

EFFECTS OF ECONOMIC RESTRUCTURING ON  
HOUSEHOLD COMMODITY PRODUCTION IN THE LOUISIANA SHRIMP  
FISHERY

by

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## ABSTRACT

The Louisiana shrimp fishery has experienced a collapse in the price of shrimp since 2001. The principal reason for this collapse is increasing shrimp imports.

Examining the political economy of agro-food systems and the interrelated household economies of Louisiana shrimp fisherpeople, this thesis asks how household commodity production, where fishers own their means of production and supply most labor themselves, is being restructured by the liberalization of seafood trade.

Shrimpers have drawn increasingly on household resources (such as unwaged labor of family members) that are normally devoted to social reproduction to maintain their participation in household commodity production. In other words, households shift resources out of the family and into the economy in order to make good on losses of cash income they suffer from low prices. Households continue producing at *de facto* wage levels below that necessary to support the household on shrimping income alone.

## 1 THEORETICAL APPROACHES

### Introduction

The Louisiana shrimp fishery is in a state of crisis. This was so even before Hurricanes Katrina and Rita hit the state in 2005. The reason for this crisis is the liberalization of trade in shrimp, mostly farm raised shrimp grown in the tropics, into the U.S. market. Imported shrimp makes up about ninety percent of U.S. consumption as of 2003, and as global overproduction has become more pronounced in the shrimp industry in recent years, shrimp prices for export-oriented shrimp farmers and Louisiana shrimp fishers alike have seen dramatic declines.

This thesis asks what the effect of the imports crisis has been on the distinctive mode of household commodity production that currently prevails in this fishery. Given that fishers own their means of production and produce the necessary labor power for catching shrimp themselves outside of wage labor relations, what implications does this have on how they cope? Are they more or less capable of surviving the crisis, and how? Can household commodity production continue, given the undermining of their terms of trade since 2001? The question of the relation of social reproduction to commodity production, when both processes are collapsed into a household that is both simple commodity producer and family, is an important one for understanding this fishery. When fishers are caught in a cost-price squeeze, how are household resources restructured and towards what end? The retrenchment of household commodity production, or its end? To answer these questions, this thesis argues the ability of household commodity producers to devalue and thus exploit their own labor in shrimping

and their multiple economies in and outside of fishing gives them flexibility to survive lower prices in the short-term, but that the shift of household resources and labor from social reproduction to commodity production undermines households' long-term viability as fishers and makes the inheritance of fishing enterprises to shrimpers' children increasingly unlikely. Global economic restructuring of agro-food systems finds a corollary restructuring of how fishing households remake how they care for each other and participate in the capitalist economy. Attention to social reproduction and self-exploitation is necessary to account for this restructuring.

There is a convention in academic writing that the use of the first person is absent from professional publications. The rest of this document, apart from the methods section, conforms to this convention, but I want to first explain the context of the author in the work. In any scientific endeavor, it is impossible to entirely remove the producers of scientific knowledge and their interests or biases, more generally their positionality, nor the effects of the norms of scientific investigation they employ or their instruments of investigation from the outwardly objective work they produce (Latour and Woolgar 1986; Latour 1987; Forsyth 2003).

I agree with Haraway (1991) that from acknowledging the obvious fact that scientists are embodied people and as such necessarily have partial, limited perspectives on the world, it follows that an 'embodied objectivity' that produces 'situated' rather than 'transcendent' or 'universal' knowledge is the only way to really be objective in making knowledge claims. This is not to argue for a radical equivalency or relativism of

knowledge, that all knowledge claims are of equal merit regardless of their *accuracy*<sup>1</sup> or *validity*<sup>2</sup> in representing observed phenomena. Rather, I am saying that partial perspective, recognizing and openly stating the ways that the observer is mediated by the world around them and their embodied experience of it, is a more responsible, honest presentation of knowledge, as well as a more democratic form of knowledge production that can be more readily accessed and deployed by people from a broad range of social circumstances.

The positionality of researchers imposes (and allows) considerable responsibility for them to account for where they see from, and what they see from there, especially to those they write about who may have a different view. It is important for scientists to acknowledge their positionality in research with political implications (and all social science has such implications- Kobayashi 1994:76). This is because the privilege of scientists as presumed authoritative speakers of truth puts them in an unequal position relative to non-scientists who can't defend their beliefs using the socially and politically legitimated authority of science, but have only the less power-laden evidence of daily life. The claim to be able to 'see everything from nowhere' (Haraway 1991), which denies the situatedness of scientists, draws on their privilege over people who cite experience in explaining the world. The unequal power relations of environmental justice activists characterized as 'hysterical housewives' or users of rural land as 'barstool biologists' (Robbins 2004:120) versus presumably wiser scientists would be more fairly

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<sup>1</sup> Accuracy is the degree to which scientific results correspond in terms of magnitude (amount or size) to an actual occurrence without necessarily being a valid representation of that occurrence.

posed if it were acknowledged that scientists are always translating results gained in the partial, bounded spaces of experiments into real-world contexts that are greatly different than laboratory conditions (Latour and Woolgar 1986). The places from which scientists construct knowledge could be seen as inevitably shaping their knowledge, just as the position of housewives in houses and hunters in barrooms affects their perceptions (without assuming that therefore scientists' judgments have no greater validity than those of anyone else, rather assuming that they are not necessarily *more* valid). With this view, it is crucial that any observers weighing the knowledge claims made by scientists have among their tools of critical judgment the context in which the knowledge was constructed. For my part, I will explain here my positionality and interests in regards to the Louisiana shrimp fishery and how I believe they affected the results of this study.

I am from Bayou Dularge in Terrebonne Parish, Louisiana, the largest shrimp producing parish in the state of Louisiana as of 1998 (the latest information available on parish shrimp landings, Louisiana Department of Wildlife and Fisheries [LDWF] 2000:23) and where the largest number of commercial shrimp fishers work as measured by licenses in 2003 (LDWF 2004a). Bayou Dularge is one of several communities in Terrebonne Parish where the shrimp fishery is a prevalent occupation. Despite my growing up in Dularge, I did not have much contact with the shrimp fishery. Recreational shrimp fishing with my family a few times a year was all the direct exposure I had to it, and I have never worked on a commercial shrimp boat. I was relatively privileged to both

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<sup>2</sup> Validity is the degree to which scientific results are a sincere, truthful representation of an actual occurrence (without necessarily being correct in describing to what extent that occurrence is generalizable to a larger population or comprehensive of all sub-populations).

live in a middle class family and go to college despite coming from a parish where the percentage of people in poverty is considerably higher than the national average. Nineteen percent of Terrebonne's population lives in poverty relative to the U.S. average of 12.4% for individuals (U.S. Census Bureau 2005a; U.S. Census Bureau 2005b). The percentage of college graduates is also considerably lower. Twelve percent of Terrebonne's population has a bachelor's degree or higher versus 24.4% in the U.S. as a whole (U.S. Census Bureau 2005a; U.S. Census Bureau 2005b). Geographically I lived 'up the bayou,' apart from the lower 'down the bayou' half of Dularge where most commercial fishing families live; from elementary school through high school graduation my social world was oriented towards the city of Houma, the parish seat of Terrebonne and an urban center far different than the bayou communities of the parish. So my upbringing, despite its spatial proximity to communities dependent on commercial fishing, did not place me in the social surroundings of shrimping.

I did not come to this research on the Louisiana shrimp fishery and its fateful entanglement with economic globalization from family or social ties (it was only after beginning this research that I became clearly aware of the many relatives--mostly great uncles whom I was too young to really know--who in decades past worked in the shrimp fishery and industry<sup>3</sup> as shrimp buyers, operators of stores, and truck drivers). It was by way of experiences at Louisiana State University participating in student activism that I became involved. From work on issues at LSU such as local environmental justice

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<sup>3</sup> I do not use the terms fishery and industry interchangeably. I use shrimp fishery to mean the harvest of shrimp from the water and bringing them to market at commercial docks or through direct sales. I use shrimp industry to refer to the docks, processing plants, trucking firms, ice houses, shipyards, and other shore-based businesses that are interdependent with the fishery for their mutual economic success.

campaigns and workers' rights in the production of university-labeled garments, I gained a critical perspective on economic globalization that would motivate my later involvement with the fishery. When the current period of economic crisis for fishers began in mid-2001, it was through newspaper articles in the *Houma Courier* that I learned about it. I thought that what I knew about globalization might be of some assistance to fishers. However naïve that thought might have been on my part--as I have learned far more from shrimpers<sup>4</sup> than any of them have learned from me--I began making contacts with shrimpers' associations in the state and non-governmental organizations farther abroad dealing with food, environment, and international trade.

These efforts have seen some success. At my suggestion, in 2003 the Louisiana Shrimp Association (LSA) began sending a delegate to the World Forum of Fish Harvesters and Fishworkers (WFF), a global fisherpeoples' organization patterned off of the global farmers' and peasants' organization *Via Campesina*. Shrimp fishers also participated that year in a march and panel discussion I helped organize during a negotiating round for the Central American Free Trade Agreement (CAFTA) that took place in New Orleans. I entered graduate school at the University of Arizona in the Department of Geography and Regional Development in Tucson in August of that year with the intention of writing my thesis on the problems facing the fishery.

My current motivations in working with people in the fishery are three-fold. The first is a simple one: to offer what effective assistance I can for people who live in the place I come from and care about who are facing a serious social and economic crisis.

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<sup>4</sup> Common parlance for shrimp fishermen in South Louisiana.

The second reason is shaped by my politics. It is my intention to contribute to thought and action on the problems facing the shrimp fishery from a perspective that questions the economic paradigm that the liberalization of trade and investment is beneficial to food producers. I want this thesis to contribute to a broader social project that entails creating and implementing fisheries and agriculture policies that assert local, regional, and national food sovereignty<sup>5</sup> and security<sup>6</sup> over the current neoliberal model that emphasizes export-led economic growth causing increased dependence of fishers, farmers, and peasants on global markets for their livelihoods. Lastly, I have a professional interest as a graduate student in completing my degree and in contributing to scientific knowledge about food systems, household commodity production, and ecology.

My academic training at the University of Arizona shaped the questions I asked in the fieldwork conducted for this study. Specifically this included classroom training and practical experience in the use of qualitative methods and exposure to theoretical viewpoints from political economy and political ecology that led me to focus on the adaptation of shrimp fishers' households to changes in the international capitalist economy. If I had trained in an academic environment that taught me neo-classical economics, conservation biology and quantitative methods, the resulting study on the same population and the same issue would have come out radically different, and probably much less sympathetic to the concerns of shrimp fishers.

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<sup>5</sup> A term meaning the effective political power of people to access and control sufficient and culturally appropriate food for their needs, produced in the context of locally directed social development with emphasis on economic and ecological justice in how profits and burdens of food production are distributed.

<sup>6</sup> A more technical term emphasizing the ability of people to access food sufficient to meet their needs, without a focus on the distributional effects of food on social wealth and the power relations inherent in particular systems of food provision.

How I conducted interviewing and other fieldwork was mediated by the connections I had (and didn't have) with people in the fishery and the kind of information I was seeking. I developed stronger contacts with officials in the LSA than to the Southern Shrimp Alliance (SSA), which meant that I was able to interview more shrimpers associated with the former than the latter organization. SSA's leadership is spread out between eight states, making it more difficult for me to speak with them, and as this study focused on Louisiana shrimpers, interviews with fishers from other states were not actively pursued. LSA and SSA have been bitter rivals over their conflicting views on the best course of political action for U.S. shrimpers. As this study is not about the conflicts between those organizations related to the anti-dumping tariff the U.S. shrimp industry has mobilized for in recent years, and leaders from both organizations were interviewed, I do not feel the unequal participation of shrimpers by organizational affiliation biased the results.

I had more contacts with fishers closer to where I lived, and conducted the majority of fisher interviews in Terrebonne, Lafourche, and Jefferson parishes, while others took place in St. Bernard, St. Tammany, and Orleans parishes. I used a 'snowball sampling' technique (Bernard 2002:185-186), meaning I asked interviewees who I should talk to next. Recruitment into the sample population of fishers relied significantly on these recommendations, which led me to interview people in those peoples' social networks (particular bayous, family and friendship groups, fishers' associations) disproportionately to the entire population of shrimp fishers. A methodology using a simple random sample of all commercial shrimp licensees or a stratified random sample

of sub-groups of all licensees (by boat or fishing gear type, by parish, etc.) would have been more representative of the entire population. A larger total sample size would also have improved the accuracy and validity of the data collected. There are three reasons why a more comprehensive sampling methodology and a greater number of interviews were not conducted. One, fieldwork was conducted over about two months of active research days in South Louisiana, limiting the number of interviews that could be conducted. Two, interviews were done in person, meaning that I had to drive to each interview site, further increasing the time required per interview. Third, this was my first research experience as the principal investigator, and progress was slow as I made just about every mistake possible. I altered my methodology as the fieldwork progressed to adjust questions to make more sense and get at unexpected themes encountered in the first interviews, so consistent data from all interviews is not available for all questions I asked. Re-examining interview notes and audio tapes of interviews in preparation for writing this document often caused me to cringe at the foolish or arrogantly confident (and wrong) assumptions I had going into interviews with people who were patient enough to put up with me and correct my thinking. My sincere thanks and apologies go to all of them.

My attempts to cover a wide geographic range of shrimping communities and the diversity of participants in the fishery in those locations met with mixed success. I was able to interview Cajun, Anglo, Yugoslav, Italian, and Isleño (descendants of Canary Islanders, many of whom live in St. Bernard parish) fishermen and fisherwomen

(shrimpers' wives<sup>7</sup>) but no Vietnamese shrimpers, men or women. Vietnamese people are a considerable part of the large-boat shrimp fishery, and their exclusion from this study means that the results are not as representative of the experiences of the large-boat sector compared with smaller boats, for which I got better interview coverage. I made several contacts with leaders of a Vietnamese shrimpers' association but was never able to successfully conduct an interview. Through interviews with state officials and managers and from fishers who knew Vietnamese shrimpers and dock owners well, a partial picture can nonetheless be constructed of their situation, but this omission on my part is an important gap in knowledge I was not able to rectify. I also wasn't able to speak directly with any fishers in Western Louisiana (Cameron, Calcasieu, Iberia, Vermilion, and St. Mary parishes) and had to rely on state and fishers' association officials and journalistic accounts for information on those areas. For other groups such as deckhands or dock and processing plant workers, I interviewed two or three people from each category. I believe a more comprehensive study by more experienced researchers would easily increase the sample size and consequently the representativeness of the results. Durrenburger's (1989) study of the Mississippi shrimp industry shows that it is possible for a single experienced researcher with several months of field time and a lot of creativity and commitment to interview a stratified random sample of over a hundred shrimpers, Anglos and Vietnamese. Durrenburger obtained sufficient quantitative data from enough shrimpers to derive correlations with statistical significance for many variables and gained much

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<sup>7</sup> Most women I interviewed self-identified as shrimpers' wives, none as fisherwomen. I use the latter term at times to indicate the active, important contributions of women in the fishery, and also use the former term out of respect for their preferred usage.

detailed information using qualitative methods. If I had employed similar methods as Durrenburger, I could have statistically discerned relationships between variables that might not have been obvious from interviews and I would have been more comprehensive and systematic in obtaining data which would allow me to apply the results of this study more broadly to the entire Louisiana shrimp fishery.

Despite the small total number of interviews, the consistency of accounts of interviewees on many topics, either overall or within coherent sub-categories (like boat size), nevertheless provides a reasonable representation of the effects of economic restructuring on the Louisiana shrimp fishery. I have less confidence in those accounts as representative of all fishers in the state.

A final point: as the reader may have already noticed, I have included explanatory text in the form of footnotes around technical, specialized terms that I judged not to be commonly used words. This was done to make the document more accessible for those reading it who may not have a social scientific background or familiarity with the shrimp industry or South Louisiana but for whom the information is I hope relevant and useful.

## Political economy and ecology of agro-food systems<sup>8</sup>

This study draws on two substantial bodies of theory: One from the *political economy*<sup>9</sup> of food: how food is tied in to the broader capitalist economic system and shapes that system (Aglietta 1979; Goodman and Redclift 1991); the other from an understanding of the unavoidable importance of non-human nature and of the human producers of food as active--not purely passive or reactive--agents in shaping food production. Much scholarship on agro-food systems emphasizes political economic drivers of change over ones based in ecology or producers' households (Buttel 1998; Magdoff et al. 2000). Other writers on the subject, particularly some rural sociologists, assert that the study of food systems must incorporate the specific natural and social environment in which food is produced and consumed as drivers of change, not just the macro-economic structures that guide production (van der Ploeg 1990; Drummond and Marsden 1999: Chapter Four; Goodman 1999).

This latter perspective is related to a body of scholarship that can be broadly grouped under the heading *political ecology* (Grossman 1998; Blaikie 1999; Martinez-Alier 2002; Zimmerer and Bassett 2003; Robbins 2004). According to one practitioner of

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<sup>8</sup> A term meaning a complex of natural and human factors (for example people, plants, animals, soils, chemicals, capital, machines, and information) involved in food production, processing, and consumption, and the associated businesses, governments, and other institutions with those core enterprises of food provision.

<sup>9</sup> The study of relationships of labor and property from a materialist perspective. This means how people's decisions are shaped by control over economic resources by particular groups of people, or classes, and how social power resulting from that control is accumulated and exercised (Marx 1978:236-244; Robbins 2004:79-80). See the sections below, 'Agro-food systems in political-economic context: From extensive to intensive accumulation' and 'Agro-food systems in political-economic context II: From Fordist to post-Fordist accumulation' for a more complete explanation of how political economy applied to food is used in this study.

political ecology, the “environmental rootedness” of primary production economies (agriculture, fisheries, and forestry) makes “intricate analyses of local-level, human-environment relations” such as “the implications of crop ecology, changing patterns of intercropping, soil management, livestock herding, and new forms of technology” necessary along with “examining the relationship of patterns of resource use to political-economic forces” on “human-environment relations at local, regional, and global scales” to understand changes to land, people, or production in food systems (Grossman 1998:14, 18-19). Doing political ecological research requires having one foot at the immediate point of production, examining how people create livelihoods in ecological systems and contribute to the form and functioning of those systems, and another in more removed (while interdependent) fields like international commodity markets and state economic development policies that affect localities. Connections between particular places and broader contexts can be drawn out in this manner. These connections are not limited to what appear to be ‘top-down’ macro-scaled processes like ‘the State,’ ‘the economy,’ or ‘globalization’ determining how primary production occurs, but also result from the accumulation of micro-scaled actions of invasive weeds, microbes, peasant farmers, or soil chemistry creating change at broader scales. Neither micro- nor macro- possibilities for explaining change in human-environmental systems of food production should be discounted or presumed beforehand to be the determining or primary driver of observed phenomena (Marsden 2000; Forsyth 2003).

It was not the focus of the fieldwork that informs this project to rigorously examine the ecology of shrimping in Louisiana. It remains a future task of a researcher to

more carefully catalog the relationships between shrimp, shrimpers, water, land, other sea creatures, and the human economy that drives people to catch and eat shrimp. There are scientifically and politically important questions like the causes and effects of bycatch (incidentally caught animals and plants typically killed and discarded) from shrimp fishing on the marine fauna of coastal Louisiana or the degree to which environmental change or fishing effort have reduced the size of shrimp caught in Louisiana waters that could benefit from examination from a political ecological outlook. Some mention is made in the history section of how Louisiana's coastal ecology shapes the fishery using already published data, but this study makes no real new contribution in this area.

More attention is paid to the currently prevailing source of labor power for economic production in the Louisiana shrimp fishery, the family, and the effects of household labor on producers' ability to participate in the rapidly changing fishery. Similar to and often integrated with political ecological research that examines how local ecological processes affect macro-scaled political and economic change, research on the dynamics of households produces rich, compelling accounts of social, economic, and ecological processes. These accounts often differ in important and unexpected ways from research approaches that neglect to examine the practices of resource harvesters. Practices seen from a distance to be irrational, destructive, or inefficient can be quite sensible, benign, and productive when viewed more closely (Fairhead and Leach 1998; Grossman 1998; Bassett 2001). Reasons for harvesters' behavior have been shown to result from bottlenecks of labor or capital during the growing season, unequal access to markets compared to capitalist firms, or the uneven gendered distribution of resources

within households, not greed, a lack of private property rights, ignorance, or wastefulness.

#### The social construction of fisheries knowledge

Both household production and ground-level ecological processes are examined by political ecologists in relation to political-economic forces like commodity prices and external national debt. They are also thought about in reference to how knowledge about people and the environment is socially constructed (Robbins 2004: Chapter Six). The social construction of knowledge means that the assumptions people have about what the world is like, influenced by their position in society, are always shaping the knowledge they produce about the world. Social power of some groups over others means that some accounts of the world have more leverage than others. This does not mean there is no objectively real world that we observe, rather that the necessarily partial accounts of observers are always in relation to specific kinds of power circulating around them, which allow for certain knowledge claims to be made that either reinforce or undermine those forms of power.

Science and scientists are particularly implicated in the social construction of knowledge as they hold a privileged position in the knowledge production business. It has been shown in particular through the work of Michel Foucault on the social sciences (Foucault 1980: Chapters Five and Six) such as criminology (Foucault 1977), psychiatry (Foucault 1965), or medicine (Foucault 1975) that the subjects of knowledge those disciplines describe and define (the criminal, the insane, the sick) did not pre-exist the

formation of those sciences. There were certainly people who broke laws, mentally ill people, or people with diseases before the rise of the scientific professions and institutions associated with them since the 19<sup>th</sup> Century, but Foucault's contribution is to show that the particular qualities they are now assumed to have were not pre-existent and "discovered" by a disinterested scientific rationality, but were actively cultivated by 'disciplinary technologies' like the prison, the asylum, and the hospital allied with specific scientific rationalities institutionalized into professions. To Foucault, power creates knowledge as much as knowledge creates power. Scientific information exists in a political field and is shaped by and contributes to shaping that field.

Just as it can be said that the prison and criminology contributed to a social construction of knowledge that makes 'the criminal' a coherent social subject, the social subject of fisheries science, the fisherman, can be seen at least in part as a construction of assumptions incorporated into that science influenced by political and economic objectives of dominant groups in society. He is not someone waiting at the dock to be documented and explained by unbiased methods. The work of Gordon (1954) and Scott (1955) on fisheries economics and its popularization by Hardin (1968) must be seen as foundational in this regard. These authors argued that fishers were economic agents, seeking to maximize their own benefit, without regard to others. They made this argument based on what they saw as the power of certain kinds of property regimes to not just define how resources are used, but to construct the very identity of the people that use them. Common property regimes or open access, what they argued was the property regime in fisheries, lead to poor, destructive, greedy and mentally unstable individuals

(Hardin 1968:1246). In short, commons make people crazy and they can be made sane by enclosing the commons. Fishery management then is a form of social engineering to produce a rational economic actor that will maximize for the aggregate surplus value of a fishery for the benefit of society (shorthand for those that own and control the means of production and exchange), not his own personal gain.

Hardin's 1968 article 'The Tragedy of the Commons' had a profound impact because it appeared during a time when it had a receptive public and regulatory audience in oceans and natural resources policy more generally. It appeared a year before the Stratton Report<sup>10</sup> was issued which formed the basis of the later Magnuson Act<sup>11</sup> which implemented the modern fishery management regime in the United States, and during the emergence of environmental studies and environmentalist social movements in the U.S. concerned about resource degradation and overpopulation. Hardin's argument, seemingly simple, direct, and commonsensical, inferred much that is not obvious, clear, and uncontested about the identity or motivations of users of natural resources. Some of these inferences were: (1) harvesters act alone and outside of any social context that could constrain their actions outside the market; (2) harvesters make decisions about resource use solely from a particular economic rationality that seeks to maximize personal gain without thought for others or their future; (3) harvesters work on a terrain of resource extraction that has no property rights, no law enforcement, and no other constraints on where or how harvesters can operate; (4) without external restrictions on their individual

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<sup>10</sup> A congressional report that found the U.S. could greatly increase fishery production by modernizing the U.S. fleet and over time removing small-scale fishers (Molyneux 2005).

<sup>11</sup> Federal legislation first passed in 1976 that implemented the U.S.' 200-mile exclusive economic zone at sea and created eight regional fishery management councils to govern this territory.

actions, collectively harvesters will inevitably (and tragically) destroy or degrade the resources they depend on to the point that the total benefits to all will be reduced and the number of participants will be reduced by attrition due to inefficiency or violence. This discourse about economically voracious individuals unhindered by societal relationships, moving unconstrained through an open-access space, rushing headlong on a tragic, self-directed trajectory of resource depletion and economic ruin without private property rights and the strong hand of government to control them, forms the dominant representation of fisherpeople implied in fisheries management policy in the U.S. (Wallace and Fletcher 2001; St. Martin 2001; Holm and Nielsen 2004; St. Martin 2005a).

Concepts such as Maximum Sustainable Yield (MSY) put into management practice the Gordon/Hardin assumptions of who fishermen are and how they make decisions. These management principles assume that unregulated fishers will increase their effort<sup>12</sup> in a given fishery to the point that they absorb any profits from it, if not further jeopardizing their livelihoods and the fish populations they harvest. The only inherent modeled restraint on fisher behavior is the unprofitability of excessive effort beyond the break-even point where the entire fishery's expenses equal its total revenues, and the only assumed motivation for either increasing or decreasing effort is profit. Corresponding with this theoretical model of resource use is a geography of fishing mapped using a grid of large statistical reporting areas overlaying the ocean. Estimates of fish populations sampled from research vessels, landings data, and estimates of fishing

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<sup>12</sup> A term that combines the fishing capacity of individual vessels (size of vessel, engine power, technology, harvesting gear), the number of vessels, and the amount of time they spend fishing.

effort from dock surveys and logbooks are entered into the cells of this grid. This data is run through formulas based on principles like MSY to make management decisions on how many boats may fish, for how long, catching what. The result of this epistemology<sup>13</sup> is a landscape of fishing that maps fish and the aggregated effort of individual harvesters working somewhere in large, homogeneous expanses of water.

When other forms of data are collected, such as the precise fishing locations of harvesters plotted on their charts or interviews with fishers, or standard data is analyzed differently, finely-scaled variations in fishing effort related to fish abundance and bottom conditions become visible, as do fishing territories that are specific to some communities and not to others. These different forms of knowledge and differing landscapes of fishing based on them suggest that the epistemology used in studying fisheries contributes to the picture of the fishery it produces (St. Martin 2001). As beliefs about the nature of the fishery help construct how knowledge production takes place (what fishers and aquatic nature are like, what kind of information is to be collected from whom, using what methods and what units of measurement, entered into what sort of analysis using what equations, to produce what sort of conclusions, etc.) they shape the results of that research. Thus research can end up finding in the fishery what the theoretical assumptions driving that research predicted because the questions asked were in reference to those assumptions. Collecting economic data like capitalized expenses, cash revenues, catches and landings from fishermen and making sense of it using concepts such as opportunity

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<sup>13</sup> The nature and form of knowledge, or how people know what the world is like. Epistemologies can vary considerably depending on the ways that people perceive the world and the means by which they do so.

cost, rent, and profit shows fishermen as individual entrepreneurs, not part of communities or families, and as motivated by economic factors as few or no non-economic factors are included in data collection or analysis. This does not mean that this form of data collection is wrong, or the results from it are false; rather it, like any form of research, it produces partial and limited knowledge. Other forms of equally valid knowledge can be produced using different methodologies based on different epistemologies of fishing.

The production of scientific knowledge on fisheries is both shaped by and shapes the form that fishery management debates take. For example, many contemporary U.S. fisheries are overcapitalized (they have more fishing capacity than necessary to achieve a maximum economic return). The ‘tragedy of the commons’ model would explain this problem as one of open access and lack of property rights over harvest, not due to government intervention (in fact because of government unwillingness to impose controls on effort). The National Marine Fisheries Service (NMFS) advocates for and implements the ‘rationalization’ of fisheries, intended to reduce the number of commercial fishers, impose market-based allocation of fish stocks, and ‘operate fisheries more as a business’ (Mansfield 2004; Fraser 2005; Hogarth 2005). Rationalization’s constitution and goals are intimately linked to its assumptions about what fishers and fish are like, how the commons works, and the appropriate means to understand them.

Hardin’s explanation for the problems of fishers and other resource harvesters (that they come from the inherent, unchangeable, and tragic economic rationality of people operating in an open-access commons), has long been critiqued by some

fisherpeople (Playfair 2003; Molyneaux 2005) in addressing the problems in fisheries that result from overcapitalization, overfishing and habitat destruction. Many fishers pose the defense of community, family, and heritage as alternative values to guide fisheries management over optimal economic efficiency as defined in contemporary management policy. They argue that traditional fishing communities can be good stewards of fisheries as the fishing methods they use are more selective and their close, long-term relation with fishing areas means they possess specialized knowledge about how they function.

#### Challenging the Tragedy of the Commons: Common property theory

Related to this critique, studies of common property institutions, traditional ecological knowledge, and customary marine tenure provide empirical examples and conceptual explication of processes wherein commons are managed successfully by their users (McCay and Acheson 1987; Ostrom 1990; Bromley 1992; Durrenburger and King 2000; Johannes 2002; Dolsak and Ostrom 2003). They challenge the inevitability of tragedies of resource depletion in the absence of private property by asserting that users of common property resources can work together to create and maintain organizations to regulate harvest. Institutions use a range of measures to conserve and allocate common property resources, for example avoiding the overexploitation of especially productive sites by rotating access in time and place among harvesters (Berkes 1992) and keeping certain territories off-limits to harvest (such as closing areas to fishing during times when fish spawn.) The design of these institutions in relation to the nature of the resource being managed, of paramount importance to their success, suggests a different style of management than the rather detached form recommended by Hardin. More successful

institutions tend to incorporate mechanisms for harvesters to create and enforce regulations themselves, for simple and easily monitored rules, and for the accountability of regulators to participants in the institution (Dolsak and Ostrom 2003:22-25).

Common property studies provide important evidence that the conclusions of the Gordon/Hardin school (overexploitation of resources is inexorable and leads to either tragedy and/or authoritarian management) are avoidable, even if the practice-based knowledge of fishers is not always equally or more comprehensive than that of managers or leads to good outcomes for fish or people (Felt 1994; McGuire 1997). They open up the possibility of a variety of common property regimes constituted by fishers' knowledge systems, perhaps reducing the conflicts between fishers and managers through processes of co-management (Durrenburger and King 2000:11-12). As U.S. fishery management is based on scientific knowledge,<sup>14</sup> common property studies can add scientific legitimacy to fishers' knowledge, making it more accessible and relevant in management, leading to possibly better policy outcomes. While this approach can act as a counterweight or corollary to managerial knowledge systems it can also reproduce and further reinforce the epistemological distance between those systems. While advocates of common property institutions recommend small scales of management (Dolsak and Ostrom 2003:12-13), and fishers operate with knowledge of fish and community territories at fine scales, managers map resources and plan policy on large grids of ocean space (St. Martin 2001). Fishery management has focused on economic efficiency and

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<sup>14</sup> The second of ten national standards for fishery management under the amended 1996 Magnuson-Stevens Fishery Conservation and Management Act mandates that "conservation and management measures shall be based upon the best scientific information available" (Wallace and Fletcher 2001:21).

development (Mansfield 2001) while fishers often emphasize community, family, and tradition.

These differences find geographical expression between Global North or 'First World' and Global South or 'Third World' fisheries. The possibility of community management of fisheries has been supported in many Global South fisheries, particularly in some South Pacific fisheries where a resurgence in traditional knowledge and management systems has taken place (Johannes 2002). In the Global North, community management has been much less successful because of strong beliefs that it is incompatible with fisheries in a modern capitalist economy, employing centralized state management, and where the focus of harvest is on the production of commodities, not subsistence or local markets. It is difficult to conceive of, much less locate, regimes of access to and allocation of common property that are presumed to be peripheral to the capitalist world economy in the core of that economy (St. Martin 2005b). The work of scholars like Acheson (2003) and St. Martin (2005, forthcoming) attempts to bridge this First World/Third World divide by showing the co-existence of community and economy and their complex interrelations in contemporary U.S. fisheries. Fishers are neither rootless economic optimizers nor reactionary defenders of traditional cultures. Fishers' practices that bridge a supposedly mutually exclusive rift between an advancing capitalist fishery and retreating communities and commons (see St. Martin 2005b:14) open up possibilities for asking how fisheries operate outside of purely traditional/cultural or rational/economic motivations.

### Moving past the binary opposition of community and economy

The study of the commons has consistently drawn a relationship between the identity of harvesters and the property regime in which they harvest; the controversy between proponents of the ‘tragedy of the commons’ school and common property studies is more about the people using common property than the commons itself. St. Martin (2005, forthcoming) contends that the representation of fishing territories as an open-access commons leads to presumptions about the economic identity of fishers as one of two binary choices. Fishers are either community-based pre-capitalist subjects that work in the unenclosed, non-capitalist commons space of the ocean or they are capitalist subjects unencumbered by community ties that take advantage of the open sea for gain. The failure to fairly represent contemporary U.S. fishers as either of these ideal types opens up to empirical questioning just how it is that fisheries, fishers, and commons function.

St. Martin (2001; 2005, forthcoming; 2005a; 2005b) argues that one good starting point for finding the ‘ambiguous commons’ that results from this questioning can be found in ‘communities at sea’ that form around fishing territories frequented by specific groups of fishers, often from the same shore-based communities, and the knowledge of these territories that is shared within those groups through means like conversations and sharing charts that show good and bad areas for dragging nets. Communities at sea, the existence of cooperation (of an admittedly contingent and limited form) in a space presumably entirely devoted to competition and individuality, shows that actual

arrangements for using the commons are always already mixtures of competition and cooperation.

Economic difference from a capitalist (or communitarian) ideal is not limited to the relations between fishing vessels on the sea, however. St. Martin (2005b:69) makes note of how on individual boats, the shares system of crew payment does not correspond with an ideal capitalist wage labor arrangement, as does Molyneaux (2005:42-43). It is along this path, away from examining how fishers relate to each other at sea, on location at the commons so to speak, to examining their social attachments between each other that this study is directed. It is opening up the 'black box' of the commons user treated by Hardin (1968) as an individual with no social ties. Ostrom (1990), while countering Hardin in showing how commons users can rationally agree to mutually beneficial rules to regulate use, gives a simple and individualistic account of the logic of harvesters. Her use of game theory still treats harvesters as individuals who are solely interested in maximizing their gains from the common resource, but argues they are capable of rationally choosing to work together to regulate themselves if it is more beneficial to them individually than competition. An account of the social nature of fishers outside of the rational choice of benefit-maximizing individuals is still needed.

It would be easy enough to build such an account by segregating a dry social space of shore communities where people help each other from a wet economic space of resource harvest where they engage in cut-throat competition. For just as the oceanic commons is too often assumed to be a purely economic space devoid of community, it follows that at least outside of the obvious economic elements of docks, processors,

shipyards, and the like, shore communities can be treated as separate from the territory of resource extraction fishers depart to and return from. Yet this picture will always be an incomplete one as any complete division between a community on shore and an economy at sea is not viable as the two interrelate and affect each other.

The disassociation of ports where fish are landed and the areas at sea those fish are caught in federal economic and social impact assessments makes it hard to re-associate the communities on shore to places at sea they tend to utilize. (St. Martin 2004:24-25). This method of assessment reproduces a binary between an abstracted economic territory at sea harvested by anonymous fishing effort and dependent shore communities lived in by real people subordinated to that economy. In a similar way, the shaping of commodity production in fisheries by the social relations of fishers on shore needs to be accounted for. In the case of Louisiana shrimping, this entails particularly the role of non-fishing wage labor markets in generating household income and the production of unwaged labor-power by households for the fishery.

## Outline

The remainder of this document begins with an account of the history of the Louisiana shrimp fishery. This history is presented in relation to a larger story of capitalist economic development, drawing from regulation theory, in relation to agriculture and food. Historical sections focusing on one period of development in the fishery are accompanied by sections about broader economic history that correspond to that period of time. The events that led up the current state of the fishery are narrated and an overview of the contemporary fishery is given.

Following this is an examination of recent characterizations of U.S. shrimpers to draw out how they are discursively positioned as large capitalist businesses, an account I argue is inconsistent with the actual circumstances of the Louisiana shrimp fishery. The methods used in this study, qualitative semi-structured interviewing, are then explained and the sampled population and means of participant selection is described.

Theoretical perspectives on household commodity production drawing from political economy and peasant studies are introduced and explained, then applied to understanding Louisiana shrimpers through the lens of household commodity production. Results from interviews are presented drawing on a numerical synopsis of qualitative data, quotes from interviews, and explanation of trends in interviewee responses. The conclusion summarizes how the theories employed relate to this empirical case and offers suggestions on the policy outcomes of this research and the future of household commodity production in this fishery.

## 2 HISTORY AND CONTEXT

### Early history of the Louisiana shrimp fishery (to 1938)

Commercial shrimping in Louisiana began in 1867. The two mainstays of the 19<sup>th</sup> century fishery were canned and dried shrimp, necessitated by the limited refrigeration and ice available for a very perishable product in a hot and humid climate. Shrimp drying was introduced by Chinese immigrants, and expatriate Chinese merchants in Louisiana opened up markets to Asian workers in the U.S. West and in China itself for Louisiana dried shrimp. This market was further expanded when after the nationalist revolution in China, the Blum and Bergeron Company of Houma gained an exclusive contract to supply China with North American dried shrimp, creating a guaranteed market for huge volumes of product. Harvest was initially done using seines which are encircling nets hundreds of feet long that were dragged across shallow water by hand and from sailboats. Numerous platforms were constructed in the marshes near the Gulf of Mexico to sun-dry shrimp near the areas they were caught and to house the people and boats that caught and processed them. The fishermen of the time were mainly recent Chinese, Malaysian, and Eastern European immigrants and Cajuns (Becnel 1962; Chapter One; DeSantis 2003a).

Women and men from these same communities processed shrimp by hand. Prices were extremely low. A barrel, equivalent to 210 pounds of head-on shrimp, sold for \$3 in 1908, or one and a half cents a pound.<sup>15</sup> Boats tended to be owned by shrimp processors who hired the large crews they required to run seines and provided housing and company

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<sup>15</sup> Twenty-six cents a pound in 2003 dollars adjusted using the Consumer Price Index or CPI.

stores for workers, while others were run as companies owned by their fishermen (Becnel 1962:5). Shrimp fishers for Mississippi canneries, which relied on Louisiana shallow-water shrimping grounds, unionized and struck in 1915 for a work contract but were defeated (Durrenburger 1989:26-30).

In contrast to a model of historical economic development from subsistence and control of the means of production by producers towards production for the market by wage laborers alienated from the means of production, the Louisiana shrimp fishery was formed under conditions of wage labor supplying distant and often international markets and would change into an owner-operated, more locally directed fishery. Rather than shrimp being the delicacy in the United States it would come to be, it was a food for poor immigrants that wealthy Americans did not eat, even if they could somehow find it on the market.

The first of several technological revolutions that profoundly changed the fishery began in the late 1910s with the introduction of trawling. An otter trawl is a conical net dragged behind a gasoline or diesel powered boat. The top of the trawl has floats that hold it at the water's surface, while the weighted bottom drags on the sea floor. The trawl is attached to the boat by two lines that connect to boards that skid on the bottom like skis that pull outward to open the net. Shrimp are caught as the boat pulls the open trawl through the water. The movement of water in the trawl pushes shrimp or other things not able to swim away into the tail end or 'bag' of the trawl, which is opened and emptied when it is hauled in. Trawling allowed shrimping to move into deeper water, greatly reduced the labor required to catch shrimp, and motorized boats and greater availability

of ice allowed the distance shrimpers could travel from their docks to fishing areas to enlarge. Louisiana catches expanded greatly, from 16 million pounds in 1919 to 76 million in 1937. Processors shifted the majority of their product towards the U.S. domestic market, primarily into canned shrimp and to a degree into fresh and frozen products. Prices increased to some 3.4 cents/lb. in 1930. Otter trawls allowed shrimpers to gain some independence from canneries; smaller labor requirements meant that shrimpers could work their boats with the help of one or two hired deckhands or members of their family, creating the conditions for the general owner-operatorship of boats. The company system used by some seiners to operate boats was adapted to the new conditions of trawling. Some shrimpers formed companies to operate ice boats, which brought ice out to fishing boats, took shrimp from them to market, and delivered supplies like fuel and groceries. Companies' boats were marked by distinctive flags identifying them to others in the company. Ice boats, either owned by fishers, operating independently or for processors, allowed shrimpers to pool their resources and sell shrimp together in bulk, giving them direct access to markets at processing plants and the ability to remain fishing for extended periods of time. Shrimpers could work longer without having to go in to deliver fresh shrimp, which increased their efficiency while imposing long periods of separation from family in very sparse conditions on the boats (Becnel 1962: Chapter Two; Gaudet 2003). While before and during the Depression the ownership of boats by shrimp buyers or processors and shrimpers' dependency on those businesses through credit and debt relationships was common, increasing numbers of fishers on the Gulf coast owned their boats, giving them a new independence in the

market (Durrenburger 1989:30). A pattern of local market power in the fishery began to emerge of nominally independent, owner-operating shrimpers, free to sell to any of a variety of middlemen but often tied to particular buyers by a variety of financial and personal ties. These dealers sold to processors that had oligopolistic power to determine the prices those shrimp buyers could pay (while themselves subject to pressures on prices from buyers for national markets they could not control). The basic framework of this system remains in place to the present despite major changes in its form and the dynamics of relationships between its constituent parts.

The increasing independence of shrimpers combined with the arduous economic situation of the 1930s led to the resurgence of labor organizing activity in the fishery. Again, the center of activity was the Mississippi coast, spreading to Louisiana. Strikes in Mississippi and Alabama in 1932, 1933 and 1935 were won in two out of three cases, with fishers gaining price increases from processors (Durrenburger 1989:32). The Louisiana fishery was paralyzed in August of 1938 when unions from several parts of the state as well as Mississippi struck for \$8.50 a barrel, \$1.50 over the going rate<sup>16</sup>. Processors opposed the strike, as did a rival, non-striking union that charged the work stoppage was instigated by some processors to allow them to reduce inventory from the last year's season. It was resolved by the end of the month with a compromise of \$8 after numerous arrests and incidents of union supporters destroying non-union and non-striking union's boats' shrimp by throwing them in bayous or pouring kerosene on them

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<sup>16</sup> \$8.50 in 1938 is \$110.92 a barrel in 2003 dollars adjusted using the CPI, or fifty-three cents a pound.

(Becnel 1962:34-37), as portrayed in a unique film, one of the few ever made entirely in the Cajun French language, *Huit Piastres et Demie! (\$8.50!)* (Pitre 1981).

Processing workers in the fishery worked long hours standing up peeling shrimp by hand and packaging them for little money. The labor force was predominantly made up of women and children, both from South Louisiana shrimping communities and migrant laborers from out of state that traveled to peel shrimp during the height of the season each year (Becnel 1962:32-33). An investigation by federal authorities into child labor in the fishery's processing sector found poor health and safety conditions for child workers and an illiteracy rate in shrimping communities among children six times the national average at the time (Becnel 1980:18). The majority female processing workforce also organized during the 1930s, but met with less success than fishers, an exclusively male occupation then (and almost without exception remaining so today, although women working on boats operated by husbands or other male relatives is frequent). Processing plant workers struck in Biloxi, MS in 1933, reaching a settlement through federal mediation (Durrenburger 1989:32). A strike of St. Bernard parish shrimp workers in 1939 attempting to raise wages to the \$0.25 an hour minimum established in the Fair Labor Standards Act a year earlier (U.S. Department of Labor 2005) failed after a striking woman worker was murdered by gunfire while on a picket line (Becnel 1980:19). No one was indicted for the crime.

In the late 1930s, the involvement of the state in the shrimp fishery expanded in an important way when federal exploratory fishing efforts discovered new offshore shrimp populations south of Louisiana which had previously been unexploited. These

offshore areas required new, bigger boat types to work in them, which were introduced from Florida in 1938. The 'Florida-type' trawler had a deeper keel than the flatter-bottom 'lugger' types used in Louisiana previously, giving it more stability in open water. They also had the wheelhouse built forward, giving more room to stern for setting out and hauling in trawls and sorting the catch. These boats using the new offshore grounds expanded the fishery's catch, harvesting large amounts of large shrimp. Between 1936 and 1953, Gulf of Mexico production almost tripled to over 200 million pounds (Becnel 1962:47). While many Louisiana fishers converted to offshore fishing, other Gulf states did so far more, as they had relatively less inshore water and the opportunities opened to them by deep water fishing were correspondingly much greater than the meager catches they got from their own inshore areas (Becnel 1962: Chapter Three). The increasing involvement of capital and the state in the fishery would profoundly restructure it in the coming decades, inserting it into the larger agro-food system of the United States to an unprecedented degree while it remained marginal to mass market systems of food provision.

Agro-food systems in political-economic context (I):  
From extensive to intensive accumulation

These changes to the fishery around and during the Second World War were connected with wider socio-economic changes in U.S, food consumption. Goodman and Redclift (1991) describe the period between the 1930s and 1950s as a crucial one in the restructuring of North American and Western European food systems. Using a framework of analysis drawing from regulation theory applied to agriculture (Aglietta 1979; de Janvry 1981; Goodman et al. 1987), they argue that the predominant mode of regulating capital accumulation, i.e. the capitalist economy, at any point in history shapes and is shaped by systems of food production and consumption. They add to this political economic perspective the recognition that nature, both in how people conceive of it and its inescapably material forms of soil, water, plants or animals, operates in the food system in ways that do not necessarily correspond to the logics of capital and industry.

During the period known as ‘extensive accumulation,’ roughly from the 1870s through 1945, cheap food was important in keeping the price of industrial labor low. This helped maintain the accumulation of industrial capital in the urban centers of the Europe-centered world economy. Cheap food reduced the cost of the labor power of workers to employers – if food prices had been higher, then wages would have had to increase in kind. Keeping the price of food cheap came about primarily by increasing world production of grains, particularly wheat, which consequently drove down prices. This occurred through the ‘extensification’ of European agriculture into North America, the southern cone of Latin America, and Australasia. The term *extensive* refers to the ability of production to expand not by increasing the productivity per unit of area, but advancing

the area of farming into new territories. Without the benefit of later innovations in hybrid seeds and agri-chemicals, production per acre remained flat or declined as the land opened up to wheat farming and overall grain supply increased. The international integration and expansion of production caused the overproduction and price collapse that reduced food prices for industrial workers in Europe and the U.S. (Goodman and Redclift 1991: Chapter Three). Decreasing real prices of food also involved the dismantling of tariff protection for European agriculture and the connection of food production in European peripheries like Russia into world markets. The increased supply of grain, for the making of bread and the feeding of livestock to increase the supply of meat and dairy products, was buttressed by the established colonial trade in items such as sugar, tea, and coffee that were crucial to the provisioning of inexpensive food and energy for European workers for centuries (Mintz 1985).

The fundamental difference in the role of food between an extensive and intensive (alternatively called Fordist) regime of accumulation was the change of food and other ‘wage goods’ (clothing, utilities, and other non-durable consumer items) from a necessary but burdensome cost of reproducing the work force to a means of profit in itself. This change was due in large degree to the altered nature of how families worked and ate. Under extensive accumulation the provision of wage goods to industrial workers like prepared food was largely outside of commodity relations. Women produced food in large part through unwaged household labor.

In intensive accumulation, the phenomenon of mass consumption created out of the work force a vast market for commodities, whereas before the interest of capital was

to reduce as much as possible the outlay of workers' wages which were not easily returned to circulation in the economy. The circuit between industrial capital and workers' wages thus became stronger and more mutually reinforcing, which led to sustained strong growth of the capitalist economy. The driving forces of these highly interrelated processes in households and the economy were the sharp rise in wages after the Second World War and the entry of women into formal wage labor in increasing numbers, which created markets for all manner of 'white goods' or consumer durables such as refrigerators and freezers, TV's, washing machines, dishwashers, microwaves, etc. The increased monetary income of families with women and men in paid work made it possible (and necessary considering the decreased time women had to maintain their households) to buy prepared foods and white goods for those families. These domestic technologies and the much-changed foods that accompanied them (frozen foods, TV dinners, canned food, and more restaurant prepared food, especially fast and take-out meals) allowed women to expand their role in wage labor even as social expectations still held that they were primarily or exclusively responsible for caring for their families (Goodman and Redclift 1991: Chapter One). The restructuring of the American and Western European household, including the ways that food was prepared and consumed, helped to create the conditions for the 'golden age of capitalism' in the industrialized market economies from the 1950's to early 1970's fueled by strong consumer demand and wage increases.

The new post-war American diet was far different than what preceded it due to the application of technology and government intervention in agriculture and food

processing in ways that made them more susceptible to investment and regulation by industrial capital. These processes, interrelated with those that were seen in food consumption, can be grouped into two categories: *appropriationism* and *substitutionism* (Goodman and Redclift 1991:90-2). Examples of appropriationism, where industrial capital adopts a part of the food production system or creates a new part, are the creation of the agri-chemical industry to provide new means to combat pests and maintain soil fertility or the consolidation of grain wholesaling and processing by corporations to create animal feeds, industrial products, vegetable oils, corn syrup, or other products. Appropriation is seldom *direct*, in the actual practice of farming where the biophysical uncertainties of soils, plants, insects, and weather inherent in agriculture are most evident and the average rate of profit therefore low and erratic (Mann and Dickenson 1978). It is *indirect* appropriation, where those uncertainties are least, such as in manufacture of machinery or other inputs, in processing or retailing food, or in financing, that is the norm in contemporary food production. The result is the maintenance or even increase of farming in the hands of household producers (family farms) simultaneous with the takeover of backward and forward economic linkages from the farm by corporations (Gasson and Errington 1993: Chapters Two and Three, Goodman and Redclift 1991: Chapter Two), producing marked differences in the modes of production operating at different points in agro-food systems.

Substitutionism refers to processes where particular agricultural inputs (or any agricultural input whatsoever) to food or industrial production are made replaceable by other forms of inputs. An example of substitutionism is the ability to make sweeteners

out of multiple agricultural products like cane sugar, beet sugar, corn syrup, or sucralose (Splenda) or chemicals like saccharine (Sweet and Low) or aspartame (NutraSweet). Substitutionism has made some crops less important to industrial processes and has made agricultural inputs more interchangeable in those processes, allowing manufacturers to sustain production at constant rates and prices despite changes to the productivity of any particular agricultural product from any particular part of the world, smoothing out the variability inherent in the 'environmental rootedness' (Grossman 1998:14) of agriculture.

Appropriation and substitution applied capital to agriculture on an unprecedented scale. Through these processes, both the inputs to and the outputs of food production were incorporated into capital accumulation, while reducing the risks of agricultural production on that accumulation. This investment in food production along with sustained government research, extension, financial assistance and commodity price supports led to a surge in world production beginning around the mid-20<sup>th</sup> century in the U.S., this one based on *intensive* expansion, growing more on the same amount of land. Hybrid seeds, agri-chemicals, and soil conservation practices allowed the food supply to grow exponentially, and stabilized some of the serious soil degradation extensive farming of grain had created in environmentally marginal territories like the Great Plains of North America. The huge grain surpluses generated by the application of new technology and money threatened to worsen the low prices U.S. farmers already were facing, which led to the post-war government policy of food aid to dump excess stocks abroad at public expense. Grain surpluses were also applied to making ingredients for processed foods and feeding animals using off-soil techniques, making red meat and chicken far more

plentiful and cheap, which fed back into the changes in food seen by the consumer and the role of mass consumption as a source of accumulation (Goodman and Redclift 1991: Chapter Three).

This new agro-food system spread internationally from its North American origins after the Second World War, foremost into Western Europe which in 1962 agreed in exchange for continued protection for some of its crops in its Common Market to allow U.S. soybeans duty-free entry. A boom in meat production following the U.S. off-soil model but with imported feeds followed (Bové and Dufour 2002). The internationalization of the complex of agri-chemicals, hybrid seeds, and the preeminence of maize and soya production for high-protein animal feeds and industrial inputs developed in the U.S. would spread further in the coming decades, becoming known as the 'Green Revolution' as it diffused into the Global South through international development agencies (Goodman and Redclift 1991: Chapter Four; Mitchell 2002: Chapters Seven and Eight; Shiva and Bedi 2002).

Food remained a key cheap wage good for workers in Fordist economies, but the spare diet of 19<sup>th</sup> Century urban workers was greatly improved because of increases in meat and dairy availability and declining prices brought about by grain surpluses created by the new intensive agriculture. Higher wages allowed people to purchase this new 'meat and potatoes' diet while simultaneously increasing their consumption of white goods, housing, and automobiles.

### The modern fishery (1938-1976)

American fisheries were not outside of these processes, although they remained rather peripheral to them before the mid-1970s. In the era of extensive accumulation, Louisiana shrimp was a cheap food for immigrant laborers, their presence in the mass consumer market was minimal, production was relatively small and was delivered in forms that were not appealing to most domestic markets. The expansion of production from offshore discoveries and the turn to frozen products processed from those discoveries changed that.

In the 1930s and 1940s, the same decades when the Florida-type trawler entered the offshore fishery from Texas to Florida, New York and especially Chicago became national distribution centers for shrimp. Gulf coast production was increasingly structured by the demands of these markets, which put shrimp into wider circulation among American consumers than ever before. The larger volumes and sizes of shrimp harvested in offshore fishing were processed for fresh and frozen sales, not for canned or dried products. Between 1930 and 1940 frozen shrimp surged from four percent of national value in shrimp products to the majority. The shift to frozen shrimp in national markets marginalized Louisiana. Frozen shrimp from other states that built up harvesting and processing capacity in the 1940's designed around frozen products largely replaced Louisiana fresh shrimp in the Chicago market, which it formerly dominated, in just five years between 1940 and 1945. Value-added products like peeled and breaded frozen shrimp, designed for convenience in cooking at home and in restaurant service gained large shares of the market (Becnel 1962:52). Frozen shrimp were useful for regional and

national distributors that could now maintain year-round product availability and greater flexibility in meeting consumer demand than with fresh shrimp, which were highly perishable.

More affluent Americans after the Second World War could afford to buy shrimp in restaurants and could find it in some quantity regardless of season. Yet in comparison to the huge increases in meat availability made possible by the expansion of the 'grains-livestock complex' (Goodman and Redclift 1991:108-110), seafood declined relatively as a share of overall food consumption in the immediate post-war decades (as it did in Britain, see Goodman and Redclift 1991:40). As incomes increased, seafood became relatively dear in comparison to meat as supply could not outstrip demand as the new agricultural techniques allowed for chicken and beef. It was at this time that shrimp acquired its cachet as a luxury food, one consumed rarely and on special occasions.

Expanding the production of shrimp to supply a growing domestic market had to rely upon essentially extensive means. Technological advances were limited to vessel and processing plant equipment. Terrebonne parish processors invented shrimp peeling and other processing machines in the 1940s and 1950s that cut the labor required to peel shrimp by over ten-fold, making it possible to peel and grade small shrimp for the frozen foods and restaurant market efficiently (Becnel 1962:53; DeSantis 2003a). Yet there was no way to apply capital or technology to the shrimp themselves to make them more abundant in the ways that were newly possible in agriculture and animal husbandry. Shrimp remained wild animals regulated in their reproduction and growth only by ecological limits of salinity, temperature, food supply and predation and human impacts

from fishing mortality and anthropogenic changes to coastal environments. These ecological ceiling on production was beginning to become apparent as early as the 1930s in the Louisiana fishery.

The increase in domestic consumer demand for shrimp in the 1940's led to a price revolution in the Louisiana shrimp fishery. Average shrimp prices increased by almost six fold nominally and over three times in real terms<sup>17</sup> in the decade between 1940 and 1950 (Table One). Higher prices led to increased participation in the fishery with higher capitalized boats. A more crowded fishery made fishers more economically vulnerable to yearly ecological variability in shrimp populations due to spring cold fronts, heavy rainstorms, or changes in the outflow of bayous and rivers that can kill or stunt the growth of post-larval shrimp in inshore estuaries. Louisiana shrimp production reached a peak in 1945 of 117 million pounds (larger than most years in the 1990s and 2000s) then fell considerably in 1947 and 1948. Recovery followed in the early 1950s, and then the fishery saw more disastrous years in 1957, 1958 and 1961. In the latter year landings fell to just 31 million pounds, less than was harvested before the offshore boom but with all

Table One. Louisiana shrimp dock prices, 1908-50, nominal and adjusted to 2003 dollars.	1908 <sup>18</sup>	1930	1938 (pre-strike)	1938 (post-strike)	1940	1950
<b>Nominal Price (cents/lb.)</b>	1.4	3.4	3.3	3.8	3.9	22.7
<b>Real price (cents/lb.) CPI<sup>19</sup></b>	26.0	37.5	43.1	49.6	51.3	173.3
<b>Real price (cents/lb.) PPI<sup>20</sup></b>	16.1	31.5	33.8	38.9	39.9	114.8

Source: Becnel (1962).

<sup>17</sup> In reference to the CPI (2003=100).

<sup>18</sup> Adjusted using 1913 CPI and PPI (Producer Price Index) data, the earliest year available for both indices.

<sup>19</sup> Adjusted to Consumer Price Index, (2003=100).

<sup>20</sup> Adjusted to Producer Price Index, (2003=100)

the new investment and participants from the boom. The surge in new investment in the fishery based on increasing landings meant that years of poor productivity jeopardized the viability of those investments. It should be noted that outside these crisis years, overall landings of Louisiana shrimp have been quite stable over the 20<sup>th</sup> Century, and natural variation has consistently affected the volume of the shrimp crop more than anything that shrimpers are capable of doing. Luckily for Louisiana shrimpers, they have not seen fishery crises akin to the collapse of the cod fisheries of New England and Atlantic Canada beginning in the 1990's.

A Department of Wildlife and Fisheries historical study of state laws governing shrimping shows that restrictive laws date back to almost the origins of the fishery, such as early bans on powered vessels and trawls before they became the dominant form of harvest in the 1920s (LDWF 1992: Appendix A). Fundamental management measures imposed around this time that still exist in some form include minimum count laws, seasonal closures of inside waters, and fishing gear restrictions. Over time these laws have become more permissive in the kinds of shrimping practices allowed. Four years after offshore shrimping began, a minimum count of 68 was introduced, meaning that no shrimp averaging more than that number per pound could be landed, replacing a previous limit of four inches in length. Exceptions to the count law were granted during the Spring inside season for brown shrimp and seabobs, allowing shrimp of any size to be legally landed. Seabobs, a small shrimp species, had been exempted previously, but the new exemption for what at the time was a rather rare species in Louisiana, the brown shrimp, spoke to changing ecological conditions and increasing fishing pressure that made the

average size of harvested shrimp (but not total volume) smaller. Brown shrimp prefer higher salinities than white shrimp (Pattillo et al. 1997), and the increasing harvest farther in the Gulf meant that brown shrimp were more commonly caught. Environmental changes to the Louisiana marshlands that shrimp grow to marketable sizes in also had a role in the emergence of brown shrimp in the fishery. Massive hydrological disruptions to the outflow of the Mississippi River system from the early 20<sup>th</sup> century such as the higher levee systems built after cataclysmic 1927 floods (Barry 1997), and the cutting of thousands of miles of canals into the marshlands by the newly arrived oil industry withdrew huge amounts of fresh water from the coast and allowed salt water to advance many miles in places into formerly fresh water zones (Louisiana Coastal Wetlands Task Force 1999).

Along with contributing to the loss of 1,900 square miles of coastal land in the past century (Caffey and Schexnayder 2000), salinity changes caused brown shrimp to move into and displace white shrimp from many of their habitats beginning in the 1950s (Becnel 1962:55). The combined effects of environmental and harvest location change on the species composition of Louisiana shrimp landings were dramatic. In 1945, over ninety percent of landings were white shrimp (Becnel 1962:46); in 1963, brown shrimp made up a third of landings; by 1978, brown shrimp were the majority of state landings (NMFS 2005a). As white shrimp are on average larger than brown shrimp in Louisiana (Sass 1979; Baron-Mounce et al. 1991:6) it appears likely that some of the cause for smaller shrimp was due to human-induced species succession due to salinity changes, not to increased or differently located fishing pressure. If those large white shrimp

populations seen as late as the mid-1940s were still as abundant, they should have been caught by someone, yet they were not; rather, brown shrimp replaced them. The expanded fishery undoubtedly added previously unfished offshore browns to inshore whites in the total catch, but there was also a change in composition of the whole that meant the decline of white shrimp to the benefit of browns. Management changes that legalized the harvest of smaller shrimp and increased shrimping effort are also undoubtedly in part to blame for the decline in shrimp sizes, but the weight and direction of any particular causation for changes to Louisiana shrimp landings is unclear. For example, it is not obvious if more permissive count laws were in response to already declining shrimp sizes (from any cause) or that changes in the law encouraged the catching of small shrimp that otherwise would not have been.<sup>21</sup>

The higher national demand for shrimp and years of bad harvests in the Louisiana fishery in the 1940s and 1950s caused many fishing families who owned large<sup>22</sup> Gulf trawlers to emigrate from the state and move to ports in Southern Texas, where offshore boats had not yet located in numbers and there were still untapped populations of large brown shrimp. Local Texans were often wary of the newcomers, a combination of economic concern by established Texas bay boat fishers that the new Gulf boats would outcompete them and cultural conflict between Anglo and Mexican Texans and ‘foreign’ Francophone Cajuns (Maril 1983: Chapter Five). These Louisiana migrants and native

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<sup>21</sup> Finding better answers to these questions would require further study of quantitative data on historical environmental conditions, landings, and fishery-independent sampling data on shrimp sizes as well as oral histories from fishers, archival research from newspapers, and available personal and business records of shrimpers, shrimp buyers and processors.

<sup>22</sup> By the standards of the time. Gulf vessels at that time were some thirty to fifty feet in length, which today would be considered rather small for ocean-going shrimp vessels.

Texan shrimpers who moved into larger boats around the same time did not necessarily stop their movement southward at the international border at Brownsville either. New discoveries of more offshore shrimping grounds further south in the Bay of Campeche and off of Yucatan in Mexico prompted American shrimpers to begin making trips there, either staying outside of Mexican territorial waters or operating through understandings that involved kickbacks to government officials (Maril 1995:157-159). At the time, the Mexican shrimp fleet in the Gulf of Mexico was not sufficiently capitalized to fully exploit its offshore waters. Shrimp were allocated under the Cardenas administration to the social sector, which meant that shrimp fishing became the de facto monopoly of fishing cooperatives (and later some *ejidos*) that marketed to domestic markets and the U.S. through parastatal companies (Cruz-Torres 2000). This development was centered initially on the Mexican Pacific coast, specifically Sinaloa state; the Gulf of Mexico did not develop a large Mexican Gulf shrimp fleet until the oil boom of the 1970s and Mexican adoption of extended jurisdiction (a 200 mile Exclusive Economic Zone or EEZ). U.S. shrimpers operating abroad were able to find new areas to expand the fishery, increasing catches (about fifteen million pounds a year at the height of the U.S. shrimp fishery in Mexico in the 1950s) and reducing overcrowding in the Gulf fisheries in U.S. waters. Some were fishing as far south as Guyana and Brazil in the early 1970s (Iversen 1993:53-60), but U.S. shrimpers were over time marginalized abroad through laws restricting their presence and competition from growing shrimp fleets from their host countries before they were excluded altogether by 1980.

Most Louisiana shrimpers were unable because of their smaller boats and lower capitalization from either emigrating to Texas or shrimping in Mexico and were otherwise unwilling to do so. Cajuns, who currently make up the majority of shrimpers in Louisiana (Deseran 1997) and have been so for many decades, are among the most endogamous ethnic groups in the United States (Henry and Bankston 2002), meaning that they tend to marry other Cajuns and settle near their place of birth. Most Louisiana fishers stayed where they were and coped with variability in the fishery. They were helped in this regard by improved management by the state in the wake of the late 1950s and 1961 fishery failures through altering season openings and minimum counts to prevent overfishing (Becnel 1962:86-87). Landings were reliable season to season for over a decade afterwards and prices remained steady or increased. Outside of bad years in 1973-5 caused by Mississippi River floods, landings have not crashed since.

Sociological profiles of two Terrebonne parish shrimping communities from 1942 and 1959 document that most households relied on shrimping and other forms of fishing for the majority of their income (Pierron 1942; Roy 1959) and that many maintained diversified livelihoods, either in other fisheries or in shore employment. Other employment and savings from shrimp income allowed fishing families to get through the winters and poor shrimping seasons. Skilled trades such as carpentry, unskilled labor, and work in the oil and gas industry on rigs or operating tugboats and crewboats provided employment for fishermen. The oil industry played a paradoxical role in sustaining many of the pre-industrial occupations of Cajuns while it transformed the economy and culture of South Louisiana (Henry and Bankston 2002). Many oilfield employees worked 'seven

and seven' or 'fourteen and fourteen' shifts<sup>23</sup> that allowed them to participate in occupations like shrimping while they were on leave from their waged jobs.

Constructing livelihoods out of a combination of wage labor and shrimping was an outgrowth of historical seasonal employment in South Louisiana in a variety of harvests throughout the year. Among the possibilities were fur trapping in the winter, harvesting oysters in the winter and spring, shrimping and crabbing in the summer and fall, mixed with cattle ranching, farming, alligator hunting, or finfishing at different points in the year (Gomez 1998:189). Shrimping was a part of overall household livelihood strategies depending on the area of the state people lived in, the livelihood opportunities that location provided, personal investment of people in shrimping, investments and skills in other trades, the abundance and price of shrimp in a given season, and the income needs of the household. Given the investment required for a shrimp boat, the intensity of labor required during the months the season was open, and the multi-generational tradition of shrimping for many participants, few shrimpers would readily exit or enter the fishery for other opportunities. People were highly dependent on shrimp for income when landings were stable and prices good. Low prices or a bad shrimp season tended to move people towards diversification of incomes and temporarily painful reductions in household expenditures, but only grave crises forced people out of shrimping entirely. Fishers were especially vulnerable to fluctuations in cash income because while they were capable of drawing on multiple sources of livelihood from

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<sup>23</sup> The numbers indicate the number of days devoted to full-time work away from home on an offshore platform or other worksite and the number of days off in a repeating work schedule.

natural resources and wage labor, they normally produced few of their household needs directly through their labor, purchasing almost all of their food, clothing, and utilities in the consumer market.

This is not a recent phenomenon, as Pierron (1942) found that Chauvin shrimpers purchased most of their household needs in the early 1940s and paid for those goods almost entirely with revenues from selling shrimp. Rather than using their incomes in good times for diversifying household production into non-fishing activities like farming, fishers used their excess income for savings, improving their boats or building better ones, or on consumption goods like gas stoves, washing machines, and radios, and later cars, televisions, air conditioners, and suburban-style houses. There was in any case little arable land for farming on the bayous where shrimpers lived, no more than required for kitchen gardens in some places. Local leaders like parish priests who urged fishers to diversify their economic investments away from fisheries were largely ignored.

#### Agro-food systems in political-economic context (II): From Fordist to Post-Fordist accumulation

Neither increasing the size of shrimping fleets nor operating overseas was sufficient for the U.S. shrimp industry to meet growing consumer demand. Domestic sources of shrimp were more or less at maximum production by 1950. Shrimp imports increased steadily after the Second World War, becoming the majority of U.S. consumption of shrimp in 1961, most of the imports coming from Mexico and Central America at that time (Becnel 1962:89-90). Increased shrimp exports to the United States were the result of national and international development programs to create or

modernize shrimp fisheries in order to earn foreign exchange. Programs to modernize fisheries, such as the Norwegian government's aid program in Kerala, India (Klausen 1968) that began in 1951 and became a model for development programs in the post-war decades, introduced motorization and new boat types. The entry of higher capitalized vessels producing for export in the context of large, established artisanal fisheries supplying local markets and subsistence needs created conflict between capitalized and artisanal sectors and higher prices for fishery products locally which made fish a less accessible food for some. Adopters of new technology gained higher cash incomes, changed the distribution of incomes and catches among fishers, and increased capital (particularly fuel) expenditure per unit of production (Kurien 1995; O'Riordan 1995; Kurien 2002).

Even with increased imports, prices for U.S. shrimpers remained fairly stable around the levels attained in the mid-1940's because demand remained stronger than supply. The growth of shrimp fisheries worldwide, as with the U.S. fishery, was through extensive development, connecting the natural production of progressively larger parts of the world's sea coasts to major consumer markets by technologies like international development agencies, diesel-powered trawl boats, manufactured ice, and freezers. There remained considerable difficulties in applying capital in large amounts to shrimp fisheries. Shrimping areas were spread out across many countries, infrastructures for freezing and export had to be built in many cases, and the ecological variability of wild shrimp populations meant that quality and quantity of shrimp could change greatly year to year and country to country. There was little way to modify shrimp supply to the

demands of the market, for example to catch smaller or larger shrimp to meet shortages of that size product. The seasonality of many fisheries meant that fixed capital investments in boats and processing plants were idled for many months out of the year, making investments in shrimping as in agriculture less profitable than in industries where the production process was constant and the use of capital uninterrupted, as in agriculture (Mann and Dickenson 1978). The diversity of shrimp species harvested throughout the world made product recognition and acceptability to consumers and standardization of processing techniques difficult. Global production for export steadily increased, but there was no quantitative leap in production due to the application of technology or capital equivalent to that seen in agriculture, and thus prices remained constant or increased in both nominal and real terms through the 1950's and 1960's. Ship builders and fuel providers profited from the increased number of boats, and the internationalization of the U.S. supply of shrimp meant that wholesalers were less dependent on the fortunes of any one region's shrimp fishery for their products, but overall shrimp fisheries were not readily incorporated into capitalist agro-food systems, either through appropriation or substitution.

Sweeping changes in international political economy occurring in the decade 1973-1983 would fundamentally restructure U.S. fisheries as part of a general restructuring of agro-food systems towards internationalization of production and consumption. Liberal or Fordist modes of capitalist regulation that emerged in the New Deal and Second World War linked state policy to economic goals such as full employment and public provision of infrastructural and basic consumption goods. These

gave way to neoliberal modes of regulation emphasizing flexible production arrangements, deregulation of business activities, and privatization of state enterprises (Shutt 1998; Hahnel 1999; Jessop 1999; Buckman 2004). All the industrial economies saw rates of profit fall in the late 1960's and early 1970's as consumer demand driven economic growth slowed as markets for consumer goods in the core countries became saturated and widespread social change movements contested the prevailing distribution of power in those countries (Shutt 1998; Cleaver 2000). It was in this context that in 1973 the oil embargo by OPEC countries delivered one of several major shocks to the industrialized countries that produced a profound crisis in capitalist accumulation that would create a roller coaster of boom and (especially) bust for commodity producers, including fishers, in the years ahead.

Beginning in 1973, prices of non-oil commodities increased in their terms of trade (real buying power) relative to manufactures and remained higher than their 1970 levels through 1981-82 (Maitzels 1992:11). Higher commodity prices, especially combined with large increases in energy costs, shifted capital flow from manufacturing areas of the world economy, i.e. the U.S., Japan, and Western Europe, and towards commodity producers, especially petroleum exporters, because the difference in price between manufactured goods those countries imported and raw materials they exported decreased. The U.S. economy's recovery from recession was threatened by increasing trade deficits as a result. The U.S. interest in reducing this deficit dovetailed with Global South nations' interest in asserting greater sovereignty over what they felt was their national territory, their nearby oceans.

As part of an initiative called the New International Economic Order (NIEO) promoted by Global South countries through the General Assembly of the UN, those countries succeeded in getting the world's coastal states to agree to the Law of the Sea Treaty in the 1970s, which had formerly been opposed by the powerful states like the U.S. The Law of the Sea granted 'extended jurisdiction,' national sovereignty, over the sea two hundred miles from a nation's shores. U.S. fishing fleets that operated overseas objected (shrimpers and tuna vessels mostly) but their concerns were overcome by the much larger presence of foreign fishing fleets near the U.S. that were threatening to overharvest to collapse several valuable fisheries. This was particularly true in New England, where a small U.S. groundfish (cod, haddock, etc.) fleet was outclassed by large factory trawlers from Western European, East Asian and Eastern Bloc countries that were taking fish at levels far above what could be sustainably harvested. Local inshore harvests suffered and the viability of the entire fishery was in danger (McCay and Finlayson 1995). There were good reasons to exclude foreign fleets from New England and Canadian Maritimes waters through extending jurisdiction.

Alongside this interest in resource conservation and protecting existent local harvesters was an interest in replacing the foreign fleet with an American highly capitalized fleet that would deny other countries revenues from North American fisheries, reduce the amount of capital leaving the country to pay for fishery imports, and increase U.S. exports. The costs of importing seafood were more affordable when the U.S. economy was growing rapidly, so a strategy of import substitution through the 'Americanization' of harvest became sensible as U.S. economic surpluses declined. This

Americanization strategy resembled that undertaken in many international development programs (Mansfield 2001). Producers were offered financial assistance in moving toward more capital-intensive production under a regulatory framework that at least in principle sought to reduce the number of total participants to increase overall surplus value, referred to as economic rent, accruing to the U.S. economy. The practical form this took were subsidies in the form of loan guarantees for building more and larger boats.

After the U.S. joined the Law of the Sea Treaty and declared its 200-mile territory in 1977, an explosion of boat building followed fueled by these subsidies, a lack of controls on new entry into the newly nationalized fisheries, and the inflationary economic situation of the country. The 1969 Stratton Report, the foundational document of federal fisheries policy that inspired the National Marine Fisheries Service (NMFS) and Sea Grant program to govern extended jurisdiction, argued for a modernized, smaller in number and economically efficient fishing fleet that would exclude most existing fishers, but it also used an assessment of total possible fishery productivity that was grossly overestimated (Molyneux 2005:20-25). This assessment was objected to by scientists but was retained, and it justified a lack of controls over effort expansion alongside support for modernization in the early years after the Magnuson Act, the federal legislation overseeing fisheries that was passed alongside extended jurisdiction.

A 'frontier' mentality resulted in which the withdrawal of excess capacity of foreign fleets was replaced within a few years by U.S. capacity. Many fishers took on heavy debts to participate in the boom and much speculative capital was invested in fisheries (Maril 1983:146-148; Playfair 2003:32-35). In the late 1970s there were few

outlets for capital that could earn revenues greater than the very high inflation rate, and building fishing vessels was one of them. A \$200,000 boat could be financed with just \$25,000 principal (much of that in the form of tax credits) and the remainder of the amount loaned and guaranteed by the government (Murray 1994). For a time fishing vessels were actually appreciating considerably (25% for shrimp vessels from 1979 to 1980) meaning that it made sense to build new vessels even if one had no intention of ever making a dime on the water with them. As a result fishers and speculators turned undercapitalized fisheries in the absence of foreign fleets into overcapitalized ones while achieving the developmentalist goal of Americanizing and modernizing the fisheries. The Stratton report's goal of removing old fishing capacity as new capacity was introduced was not implemented due to the political difficulty of ending the livelihoods of thousands of people and dozens of coastal communities, so new capacity was compounded with old. This would create economic and ecological crisis for fishers in the years ahead.

Fishers also built up capacity rapidly in the 1970s because of the record prices they received combined with the record expenses they faced. For example, Gulf of Mexico real shrimp prices followed closely the global commodity price trends of the decade, gaining rapidly after 1970, reaching a peak in 1979 that was double the real price at the beginning of the decade. A lack of restrictions on new effort in most federally managed fisheries meant the lure of high prices and easy government-backed credit caused new capacity to flood in. In the Gulf of Mexico shrimp fishery, a fishery management plan was not approved until 1981, after the building boom had occurred, and that plan would have done little to slow down expansion if it had arrived earlier as it

argued that shrimp had no effective stock-recruitment ratio (Gulf Council 1981; McGuire 1991). This argument defended a lack of restrictions on effort.

In addition to more boats competing for fish, much higher fuel prices and other increasing costs like insurance tightened profit margins for fishers, which higher landings prices only partially compensated for. Consequently fishers, especially owners of fleets vertically integrated with docks and fuel and equipment suppliers that were prevalent in some fisheries like the Texas Gulf shrimp fishery, expanded their capacity to achieve economies of scale to compensate for their smaller margins. Overcapitalization was a response to the declining margins of some individual enterprises that had the effect of reducing overall industry profitability (Maril 1983:140-146).

In comparison to regions like New England where there was a considerable decline in fisheries capacity when foreign fleets left, the Gulf of Mexico shrimp fleet had always been almost exclusively from the U.S. (Iversen 1993:58-60). As mentioned before, the U.S. had a considerable shrimp fleet engaged in foreign operations. When Central and South American countries declared their own EEZs, this U.S. fleet had to return home and its capacity was added in with the already mature, perhaps already overcapitalized, U.S. fleet operating in American waters. Yet federal construction assistance was given out to the Gulf shrimp fishery just as it was in other fisheries that were not facing returning vessels and already high levels of domestic effort (Murray 1994). Providing large subsidies to increase capacity<sup>24</sup> in a fishery that was already

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<sup>24</sup> An estimated \$100 million in loans was guaranteed by 1988 for the Southeast U.S. shrimp industry, almost all of that to building or upgrading boats. A third of the total went to Louisiana. In comparison, the entire Louisiana shrimp fleet of some 15,000 boats and vessels was worth \$172 million in 1979 (Sass and Roberts 1979).

getting crowded must be seen as having particularly perverse effects on economic efficiency.

This evidence disputes a simple ‘tragedy of the commons’ argument that fisheries become overcapitalized due to inherent human drives to exploitation in an open-access commons. It points to specific rather than general causes of overcapitalization rooted in government subsidies, national economic interests to improve the balance of trade, misleading scientific data that justified overcapitalization, economic incentives to build up capacity to make short-term speculative profits and cope with rising expenses, and a capitalist overaccumulation crisis of fixed capital. Because capital invested in a fishing vessel is *non-malleable* (Jennings et al. 2001:227), meaning that it cannot be easily converted into other productive uses and typically only at a loss to its owner, once money is put into a boat the tendency is for it to stay. Shrimp boats can be rigged for other fisheries, but often not easily, and they have little or no use in non-fishing work. The revenues from selling a boat’s steel or wood, electronics, engines and nets are a fraction of the cost of a constructed boat. As the opportunity cost of regaining any liquidity of capital invested in a boat is very high, fishers will continue fishing at very low levels of profitability, or even at a considerable loss, rather than selling it, tying it up, scrapping or sinking it. Thus the overcapitalization encouraged over a few years would haunt fisheries for decades to come, while remaining a constant proof and justification for those that wished to see the irrationality of fishers and the tragedy they supposedly brought upon themselves.

The negative effects of overcapitalization were somewhat obscured by the inflationary run-up of boat and commodity prices in the latter part of the 1970's but became painfully apparent in the 1980s. Commodity prices began falling at this time and never regained the record levels seen in the previous decade. Highly indebted fishers who upgraded their boats were placed in severe economic stress due to their need to make loan payments based on higher prices. Intensive harvest in some fisheries due to declining margins and overcapacity intensified the threat of biological overfishing and fishery collapses that originally helped motivate the enclosure of coastal seas. In some places like the Northwest Atlantic, fisheries did collapse, causing closures and restrictions that impoverished many fishing communities (Rogers 1995; Palmer and Sinclair 1997). The response to ecological and economic crises of some fishers, elected officials, fishery managers, academics, and environmental NGO's has been to advocate for reducing the number of fishers and/or impose forms of market-based allocation of fish stocks (Christy 1996; Playfair 2003: Chapter Six; Molyneaux 2005:221-229). Based on such claims, fisheries in crisis have seen policies designed to buy out or otherwise alienate many small-scale fishers from fishery resources (McCay and Finlayson 1995). These policies, based on the assumption that the core of the problem is too many fishers and common property, have provoked fears that ecological crisis is being used to take access to fisheries from traditional communities (Rogers 1995) and finally impose the 'lean, mean' fishery model envisioned in the Stratton Report with private control of fisheries by corporations operating large vessels.

What occurred in U.S. fisheries in the 1970's and afterwards was reflected in other countries' fisheries and the broader international food order. The post-war decades saw the dumping of agricultural surpluses as food aid or subsidized exports into many Global South countries for geopolitical reasons, to stabilize U.S. farmers' prices, and to develop markets for agricultural exports. Cheap food was in the developing countries just as in the Global North a key component in sustaining an accumulation strategy based on industrial development and urbanization. It also had the effect of undermining the economic basis of domestic food production for the sizeable portions of those countries' populations, often the majority, engaged in agriculture. Reduced returns to Global South farmers led to their impoverishment, a conversion to import substitution crops like rice and wheat, or export crops supported by Green Revolution technical assistance. The *disarticulation*<sup>25</sup> of these countries' domestic food production from meeting national or local needs increased their vulnerability to food insecurity and hunger.

This was exposed when in 1972-4 the U.S. moved away from food aid due to budgetary constraints, international food commodity prices increased, and the new demand of the USSR for American wheat strained world supplies. Countries that had grown dependent on food aid now had to pay for their imports. During the years of high commodity prices for some Global South countries' exports, food imports could be paid for with foreign exchange earnings or by entering into increased debt, but this was not universally possible, and the debts incurred would not be easily paid off.

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<sup>25</sup> Movement away from complementarity of food production and consumption in a given country, or a growing divergence between what is produced and what people are able to consume.

The structural problems in the global capitalist economy that emerged from the crisis of the 1970s prevented commodity exports from providing enough capital for the increased needs of Global South nations for imported food and other goods. Average annual Gross Domestic Product growth (GDP) in the OECD countries<sup>26</sup> fell from 4.3% for 1950-1973 to 2.4% for 1973-1995. Growth in private consumption slowed from 4.3% to 2.6% over the same years (Shutt 1998:38). This had the effect of reducing demand and prices for primary commodities which made imports of manufactures effectively more expensive for net commodity exporters and debts harder to pay. Non-oil commodity terms of trade began falling rapidly in 1981-82 and reached sustained low real values worse than those seen during the Great Depression in the 1930's (Maitzels 1992:12). Lower export revenues meant that the large debts incurred for a variety of reasons (food purchases, industrial development, consumption goods for national elites and corruption) in the 1970's quickly became unpayable for many countries. Mexico almost threw the world financial system into chaos when it threatened to default on its huge debt in 1982, ushering in the era of structural adjustment (Thorp and Whitehead 1987).

International financial institutions dating back to the Second World War, the World Bank and International Monetary Fund, became responsible for making these countries solvent again. In return for assistance, Structural Adjustment Programs (SAPs) were imposed that cut public spending on things like subsidized food for urban consumers or agricultural assistance, and restructured national economies towards

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<sup>26</sup> Organization for Economic Cooperation and Development, an organization of the wealthiest countries, located mostly in Western Europe, East Asia, and North America.

increasing exports and reducing imports. Countries that lost much of their ability to feed themselves due to cheap food imports now had to pay dearly for imported food and could no longer assist consumers with the cost. Capital-intensive Green Revolution techniques were often abandoned as state support for them was cut (Bassett 2001: Chapter Six). To earn foreign exchange for debt service and to pay for imports such as food, countries shifted more resources to export production, further tying their food security to world markets and reducing the share of their agricultural productivity devoted to meeting domestic needs.

As prices of many traditional food and export crops declined, producers turned, often with development agency assistance, to so-called ‘non-traditional’ crops like ornamental flowers, gourmet coffees, soybeans, fresh vegetables, and aquacultured seafoods. Much of this production was for export in hopes of entering markets that had not suffered as much from commodity price declines. In all fairness, some forms of aquaculture, like increases in the farming of species like carp and tilapia (De Silva 2003; Suresh 2003) especially in China, have greatly increased the availability of fish at affordable prices for people in the Global South. This part of the so-called ‘Blue Revolution’<sup>27</sup> improves local food security (Njoroge 2005) by focusing on local and regional markets, not exports, and the cultivation of cheap seafoods that can be raised using locally-derived inputs, but the product that combines advances in aquaculture with the need of many nations for high-value agricultural exports is shrimp, and as such

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<sup>27</sup> A term that denotes the modernization of aquaculture and fisheries. Originally used to describe the motorization and expansion of Global South fishing fleets, it encompasses widely divergent projects from efforts to implement appropriate technology aquaculture projects with little capital input to genetically modified fish development and extremely capital-intensive open ocean aquaculture for export markets.

shrimp aquaculture development draws a disproportionate share of state and private investment for the amount of food it produces.

### Shrimp aquaculture and the globalization of seafood production and consumption

While shrimp aquaculture in various forms has existed for hundreds of years, modern shrimp farming largely developed in Taiwan in the 1970s, then diffused to Southeast Asia and South America. It both created new shrimp farming industries where none had existed before and revolutionized wild shrimp fisheries and old forms of aquaculture already in place (Hall 2004). The growth of shrimp trade and aquaculture was rapid. From 1/20<sup>th</sup> of global shrimp supply in 1980, aquaculture amounted to over a third by 2001. The total amount of shrimp crossing borders also increased: the majority of world shrimp production of all types was exported in 2001, while approximately a quarter was in 1980. The major importers of shrimp are presently the U.S., Japan, and the European Union. In 2001 Thailand, India, Indonesia, Vietnam, and Mexico were the top five global shrimp exporting countries by volume (NMFS 2004b:28-29). Shrimp is today the most consumed seafood in the U.S. and a major source of foreign exchange for many countries.

The shrimp farming industry is a major source of controversy. Fisherpeople and other coastal residents of exporting countries have long denounced shrimp exports. Opponents argue that shrimp farming destroys coastal wetlands and agricultural land to build ponds and that wild fish and shrimp stocks are diverted for fish meal to feed farmed shrimp and for shrimp larvae to stock the ponds. There have been many incidents of violence including numerous killings of people opposed to shrimp farming in their

communities by shrimp farming interests. Often coastal residents do not have legal title over their lands and land seizures and relocation of people for shrimp pond construction is a source of much conflict and violence (Siregar 2001). The so-called “Pink Gold Rush” of shrimp exports has come with a high social and ecological cost (Stonich and Bort 1997; Ahmad 1997; Cruz-Torres 2000; Stonich and Vandergeest 2001; Lahiri 2004).

The shrimp farming industry shows high levels of regional differentiation rooted in historical land tenure patterns, capital availability, and ecological conditions of the places it operates (Hall 2004). In smallholding-dominated societies like Vietnam and Thailand, farms have been tiny in size but huge in numbers, only a few hectares in most cases, operated by peasants and entrepreneurs able to access the often considerable capital needed to build and operate shrimp ponds even of such small sizes. In contrast, Mexican, Ecuadorian, Brazilian, Central American and Indonesian shrimp farming has followed a largeholding pattern, reflecting the land inequality of those countries. Large farms are operated as sharecropping enterprises (Siregar 2004) or as plantation-type operations. These differences are significant as some parts of the shrimp farming industry are vertically integrated, where large ponds are owned by the same businesses that operate processing plants, input suppliers, and exporting companies, and others are made up of theoretically independent peasant producers that are in reality dependent on buyers and exporters for markets and capital but exercise a certain real if limited autonomy in their farming practices. Capital has more control over some sectors of the industry than others and some forms of shrimp farming distribute incomes and costs of the industry

more evenly across the populations affected by it. In recent years intensive<sup>28</sup> (as opposed to extensive<sup>29</sup>) farming culture has expanded in some regions, increasing productivity per unit of area while increasing ecological problems with shrimp farming (Vandergeest et al. 1999; Lebel et al. 2002).

Despite these differences, all these farming types, high or low stocking densities, large or smallholdings, have for the first time made it possible to produce shrimp on demand. Green Revolution technologies like agri-chemicals and off-farm livestock production using processed feeds were adapted to shrimp, and tied to the neoliberal economic paradigm of export-oriented production. Shrimp can now be *intensively* produced, meaning more can be produced not through geographic expansion of fishing production, but by through improving productivity beyond that naturally possible in the sea. Capital is able to appropriate backward and forward linkages to this increased production. U.S.-based agribusiness corporations like Cargill and Monsanto are involved to supply inputs as are other transnationals like the Charoen Propkhand (CP) Group of Thailand, an input and capital provider and buyer/processor/exporter throughout Southeast Asia. Numerous development agencies and national governments have provided financial assistance to shrimp farming and there exists a large technical extension community providing advice and research (Skladany and Harris 1995).

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<sup>28</sup> Intensive here means high stocking densities of shrimp per unit of pond area and higher capital investment, including purchased formulated feeds, use of chemicals and antibiotics, and mechanical aerators. Farm size and intensiveness can be positively or negatively correlated. Brazil has many large-scale operations using highly intensive techniques. Thailand's farmers are mostly very small but among the most intensive in the world. Access to capital to purchase inputs more than farm size is the key to achieving intensive production.

Farmed shrimp were more successful as an export commodity compared to wild-caught shrimp as they could be grown to specific market demands such as preferred size, were of a more uniform size than wild-caught, and their availability was less dependent on things like seasonality of harvest. As with other agricultural crops intensive techniques were applied to, shrimp aquaculture has shown the ability of supply to greatly outstrip demand and collapse prices, but this was not immediately evident as shrimp farming and greater overall trade in shrimp developed in the 1980s and 1990s. While shrimp prices throughout this period were lower than in the 1970s, in real terms shrimp remained a relatively valuable commodity compared to traditional exports like coffee or sugar that saw devastating price losses. For this reason, investment continued to flow in and production continued to increase.

Shrimp farming like export-oriented fisheries and agriculture in general earned foreign exchange which could (but did not necessarily) indirectly feed people in the Global South by paying for imported grain. The high prices of foods produced for export meant that relatively few people in the producing countries were able to access the foods they produced. This unequal access was intensified by the polarization of income caused by structural adjustment in economies restructured by the debt crisis. Kent (1995) reports that the surge in exports of fish helped to reduce the per capita consumption of fish in Africa and South America between 1978-1988 while in Asia, Europe and North America consumption increased. The Global South has a positive balance of seafood trade of \$11

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<sup>29</sup> Extensive refers to a production process with lower stocking densities reliant more on locally procured feeds or food found in the ponds themselves. Extensive operations cost less to run but produce less per unit area.

billion, but this says nothing about how this income is distributed. Seafood consumption in the South is on average nine kilograms per person per year compared to twenty-seven in the North (Le Sann 1998). Income from fish exports means less fish for people to eat in the exporting countries. When the European Union established its Common Fisheries Policy, one way of reducing overcapacity and overfishing in its waters was to buy access rights to West and East African countries' EEZs for European fishers. Heavily indebted African countries in effect sold their fishery resources so that Europe could export its excess capacity at public expense and deliver those fish to European, not African, consumers (Le Sann 1998:73-75). The subsidization of large-scale, distant water fishing fleets of Japan, Russia, Western Europe and other wealthy countries amounted to an estimated \$54 billion in 1989 according to the UN Food and Agriculture Organization (FAO 1993). The end of the Soviet Union stopped the subsidies going to Russian fishers, but Japan, which contributed \$19 billion to its fishers in 1989, continues along with several other countries to give large subsidies. Current U.S. fishery subsidies are much smaller in comparison and U.S. shrimp fishers receive no federal subsidies for operation, although they did receive relatively small amounts of temporary disaster and trade adjustment assistance in the 2000's due to the low prices they currently face.

Importers, wholesalers, and retailers have gained new power over many parts of the U.S. agro-food system since the 1980s. Consolidation of food service businesses meant the commodity chain of shrimp like many other products became more buyer-, not seller-directed (Gereffi 1994), meaning producers had to take the prices given regardless of whether they met their needs. The commodity chain of shrimp was altered as

restaurant wholesalers like SYSCO and U.S. Foodservice, importers like Red Chamber, Ocean Garden, and Empress International, and restaurant holding companies like Darden Restaurants (Red Lobster and Olive Garden) and Yum Brands (Taco Bell, KFC and Long John Silver's) gained market share through the volume of products like shrimp and other seafoods they moved or purchased. They could thus undermine the privileged position in the commodity chain held by seafood processors and regional distributors that existed when domestic production had a bigger market share.

Previous to the rapid decline in market share due to imports, a bad harvest year in the Gulf of Mexico meant higher wholesale shrimp prices, cushioning somewhat the pain caused by a poor harvest. Now, U.S. shrimp fishers or farmers in any other country get the same price no matter how their season went, making supply availability and price predictability for wholesalers and retailers better but making bad years worse for producers. In this way shrimp farming acted in a substitutionist manner towards wild-caught shrimp, allowing for more steady supplies of even quality and size despite ecological or economic disruptions in parts of the global supply chain.

Increased supplies and lower prices allowed per capita consumption of shrimp to almost triple between 1980 and 2003 from 1.4 lbs. per U.S. consumer to 4.0 pounds (Department of Commerce 2004). This reflected changes in the U.S. diet as concerns over health moved people away from the high consumption of red meat (made possible by the grains-livestock complex) without reducing their overall animal products intake. Between 1984 and 2003 per capita spending on beef went from \$199 to \$246, a 19% increase, for chicken, \$85 to \$145, 41%, and for fish and seafood of all types, \$67 to

\$124, 46% more (Department of Labor 2004). Shrimp became a convenient replacement for chicken or beef in many dishes marketed as healthy in restaurants and groceries as it fit the requirements of both the low fat and low carb diet crazes. Lower wholesale prices for retailers, greater availability, and the continuing belief among consumers that shrimp was an indulgence made it an important component in food retailing, especially for restaurants. Between 1999 and 2003 when supplies of shrimp in the U.S. market grew dramatically and prices fell correspondingly, shrimp dishes increased by 47% on menus of large chain restaurants (Food Beat 2004).

The fishery in the 1980s and 1990s

Louisiana's economic fortunes closely paralleled those of petroleum-exporting nations in the 1970s and 1980s. The unsustainable prosperity of high oil prices created an economic boom, especially in the coastal parishes where the oil industry and shrimping were prevalent. In the late 1970s the number of shrimp boats in Louisiana increased from around 10,500 to over 15,000, spurred by high shrimp prices (Gulf Council 1981:3-81). When the bottom fell out of the oil business in the early 1980s, unemployment increased dramatically, well over ten percent in some oil-dependent parishes. The number of commercial shrimpers accelerated further after the oil bust as people turned to shrimping as an income of last resort. The shrimp fleet grew about twenty-five percent over 1980 levels to a peak of 20,150 licenses in 1987 (Baron-Mounce et al. 1991:18). Record numbers of participants in the fishery combined with low prices, steady or increasing expenses, and a stable resource base that was fully exploited meant that fishers were caught in a *cost/price squeeze*, but fishers continued to shrimp because they had few

economic options to earn a living. Profit margins were very tight because of the number of boats in the fishery sharing the devalued resource, making the fishery very vulnerable to any further decline in its profitability.

In the late 1980s serious concerns about the decline of endangered sea turtle populations prompted new regulations of U.S. shrimp trawlers, which were cumulatively unintentionally catching and drowning many sea turtles even if many individual shrimpers seldom saw a turtle. The outcome of these concerns was a several years long fight between commercial shrimpers' associations, the federal government, and environmental NGOs over the issue of TEDs, or Turtle Excluder Devices. TEDs were designed to allow turtles caught in shrimp trawls to escape, but because trawls with TEDs lose perhaps ten percent or more of their shrimp in some instances, fishers bitterly opposed them (Condrey and Day 1987; Margavio et al. 1996). While some environmental organizations felt that fishers were being unreasonable in their opposition, fishers with much reduced margins of profit could ill afford to see a significant portion of their catch disappear with no compensation from the government for their losses. Further, the design and testing of TEDs was initially done in waters off Florida that have bottom conditions unlike that of many shrimping areas, meaning that the mandated TED designs were inefficient for either catching shrimp or releasing turtles for fishers in some other regions, a point that shrimpers made repeatedly with little effect (Blount 2003). After the imposition of TEDs came BRDs (Bycatch Reduction Devices) in the late 1990s, which were designed to exclude juvenile red snappers in order to rebuild that overfished

species' population in the Gulf. BRDs are estimated to reduce shrimp catches by five to thirty percent on top of losses created by TEDs (Samonte-Tan and Griffin 2001).

Due to the high levels of participation in the Louisiana shrimp fishery, low prices kept down by the dominance of imported shrimp in the U.S. market, decreasing efficiency due to regulations, and an improving state economy after the 1980s oil bust, the number of shrimpers started to decline considerably after 1987. From 16,505 commercial licenses in 1989, the fishery in 2000 fell to 9,988 (LDWF 2004a). The composition of the fishery changed too. Very small boats (under 19') fell by over half between 1989 and 1997 while the largest sized boats (over 65') fell by only 1/3 (LDWF 1998:8). This does not mean that large boats were necessarily more efficient, however: the much larger capital investments in such boats means that they cannot be so easily scrapped as small ones.

There were over 10,000 recreational shrimpers in 1978 (Sass and Roberts 1979:1) which fell to only 4,000 in 1996 (LDWF 1998:9). Sixty-four percent of commercial shrimpers in 1994 worked full-time in the fishery (Deseran 1997:9) and the percentage of owner-operated boats increased to 94.6% in 1997 (Deseran 1997:7) from 76% in 1978 (Sass and Roberts 1979:4). Part-time participation in the fishery declined and those remaining were the more committed. Thus the smaller boats that part-time commercial and recreational shrimpers used declined most rapidly, while even for the largest boats owner-operation became more dominant. The combination of both trends put commercial shrimping more into the hands of household producers who relied on it for the majority, but often not the entirety, of their income. The surge in fishery participation in the 1980's

from mostly small boats for replacement income did not produce a new class of boats that could not easily leave the fishery like the increase in large boats in the 1970's. The new fishers of the 1980s left when other opportunities returned and their boats disappeared from shrimping through attrition and conversion to other uses. Rather than an increase in effort due to speculative building or chasing high prices or because of the inherently tragic nature of open-access commons, the 1980's increase was one created by severe economic need in coastal communities, a need that dissipated as the overall South Louisiana economy improved and shrimping met new challenges that brought it to severe crisis in 2001.

### 3 THE CURRENT SITUATION

#### The imports crisis (2001-2005)

The 1990s were a decade of economic growth in the U.S., which meant increased consumer spending. Demand growth meant that despite the continuing increase in shrimp imports, Gulf of Mexico shrimp prices stabilized from their fall through the previous decade at real levels slightly higher than they were through the 1950s and 1960s. The number of shrimp fishers continued to decline in Louisiana throughout most of the 1990s but the fishery saw better times than it had in years previous. U.S. demand for shrimp drove global increases in export production, which faced large but stagnant markets in Japan and the European Union. U.S. domestic production remained flat in the 1990s around 200,000 tons heads-off equivalent, while imports increased from just under 700,000 tons heads-off equivalent in 1992 to almost 1.2 million tons in 2001 (NMFS 2003). New producers of farmed shrimp like Vietnam and Brazil dramatically increased their exports to get a share of the profits. Shrimp exports to the United States brought in dollars, which were very valuable at that time relative to other major world currencies, allowing these countries to buy more with the proceeds from each pound of shrimp they sold (NMFS 2004b: Chapters Three and Four).

This growth in exports might have continued at stable prices if it were not for the faltering of the U.S. economy beginning in 2001 which occurred while demand remained flat in other consuming countries. As U.S. demand declined, shrimp exports had nowhere else to go, and as a result inventories started to pile up and prices began to fall. Beginning in April 2001, dockside shrimp prices began to fall in Louisiana. Northern Gulf of

Mexico 36/40 headless shrimp went from \$4.15/lb. in May to \$3.10 that November; and the prices continued to plummet. In May 2004 headless 36/40s got \$2.60 a pound, in November of that year just \$2.18 (NMFS 2004c). Even as shrimp prices tumbled in the United States, shrimp imports continued to pour in because other markets were not as desirable to shrimp exporters for a variety of reasons and the production had to go somewhere. The E.U. and Japan were relatively weaker economically and their markets could absorb little extra shrimp. In addition, the U.S. market had no significant tariffs or quantitative restrictions on imported shrimp unlike Japan and Europe, which imposed between six to twelve percent tariffs on shrimp on most exporting countries (Josupeit 2004). Shrimp exports to the United States got a boost because of this lack of tariffs.

Economics does not entirely explain why the shrimp imports to the United States spiked starting in 2001 and the market price collapsed. The destabilizing market effects of shrimp biology under the conditions of intensive aquaculture also contributed. Shrimp raised in close proximity in ponds are susceptible to many forms of disease and like other crustaceans, they cannot be vaccinated because they only have non-specific immune systems, making them much less capable of fighting disease compared to mammals (Jennings et al. 2001:320; Owens 2003:204). This problem gives farmers fewer options to protect shrimp from disease outbreaks. Shrimp have also been cultivated intensively only for a few decades, compared to domesticated land animals that have thousands of years of selective breeding and built-up disease resistance in their more advanced immune systems to protect them. Disease is the main reason why antibiotics and other chemicals (Jory and Cabrera 2003:387) are often used on farms that stock high densities of shrimp,

feed them processed feeds, and use other technological, capital-intensive methods to increase production and profitability. Diseases enter ponds from wild-caught or hatchery-raised shrimp larvae, from feeds, and from the effluent of nearby already-infected ponds. In an effort to reduce outbreaks caused by local wild-caught larvae, farms increased their use of more expensive larvae from hatcheries in the late 1990s. This attempt backfired as hatcheries, which sell larvae internationally, helped rapidly spread diseases by unknowingly exporting infected shrimp to previously unaffected countries (FAO 2003). The white spot syndrome virus outbreak in 1999-2001 alone is estimated to have reduced global farmed production for a time by about twenty-five percent (Jory and Cabrera 2003:383) and destroyed the majority of some countries' production.

The unpredictable increases and decreases in supply caused by expansion of shrimp farming and disease led to considerable price volatility in the late 1990s. High prices caused by temporary disruptions in supply and strong demand led to waves of new investment in the industry, which flooded the market and caused price declines, leading to a 'boom-bust' cycle that accelerated global overproduction relative to demand. 2000 was one such 'boom' year. The strong United States economy and declining production from some exporters due to disease drove prices to very high levels. Many U.S. fishers responded that year by making new investments in boats, sometimes taking on new debts in order to do so. Shrimp exporters also saw an opportunity to invest, and increased production. In 2001, when the United States economy slowed down, disease outbreaks had been (for the moment) contained, and exports increased while demand declined, the

result was a crash in shrimp prices that caught many fishers and farmers off guard, leading to severe economic hardships that have been experienced since then.

The politics of food safety also played a part in the imports crisis. The European Union (EU) had much more stringent food inspection requirements than the U.S. on imported seafood (Hanekamp 2002; Milstein 2003), and detected and rejected numerous shipments of imported shrimp in 2001 and 2002 containing chloramphenicol, a powerful antibiotic used to control outbreaks of disease in shrimp ponds that is dangerous to human health and illegal to be used in food. In the wake of the chloramphenicol scare in Europe, much shrimp destined for the EU was rerouted to the U.S. where standards were not as strict and the chances of detection were smaller (NMFS 2004b:35-36).

Southeast U.S. shrimpers have seen prices marginally improve in 2005 after they succeeded in imposing anti-dumping tariffs on six exporting countries in late 2004. Prices remain far below the pre-crash levels of 2001, however, despite years of work by fishers' associations to fundraise and lobby for the tariffs. The fishery remains in a highly vulnerable economic state. Shrimp farmers in India and Vietnam have been negatively affected by the tariff, causing cuts to their prices (Fritsch 2004; Indo-Asian News Service 2004). Some Thai shrimp farmers actually benefited, despite their being included in the tariff, because the low duties assigned to them made their exports more competitive against Vietnamese and Chinese shrimp, two major exporters that were assessed high tariffs (Keeratipatpong and Arunmas 2004). This compounded the low shrimp prices received by farmers in the years before the tariff was imposed, caused by the same problems of global overproduction. Many Thai shrimp farmers were selling their

products at a loss for several years in a row before the tariffs were imposed (Pongvutitham 2004). Thai shrimp exports fell in value per ton by approximately twenty-five percent between 2000 and 2003 (Pongprasert 2004), before the United States anti-dumping tariff was imposed.

The U.S. anti-dumping tariffs have helped domestic fishers survive for the moment, but shrimp production is apparently shifting rapidly to unaffected exporting countries like Indonesia (Asia Pulse 2005). The effect of imposing tariffs therefore may only have a temporary effect on the U.S. market and their impact on shrimp farmers' livelihoods affected by the same problems of overproduction and declining prices is unclear, but is certainly negative in many instances. At the same time, the corporations involved in exporting, wholesaling, and retailing shrimp and supplying inputs to shrimp farming do not appear to have been harmed nearly as much. The Charoen Propkhand (CP) group increased its profits 203% over the second quarter of 2005 compared to the same period in 2004, and increased its shrimp exports by 189% from the previous quarter (*Bangkok Post* 2005).

Shrimp prices have generally reflected global commodity price trends, which saw long-term positive trends from 1950 to 1970, appreciation in the 1970s, and severe depreciation afterwards (Maitzels 1992:13; Robbins 2003). From 1950 to 1970, real Gulf of Mexico shrimp prices (CPI=1982-4) rose slowly, about ten to twenty percent over two decades. 1970 to 1980 saw prices become more erratic and much higher. From 1980 to 1990 prices fell back to the level they were in 1970. In the 1990s prices stayed flat around the real levels seen in the 1960s. After 2001, prices fell below any point seen during the

past half-century (Figure Four). The situation of shrimp is not very different from many other heavily traded primary commodities, such as coffee, sugar, and cocoa, which have seen even more dramatic declines. For example, nominal cocoa prices have declined from a \$2,832/ton average in 1980 to \$1,190/ton in 2002, a 58% decline. When 1980 prices are adjusted to the Consumer Price Index, reflecting the actual purchasing power of the good over time, the decline is more dramatic, to \$6,174 versus \$1,190, or a 81.8% decrease in real value (Robbins 2003:8-9). In comparison, average nominal Gulf of Mexico shrimp prices were \$1.63 per pound in 1980 and \$1.43 in 2003. Real adjusted prices using the CPI (1982-84=100)<sup>30</sup> were \$1.98 in 1980 and just \$0.78 in 2003. The real buying power of the earnings from shrimp fell by over 60%. Shrimp fishers were in effect working for less than half the money they were almost a quarter century earlier. The average price of Gulf of Mexico shrimp in 2003 was in CPI adjusted terms \$0.78, while in 1950, the earliest year for which NMFS keeps public records, it was \$0.91, a decline of fourteen percent. The average CPI adjusted Louisiana shrimp price in 2003 was \$0.58, and in 1950 it was \$0.87, a decline of one-third.

While shrimp was for a long time a partial exception to the general trend in commodity prices, it appears shrimp may be headed in the same direction that other commodities are. The surge of imports after 2000 was the turning point driving prices below the stable level they had maintained for a decade. While U.S. imports of shrimp increased by 49.8% from 345,000 tons to 517,000 between 2000 to 2004, the total value

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<sup>30</sup> Years in the early 1980's are used frequently as base years for price comparison studies because 1982-84 are the years the U.S. Bureau of Labor Statistics uses as a base for the Consumer and Producer Price Indices.

of that shrimp actually *declined* by \$100 million dollars, from \$3.8 billion to \$3.7 billion. Per pound, the price of imports declined by 35% from \$5.50 to \$3.57 over the same period (NMFS 2001; NMFS 2004d).

Prosperity from primary commodity production has been ephemeral, unequally distributed, and often lacking altogether for those that engaged in it. This is true in developed and developing countries, although many Global North agricultural producers have been partially shielded with state support that has ironically made the problem worse for the rest of the world those producers dump subsidized agricultural products on world markets (Bové and Dufour 2002; Ritchie et al. 2003). The reasons for the fragility of commodity producers are many. Variability in crop yields due to the environmental nature of production and the substitution of agricultural inputs with chemical ones (natural to synthetic rubber, cotton to synthetic fibers) can destabilize prices. Although crop failures are an ancient problem, and substitutionist pressures are at least fifty years old for most commodities, the current depression in prices was only really pronounced after 1980. This is due to slower demand growth and the increase in the real price of manufactures which has occurred much faster relative to the price of primary commodities, making commodities effectively cheaper. Commodity producers facing worse economic conditions have responded by increasing production, often encouraged by governments seeking foreign exchange in the context of debt crisis and structural adjustment. More production without increased demand leads to overproduction and price collapse. Over the past twenty years many international commodity agreements, designed to maintain stable and fair prices for producers by regulating production volume

and quality and commodity market speculation, have been dismantled because they conflict with the free-market ideology now dominant in international development practice (Robbins 2003).

Many proposals have been forwarded for addressing the widening gap between the price of primary commodities and cost of living and production of commodity producers, such as increasing international aid or market-based schemes like fair trade coffee. Reestablishing supply management agreements to support prices, while it would run against deep-seated opposition from Global North governments and international financial institutions strongly committed to the unfettered liberalization of trade and investment, may be one of the more promising options. One researcher estimated the effect of commodity price decline for developing countries to be a loss of \$242.5 *billion* in 2002 alone compared to what they would have received in 1980 for the same amounts of the top ten tropical commodity crops (shrimp not included). This means that if commodity prices had the real value they had in 1980, developing countries would have earned several fold what they received from all sources of international aid in 2002 (Robbins 2003:11).

As domestic U.S. shrimp production amounts to barely ten percent of U.S. shrimp supply as of 2003, declining from around twenty percent in the mid-1990s, imports will necessarily make up the sizeable majority of consumption for the foreseeable future. Domestic fishers need better prices in order to maintain their livelihoods; fishers and farmers abroad likewise need the earnings from exports. Managing supplies and prices by means of quotas, floor prices, or other means could achieve higher prices for all

producers, more stability in the international market, and an ability to address some of the negative consequences to people and the environment from shrimp production.

#### Overview of the contemporary Louisiana shrimp fishery

Louisiana produced thirty-nine percent of United States landings by weight of wild-caught shrimp as of 2003 (NMFS 2005a) and over forty-nine percent in the Gulf of Mexico, the source of the majority of U.S. shrimp landings<sup>31</sup> (79% in 2003). By *ex-vessel value* (the money earned from products landed off of boats, not the eventual value of processed and marketed shrimp), Louisiana's harvest was worth \$135 million in 2003, 31% of total U.S. ex-vessel earnings on shrimp and 37% of total Gulf of Mexico ex-vessel value. Louisiana shrimp were worth on average \$1.08/lb. in 2003, considerably less than the national average ex-vessel price of \$1.35 or the Gulf average of \$1.43.

Relative to its fellow Gulf of Mexico states, Louisiana is the biggest wild-caught

Table Two. 2003 Comparative shrimp landings statistics. <sup>32</sup>	United States	Gulf of Mexico	Louisiana
Landings (pounds)	323.7 million	256.4 million	125.7 million
Total ex-vessel nominal value (\$)	440.6 million	365.4 million	135.2 million
Per unit nominal value (\$/lb.)	1.36	1.43	1.08
% of total U.S. landings (lbs.)	100	79.2	38.8
% of total U.S. value (\$)	100	82.9	30.7

Source: NMFS (2005a).

<sup>31</sup> Landings are not the same as catches. Landings refer to shrimp that are brought to shore in a way that their weight and value can be entered into statistical data, typically to commercial docks.

<sup>32</sup> These figures were calculated from 2003 Annual Commercial Fisheries Statistics published by the National Marine Fisheries Service (NMFS) Fisheries Statistics Division, not the 2003 *Fisheries of the United States* annual report from which many statistics on fisheries are disseminated. The national totals from Commercial Fisheries data varied somewhat from the *Fisheries of the U.S.* data (by approximately ten million pounds and \$16 million) for unknown reasons. In light of this discrepancy, Annual Commercial Fisheries Statistics data was used here to maintain consistency with more detailed landings and other data drawn from that data set used in this document.

shrimp producer by weight and second (behind Texas) by value. Among the several Gulf states (Texas, Louisiana, Mississippi, Alabama, and the west coast of Florida) Louisiana earned the lowest per pound price for its shrimp, Alabama earning the highest at \$1.92/lb. Louisiana has historically lagged behind all other Gulf states in its per pound value, with Mississippi slightly more and Texas, Alabama, and western Florida the highest (especially the latter two). The reasons for this disparity are many, involving factors such as the policy of the state to allow the harvest of smaller shrimp that have less monetary value (Louisiana Department of Wildlife and Fisheries {LDWF} 1992; LDWF 1998).

This data may be somewhat misleading, however. About half of the generally larger and more valuable shrimp harvested in the state's adjacent federal waters (eight to ten percent of total statewide landings), are landed out of state and contribute to those states, not Louisiana's, landings statistics. A much smaller percentage of inshore shrimp, which tend to be smaller, are landed out of state, meaning that Louisiana landings tend to overestimate the proportion of small shrimp actually caught near the state. As much as twenty percent of the state's overall shrimp catch is unreported (LDWF 1992:3). The inclusion of these unreported catches in landings may move the average size of shrimp down, counteracting to an unknown degree the effect of out-of-state landings of large offshore shrimp. The amount of direct sales by fishers to consumers has climbed significantly since 2001, as reported by shrimpers interviewed for this study. Many of these sales are reported, and many are not. Direct sales tend to be of larger shrimp, thus the average individual size of unreported shrimp catches sold directly should be larger than of those reported, moving the statewide average up somewhat. The size composition

of Louisiana shrimp landings is due at least in part to where shrimp are landed and to what degree information is recorded, not the actual size of the shrimp population.

Even with these facts taken into consideration, Louisiana shrimpers still catch significantly smaller shrimp than the Gulf average. The average size of Louisiana shrimp, especially white shrimp, has declined absolutely in Louisiana in recent decades (Baron-Mounce 1991:6). This size decline is presumably due to a combination of fishing activity and biophysical changes to the Louisiana coastal environment.

The principal species harvested in the Louisiana shrimp fishery are brown shrimp (*Penaeus aztecus*) and white shrimp (*Penaeus setiferus*), with smaller fisheries for seabobs (*Xiphopeneus kroyeri*) and a few other species. Penaeid shrimps' lifecycle begins with spawning in offshore waters, producing larvae that migrate into inshore waters and estuaries where they grow into postlarval and juvenile size classes. Juvenile and adult shrimp move out of estuaries back towards the ocean, continuing to grow as they progress through lakes and bays along the way (Iversen 1993:5-28, Louisiana Sea Grant 1999; Pattillo et al. 1997:55-63, 73-80). In Louisiana state waters, which include the inshore waterways and the open Gulf extending to three miles from the coastline, fishery management is governed by the state's Wildlife and Fisheries Commission which oversees the opening and closing of the fishery among three east-west management zones and between inside and outside state waters.<sup>33</sup> The spring or brown shrimp season opens in May in inside waters, the exact times and places based on average brown shrimp size

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<sup>33</sup> Inside, or inshore, waters are typically those inside of the state's mainland coast or barrier islands, and include bays, lakes, and sounds as well as smaller bayous and canals in the coastal marshes. Outside, or offshore, waters extend from the inside/outside 'shrimp' line to where federal jurisdiction begins three miles out (Louisiana Sea Grant 2002).

in each east-west zone and by state statutes, and closes in late June or July. The autumn or white shrimp season opens in August and extends into December. State offshore waters tend to be open most of the year as do federal waters (Gulf Council 1981; Louisiana Sea Grant 1999; LDWF 1992; Louisiana Sea Grant 2002).

The geographic distribution of commercial shrimpers in Louisiana is primarily among a few coastal parishes. There were 8,677 Louisiana residents holding state commercial shrimp licenses in 2003. License data is filed by residential address, not necessarily by the parish from where the boat operates, and many commercial licenses are obtained by recreational shrimpers who sell little or no shrimp but get them to pull larger nets than are legal with a recreational shrimping license. This data may skew somewhat the actual participation in the commercial fishery by parish as well as overall. Many commercial fishers may also retain a license but not fish in a given season, particularly in recent years with record low prices. Terrebonne Parish had the largest number of shrimpers as measured by state license holders in 2003 with 1,549, followed by Jefferson with 1,439 and Lafourche with 1,188 (LDWF 2004a).

Fishers in many parishes are concentrated along bayou communities characterized by geographers as linear settlements: long rows of dwellings extending southward towards the coast along natural ridges formed by distributary channels of the Mississippi river (Kniffen and Hilliard 1988:132). In Terrebonne Parish, communities where shrimping is a significant activity include Theriot (Dularge), Dulac (Grand Caillou), Chauvin (Little Caillou), and Point-aux-Chenes/Montegut, in Lafourche Parish along Bayou Lafourche from Larose to Leeville, in Jefferson Parish on Grand Isle and in the Lafitte/Barataria

area, in Plaquemines in Empire, Buras, and Venice, in St. Bernard in Yscloskey and Delacroix, in St. Mary in Morgan City, and in Vermilion Parish in Intracoastal City and Delcambre. Many commercial shrimp boats can also be found in St. Tammany, Calcasieu, Cameron, Iberia, St. Charles and Orleans parishes.

The distribution of boats by size can be broken down into three main categories: statewide in 2003, thirty feet and under in length ‘inshore’ boats made up 74.3% of licensees, 31’ to 50’ ‘beach’ or ‘bay’ boats made up 19.3%, and 51’ and over ‘Gulf’ or

‘offshore’ boats made up 6.4% (LDWF 2004b)<sup>34</sup>. This distribution varies geographically across the state. Some parishes have a larger percentage of smaller boats such as Terrebonne and Jefferson, while other parishes like Vermilion and St. Mary have a bigger percentage of larger boats<sup>35</sup> (Deseran 1997:4). Communities tend to have particular fishing territories that are

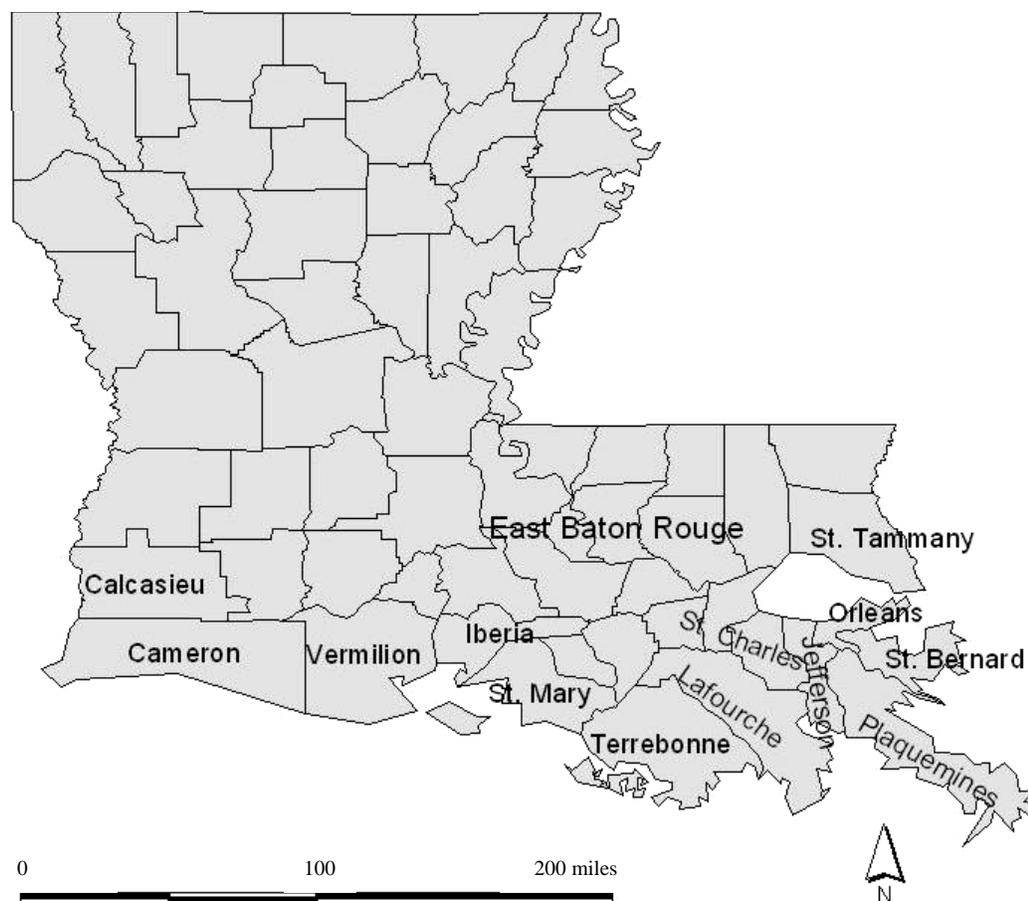
Table Three. Commercial shrimp licenses by Louisiana parish (top twelve parishes), 2003.	Number of licenses (% of statewide)
Statewide total	8,677 (100)
Terrebonne	1,549 (17.9)
Jefferson	1,439 (16.6)
Lafourche	1,188 (13.7)
Plaquemines	828 (9.5)
Saint Bernard	608 (7.0)
Saint Tammany	328 (3.8)
Saint Mary	327 (3.8)
Orleans	292 (3.4)
Vermilion	271 (3.1)
Saint Charles	247 (2.8)
Iberia	212 (2.4)
Calcasieu	168 (1.9)
All other parishes	1,220 (14.1)

Source: LDWF (2004a).

<sup>34</sup> These descriptive terms for boat size categories are not definitive of the actual locations they fish. Boats of all three sizes can be found working in inshore and offshore state waters and the open Gulf, although the distance from shore of fishing and boat size tend to be positively related.

<sup>35</sup> Data on size trends by parish comes from a telephone survey (Deseran 1997) done seven years before this study, thus some changes may have occurred between then and 2003, the latest year parish-wide aggregate license data and statewide data by boat size. The 1997 data also excludes boats under thirty-five feet, which make up at least  $\frac{3}{4}$  of licensed vessels in 2003. This exclusion of a considerable majority of the state’s vessels however does not appear to substantially alter the overall trends in boat size by parish, as interview data and observation from this study supported the general findings of Deseran (1997) about where larger and smaller boats tend to congregate. If anything, this data underestimates the dominance of small boats in terms of numbers of licenses in some parishes.

Figure One Louisiana Parishes mentioned in this thesis



specific to the hydrology and landforms of the regions they are situated in, with considerable differences among fishers in those communities in how and where they work. Overall, smaller boat communities focus on inshore areas closer to them, and larger-boat ones are capable of working further away and in deeper offshore waters. 2003 shrimp landings data by area caught or by boat size was not assessed for this study<sup>36</sup>, but data from a 1991 study (Baron-Mounce et al. 1991) shows that for 1986-1989 on average

<sup>36</sup> Such data is collected by the Department of Wildlife and Fisheries on 'trip tickets,' records filed at docks by fishers documenting the poundage, size, and general location where shrimp were caught. These records are confidential and access to them is not readily available to the public, thus they were not used in this study.

43.7% of Louisiana shrimp landings by weight were from inshore waters and 56.3% from offshore state and federal waters. By value, 41.7% came from inshore and 58.3% from offshore state and federal, showing that on average shrimp caught offshore are worth somewhat more and are larger. As fishing effort by area is generally correlated to boat size, meaning that inshore landings tend to be from smaller boats and offshore landings from larger ones, this data shows that inshore fishers catch less per boat than offshore fishers, while remaining a significant part of the overall fishery. Interview data from this study corroborates this. Fishers explained that shrimpers in inside waters must by law use smaller nets than are allowed offshore and tend to work more part-time, fishing only during inshore seasons and employed in other occupations at other times, so that their yearly catch per boat is on average smaller than that of those who work in the fishery longer with larger boats. Keithly and Baron-Mounce (1990) found in their study that part-time fishers tended to have smaller boats, took fewer trips, were more likely to fish in inside waters, and caught less per trip than full-time fishers.

Building the strawman, or what Louisiana shrimp fishers are not

An observer of the op-ed pages in national newspapers and journals of opinion in 2004 could have been forgiven if s/he thought most U.S. shrimp fishers were major corporations. That year, as the anti-dumping suit against six shrimp exporting countries was argued between the U.S. domestic shrimp industry and shrimp importers, wholesalers and retailers and exporting countries was reaching a point of decision, The *New York Times* published an editorial on July 21<sup>st</sup> entitled 'Shrimp and Mischief' (*New York Times* 2004). The editorial claimed the flood of shrimp imports 'flows naturally

from the laws of economics that this country is supposed to believe in' and asserted that the domestic shrimp industry, by pursuing an anti-dumping suit, was holding back free trade negotiations, hurting poor people by threatening to impede the lifting of trade barriers that 'make it hard for farmers in the developing world to sell their products.' The benefits to developing world farmers from reducing trade barriers are strongly contested by many developing world farmers and advocates (Boucher 1999; Shiva and Bedi 2002; Robbins 2003), and the powers attributed to U.S. shrimp fishers, at least the ones interviewed for this study, are quite exaggerated. Many of those fishers lived in very modest homes and had enough trouble paying their bills and caring for their children without paralyzing international trade talks.

The *Times* was not alone in condemning the anti-dumping suit brought by U.S. shrimpers and portraying them as powerful economic actors. The CATO Institute issued an editorial (Balko 2005) that claimed the pursuit of protection by 'Big Shrimp' (the U.S. shrimp industry) 'is a great example of how the fight for free trade isn't about protecting big business at all. Rather, it's about protecting free markets, promoting commerce and generating prosperity,' the implication being that 'Big Shrimp' plays the role of 'big business' seeking protection against free markets. The Fund for Reconciliation and Development, an NGO with progressive politics that has done much to restore normal relations between the U.S. and Vietnam and remedy the continuing effects of the war on the people of that country, called U.S. shrimp fishers 'Jumbo Shrimp' who were seeking 'Corporate Welfare' at the expense of Vietnamese peasants (Wells-Dang 2004). Their editorial, which appeared on the website of the liberal think tank Foreign Policy in Focus

([www.fpif.org](http://www.fpif.org)), compared the anti-dumping suit to the World Trade Organization's (WTO's) policies 'tilted in favor of the strong over the weak.' Yet the argument in the editorial strongly paralleled the talking points circulated by the CITAC/ASDA (Consuming Industries Trade Action Committee / American Seafood Distributor's Association) Shrimp Task Force ([www.citac.info/shrimp](http://www.citac.info/shrimp)), the leading group fighting the tariffs representing some of the largest seafood importers and wholesalers in the country.

A cartoon accompanying a *Wall Street Journal* article on the shrimp anti-dumping issue (King 2004) presented the same simple image of the U.S. shrimp industry as a bully in decline trying to hold back progress. The cartoon modeled a U.S. shrimp fisher after the seafood restaurant owner/fisherman character from TV's *The Simpsons*, wearing an American flag shirt and offering a small plate of shrimp to a consumer sitting down to eat in a restaurant. Over this plate of shrimp, from an invisible body outside the window an arm emerges (labeled 'IMPORTS') to drop a larger plate of shrimp before the hungry and eager consumer who is oblivious to the anger of the fisherman whose harvest has been one-upped. Such images and text produce a naïve, shallow understanding of shrimp fishers, farmers, and globalization. An op-ed in the March 29<sup>th</sup>, 2004 *Washington Post* (Mallaby 2004) explained the situation as such:

Vietnamese peasants get jobs; American teenagers munch their products as they goggle at TV: This is globalization. As always with globalization, someone has a grievance. Traditional American shrimpers are hurting, because cultivated shrimp are driving down prices. It's hard to blame "unfair" behavior by the Thais or Vietnamese, who are simply more efficient.

This perspective offers no hint that shrimp farmers were hurting before the imposition of tariffs from much lower prices, sometimes lower than their costs of production, due to

global overproduction (Pongvutitham 2004). Nor does it mention the ongoing dispossession and violence associated with shrimp farming that continues to provoke resistance in exporting countries (Lahiri 2004).

The op-eds mentioned above portray U.S. shrimp fishers as inefficient, wealthy corporations using unfair methods to take away peasants' livelihoods and ignore the reasons why increased shrimp exports may not be beneficial to the very poor people they claim to champion in the exporting countries. Evidence compiled by fisher, peasant, and environmental groups in India shows that the capitalizable social and ecological costs resulting from shrimp farming in India were higher than the total foreign exchange earned by the export of shrimp (Lahiri 2004:iii, Shiva 2002:25-30). This means that shrimp farming for export in that country was a net transfer of income from people dependent on coastal resources for livelihoods to those that received the profits from shrimp exports (seldom the same people) and an overall decline in national income. That decline was largely invisible as many of the costs, while potentially capitalizable for the purpose of making estimates, never entered the cash economy, never mind international commerce.

The critiques of the way the anti-dumping suit was handled in these articles are at least true, if very one-sided in their slant on the story. It is true that U.S. fishers received emergency government assistance in the early 2000s, but the amounts didn't total more than a few tens of millions of dollars over several years split unevenly between about 13,000 fishers. Louisiana and other Gulf states particularly were short-changed when \$35 million in federal assistance was split evenly between South Atlantic states and Gulf

states, even though the Gulf produces several times the amount of shrimp as the Atlantic states. Government subsidies to shrimp fishers are a pittance compared to the huge sums given to U.S. agriculture, some \$22 billion a year as of 2000, of which the majority goes to the largest farms and agribusiness corporations (Weber 2000; Lancaster 2002; Ritchie et al. 2003). Some shrimpers have advocated directly collecting the proceeds of the anti-dumping tariffs through a piece of federal legislation called the Byrd Amendment. But this legislation has been declared illegal by the WTO and many fishers have expressed opposition to direct distribution of tariff proceeds or how those proceeds may be apportioned among fishers. Given the policy of the U.S. government for decades in promoting the liberalization of trade and investment, U.S. fishers have few options but the arbitrary weapon of anti-dumping to achieve any relief from collapsing commodity prices if they are to survive.

The socio-economic differences between a U.S. shrimp fisher and a Vietnamese shrimp farmer are real enough, and Americans, even shrimpers who have been through tough economic times in recent years, individually have much more material wealth and political power than peasants in the Global South. The privations caused by the imposition of anti-dumping tariffs are real and they raise serious questions for the proper course of action to improve the situation of U.S. shrimp producers. Yet despite the clear differences between shrimpers in the U.S. and shrimp fishers and farmers abroad, they have much in common in addition to the commodity they produce.

There are wealthy and politically influential individuals and businesses in the U.S. shrimp industry, many of them key supporters of the Southern Shrimp Alliance's

campaign for tariffs, but it is hardly accurate or fair to characterize the vast majority of fishers as big business corporations. Louisiana shrimpers in particular bear precious little resemblance to the characterizations highlighted above of 'Big Shrimp.' Rather they, like many shrimp producers elsewhere and many primary commodity producers of all sorts, produce commodities using capital and labor drawn in large part from their households. The structurally similar organization of labor and ownership of the immediate means of production between these Global North primary commodity producers and their Global South counterparts means theoretical approaches applied to the latter group may have significant explanatory power in describing how Louisiana shrimp fishers operate and how they cope with declining commodity terms of trade.

One research strategy often used to understand small-scale fisheries producers in the Global South is referred to as the 'livelihoods approach' (STREAM Initiative 2005). A growing trend in research against purely economic assessments, livelihoods approaches involve interviewing and/or surveying members of households to understand how they engage in production and sustain household needs. This perspective holds that the choices people have in earning a living, how they make those choices, and constraints and incentives related to their decision-making are important to understand natural resource use. Livelihoods approaches entail putting people and their multiple economies, not one particular natural resource that people harvest, at the center of investigation.

In U.S. fisheries, despite their differences from many Global South fisheries, there is a broad recognition among fishers, managers, and some NGOs that more social science on fisheries needs to be undertaken, what little exists should be more systematic, and

social data should have a greater role in policy making than purely biological or bioeconomic assessments. Interviews with fishers and managers for a book on the future of U.S. fisheries management (Hanna et al. 2000:133-138) document this. An LSU Sea Grant official delivered an important address at a 1994 conference saying

...there is something new on the horizon in terms of the importance of coastal fishing. All of the public policy decisions in the future will include identifying and acting on the social impacts or aspects of any policy alternative. Economics alone is not going to determine fishery policy. We all need to become familiar with a whole new set of things in order to be able to effectively argue the importance of any fishing policy alternative. This is especially important on the federal level. Keep in mind that social aspects include the fishermen and their dependent communities. Know and gather hard data on the fishermen from sociological and anthropological standpoints, and on their dependent communities. (Roberts 1994:2)

Fishery managers interviewed for this study had much informal information on the social situation of shrimp fishers, gained through experience communicating with them while doing their jobs, but little scientific data that they could present on the subject. One manager in particular acknowledged the lack of social science on Louisiana fisheries and the importance of such research, saying “research is not being done on society. The biophysical work is done well, but there’s only big anecdotal evidence on people. We presume a lot. It’s hard to get social scientists, economists stimulated about these things. So much is speculative.”

A different research focus often requires different research methods. For research on the social aspects of fisheries, *qualitative*<sup>37</sup> methods have often been used, in contrast

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<sup>37</sup> Qualitative research on people relies on methods such as interviews, analysis of writing, speech, or material culture, observation, and/or living in and among the people being studied (Tashakkori and Teddlie 1998).

to generally quantitative methods used in biological and bioeconomic fisheries research.

It is to these methods in the context of this study that we now turn.

## Methods

The methodology of this study approximates the social science method known as RAP, or Rapid Assessment Process (Beebe 2001). RAP is a research team-based methodology using multiple forms of data collection to quickly gain a good, but not comprehensive, understanding of a research question. This project has only one researcher, but otherwise the techniques and goals of RAP are closely followed. RAP utilizes *triangulation*, gathering diverse perspectives and using several methodologies to understand a given situation. As in navigation, research triangulation allows one to figure out what is going on with only a few known points because the interaction of those data points allows conclusions to be drawn that would not be obvious if they were examined in isolation. For this reason interviews were conducted with people of diverse geographical location and perspectives on the Louisiana shrimp fishery. Questions were tailored to each category of participant, such as fishers, managers, processors, environmentalists, etc.

I formally collected data from fifty-seven people, twenty women and thirty-seven men, between May and August 2004 (Table Four). Selecting participants was accomplished mostly through key informants (Fetterman 1988:47-51; Bernard 2002:187-190) that I already knew through previous interactions with Louisiana shrimp fishers. These informants directed me to others that they felt I should talk to. As explained in the

introduction, this practice created a certain amount of path dependence between initial interview participants and subsequent ones. I tried to compensate for this problem with *a priori* sampling guidelines based on the geographic distribution of shrimp boats by parish, the ethnic and gender diversity of participation in the fishery, and the multiple types of businesses in the shrimp fishery and industry. This meant that I tried to get at least one or two interviews in most of the major shrimping parishes, interview women and men in roughly equal numbers, interview large and small boat fishers, and speak to boat deckhands as well as owner-operators and shrimp dock and processing plant workers, not only owners. After conducting interviews with a given population, like small boat fishermen in Terrebonne parish, I would shift effort toward other leads, like shrimp processors in Jefferson or fisherwomen in Lafourche parish. This sampling strategy produced a thin, purposive (non-random) coverage of the various sectors of the shrimp fishery and industry with one major exception: Vietnamese fishermen and – women. (See the introduction for more on why this occurred.) In interviews with local, state, and federal fishery managers and elected officials and key informants like fishers’

Table Four. Formal interview participants by parish, occupation, and gender. The left box for each occupation lists participants by gender. Men in each occupational category are to the left, women to the right and separated by a forward slash (/). Totals appear in bold face at right.													
	Fisherpeople		Fishery managers/ appointed officials		Elected officials		Dock owners / workers		Processor owners / workers		Non- governmental organizations		Parish totals
Terrebonne	5/2	<b>7</b>	2/0	<b>2</b>	2/0	<b>2</b>	3/0	<b>3</b>	7/3	<b>10</b>			24
Jefferson	2/1	<b>3</b>	2/0	<b>2</b>			1/0	<b>1</b>			1/0	<b>1</b>	7
Lafourche	2/10	<b>12</b>			1/0	<b>1</b>	1/1	<b>2</b>					15
St. Bernard	1/0	<b>1</b>					1/0	<b>1</b>					2
St. Tammany									1/0	<b>1</b>			1
Orleans	1/0	<b>1</b>	1/0	<b>1</b>							0/1	<b>1</b>	3
E Baton Rouge			3/0	<b>3</b>									3
Out of state			0/1	<b>1</b>							0/1	<b>1</b>	2
Occupation totals	11/13	<b>24</b>	8/1	<b>9</b>	3/0	<b>3</b>	6/1	<b>7</b>	8/3	<b>11</b>	1/2	<b>3</b>	n=57

association officials I asked broader questions that often provided a check on the particular information supplied by interviewees. This data generally corroborated what fishers were saying and helped to fill in some gaps in knowledge I was not able to directly address.

Data collection was by semi-structured interview (Bernard 2002:205; Flick 2002:80-85), a format that allows for some flexibility in pursuing unexpected turns in conversation but has enough structure to get consistent information in all interviews. Semi-structured interviewing was used because I had some familiarity with the subject matter and some of those interviewed, but not comprehensive knowledge that would allow for a tighter interview format. The interviews were somewhat exploratory, and new leads opened by them were incorporated into questions asked in later interviews. I wrote a written interview guide with key questions for me to ask. Interviewees signed an informed consent form approved by the University of Arizona Human Subjects Protection Program (Project Approval #B04.63) ensuring their names and personal information would remain confidential unless they signed to specifically allow use of their names only for quotations. Some information was gained from informal conversations at interview sites or during phone calls from fifteen other people who did not sign an informed consent form. I have not used information specific to them but have retained general observations they conveyed to me. Formal interviews lasted generally between an hour to an hour and a half and were conducted by the author in person. To record responses, I sometimes used a tape recorder (for which participants signed to approve its use) and always took notes during the interview. I did not follow up on these

notes with formal, typed field notes soon after interviews, as Bernard (2002:367-377) highly recommends. Bernard's advice is well placed; thankfully, the backup tapes recorded at many interviews were invaluable to fill in the gaps and confusing passages in my initial notes when I finally produced a formal set of field notes months after the conclusion of fieldwork. I listened to these tapes but did not transcribe everything on them into text. In all, the formal notes amounted to about 54,000 words.

I coded the notes, applying themes that describe the information they contain in a way that allows similar notes to be compiled and compared, using the method of open coding (Flick 2002:177-182). I read through the notes and highlighted passages of text that conveyed certain broad themes, such as fishing strategies or family. By going through the notes, more and more categories emerged, and sub-categories from the broad ones became apparent and were differentiated. This process is what Flick (2002:181-2) calls 'axial coding' or splitting up specific codes from larger 'axial' themes. Overall, more than 90% of the notes received some sort of code and 74 codes were differentiated within six categories. Most coded selections were a few sentences long, while some, like quotes transcribed from audio tapes, could be quite long. Most passages only received one code, but some parts were coded into several different themes. The interview data in this document comes out of the compiled coded notes, sorted by category, produced by this analysis.

#### 4 ACCOUNTING FOR HOUSEHOLD ECONOMIES

##### Theorizing household commodity production

The theorization of household production engaged here begins from the assumption that household producers do not conform to standard theories of capitalist business operation. Theory needs to incorporate *commodity production*, the creation, through social labor, of objects with a monetized exchange value, and *social reproduction*, labor that creates value in the sustenance and growth of human beings and their relationships with each other. Commodity production is often placed in the category of economy and is what people typically refer to as work, meaning waged labor. Socially reproductive labor, be it caring for children and elders, preparing meals, shopping, cleaning, or otherwise provisioning peoples' direct needs, is normally associated with the household. Social reproduction is positioned largely outside of market relations (people aren't paid wages for most of it, even in advanced capitalist societies). Its location apart from the economy and (salaried) work, corresponds with and contributes to the gendering of labor and space. Households that combine social reproduction with commodity production unmediated by wages derived from working for someone else blur this division. It is necessary therefore to account for how these two production processes are enacted and relate to each other in order to properly understand shrimp fishers in Louisiana. In this fishery, where the vast majority of boats are owned and operated by familial households, family and economy are implicated in each other producing ambiguously social and economic assemblages of people and capital that are businesses and households at the same time.

This study treats household economies not as a secondary, supporting economy within a pre-existent and independent capitalism, but as the basis for a shrimp industry that shapes how that industry functions as much as it is shaped by it. Gibson-Graham (1996) argue that thought about capitalism is too often *capitalocentric*. Capitalocentrism is an economic discourse that “involves situating capitalism at the center of development narratives,” (Gibson-Graham 1996:41), defining all economic activity in reference to a capitalist ideal. It is thinking about capitalism as inherently and unavoidably dominant, expansive, and dynamic, and noncapitalist economies as geographically marginal, vestiges of earlier modes of production, and fragile. Using a non-essentialist reading of the economy, Gibson-Graham (1996:Chapter One) theorize that the economy is not a monolithic capitalist entity, but a site of plurality and difference where many forms of social production exist. Defining different economies such as those of households in terms of capitalism, or as functional to capitalism, does a ‘discursive violence’ (Gibson-Graham 1996:12) to the actual processes going on in non-capitalist economies.

Gibson-Graham do not argue against the fact that capitalist enterprises exercise tremendous power in contemporary societies with often unjust consequences. Their point is that thinking about capitalism as all encompassing prevents people from imagining, finding, or creating noncapitalist economies in their lives, or in understanding the kinds of exploitations that occur outside of capitalism (even as they may be articulated with it.) Part of the problem is that existent non-capitalist economies are not seen or are regarded as either dying out or merely appendages of capitalism. The household economies of

Louisiana shrimp fishers can exercise logics over the distribution of labor power, capital, and privation that cannot be entirely reduced to capitalist principles.

Gibson-Graham (1996: Chapter Eight) see households as sites of multiple *class processes*<sup>38</sup>. For example a household may be involved in a capitalist class process that provides wages for a male laborer as well as a patriarchal or communal class process within the family that may distribute those wages and the burdens of household labor in a wide variety of equal or exploitative ways among household members. Examining how members of households work along lines of gender and age is essential to understand how class processes may unequally reward some members of households and how the family relates with an external capitalist economy. Accounting for the effects of household ownership and operation of fishery enterprises requires an understanding of both how those households work in the capitalist economy and how they maintain homes and care for their members. Assumptions such as that they seek to maximize profit and minimize expenses and measures of economic performance such as monetized labor costs or rates of return on invested capital may be insufficient to account for the behavior of shrimp fishers.

As such this discussion will not engage with the considerable literature on agricultural resource economics (see Durrenburger 1984b for a review) that models farms as businesses that happen to produce eggs instead of the frying pans they are cooked in but are otherwise largely indistinguishable. Departing from neoclassical economic theory to incorporate social reproduction with commodity production opens the question of on

what basis to understand the economics of Louisiana shrimp fishers. The Marxist economic tradition offers a counter-narrative that can provide some assistance in this regard.

Karl Kautsky's work *The Agrarian Question* (1988) remains a foundational text in the political economy of agriculture over a century after its first publication in 1899. Kautsky, an official in the German Social Democratic Party and the Second International, compiled the study to guide the largely urban, proletarian party's policy on the German peasantry and describe what role peasant farmers played in capitalist society. He concluded that capitalist development did not impose a capitalist agriculture in the image of modern industry but rather integrated peasants as super-exploited commodity producers who impoverished themselves in order to hold onto their land. This interpretation ran against his initial beliefs that over time capitalist development replaces many small businesses with a few large ones and alienates ownership over the means of production from working people.

After reviewing the situation of late 19<sup>th</sup> Century European farmers who faced declining fortunes from imported grain from the Americas and a growing gap in income between urban and rural inhabitants, Kautsky was forced to change his mind. He found that peasants could compete and survive through overwork and underconsumption. Small farms were able to survive because of their owners' willingness to impoverish themselves, which allowed them to out-bid larger operations in selling their produce, but

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<sup>38</sup> Conceived as the distribution of surplus value among the members of a given economic system, including that of a household.

only at the expense of their health and well being. This ‘self-exploitation’ of the peasantry was materialized in their cheap agricultural commodities, which would sell for less than the cost of production if nominal wage rates applied to their production. The merchants who bought, processed, and retailed this produce, and the urban consumers who ate it, realized the surplus of this labor.

The household nature of peasant farm production meant that no wages were paid to family members for their labor on the farm, meaning that farmers could work themselves harder without increasing their cash expenses in order to maintain their income in the face of falling prices for their produce (Kautsky 1988:110-114).

Agriculture has special properties that tend to resist its total assimilation into capitalist relations of production: Fundamental limits on the amount of land and risks inherent in agriculture due to weather, pests, etc. reduced the ability of industrial capital<sup>39</sup> to directly appropriate the land. Even large capitalist farms with modern equipment and scientific management had a hard time competing with peasants who could undercut their prices by eating less and working harder in order to hold onto their land and independence (Kautsky 1988:59-81, 134-166). For these reasons, as the profitability of agriculture in Europe fell and industrial capitalism advanced, small family farms did not decline relative to large ones but in some cases advanced upon them (Kautsky 1988:135).

Small agricultural producers’ economies were outside of capitalism *per se* because they combine household and business in one, unlike in industry (Kautsky

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<sup>39</sup> Although see Henderson (1999) about financial capital’s crucial role in overcoming the obstacles presented by nature to industrial capital in California’s agricultural development.

1988:96), but were structured by a capitalist economy that profited from their overwork and frugality. To maintain their limited independence based on land ownership (and avoid becoming proletarians) peasants would accept highly unfavorable market conditions. This arrangement was doubly beneficial to social elites (Kausky 1988:134-144, 154-166). The surplus labor from small farms was politically and economically desirable to maintain a reserve population of economically desperate and conservatively minded recruits for the military and agricultural labor on larger farms (as smaller farms were increasingly unable to make ends meet based on their production alone, and increasingly sent members of the household to work on larger estates). Over the long-term, Kautsky thought (correctly) that European small farmers would decline in numbers but there would not be an abandonment of family farming *en masse* or as a mode of organizing agricultural land and labor.

From Kautsky, one can see how agricultural (and fisheries) production can be incorporated into a capitalist economy without the ownership of the means of production being expropriated from smallholders. Some important features and strategies of household producers can be identified:

- Households combine commodity production with social reproduction in a single place among a related group of people. The separation of work from home typical in wage labor is not as marked (Kautsky 1988:96).
- In the context of declining economic conditions, household producers can intensify commodity production and reduce their expenses. When this production fails to meet income needs of a household, they sell more labor on the market or engage in craft

production to earn money. Income diversification is a key element in small farmers' survival (Kautsky 1988:174-196).

- Concentration of productive capacity into a few large, efficient enterprises does not necessarily produce cheaper goods. Small producers desire to maintain ownership over the means of production in order to remain nominally independent and are willing to sacrifice much in order to do so. Unlike capitalist firms that must produce a profit to satisfy their investors, household producers who are not indebted do not have any need of producing surplus value, i.e. accumulating capital. As long as their cash incomes cover the capitalized costs of reproducing their means of production and themselves they can operate without making any profit.
- The flexibility of household producers to meet declining terms of trade is primarily because land ownership and provision of labor by the household means these costs of production are not capitalized and do not have to be factored into the price of the commodities households sell (Kautsky 1988:95-118, 170). This practice puts them at a market advantage against capitalist producers while making it difficult for them to improve their lives. Debt or the absolute inability to meet the costs of production or household maintenance can easily lead to the dispossession of household producers from the means of production.
- Household producers facing income deficits turn to wage labor in other businesses while maintaining their participation in commodity production. With outside income from wages households can maintain commodity production even when their proceeds from farming or fishing cannot meet the needs of the household (Kautsky 1988:166-174).

*The Agrarian Question* offers an assessment of smallholder farming in the context of a capitalist economy. It argues that capital is able to accommodate the smallholders' hold on the means of agricultural production in the larger capitalist system by exploiting them through unequal exchange of commodities instead of directly employing them. *The Agrarian Question* and similar political economic engagements with agriculture do not offer a detailed theory or case studies of the internal dynamics of households that reveal what if any agency they have in determining the conditions of their production. In stressing the structures that shape how agricultural producers behave, Kautsky gives a 'top down' view that says relatively little about the actual organization of household producers. This view tends to miss the crucial role that social reproduction plays in all human societies, not only capitalist ones, to impose requirements on household incomes and produce household resources. Explaining household producers' livelihood strategies, even in an economy dominated by capitalist firms, is not entirely reducible to political economic forces emanating from the capitalist economy.

#### Chayanov and household economies

The Russian agronomist A.V. Chayanov, whose career extended from the 1900s to his arrest by the Stalinist regime in 1930, provides a theory to explain peasant economy that addresses how households make decisions to allocate labor and capital in relation to their needs for social reproduction. In *The Theory of Peasant Economy* (1986), Chayanov sought to understand the logic of peasants, and to construct a theoretical model to predict peasant economic behavior. This model was based on the assumption of a different motivation than profit maximization driving peasant production. It represented

peasant interests as the balance between demand satisfaction of the farming household versus drudgery of labor.

Demand satisfaction refers to the meeting of the socially and biologically determined requirements of the household for food, shelter, clothing, and other needs and wants, and varies based on individual tastes, the degree of affluence expected in a given society, and the degree to which goods required for reproducing the household and its productive forces must be purchased on the market or can be produced on-site (Chayanov 1986:6-7, 12, 84). Demand satisfaction is also regulated by the producer/consumer ratio of a household (Chayanov 1986:90-106, 128-132). This ratio is the balance between the labor productivity of the household and the cumulative draw on household resources from all sources. A young child or elder would consume without producing much, women and men of working age would consume but produce much more, and household members working elsewhere but sending home cash remittances would produce without consuming (from the household budget). Totaling all these inputs of labor and draws on resources produces the ratio. A ratio more in favor of consumers means that producers will have to work harder to achieve the same level of demand satisfaction, and one tilted toward producers means that labor burdens will be less per worker.

Drudgery refers to the undesirability, fatigue, and difficulty of labor. The concept presumes an increasing marginal difficulty and decreasing benefit with each additional unit of labor by a given producer - work is more undesirable the more one does it, it returns less benefit, and this increases exponentially after a point. Chayanov (1986:6, 81-89) theorized that peasants seek to balance a maximum amount of demand satisfaction

while minimizing their level of drudgery. When the household faces shortages of the means of social reproduction/demand satisfaction, household producers engage in self-exploitation, working at higher levels of drudgery than they would normally to achieve the necessary provisioning of the household (or something approaching it). The uncapitalized nature of household labor means that family farms can sometimes out-compete capitalist competitors, especially in times of economic crisis.

When prices received for commodities fall, or the producer/consumer ratio tilts more in favor of consumers, household producers have to either work harder (with more drudgery) to earn the same income, find other sources of income, and/or reduce their consumption. If prices of produced commodities were to fall by half, as households try to find mutually optimal balances between demand satisfaction and drudgery, the tendency would be for production to increase but not sufficiently to entirely make up for lost income. Families would reduce their consumption, but will also increase their drudgery somewhat to avoid having their quality of life reduced by half. When the income potential of a given amount of wage labor is higher than that achievable in commodity production, producers will shift their labor away from the farm. In a situation where proceeds from farming can efficiently provide only a portion of household needs, beyond which the drudgery of intensifying farming to fulfill all needs becomes higher than that of working off-farm, it is rational for farmers to diversify their livelihoods (Chayanov 1986:195-219).

The seasonal variability of primary production and the variability in households through the decades-long lifecycle of the family impose certain benefits and

disadvantages to household producers. For example, certain times of the year require farmers' intensive labor in planting, harvesting, or other tasks regulated by weather and the biology of their plants and animals. At these times, households have labor bottlenecks – there is too much to do for too few people, and for households with sufficient capital they may hire outside help, becoming capitalists of a sort for a while. At other times, there are very few demands on labor, meaning that household members can seek wage work elsewhere or engage in craft production of goods for sale (things like textiles, furniture, etc.) Diversification of income sources throughout the year is the result of this ecologically derived variability in labor demands through the year (Chayanov 1986:107-117). Having some income through the year is also important because the needs of the household for social reproduction are steady, unlike farming income which is periodic. Multiple sources of livelihood make the household more resilient by reducing its dependency on one seasonal source of income that may vary year to year. Side jobs help people get through periods when large influxes of cash are far away (like winter and early spring) and savings are drawn down by the seasonally invariant demands of the family for food, clothing, housing, utilities, and other needs.

Over the course of a generation in a farming family's life, the biological reproduction of the household through having children and aging (an essential sub-set of social reproduction if *family* farming, using household labor, is to continue) changes its needs and income earning potential (Chayanov 1986:53-69). Young families with few dependents have high earning potential because of low total household consumption but little saved capital and little household labor. Households with many small children have

a high ratio of consumers to producers, requiring harder work by parents to increase the farm's output to sustain a given standard of living. As children age (assuming that they contribute to the farm labor force, true for Russia in Chayanov's time but not so much so in the contemporary U.S.) the ratio becomes producer-dominant, and the farm can accumulate considerable income in these years. Yet the parceling of the farm among children as parents retire or die makes this apparent accumulation illusory in many cases; the farm's expanded productive capacity is split up or sold off and out of the family. Aging farmers can contribute less labor but their income demands are much less, as houses tend to be paid off and children moved away, meaning they may be more capable of (or resigned to) weathering economic crisis than younger farmers just starting out with outstanding debts, higher consumption requirements, and the ability to abandon farming to start another career with possibly higher income. At each stage along the family lifecycle the changing labor contributions of household members and their demands on household resources affect the surplus generated by the enterprise and its vulnerability to crisis alongside political economic factors like interest rates, commodity prices, and government subsidy policies.

Chayanov posited a theory of how household economic producers operate in a capitalist society, how they make decisions about labor outlays, production, and consumption. The demands on households for social reproduction play a crucial role in this theory. Household producers have some agency to determine their destiny. This theory has considerable limitations because it was based on data from Russian peasants who had large families and could essentially produce all their consumption needs and

means of production directly from nature around them without the need of capital. This is not the case for contemporary shrimpers, who produce little or none of their own food or other consumption goods and buy almost everything they need. Their boats need fuel, parts, repairs, and ice that by necessity shrimpers have to pay for with money. Louisiana shrimp fishermen possess large capital investments in their boats that Russian peasants did not and they cannot exercise the kind of patriarchal control over family labor to compel it to work assumed in Chayanov's theoretical model. With this being said, the fundamentals of the model can help to understanding how household commodity production in this fishery has been affected by low shrimp prices. Shrimpers own their own boats and continue to rely primarily on household labor for commodity production. The valuation of household labor remains highly flexible as it does not enter into wage relations, but is mediated by commodity exchange. As most shrimpers do not hold debt on their boats, the presence of capital in their households does not have the same disciplinary effects it might on production if financial capital were widespread. Fishers combine participation in capitalist labor markets and shrimping to meet their needs out of multiple household economies. It is through the theory of self-exploitation to achieve minimum consumption levels that we can see the strategy of Louisiana shrimpers to cope with the crisis by *de facto* devaluing their own labor in order to continue deriving the necessary income they need to live.

## Results from interviews with fisherpeople

Me and my wife started off working together, about 35 years ago. I made the first boat, working by myself, and I made another boat, a big steel hull, so (then) I'm making like three times the money, basically. Making money but to keep your equipment up takes over half the income. We was always a family operation. My three boys worked with me, my wife, my daughter, and as we come up, went our separate ways, we always did, if I'm making money, this one had a rough time, well I'd be over here (to help them), and vice-versa. It would keep it in, like, in the family. But the circle keeps getting smaller and smaller and smaller and smaller because all of us is making less money. And one of 'em do have a (wage) job. He got out and he's got him a little job. But the other ones are still in the same circle, and we're doing like this, steady, steady (moves his hands together from having them spread out). All of us. It's closing up. At one time this thing (household economy?) was bigger than a (big) pot, if you want to call the circle, now it's littler than your little finger. Money-wise, I'm talking about, and we're still trying to keep each other going, (so) if my son needs something, if I've got it, I'll give it to him, but the circle's getting faster and faster and littler and littler. And sooner or later, we just got through talking about this when (a relative) was home, well, how little does the circle get before you get squished? Because that's what it's coming to. Sooner or later, naught from naught is naught. We're right at naught. And if it would be like this, if it would just be me, just be (another shrimper) you know, wouldn't hurt nothing, but it's an industry. This goes from Alabama over (to Texas). The next house (over), he's going to tell you the same thing. We're holding on, how I got no idea. Now some of them (shrimpers) did save a few dollars, but very, very few had the opportunity to. Because just when I was making money, go out there and make \$20,000 a week, well guess what, two weeks later your motor's broke, there goes \$15,000. And it always was like that. In my lifetime I've seen the Louisiana boats have to go to Brownsville, Texas. Some of them still over there, never did come back. Shrimping always was up and down. But the shrimp was worth (more) at that time. It was worth more in 1940 than in 2004.

– Terrebonne parish shrimper, June 2004.

This passage condenses much of the experience of household economies of Louisiana shrimpers in recent years. The circle of the household economy and its ability to sustain its members and commodity production has been strained in a way that has not been seen for many decades. Data from interviews with fishers and others reveals some

prominent themes in how fishers have restructured their households and their engagement with the fishery in the years since the price of shrimp collapsed.

All twenty-two shrimping households interviewed (for two households more than one member was interviewed) owned and operated their own boats. This corroborates Deseran's (1997) finding that almost 95% of Louisiana shrimpers are owner-operators. One shrimper interviewed worked a boat for an owner until a few years ago, but bought the boat from the owner and now runs it for himself. All but three of the interviewed fishers were married; two were not and the marriage status of one was not verified. The marital status of the study subjects also supports the finding of Deseran (1997) who found that over 90% of Louisiana shrimpers were married or cohabitating. The basic requirement for household commodity production, ownership of the means of production in familial households, is abundantly in evidence in this fishery.

Age information was not collected systematically from shrimper interview participants, but of those who gave their age most were between the late 30s and late 50s. The mean age of shrimpers reported by Deseran (1997:5) was 46.7 years. Most participants had been shrimping for more than fifteen years and many had relatives who were in the fishery before them and helped them enter it.

Fishers interviewed who gave the size of their boats owned boats between 25' and 75', on average 49.6 feet long. Six boats were 30' or less, eight between 31' and 50', and seven over 50'. Participants had their current boats for an average of 14.1 years, meaning

that they on average purchased their boats in 1980. (This is not necessarily when the boats were built, only how long their current owners had them). Some boats had been with their owners only three years, and one shrimper had his boat thirty-four years. Six boats were purchased between 1977 and 1983 and ten were purchased between 1996 and 2001. Many people had owned multiple boats over their careers in the fishery. From these boat histories, supplied by six fishers, two patterns emerged. Some fishers built up from small initial boats to larger boats, sometimes over eighty feet, then shifted back down to smaller

Table Five. Interview data for fisherpeople. (N=24)	Positive responses expressed as percentage of population
Fisher is married	87.5
Boat is owner-operated	100
Boat under 30'	28.6
Boat between 31' and 50'	38.1
Boat over 50'	33.3
Fisher or spouse increased shrimping effort due to prices	21.4
Fisher or spouse decreased effort or stayed the same	78.6
Had increased direct marketing for some time since 2001	31.3
Wives reporting working on boats recently	30.8
Wives reporting working wage jobs recently	46.2
Wives who have (re)started working due to crisis	23.1
Fishermen working shore jobs (part or full time)	45.4
Reported deckhands are being let go in the fishery	20.8
Boat purchased with cash	27.8
Boat purchased by financing	72.2
Owe money on boat now	22.2
Have health insurance	50.0

boats either to reduce expenses, because they grew older, or to change their fishing strategy to making shorter, less sustained fishing trips in inshore waters while they had shore jobs or worked in other fisheries. These motivations were often linked. Other fishers started similarly with small or medium boats and moved over time to their current larger boats. There was no strong correlation between age and boat size, but older fishers'

explanations of their decision to get into smaller boats suggests a link between fishers' place in their lifecycle and how they fish and a cyclical nature of household commodity production over a family's lifetime.

#### Effects of shrimp price decline on household commodity production

Most shrimpers interviewed did not report better catches or increased fishing effort since 2001. Overall, there are fewer boats and steady landings in the fishery, meaning that the boats remaining catch more per boat overall. Because of the environmentally limited number of shrimp to be caught and the limited number of days to catch them, stretching out the amount of work in fishing cannot achieve the beneficial (if exploitative) effects on household incomes to the degree that intensifying agricultural production can have. Much higher expenses, mostly due to fuel price increases, make each additional unit of effort in the fishery very expensive, and especially for smaller fishers, effort was considerably reduced or eliminated altogether in the 2004 season in favor of other forms of employment. For some larger boat fishers, who work more or less throughout the entire year, have much more capital invested in the fishery and less ability to work outside the fishery, intensifying effort is a strategy that could increase total landings and incomes. Interviewees said how desperate shrimpers were for income was positively related with the amount of effort they were putting in, creating hazardous conditions for them for limited benefits. Limited options for other income outside of shrimping compounded this tendency. Fishers with few options for other jobs and large debts kept trawling despite very low returns on their labor and more wear and risk of breakdown on their boats. Older fishermen had trouble finding work even if they had

other skills because their time in the fishery meant they did not have a work record and references comparable to younger workers who worked in businesses like the oil and gas industry or shipyards. As one fisherwoman explained, speaking about a neighbor in this situation:

This fellow is trying. You're going to put in the number of hours it's gonna take to make the money you need to survive. We're not making anything extra and you can't - a lot of people think, 'Oh, you're gonna go out there and you're gonna put in twice as many hours,' well, you put in so many hours, (but) you can't go out there and put in twice as many ... He's gonna kill himself. He's out there by himself because he can't keep a deckhand to make it worth their while to go ... You're taking risks you would not take otherwise.

- Jefferson parish fisherwoman, July 2004.

While nominal shrimp prices fell about  $\frac{1}{2}$  between 2001 and 2004, with greater expenses the loss of net income from shrimping fell by about  $\frac{2}{3}$  over the same time. To give a sense of the magnitude of the economic change that occurred over a matter of months in 2000-2001, one shrimper claimed \$80,000 in revenue from shrimp on his taxes in 2000, \$8,000 in 2001, and \$6,000 in 2003. This fisher had a shore job that allowed him to reduce his effort and not fish at all for 2004. Another fisher made over \$100,000 on about \$250,000 gross revenues in 2000 and then ran deficits the next three years in a row until he stopped fishing for a job driving oilfield crew boats. Given the inevitable expected and unexpected expenses of shrimping outside of everyday ones like fuel, the small surpluses fishers were able to obtain with much lower prices could be easily absorbed entirely by the boat leaving no income for the family. One fisherman said:

Instead of \$500, you work all night for \$100. You have tens of thousands (\$) on the boat. The shrimper is the lowest-paid person in the country. (He) can only work one hundred twenty days (maximum per year, and you never work every night). Only \$400 a night (on

average). sixty days a year and makes \$20,000. And then he takes his expenses out. Everything's a lot higher and the price of shrimp's a lot lower. Instead you're going to net \$12,000 clear. You're at a poverty-level job.

- Terrebonne parish fisherman, June 2004.

The unwaged character of fishers' labor means that they can drive themselves down to poverty level, or lower, and still deliver commodities at prices competitive with imports, but this can only occur by imposing privation on their households. The ecological limits on commodity production and the need to take several days to weeks a year to do repairs on boats (reproduce the means of production) means that unlike in industry, where stretching out labor time can be done evenly throughout the year, shrimpers have little ability to make up for lower margins by increasing labor time.

Whom serious breakdowns affect and whom they don't is to a degree a matter of chance, one that can knock a shrimper out of the fishery permanently with margins of profit so tight there. Interview participants listed many examples of this happening to people they knew. Shrimping households that once had reserves of cash for such expenses exhausted them. For some households, they were able to maintain approximately the same income they had but could no longer accumulate any surplus, while respondents said electricity and water were being cut off for others. The level of indebtedness of households going into the crisis was a key factor in their ability to maintain themselves. The very high shrimp prices in 2000 convinced many shrimpers to take on new loans to repair boats that were in many cases built in the late 1970s or early 1980s and needed work. When prices fell, their

ability to meet the expenses of production and their household needs combined with a boat note was too much for many families. Debt was reported by Deseran (1997:7) to be most prevalent among the largest boat types (over 60') but the large debts accumulated by many fishers of all boat types since 2001 may change this somewhat.

When asked what sorts of boats were surviving better than others, opinions were mixed. Small boat fishers questioned how big boats could survive and vice-versa. Both communities tended to agree that many small boats had stopped fishing because their owners could do better with other work, while many big boats that were continuing were at grave risk of repossession due to excessive and unpayable debt. Most of the people who commented on what the future of the fishery would be said it would be more small boat dominant, but this is just speculation. New fishing gear configurations are changing the nature of the inshore, small boat fishery. Skimmer nets, modified beam trawls mounted on paired booms on the sides of a shrimp boat as opposed to dragged behind as with an otter trawl, reduce fuel consumption per unit of effort because they have less drag on the bottom and can catch more shrimp faster in inshore waters. Using skimmers, fishers can move in and out of fishing areas faster and make shorter trips, and using skimmers in inside waters means fishers don't have to use TEDs or BRDs. Overall, there are divergent fishing strategies of large and small boats, but no very strong trends. Large boats' strategies are more focused on intensified effort and greater household labor and capital investment to increase overall catch and income. Smaller fishers are moving toward income diversification, which can include shrimping work or not. The smaller the

boat and less investment and portion of income derived from shrimping, the easier it is to depart the fishery entirely. Of course, there are many exceptions to these trends based on the situation of individual households. More than a split between small boats leaving the fishery and big boats staying in, the part-time 'weekend warriors' in the fishery who have full-time shore jobs and rely for only a small and usually discretionary percentage of their income have left in droves. As these fishers are almost all in small boats, the overall license data shows small boats declining disproportionately relative to bigger ones, but this does not mean that small boat fishers who are highly committed to the fishery are leaving in large numbers, even if many have reduced their effort and some have certainly left.

The change in the percentage of total income from shrimping for three fishermen's households between 2000 and 2004 neatly documents some of the typologies of households and how they have coped with the crisis. Fisher #1, a part-time participant who worked a shore job full-time and got his boat in 1999, earned just twenty percent of his income from shrimping in 2000 and none in 2004. The reason for the complete decline was his withdrawal from the fishery; it was not worth his time to keep fishing when profits per day were so small or non-existent and his established job could return much better income with less hassle. Fisher #2, who had been shrimping for over thirty years and currently operates a 30' boat, got 90-95% of his household's income from shrimp in 2000 and the same percentage in 2004; however the overall budget of the household fell considerably. Shrimping is what this person knew and his family was heavily invested in it; he had few options due to his age as a limiting factor in starting in

another line of work, so he stayed shrimping, fishing harder for less money. Fisher #3, whose household got a large share of its income and health insurance coverage for its members from his wife's job as a public school teacher, ran a twenty-one year old 27' boat and got 60-70% of his household's income from shrimping in 2000. In 2004, he got only 25-30% from shrimp. He stayed in the fishery and his landings remained about constant but as his revenues fell by over half his contribution to the household budget shrank accordingly. The relative autonomy of his household from shrimping revenues means that it is somewhat cushioned from the full impact of the crisis.

These vignettes, while few in number and only involving small boat fishers, document three clear trends in the fishery – The evacuation of part-time shrimpers from the fishery (fisher #1), the intensification of production and severe hardship among households that are almost exclusively dependent on shrimping (fisher #2), and reduced shrimping effort and somewhat diminished standards of living for fishers whose households are somewhat diversified (fisher #3). In this last case, if it had been the husband and not the wife who had access to a good paying job (while being a fisherman during some part of the year), the scenario might have played out very differently and it would be more likely that the husband would have stopped shrimping and transferred his labor over to the shore job. The ability of his wife to continue bringing in a steady income leads to his continued ability to shrimp without the household suffering an extreme disruption. The dynamics of gender and labor within the household play an important role in the viability of a given household shrimping enterprise.

Household shrimp producers have relied more on household labor, which does not require wages, and reduced their hiring of paid deckhands in recent years. Paid deckhands are often friends or members of shrimping families, so even in this situation of wage labor the relationship of worker and boss is mediated by intimate social ties. Despite these links, paid help on boats is one of the easiest things to cut out of the budget of a shrimp boat. Deckhands used to make quite good money that varied with the success of the boat and the quality of the season, as they shared the boat's proceeds under a share system instead of a fixed wage rate (Sass and Roberts 1979:7). The reduced wages for deckhands have forced ones with significant family responsibilities to find other work, and those who continue, are like many shrimpers, those who are desperate and can't find other forms of work, according to one fisherwoman interviewed. No deckhands were formally interviewed for this study, so any conclusions about how their lives have changed in recent years is speculative.

Fishermen have either done without deckhands as a result of lower profitability, working their boats alone, or other members of the household have gone onto the boats to take their place. For very small boats working alone is not as difficult as it is for larger boats, so the departure of deckhands has been uneven, and many small boats never used deckhands. The participation of wives, sons, brothers and brothers-in-law in work on boats is not a new phenomenon. Many interviewed fishers said women working on boats as deckhands was not unusual for young households without children who were trying to get established in the fishery or during times when women were needed, if a deckhand was not available or money was short. For more affluent shrimping households and those

with young children, women were much less likely to be on boats. Since 2001 many more wives have had to work in shrimping full- or part-time to reduce the cost of commodity production in order to preserve household income. Children, particularly male teenagers and young adults, are also participating more in the fishery in recent years, but for them and for other members of the household the extra work comes with increased social strain in the family. Working on shrimp boats takes away from time for the other activities they are engaged in, like maintaining the household in the absence of men who are shrimping. Household labor on boats beyond that of a dedicated member or members of the family (i.e. the husband) raises the drudgery of that labor as people must juggle multiple tasks while receiving no real surplus of income, just the savings from not having to hire people. Households capture more of the income from commodity production by involving more of their members in it. As the economic fortunes of the family decline the entanglement of the household with the economy becomes greater as more household labor is devoted to commodity production and away from social reproduction.

Another way households have been able to increase their share of the total value achieved by their commodity production by expending more family labor is direct marketing. In 2002 there was an explosion of roadside sales of fresh shrimp that has abated somewhat as the local market has become saturated with sellers. The reason direct sales are so desirable is that fishers can get about fifty cents to a dollar more per pound of shrimp than they can get by selling to commercial docks. Many small boat fishers have long practiced direct sales, but for most shrimpers of any size boat the volume of shrimp,

especially small ones, that they catch means only a small fraction of their total catch can go to direct marketing. Consumers generally want only big shrimp and the time required to find markets, transport shrimp, retail them out in small quantities is very considerable. In terms of conserving household time and labor, selling to the dock, getting your check, and being done with it is by far the better option. When households are undergoing substantial deficits of income, however, the amount of drudgery they are willing to tolerate to meet a minimally acceptable standard of living increases. Therefore many households have turned to retailing, and most of this labor is being conducted by fisherwomen who direct market while their husbands are shrimping. As with women's work on boats, the demands of social reproduction and paid work for their labor in addition to direct marketing is a source of much stress and tension for little extra money. Any increased income to the household is largely due to the fact that the true labor costs of retailing are not reflected in the price of the shrimp. This is what one shrimper's wife said about it:

I'm on a full time job, but my husband calls and wants me to sell shrimp. We try to sell \$1.00 more than the shed (commercial dock). It takes time and stress – some just want two or three pounds. We do a few hundred pounds here and there. It's such a pain to try to sell direct, compared to the shed. - Lafourche Parish fisherwoman, July 2004.

Even for quite sophisticated retailing operations linked up with farmer's markets and even national sales of frozen shrimp over the internet with next-day delivery, it still is the unpaid labor of wives in these families that is absolutely essential to make these schemes work, and then only with very large capital investments in freezers, stainless steel kitchens, etc. that many fishers cannot afford. Before 2001, the prices shrimpers got

at the dock were much higher than what they get now selling direct, so fishers are not really gaining income with retailing, they are only making up part-way for the long distance they have fallen. Again, household labor is expended that would otherwise go to social reproduction (or not be used at all, allowing fishers the possibility of actually taking a break from time to time) in order to divert the value of their commodity back into the household and out of the commercial economy. One fisher put the issue succinctly (in rather Chayanovian terms):

It's tremendous [the growth of direct marketing], but when you're going to put it down on a pencil and paper it's not worth it. There's no way you [fishermen can run the boat and peddle shrimp at the same time. So what you've got to do, *you got to pull outside resources in to sell your product while you're working, predominantly your wife or one of your children* [my emphasis]. So, when you're doing that, like for instance, your wife could have a job that would be making money, not only are you taking her out of the work force to peddle your shrimp, so it's only an extreme salvation for the panic that we're in.  
- Jefferson parish fisherman, July 2004.

This quote provides a good place to answer what many readers may think is the questionable utility of Chayanovian theory in what are highly subjective decisions made by household producers about how they are to deploy their labor in constructing livelihoods for themselves. Do fisherwomen really 'put it down on a pencil and paper' how best to work, to direct market shrimp or at a waged job? While fishers are not engaging in the academic discourse used by Chayanov to describe and model peasant farmers, they are in a very real sense calculating how they might best meet or reduce their household consumption needs and improve the productivity of labor without making it excessively fatiguing. Time and again interview participants ran through detailed narratives of their strategies for making a living and the Catch-22s they were now

embroiled in that have compromised their quality of life and perhaps long-term ability to exist in the fishery in order to meet the immediate needs of their households and continue producing shrimp. If neo-classical economics is not able to account for the existence, logic, or value of unwaged household labor in the economy, Louisiana shrimpers certainly are. They are immersed in these 'invisible' economies as they pass through grocery stores, shrimp docks, and other economic spaces where the rule of monetary exchange and wage labor is, at least apparently, firmly entrenched. Few of the hundred million plus pounds of shrimp produced each year in Louisiana leave the water without the efforts of workers in household enterprises employing non-capitalized labor.

## 5 CONCLUSIONS

The social reproduction of shrimpers' households is an important component in the decision-making of those households about participation in the fishery. At the same time, the fishery profoundly shapes the dynamics of social reproduction of those households. The effect of the imports crisis has been that households are transferring resources out of social reproduction into commodity production. The demand satisfaction achievable from shrimping income has fallen dramatically, leading to declines in living standards and increased drudgery of labor to compensate. The structural unity of economic production and social reproduction in the shrimping household means that household resources have been transferred to maintain boats as households go from net accumulators to dissipaters of capital.

The largest source of labor in the fishery is the unwaged labor of owner-operating fishers themselves. Many fishers hire deckhands but this has been declining recently due to declining profitability; to compensate family members have increased work on boats without pay. A lack of wages makes shrimpers' incomes more flexible and allows them to bid down the price of their labor and increase their self-exploitation and labor drudgery as commodity prices fall. This strategy can allow shrimpers to maintain household commodity production where enterprises with fixed labor costs could not.

Shrimping is for many seasonal work, a part of a livelihood constructed out of multiple sources of income. As shrimp prices fall many inshore shrimpers further diversify their incomes but do not necessarily leave the fishery altogether. For these households effort in the fishery falls as prices decline, whereas shrimpers that fish almost

year-round, typically with larger boats, greater capital investments, and more debt, fish harder as prices fall. For unindebted shrimpers, if the likely return on their labor time in other trades is much better than shrimping, then fishers will likely stop or reduce shrimping effort for a time. If prices return, that logic may be reversed - since households that stop shrimping often retain their boats, they may return relatively quickly if conditions improve. Longer periods of crisis in shrimping reduce this possibility.

The seasonality of shrimping means that household commodity income and labor demands are uneven throughout the year. The smaller total surplus value generated by shrimping in recent years combined with year-round income needs for social reproduction means that income bottlenecks during the winter, when shrimping is closed, are more intense and prolonged. Breakdowns of shrimp boats can cost tens of thousands of dollars for which family savings to cover such expenses no longer exist, making fishers more vulnerable to being forced out of the fishery by such extraordinary expenses.

Waged employment or self-employment outside the fishery is crucial to open up income bottlenecks, and women in shrimping households often accomplish this. Many fisherwomen worked previously and/or have gone back to work since the price collapse to make up for lost shrimping income. As women remain responsible in these households for most social reproductive labor, the crisis has intensified the labor demands on them as much as it has fishermen. Fishermen also often engage in wage labor or other forms of self-employment on the off-seasons. Many fishers have taken up these jobs full-time and stopped or greatly reduced their effort in shrimping since the price collapse.

As the shrimping population is aging and fewer younger people are recruited into the fishery (from within shrimping families or from without), the social reproductive needs of shrimping households are changing. Households that have shrimp boats and houses that are paid off and have grown children, a considerable number based on the interview data collected in this study, are in a somewhat better position to cope with economic crisis in the short-term. All shrimpers, regardless of their circumstances, face a grave challenge to the long-term reproduction of family ownership and labor provision in the fishery as older shrimpers leave and fewer young people replace them. This trend could spell the terminal decline of household production in future decades if prices do not improve, not because it is impossible to make any money in shrimping, but because it is not rational for people to expend their labor shrimping when other kinds of work can provide a much better livelihood with greater certainty and a better return to the household for the labor expended. Yet as household producers are capable of fishing at lower rates of profit than capitalist firms, the question of who would profitably participate in the fishery if household producers won't is a serious one. Most likely the fishery would have to be radically restructured with far fewer participants to ensure sufficient profitability to sustain investment using more orthodox capitalist labor relations (meaning with waged captains and crews working for investor owners, vertically integrated with processors by ownership or functionally dependent on them based on debt) (Maril 1983).

The presence of shrimping households in the fishing economy as sources of labor and capital paradoxically makes it both possible for those households to compete with imports for now and more difficult for them to remain in the fishery later. The crisis in

Louisiana shrimping is one of social reproduction as much or more than it is of economic production, in that shrimping households have maintained their ability to produce commodities even at much lower prices, but at the expense of making their lives more precarious by the loss of savings and insurance, intensified labor demands, and greater interpersonal conflict. There is no limited liability for these shrimping enterprises; when a crisis erupts in economic production it immediately bears on the household's most basic needs. People are not just at risk of losing their boats; for many, their cars and their houses in danger of being taken away too. (While fishers may be very cautious about putting lots of debt on their boats, they have home mortgages and car notes like most people in the United States.)

Redefining the fishery and management alternatives with household commodity production in mind

As household commodity production is so important to how the Louisiana shrimp fishery works and how it is faring the imports crisis, the role of all those engaged in it needs to be acknowledged and addressed in any plan for fishery recovery. This includes people like shrimpers' wives whose names do not appear on commercial shrimping licenses and maybe never step on a boat, but without whom the fishery simply could not operate. A definition of the shrimp industry as boats, docks, and processors misses the household's constitutive role in the shrimp fishery by only looking at the institutions that directly handle shrimp. Shrimp are not the only thing produced by the fishery; the labor power of fishers must also be (re)produced, and households are a big part of how that occurs (public hospitals, insurance, and other forms of collective provision of social

reproduction also play a significant role). Producing household labor power at competitive prices is as necessary for the fishery's operation as the production of shrimp or provision of fuel and ice. It is in large part the driving down of the *de facto* price of household labor that has allowed the fishery to survive since 2001. To drive down this price, we see intensified self-exploitation of household labor in shrimping, reduced consumption levels by households, and increased dependence on non-fishery income.

The space of the fishery does not stop at the boat and it is bigger than the formal economy that can be readily quantified using standard statistical measures of business performance. Yet in including the family as part of the fishery, one should not fall into the trap of holding up the family as merely a non-economic aspect of the fishery, a valuable repository of cultural heritage that is threatened by the modern economy. Household economies are not a quaint but fading legacy of the past; they are how fishers survive in the present. The fishery's dependence on unwaged household labor on boats and the waged labor of household members in multiple economic sectors other than fishing has increased, not decreased, as prices have fallen. The fishery has diversified and informalized itself for survival as much as it has rationalized and consolidated.

If we can say that households are in the economy in this fishery, then we must also say that the economy is in the household too. The means of commodity production owned by a household (shrimp boat) shares in the household budget along with its human members. A boat owned by a family must be socially reproduced through that family's labor and income just as the labor power of the people that work on it must be. Chayanov (1986:195-219) writes that investments in capital by farmers have the same effect as

more consumers in the family; for household commodity producers, new equipment is not so different than new children in its effects on the household budget because both draw from a common pool of income that is split between reinvestment in production and meeting household consumption needs. If the demands of reproducing the productive power of a boat increase but income does not correspondingly, then the deficit in income will be made good by reducing the family's consumption. This is occurring in the Louisiana shrimp fishery as lower profit margins on shrimp mean that boats consume a larger portion of total fishing income in reproducing themselves as means of production, leaving less for families. When boats are in a deficit, money from other household sources may be called upon to get them working again.

Boats have high but seasonally variable expenditures on items like diesel and ice. They only need these things when they are working and returning more income to the household than they consume, so they typically don't directly take from the household budget. But boats can also have seasonally invariant costs. If shrimpers owe money on them (note that the majority of Louisiana shrimpers owes no money on their boats according to Deseran 1997) they must pay interest every month, regardless of if the boat is catching shrimp or not. Boats owned in the clear are more likely to sit when times are not optimal for shrimping but ones with notes compel people to work them even if the income possible from the fishery is lower than in other work. In this way the possession of the means of production, rather than dispossession from it, compels people to work.

The kind of consumption that boats require to reproduce their ability to fish bears on the household's budget. While compensation to fishers' labor is flexible in that it is

unwaged, many boat needs are non-negotiably satisfied only with money at fixed costs and cannot be postponed if the boat is going to work. The boat's call to reproduce its productive capacity is often more urgent than that of the people in the family because when the boat does not get what it needs, it will cease to function and the family will lose any productivity from commodity production, unlike people who can go without medical insurance, wear old clothes, and can do without in a variety of other ways. If outlays to the boat remain the same or increase at the same time the income derived from commodity production declines, the boat in essence reaches out of the water and begins to predate on the household, siphoning income that would have gone to social reproduction and deploying it to sustain commodity production. This is typically a relative process: Less surplus revenue above fishing expenses is available for the family because a larger percentage goes back to the boat. It can, although, become an absolute transfer, where household resources (like a mortgage on a house to pay for replacing a boat engine) will be deployed to commodity production that were firmly outside of it.

This should be qualified to say that before households lose things like their houses or go hungry, they will most likely get out of shrimping if they possibly can. Ultimately people do care for their children before their boats. Short of this extremity, however, many households will endure considerable privation in order to stay in the fishery. This endurance has a positive effect on the resiliency of the fishery as producers can survive crises like hurricane damage to houses and boats, poor shrimp production, or low prices as long those crises are not too extreme or prolonged. The collapse in shrimp prices is, however, as an interviewed fisherman said, "a hurricane that won't go away." It is

overwhelming many households' ability to cope. The savings of most of these families is long gone, and the fixed capital many households have accumulated in their boats from decades of hard work is being dissipated as they rust, rot, break down and sink from lack of maintenance. The skills possessed by their owners are being lost to the fishery as those people transition into other jobs or retire. The longer the crisis continues the more likely it is that many households will not be able, or willing, to return to shrimping even if prices get better. The household mode of shrimp production, not just the presence of certain households participating in it, faces a serious challenge as children are not likely to enter the fishery both because of lack of interest in living in poverty and because their fathers' boats will not be there when they are of age to inherit them.

The production of commodities by households differs greatly from the Fordist ideal of a reproductive, female, home-based non-capitalist household operating separate from a mobile, male, productive economy. Productive and reproductive labor, economy and community work in the Louisiana shrimp fishery at close quarters and in rapidly changeable ways, giving fishers considerable flexibility to cope with economic restructuring in global markets. The survivability or withdrawal of boats from the fishery cannot be understood solely from the perspective of the boat as an economic machine that consumes and produces only in terms of monetary capital, or of the natural tendencies of an open-access commons to reach a tragic end. The social context the boat works in is also important. That context is, for the Louisiana shrimp fishery, most immediately the household of its owner-operators, and is not only a context that appropriates the surplus of the boat for consumptive use, but is productive of labor power which participates in a

wide array of economic processes, including but not limited to shrimping. Thus the term *household production*, shorthand for the combination of two objects called the economy and the family, is doubly meaningful as *the production of a household* itself, a group of people with certain social relations, not just their commodities (be they shrimp or labor-power). Households are not a fixed object reproduced according to social or natural laws in contrast to a dynamic economy. They are produced differently all the time in constant relation to the shrimping economy, and in turn they shape that economy by means of the cost and availability of their members' labor power, their degree of participation in the fishery, their capitalization and intensity of labor on their boats, and their resiliency or lack thereof to external shocks.

Seeing this fishery through the lens of household commodity production can lead to different policy options than those currently dominant in fishery management. Maximizing aggregate rent from this fishery through, for example, an Individual Fishing Quota (IFQ) regime where access to shrimp became far more expensive because it became a tradable commodity, may push many people out of fishing because the return on their labor would dramatically decline. A fisher's IFQ payment would absorb much of their catch's surplus value, which would be spirited away from them to be realized by banks providing loans, the lease holder of the IFQ, the government agency that ultimately owns the access privilege, or some combination of those roles. This reduction and

redirection of value from the fishery would make shore jobs relatively more attractive of fishers' labor and fishery participation would decline.<sup>40</sup>

Currently in U.S. fisheries management rationalization, (or as it is referred to in reference to Louisiana shrimping, 'professionalization': LDWF 1998), meaning reducing the number of participants in a fishery, is a popular strategy for dealing with fisheries crises. One fishery manager interviewed for this study made this argument for professionalizing the Louisiana shrimp fishery:

A lot of those (boats), that's (a) part-time fishery, is that an industry? I would maintain that it's hard to identify that as an industry because very few people are going to make full-time livings from it, it's not a job creator. It's supplementary work, we as a society need to decide, are we better off with 100 people fishing full-time and paying taxes, or 1,000 people fishing part-time and probably not reporting their earnings from the shrimp industry because they have earnings from a job to report, or the rest of the time they're on welfare and the public dole? It's a decision we have to make. The other thing that we need to do, we need to look at – again, what I quote back to are we better off with 1,000 people or 100 – There's just not enough room to have an industry that's open-ended for anyone who wants to get in it, you can.

- Fishery manager, May 2004.

While these comments are unrepresentative of most managers interviewed<sup>41</sup>, the sentiment expressed does resonate with policies being implemented for Louisiana fishers. An April 2005 conference in New Orleans on Gulf of Mexico shrimp management organized by an environmental organization and state seafood agencies (Burdeau 2005) advocated the shrimp fishery be restructured along the lines of Alaska's fisheries, which

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<sup>40</sup> This is not to say that IFQ proponents are unaware of this effect, quite the opposite. IFQ programs are often implemented precisely to reduce participation in fisheries by making it unaffordable for many fishers to access the resource (Christy 1996; Playfair 2003; Molyneaux 2005).

<sup>41</sup> Other fishery managers were more circumspect in their judgments of what the goals of management were and less confident in the success of any major changes in management for the fishery.

are the most rationalized and marketized, with extensive use of IFQ's and other market-based allocation measures, of any in the U.S. (Mansfield 2004). The Gulf of Mexico Fishery Management Council approved a partial marketization scheme for shrimp licenses in 2005 as an answer to the problems facing the shrimp fishery from imports over the objections of most Louisiana shrimpers who commented on it (NMFS 2004b, McKnight 2005a, McKnight 2005b).

No doubt for overcapitalized fisheries (the Gulf of Mexico shrimp fishery being one historically), reducing the number of nets in the water can be beneficial for fishers and fish alike. However, the strategy of reducing participation based on eliminating fishers who don't derive all or a majority of their income from a fishery is missing the value of household economies capable of drawing on multiple sources of income to subsidize and sustain fishers working at *de facto* wage levels below what alone would be required for them to survive. The resiliency of these households to weather crisis should not be so overlooked.

The path of professionalization outlined above, a vision drawing on the 'tragedy of the commons' and a capitalocentric understanding of economic efficiency and progress, is not the only road open to the future of the Louisiana shrimp fishery. Bebbington (1999), in an influential paper entitled 'Capitals and capabilities,' argues that the discounting by development agencies of many small rural producers as '*no-viables*' (not economically viable) condemns those people, or households, or even regions, to stagnation through disinvestment. Upon closer examination, the inviability of these producers, based on an assessment of only their ownership of land and water, does not

take into consideration their other sources of income from craft production and provision of services in the rural economy. Rather than the policy advocated by development agencies of moving these ‘no-viables’ off their meager lands and into the cities to make way for ‘viables’ to set up capitalized agriculture, another form of development becomes possible (a so-called *via campesina* or peasant road of development) if the many livelihood strategies available to rural people other than only ones based in the land are considered and developed. All the capitals and capabilities of primary commodity producers should be taken into consideration in making assessments of their value and resilience.

A similar case can be made for Louisiana shrimping households. Fishermen skilled in trades like carpentry and welding earn good money off-season and still participate in shrimping full-time, at least during the inshore season. Fisherwomen often contribute not only household labor but wages to household budgets, and many more are doing so in the context of low shrimp prices. Rather than focusing only on fishermen who hold shrimping licenses, and only on the income they can earn from shrimping, a diversity of ‘other professionalizations’ engaged by fishers to cope with the crisis in shrimping are visible if the entire household of shrimping households is considered. These other professionalizations, despite the hardship of self-exploitation they often impose, may have positive outcomes for some fishers. One fisherman interviewed for this study explained that the long-term effect of the crisis in shrimping, while it was harmful for people in the near-term, would get people to focus more on education and not fall to shrimping as a traditional means of income with no backup plan. His wife explained too

that many fisherwomen have gone back to school in recent years in order to get into better work in order to earn more money in light of their newly greater responsibilities for making money.

Public policy may be able to help this process be successful for more fishers. These policies must acknowledge the role of social reproduction in producing household labor power for commodity production. They could include measures to improve the ability of fishing households to diversify their livelihoods through education of fishermen and fisherwomen, or offering assistance to social reproduction such as cooperative health insurance funded between fishers' contributions and taxes on seafood production. These measures may help fishers survive in an environment of chaotic or declining market prices.

Such policies should not be interpreted as a means of avoiding addressing market prices. Stable and reasonable prices would reduce the boom and bust cycles of investment in and divestment from fisheries, arguably doing more to address the structural reasons for fisheries crises than any rationalization of boats, fishermen, or subsidization of social reproduction would do.

#### Looking towards the future

The future of the Louisiana shrimp fishery is foreboding. Policies to support alternative professionalization / income diversification, assuming they could be implemented, may have a significant effect in slowing the tide of fishers out of shrimping, but only that. Job training is not an effective strategy for retaining fishers or their children in the fishery. When fishers explained to me how they inherited their

shrimping businesses from several generations of their ancestors and hoped to continue the tradition with their children, in the same breath they would express their opposition to their children actually becoming shrimpers – they saw no long-term future in the business and didn't want to subject their children to decades of struggle akin to what they've experienced for the past few years.

The continuation of household commodity production in its current or past forms is not a necessarily positive phenomenon. This mode of production is clearly no exit from exploitation. Not only do fishermen exploit their own and their families' labor to sustain and expand production, but their devalued labor and sweat equity in their boats, embodied (if uncapitalized) in the shrimp they harvest, is eventually realized as profit by shrimp processors, wholesalers, retailers and consumers who buy shrimp that are cheaper than even a 'normal' rate of labor exploitation would allow for.<sup>42</sup> Yet, because self-exploitation keeps fishers in business during periods of crisis and generally keeps banks out of shrimping households' pocketbooks by reducing the amount of debt they hold, it reduces financial exploitation of fisherpeople, as well as giving them more flexibility in how or if they engage in shrimping at all. For those without debt on their boats, shrimpers neither have to work directly for someone else who owns their boats, nor do they have to answer to the slightly more remote lash of a bank demanding a boat note each month.

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<sup>42</sup> This is not to say that shrimp processors in Louisiana are making a killing. They have been greatly harmed by the imports crisis as well, and face similar problems as fishers. The lower prices they get from fishers may be the only thing that allows them to stay in business and remain a market for shrimpers' catches. The profits in the contemporary global shrimp industry are concentrated far down the commodity chain from the Louisiana shrimp industry, such as importers, wholesalers, and seafood retailers.

The fixed capital in their boats they build out of their labor is not only a means of production, but an asset that can be used to leverage other investments or pass on a livelihood and means to earn it to a child. Through progressively trading in old boats for new ones, paying for a new boat in part with proceeds from selling the old boat, assets could be retained and expanded within families over generations, accumulating real wealth in the hands of shrimpers. This process is now operating in reverse.

Perhaps one of the hardest to recognize tragedies for the Louisiana shrimp fishery recently has been the multitude of 'For Sale' signs on tied up shrimp boats. These boats are being offered for fractions of their construction cost and are still not finding buyers, or are already sinking back into the bayous of Louisiana from where the wealth transformed into their hulls was originally harvested. These boats represent the devaluation and waste of decades of labor and hardship of fisherpeople that is being destroyed by the action of a globalized capitalist system, spurred on by technological innovation and the rapid movement of international finance capital seeking higher returns, to flood the market with farm-raised shrimp, a form of production that finally brings this commodity sector firmly within the finance-directed nexus that transformed agriculture by overcoming natural barriers to production.

Hurricanes Katrina and Rita in 2005 did not hit a prosperous shrimping industry in Louisiana. They flooded, smashed, and scattered about the boats, docks, and processing plants of an industry already devastated by the 'hurricane that won't go away' – the imports crisis. Like the breached levees of New Orleans and eviscerated wetlands

sacrificed to oil and gas development that intensified the hurricanes' destruction, for the Louisiana shrimp fishery malignant neglect by government and prioritization of profits over people's livelihoods in the form of the imports crisis magnified Katrina and Rita's violence into a possibly terminal blow for thousands of commercial shrimpers throughout South Louisiana. This is particularly so in the far east and west of the state where the hurricanes made landfall. The performance of the federal government thus far in 'recovery' after the hurricanes does not suggest that effective or timely aid is coming to help the shrimpers of Louisiana.

Rather, the hurricanes may accelerate social changes already occurring in the fishery by decades, causing a rapid decline in the number of fishers that would have taken far longer to accomplish by attrition. In their wake, plans that would never have been politically viable in Louisiana – such as vessel buybacks to reduce the number of participants and restructure the fishery towards one smaller in number, more capitalized, and more articulated with shrimp processors' needs, may be seriously considered. If such plans succeed, the predominant role that household commodity production plays in this fishery will come to an end.

## APPENDIX A: HUMAN SUBJECTS APPROVAL

Human Subjects Protection Program  
<http://www.irb.arizona.edu>



1350 N. Vine Ave  
 P.O. Box 245137  
 Tucson, AZ 85724  
 (520) 626-6721

19 April 2004

Brian Marks, B.A.  
 Advisor: Sallie Marston, Ph.D.  
 Department of Geography  
 P.O. Box 210076

RE: BSC B04.63 EFFECTS OF ECONOMIC RESTRUCTURING ON LIVELIHOOD STRATEGIES IN THE LOUISIANA SHRIMP FISHERY

Dear Mr. Marks:

We received your research proposal as cited above. The procedures to be followed in this study pose no more than minimal risk to participating subjects and have been reviewed by the Institutional Review Board (IRB) through an Expedited Review procedure as cited in the regulations issued by the U.S. Department of Health and Human Services [45 CFR Part 46.110(b)(1)] based on their inclusion under research category 7. Although full Committee review is not required, a brief summary of the project procedures is submitted to the Committee for their endorsement and/or comment, if any, after administrative approval is granted. This project is approved with an **expiration date of 19 April 2005**.

The Human Subjects Committee (Institutional Review Board) of the University of Arizona has a current Federal Wide Assurance of compliance, number FWA00004218, which is on file with the Department of Health and Human Services and covers this activity.

Approval is granted with the understanding that no further changes or additions will be made either to the procedures followed or to the consent form(s) used (copies of which we have on file) without the knowledge and approval of the Human Subjects Committee and your College or Departmental Review Committee. Any research related physical or psychological harm to any subject must also be reported to each committee.

A university policy requires that all signed subject consent forms be kept in a permanent file in an area designated for that purpose by the Department Head or comparable authority. This will assure their accessibility in the event that university officials require the information and the principal investigator is unavailable for some reason.

Theodore J. Glattke, Ph.D.  
 Chair,  
 Social and Behavioral Sciences Human Subjects Committee

TJG:pm

cc: Departmental/College Review Committee

APPENDIX B: TABLES ON THE LOUISIANA SHRIMP FISHERY

Table Six Louisiana shrimp landings, 1950-2003

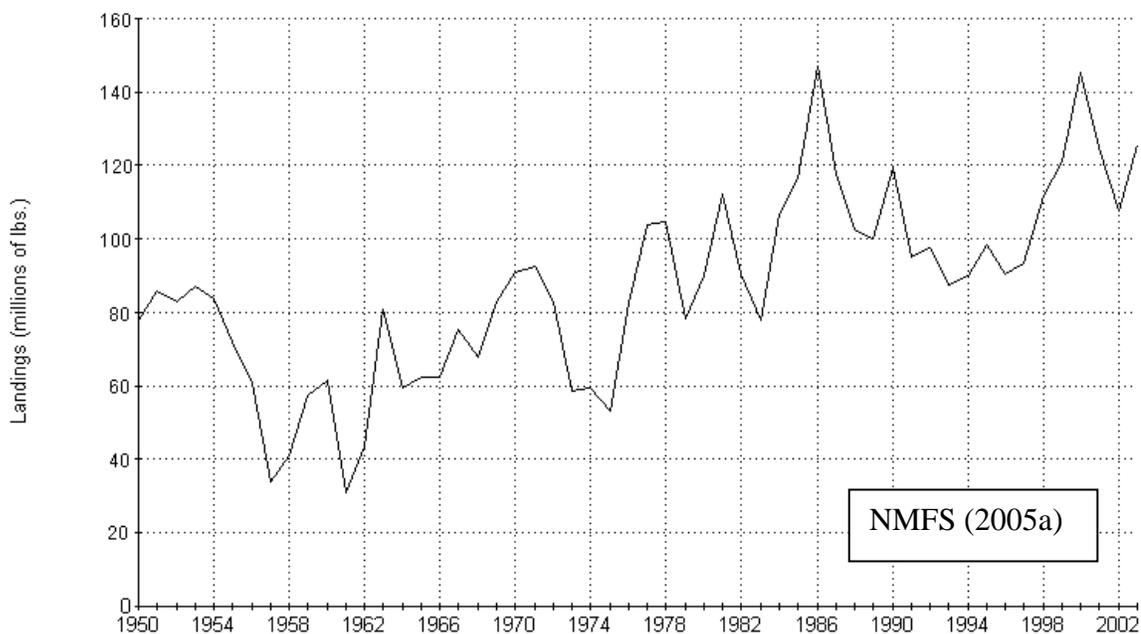
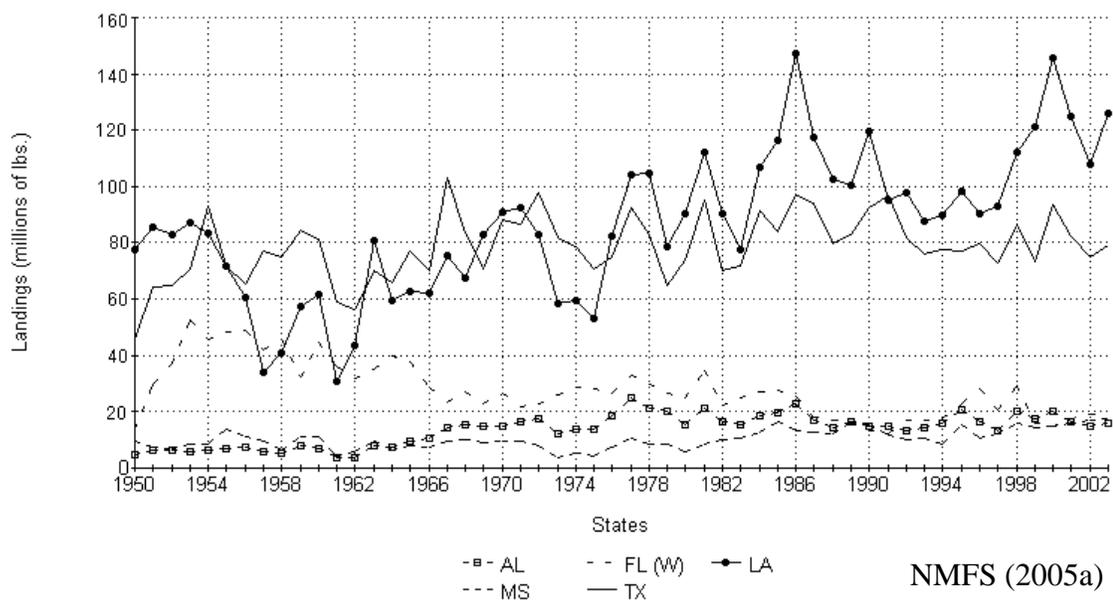
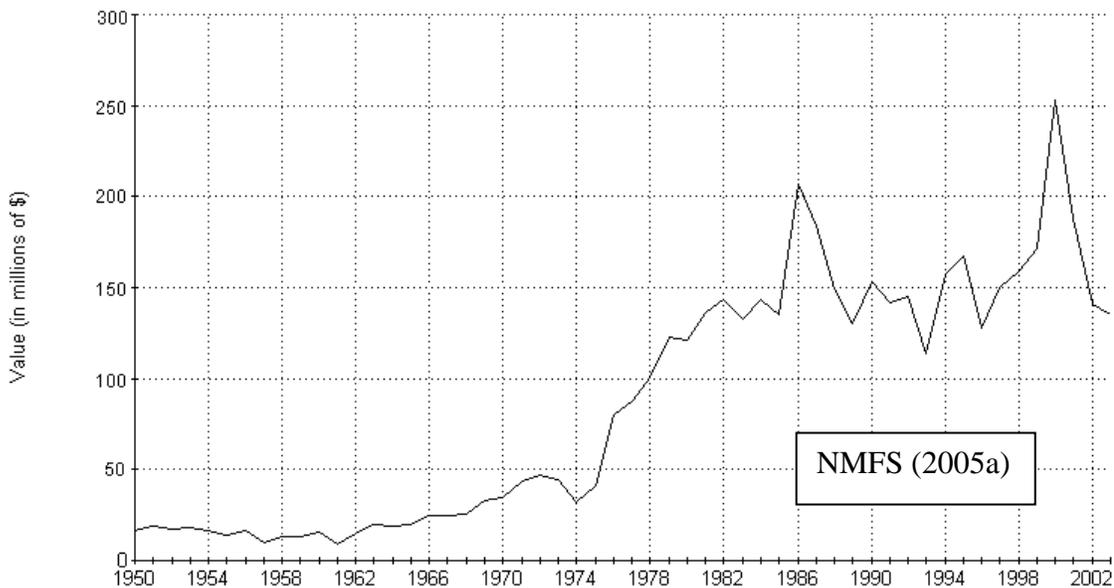


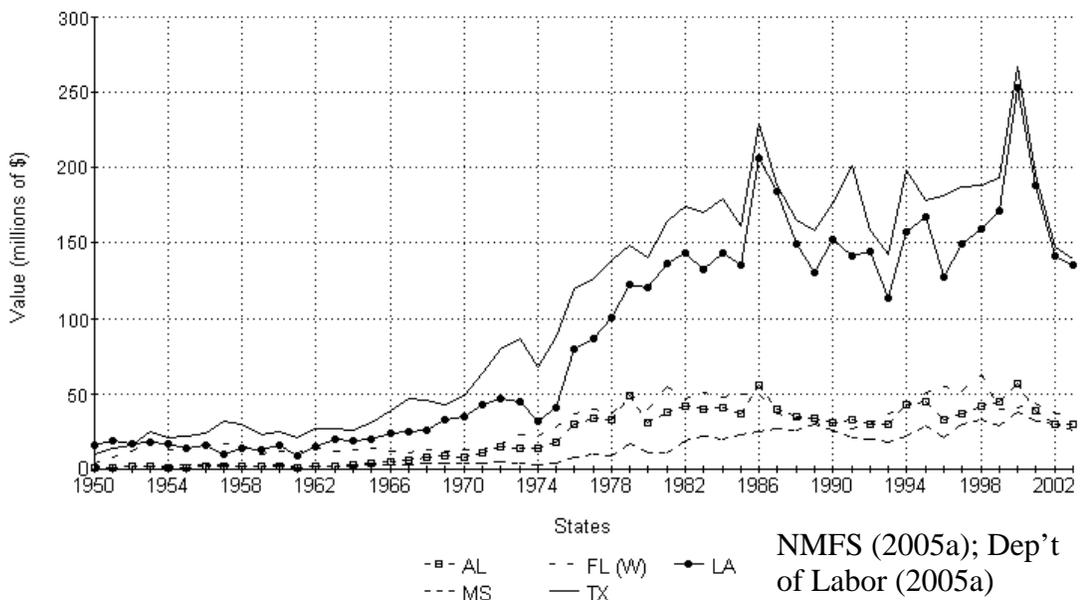
Table Seven U.S. Gulf of Mexico shrimp landings  
By state, 1950-2003



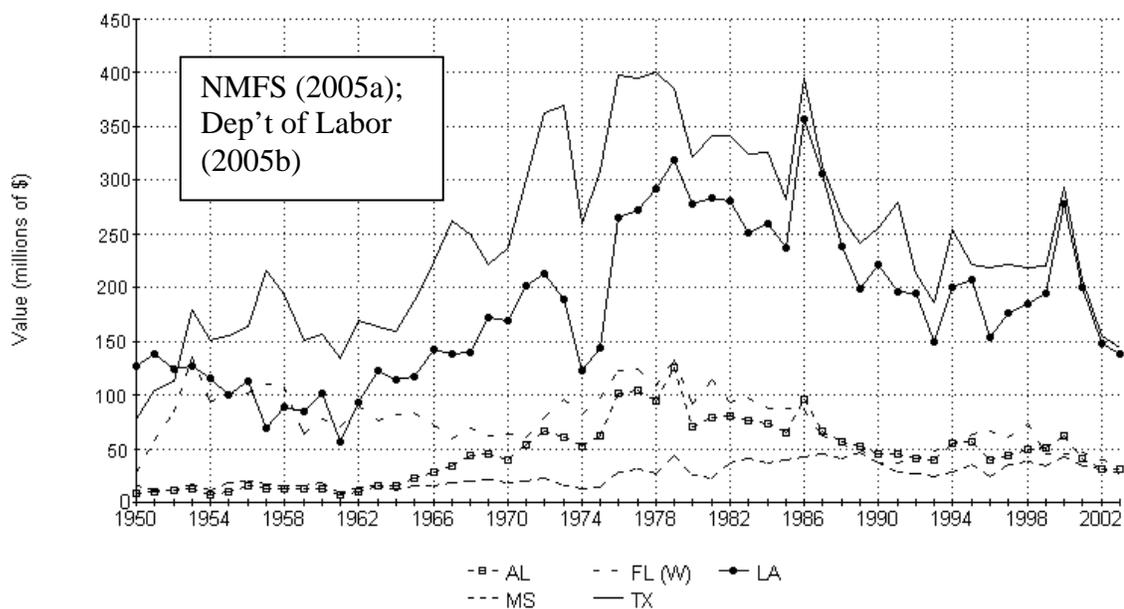
**Table Eight**      **Nominal Louisiana shrimp landings value**  
1950-2003



**Table Nine**      **Nominal shrimp landings value**  
For U.S. Gulf states, 1950-2003



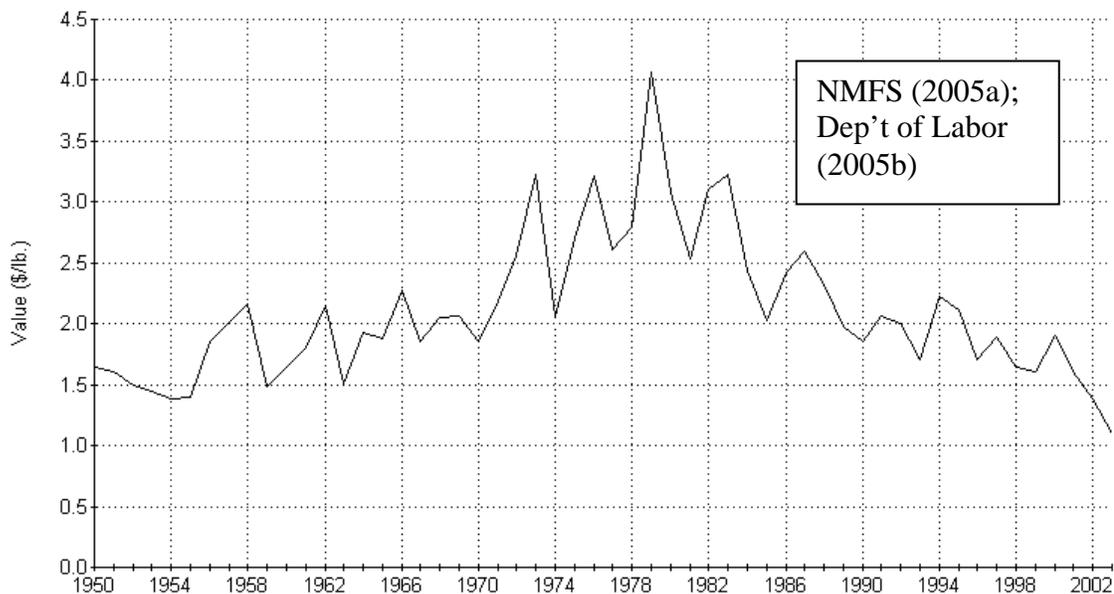
**Table Ten** Total value of shrimp landings adjusted to the CPI (2004=100)  
1950-2003, by state



**Table Eleven** Nominal Louisiana shrimp landings value  
Per pound, 1950-2003



**Table Twelve**  
**Real Louisiana shrimp prices, 1950-2003**  
 Adjusted to the CPI (2004=100)



**Table Thirteen**  
**Real shrimp prices for U.S. Gulf states**  
 Adjusted to the CPI (2004=100)

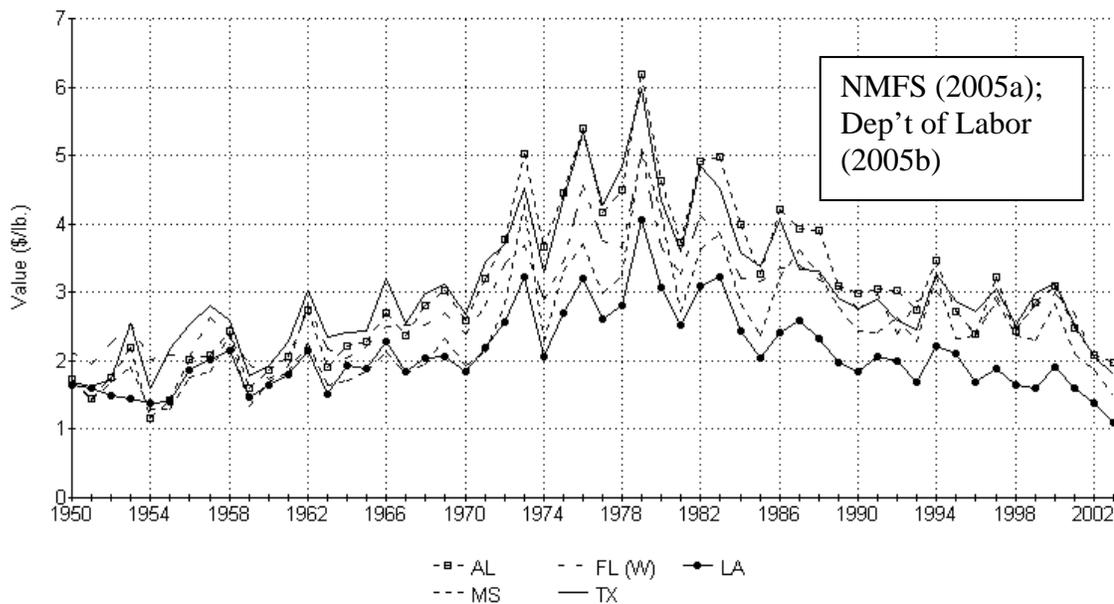


Table Fourteen. Number of Louisiana commercial shrimp fishers (or equivalents) for selected years.					
1937 <sup>43</sup>	1948 <sup>44</sup>	1958 <sup>45</sup>	1976 <sup>46</sup>	1979	1987 <sup>47</sup>
c. 2,313	3,408	c. 5,586	10,470	15,310	20,150

Table Fifteen. Louisiana commercial shrimp licenses, 1989-2003. (LDWF 2004a)				
1989	1990	1991	1992	1993
16,505	14,840	13,183	12,468	10,588
1994	1995	1996	1997	1998
9,637	9,512	9,388	8,466	8,826
1999	2000	2001	2002	2003
9,336	9,988	9,964	9,588	8,677

<sup>43</sup> The number of trawls used in the Louisiana shrimp fishery in that year. (Becnel 1962:22).

<sup>44</sup> License data from Becnel (1962:62).

<sup>45</sup> The number of shrimp fishermen in Louisiana that year (Becnel 1962:61).

<sup>46</sup> 1976 and 1979 license data from Gulf Council (1981:3-81).

<sup>47</sup> License data from Baron-Mounce et al. (1991:18).

Table Sixteen. Recent statistics on U.S. shrimp production and consumption.	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
U.S. landings (millions of lbs.) <sup>1</sup>	175	190	196	179	173	189	219	201	196	195
Shrimp imports to the U.S. (millions of pounds) <sup>2</sup>	750	719	721	811	894	960	1024	1178	1305	1495
Change over previous year in total U.S. shrimp supply (%)	3.8	-1.7	0.8	7.4	7.2	7.1	7.6	9.9	8.1	11.2
Market share of U.S. shrimp landings (%)	18.9	20.9	21.4	18.1	16.2	16.4	17.6	15.0	13.1	11.5
Per capita shrimp consumption (pounds) <sup>3</sup>	2.6	2.5	2.5	2.7	2.8	3.0	3.2	3.4	3.7	4.0
Growth in U.S. per capita disposable income (%) <sup>4</sup>	3.6	3.8	4.0	4.0	5.6	3.5	6.2	3.0	3.5	3.2
Average U.S. ex-vessel price (headless equivalent, dollars per pound) <sup>5</sup>	3.22	3.00	2.60	3.04	2.98	2.96	3.16	2.82	2.36	2.17
Average import price (headless equivalent, dollars per pound) <sup>6</sup>	No data <sup>7</sup>	No data	3.47	3.58	3.47	3.23	3.71	3.06	2.61	2.54

<sup>1</sup> NMFS (2004a), page 82.

<sup>2</sup> NMFS (2004a), page 82.

<sup>3</sup> Department of Commerce (2004).

<sup>4</sup> Department of Commerce (2005).

<sup>5</sup> Total value of U.S. shrimp landings, taken from *Fisheries of the U.S.* data (1994-2003), divided by total amount of landings (headless equivalents) drawn from NMFS (2004a), page 82.

<sup>6</sup> NMFS (2005b). Note that import prices are higher in part because many imports arrive already processed, whereas U.S. landings are for unprocessed shrimp. Processing those shrimp increases their price relative to imports.

<sup>7</sup> NMFS trade data was not available for before 1996 to compile these statistics.

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