety of services to independent fishers, such as free dockage, free ice, and bait in exchange for patronage. Historically, the owners of fish houses have extended credit to fishermen in the event of an engine breakdown or other emergency situations. Today, fish house owners are less willing or able to exert

such privileges due to thinner profit margins. Garrity-Blake and Nash (2007) cited an instance where one fish house owner in a pricey community recently evicted commercial vessels from his docks to make room for recreational boaters who were willing to pay high slip rentals. With the closing or recreational transition of each fish house, numerous fishers lose access to the waterfront sites necessary for dockage, unloading, and resupplying.

Transforming the Community of Two Rivers: From Commercial to Recreational

As the population of Two Rivers changes, the primary use-characteristics of fishery and coastal resources is also changing. As one former beacher, turned permanent resident explained:

> "Two Rivers always had a lot more people in the commercial industry; but, it was always a fairly well developed recreational fishing area even in the early 1950s. They had a gun club. Even then you had a Two Rivers, an Old Two Rivers and an Old Old Two Rivers. That probably hasn't changed but the type of people is more and more sportsman and less commercial fishermen. You can go up [the creek] and look at all the boats. That tells you a lot right there. A lot of them are abandoned."

This fact is illustrated in the comments of a CCA member:

> "I think one issue people aren't really looking at is population shifts from urban to extra-urban areas and coastal areas. As you get more and more people oriented toward the coastal regions of the state you are going to have more and more recreational fishermen. It is going to become a larger and larger subpopulation of the areas. No their grandfathers didn't commercial fish. Their grandfathers were form Pittsburg or wherever. But the fact is that landscape is changing and we got to change our management strategies to meet that increased demand."

In a newspaper interview, the director of the CFRG made a similar argument. He claimed, "North Carolina is the fastest growing state east of the Mississippi, and many of our new residents are baby-boomers hitting retirement age and moving here with a fishing rod in their hands" (West 2009b).

In many ways, the social visibility campaigns against commercial fishers are designed to influence the newer residents that are swelling the populations of coastal areas. Negative images of commercial fishing are perpetuated and the transformation of coastal resource use from commercial to recreational is encouraged in the micro-political relationships between new residents and commercial fishers in coastal communities, which impact the everyday lives of commercial fishers. New residents in Two Rivers criticize commercial fishers for destroying the environment and the resources of the fishery. One local fisher said, "they don't want you trawling. That is all I heard since I was growing up. These people come from up the country come down here and say you trawlers should have to quit. You're killing all the fish." The local fishers consistently explained that the new residents are always:

> "talking about the commercial fishermen and that they were destroying the fish and all this stuff. Like I say a lot of people don't know nothing about it, yet they talk against it. They think we're destroying everything and we're not. One man said they were catching flounder up here and carrying them to Mexico on their boat. They'd ruin before you could get them to Mexico unless you had a factory-freezer boat. Just stupid things like that. Ignorant people – some people you can get it through their heads and some people you can't. They don't know what you go through – what kinds of hardships you have – not making no money or the weather you have to work in."

Newer local non-fishers and recreational fishers consistently blamed commercial fishers for decreases in fish populations, while explaining there is no way recreational fishers could damage fish populations and marine resources to the same extent. For example, one local, recreational fisher in Two Rivers blamed the decline in the quality of fishing since she first started visiting Two Rivers in the 1970s on commercial trawlers. She said:

> "Fish was really plentiful. I thought there was nothing to it – you just automatically got fish. I always considered it was the big boats (commercial

> trawlers) come in here and take all the fish out of here and the little ones (juvenile fish) were hurt – taken out with the nets. I know that is not the agreement of everybody but I never could see how the rec person could – all you have to do is look out there – you don't see any (recreational) boats out there fishing. And how many do you see on the pier – maybe one or two."

Recreational fishers are invisible to the public and each other. Recreational fishers are diffuse, spread out throughout communities and coastal regions. While there are some areas in North Carolina that become congested with recreational fishers, most recreational fishers do not see one another on the water. The coastal waters of North Carolina are vast, covering 2.5 million acres (Deaton et al.2010). As a recreational counsel representative said, "Most times if I even see another recreational fishermen across the river, I feel he's too close." This social invisibility contributes to disbelief among recreational fishers and the general public when they are presented with statistics and other information on their impacts on fish populations. The sentiments of the CFRG director expressed during a newspaper interview were common among recreational fishers during the spotted seatrout fishery management process. He said, "A recent study finds that (spotted seatrout) are stressed and over fished, but they lay the majority of the blame at the recreational fisherman's feet – we're not buying it" (Ulbrich 2009).

The low density of recreational fishers on the water and the richness of North Carolina's fisheries is a draw for recreational fishers. While there are approximately 800,000 recreational fishers in North Carolina who are state residents, an additional 1.2 million recreational fishers travel from out of state to fish in North Carolina waters (NMFS 2010b). The draw of recreational fishing, paired with the beauty of the environment and highly affordable coastal living opportunities contribute to the rapid population growth and associated coastal development occurring in North Carolina. As

recreational and conservation interest groups wage political and social visibility campaigns to delegitimize commercial fishing and fisherpeople as destroying coastal resources, the detrimental impacts from coastal development, industry and recreational use of coastal resources remain relatively invisible, in relation to the manufactured visibility of commercial fishers.

**Recreational Fishing: An Invisible Threat to Fish Species of Concern**

The number of recreational fishers has increased as the population of coastal areas across the United States has increased. Nationally, between 2000 and 2008 the number of recreational fishers increased by 65 percent (NMFS 2010b). In 1999 there were over 7.8 million licensed recreational anglers in the United States (Holliday 1999; NMFS 2010a). The estimated marine finfish catch for 128 species was 328.8 million fish, of which 59 percent were discarded alive (Holliday 1999). The total weight of the fish harvested – kept for consumption – was 198.7 million pounds. By 2008, there were 13 million recreational fishers, who caught 391 million fish, of which approximately 46 percent were discarded alive (NMFS 2010b). These fishers kept 212 million pounds for personal consumption (Van Voorhees 2010).[103]

These trends are also evident in North Carolina. There has been a 69 percent increase in the number of recreational fishers in the South Atlantic since 1999 (NMFS 2010b). Currently there are nearly two million recreational fishers, harvesting fish in North Carolina waters today (NMFS 2010b). In 2008, these two million recreational anglers took a total of approximately 7.18 million recreational fishing trips (NMFS

[103] In 2008, the recreational industry supported over 384,000 jobs and contributed $59 billion in sales impacts and $27 billion in value-added impacts to the United States economy (NMFS 2010b).

2010b). This includes trips from shore (4.3 million trips), private boat (2.5 million trips), and charter boats (283,000 trips) (NMFS 2010b).

The Impact of Recreational Fishing on Fish Populations

Recreational fishing is a tremendous tourism draw in North Carolina. Approximately 1.1 million, or 55 percent of the 1.9 million anglers that fished North Carolina waters in 2008 were from out of state (NMFS 2010b). Not only does recreational tourism contribute to coastal development and further impairment of coastal resources from development, but recreational fishing exacts a heavy toll on fish populations. Currently, there is no cap on the number of recreational licenses in North Carolina. Across the country, current regulations on recreational fisheries focus on controlling how much and what size of different kinds of fish can be caught, not the number of individuals allowed to fish (Coleman et al. 2004).

As Balsiger, Risenhoover, and Boreman (2008) noted, NMFS does not include the recreational fishing sector in the concept of 'excess harvesting capacity.' This is problematic. The fact that recreational fishers are often restricted to the harvest of five or eight fish of specific species and sizes does not preclude the fact that their sheer numbers add up. In addition, catch-and release fishing practices are not as sustainable as recreational fishing interests claim. As discussed in Chapter Five, not all fish discarded alive survive. Recreational fishing interests, such as the CFRG and CCA leverage their willingness to sacrifice the ability to harvest fish for the chance to catch-and release. However, the mortality rate – death – of fish that are caught and released varies by method caught, size of fish, and water conditions.

While the hook-and-line mortality for flounder was reported during an advisory committee meeting as 19 percent, a recreational council representative said he knew his "personal mortality rate was 90 percent because the fish swallowed the minnow." He said he stopped fishing for flounder because he knew they were all dying. "The way a flounder eats the bait (and thereby the hook) affects mortality rates." A recreational fisher in Two Rivers expressed similar concerns. He said:

> "there are many problems when you catch a fish with hook. The damage the hook does. Oh you're supposed to hook them in the corner of the mouth. Well you tell that to the fish. I feel like if the fish is going to bite, you shouldn't waste it. But they say well the crabs can eat or something."

Furthermore, recreational fishers are responsible for landing a significant percentage of threatened fish species.[104] In 2002, recreational landings accounted for 23 percent of the total take of threatened species in the United States, which increased to 38 percent in the South Atlantic, 59 percent along the Pacific Coast, and 64 percent in the Gulf Mexico (Coleman et al. 2004). In North Carolina, recreational fishers are responsible for 71 percent of the harvest of spotted seatrout (NCDMF 2009d), 60 percent of the harvest of red drum (NCDMF 2008b), and where commercial fishers constitute only 2 percent of the catch of summer flounder, recreational fishers consistently over exceed the harvest limit (NCDMF 2005). Spotted seatrout, red drum, and summer flounder are all designated as species of concern; and, in 2005, the over harvesting of summer flounder by the recreational sector resulted in the following concern:

> "If North Carolina does not take steps to address the recreational over-harvest, the U.S. Secretary of Commerce could find our state out of compliance with the Fishery Management Plan for Summer Flounder . . . and our recreational and commercial flounder fishery could be shut down, along with any fishery that has the possibility of catching flounder."
>
> (NCDMF 2005)

[104] Species that are overfished or subject to overfishing.

The Regulatory Invisibility of Recreational Fishing

Recreational fishing is invisible in two ways. The overwhelming impact of the recreational sector on fish populations is shielded from the public, including from recreational fishers themselves by the diffuse nature of recreational fishing over a vast area. In addition, the impact of recreational fishing is, for the most part, invisible to the formal fisheries regulatory system. A large reason for the invisibility of the impacts of recreational fishing on fish populations is a relative lack of the regulatory infrastructure necessary to manage recreational fisheries, evidenced by a short supply of information on recreational fishing.

Data collection and statistics on the commercial fishing sector are extensive and intensive. Landings data is collected directly from fish houses through trip ticket programs, where dealers and commercial fishers report what species, how much and where the fish were caught in nearly real time through computer reporting. Statistics on salt water recreational fishing, on the other hand, are very sparse and inconsistent. Until recently, NMFS collected statistics on recreational fishing from coastal states; but, historically the data collection methods of each state has varied greatly, and not all states have had programs to collect recreational statistics, or recreational fishing license programs. For example, prior to 2007, recreational fishers did not need a license to fish in North Carolina coastal waters (Crosson 2010).

In recognition of the impact of recreational fishers and the need to improve the accuracy of the data and estimates on recreational catch and participation used for management, the Reauthorized Magnuson Act (2007) established the Marine Recreational Information Program. The Program is a regional-based registry that

required all recreational fishers to be registered by 1 January 2010. The primary instrument used for data collection is the Marine Recreational Fisheries Survey (MRFS), which is conducted through random-digit dialing and at dockside through in-person interviews.

However, there are some problems with data collection. The telephone survey is based on self-reported catch histories, often collected some time after the fish were caught. The reliability of the data is susceptible to the intentional and unintentional inaccuracy of responses and general difficulties of conducting phone surveys. Meanwhile, in-person field sampling is constrained by the inability of fisheries researchers to sample private access areas, such as gated communities and other private waterfront docks, piers or boat houses. State administrators are aware of these problems, as one administrator explained:

> "We just don't have the real time in season capability of monitoring and managing recreational fisheries like we do with commercial fisheries just because of the way the data is gathered. I wish we could but in North Carolina there are 2500 or 3000 commercial guys and 5 or 600,000 recreational guys that fish regularly. The amount of resources that it takes to have a daily, weekly or log book reporting requirement – it would cost untold time and monetary resources. They are changing the MRFS program in the next year of two. We hear a lot of complaints about the recreational data from the recreational and commercial folks. North Carolina is getting ready to do something about the difficulties of gathering data from private access fishing areas. The official license funds that we allocate for research, education and habitat improvement just provided the division to enhance the MRFS effort with increased emphasis on nighttime and private boat sectors."

The inability to sample private access areas is highly problematic. Private access areas are the primary entry/exit points for the private boat sector, which catches the majority of recreational landings. Figueira and Coleman (2010) found that the majority of recreational landings are caught by the private/rental boat sector (65%), followed by

the for-hire (22%) and shore-based (13%) sectors.[105] Private access areas are currently increasing across the United States, and are predicted to continue to increase as the development of coastal areas increases. Coastal areas, especially those in North Carolina are experiencing the fastest rates of population growth and development in the country (Deaton et al. 2010; NEP 2008).

**The Impacts of Coastal Development and Phosphate Mining on Fishery Habitat**

Population growth and the increase in recreational fishing drive coastal development, which along with industry, such as mining along the United States coastline contribute significantly to the degraded and continued precarious state of the nation's estuarine, fishery, and other coastal resources. In a report to NOAA on the importance of the nation's estuaries to fisheries, Lellis-Dibble, McGlynn, and Bigford (2008) estimated 53 percent of the population of the United States lives in coastal counties. This translates to more than half of the nation's population living on 17 percent of the nation's land area, excluding Alaska, with continued expected growth. According to the Environmental Protection Agency,

> "Coastal counties are growing three times faster than counties elsewhere in the nation. Unfortunately, this increasing concentration of people is upsetting the natural balance of estuarine ecosystems and threatening their integrity. Channels have been dredged, waters polluted, and marshes and tidal flats filled and shorelines reconstructed to accommodate human housing, transportation, and agriculture needs. Stresses caused by overuse of resources and unchecked land use practices have resulted in unsafe drinking water, beach and shellfish bed closings, harmful algal blooms, unproductive fisheries, loss of habitat, fish kills, and a host of other human health and natural resource problems."
>
> (NEP 2008)

[105] There are three recreational fishery sectors: (1) the shore-based sector, in which participants fish from shore, beach, bank or man-made structures like bridges, docks and seawalls; (2) the private/rental-boat sector, in which participants use their own or rented boats to fish; and, (3) the for-hire sector, consisting of charter boats and headboats – vessels on which fishing space and assistance are provided for a fee.

Wetlands are particularly impacted. Wetlands are the fish habitat occupying the transition between land and water (Deaton et al. 2010). By storing and filtering land runoff, they enhance coastal water quality and play a vital role in providing refuge and food for juvenile fish. The loss and degradation of coastal wetlands has a direct adverse effect on the quality of estuarine and marine ecosystems, which support fisheries. It is estimated that over 95 percent of the commercial finfish and shellfish species and 85 percent of recreationally important species are dependent on wetlands and estuarine habitats for some portion of their life cycle (Lellis-Dibble, McGlynn, and Bigford 2008).

According to the EPA (2004), the nation's estuarine resources are diminishing and continue to be threatened, receiving a "fair" rating on a scale of good, fair, and poor. Evaluation of sediment quality, water quality, benthic community condition, and coastal habitat loss indices indicate 28 percent of estuarine waters are impaired for aquatic life. According to this report, the overall national coastal habitat condition, based on long-term wetland loss rates, is rated "poor" and water quality is rated "fair." A healthy water column is just as important as healthy wetland and submerged aquatic vegetation habitat for fish and shellfish. The EPA (2004) reported that 60 percent of the nation's estuarine waters are moderately to highly degraded. Degraded water quality variables include increased chlorophyll *a* concentration, decreased dissolved oxygen (DO) concentration, increased nutrient concentration, and reduced water clarity. These conditions have a direct impact on fish populations, as well as other marine life.

Between 1998 and 2004, 59,000 acres of coastal wetlands, including marine, estuarine, and freshwater were lost each year across the United States (Lellis-Dibble, McGlynn, and Bigford 2008). Estuarine and marine wetlands continue to shrink at an

average rate of approximately 4,740 acres a year. Studies have shown that 66 percent of the wetland loss in coastal counties across the United States was due to development (Lellis-Dibble, McGlynn, and Bigford 2008). Pre-colonial estimates of wetlands in North Carolina are approximately 7.2 million acres, while current estimates are approximately 5.1 million acres, with annual wetland losses of approximately 802 acres a year (Deaton et al. 2010).

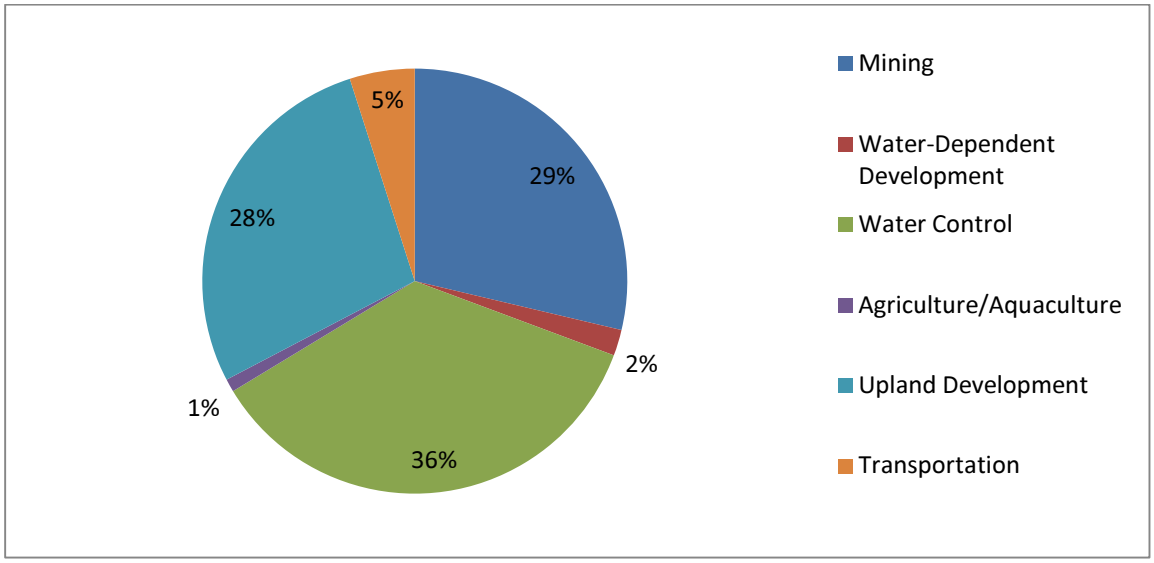


***Figure* 10**. Wetland Impacts by Source in Eastern North Carolina (Deaton et al. 2010: 293).

The factors causing wetland loss and damage in North Carolina are shown in Figure 10 above. The most significant factors impacting wetlands in North Carolina are water control projects (36%), mining (29%), and upland development (28%) (Deaton et al. 2010). Considering many water control projects, as well as transportation and water-dependent devolvement projects are the product of increased upland development, the following sections focus on upland development and mining. [106]

[106] *Water control* includes the construction of impoundments, reservoirs, ditches, canals, water intakes, storm drains, storm water ponds, and other activities designed to alter water flows. Note: some water control projects are related to transportation and upland development.

Upland Development in Coastal North Carolina

Population growth is driving coastal development and land use changes in North Carolina. Historically, much of the land around the Albemarle-Pamlico Estuarine System was drained to accommodate agriculture and forestry, and remains drained for residential, industrial and urban development. It is estimated that over two million acres of land have been drained and developed for agriculture and forestry along the North Carolina coast (Deaton et al. 2010). Within every square mile of agricultural land in coastal North Carolina, there are an estimated 20 miles of field ditches, collector canals, and main canals, many of which drain into the estuary (Deaton et al. 2010).

While agriculture and forestry contribute to non-point source pollution consisting of sediment and fertilizer, as can be seen by Figure 10, the current damage to wetlands stemming from agriculture is only one percent. A larger problem is North Carolina agriculture[107] and forestry lands are currently being replaced with developed land uses, consisting of urban, suburban, and residential developments and increased impervious surface area. Farmland has declined from nine to 8.5 million acres between 2002 and 2009; and forestry has declined by one-third from 1990 to 2002 (Deaton et al 2010). Over the last decade, developed land uses have increased in coastal counties. Urban land cover more than doubled (from 5% to 12%). High-density urban areas tripled, while

*Upland development* includes isolated ponds, residential lots, commercial facilities, utility cables/pipelines, wastewater treatment plants, schools, churches, and other activities converting wetland habitat to uplands or supporting upland development.
*Mining* includes quarry and sand pit construction or expansion, and other mining sources.
*Agriculture/aquaculture* activities include irrigation ponds, farm construction, clearing land for animal operations, fish hatcheries, fish farms, spray fields, and similar activities that disturb wetland hydrology. Note: most agriculture activities are exempt from requiring 401 permits.
*Transportation* includes construction of roads, highways, bridges, and culverts.
*Water-dependent development* includes piers, docks, marinas, navigation channels, boat ramps, shoreline stabilization structures, channel relocation, and similar activities and structures associated with waterways.
[107] Agricultural lands include cropland, pastureland, animal operations, and land-based aquaculture.

suburban sprawl (measured as low to medium-density urban consisting of 10-70% impervious surface area) increased by 150 percent (Deaton et al. 2010). Decades of population increases and development along the coast pose significant threats to coastal fisheries.

Population growth and an increased percentage of impervious surfaces in wetland areas contributes to fecal coliform bacteria and associated pollutants in surface waters. The source of pollutants impairing 28 percent of streams in North Carolina are unspecified. Of the 72 percent of streams with specified sources of impairment, point sources comprise 27 percent and non-point sources make up 73 percent (Deaton et al. 2010). Non-point source pollution consisting of nutrients, sediment, and toxic chemicals enters North Carolina's water ways and estuary from agricultural, residential and impervious surface storm water runoff. A common result of this pollution is elevated levels of nitrogen and phosphorus, which promote algae growth known as *Pfeisteria*, or red tide (Ribaudo, Horan, and Smith 1999). Algae growth reduces oxygen levels and causes the outbreak of micro-organisms. In the late 1990s several major fish kills associated with low oxygen events and diseases, such as *Pfeisteria,* occurred in North Carolina (Deaton et al. 2010).

Point source pollution is also a problem. Sewage spills from wastewater treatment facilities also contribute substantially to pollutant loading in coastal waters (Deaton et al. 2010). From 2002 to 2009, the amount of sewage spilled in coastal waters ranged from 0.5 million to over 10 million gallons per year (Deaton et al. 2010). Fecal coliform contamination is the most cited reason the DMF puts out consumption warnings on many species of fish and periodically closes large portions of estuarine waters to

fishing (DMF list serve emails). Over the past three decades there has been a drop in the value of the clam and oyster harvest in North Carolina of approximately $10 million annually, which can be attributed to increased closures of shellfish beds due to microbial contamination (Deaton et al. 2010). Since 2000, as much as 2,318 acres of productive shellfish waters have been permanently closed due to point and non-point source pollution (Garrity-Blake and Nash 2007).

Industrial Mining: PCS Phosphate

In addition to coastal development, wetlands and fishery habitat are significantly impacted by mining activities. Mining in North Carolina consists of surface, open-pit mines for sand and gravel, crushed stone, and phosphate (Deaton et al. 2010). There are 271 active mines in coastal counties, consisting of 262 permits for sand/gravel mining, eight permits for crushed stone mining, and two permits for phosphate mining. Sand/gravel and crushed stone mines occur generally in upland areas, although some may be located in or adjacent to wetlands. The open pits created by coastal mines fill with groundwater that is often pumped into ditches and rivers during excavation. Many mine sites are in the vicinity of rivers and estuaries and discharge can contain sediment, nutrients, and heavy metals.

Sand and gravel mines are the most common mines in North Carolina. However, they were implicated in only 0.5 percent of impaired streams in coastal draining river basins in 2006 (Deaton et al. 2010). The largest mining impacts on wetlands and the health of the estuary stem from the phosphate mines. The phosphate mining permits are owned by Potash Corporation of Saskatchewan, Inc. (PCS),[108] and consist of 15,952 acres

[108] PCS is the world's largest fertilizer company by capacity, producing the three primary crop nutrients – potash, phosphate and nitrogen. They are responsible for about 20 percent of global capacity

along and within the Pamlico River in Beaufort County. As a local commercial fisher stated,

> "Everybody blames all the problem out here in the river on the commercial fishermen, which we all know what it is, but people don't want to listen to you about it. That stuff up the river you see lights from every night and the smoke and all that stuff."

The vast majority of mining impacts on wetlands in North Carolina occurred during a single project in 1997 when PCS was issued a permit to destroy 1,268 acres of wetlands in Beaufort County (Deaton et al. 2010). In the past, whole creeks adjacent to South Creek and Pamlico River estuary were lost to PCS's mining activities. PCS is currently planning the expansion of its operation into more wetland areas in the vicinity. The projected mine expansion will impact 11,909 acres, including 3,953 acres of jurisdictional wetlands and over five miles of streams (NOAA 2010b).

The current PCS expansion represents the largest destruction of wetlands ever permitted in North Carolina (Deaton et al. 2010), and the largest single source of disturbance to wetlands in the southeastern United States in several decades (NOAA 2010b). According to several interviews, North Carolina state agencies vetoed the PCS mine expansion. A fisheries biologists explained:

> "I think Wildlife and Fisheries is the only state agencies that objected to it. Even federal Fish and Wildlife and EPA signed off on it. EPA had a chance to override it but they deiced not to. That's where the problem is because that was a federally issued permit. The core of engineers did not listen to the state concerns; they listened to NMFS and NOAA and U.S. Fish and Wildlife Service – since they didn't object they blew off our concerns. We wasted all that time deciding all those issues. Once we put all our issues in 15 pages of comments to them I never

(http://www.potashcorp.com/about/overview/). PCS bought the operation from Texas Gulf in 1995 as its first phosphate operation. The phosphate operation is located at Lee Creek, off the Pamlico River in Beaufort County, North Carolina. It is the largest integrated phosphate mining and chemical plant in the world, and has the capacity to produce 6.6 metric tons per year of phosphate ore, 1.3 metric tons per year of phosphoric acid and 0.2 metric tons per year of phosphate feed.

> heard a word back from them. They never tried to call us or address our comments or ask us anything."

A fisheries council representative said:

> "All we can do is comment. We write them a letter and tell them we think the permit should be denied. We wrote the core of engineers and PCS. I don't know who else. We said we were concerned about the amount of wetlands being impacted and outlined why wetlands are important to the species for which we have responsibility and how important that habitat is for them and how it functions and we said we wished they would change their plans and not impact those wetlands to that degree. Again it is just comment. They have to address it but often times it comes down to the economic impact of this proposal which is great enough to overwhelm the environmental impacts."

Regardless of state opposition, NOAA's (2010b) Habitat Conservation Division worked closely with the United States Army Corps of Engineers, resource management agencies, and PCS to come to an agreement on the proposed expansion. NOAA (2010b) cited the need to resolve the project on the fact that PCS is the largest employer in Beaufort County, North Carolina with 1,096 employees. As a fisheries administrator explained:

> "They (PCS) create a lot of jobs, they pay a lot of taxes, they provide ancillary jobs for a lot of people and they are also pretty generous in donating money and time to a lot of other organization – little league baseball, softball and schools. The do a really nice job of reaching out into the community to do the things that they do."

Another fisheries administrator also pointed to the economic impact of PCS on the region: "You've got a company, tough economic times that contributes $50 million to state taxes and jobs. The environment is the pure loser on this one."

In addition to the substantial stream and wetland impacts due to excavation, PCS has a significant impact on water quality. PCS is the largest source of waste water among all coastal North Carolina mining operations. Until 1992, PCS was discharging 50 to 60 million gallons of phosphate-rich water into the Pamlico Sound every day, significantly

contributing to eutrophication[109] of the Pamlico River (Deaton et al. 2010). Since 1992, PCS has reduced discharge of nutrients by over 90 percent by using a water recycling process. However, heavy metal contaminants have also been associated with PCS. Higher than average concentrations of arsenic, cadmium, molybdenum, selenium, and zinc were all found in several rivers and creeks, including Durham Creek, Porter Creek, South Creek, Pamlico River, Jacks Creek, Huddles Cut, and Tooley Creek (Deaton et al. 2010).

The presence of these heavy metals has been directly linked to shell disease in blue crabs found in the Pamlico River and hormone alterations that affect the reproduction and health of fish and shellfish (Deaton et al. 2010). According to one local fisherman, "you can go up there and catch fish and crabs up there and the crab and fish got sores on 'em. Because they dump acid stuff over board. I argued with people ever since it's been up there about the cause of it." A fishery biologist recounted the effects on blue crabs:

> "Back in the late 80s we had that shell disease. I would catch blue crabs with half their shell disintegrated. It was amazing what we were seeing out there. We set up experimental cages and I'd take crabs and scrape that first layer of lipid protein off them just to see what would happen - in those areas right at PCS or just below – it just disappeared – just disintegrated. Now after that they implemented a closed booth system the problem went away."

While fisheries biologists claim the problem causing shell disease in crabs has been solved, local fishers still report problems with water and air quality around and down river from the phosphate plant. A local fisherwoman recounted a time when she:

> "was out there shrimping and took a five gallon bucket over the side of the boat to get some river water to wash her hands. When I put my hands in it - it burned me

[109] The process by which a body of water acquires a high concentration of nutrients, especially phosphates and nitrates, which promote excessive growth of algae, depleting the oxygen levels of water, thereby causing fish kills.

just like somebody had set fire to my hands. It was like there was some kind of acid chemicals or something in that water."

The Pamlico River, the major river adjacent to the phosphate plant was closed to shrimping in 2006 to protect juvenile flounder. However, crabbing is still allowed in the vicinity. A local fisherman from a community down the coast from Two Rivers described an experience he had trawling for crabs in the vicinity of PCS. He said:

> "I have been right off PCS crab trawling and my eyes would burn. And of course we separate our peeler crabs out and I keep my peeler crabs in 150 quart cooler to keep water running on them.[110] I have been around PCS where those crabs were coming out of there; they couldn't stay in it. They would come right out like they got bad water in there. And I have been off PCS and said there is something in the air – my eyes were burning. And the crabs would be laying there just as pretty and all of a sudden everyone of them would try to get out – all over the deck just as fast as you could pick them up."

Fishers' Perspectives on Fishery Habitat and Environmental Conditions

Local fishers in Two Rivers are well aware of the consequences of development and industry for the environmental basis of their livelihoods. I was often told during interviews with local fishers that "pollution's what's killing this place. They want to put on fishermen what pollution is doing. People are doing the most damage." Many local fishers pointed to the damage caused by the phosphate industry and water runoff from upland development:

> "South Creek and Pamlico River is dying right today. It's almost on a death bed. Just a few more years I don't even think there will be a commercial that can make a living. It's just too much population, too much pollution, too much run off from Texas Gulf,[111] from Raleigh and other places like that. It's just slowly killing it."

Other fishers blame coastal development. A local fisher explained the changes he has witnessed over the 78 years he has been in Two Rivers:

[110] The water is pumped from the river to keep fresh water continuously running over the crabs while they are contained on the deck of the boat.
[111] Many of the locals still call PCS by its former name, Texas Gulf.

> "I can remember when nobody even wanted to be on the water because of the green heads and the yellow flies and the mosquitoes – and damn if I want to live down on that place – no way. But now – as you come in off this road here, and my wife will tell you the same thing – in 1980 there weren't but two houses down here, now there's 15 or 16 and it's that way everywhere and even worse here and not just here. It's worse for other places than here. Because this is all family here. Her family and we own all of this across the road back to the two story house back to the creek – we own right around to the other creek. We own it all. So it's pretty well controlled who we –. You know it's been so long that some of the family has died or something like that and youngins has sold it. And eventually it will all be sold to outsiders but right now it's not. It's happening everywhere. You see all these places being developed and that's what's going to kill it."

Another long-time Two Rivers fisher described how the fishery and habitat has changed in his lifetime. He said:

> "I can tell you that at one time I would have laid money on any square foot of water in South Creek and Pamlico River as being the healthiest waters there was out of anywhere you wanted to go. It had the most seafood, crabs, fish, and shrimp that I have ever seen as a boy per water size that I ever been into. The bottoms. I can remember when you could walk around the shores just like this – from that corner there to over there where my son lives right there – and I could have picked up a dozen and a half soft crabs with my hand. They were just that thick. They had grass beds – they had places to go. I mean that's how we got them. We walked around, picked them up and carried them home and cooked them. And the shore was clean; it was healthy; now today you would be lucky if you walked this shore from here to Washington and ever found a soft crab. It's just not there. They have no – their habitat has been destroyed; the bottom has been destroyed. Tell you something else if you want to doubt any part of it – next chance you get go down to the river and start messing with you foot and start washing – take your foot like a fan and if you don't see little bubbles of oil pop up I'll give you a hundred dollars. It's there and when I was a boy it didn't exist. The sand had a different color to it; it had a real shiny bright look to it; today it has a black muddy tinge or orangey color to it. I mean it's just – I mean it's being killed by human beings – not by fishing. Anybody tell you that fishermen is killing it is a liar!"

But, conservation and recreational fishing interests do claim the "fishermen is killing it;" and, fisheries administrators have little choice but to increase regulations on commercial fishers as a result of the political inactivity of commercial fishers in the formal governance system.

The commercial fishing industry is blamed for the decline in fish populations, whether the cause is weather related, such as cold stun events, or habitat destruction and pollution. The reason stems from the juxtaposition of the difficulty of quantifying the chaotic and complex nature of fisheries and the strict legislated conservation goals. While the Reauthorized Magnuson Act requires an end to all overfishing and the rebuilding of all overfished stocks under federal purview by 2011 (MSRA 2007), the North Carolina Fisheries Reform Act (FRA) requires an end to overfishing and the rebuilding of overfished stocks within 10 years of the development of a state fishery management plan (NCGA 1997). Fishery administrators claim:

> "The biggest issues we face is knowing how to adequately assess how much different factors are contributing to depleted stocks from what we are trying to sustain. There is very little really good science to show the linkages between them – if I develop this bit of marsh or I have these boats and piers and marinas – what does that mean for fish populations – we don't have that knowledge. By the time you are going to be able to see it, it's going to be there and you can't undo it."

Where environmental factors are beyond the control of the fishery regulatory structure, human fishing effort is not. The result is an emphasis on reducing the harvesting capacity of fishers in order to meet the conservation goals set forth in fishery legislation.

**A Note on the Impact of Development and Recreational Fishing on Sea Turtles**

In addition to bearing responsibility for declining fish populations, commercial fishers also bear the brunt of the blame and consequences to protect sea turtles. This is reinforced by the social visibility campaigns of conservation and recreational interest groups. Jean Beasley, director of the Karen Beasley Sea Turtle Rescue and Rehabilitation Center (Center) was recorded in a newspaper interview as saying, "Killing one turtle in a gill net is one too many under the Endangered Species Act . . . What you

tolerate, you empower to continue" (Ulbrich and Pippin 2009). The CFRG states on their website that "Gill nets have no place in modern day commercial fishing! The time has come for their end here in North Carolina, period!" Along with this statement are pictures and descriptions of sea turtles entangled in gill nets.

In addition to depictions of direct interactions between sea turtles an gill nets, commercial fishers are blamed for the unobserved and unaccounted reasons sea turtles become stranded. According to the Sea Turtle Advisory Committee (2006), a stranded sea turtle is defined as any sea turtle found dead, alive but debilitated, or injured on any beach, ocean or sound side, or floating in the water. Sea turtles found within or caught in fishing gear or power plant mechanisms are classified as "incidental captures" and are not categorized as strandings. However, a turtle injured or killed during an interaction with fishing gear, which later washes ashore and is observed, is classified as stranded (Sea Turtle Advisory Committee 2006).

Conservation and Recreational fishing groups often describe sea turtle strandings as the result of commercial fishing operations, either gear or vessels. For example, NoMoreGillNets.Org (2008) describes a mass sea turtle stranding event on January 7, 2008 as the result of gill nets, although by their own account "The majority of the turtles appeared to have no wounds, and their overall body condition appeared healthy." And, sea turtle strandings increase the scrutiny of NMFS on the commercial fishing sector, resulting in greater regulations and possibly closures, such as the stranding event that culminated in the Pamlico Sound Gill Net Restricted Area (PSGNRA) in 1999 (Gearhart 2001). However, there are numerous factors that affect sea turtle populations and strandings, including coastal development and recreational activities.

The greatest impact on sea turtle populations is destruction of habitat and nesting grounds. Female sea turtles engage in natal homing; they return to the regions where they hatched to nest and lay their eggs (Sea Turtle Advisory Committee 2006). The destruction of nesting grounds caused by coastal development is thus a significant determinant of sea turtle populations. In addition to loss of nesting rounds, the Sea Turtle Advisory Committee (2006) cited other factors associated with coastal development that threaten sea turtles. Pollution in estuaries, which are commonly used as feeding grounds for sea turtles, presents the potential problem of ingestion of harmful substances or debris by turtles. Similarly, large industry operations such as power plants, oil and gas, production and mining pose the threat of capture, injury or mortality, as well as increased pollution and decreased water quality. Furthermore, an increasing coastal human population means an increase in the number of recreational fishers and boaters, which present an increased potential for non-commercial human-sea turtle interactions.

The causes of mortality for all sea turtle strandings in North Carolina between 2005 and 2009 are shown in Table 2 below. According to the N.C. Wildlife Resources Commission Sea Turtle Stranding Salvage Network Database (2010), between 2005 and 2009, the number of stranded sea turtles totaled 2,226. Although conservation and recreational interest groups often attempt to blame sea turtle strandings on the commercial fishing industry, there is little evidence that sea turtle strandings are the result of commercial fishing. As can be seen in Table 2, the vast majority (71%) of the causes for the mortalities were unknown, followed by cold stun events (11%), boat strikes (9%), and disease (5.5%). Only 3.5 percent of the sea turtles stranded between 2005 and 2009 was the result of entanglement, either in recreational or commercial gear or other debris.

Considering the sheer number of recreational fishers on the water, the proportion of sea turtles potentially hurt by commercial fishing gear is minimal. Moreover, the mortalities caused by entanglement is almost three times less than mortalities caused by boats.

***Table* 2**. Observed Sea Turtle Strandings and Causes of Mortality, 2005 –2009[112]

| Observed Stranded Sea Turtles in North Carolina | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| YEAR | Loggerhead | Green | Kemp's Ridley | Leatherback | Hawksbill | Hybrid | Unidentified | Total Turtles |
| 2005 | 249 | 66 | 30 | 9 | 4 | 0 | 20 | 378 |
| 2006 | 202 | 49 | 41 | 7 | 1 | 0 | 21 | 321 |
| 2007 | 157 | 141 | 29 | 4 | 0 | 0 | 11 | 342 |
| 2008 | 177 | 298 | 59 | 3 | 0 | 1 | 9 | 547 |
| 2009 | 213 | 299 | 113 | 3 | 1 | 0 | 9 | 638 |

| Assigned Cause of Mortality* | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| YEAR | Boat Strike | Cold Stun | Pollution | Entanglement** | Mutilation | Shark | Disease | Unknown | Other |
| 2005 | 58 | 10 | 0 | 4 | 1 | 1 | 31 | 273 | 0 |
| 2006 | 35 | 8 | 1 | 3 | 0 | 0 | 25 | 249 | 0 |
| 2007 | 33 | 12 | 0 | 10 | 0 | 1 | 18 | 268 | 0 |
| 2008 | 32 | 94 | 2 | 47 | 1 | 2 | 20 | 349 | 0 |
| 2009 | 37 | 100 | 3 | 16 | 5 | 0 | 28 | 447 | 2 |

Similar to recreational versus commercial gear, sea turtle mortalities from boat strikes are more likely to be caused by recreational activity. Forty-four percent of the 803,308 recreational fishers in North Carolina own boats, with 8 percent owning two boats and 1 percent owning three or more (Crosson 2010). Estimating one boat for each of the 44 percent of recreational fishers results in 353,455 recreational boats, which is drastically greater than the number of commercial vessels in North Carolina. The total number of commercial licenses issued in 2008 was 8,711, although the total number of licenses with reported landings was 3,902 (NCDMF 2009f: II-148). Almost all

[112] Source: N.C. Wildlife Resources Commission Sea Turtle Stranding Salvage Network Database (http://www.ncfisheries.net/fisheye/2010FishEyeNews/2010TurtleTable.html)
* The above totals are for turtles found stranded on the beach and do not include those classified as incidental captures in fishing gear, as witnessed by federal or state observers.
** The "Entanglement" category refers to those turtles found stranded on the beach that showed signs of entanglement, either in fishing gear (commercial or recreational) or debris (rope, plastic, etc.).

commercial fishers (97%) in North Carolina own boats, with 50 percent owning one, thirty-four percent owning two, and 11percent owning three or more (Crosson 2007). However, even in an attempt to overestimate the number of commercial fishing vessels on the water by calculating three boats per commercial fishers results in 26,133 commercial vessels. Nationally there are approximately 35,600 commercial vessels in the United states (BLS 2009), which is 10 percent of the number of estimated recreational fishing boats in North Carolina, not including the number of for-hire recreational fishing boats and recreational boats not used for fishing. The higher proportion of recreational fishing boats on the water implies a higher probability that boat strikes of sea turtles are caused by recreational boaters.

Furthermore, just as the affects of recreational fishing on fish populations is relatively invisible to management agencies, as well as the general public, so too are the affects of recreational fishing on sea turtles. According to an interview with a recreational fishing guide in an article in the North Carolina Division of Marine Fisheries newsletter, interactions with sea turtles are a common experience for recreational fishers (NCDMF 2010i). The guide stated, "I see sea turtles about every trip where we go in the ocean;" they are definitely increasing in number. In one trip during spring 2010, the guide reported he saw close to 200 sea turtles. The increasing number of sea turtles in North Carolina and the sheer number of recreational fishers on the water indicates a highly probable significant sea turtle interaction rate in recreational fisheries.

It is well known that sea turtles strike at bait and ingest fishing hooks (NCDMF 2010i). Dr. Craig Harms, a veterinarian for the Center estimated that about 15 percent of the patients at the hospital come in with recreational hook and line injuries (NCDMF

2010i). For example, According to the Center's (2011) website, a loggerhead sea turtle, named Washington was found under a boat at a residence on the intracoastal waterway in Hampstead, North Carolina September 8, 2007. "Monofilament line was wrapped around her left front flipper with line, sinker and hook trailing behind and entangling in the rear flipper" (Center 2011). A recreational fisher in Two Rivers described an incidence where he caught a sea turtle off his pier. He said:

> "Caught a sea turtle out here one day, a logger head. I was bottom fishing with a big hunk of cut fish, which is how I usually catch the big speckled trout. I thought it was big skate and when I got it close to the pier, I saw what it was. The law says you have to cut the line if that happens – so that's what I did."

Evidence, and the consequences of recreational fishers interactions with sea turtles is illustrated in Figure 11.

***Figure* 11**. Picture of Ingested Hooks in a Juvenile Kemp Ridley's Sea Turtle Caught on a Fishing Line off a Recreational Fishing Pier October 8, 2009 (Center 2011).

Although there are potentially high levels of interactions with sea turtles in recreational fisheries, recreational fishers are relatively unregulated in regards to sea turtle conservation. Statistics on such interactions are scarce, as is documented mortality rates. The NMFS Observer Program, which monitors sea turtle interactions, is mandatory for commercial fisheries, but not required for recreational fisheries. Current management measures in recreational fisheries consist of *voluntary* use of circle hooks to reduce the rate of hook ingestion (Sea Turtle Advisory Committee 2006).

The more people move to coastal areas, the greater the damage to coastal habitat, fish populations, and sea turtles. However, new residents in coastal areas are largely unaware of their own impact on coastal resources in relation to the perceived damages caused by commercial fisherpeople. People move to coastal areas to enjoy the beauty of the environment, diversity of wildlife and recreational aspects of coastal living. In the process, new resident enforce new norms and customs, which conflict with the traditional livelihoods of commercial fisherpeople. As an ex-law enforcement officer with the DMF said:

> "Now we have to deal with all these people on these beach that don't want to see people throwing nets, working. But, they let these yachts go by doing 30 miles an hour. They chop more sea turtles with their propeller wheels than shrimp and fish nets ever kill. Propeller wheels and party boats running over sea turtles. But it's alright for them to do it. I don't know."

Commercial fishers operate under an ever increasing regulatory system, designed to manage the economic activity of fishing within the confines of conservation mandates while taking account of competing interest groups, which results in a vicious circle. As commercial fishers are increasingly constrained in when, where, what and how much they can fish, the populations of fish continue to decline from the destruction of habitat,

degradation of water quality, and pressure from the recreational fishing sector, which results in increased political pressure from competing interest groups and more regulations on commercial fishers. To add insult to injury, the ability of commercial fishers to maintain their livelihoods is further complicated by imported farm-raised seafood, which drives down the price of locally caught fish.

**Adding Insult to Injury: Imported Farm-Raised Seafood and Declining Local Prices**

Seafood imports have grown dramatically in the United States, particularly in the last decade. The volume of edible seafood imports rose from 1,437,806 metric tons in 1996 to 2,425,084 metric tons in 2007, an increase of almost 70 percent (Crosson 2008). Although still substantial, seafood imports have declined since 2007. By 2009, seafood imports declined to 2,341,242 metric tons (5.2 billion pounds) (NOAA Fisheries 2010a), a 4 percent decrease from 2007. In 2009, imports constituted 84 percent of the seafood consumed in the United (NOAA Fisheries 2010b). The majority of seafood imports in the United States come from China, Thailand, Canada, Indonesia, Vietnam, Ecuador, and Chile (NOAA Fisheries 2010b). The top 10 seafood imports by value and volume are depicted in Figure 12.

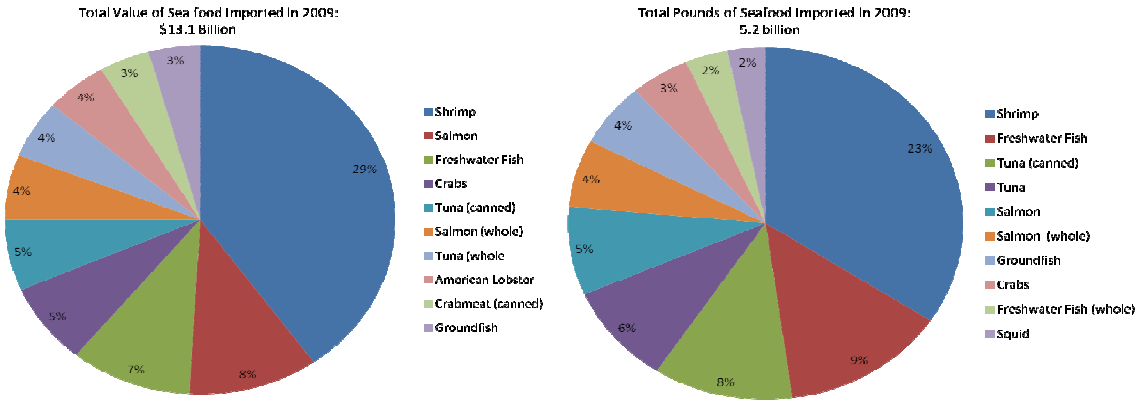


***Figure* 12**. Top 10 Seafood Imports in Value and Pounds for 2009, Fresh and Frozen (NOAA Fisheries 2010b).

The top species imported by value and volume is shrimp (29% and 23%, respectively) (NOAA Fisheries 2010b). (See Appendix G for a table with the dollar values and pounds of the top 10 seafood imports). From 1996 to 2007, the volume of shrimp imported into the United States rose from 264,207 tons to 556,936 tons, an increase of 211 percent (Crosson 2008). Showing a slight decline of 2 percent from 2007, the volume of shrimp imported in 2009 was 548,539 tons (NOAA Fisheries 2010a), or 1.2 billion pounds, valued at $3.75 billion (NOAA Fisheries 2010b). Approximately 87 percent of the shrimp supplied in the United States is imported, the majority of which is farm raised (Buck 2004).

Shrimp Prices in North Carolina

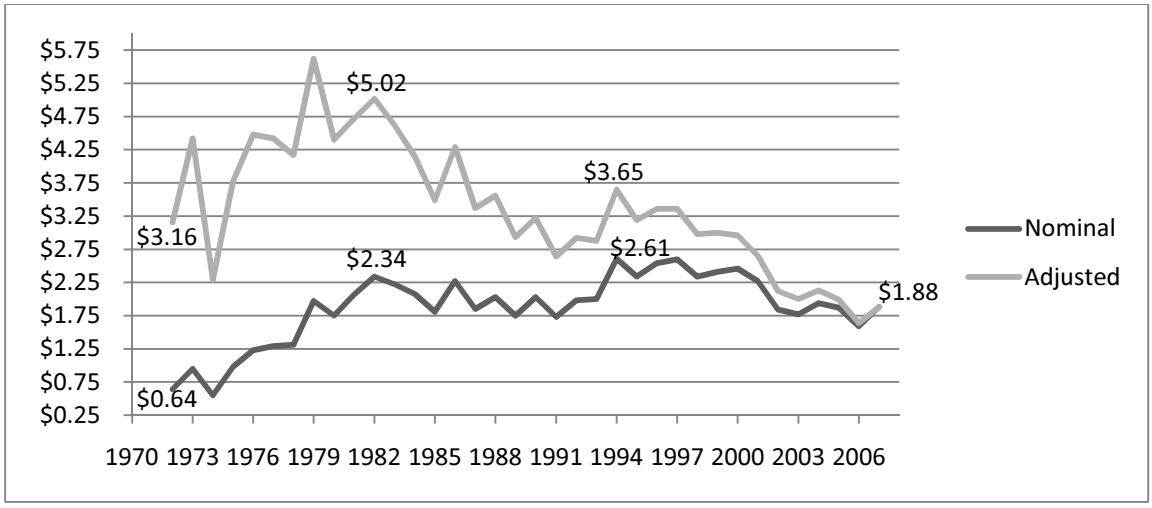


***Figure* 13**. Nominal and Adjusted Shrimp Prices per Pound in North Carolina, 1972 – 2007 (Crosson 2008: 16).

Imported shrimp compete directly with shrimp harvested locally in North Carolina. Shrimp are the second most important fishery in North Carolina, in value ($8,527,442) and volume (5,407,541 pounds), behind blue crabs (NCDMF 2010b). As shrimp imports into the United States have increased, the price of shrimp has decreased in North Carolina. A graph of nominal and adjusted shrimp prices in North Carolina

from 1972 to 2007 is depicted in Figure 13 above. (See Appendix H for a table of nominal and adjusted shrimp prices from 1972 to 2007.) As can be seen, the value of shrimp has declined since the 1980s.

Shrimp are an important fishery across North Carolina, and Two Rivers is no exception. While the blue crab fishery has historically been the most productive and lucrative fishery in the state, in recent years drought conditions have caused high salinity in the rivers, which has driven the crab into fresher water systems. According to a crab and shrimp biologists:

> "They have been down a little bit but I think that has been the salinity the last couple of years. The drought conditions and the crabs have moved up the system where whole wildlife areas have been closed to crabbing a number of years ago. So we see the decline in landings and people say something is wrong with the crabs, well the crabs are still here; the fishermen just can't go catch them anymore. So, you know the salinity is 15 parts per thousand. So the crabs are all higher up in those creeks where the guys can't go legally fishing anymore."

The decrease in crab fishing has increased the importance of shrimp for local fishers. As one local fisher explained:

> "Once the shrimp are gone people usually go back to trawl crabbing. We start out after oyster season in April – a little bit trawl crab, crab 'til end of June, then go shrimping – shrimp for about three months, then go back crabbing – crab until oyster season opens – oyster until February. Then there's a slack spell. But it's not that way anymore. The only thing we got pretty much is shrimping and gill netters and oyster season."

Another local fisher explained that:

> "It's got so expensive now with fuel and everything we don't crab at all. Just can't justify it. But now we will shrimp. We'll probably start shrimping a little bit next month. Hopefully, if the prices are enough we'll start. It's getting tough now with fuel being what it is and seafood is down low. There's not much demand for it. Rather there's demand for it, but imports is killing it. We can't compete with China and the other Asian markets that come over here, Brazil. Raising shrimp and stuff we can't compete with that. But we have to do the best we can."

While shrimp have been abundant in recent years, the prices fishers get at the fish houses are extremely low. Fishers constantly told me, "What was sad was that we were catching shrimp but we weren't getting no price for them. We sold a whole boat load of shrimp for $1.05 per pound." A retired local fisher told me:

> "Heard the boys have just quit shrimping because the prices have gotten so low. I remember when they were $4 to $5 a pound off the boats now they are $1 and some change. That is because of the imported shrimp from other countries. I guess if you put enough salt and butter on it tastes OK."

In another account, a local fisher explained that low prices were forcing fishers to dock their boats :

> "The boys work a big boat. Two weeks ago they packed their shrimp out after being out on the water for a week. A week of work and the man paid the captain $35. They got $.85 a pound. The dealer owned the boat. 31/35s[113] for $.85. Folks got less than a dollar a pound to start with for the small shrimp. I think it did get up to $1.25. I had some people coming so I went and got 300 lbs of 16/20s and I gave the fish house $250. So the boat didn't get very much. In 2001, I got $1.65 for 40/50 count. Diesel fuel was $.85 cents a gallon. Now it's in the $2 range. Last year it got up to $4.25. Most of your independent people just tied their boats up because they couldn't go for that. Last year some of the boats got as low $1.65 for 16/20 shrimp. They hardly got more than $2 for any of them."

As shrimp prices decline, some fishers complain that the fish houses are taking too large of a percentage of the sale price. In a community down river from Two Rivers, a retired fisher said:

> "It was unbelievable what they got up here at the bridge for big nice shrimp, 21/25s heads – with the heads on. The boats got about $1.20 some cent. Well they were selling, so me and my wife said we should get some shrimp. Do you know, they were selling them same shrimp for $2.50 a pound. They are giving the boats $1. That is what aggravates the hell out of me. You go out there and bust your mess and the fish house makes more off the shrimp than you make off the shrimp! I don't need it. That's why I am retired."

A local fisher explained that:

[113] 21/25s, 16/20s, 11/15s, and so on, are units of measurement for the size of shrimp, indicating how many shrimp constitute a pound. For example, 31/35s means there are 31 to 35 shrimp in a pound.

> "When the seafood house buys the shrimp from the boat he knows what he is going to get for that shrimp. If the boat gets $1.50 a pound today and the house is getting $3, that the house's $1.50 a pound. The boat may get $1 a pound and the fish house is getting $3 a pound, he gives the boat the $1 and he gets $2 profit. Now if the price drops to $2 a pound the fish dealer is still going to make sure he gets his $1.50."

While local fishers blame the fish houses for taking too large of a percentage in the sale price, fish house owners explained they are also pressured by competition from imports. According to a local fish house owner:

> "Just around the year 2000, for 16/20[114] shrimp I was paying to the boat over $7 a pound. I was paying them that. I was getting my packing fee on top of that. Now the highest you can pay is about $3.25 thanks to the imports. Half the price of 2000. That's something ain't it? We have to compete against the imported shrimp and the demand isn't as much because a lot of Americans are buying the imported – all the restaurants.

Although local fish house owners are also hurt by declining seafood prices, some fish houses sell imported seafood. A fish house owner in a community up the coast from Two Rivers told me the only thing that will help local fishers is educated consumers. He said:

> "[All these other fish houses] sell damn imports. But they are trying to help the damn fishermen – they sound like damn hypocrites to me. They sold imports before they had to sell imports. They sold imports for their own damn greed. Now, you can't sell no shrimp. Import, farm raised or whatever. What can we do to help the American fishermen? The only thing I know is educate people on these imports and stuff. As long as people buy them they are going to send them over here."

The low prices received at the fish houses force many fishers to peddle, or sell their own shrimp. Shrimping is a physically taxing occupation. Typically, shrimpers usually leave the dock Sunday afternoon and return either Thursday or Friday afternoon. The crew, often consisting of two to three people, sleeps very little while on the water. Once they return to the dock, the shrimp must be unloaded, culled for size, iced, and

[114] It takes 16 to 20 shrimp to make a pound.

packaged for sale. These are tasks usually done by the fish house. Fishers typically have one full day to rest and spend time with family while also cleaning and restocking the boat with supplies and ice as fast as possible to leave out from the dock the following Sunday. When fishers peddle their own catch, they must unload, cull, ice, package, and sell the shrimp before they can get ready to leave for the next trip. As a local fisher explained:

> "There's fellas around here selling their own shrimp. I don't blame them. But when I done it. When Friday rolls around I don't want to go peddle no shrimp. I'm tired and wore out when I come home and I'm tired and wore out when Sunday afternoon rolls around when I leave. You do that and that will burn you out quick."

Of course, shrimp prices by themselves are not the whole story. Wars in the Middle East, the 2008 recession, rising gas prices, and inflation have created hardships across the country. Two Rivers is no different; and, declining seafood prices only add to the difficulties facing local fishers. A common statement from local fishers in Two Rivers is, "Imports are really hurting us and the economy isn't helping. Everything is undergoing inflation expect seafood. Seafood prices are going down down down." Stories like the following were common:

> "We had a good crop of shrimp last year. But we couldn't make no money because fuel was $3.70 per gallon. My boat was burning 11,000 gallons of fuel a week. We were selling the shrimp for enough money in ordinary years. But last year, I lost $5 to 6,000 a week just in the fuel bill with a price of $3.70/gallon."

The affects of imported seafood on local prices adds insult to the injury caused by rising operating costs, as well as fishery regulations. The following sentiments were expressed by many of the local fishers in Two Rivers and the surrounding communities.

> "It is because of imported shrimp. That is the main reason – the free trade act. We got more rules, laws and regulations than these foreign countries. Do these other foreign countries have to pull turtle shooters and lose one-third of their

> catch? That's what I want to know. Do these other foreign countries have to pay $2 or more fuel prices? And we have to compete with these guys and they can do it cheaper than we can because they don't have the same expenses. It's not fair for us. They should tariff all those shrimp where it makes them higher than our shrimp to buy. We are going out of business because of that. People are tying their boats up next week and not even going out. It's not worth it.

Parity in Regulations and Prices Between Foreign and Domestic Shrimp Produces

The answer to questions of whether other countries are subject to regulations intended to protect sea turtles is yes. Parity in regulations to protect sea turtles between United States shrimpers and exporting shrimp producing countries is achieved through United States Public Law (PL) 101-162, which prohibits the importation of shrimp and shrimp products harvested in ways that adversely affect sea turtle species (USDS 2010). PL 101-162 requires the use of TEDs or certification that shrimp harvesting methods do not pose a threat to sea turtles. In addition, the United States government has determined that trade with foreign countries on seafood should be fair, to some extent with regards to prices.

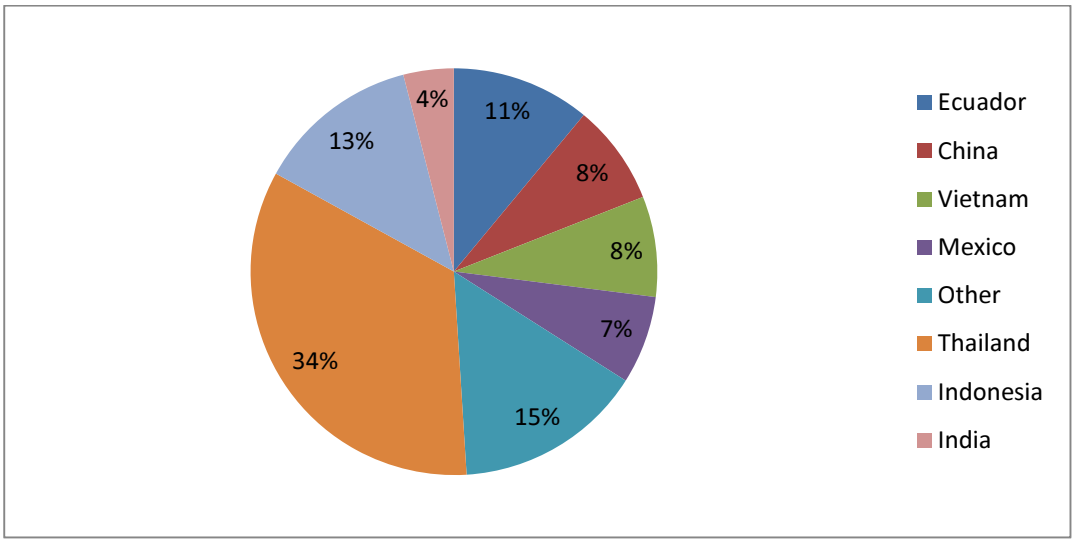


***Figure* 14**. Shrimp Imports By Country (NOAA Fisheries 2010b).

The top countries of origin for shrimp imported to the United States are shown in Figure 14. Since 2005, the United States government has levied anti-dumping duties on frozen warm water shrimp from Brazil, China, India, Thailand, and Vietnam (USDA 2007). Since 2007, the volume of imported shrimp has declined by 2 percent, from 556,936 tons to 548,539 tons in 2009 (NOAA Fisheries 2010a). Although the effects on prices in North Carolina of this decrease are negligible according to the testimonies of local fishers, on March 15, 2011, the United States International Trade Commission (USITC 2011) continued the anti-dumping duty orders on frozen warm-water shrimp from Brazil, China, India, Thailand, and Vietnam. The duties will remain in place for another five years, at which time they will be reviewed according to the Uruguay Round Agreements Act on anti-dumping measures (USITC 2011). However, the anti-dumping measures are strongly opposed by United States seafood distributors, retailers, restaurateurs, and other businesses involved in shrimp processing and marketing, as well as by the targeted exporting countries (Buck 2004).

Opponents of the anti-dumping measures put forth three arguments against the anti-dumping measures. First, they claim that imported shrimp support about 100,000 jobs in the United States domestic processing sector and provide additional incomes estimated at more than $2 billion annually to retailers and restaurants. Second, the price United States seafood consumers pay for shrimp would increase significantly if the supply of inexpensive imported shrimp is curtailed. And, third, United States commercial shrimp harvesters lack competitiveness due to high costs of production, which cannot be alleviated by taxing imports.

Conversely, proponents of anti-dumping measures point to the loss of jobs and damage to local fishing communities caused by the depreciated prices of locally caught seafood. Additionally, they charge that United States seafood distributors and marketers make excessive profits from low-cost imported shrimp and do not pass substantial savings on to consumers. According to local fishers, "all imports do is allow fish houses to pay us less." As discussed earlier, commercial fishers complain about the difference between the price they receive from fish houses for their catch and the price the fish houses receive from distributors and retailers. Fishers are even angrier when they go into the local supermarket and see the prices consumers pay for imported shrimp. For example, a local fishers said:

> "Can't get no price for them because of all the imported stuff. You get that stuff in here and the fish houses buy it for a couple dollars a pound and they tack a $15 a pound on to it. You go right over to Food Lion and places like that and see them at $15 something like that."

*Production Costs: Aquaculture versus Trawling*

The bulk of the difference in prices between United States shrimpers and shrimpers in exporting countries stems from a difference in production costs. This fact is supported by NOAA, and acknowledge by commercial fishers in the United States. After the initial implementation of anti-dumping measures on shrimp imports, Sharp and Zantow (2005) used a simultaneous equations framework to determine how much material injury – measured by deterioration in domestic shrimp prices – was attributable to artificially low prices of imports versus other market factors. They found that the low price of shrimp imports was the result of production cost differences, rather than predatory dumping. Most shrimp from exporting countries is farm raised, which gives exporters a cost advantage over United States shrimp-boat operators who trawl for their

catch in open seas (Sharp and Zantow 2005). While the bulk of locally harvested shrimp in the United States is wild-caught, more than half of the shrimp imported into the United States is farm-raised though aquaculture[115] (NOAA Fisheries 2010b).

NOAA is currently working to develop the nations' commercial aquaculture production to reduce the nation's dependence on imports, meet the growing demand for safe, healthy seafood, create jobs for United States coastal communities, increase regional food supply and security, and help restore depleted commercial and recreational marine species (NOAA Fisheries 2010b). Local fishers know they cannot compete with farmed seafood producers. As one local fishers stated, "We can't compete with China and the other Asian markets that come over here, or Brazil. Raising shrimp and stuff we can't compete with that." However, many local fishers are highly resistant to farm-raised fish and the idea of aquaculture.

A local fisher pointed out that the resources of United States fisheries are abundant and United States fishers have the capacity to supply a greater portion of the nation's demand for seafood. He said:

> "We have 200 square miles to fish off our coast and 85 percent of our seafood is imported. Something is wrong with that picture. We don't have shrimp all year, and restaurants need to have it all the time, but 85 percent is a high number when we have the capacity and resources to fulfill a lot of that demand."

Furthermore, commercial fishing has a long and proud heritage. A transition to aquaculture would end commercial fishing as it has existed for hundreds of years. In addition, many commercial fishers claim the quality of farm raised fish is low.

[115] Aquaculture, or fish farming, refers to the breeding, rearing, and harvesting of plants and animals in all types of water environments, including ponds, rivers, lakes, and the ocean. More specifically, marine aquaculture refers to the culturing of marine species, while freshwater aquaculture focuses on the culturing of freshwater species. For example, marine aquaculture production includes oysters, clams, mussels, shrimp, and salmon, while freshwater aquaculture operations produce trout, catfish, and tilapia (NOAA-Fisheries 2010b).

According to many local fishers, imported farm-raised fish is not as good as local, wild caught seafood. One local said:

> "The pond raised stuff, which if people would realize and get a good shrimp or fish caught in the wild and get one that's pond raised they'd see all the difference in the world. That's hurt the commercial fishermen an awful lot. And all that imported stuff, it's half rotten when you get it here."

According to many commercial fishers, even though farm raised fish are cheaper than wild caught fish, the higher price is worth it. One local fisher said:

> "A lot can be done if we get the people to stop all this importing stuff and quit caring so much for the stuff they do get cheap. You know the fish cost a whole lot more when it's wild than in the pond. But, they don't know what they're getting. They have no knowledge of it. Most of the shrimp you get in a pond or whatever are mostly small uniform size and they don't taste good. Out in the wild we catch them out there 10/15s and 16/20s, which down rock shrimping we caught what we call hoppers and they get to be 5/10s – that's 5 to 10 a pound – and that's headed. Big shrimp and they're good!"

Another local fisher pointed out the vulnerability of fish farms to storm water runoff. He said:

> "There used to be a shrimp farm in South Carolina but they got contaminated when the storms came. I don't know if they're still doing it or not. I know there's fish farms, mainly catfish around here, some in Aurora and some in Pantego or somewhere. They're mainly rotten."

Fishers are on to something with the problems caused by fish farms. In addition to the threat posed to fish farms from storm water runoff, fish farms also contribute to contaminants in water runoff, which decreases water quality in estuarine areas. In a 2009 report to the Marine Fisheries Commission, the Habitat & Water Quality Advisory Committee noted a problem regarding discharge from five Hybrid Striped Bass ponds in Beaufort County, which is situated in the central region of the Albemarle-Pamlico Sound Estuary System (DENR 2009). The Department of Water Quality determined the discharges contained elevated chlorophyll and biological oxygen demand (BOD). BOD

is a measure of the concentrations of organic material in water that microorganisms are capable of breaking down. High levels of BOD indicate large quantities of organic matter. As microorganisms break the down organic matter, much of the oxygen in the water is consumed in the process. The resulting low levels of oxygen kill or cause stress to fish and other organisms in coastal waters.

In addition to arguments about quality of farmed fish and the potential for further environmental degradation, fishers love their work. In Two Rivers and the surrounding communities, fisher after fisher expressed the following sentiments, "I just love being on the water. That's all I've ever know, all I've ever done. It's independent. Nobody ever tells me anything I could do and I can't do." Retired fishers and fishers who had to quit as a result of economic hardship often lamented their current circumstances of not fishing. As one retired fisher said, "If you love working the water you can't go and work nowhere else. It's been 17 years since I quit and I want to go just as bad as the first day I come to the docks." Even though times are hard, fishers do not want to give up their livelihoods. Another local fisher added:

> "You can barely make it anymore. We're barely surviving. Crabs are not there this year. The price of shrimp – the shrimp are there but you can't get anything for it. But, we love it. We're just trying to make an honest living – and we're struggling for that."

**The Ability and Motivation of Commercial Fishers to Govern the Commons**

Fishers engage in active non-participation as a rational response to the constraints and inequities of the formal fisheries governance system. However, systemic processes are increasingly dominating the lives and livelihoods of local fisherpeople, closing the maneuverable room they have to practice informal governance of the fisheries commons. The misperceptions and misunderstandings disseminated through social visibility

campaigns by recreational and conservation interests enter into the everyday lives of commercial fishers through the disciplinary tactics of new coastal residents, whom are swelling the populations of coastal fishing communities in North Carolina at an alarming rate. New coastal residents are agents of domination; they attempt to enforce their views about the appropriate use of coastal resources and what community life should be by challenging local customs and introducing new values. The growth of new residents in coastal regions of North Carolina is part of the systemic processes exerting latent structural power on the lives and livelihoods of fisherpeople in Two Rivers.

Rampant population growth and the associated transformation of wetlands and commercial fishing infrastructure to private and commercial residential developments, the drastic increase in the recreational use of coastal resources, as well as industrial phosphate mining and competition from imported farm-raised seafood are dominating, detrimental influences on the social, environmental, and economic foundations of fisher livelihoods. Meanwhile, pressure to regulate the commercial fishing industry continues to increase as the detrimental impacts on fish populations, habitat, and endangered and threatened marine animals from population growth, development and industrial phosphate mining remain relatively invisible in relation to the manufactured visibility of commercial fishers. As the influence of these processes increasingly extends into fisher lives and livelihoods, the ability and motivation of fisherpeople to ensure sustainable fisheries governance is eroded.

The conservation ethic of local fishers is premised on hope for the continued viability of the fishing industry into the future, for themselves and their descendents. A local fisher summed up the conservation ethic of fisherpeople nicely. He said:

> "We as fishermen – the worst thing we could do is overfish. It is the very worst thing we could do unless there is no one else in our family that is going to go fishing and you're going to be the last [. . .] that is ever going to fish so you get every damn one of them. That is not the case. You can't catch everything this year because you won't have anything to fish next year. Or your sons or grandsons – I am third generation and I have had my three year old grandson on that boat. He is 5th generation. What future would he have? And that is the way most of us think about this. But yet, that message is never clear to the NGOs and special interest groups or anybody else. We are completely misunderstood. We are out there to get everything there is to catch out there. I don't know what we would do after that. We haven't figured that out yet because we haven't caught them all yet."

Commercial fisher's outlook for the future of their livelihoods is sincerely strained. A local fisher summed up the sentiments of all the small-scale fishers I came across in North Carolina. He said, "the number one question on people's mind in the fishing industry is am I going to be here tomorrow." As one retired local fisher explained:

> "They're being pressed just like I was in the industry. They're being pressed from all sides: from the land side with development, and property taxes and no place to dock their boats and insurance prices, gas prices, poor prices at the dock for their catch, and then they get out on the water and they have to face the ire of the recreational fishermen plus all the regulations from the federal government and state government. It's a tough life and it's one that you have to love to do to put up with all the mess."

Local North Carolina fishers, in Two Rivers, as well as surrounding communities consistently pleaded to be allowed to continue to fish under a fair regulatory regime, with fair trade, and social circumstances respecting of fishing livelihoods by explaining their role in society as providing a service. As a fisher explained:

> "The main thing is that we produce a food source – a quality food source. This country has always been self supporting. We are not that way anymore. If we keep closing the industry down in this country, my children, grandchildren are going to be totally dependent on everything imported. We are a food source. A lot of people don't fish. Recreational – the only people that are going to benefit from it is that individual whereas our products are distributed around the country."

Many fishers have given up hope for the future of the commercial fishing industry. International competition, rising operating costs, and increasing regulations are forcing local fishers out of the commercial industry and into alternative forms of employment. According to many fishers interviewed:

> "A lot of people are getting out, insurance rates are skyrocketing – people can't afford to insure their boats. International competition – shrimp, fish, crabs, crab meat from overseas killed domestic prices to the point where guys can't afford to stay in the business any longer."

In order to support their families, fishers have to leave the industry for other forms of employment. As another local fisher explained:

> "People are having to do something else to keep their family going. There's a lot of them bulk heading; they used to crab pot. They been carpentry, tug boat, police force, sheriff's department. They have had to change professions to survive. A lot of them that haven't done that, they are not really surviving; they're spinning their wheels. It's getting more like a resort with all of these new people around here."

The increasing difficulty of making a living from commercial fishing is breaking generations of tradition in fishing families as younger generations are unable to make a living from fishing. Many fishers stated the following:

> "The young people can't get into it and support a family. Generation after generation after generation – this was one of the first industries in North Carolina and now the young people aren't getting into it – can't get into it."

Not only are younger generations of traditional fishing families not entering the industry, but commercial fisherpeople often said that they would not recommend people just starting to enter the commercial fishing industry. Time and again fisherpeople expressed the following sentiment during interviews:

> "It is not something I would advise anybody to get into especially young people. There is nothing there – it is not there any longer. Used to you could make a living out of it. You wouldn't get rich but you could feed your family and pay

> your bills. Now you can't do that. If you don't have everything paid for you can't make it. You got mortgage payments, car payments, insurance. It's going to keep on dwindling – it is not going to come back."

Not only are fishers leaving the industry, and no new fishers are entering the industry, but the fishers left in the industry are aging out. As one local fisher explained:

> "Now there's this hassle with these groups – oh the commercial people is catching it all – we are not catching it all! It is going down every year, what we are catching. And, we are getting less and less people. The commercial fishing industry – average age is 40-plus. There are no young people coming back into it. And no more commercial fishing licenses. They've been reduced by 50 some percent in the last couple of years. It's regulating itself out because we are regulated to the point where we can't make no money."

As fisherpeople see the erosion of the viability of fisher livelihoods, for themselves and future generations, their motivation to protect their livelihoods and fishery resources is also eroded. It was heartbreaking to hear a long-time commercial fisher from an extended family of commercial fishers, who has been an avid fisheries council member say the flowing:

> "It's going to disappear. I feel that – I ought not to say this, but I feel – I said this when I got off the boat in 93, I made the statement and I still stick with it – that like the rest of people, I want to keep my son a job because he don't have any boy children. He's got one girl and that's all he's got and I'll send her away before I let her get into it. He's got to make his living. After that I don't give a damn what they do to it. I really don't; because, I've seen so much in it. I really don't care if it dries up where anymore fish could swim. You just – you try and try and people knock you down every time you try."

He went on to say:

> "As far as I can go back, all my family – my father, my grandfather, his great grandfather – they all fished. I reckon my grandfather fished before motors. They had sail boats they fished with – oystering, gill nets, traps. As far as I know, as far as I've ever gone back in the family, that's all they ever done. My son's the last one; he'll be the last of it."

## Conclusion

The lives of commercial fishers are increasingly dominated by the latent structural power of the systemic processes occurring in and around Two Rivers, North Carolina. Population growth, coastal development, mining activities and the transformation from commercial to recreational use of fisheries resources, as well as international seafood markets are destroying the social, environmental, and economic foundations necessary for fishery-based livelihoods. Meanwhile, commercial fishers bear the brunt of regulations designed to conserve fish and other marine resources. The environmental degradation and declining fish populations caused by population growth, coastal development, industrial mining, and recreational use of coastal resources remain for the most part invisible to the formal fisheries management structure. T

The ability and motivation of commercial fishers to informally govern the fisheries commons is decreased as the social, environmental, and economic viability of fisher livelihoods are eroded. Thus, although the participation of local fishers is promoted for the sake of the sustainability of the nations fisheries, local fishers and their communities are increasingly disarticulated from the fishing industry at the same time as the nation's fisheries are increasingly degraded. However, there is hope and a way forward for commercial fishers and the future sustainability of the nation's fisheries. The next chapter outlines the possibilities and potentials available to commercial fishers seeking a greater degree of control over the processes determining their lives and livelihoods.

# CHAPTER EIGHT

## ACTIVE PARTICIPATION IN ENVIRONMENTAL GOVERNANCE OF FISHERIES: POTENTIALS AND POSSIBILITIES FOR THE FUTURE OF COMMERCIAL FISHERS AND FISHERIES

The fisherpeople of Two Rivers, as well as fisherpeople in many other areas of North Carolina face a diversity of constraints in maintaining their livelihoods. Fisherpeople chose to engage in active non-participation as a pragmatic, rational response to their disadvantaged position vis a vis the manifest structural power of best available science-based conservation mandates and the greater transformative capacity of conservation and recreational fishing interests within formal processes of fisheries governance. Rather than expend valuable resources in the formal governance realm, fishers direct their energy and resources toward the informal governance realm where they have traditionally held an advantage in determining resource use, access, and allocation on their own terms. Nevertheless, in recent years the latent structural power of systemic processes – population growth, coastal development, phosphate mining, the broad-scale transformation from commercial to recreational use of fisheries resources, and competition from farm-raised seafood imports – is eroding the social, environmental

and economic foundations of fisher livelihoods, as well as their informal fisheries governance institutions.

Fishers' strategy of active non-participation is not working to their advantage. Commercial fishers are increasingly losing their place in the fishing industry and their communities at the same time as fish populations and coastal resources are increasingly degraded. Although circumstances are dire, there are potentials and possibilities for fisherpeople to gain a greater degree of control over the processes determining their lives and livelihoods, as well as the ecological health of fisheries. First, fisherpeople must take control of their own political and social visibility by switching from a strategy of active non-participation to one of active participation. Second, fisherpeople should be aware of the resources and tools within fisheries legislature that could be used to gain greater visibility and legitimacy within the formal governance system. Third, the purview of the formal fisheries governance system must expand beyond its current focus on stakeholder competition over access to and allocation of fishery resources to protection of fisheries habitat and regulation of non-fishing related activities that impact essential fish habitat. This last component consists of moving from the governance of a single natural resource complex and the people that directly use that resource to governance of the broader environmental and social factors that affect that resource. Essentially, this is a switch from natural resource governance to environmental governance, and relies on the active participation of all fisheries stakeholders, especially local fisherpeople.

**Taking Control of Political and Social Visibility though Active Participation**

In the absence of adequate political competition from commercial fishers, recreational and conservation interest groups have successfully defined commercial

fishing as *the* threat to the sustainability of fisheries. As a result, there has been a 30 percent decrease in the number of commercial fishers across the United States (NMFS 2010b) and a 65 percent decrease in North Carolina (NCDMF 2009f) between 2000 and 2008. Ironically, the drastic declines in the harvesting capacity of the commercial fishing industry have had little effect on halting or reversing the depletion of fish, or other coastal resources.

In 2005, approximately 26 percent of fish were overfished and 19 percent were subject to overfishing (Buck 2007). These numbers nearly doubled in four years. In 2009, nearly 46 percent of fish stocks were overfished and 38 percent were subject to overfishing (NMFS 2010a). Similarily, the sustainability of North Carolina fisheries are threatened. According to the North Carolina Division of Marine Fisheries (NCDMF 2010k), approximately 34 percent of fish stocks and species are categorized as being in a state of concern, while 22 percent are designated as depleted.

Population growth, coastal development, and mining activities in coastal areas contribute to the continuing decline in fish populations, endangerment of sea turtles and destruction of coastal habitat, directly contradicting the sustainability goals of the formal fishery and environmental governance systems. Furthermore, as the population of coastal areas has increased, so has the number of recreational fishers. There has been a 69 percent increase in the number of recreational fishers in the South Atlantic since 1999 (NMFS 2010b). In nearly the same amount of time, the number of commercial fishers has decreased by 65 percent decrease in North Carolina (NCDMF 2009f). While there are approximately 4,000 commercial fishers in North Carolina (NCDMF 2009f), nearly two million recreational fishers currently fish North Carolina waters every year, 1.5

million of which are yearly tourists (NMFS 2010b). Recreational fishing has been proven to have a profound and deleterious impact on fish, as well as other marine animals.

The political inactivity of commercial fishers allows conservation and recreational interest groups to shape formal fishery governance processes with minimal opposition. The result is greater regulations on the commercial fishing industry and drastic reductions in the number of commercial fishers. Meanwhile, fish populations continue to decline and coastal resources are continually destroyed as a result of population growth, coastal development, and mining activities in coastal areas, as well as recreational use of resources. The first, and most important, step to combat these trends is active participation.

Active Participation, as Opposed to Active Non-Participation

Local fisherpeople must actively participate in formal fisheries governance processes to maintain their place in the informal realm of fisheries governance. By practicing active non-participation, Two Rivers fishers have forfeited their legitimacy as fisheries stakeholders, and as a result their power to influence the decision-making processes that determine their livelihoods. Two Rivers fishers have unintentionally relied on their historical relationship with the North Carolina fishery management system, which does sometimes work to the advantage of commercial fishers. This was observable when the DMF opposed the gamefish bill and sought to forestall the closure of the gill net fishery. Yet, commercial fishers cannot continue to rely on their historical regulatory relationship with the fishery management system. The historical relationship between fishers and the regulatory structure may profoundly change in the near future

considering the strong interest of NOAA in transitioning from commercial fishing to commercial aquaculture to compete international and increase conservation of fish populations as discussed in Chapter Seven.

Moreover, political activity determines visibility – the issues up for debate, who is regulated and how they are regulated, as well as invisibility. For example, while fisheries administrators are becoming increasingly aware of the need to regulate recreational fishing and land-based development processes, commercial fishing has been publically and politically defined as *the* threat to the sustainability of fish and other coastal resources. The manufactured visibility of commercial fishers distracts attention from the damage caused by coastal development, phosphate mining, and recreational fishing, and hides the profound ecological benefits of informal commercial fisher governance practices.

Although the active non-participation of commercial fishers is an active choice based on rational calculation of means and ends, if a false consciousness exists among commercial fishers, it is the belief that their political participation has no effect on the decision-making processes determining their livelihoods. The drastic increase in fisheries regulations over the past 30 years, which picked up momentum with the implementation of the Sustainable Fisheries Act in 1996 has created a sense of political inefficacy among commercial fishers. Time and again politically inactive commercial fishers, as well as politically active commercial council representatives stated in interviews: “participation does no good;” “we’re a rubber stamp for the process;” and, the fisheries administrators “will do what they want anyway.” A council member explained the current circumstances of commercial fishers in Two Rivers, and across North

Carolina, and their mentality about fisheries political involvement. He said, "the commercial fishing outlook doesn't look good," and:

> "The only thing that can be done is if some of these young guys get involved. I have even asked my brother to go and he wouldn't go. You have to get involved. I told them if you don't get involved they are going to take your livelihood away. There's a lot of people that I know. I have been up and down this coast. I have been from one end to the other. It's just like (Two Rivers), Belhaven, here in Hoboken, Oriental, down to Wanchese. I know every one of them and their not getting involved. Most of them say it wouldn't do no good anyway. But you don't know until you go."

Political Visibility and Fisher Efficacy in North Carolina

"You don't know until you go." Although commercial fishers are indeed disadvantaged relative to conservation and recreational fishing interests, any influence gained through political participation is better than none, and the extent of that influence is unknown until political action occurs. A commercial fisher heavily involved with cooperative research projects with NMFS explained his reason for participation in formal fisheries governance. He said, "I told my boys that I could finish out my time fishing with a pirate hat but if we don't [get involved] you won't have a future in fishing." Through active participation, fishers can take control of their legitimate right to have a say in the processes determining their livelihoods, and gain a degree of power over the outcomes. As another commercial fisher heavily involved in formal fisheries governance processes said:

> "The hardest thing I had to do when I was sitting on that council was help create laws I had to go out and live with. Now there was good side to that because I could say here is a big problem they didn't think through and bring it back to them and say you might want to think about this or this is a problem because – ."

*An Example of Fisher Efficacy: Trawling for Shrimp and Crab*

Furthermore, as one commercial fisher council member recalled, his participation "has done some good at different times." He explained:

> "It has done some good at different times. I've kept the crab trawling industry open when they closed it to shrimp trawling in the Pamlico and Pungo River. They wanted to do it for *all* trawling and I said no – shrimping is not crabbing. If I had not been on that committee they would have closed it to shrimping *and* crabbing."

This commercial fisher council representative was recalling a regulation in 2006 that closed some areas and restricted several others to shrimp trawling to decrease the harvesting of juvenile fish, particularly flounder. These areas included the Pamlico and Pungo Rivers, the Neuse River, the White Oak River, and the Core Sound. (See Appendix I for maps of the closed and restricted areas). DMF scientists had found juvenile flounder to be twice as abundant in the Pamlico and Pungo Rivers compared to other areas in North Carolina, thereby highly susceptible to capture in trawl nets. The designation of flounder as a species of concern[116] by the DMF and flounder Advisory Council (Council) in 2001 gave no choice to the shrimp Council and Marine Fisheries Commission (Commission). Action to reduce the incidental capture of juvenile founder was mandatory.

During development of the shrimp fishery management plan (FMP), conservation and recreational interests attempted to promote greater regulation of the commercial fishing sector by defining the visibility of commercial trawlers. They defined the activities of trawlers as a threat to juvenile fish and habitat and promoted closure of the areas under consideration to all trawling activities as the solution. Commercial fisher

[116] Concern implies a situation where a fish stock is in danger of becoming depleted. Depleted refers to fish stocks where the spawning stock abundance is below a predetermined threshold or where low stock abundance precludes an active fishery.

Council members countered by recommending that the Commission restrict the total headrope length— the reach of a net— to 90 feet on shrimp trawls. This would restrict the size of nets and the quantity of shrimp harvested, thereby decreasing the capture of juvenile flounder, making the closure of areas unnecessary. These commercial fisher representatives likewise argued against the closure of the crab trawl fishery. Shrimp trawlers use a 1.5 inch mesh netting, which does not allow the escapement of any fish. Crab trawlers, on the other hand, use a four inch mesh netting, which does allow the escapement of juvenile fish, as well as many adult fish. To the consternation of many commercial and recreational Council members, the MFC restricted the headrope length of shrimp trawl nets to 90 feet in several areas and closed several others to shrimpers. However, the crab trawl fishery was allowed to continue without additional regulations.

This example illustrates that although there is some frustration with the process, active user-group participation does make a difference in the determination of regulations. Without the political negotiation among user-groups in the Councils and Commission, and the active participation of commercial fishers during meetings, the crab trawl fishery would have also been closed. As a council representative explained, "Anytime they have closed a river because of small shrimp and fish they closed the crab trawling down too." Without the arguments by commercial fishers that crab trawling was not a threat to juvenile fish, commercial fishers would have experienced greater hardship from the closure of the rivers to crab trawling.

Becoming Socially Visible: "Feeding Families for 400 Years"[117]

In addition to taking control of their own political visibility, commercial fishers need to actively participate in defining their own social visibility. The social visibility campaigns discussed in Chapter Six illustrated the influence that social mobilization can have on formal fisheries decision-making outcomes, as well as the everyday lives of commercial fishers. However, it is more difficult to take control of one's social visibility than it is to take control of one's political visibility. Although commercial fishers are relatively disadvantage in comparison to conservation and recreational fishing interests in the formal fisheries governance realm, the formal fisheries governance system provides extensive opportunities for fishers to become involved, and involvement is encouraged. In contrast, access to the social media necessary for commercial fishers to define their visibility on a broader social scale for the general public requires a greater quantity of resources. The factors that create inequality in political competition in the formal fisheries governance realm are compounded in the broader social realm of society. Visibility campaigns through billboard messages, websites, newspaper articles and other forms of social media require extensive time, money, and access to and knowledge of information technology.

In North Carolina, the Coastal Conservation Association (CCA), Coastal Fisheries Reform Group (CFRG) and several other recreational interest groups drew on the pooled resources of their political capital in the social visibility campaigns against gill nets. Greater access to resources through political capital is also available for commercial fishers. One opportunity is through involvement with the Commercial Fisherman of

[117] A phrase on bumper stickers disseminated by the Commercial Fishermen of America, a national association for commercial fishers.

America (CFA). The CFA is relatively new; it was organized in 2006, and is the only nation-wide organization for commercial fishers.

In 2009, the president of the Commercial Fishermen of America (CFA), a North Carolina commercial fisherman organized a meeting in Gloucester, Massachusetts to discuss strategies to build a national voice for commercial fishers (Gaines 2009). Roughly three dozen people participated. Meeting attendees included a professor of Marine Science at the University of Massachusetts at Dartmouth, who serves as a connection between the congressional delegation and the state's fishing industry; executive director of the Northeast Seafood Coalition, a nonprofit lobbying organization; executive director of the United Fisheries of Alaska; a representative of the Rhode Island Fisherman's Alliance; a former organizer for Greenpeace, who now serves as director of the Northwest Atlantic Marine Alliance; and, executive director of the Massachusetts Fishermen Partnership and president of the Gloucester Fishermen's Wives Association, to name a few.

The meeting participants discussed the need for a national education campaign to inspire appreciation and pride in the fishing community and retaliate against the negative images propagated by recreational fishers and environmentalists (Gaines 2009). The group pointed out the need to highlight the fact that commercial fishers fish to feed Americans (Gaines 2009). Fishers consistently argue that they supply an important service to the country by giving people access to fish. I was often told during interviews with fishers:

> "We are a lot of people's only method of getting a fresh seafood dinner. If they don't have a boat or a rod and reel or know somebody, the only way they could get a decent, fresh, American caught meal is through us. We provide a service and there has to be some recognition of that."

The role of commercial fishers in supplying a service to the public is made visible on a bumper sticker, "Commercial Fishermen of America: Feeding Families for 400 Years." However, the standard counter argument of recreational fishing interests is:

> "People who don't catch fish shouldn't necessarily have access to fish. Fish are a public trust resource, they are not owned by the commercial fishermen. They're making their living off a resource they don't own and didn't create."

Commercial fisherpeople describe the recreational perspective as selfish. A local Two Rivers fish explained, "A lot of people don't fish. Recreational – the only people that are going to benefit from it is that individual whereas our products are distributed around the country."

Many ideas to mobilize public support for the commercial fishing industry developed from the meeting in Gloucester. One idea consisted of increasing the understanding among the public that commercial fishing is similar to, and experiencing the same processes as family farming did in the 1980s that created bigger yet fewer farms (Gaines 2009). Attendees suggested painting commercial fishers "as green-collar workers" (Gaines 2009), stewards of the sea, and promoting the sustainable aspects of commercial harvesting and fishing practices. The CFA was also advised to capitalize on the success of the *Deadliest Catch*, a reality television series about Alaska crab fishermen on the Discovery Channel. A meeting participant said, "It's the first positive image since *The Perfect Storm*,[118] and that didn't have a happy ending" (Gaines 2009).

According to the president of the CFA, Sig Hansen, one of the stars from the *Deadliest Catch* is a member of CFA, as are a few other fishers from the show. There is

[118] *The Perfect Storm* is a movie that came out in 2000 based on a book about the real life circumstances of a sword-fishing crew from Gloucester, Massachusetts, which ran into a violent storm. The vessel and crew were never found.

a recorded conversation between Sig Hansen and the director of a documentary called *Truth: Fishing Crisis or Government Mismanagement* available on the CFA (2011) website. During the conversation, Sig discusses the importance of the CFA, the unified political action of commercial fishers, and the broader factors affecting fisheries resources, as well as the conservation ethic of fishers. As the CFA president explained, the popularity of *Deadliest Catch* is

> "humongous right now but there are only so many times you can see a crab pot come up on a boat. I want to capitalize on their popularity and that they see the need for this group and they are more than willing to do it. Their popularity is how we are going to open some doors."

Local commercial fishers could benefit from the social and political capital generated by contributing to the energy and resources of groups like the CFA. Furthermore, although joining a national group, such as the CFA is a step in the right direction, fishers can start to take control of their social visibility in their communities. As the president of the CFA said:

> "There is a need to educate the American public. I have never turned down someone to talk to about why I do what I do and why I am frustrated with the process – never. If we get enough people interested in shining the light on the subject, I got truth behind me."

Each opportunity by a commercial fisher to make the 'truth' about commercial fishing visible to "strangers" and other misinformed people they come across is a boon for the broader community of commercial fisherpeople. The local fisher who took the opportunity to talk to a class of 12$^{th}$ grade science students about the commercial fishing industry is a prime example of one person starting to take control of and responsibility for the social visibility of commercial fishers everywhere. As that fisher explained, he learned from his experience with the class "that people who have never encountered

someone to encounter the truth with them never learn the truth." It is also important for fishers to recognize the value of their knowledge and skills for sustainable fisheries governance. As one local fisher actively involved in formal fisheries governance stated:

> "The observations that we take – it's instilled in us to look for changes. It could be that kind of grass don't belong here, or that kind of bird don't belong here, or what are those fish doing here, or it could be boats – not recognizing boats. Why not utilize our expertise – we don't have to have college degrees to do this. We have a skill."

**Legislative Leverage: National Standard 8 and Ecosystems Management**

Although commercial fishers are at a relative disadvantage in waging political and social visibility campaigns in relation to conservation and recreational fishing interest groups, there are powerful legislative tools available for commercial fishers to leverage for greater influence in fisheries decision making processes. The extensive fisheries co-management structure in North Carolina, as well as at the federal level exists to incorporate a diversity of viewpoints and experiences into fisheries decision-making outcomes. The basic co-management structure created by the 1976 Magnuson Fishery Conservation and Management Act has been elaborated by the 1996 and 2006 amendments. Two important developments for commercial fishers of the 1996 Sustainable Fisheries Act (SFA) and the 2006 Reauthorized Act are National Standard (NS) 8 and the institutionalization of ecosystem-based approaches to fisheries management.

<u>NS 8 and the Ecosystems Management: The Importance of Fishing Communities</u>

The SFA formally incorporated the first definition of a fishing community into legislation and added National Standard (NS) 8, which explicitly states a dedication to

protecting fishing communities. Section 3[17] of the SFA defined a fishing community as:

> "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." [119]
>
> (MSA 1996)

Based on this definition, NS 8 states,

> "Conservation and management measures shall, consistent with the conservation requirements of this Act (including the prevention of overfishing and rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities by utilizing economic and social data that meet the requirements of paragraph (2)[120], in order to (A) provide for the sustained participation of such communities, and (B) to the extent practicable, minimize adverse economic impacts on such communities."
>
> (MSA 1996: Sec. 301[a-8])

The inclusion of the provision to consider fishing communities in management decisions is an important component of the ecosystem approach to fisheries management (EAM). The SFA created an Ecosystem Principles Advisory Panel (1999) to assess existing applications of ecosystem principles and recommend strategies to implement EAM into future fisheries management and research. The Panel (1999) defined EAM as management that takes major ecosystem components and services into account, values habitats, embraces a multispecies perspective, and is committed to understanding human-nature interactions from an ecosystem perspective. This definition was formally adopted by NOAA with explicit reference to the importance of collaboration in the management process. NOAA (2006: 2) identifies the following as defining characteristics of EAM:

[119] The guidelines developed in 1998 to help develop federal fishery management plans under the new conservation measures of Sustainable Fisheries Act clarified the definition of fishing community by noting that it referred to a place and the residents and fishery-dependent businesses and services therein.
[120] National Standard 2 states, "Conservation and management measures shall be based upon the best scientific information available."

> "(1) geographically specified, (2) adaptive in its development over time as new information becomes available or as circumstances change, (3) takes into account ecosystem knowledge and uncertainties, (4) recognizes that multiple simultaneous factors may influence the outcomes of management (particularly those external to the ecosystem), and (5) strives to balance diverse societal objectives that result from resource decision making and allocation. Additionally, because of its complexity and emphasis on stakeholder involvement, the process of implementing EAM needs to be (6) incremental and (7) collaborative."

Importantly, EAM sees and treats humans as part of the ecosystems they inhabit and use for survival, recognizes the inherent complexity of fisheries and hence the uncertainty of fisheries science, and the importance of stakeholder participation in collaborative governance processes. EAM also recognizes that natural resources are part of a broader environment, and the factors and processes which affect the health of that environment also affect the health of the resource. In this way, EAM opens the door of natural resource governance to expand into environmental governance.

Section 406 of the 2006 Reauthorized Magnuson Act formally instituted the application of EAM and reemphasized incorporation of stakeholder participation as a requirement in fishery governance processes (MSRA 2007). However, the Reauthorized Act also restated a dedication to the use of the best available science in all fishery management processes, especially the implementation of EAM. Yet, the best available science mandate is to an extent inimical to many components of the EAM processes, specifically those associated with the collaborative processes involving stakeholder participation.

Constraints and Opportunities: Best Available Science and Collaboration

One of the primary reasons to promote the increased participation of fisheries-dependent people and other user-groups stems from recognition of the complex nature of fisheries ecosystems. The primary benefit of including resource-dependent people for

ecosystem approaches to fisheries management (EAM) is consistently sited as: local communities and actors are more aware of the intricacies of local ecological and social practices and processes, which encourages more effective information gathering, monitoring and enforcement (Armitage et al. 2009). The contextualized and experiential, local knowledge and practices, which give rise to practical knowledge, informal governance processes, and the ability to improvise in the face of unpredictability are claimed to be the key stone of effective and sustainable collaborative arrangements, the solution to inherently incomplete scientific understandings of coupled human-biophysical systems (Dietz, Ostrom, and Stern 2003). Collaborative efforts are also described as having qualities that remedy the failures of traditional command-and-control management processes; they are more responsive, flexible, and likely to work toward compromise and workable solutions, as opposed to state bureaucracies that are slow, rigid, and paralyzed by diverse, broad-based constituencies (Fiorino 2004).

*Constraints of Best Available Science Mandates*

The best available science mandates of the ESA and Magnuson Act contradict the benefits of the ecosystems-approaches to fisheries management (EAM). Conservation goals based on the best available science mandate create a consistency in the pattern of decision-making processes, which delegitimizes the experiences and knowledge of commercial fishers, as well as other user-groups. As Carolan (2008a; 2008b) noted, the best available science mandate assumes that good science rests upon objective, value free data, often defined as quantifiable, empirical information, collected according to the positivistic method. A local Two Rivers fisher explained his experiences participating in best available science-based management processes:

> "I've been an advisor on the Atlantic States Marine Fisheries Commission; I've been an advisor on the Mid-Atlantic Council; I've been advisor on the South Atlantic Council and I've been on six or seven advisory panels in North Carolina and New Jersey. I've been on the crab advisory, shrimp advisory, finfish advisory, the advisory committee for the Fisheries Reform Act. After I put most of my time in trying to get on every panel I could to try to see if I couldn't help the fishermen, my son and other people like him, especially when I knew a lot of the things they were saying simply weren't true. But they would tell us that what we say is not scientific and there's nothing to it. But yet they wanted to put us down with tracking devices, monitor where we've been and went – they wanted to know how many tows we made; how long we towed it; what depth of water we were in; what the weather conditions were – they wanted all that information from us but yet we had no say. They basically were saying we'll listen to you because the Magnuson-Stevens Act says we have to but what you say isn't going to mean a hill of beans to us. And, it didn't. In roughly around 10 to 12 years all together, I could honestly say I don't think they did one thing that was half suggested by a fishermen that I know of – not when I was on there. It all comes down to science and fishing is not considered science."

The premises for collaborative governance are undermined and the problems of command-and-control scientific management are reinforced as the best available science mandate dictates appropriate courses of action, for scientists, administrators, and civil society members; and, the role of stakeholder groups in governance processes is limited to choosing among policy options generated by statistical and fisheries science committees. However, the inherent complexity of marine environments and populations lends to incomplete and uncertain scientific knowledge, which creates space for user groups to influence the policy process. When commercial fishers abstain from formal political processes, recreational and conservation interest groups gain a greater degree of influence; and, conservation becomes a regulatory tool to control commercial fishers, rather than a joint venture, which uses the extensive skills and knowledge of fisherpeople to enhance sustainable natural resource use.

*Opportunities created by Fisheries Legislation*

Political participation, even when it is constrained by legislative protocols and imperatives which determine the roles of participants and rules of participation, gradually wears on the despotic power of such of mandates, causing change in seemingly intractable structures and processes. In a process Skocpol and Amenta (1986) call policy feedbacks, administrative bureaucracies and policies are made and remade in a never-ending flow of politics. This process of change is possible because bureaucratic organizations and legislative imperatives are not just structuring forces in political life, they serve as resources and platforms for the organization of political associations and pressure groups (Skocpol 1985). NS 8 and the institutionalization of EAM in fisheries legislation are powerful tools and platforms for commercial fishers to gain greater leverage in working at the cracks and spaces for influence created by the incomplete and uncertain fisheries science in relation to opposing stakeholder groups, as well as administrators and scientists.

NS 8 of the Sustainable Fisheries Act specifically and explicitly states the importance of considering and minimizing the adverse impacts of regulations on fishing communities, as well as the importance of maintaining the sustained participation of fishers and fishing communities in the fishing industry. And, the importance of fisher and other stakeholder-group participation in governance processes for the sustainability of fisheries and habitat is pervasive throughout the fishery and environmental legislation guiding fisheries governance. It is observable in the organizational structure of the councils, committees, commissions and panels, as well as the greater integration and

coordination with NEPA and the ESA.[121] There are even precedents for the incorporation of fishers in cooperative fishery research projects. The visibility fishers could gain from these opportunities has the potential to moderate the constraints of the best available science mandates, enhance ecosystem approaches to management, and increase the legitimacy of fisherpeople's local ecological knowledge, thereby ensuring the sustainability of the nation's fisheries.

**Broadening Fisheries Governance to Environmental Governance**

The active participation of commercial fishers in formal fisheries governance processes and more effective use of existing fisheries legislative tools and resources could help to shed light on the truth about the impact of commercial fishing on the health of fish populations and other marine mammals. However, sustainable fisher livelihoods depend on more than participating in the decision-making processes that determine fisheries rules and regulations concerning access and allocation to fisheries. Sustainable fisher livelihoods depend on sustainable fisheries habitat. The detrimental impact of population growth, coastal development, and industrial phosphate mining on fishery resources and essential habitat requires the broadening of fisheries governance.

The authority of the fishery governance system needs to extend to factors outside the activities of fishers that affect fish, other marine animals, and fish habitat in order to ensure sustainable fisheries. This consists of moving from the governance of a single natural resource complex and the people that directly use that resource, fisheries and fishers, to governance of the broader environmental and social factors that affect that resource, in this case, fisheries and fisheries habitat. Essentially, this is a switch from natural resource governance to environmental governance, and relies on the active

[121] This is discussed in Chapter Four.

participation of all fisheries stakeholders, especially that of local fisherpeople. Fortunately, as detailed below, a legislative infrastructure already exists for the broadening of fisheries governance to environmental governance.

Essential Fish Habitat and Coastal Habitat Protection Plans

As a result of greater coordination with the ESA, the SFA requires the eight Regional Fishery Management Councils to amend federal fishery management plans (FMPs) to include provisions for the protection of "Essential Fish Habitat" (EFH), as well as end overfishing and rebuild overfished stocks. According to NOAA, essential fish habitat includes all types of aquatic habitat where fish spawn, breed, feed, or grow to maturity (Blackhart, Stanton, and Shimanda 2006). The 2006 Reauthorized Act requirement that fisheries administrators implement ecosystems-based approaches to fisheries management (EAM) grew out of the need to protect essential fish habitat. Parallel to the provision that regional FMPs include plans for the protection of essential fish habitat, the 1997 North Carolina Fisheries Reform Act (FRA) stipulates the development of a coastal habitat protection plan (CHPP) for wetlands, spawning areas, threatened/endangered species habitat, primary and secondary nursery areas, shellfish beds, submerged aquatic vegetation and outstanding resource water[122] (NCGA 1997).

The CHPP defines essential fish habitat as freshwater, estuarine, and marine areas that support juvenile and adult populations of recreationally and commercially important fish, shellfish, and crustacean species, as well as forage species important in the food chain of such fish (Deaton et al. 2010). Essential fish habitat also includes land areas that are adjacent to, and periodically flooded by rivers and coastal waters. There are six fish

[122] Outstanding Resource Waters is a classification intended to protect unique and special waters that have excellent water quality and exceptional state or national ecological or recreational significance.

habitats based on distinctive physical properties, ecological functions, and requirements for living components of the habitat. These are: wetlands, submerged aquatic vegetation, soft bottom, shell bottom, ocean hard bottom, and water column. The inclusion of the CHPP requirement to protect essential fish habitat has the potential to expand the purview of fisheries governance to environmental governance of land-based, non-fishing related activities that affect the health of fisheries. As one administrator explained:

> "In 1997 the General Assembly passed the Fisheries Reform Act, which completely changed the way that we managed and regulated fisheries in North Carolina. [. . .]. Part of that was the requirement that the state of North Carolina adopt what it calls a coastal habitat protection plan. That plan was adopted in late 2004. It was recognized by the General Assembly at that time that our coastal habitats are critical to maintaining our fisheries and the fish populations. We've seen – a good example is river herring; right now there's a moratorium, you can't even catch them because the population is in such bad shape. A lot of that is due to habitat alterations, habitat changes in the northeast part of the state – bridges, culverts, highways crossing over traditional spawning areas for river herring and residential areas have kept them from being able to migrate back up into those most protected waters where they used to lay their eggs and juvenile fish used to spend those critical first few weeks of their lives before they migrated back out. For some reason the fish are not coming back into those areas. We know they can't get to a lot of the areas but they're not even coming up to the impediments themselves any longer."

The legislative goal of the CHPP is long-term enhancement of coastal fisheries through protection of coastal habitats (Deaton et al. 2010). CHPP provides a framework for management actions to protect and restore habitats critical to North Carolina's coastal fishery resources. The CHPP describes and documents the use of habitats by species important to coastal fisheries, the status of these habitats, and the impacts of human activities and natural events on those habitats. The Coastal Resources Commission (CRC),[123] Environmental Management Commission (EMC),[124] the Marine Fisheries

[123] The CRC enacts rules to manage development and land disturbing activities along estuarine and ocean shorelines, shoreline stabilization, alteration of submerged bottoms and coastal wetlands, and marina construction.

Commission (MFC),[125] and several other state agencies work in collaboration to approve and implement the plan and to increase its effectiveness. These three Commissions have regulatory jurisdiction over coastal resources, water, and marine fishery resources.[126]

Economic Development and Protection of Essential Habitat

Population growth, coastal development and phosphate mining in ecological sensitive areas are significantly detrimental to the health of fisheries, and essential fish habitat. This fact has been recognized by the North Carolina state legislature and plans have been developed to minimize the effects of land-based development and industrial practices on wetlands and the water column, and the future health of fisheries. However, economic considerations are often times weighed more heavily than environmental needs. As a fisheries scientists explained:

> "We try to put in regulations but the developers and other lobbies have such a strong voice that you try to do things to protect these areas - that's where the politicians come in. No you aren't going to allow this stuff to happen we need the tax base – we need that – we need this. PCS[127] is a great example. Environmental disaster is happening now as we speak."

Another fisheries administrator also explained that while some inroads in environmental protection were being made, environmental considerations were taking second place to economic growth and development in coastal counties. He said:

> "There is some talk about trying to get language put into the local land use plans with regards to habitat protection, conservation along the shorelines. There's

[124] The EMC has wide-ranging authority over activities affecting water quality statewide. Rules adopted by the EMC govern point and nonpoint discharges, wastewater management, alteration of non-coastal wetlands, and storm water management.
[125] The MFC manages commercial and recreational fishing practices in coastal waters through rules implemented by the Division of Marine Fisheries (DMF).
[126] The Division of Coastal Management (DCM) and North Carolina Wildlife Resources Commission (WRC) are also involved in implementing CHPPs. The DCM implements rules adopted by the CRC; and, the WRC has a direct role in the management of fisheries through the designation of primary nursery areas in Inland Waters.
[127] Potash Corporation of Saskatchewan, Inc. (PCS) is a phosphate mining corporation in Aurora, on the Pamlico River.

> been legislation with regards to buffer rules, increasing the size of buffers (between developed areas and shorelines). The Tarpan and the Neuse have pretty serious, pretty stringent buffer regulations that have been put in place now for ten to fifteen years I guess. So you know they're starting to look at it but it's very difficult. The homebuilder's associations, the lobbyists for the developers are very strong. To get anything meaningful put into place at this time is very difficult. Especially when you're talking about a tax base, you're talking about jobs. Right now unfortunately the environmental community – the ecological aspects of a lot of this are taking second place to the need for these counties to find some way to produce financially. It's a tough balancing act."

The resources and capacities of economic interests, homebuilders' associations, lobbyists for developers, and PCS outweigh the ability of fisheries administrators to levy regulations on land use. Even though the legislative infrastructure to expand fisheries governance to control the impact of coastal development and industry on fisheries habitat exists, economic development and growth remain relatively invisible in regard to who is targeted by fisheries regulations and how. The result is fishers bear the brunt of regulations directed toward the conservation of fish populations. According to a fisheries scientist:

> "One of the bigger issues here is we're losing habitat left and right. That is something you will never get back. We can manage and do everything you want to these fish but if we don't protect this habitat area where the juveniles need to grow up – . Sometimes I feel like we're doing as much as we need here but the fishermen are the ones always getting the burden of 'well we have do something and you're the ones we see.' We aren't coming back and saying well it was a bad idea to put that marina there we want you to take it out – that not going to happen. But that area is lost. It will never produce the numbers of young it used to produce and so that is a net decline in overall productivity. Yet who is going to be blamed for that? The fishermen. Numbers (of fish) are going down. Well, it's the fishermen. The fishermen gets the fish; they must be the ones doing it."

Fisheries Stakeholder Participation in Coastal Habitat Protection

The absence of commercial fishers from formal fisheries governance processes has given commercial and recreational interest greater leeway in determining fisheries regulations. Similarily, the absence of commercial fishers and other fisheries

stakeholders from broader environmental governance processes has allowed opposing user groups, such as PCS, homebuilders' associations, and lobbyists for residential and commercial developers greater leeway in determining the broader economic practices affecting essential fisheries habitat. As recreational and conservation interests define the issue as overfishing and the solution as reduction in the harvesting capacity of the commercial fishing industry, the impacts of recreational fishing, coastal development, and industrial phosphate mining remain invisible as fishery habitat is degraded and fish populations and other marine resources are declining. All fisheries stakeholder groups must become involved in the environmental governance of fisheries to ensure the future health of the nations' fisheries.

*Two Rivers Fishers: Caught between Environmental Costs and Economic Rewards*

Two Rivers fishers are very aware of the factors causing declining fish populations and the consequences for their livelihoods. As one local fisher explained:

> "I'm not an environmentalist. But I know what I see and I know I've seen this water go downhill, and that's what's killing all the fish. I know it has to do with Texas Gulf[128] and all the development. I know that it's killing these head waters and the fish in the river and eventually it is gonna kill Pamlico Sound. It's gonna happen. I say it's gonna happen within 25 to 50 years. And then you can have all the environmental change you want. I'm not saying it will kill it to the point that it's completely extinct but it will kill it to the point where commercial people will no longer be able to make a living. It'll be completely shut down to them."

However, fisherpeople are conflicted when it comes to the detrimental impacts of industrial mining, coastal development, and the in-migration of new residents on fisheries resources and the economic benefits. Coastal development and PCS create alternate employment opportunities for local fisherpeople, which are seen as increasingly necessary in light of the growing difficulties of making a living from fishing. One Two

[128] The name of the corporation that owned the phosphate mine before PCS.

Rivers native explained the economic importance of coastal development and new comers to the area. She said:

> "The beachers help the community. They bring money in. I mean it helps [the local store owner] out. If they didn't shop with her it would be bad on her. It would hurt everybody if they didn't come around. They buy land; they have to have a house built; a pier if they are on the water or bulkhead if they are on the water."

Local Two Rivers fishers also discussed the importance of the jobs created by PCS. One local fisher said, "I mean it's helped people with hard working jobs and all, even if it's not helped the water people or the water either." Another Two Rivers fisher expressed his exasperation with the environmental and economic impacts of PCS. He declared:

> "I don't care if it's blown up. But it won't make no difference. What they've roughly done, they've virtually wiped out my generation or people that was raised in my family – they've wiped out a living basically. Now I don't – don't get me wrong, I mean I know people have to have jobs. But people had jobs before they come here. I had a job before Texas Gulf come here; and I'll have a job if I live long enough after they leave. But Texas Gulf is probably doing the best they can, doing as much as they can; but they're in it for the dollar bill and you don't take and pump 50 or 60 million gallons of water in an estuary the size of that this is without making some damn bad environmental changes."

The conflict fisherpeople feel about the employment opportunities generated by coastal development and phosphate mining leads to their inaction with regard to environmental protection.

*The Coastal Conservation Association: Focused on Opposing Commercial Fishing*

Interestingly, recreational interest groups, such as the Coastal Conservation Association (CCA) are not involved in protection of land-based fisheries habitat either, regardless of the coastal conservation portion of the association's name. When I asked about the efforts of the CCA in protecting fishery habitat, a member told me:

> "Well we got a lot of people that work hard with shellfish recycling because that is habitat. We got another bill introduced this session that's – some of the salt water fishing funds[129] are dedicated to building this really nice deep water oyster reef in the Engelhard area – pretty neat idea. It will be an oyster sanctuary – no harvest allowed. There will be no destructive gear and no trawling, which nobody will drag across it anyhow because they'll tear their gear up. But you would be allowed to go in and wrap up that area with a gill net. So we are using recreational funds to the tune of $1 million to build this reef using recreational funds. We said if you are going to build an oyster sanctuary and you are going to say it's a sanctuary for oysters keep the destructive gear out. Make it against the law to use *any* commercial gear within 100 yards of the oyster sanctuary. So, yeah we're involved with habitat."

The CCA is very active in oyster shell recycling, which is beneficial to water-based fish habitat. However, they are more concerned with closing areas to commercial fishing than they are protection of fish habitat. As the above statement explains, where commercial gill nets would be allowed in the new oyster sanctuary, the CCA was petitioning to close the area to all commercial fishing.[130] When I asked if the CCA was involved in land based habitat issues, I was told:

> "No we aren't. The CCA isn't. There are a bunch of conservation organizations that are more oriented towards land acquisition and doing things with habitat in that sense."

This is surprising. Land-use has the largest impact on the health of fisheries as discussed in Chapter Seven; and, the stated purpose of the CCA (2010b) is to:

> "advise and educate the public on conservation of marine resources. The objective of CCA is to conserve, promote and enhance the present and future availability of these coastal resources for the benefit and enjoyment of the general public."

The CCA and many other recreational and conservation interests continue to blame the commercial use of resources for declining fish populations, while ignoring

[129] Funds collected from the sale of the coastal recreational fishing licenses in North Carolina.
[130] The consequences for the commercial fishers in the area are unknown at this point; but, Engelhard is one of the last communities in the region primary consisting of commercial fishing and commercial fisherpeople

other factors, including the recreational use of resources. A CCA member explained the association's position on commercial and recreational use of resources from his own perspective. He said:

> "I'm not a tree hugger. I'm not a terrorist. I consider myself a conservationist. I don't think we would have a lot of the wildlife in this country right now if the sportsmen of the time didn't stand up and do what they did when they did it. Market hunting ducks to the point of extinction, shooting all the buffalo you can. The people who have allowed the resources to thrive are the people who use the resources for sport."

Meanwhile, in 2002 recreational landings accounted for 23 percent of the total take of threatened fish species in the United States, which increased to 38 percent in the South Atlantic, 59 percent along the Pacific Coast, and 64 percent in the Gulf Mexico (Coleman et al. 2004). These numbers have surely increased since 2002. There has been a 69 percent increase in the number of recreational fishers in the South Atlantic since 1999 (NMFS 2010b). The continuing and purposeful lack of attention to the impact of recreational use of resources, as well as the narrow focus on criticizing commercial fishing allows the activities that truly cause the degradation of fisheries resources to persist.

Protecting Habitat: Collaboration between Administrators, Scientists and Fishers

The substantial economic and political capital of PCS and residential developers, paired with the active non-participation of recreational interest groups and commercial fishers in environmental governance activities related to protection of essential land-based fisheries habitat reinforce the manufactured visibility of commercial fishers and the invisibility of coastal development, phosphate mining, and recreational use of fisheries resources. However, on the positive side, the Sustainable Fisheries Act and the North Carolina Fisheries Reform Act actually supply powerful legislative tools for fisheries

stakeholders to leverage against detrimental land-use practices. This is especially true in North Carolina where a multitude of state agencies with authority over development processes are involved in the development, implementation, and oversight of CHPPs. These agencies are the Coastal Resources Commission (CRC), Environmental Management Commission (EMC), and the Divisions of Water Quality (DWQ), Air Quality (DAQ), Water Resources (DWR), Land Resources (DLR), and Coastal Management (DCM). The North Carolina Wildlife Resources Commission (WRC) and the Marine Fisheries Commission (MFC) are also involved.

The CRC enacts rules to manage development and land disturbing activities along estuarine and ocean shorelines, shoreline stabilization, alteration of submerged bottoms and coastal wetlands, and marina construction. The EMC has wide-ranging authority over activities affecting water quality statewide. Rules adopted by the EMC govern point and nonpoint discharges, wastewater management, alteration of non-coastal wetlands, and storm water management. EMC rules are implemented by several different agencies, including the Division of Water Quality (DWQ), Division of Air Quality (DAQ), Division of Water Resources (DWR), and the Division of Land Resources (DLR). The DLR administers rules adopted by multiple regulatory commissions, including the EMC, Sedimentation Control Commission, and the Mining Commission. And, the Division of Coastal Management (DCM) implements rules adopted by the CRC, while the North Carolina Wildlife Resources Commission (WRC) has a direct role in the management of fisheries through the designation of primary nursery areas in Inland Waters, including many anadromous fish spawning areas, and regulation of fishing in those waters.

The role of the Marine Fisheries Commission (MFC) in the development, implementation, and oversight of the CHPP provides an opportunity for fisheries stakeholders to become politically visible on issues affecting fisheries habitat. And, the efficacy of fisheries stakeholder in such activities could be bolstered by the awareness, deep concern and frustration of fisheries administrators and scientists with the detrimental impacts of land-use practices on fisheries resources. Collaboration among commercial fishers, recreational fishers, and conservationists with fisheries administrators and scientists in the environmental governance of fisheries is very possible. It could have profound potential to moderate if not halt and reverse the degradation of essential fisheries habitat.

**Conclusion: "Keeping the Elephants Off the Dock"**

In light of the multitude of factors that affect fish populations, regulations inordinately directed toward the commercial fishing industry are, in the words of one commercial fisher, tantamount to "keeping the elephants off the dock." The brunt of the responsibility for conservation of fisheries resources is placed on the commercial fishing industry. The combined detrimental impacts of population growth, coastal development, and industrial phosphate mining, as well as recreational use of fishery resources remain relatively invisible in relation to the manufactured visibility and, subsequent, delegitimization of commercial fishers. The result is: although the participation of commercial fishers in formal fisheries governance processes is encouraged, commercial fishers are increasingly disappearing from the fishing industry and their communities, and fishery resources are becoming increasingly degraded. The future of small-scale commercial fisherpeople and the sustainability of fisheries lies in active participation to

make the invisible visible and in broadening the focus of fisheries governance to environmental governance of fisheries.

There are a multitude of potentials and possibilities in existing fisheries and environmental legislation that could serve as tools and resources for fishers seeking a greater degree of control over their lives and livelihoods. One potential opportunity is provided by NS 8 of the Sustainable Fisheries Act, which requires the protection of fishing communities, and their sustained participation in the fishing industry. Another potential resource is the 2006 Reauthorized Magnuson Act, which requires fisheries administrators to implement ecosystem-based fisheries management. Ecosystem approaches reaffirm the importance of the participation of fishers in formal processes of fisheries governance to rectify the inability of scientific knowledge to account for the inherent complexity and uncertainty of fisheries.

Ecosystem approaches also supply the foundation for expanding fisheries governance to environmental governance of fisheries. In addition to ecosystem-based approaches to fisheries management, there are other resources for fishers wanting to engage in environmental governance of fisheries. At the federal level, fishers could leverage the mandates of the ESA and Magnuson Act Amendments to protect essential fish habitat. At the state level, in North Carolina, fishers have access to the tools supplied by the 1997 Fisheries Reform Act, which mandates the development of a Coastal Habitat Protection Plan to protect essential fish habitat from detrimental land-use practices. However, the first, and most important step for commercial fishers is to actively seize their legitimate right to engage in formal fisheries governance processes so that they may

control their own visibility, as well as make the invisible visible. Only commercial fishers can shed light on the needs of fisheries governance from their unique position and the experiential, local knowledge proclaimed as invaluable in federal and state fisheries legislation, as well as by researchers and practitioners of commons governance.

# CHAPTER NINE

# CONCLUSION

## VISIBILITY, LEGITIMACY, AND POWER: IMPLICATIONS FOR SUSTAINABLE GOVERNANCE OF THE FISHERIES COMMONS

There is a substantial contradiction in United States fisheries governance. While the participation of local fishers in formal fisheries governance processes is promoted for the sake of the sustainability of the nation's fisheries, local fishers are increasingly disappearing from the fishing industry and their communities at the same time as the health of the nation's fisheries continue to decline. I explored this contradiction through a case study of a community of commercial fisherpeople in Two Rivers, North Carolina. I developed the concepts of visibility, legitimacy, and power to capture the multiple levels and scales of structure and agency that shape the participation of local Two River fishers in governance activities and lead to environmental degradation.

I found that although there are opportunities for fisher participation in formal fisheries governance processes, many fishers in Two Rivers and other areas of North Carolina practice active non-participation – intentional non-involvement in formal

political activities while instead engaging in informal fisheries governance activities. The active non-participation of fishers is a strategic response to the constraints and inequities of the formal fisheries governance system. This strategy has hastened the decline of fisher livelihoods and the resources they depend upon. Nevertheless, while the situation appears dire in many ways, there is hope for the future sustainability of fisher livelihoods and fisheries resources. Hope exists in the active participation of fisherpeople in fisheries governance and the expansion of formal fisheries governance beyond its traditional focus on stakeholder competition over access to and allocation of fishery resources to protection of fisheries habitat and regulation of non-fishing related activities that impact essential fish habitat. This consists of a transition from fisheries governance to environmental governance of fisheries.

This study contributes to the literature on commons governance and the practice of collaborative management. The phenomenon of active non-participation challenges research on and the practice of natural resource and environmental governance. The great emphasis placed on the democratic participation of local resource user groups as necessary for natural resource and environmental sustainability demands a greater focus on who is and who is not participating, and why, as well as the associated consequences. The theoretical framework used here is one method of mapping the opportunities and constraints to the governance participation of natural resource dependent people and the consequences. The rest of this chapter will summarize the finding from this research and its contributions and ramifications for commons scholarship, natural resource policy, and environmental governance.

**Explaining Active Non-Participation and the Assumption of Voluntary Action**

The active non-participation of Two Rivers fisherpeople directly challenges the assumptions of Common Pool Resource (CPR) scholars and many practitioners of collaborative natural resource management. Both groups tend to assume that the natural resource dependent groups most important to sustainable governance processes will voluntarily and automatically act to engage the formal political system to protect their way of life and the resources they depend upon for a living. The unspoken proposition hidden in this way of thinking is that resource dependent groups that do not actively engage the formal political system are not involved because they do not care about the outcomes of formal governance processes or alternatively, that they agree with existing governance practices and outcomes. This perspective does not recognize power as a structural constraint or barrier to the participation of user-groups; groups are seen as free to participate, or not as they choose.

In contrast, the active non-participation of local fishers in Two Rivers illustrates that the choices resource dependent people make about governance participation are constrained. According to Scott (1985; 1990), a lack of overt resistance to existing circumstances may give the appearance of compliance or unconcern, but may actually stem from a rational response to objective circumstances. The active non-participation of Two Rivers fishers, as well as many other fishers across North Carolina represents a realistic, pragmatic response to the constraints and inequities of the formal fisheries governance system. Rather than expend their resources in an arena where they feel it will do little good, fishers direct their energy toward the informal realm where they perceive a greater probability of success. In this way active non-participation is, in correspondence

with Lukes' (2005) interpretation, an act of agentic power in that fishers are responsible for their own inaction; it is an active choice. However, this act of power, although an active choice, is premised on the consideration of opposing and constraining alternatives in contrast to the assumption of voluntary action made by CPR scholars and many practitioners of collaborative natural resource management. Recognizing the active non-participation of pertinent user-groups requires attention to broader power structures, both those that are constraining, as well as enabling of political action.

Much is said of the importance of ensuring that the 'right' participants are involved in participatory natural resource management processes. However, the voluntary action assumption has resulted in a general lack of discussion in the research and policy prescriptions of how actors are chosen, drawn into, or legitimized to participate in commons governance, or what may be the barriers to voluntary participation. Consequently, there is little discussion of how actors are excluded, or why they may exclude themselves from participation in formal governance activities. Two significant reasons for this lacunae are: CPR scholars have a tendency "to ignore how the local is often created in conjunction with the external non-local environment" (Agrawal 2001: 1657); and, explicit analyses of power as a determinant of collective action and effective local governance have been relatively neglected (Clement 2010; Jentoft 2007).

**Visibility, Legitimacy & Power: A Framework for Analysis Across Scales & Levels**

I examined the issue of participation, and uncovered the phenomenon of active non-participation by exploring power across both the formal and informal scales of fisheries governance, as well as across levels of analysis. The context for examining formal governance processes was the North Carolina fisheries governance system, while

the community of Two Rivers was where I studied informal governance processes. I examined power within the formal realm of fisheries governance at the organizational and group levels, and within the informal realm in Two Rivers at the intersection of group and systemic levels.

Power as Structure and Agency Across Levels of Analysis

I conceptualized the power of user-groups – commercial fishers, recreational fishing interests, and conservationists as "differential transformative capacity." This term borrows from Giddens (1984) – the idea that power is agency in the form of transformative capacity, and from Bourdieu (1985; 1986) – the notion that agency is constrained by the forms of capital available to groups and the context in which that capital is deployed. Thus, while all user-groups exercise power in their ability to act, their capacity to achieve desired outcomes depends upon their access to and control of economic, social and cultural resources and the context in which those resources are deployed.

I used Mann's (1993) concepts of "infrastructural and despotic power" to discuss manifest structural power at the organizational level, the institutions and organizations of the formal North Carolina fisheries governance system. Infrastructural power is observable in the extensive opportunities for user-group participation created by the co-management structure of the formal North Carolina fisheries governance system. Despotic power is observable in the actual constraints imposed on the influence of participating user-groups, as well as that of fisheries administrators by the legislative and organizational imperatives of the formal fisheries governance system, specifically mandates that require conservation measures rely solely on the "best available science."

I also used Weber's (1978) and Foucault's (1977) use of the term "domination" to examine latent structural power at the systemic level. Whereas the manifest power at the organizational level is easily observable in organizational and legislative imperatives, latent structural power is diffuse, embedded in the relationships, institutions, strategies and technologies of domination (Foucault 1980). As Foucault (1978) explained, domination is not always a choice, decision, or characteristic of an individual or group of individuals; often time it is a process or series of processes. I empirically examined the latent structural power of systemic level processes through their dominating effects on the social, environmental and economic foundations of the livelihoods of fisherpeople. I studied the disciplinary tactics that new residents apply in their micro-political relationships with Two Rivers fisherpeople; the devastation to fisheries resources in North Carolina caused by population growth, coastal development, phosphate mining, and the transformation from commercial to recreational use of resources; and, the erosion of the economic basis of fisher livelihoods caused by competition from imported farm-raised seafood.

Power in Motion: Visibility and Legitimacy

Concepts of visibility and legitimacy allowed me to examine the different types of power in motion, as constraints and resources in the political competition of user-groups. Visibility and legitimacy denote aspects of structure and agency at the group level; each represents a relationship with the governance structure as well as between groups. Visibility determines which issues are up for debate and who participates and how in governance processes, as well as who is targeted by regulations and how. Visibility is historical, political and social. Whereas historical visibility derives from past

relationships with the resource and regulatory structure, political and social visibility influence present and future use of the resource and relationships with the regulatory structure and broader public, respectively.

The visibility of resource user groups determines who has a legitimate right to participate in governance practices; and, legitimacy consigns political power to actors. Visibility and legitimacy are flexible, susceptible to manipulation by the referenced user-group or opposing user-groups. However, the differential transformative capacity of user groups shapes their ability to manage their own, or other user groups' visibility and legitimacy in relation to the organizational structure of fisheries governance and to systemic level processes. The first step to utilizing this theoretical framework is to understand the structure of the realm where political action occurs. The primary research question of this study focuses on the empirical contradiction in United States fisheries governance; thus, I started with the organizational level of analysis and formal scale of governance.

**Findings: Visibility, Legitimacy and Power in Two Rivers, North Carolina**

As discussed in Chapter Four, extensive opportunities exist for user-group participation in formal fisheries governance processes; yet, there are significant constraints to the influence of fisherpeople in decision-making processes. The despotic power of fisheries and environmental mandates that require conservation measures rely solely on the best available science delegitimizes the local ecological knowledge of fisherpeople. Marine ecosystems and fish populations are complex, chaotic, and affected by a multitude of environmental and non-commercial fishing related activities beyond the abilities of fisheries science to predict or fisheries administrators to control. Where

environmental factors and non-fishing activities are beyond the control of fisheries administrators, commercial fishing effort is not. As the loss of legitimacy constrains fishers' ability to influence fisheries rules and regulations, commercial fishing becomes increasingly regulated in order to meet conservation goals set forth in fishery legislation. And, the historical visibility of the commercial fishing industry – its historical relationship with the fisheries governance system, which was once premised on the objective of development and expansion of commercial fishing industry – draws the attention of opposing user groups whom blame commercial fishers for overexploiting fisheries resources, reinforcing an inordinate regulatory emphasis on commercial fishing.

In Chapter Five, I discussed the ways in which conservation and recreational fishing interests have leveraged the opportunities (infrastructural power) and constraints (despotic power) of the formal fisheries governance system to define the political visibility of commercial fishers as a threat to fisheries and marine resources, effectively delegitimizing fishers' governance rights regarding sea turtles, seatrout, and gill nets in North Carolina. The Karen Beasley Sea Turtle Rescue and Rehabilitation Center (Center) drew on the citizen suit provision of the ESA and the protected status of sea turtles to become politically visible and decrease the legitimacy of both commercial gill netters and the North Carolina Division of Marine Fisheries (DMF) in fishery governance processes. The Center defined the visibility of commercial gill netters as threatening to sea turtle populations and the visibility of the DMF as inadequate to the task of sea turtle protection. Gill netters suffered greater restrictions and the DMF was burdened by increased budgetary and staffing requirements. Both lost a degree of authority over fisheries governance decisions.

Recreational interests were similarly successful in decreasing the legitimate role of commercial fishers in formal governance decisions on spotted seatrout. Recreational fishing interests achieved political visibility through fisheries and state legislation and attacked the legitimate right of commercial fishers to govern spotted seatrout based on economic, conservation, and gear-conflict premises. Recreational fishing interests succeeded in defining the visibility of commercial gill netters as inconsequential participants within the spotted seatrout fishery, greedy over-exploiters, and conflictual trouble makers who pose a threat to recreational fisher safety. As a result, commercial fishers lost the legitimate right to decide when to fish and what size fish to harvest.

The political visibility campaigns of recreational and conservation interests were successful regardless of the lack of scientific support for their propositions about the negative effects of gill nets and gill netters on populations of sea turtles and spotted seatrout. This success was, in large part, possible because of the lack of active political participation on the part of commercial fishers in formal fisheries governance. In Chapter Six, I explained the lack of fisher participation as a product of rational calculation. The ability to take advantage of political opportunities, while navigating and leveraging the constraints of the formal fishery governance system depends on access to, and control of context specific resources.

Recreational and conservation interest groups possess more of the forms of capital needed to effectively engage the formal fisheries governance system. The forms of capital most effective for formal political activities include scientific and technical

knowledge and skill sets, weak forms of social and political capital,[131] and large amounts of monetary forms of capital. These forms of capital contrast with the experiential, local ecological knowledge and fishing skills sets, dense social capital, and high amounts of fishing related capital equipment of fisherpeople. Based on consideration of these factors, commercial fishers retreat to the informal realm of fisheries governance, where they dedicate their material and non-material resources toward continuation of their livelihoods from the vantage point of their communities.

Nevertheless, conservation and recreational interests also engage in informal governance of the fisheries commons. The social visibility campaigns of recreational and conservation interest groups challenge the traditional authority and legitimacy of local fishers by disseminating exaggerated misunderstandings and misperceptions of the commercial fishing industry to the general public. In Chapter Seven, I discussed how these misperceptions and misunderstandings enter into the everyday lives of commercial fishers through the disciplinary tactics of new coastal residents, whom are swelling the populations of coastal fishing communities in North Carolina at an alarming rate. New coastal residents are agents of domination; they attempt to enforce their views about the appropriate use of coastal resources and what community life should be by challenging local customs and introducing new values. The growth of new residents in coastal regions of North Carolina is part of the systemic processes exerting latent structural power on the lives and livelihoods of fisherpeople in Two Rivers.

The systemic processes impacting Two Rivers and other coastal regions in North Carolina consist of rampant population growth and the associated transformation of

[131] Weak social and political capital consists of widespread and diverse social ties, as opposed to strong social ties, which are often less diverse and more close-knit (Fukuyama 2000; Granovetter 1973). Weak ties offer greater access to diverse material and non-material resources.

wetlands and commercial fishing infrastructure to private and commercial residential developments, the drastic increase in the recreational use of coastal resources, as well as industrial phosphate mining and competition from imported farm-raised seafood. These processes are dominating, detrimental influences on the social, environmental, and economic foundations of fisher livelihoods. As the influence of these processes increasingly extends into fisher lives and livelihoods, the ability and motivation of fisherpeople to ensure sustainable fisheries governance are diminished. Meanwhile, pressure to regulate the commercial fishing industry increases as the detrimental impacts on fish populations, habitat, and endangered and threatened marine animals from population growth, development and industrial phosphate mining remain relatively invisible in contrast to the manufactured visibility of commercial fishers.

In Chapter Eight, I discussed how fishers' strategy of active non-participation works against their best interests. Commercial fishers need to switch to a tactic of active participation in which they actively engage formal processes of fisheries, as well as environmental governance. By practicing active non-participation, Two Rivers fishers have inadvertently forfeited their legitimacy as fisheries stakeholders and, as a result, their power to influence the decision-making processes that determine their livelihoods. Best available science-based conservation mandates are constraints on the influence of all fishers stakeholders, not just fisherpeople. Within these constraints, political activity determines invisibility, as well as visibility.

Political action has the power to influence visibility – the issues up for debate, who is regulated and how they are regulated. The political inactivity of fisherpeople has allowed conservation and recreational interests to politically and publicly define

commercial fishing as *the* threat to the sustainability of fish and other coastal resources. This manufactured visibility of commercial fishers distracts attention from the damage caused by coastal development, phosphate mining, and recreational use of resources, and allows the profound ecological benefits of informal commercial fisher governance practices to remain invisible.

However, through active political participation and strategic leveraging of existing legislative tools and resources, fisherpeople could gain a greater degree of control over the fisheries decision-making processes, as well as the broader systemic processes affecting the environmental basis of their livelihoods. One potential resource for fishers seeking a greater degree of control over their lives and livelihoods is provided by NS 8 of the Sustainable Fisheries Act, which requires the protection of fishing communities, and their sustained participation in the fishing industry. Another potential tool is the 2006 Reauthorized Magnuson Act, which requires fisheries administrators to implement ecosystem-based fisheries management. Ecosystem approaches reaffirm the importance of the participation of fishers in formal processes of fisheries governance to rectify the inability of scientific knowledge to account for the inherent complexity and uncertainty of fisheries.

Ecosystem approaches also supply the foundation for expanding fisheries governance to environmental governance of fisheries. In addition to ecosystem-based approaches to fisheries management, there are other opportunities for fishers wanting to engage in environmental governance of fisheries. At the federal level, fishers could leverage the mandates of the ESA and Magnuson Act Amendments to protect essential fish habitat. At the state level, in North Carolina, fishers have access to the tools supplied

by the 1997 Fisheries Reform Act, which mandates the development of a Coastal Habitat Protection Plan to protect essential fish habitat from detrimental land-use practices.

**Why Bother?: The Importance of Commercial Fishers to Fisheries Governance**

Commercial fisherpeople are not perfect. Their knowledge is not perfect, simply because no knowledge is perfect; and, their resource use practices are not always the most sustainable. As a local fisher said:

> "We try to take care of what we are doing. I mean there's some in it, like everything, they don't care what they do. How big it is, how little it is. They're, some of them catch undersized stuff and they get rid of it and people will buy it and they shouldn't sell it, and people shouldn't buy it from them when they're that small."

However, commercial fishers possess knowledge and experience essential for fisheries governance processes, formal and informal. In the formal realm of fisheries governance, the addition of commercial fishers to conservation and recreational fishing interests ensures greater diversity of perspectives and experiences. Political diversity is necessary; it acts to fill out the missing and incomplete information of fisheries science. Political diversity and competition also ensures greater inclusiveness of access to fisheries resources. However, the potential benefits of local fisher participation in formal fisheries governance are lost as the number of commercial fishers in the industry decreases. The fewer commercial fishers left in the industry, the less powerful their voice in formal fisheries politics, and the less diverse the stakeholders involved in political competition over fisheries issues.

Most importantly, the profound benefits of informal fisheries governance are lost as commercial fishers are increasingly pushed into alternative, non-fishery related occupations, as well as out of their communities. In the informal realm of fisheries

governance, commercial fishers and their communities act as guardians of fisheries resources. They see and hear about resource use-practices, changes in fish populations and habitat, and they act to protect fishery resources to ensure the perpetuation of fisher livelihoods for generations to come. The death of commercial fishers' hope for the future of their way of life represents a significant blow to the future sustainability of fisheries. At the same time, each dislocation of a commercial fisher from the industry and their community leads to greater development and further impacts on coastal resources.

The Practical Utility of this Case Study

The benefits of the participation of local commercial fishers in formal governance processes, as well as the costs of their non-involvement resonates across the management of a diverse array of natural resources, and environmental governance in general. The great emphasis placed on the democratic participation of local user groups as necessary for natural resource and environmental sustainability by commons scholars and advocates and practitioners of collaborative natural resource management demands a greater focus on who is and who is not participating in governance processes, and why, as well as the associated consequences. The case of Two Rivers illustrates that pertinent local user groups are often not involved in formal natural resource governance processes, despite the fact that environmental sustainability rests at the juxtaposition of local agency and broader social, political and economic forces. Exploring the links between visibility, legitimacy, and power has allowed this study to capture multiple levels and scales of structure and agency that shape the participation of local North Carolina fishers in governance activities, as well as the sustainability of the nation's fisheries. The utility of this theoretical framework lies in the development of a map of opportunities, constraints,

and environmental consequences, which could serve as an outline of the possibilities and potentials available to fishers and other resource dependent people seeking a greater degree of control over the processes determining their livelihoods, or researcher and practitioners of collaborative natural resource governance seeking to ensure the future sustainability of natural resources and the environment.

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# APPENDICES

## Appendix A

## Interview Protocols

### Two Rivers Fishers

*Purpose*

To illuminate illuminated the experiences of fishers in the area, changes in the industry and community, and formal and informal political involvement in fishery governance

*Overarching Question:*

What have been your experiences in this community, with the fishing industry and with fishery governance?

*Specific Questions*:

1. How long have you been in the area? Can you tell me about your experiences with fishing in this area?

2. Are you still fishing? How has fishing changed over the time you have been in the area?

3. Can you tell me about the meetings put on by the DMF or National Marine Fisheries service?
   i. What happens there?
   ii. What kinds of things do fishers talk about?
   iii. What kinds of things do scientists talk about?

4. Can you tell me about any other experiences you may have had in trying to influence fishing policies?

5. Can you tell me about the cooperative research projects, where scientists come down to ride in boats with fishers?

6. What kinds of work do you do when not fishing?

7. How do you spend your free time?
   i. What do you do for fun?
   ii. What people do you spend time with in the area?

8. What are some of the most pressing problems in the area affecting fishing?

9. Can you tell me about the community? How do you define it? What kind of people are members? Where are the geographic barriers?

10. How has the community changed since you have been living here?

11. How has the community been affected by the changes in fishing practices?

12. Can you tell me about some of the local politics in the area? What kinds of people are engaged in these activities? Are there any political activities you participate in?

13. Is there anything else you would like to tell me or is there anything else I should know about the Two Rivers community or the experiences of fishers in the area?

14. Thank you so much for your time. Do you mind if I contact you if I have any further questions when I go over the interview?

**Two Rivers Non- Fishers**

*Purpose*

To determine the affects of changing demographics on the community, informal governance processes, and formal fishery governance processes

*Overarching Question:*

What is the relationship between local non-fishers, changes in the community and the involvement of local fishers in fishery management?

*Specific Questions*:

1. Can you tell me why and when you moved here?

2. How has the community changed since you have been here?

3. Can you tell me about the community? How do you define it? What kinds of people are members? Where are the geographic barriers?

4. How do you spend your time here?
   i. Are you employed? If so, what do you do?
   ii. What do you do for fun?
   iii. What people do you spend time with in the area?

5. Can you tell me about your relationships with the local commercial fishers?

6. Have you ever attended the meetings put on by the DMF or National Marine Fisheries Service or have you participated in other activities meant to influence the local environment?

7. What are some of the most pressing problems in the area?

8. Can you tell me about some of the local politics in the area? What kinds of people are engaged in these activities? Are there any political activities you participate in?

9. Is there anything else you would like to tell me or is there anything else I should know about life in Two Rivers?

10. Thank you so much for your time. Do you mind if I contact you if I have any further questions when I go over the interview?

**Non-Local Fishers: Ex-Local and Extra-Local**

*Purpose*

To gain a point of comparison and linkage to broader factors affecting fishers in the region

*Overarching Question:*

How have changes in the fishery affected the involvement of non-local fishers in fishery management?

*Specific Questions*:

1. Can you tell me about your experiences with fishing in the region?
   (If a former Two Rivers fisher)
   i. Are you still fishing?
   ii. Why and when did you leave Two Rivers?
   iii. How has the Two Rivers community changed over the time you lived there and since you left?

2. How has fishing changed over the time you have been in the area?

3. Can you tell me about the meetings put on by the National Marine Fisheries service?
   i. What happens there?
   ii. What kinds of things do fishers talk about?
   iii. What kinds of things do scientists talk about?

4. Can you tell me about any ways you have attempted to influence fishing policies?

5. Can you tell me about the cooperative research projects, where scientists come down to ride in boats with fishers?

6. What kinds of work do you do when not fishing?

7. What is the most important factor affecting fishing in the region?

8. Is there anything else you would like to tell me or is there anything else I should know about some of the changes fishers have experienced or about their experiences in trying to influence fishing polices?

9. Thank you so much for your time. Do you mind if I contact you if I have any further questions when I go over the interview?

**North Carolina Management Personnel and User-Group Representatives**

*Purpose*

To gain relevant information about the relationship between fishers, the fishery management structure and the fishery ecosystem from the perspective of people involved directly in fisheries management.

*Overarching Question**:***

What is the overall relationship of management personal to fishers and the local ecosystem?

*Specific Questions***:**

1. What do you think of co-management practices – where government officials form partnerships with local actors to manage the fishery?
   i. Are you involved in any co-management practices?
   ii. Are you involved in cooperative research projects? How are fishers chosen to participate?

2. Do you work directly with local fishers?
   i. How are your relationships with the fishers?

3. What are the ways local fishers are incorporated into fisheries management processes?

4. What's the overall health of the fisheries? – The estuary? What are some of the most pressing problems right now with managing the fisheries?

8. Is there anything else you would like to tell me or is there anything else I should know about the fishery, estuary, or management practices?

9. Thank you so much for your time. Do you mind if I contact you if I have any further questions when I go over the interview?

## Appendix B

## Consent to Participate in a Research Study

## Colorado State University

**TITLE OF STUDY**: Visibility, Legitimacy, and Power: A North Carolina fishing community and governance of the commons

**PRINCIPAL INVESTIGATOR:**

Peter L. Taylor, Ph.D; pete.taylor@colostate.edu; Department of Sociology;
(970) 491-6043

**Co-PRINCIPAL INVESTIGATOR:**

Candace K. May, M.A.; candace.may@colostate.edu; Department of Sociology;
(970) 219-6945

**PROJECT DESCRIPTION AND OBJECTIVES**

This study is being conducted to fulfill the requirements for a Doctor of Philosophy degree. The objective of this study is to understand how commercial fishers have been affected by changes in fishing regulations, the ways that fishers or other community members were involved in forums to determine those regulations, and the broader changes experienced by the community. As a community member and/or fisher, you are asked to provide your experiences associated with the fishing industry, Division of Marine Fisheries, and/or life in the community. Locations of interviews will be determined on an individual basis and will be conducted at the agreed upon meeting place and at your convenience. The length of interviews may last from 30 minutes to a 1 hour; and, with your permission a second session may be scheduled to add clarity to my understanding of your experiences.

Interviews may be tape recorded. Initial here if you consent to the use of a tape recorder: _____

**BENEFITS & RISKS OF PARTICIPATION**

There are no direct personal benefits to participating in this research. By participating in this study you will help me learn what factors affect the involvement of fishers in fishery management processes and how the lives of fishers and community members have been changed by changes in fishing regulations. The hope for this information is that it will be helpful to local commercial fishers and policy makers.

There are no known risks to participating in this study. It is not possible to identify all potential risks in research procedures, but the researchers have taken reasonable

safeguards to minimize any known, potential, and unknown but potential, risks. The Colorado Governmental Immunity Act determines and may limit Colorado State University's legal responsibility if an injury happens because of this study. Claims against the University must be filed within 180 days of the injury.

**YOUR PARTICIPATION IN THIS RESEARCH IS VOLUNTARY.**

If you decide to participate in the study, you may withdraw your consent and stop participating at any time.

**COMPENSATION**

There is no compensation (payment) for taking part in this study.

**CONFIDENTIALITY**

I will keep private all research records that identify you, to the extent allowed by law. Your information will be combined with information from other people taking part in the study. When I write about the study to share it with other researchers, I will write about the combined information that was gathered. You will not be identified in these written materials. While the results of this study may be published, I will keep you name and other- identifying information private.

Every effort will be undertaken to prevent anyone from knowing the information you supplied, or that you participated in the study. A linked list will be used to separate your name from your research records. The list will have a code (e.g. XX001) and the names and addresses of the participants. Recorded and transcribed interviews will have the code and participant responses. The linked list which contains the code and the participant identification number will be locked in the co-principal investigator's office and on a pass code protected computer for up to 3 years. You should know, however, that there are some circumstances in which we may have to show your information to other people. For example, the law may require us to show your information to a court

**QUESTIONS?**

Before you decide whether to accept this invitation to take part in the study, please ask any questions that might come to mind now. Later, if you have questions about the study, you can contact the Co-Principal Investigator, Candace K. May at (970) 219-6945 or candace.may@colostate.edu or Principal Investigator, Peter L. Taylor at pete.taylor@colostate.edu or (970) 491-6043. If you have any questions about your rights as a volunteer in this research, contact Janell Barker, Human Research

Administrator, at 970-491-1655. We will give you a copy of this consent form to take with you.

Your signature acknowledges that you have read the information stated and willingly sign this consent form. Your signature also acknowledges that you have received, on the date signed, a copy of this document.

_____

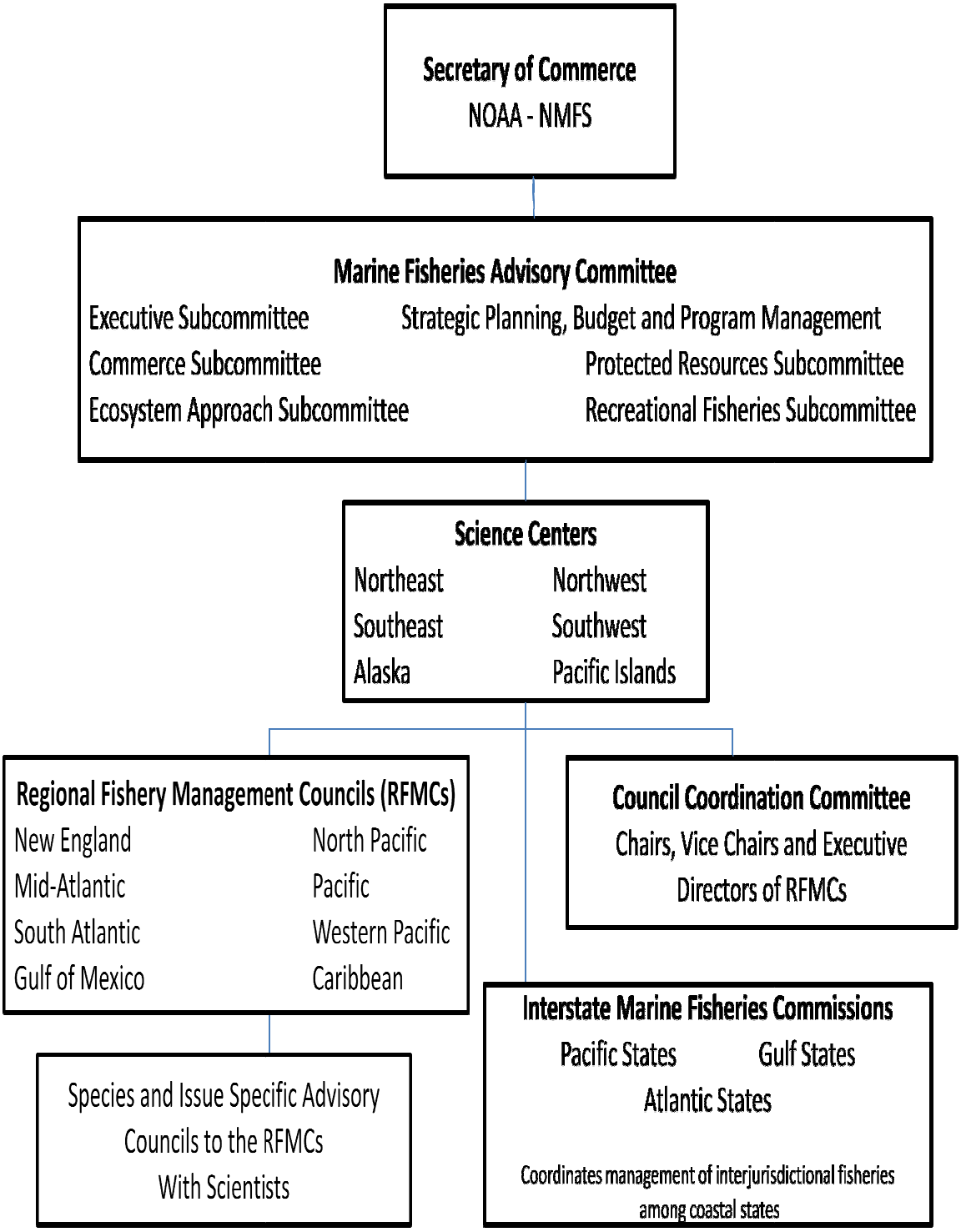
Signature of Interviewee Printed name of Interviewee Date

_____ _____

Signature of Researcher Date

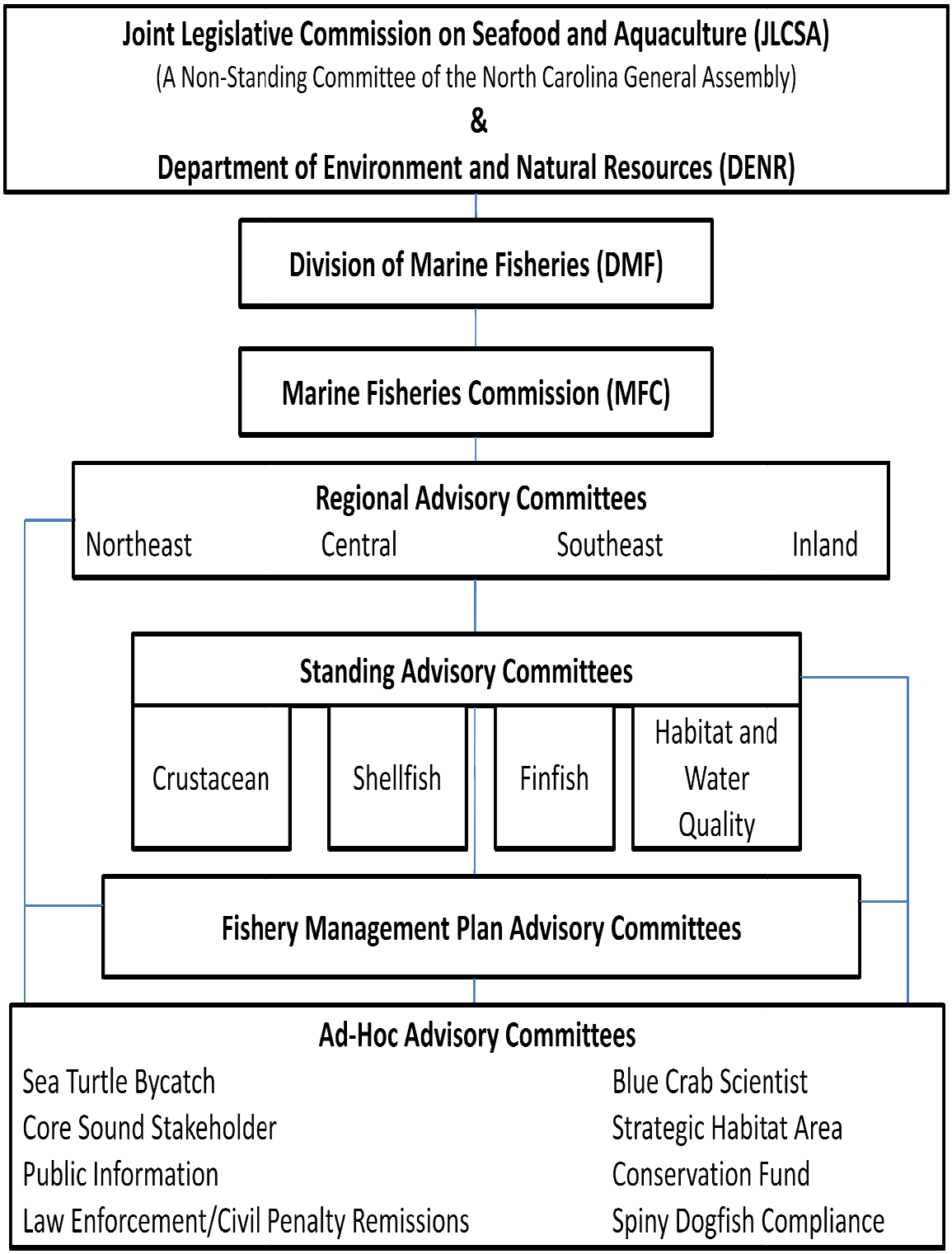
## Appendix C

### The Organizational Structure of the Federal Fisheries Governance System



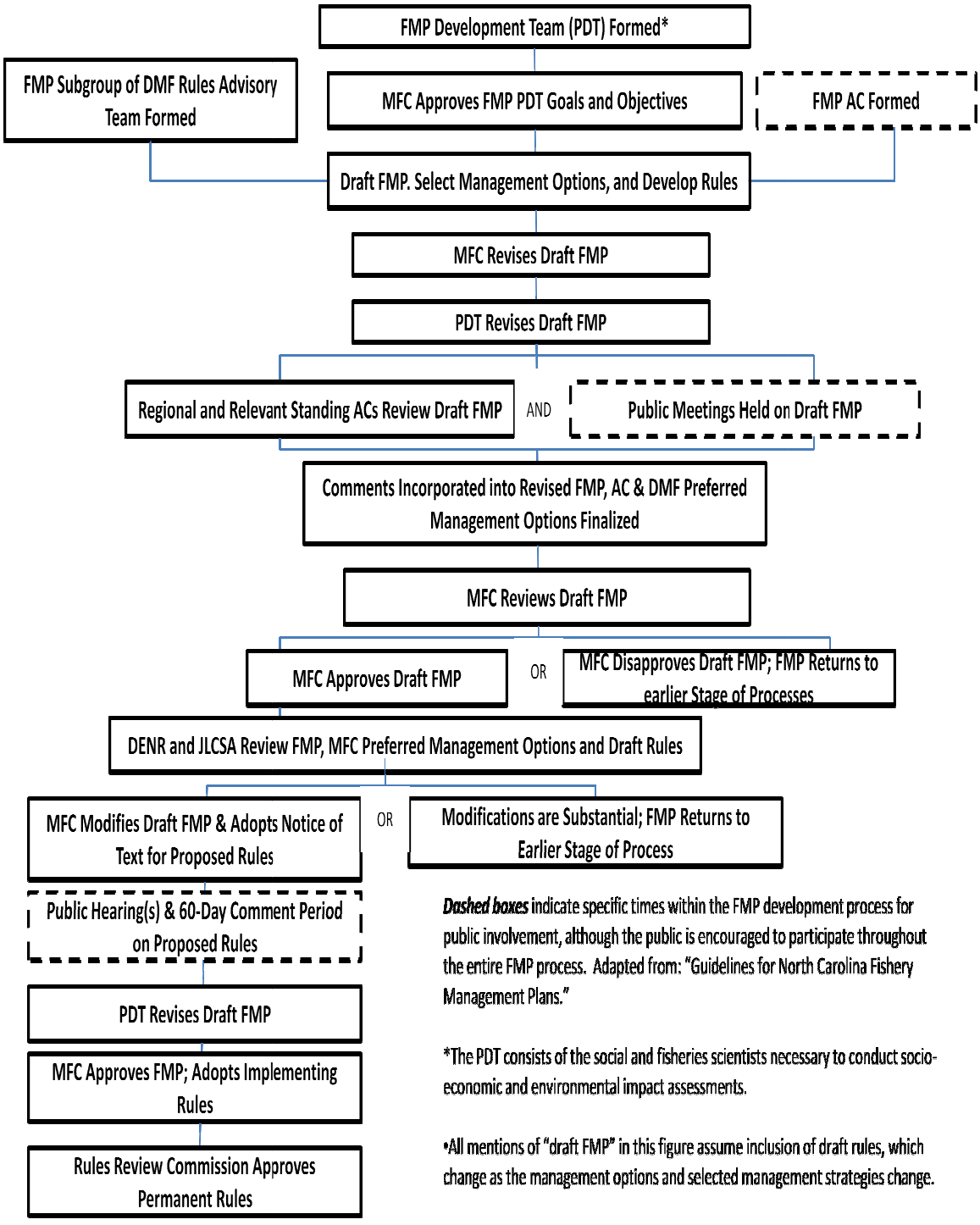
## Appendix D

### The Organizational Structure of the North Carolina Fisheries Governance System



# Appendix E

## North Carolina Fishery Management Plan and Rulemaking Process[132]




[132] (Mirabilio and Baker 2006: 4)

## Appendix F

## Human Population, Density, And Growth in Coastal Counties of North Carolina, 1990 – 2010[133]

| County | 1990 | | 2000 | | 2010* | | 1990-00 | 2000-10 | 1990-2010 |
|---|---|---|---|---|---|---|---|---|---|
| | Pop. | Persons/ mi² | Pop. | Persons/ mi² | Pop. | Persons/ mi² | Change (%) | Change (%) | Change (%) |
| Brunswick | 49,985 | 82.35 | 73,143 | 118.10 | 110,293 | 136.73 | 43.5 | 33.7 | 77.2 |
| Camden | 5,904 | 24.37 | 6,885 | 28.65 | 9,916 | 41.73 | 16.6 | 30.6 | 47.1 |
| Pender | 28,885 | 33.16 | 41,082 | 47.22 | 55,188 | 63.45 | 42.4 | 25.6 | 68.6 |
| Currituck | 13,736 | 52.55 | 18,190 | 69.59 | 23,179 | 88.51 | 32.4 | 21.5 | 53.9 |
| New Hanover | 120,284 | 602.85 | 160,307 | 803.44 | 197,548 | 1031.34 | 33.3 | 18.9 | 52.1 |
| Onslow | 149,838 | 165.37 | 150,355 | 196.04 | 180,023 | 238.16 | 0.3 | 17.4 | 17.7 |
| Pasquotank | 31,298 | 137.96 | 34,897 | 153.83 | 41,529 | 183.64 | 11.5 | 16.0 | 27.5 |
| Perquimans | 10,447 | 42.23 | 11,368 | 46.00 | 13,461 | 54.48 | 8.8 | 15.5 | 24.3 |
| Gates | 9,305 | 27.29 | 10,516 | 30.84 | 11,828 | 34.74 | 13.0 | 11.1 | 24.1 |
| Dare | 22,746 | 59.35 | 29,967 | 78.17 | 33,073 | 86.26 | 31.7 | 9.4 | 41.1 |
| Craven | 81,812 | 115.12 | 91,436 | 128.66 | 99,311 | 139.89 | 11.8 | 7.8 | 18.8 |
| Carteret | 52,407 | 101.13 | 59,383 | 114.59 | 64,144 | 126.87 | 13.3 | 7.4 | 20.7 |
| Hertford | 22,514 | 63.01 | 22,601 | 63.81 | 23,663 | 67.06 | 1.3 | 4.5 | 5.8 |
| Beaufort | 42,283 | 50.83 | 44,958 | 54.05 | 46,877 | 65.18 | 6.3 | 4.1 | 10.4 |
| Tyrrell | 3,856 | 9.84 | 4,149 | 10.58 | 4,297 | 11.05 | 7.6 | 3.4 | 11.6 |
| Bertie | 20,388 | 29.16 | 19,773 | 28.28 | 20,152 | 82.82 | -3.0 | 1.9 | -1.1 |
| Chowan | 13,506 | 78.19 | 14,526 | 84.09 | 14,763 | 85.06 | 7.6 | 1.6 | 9.2 |
| Pamlico | 11,368 | 33.40 | 12,934 | 38.00 | 12,871 | 38.24 | 13.8 | -0.5 | 13.3 |
| Washington | 13,997 | 40.41 | 13,723 | 39.65 | 13,082 | 37.58 | -2.0 | -4.9 | -6.6 |
| Hyde | 5,411 | 8.75 | 5,826 | 9.43 | 5,448 | 8.9 | 7.7 | -6.9 | 0.8 |
| Total | 710,743 | | 826,019 | | 903,549 | | | | |

[133] (Deaton et al. 2010: 11)

## Appendix G

## Top 10 Seafood Imports into the United States in 2009, Fresh and Frozen in Thousands[134]

| Top 10 Imported Fish | Value | % | Top 10 Imported Fish | Pounds | % |
|---|---|---|---|---|---|
| Shrimp | 3750000 | 29 | Shrimp | 1200000 | 23 |
| Salmon* | 1000000 | 8 | Freshwater Fish* | 471700 | 9 |
| Freshwater Fish* | 937300 | 7 | Tuna (canned) | 398000 | 8 |
| Crabs | 700200 | 5 | Tuna* | 319800 | 6 |
| Tuna (canned) | 613000 | 5 | Salmon” | 283000 | 5 |
| Salmon (whole) | 562300 | 4 | Salmon (whole) | 217800 | 4 |
| Tuna (whole) | 502100 | 4 | Groundfish * | 205300 | 4 |
| American Lobster | 480800 | 4 | Crabs | 170200 | 3 |
| Crabmeat (canned) | 391000 | 3 | Freshwater Fish (whole) | 121400 | 2 |
| Groundfish* | 398500 | 3 | Squid | 107600 | 2 |
| Assorted Other | 3764800 | 29 | Assorted Other | 1705200 | 33 |
| **$13,100,000,000** | | | **5,200,000,000 Pounds** | | |

*Fillets and steaks

[134] (NOAA Fisheries 2010b)

## Appendix H

### Shrimp Prices per Pound in North Carolina, 1972 – 2007[135]

| Year | Nominal | Adjusted |
|---|---|---|
| 1972 | 0.64 | 3.16 |
| 1973 | 0.95 | 4.42 |
| 1974 | 0.55 | 2.29 |
| 1975 | 0.98 | 3.77 |
| 1976 | 1.23 | 4.48 |
| 1977 | 1.29 | 4.42 |
| 1978 | 1.31 | 4.17 |
| 1979 | 1.97 | 5.62 |
| 1980 | 1.75 | 4.40 |
| 1981 | 2.07 | 4.72 |
| 1982 | 2.34 | 5.02 |
| 1983 | 2.22 | 4.62 |
| 1984 | 2.08 | 4.15 |
| 1985 | 1.81 | 3.49 |
| 1986 | 2.27 | 4.29 |
| 1987 | 1.85 | 3.37 |
| 1988 | 2.03 | 3.56 |
| 1989 | 1.75 | 2.93 |

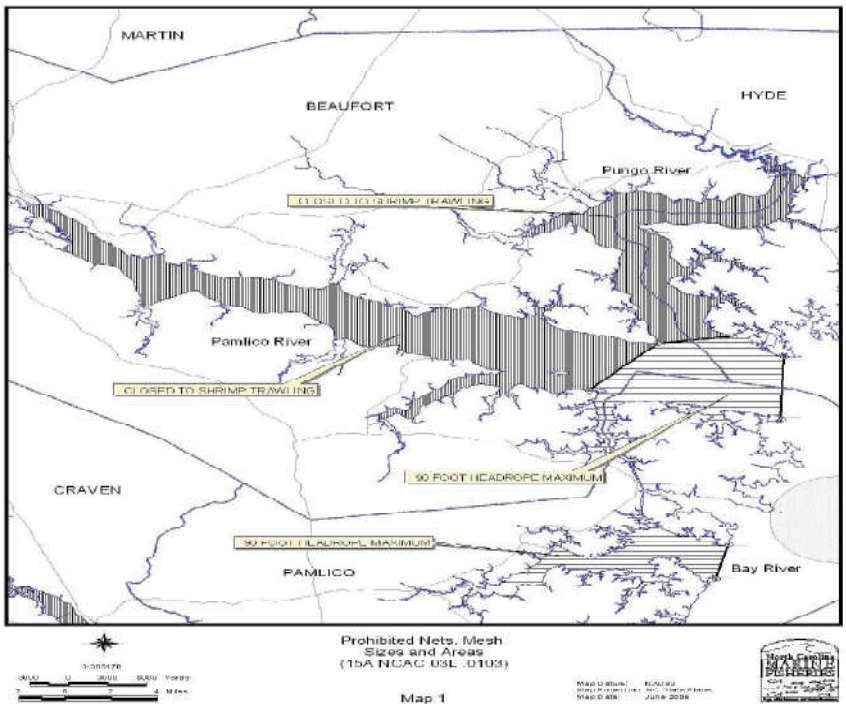
| Year | Nominal | Adjusted |
|---|---|---|
| 1990 | 2.03 | 3.22 |
| 1991 | 1.73 | 2.64 |
| 1992 | 1.98 | 2.92 |
| 1993 | 2.00 | 2.88 |
| 1994 | 2.61 | 3.65 |
| 1995 | 2.34 | 3.19 |
| 1996 | 2.54 | 3.36 |
| 1997 | 2.60 | 3.36 |
| 1998 | 2.34 | 2.98 |
| 1999 | 2.41 | 3.00 |
| 2000 | 2.46 | 2.96 |
| 2001 | 2.27 | 2.65 |
| 2002 | 1.84 | 2.12 |
| 2003 | 1.77 | 2.00 |
| 2004 | 1.94 | 2.13 |
| 2005 | 1.87 | 1.99 |
| 2006 | 1.59 | 1.64 |
| 2007 | 1.88 | 1.88 |

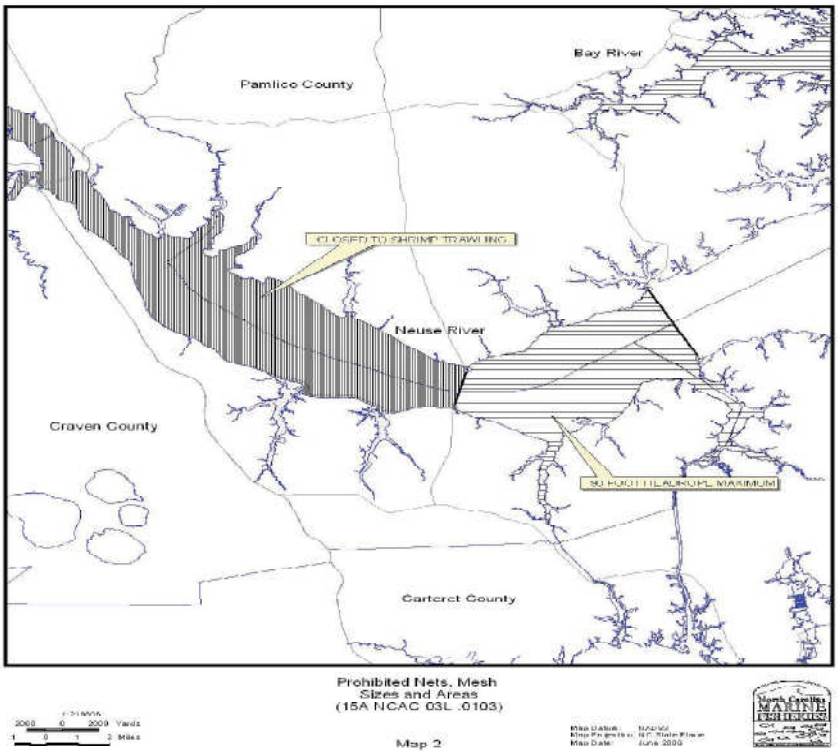
All prices are given in both nominal prices and Consumer Price Index – adjusted 2007 prices. A dollar in 1972 had the purchasing power of a little over $4.96 in 2007, so the $.63 that a pound of shrimp demanded in 1972 would be worth $3.16 in 2007.

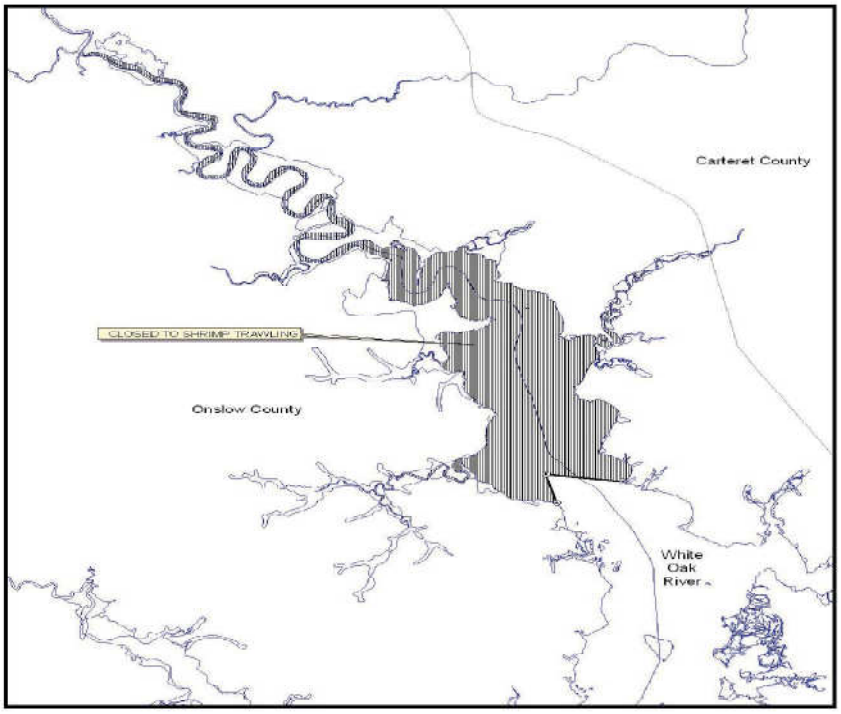
[135] (Crosson 2008:16)

# Appendix I

## Maps of Areas Closed to Shrimp Trawling in 2006

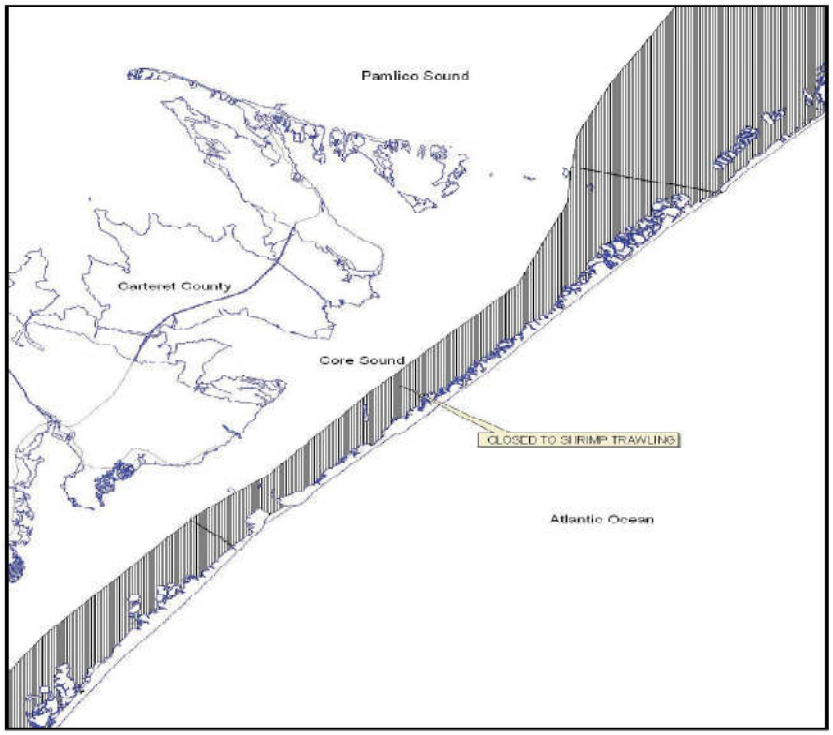





Prohibited Nets, Mesh
Sizes and Areas
(15A NCAC 03L .0103)

Map 3




Prohibited Nets, Mesh
Sizes and Areas
(15A NCAC 03L .0103)

Map 4