A SOCIAL AND ECONOMIC ANALYSIS OF COMMERCIAL FISHERIES IN NORTH CAROLINA:

Core Sound to the South Carolina State Line

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INTRODUCTION

The coast of North Carolina is home to marine fishery resources that are of significant economic and social importance to the state's coastal communities. Though small, the Core Sound area off the coast of Carteret County accounts for a considerable amount of commercial catch in North Carolina. The Cape Lookout National Seashore encompasses the southern and eastern boundaries of the Sound (including Shackleford and Core Banks), leaving the area largely uninhabited. In contrast, the western shore of the Sound consists of multiple small towns that have a long history of commercial fishing. South of Core Sounds falls an area known as the Southern District (Beaufort Inlet to the South Carolina border). All of the waters in this area fall behind barrier islands. Regulations in both Core Sound and the Southern District fall under the state Marine Fisheries Commission (MFC) and the interstate Atlantic States Marine Fisheries Commission (ASMFC).

The North Carolina Division of Marine Fisheries (NCDMF) has conducted a series of studies aimed at gathering social and economic information on North Carolina's marine fisheries for use in FMP creation. These studies include previous analyses of Core Sound fisheries (Crosson 2007b, Cheuvront 2002) and fisheries from Beaufort Inlet to the South Carolina state line (Crosson 2010, Cheuvront 2003), as well as fisheries in the Albemarle Sound (Hadley and Wiegand 2014, Crosson 2007a, Diaby 2000), Pamlico Sound (Hadley and Wiegand 2014, Crosson 2007a, Diaby 2002), and Atlantic Ocean (Crosson 2009, Cheuvront and Neal 2004), These analyses are updated approximately every five years. As required by the North Carolina Fisheries Reform Act of 1997 and the Magnuson-Stevens Fishery Conservation and Management Reauthorization Act of 2006, the results are then used in the socioeconomic section of state FMPs as well as in commercial fishing economic impact models used by NCDMF.

Study Area

Two areas are examined in this study: Core Sound and the Southern District. The Core Sound area is defined as the waters from Cedar Island down to and including the North River/Back Sound area (Figure 1). The Core Sound area lies entirely within Carteret County and consists of approximately 72,000 acres of water. The Southern District area is defined as the waters from Beaufort Inlet down to the South Carolina border. This includes the following NCDMF trip ticket waterbodies: Newport River, Bogue Sound, White Oak River, Inland Waterway – Onslow County, New River, Stump Sound, Topsail Sound, Masonboro, Sound, Cape Fear River, Lockwood Folly River, Shallotte River, and Inland Waterway-Brunswick County. The Southern District lies within Carteret, Onslow, Pender, New Hanover, and Brunswick Counties and consists of approximately 115,005 acres of water (Figure 2). Some of the fishermen surveyed for this project fish in other waters, those activities are not the focus of this study and are generally not reported.

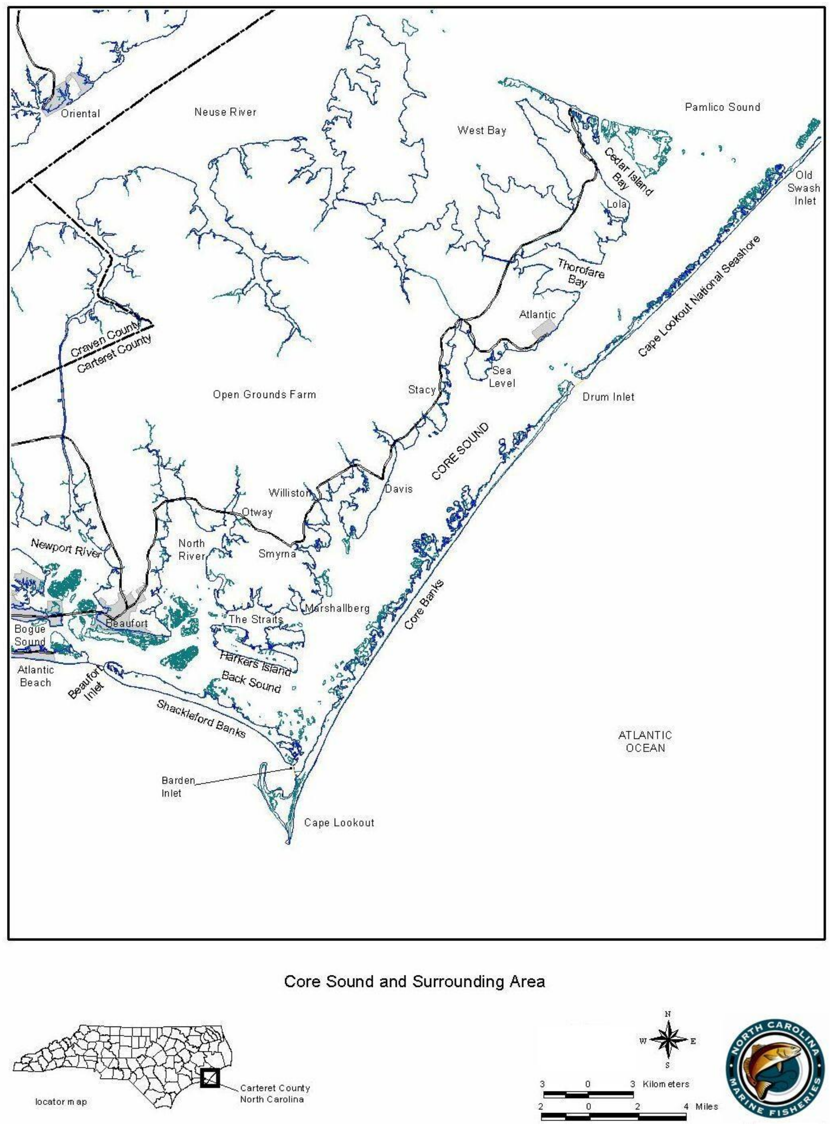

Figure 1. Map of Core Sound and Surrounding Area (NC DMF GIS Program).

Figure 2. Map of North Carolina Coast from Beaufort Inlet to the South Carolina State Line (NC DMF GIS Program).

Study Objectives

There were three primary objectives of this study:

1. To describe the socioeconomic characteristics of commercial fishermen operating along the North Carolina coast from Core Sound to the South Carolina state line off, including demographics, dependence on commercial fishing and fishing business characteristics;

2. To collect cost and earnings information from commercial fishermen operating from Core Sound to the South Carolina state line to improve estimates of the cost, earnings, and economic returns associated with commercial fishing; and

3. To evaluate commercial fishermen perceptions regarding current fisheries management practices, the importance of fishing in their communities, and relevant issues currently facing the commercial fishing industry.

METHODOLOGY

Recruitment and Participation Rates

In 2016, a list of 923 commercial fishermen was compiled from the NCDMF license database. This list reported every person or business that landed at least $1000 in ex-vessel value of seafood from water bodies in the study areas in 2015. Licenses included were the Standard Commercial Fishing License (SCFL), the Retired Standard Commercial Fishing License (RSCFL), and the Land or Sell License.

A random subset of 500 fishermen were contacted about completing the survey. A project specific interviewer contacted fishermen by mail and by phone requesting their participation in the survey. In January of 2017, all 500 fishermen were sent a mailing that contained a letter introducing the survey project, a link to an online copy of the survey as well as a hard copy of the survey and a return envelope. To incentivize fishermen to complete the survey, the introduction letter explained that individuals who complete the survey would be eligible to participate in a prize drawing for one of multiple Walmart gift cards in the amount of $10. In February of 2017, fishermen who had not responded to the initial survey distribution were sent an additional mailing. In June of 2017 fishermen who had still not responded were contacted by phone and encouraged to complete the survey. A final mailing was sent out the end of June 2017. Of the 500 possible respondents, 97 completed the survey, a response rate of approximately 19%. This response rate is slightly lower than the response rates of previous surveys. The majority of the non-responses were due to fishermen that were unable to be located and contacted. Only a small number of fishermen directly refused to complete the survey.

Survey Instruments

The NCDMF Fisheries Economics program aims to survey commercial fishermen on a staggered five-year basis. Fishermen representing each area of the coast are expected to be surveyed in a given year, with the goal that the survey will be updated again in five years. For longitudinal purposes, Cheuvront (2002, 2003) and Cheuvront and Neal (2004) refined the survey to the point that the general format is set, with minor modifications made to reflect each area's specific fisheries and additional interests at the time of survey administration.

The current survey, used in this study, consists of 49 questions and took approximately 30 minutes to complete. The data collected in this survey (Appendix A) addressed five key areas of interest:

1. Individual fishermen socio-demographics and reliance on commercial fishing;
2. Fishing business characteristics and cost;
3. Vessel characteristics and expenses;
4. Target species and gear;
5. Perceptions and outlooks regarding commercial fishing and fisheries management.

Data from the survey was recorded by hand and then coded into a Microsoft Excel database. Following which frequency and univariate analyses were performed using Microsoft Excel and the Statistical Package for the Social Sciences (SPSS). Economic impact estimates were calculated using IMPLAN modeling software and the NCDMF economic impact model.

SURVEY RESULTS

Demographics

The Core Sound and Southern District survey respondents were predominately male (98%) and white (94%). The average age of commercial fishermen was 57 years, through there were active fishermen as young as 1 and as old as 83 years. The majority of fishermen were married (68%) and most had at least a high school education (86%). Survey respondents indicated living in their current communities an average of 39 years, with many fishermen still living in their birth community. Majority of respondents were from Carteret (31%), Onslow (28%), Pender (13%) and New Hanover (13%) counties (Table 1).

Table 1. Demographics of Core Sound and Southern District survey respondents.

	Frequency	Percent		Frequency	Percent
Gender			**# of People in Household**		
Male	93	98%	1	16	18%
Female	2	2%	2	45	49%
Race			3	18	20%
White	89	94%	4	10	11%
African American	0	0%	5	2	2%
Asian American	4	4%	6	0	0%
Hispanic	2	2%	**County of Residence**		
Marital Status			Carteret	29	31%
Married	64	68%	Pender	12	13%
Divorced	1	1%	Brunswick	10	11%
Widowed	0	0%	New Hanover	12	13%
Separated	17	18%	Onslow	26	28%
Never Married	12	13%	Other	4	4%
Education			**Years in Community**		
Less than High School	13	14%	Average	39	
High School Graduate	44	47%	Minimum	3	
Some College/2-year Degree	26	28%	Maximum	83	
College Graduate	11	12%	**Age**		
Household Income			Average	57	
Less than $15,000	9	11%	Minimum	1	
$15,001-$30,000	18	21%	Maximum	83	
$30,000-$50,000	15	18%	**Years Fishing**		
$51,001-$75,000	14	16%	Average	31	
$75,001-$100,000	6	7%	Minimum	0	
More than $100,000	7	8%	Maximum	60	
Refuse to answer	16	19%	**% Income from Commercial Fishing**		
Fisherman Status			Average	59	
Full Time	53	57%	Minimum	0	
Part Time	40	43%	Maximum	100	

The average respondent had 31 years of commercial fishing experience, though there were fishermen who had been active for less than a year, and fishermen who had been active for more than 60 years. Most respondents considered themselves to be full-time fishermen (57%), however 71% of fishermen indicated that they had a second source of income. Fishermen indicating that they maintained a second job were often still involved in the fishing industry in some manner (18%) including: charter fishing, fish house operation, and marine construction. Other fishermen income sources included: construction, social security, and the service industry. Survey respondents typically lived in households with two (49%) to three (20%) residents and had an annual household income between $15,000 and $50,000 dollars (39%). On average, respondents indicated that 59% of their income come from commercial fishing, though results show that commercial fishing can account for less than 1% and as much as 100% of an individual fisherman's income (Table 1).

Seasonality

Based on survey responses the peak time for commercial fishing in the Core Sound and Southern District regions falls between June and November with over 85% of respondents spending time fishing the area. The slowest time in the region falls between December and April. Majority of fishermen indicated working the water year-round (57%) (Table 2). Most (90%) of fishermen are the sole-owner of their commercial fishing business, while 7% have a partnership with other fishermen, and 3% are a part of a corporation.

Table 2. Months of fishing activity for Core Sound and Southern District survey respondents.

Month	Frequency (n=95)	Percent
January	76	80%
February	75	79%
March	76	80%
April	75	79%
May	78	82%
June	81	85%
July	81	85%
August	82	86%
September	84	88%
October	91	96%
November	90	95%
December	74	78%
All Year	54	57%

Fishing Vessels and Business Expenses

Almost all the Core Sound and Southern District respondents (93%) owned at least one registered fishing vessel. Fifty percent owned only one vessel, 46% owned at least two vessels, and 22% owned three or more vessels. For data analysis purposes vessels were divided into three different categories: small vessels (less than 19 feet in length), medium vessels (between 19 and 38 feet in length), and large vessels (greater than 38 feet in length). For their primary vessel, 50% of fishermen utilized a small vessel, 47% utilized a medium vessel, and 3% utilized a large vessel (Table 3).

Table 3. Summary characteristics of Core Sound and Southern District respondent vessels.

	Small (n=45)	Medium (n=42)	Large (n=3)
Average Length (feet)	16.2	22.7	56.3
Average Crew Size	1.3	1.7	2.3
Average Years Owned	13.8	13.0	25.0
Average Market Value	$7,184	$26,017	$80,000

When considering trip expenditures, it is important take into account vessel size, as larger vessels tend to have higher operating costs. Total per trip expenses were highest for large vessels ($1,500), followed by medium vessels ($469.10), and smaller vessels at ($399.20) (Table 4).

Table 4. Mean trip expenses by vessel size for Core Sound and Southern District respondents.

	Small Vessels	Medium Vessels	Large Vessels
Fuel	$241.87	$247.13	$1,375.00
Ice	$20.58	$126.86	$25.00
Groceries	$28.91	$73.78	$100.00
Bait	$107.84	$21.33	$0.00
Trip Total	**$399.20**	**$469.10**	**$1,500.00**

Table 5 shows the estimated per trip expenditures and estimated annual expenditures for fishermen in the Core Sound and Southern District. Both average and median expenditures were estimated. Using both estimates helps to account for variations in fishing vessel size and operation. Large vessels and operations are associated with higher operating costs and as a result skew the summarized expenditures data upward. This results in mean values that are, in some cases, as much as five times higher than matching median values.

Table 5. Mean and median fishing expenses of Core Sound and Southern District respondents.

Trip Expenses	Average	Median
Fuel and Oil	$259.76	$30.00
Bait	$71.51	$5.00
Ice	$49.49	$7.00
Groceries	$58.43	$0.00
Other	$132.89	$2.00
Total Per Trip	**$572.07**	**$44.00**

Annual Expenses	Average	Median
Labor	$8,306.96	$0.00
Loan Payments	$221.00	$0.00
Vessel/Gear Repairs	$1,756.75	$625.00
Docking Fees	$325.62	$0.00
New Gear	$2,540.57	$900.00
Insurance	$189.25	$0.00
Vessel Registration	$127.15	$60.00
License Fees	$454.35	$400.00
Other	$577.71	$0.00
Yearly Total	**$14,499.36**	**$1,985.00**

Majority of fishermen operating in the Core Sound and Southern District pay their crew using a share system (50%). The captain of the vessel received, on average, 34% of the profits, the boat owner received 46%, and the crew of the vessel received 35%. Fishermen that do not pay their crew using shares typically fish alone (70%), pay a per day rate (15%), or a per trip rate (7%).

Gear and Target Species

Among survey respondents, oysters were the most commonly targeted species (56%), followed closely by clams (33%), Jumping and Sea Mullet (33%), Flounder (33%), and Shrimp (32%). Table 6 summarizes the variety of species targeted in Core Sound and the Southern District.

Table 6. Species targeted by Core Sound and Southern District survey respondents.

Species	Frequency	Percent
Oysters	53	56%
Clams	31	33%
Mullet (Jumping/Sea)	31	33%
Flounder	30	32%
Shrimp	21	22%
Spot	20	21%
Crab	19	20%
Trout (Speckled/Gray)	19	20%

Majority of fishermen working in Core Sound and the Southern District use rakes (38%) or tongs (32%), gears associated with the harvest of oysters. Fishermen also reported using gigs (29%), their own hands (23%), and gill nets (19%) (Table 7). It is not uncommon for fishermen in the region to target multiple species throughout the year and as a result many use varied gear types. 38% of fishermen utilized a single gear type year-round, while 29% utilize two years, and 31% use three or more gear types.

Table 7. Gears used by Core Sound and Southern District survey respondents.

Gear	Frequency	Percent
Rake	36	38%
Tongs	30	32%
Gig	27	29%
Hand	22	23%
Gill Net	18	19%
Crab Pot	17	18%
Shrimp Trawl	11	12%

Income

In 2015, 84% of Core Sound and Southern District fishermen surveyed indicated making less than $30,000 from commercial fishing alone. Additionally, 61% of respondents indicated a total household income of less than $50,000 (Table 8). This is in line with the 2015 median annual household income in North Carolina ($46,868) and in Carteret County ($48,457).

Table 8. Reported annual income from commercial fishing and annual household income of Core Sound and Southern District survey respondents.

Commercial Income	Frequency	Percent	Household Income	Frequency	Percent
$0 or lost money	10	13%	-	-	-
$1-$5,000	12	16%	-	-	-
$5,001-$15,000	25	33%	>$15,000	9	13%
$15,001-$30,000	17	22%	$15,001-$30,000	18	26%
$30,000-$50,000	9	12%	$30,001 - $50,000	15	22%
$51,001-$75,000	3	4%	$50,001 - $75,000	14	20%
$75,001-$100,000	0	0%	$75,001 -$100,000	6	9%
More than $100,000	0	0%	More than $100,000	7	10%
Total	76	-	Total	69	-
Refused	9	-	Refused	16	-
Grand Total	85	-	Grand Total	85	-

Healthcare

Majority of survey respondents indicated that they currently had some form of health insurance (78%). Of those individuals, 30% purchased healthcare themselves, 32% indicated being covered through another job or a spouse’s job, and 34% were under Medicare/Medicaid. Individuals that held insurance were paying an average of $345 dollars of month per plan, with premiums as ranging from cost-free to $1200. On average, insurance plans were covering two individuals, but as low as one individual and as high as four individuals were covered by a single plan. The per person average for healthcare premiums was $228.85 per month (Table 9).

Of the fisherman purchasing healthcare for themselves 17% are purchasing healthcare through the federal exchange created by the Affordable Care Act (ACA). Those not using the ACA (66%) are purchasing their healthcare through a private company. Fishermen using the ACA are primarily on the silver health plan (32%), though many fishermen were unsure of which level health plan they had purchased (45%).

Majority (88%) of survey respondents did not believe that access to health insurance was effecting their commercial fishing business. Contrarily, 41% of respondents felt that strongly that commercial fishing was affecting their health. Of the fishermen that had health insurance, 59% had a plan that covered on the water injuries (compared to 17% who did not, and 24% who were unsure).

Table 9. Healthcare status of Core Sound and Southern District survey respondents.

	Frequency	Percentage		Frequency	Percentage
Health Insurance Effect Business?			**Monthly Premium**		
Yes	10	12	Average	345	
No	74	88	Minimum	0	
Health Insurance Status			Maximum	1200	
Yes	73	78	**Individuals Covered**		
No	20	22	Average	2	
Health Insurance Provider			Minimum	1	
Self	23	30	Maximum	4	
Other Job	12	16	**Purchase Method**		
Spouse's Employer Plan	12	16	Federal Exchange	17	34
Medicare/Medicaid	26	34	Private Company/Broker	33	66
Other	3	4	**Federal Plan**		
Cover On the Water Injuries			Bronze	4	18
Yes	44	59	Silver	7	32
No	13	17	Platinum	1	5
Unknown	18	24	Unknown	10	45

Perceptions

Survey respondents were asked a series of questions concerning their opinion on the current state of commercial fishing. To understand the challenges facing commercial fishermen in Core Sound and the Southern District, survey respondents were asked to rate how certain issues were affecting their fishing business on a scale of 1 (unimportant) to 10 (very important). The issue of most concern was the development of the coast, followed by imported seafood. Of least concern was competition with local and non-local fishermen, and crew and labor issues (Table 10). When asked if they would still be fishing in ten years, only 63% of respondents answered yes. The two concerns most often cited were old age and over-regulation of the industry.

Table 10. List of issues of concern to Core Sound and Southern District survey respondents.

Ranking	Issue	Rating
1	Development of the coast	8.03
2	Imported seafood	7.71
3	Weather	7.53
4	Keeping up with proclamations or changes in rules	7.52
6	State regulations	7.24
5	Seasonal or area closures	7.23
7	Cost of licensing and taxes	7.17
8	Losing working waterfronts like docks, marinas, and fish houses	7.07
9	Environmental regulation	6.97
10	Inability to predict the future for your fishing business	6.96
11	Seafood prices	6.91
12	Gear restrictions	6.77
13	Areas off limits to fishing	6.77
14	Size limits	6.39
17	Fuel prices	6.23
15	Bag limits	5.69
16	Federal regulations	5.58
18	Quotas	5.54
19	Record keeping (trip tickets, tax purposes)	5.40
20	Overfishing	5.12
21	Startup costs	4.91
22	Obtaining financing for repair/replacement costs	4.82
23	Competition with local fishermen	4.55
24	Competition with non-local fishermen	4.04
25	Crew or labor issues	2.19

Survey respondents were also asked to agree or disagree with statements on how commercial fishing influences their daily lives and local communities on a scale of 1 (completely disagree) to 10 (completely agree). In line with previously listed concerns, 40% of fishermen did not agree with the statement "I will be able to make a living fishing in the future." Despite this, results suggest that commercial fishing is a very important role in the respondents' communities both in terms of their history (93%) and economy (80%). Majority of respondents felt they were respected in the community (62%) and that their community actively supported commercial fishing (64%). Only 14% of fishermen felt that they weren't working harder to catch fish now than they did in the past (Figure 3).

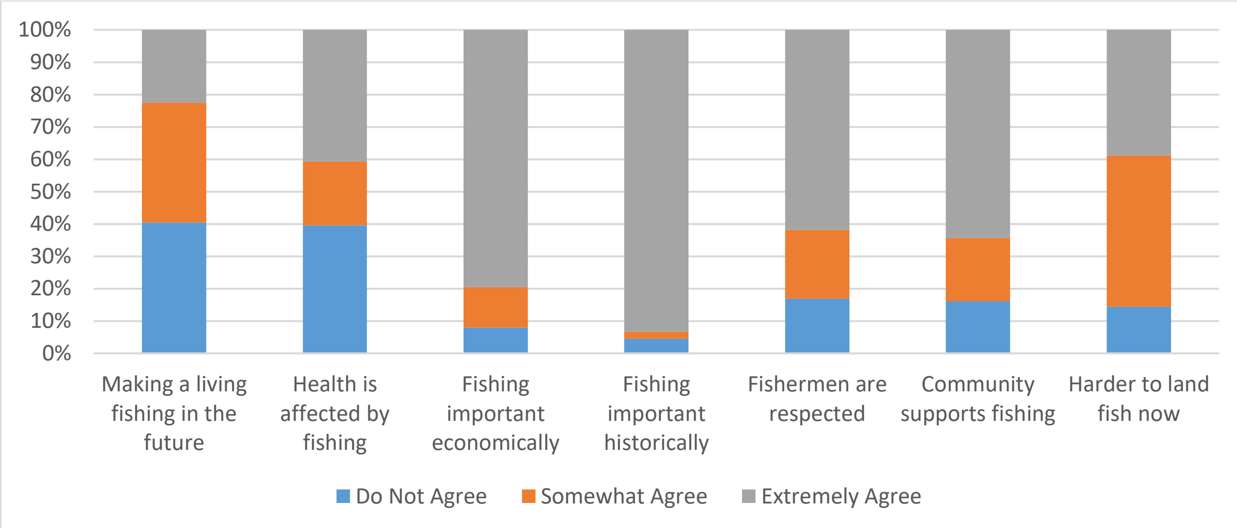

Figure 3. Core Sound and Southern District survey respondents' agreement with statements regarding commercial fishing.

User Group Conflicts

Respondents were also asked whether they had any negative experiences with other commercial fishermen, recreational fishermen, federal regulations, or state regulations within the last year (Table 11). Recreational fishermen were the most cited conflict, with 40% of fishermen indicating that they had negative experiences, followed closely by state regulations (38%), federal regulations (15%) and other commercial fishermen (15%). A variety of concerns were expressed, the majority of which involved over-regulation of Core Sound and Southern District fisheries. Additionally, fishermen expressed how long commercial fishing has been a part of their culture and its importance to North Carolina's coastal communities.

Table 11. Frequency of Core Sound and Southern District survey respondents indicating conflicts.

User Group	Frequency	Percent
Other Commercial Fishermen	13	15%
Recreational Fishermen	35	40%
Federal Regulation	13	15%
State Regulation	33	38%

Economic Impacts

The economic activity associated with harvesting commercially valuable species in the Southern District of North Carolina state territorial waters is provided in Table 12. Commercial fishing in the Southern District supported an estimated 803 full-time and part-time jobs, $11.6 million in income, and $35.2 million in output impacts (Table 12). The economic impacts from the commercial fishing-harvesting sector include a wide variety of businesses, such as those involved in selling petroleum products, boat building and repair, wholesale distribution services, food and beverage sales, real estate, banking, healthcare, and insurance.

Table 12. Economic Impacts of Commercial Fishing in the Southern District.

Total Pounds[1]	Ex-Vessel Value[1]	Jobs[2,3]	Income Impacts (thousands of dollars)[3]	Output Impacts (thousands of dollars)[3]
14,912,275	$17,668,209	803	$11,643	$35,286

[1]As reported by the North Carolina Division of Marine Fisheries (NCDMF) trip ticket program.
[2]Represents the total number of full-time and part-time jobs combined.
[3]Economic impacts calculated using the NCDMF commercial fishing economic impact model and IMPLAN economic impact modeling software. All economic impact estimates are for the state economy of North Carolina.

The economic impact estimates presented for commercial fishing in the EEZ of the Atlantic Ocean should be viewed as conservatively low, as they solely represent the harvesting sector of the commercial industry. Other important components of the commercial fishing industry such as seafood distribution, wholesale, retail markets, and restaurants selling seafood harvested in North Carolina are not included in this analysis. Data are extremely limited specifically for these sectors in North Carolina. Furthermore, data on seafood supply chains regarding interstate and intrastate movement of North Carolina seafood products are highly limited due to few reporting requirements to track the movement of seafood and lack of adequate studies that provide data on such material. Efforts are currently under way to incorporate national level supply chain information with the state level data utilized by the NCDMF commercial fishing economic impact model to better estimate the full economic impact of the North Carolina commercial fishing industry. Economic impact estimates represent impacts to the state economy of North Carolina.

DISCUSSION

Commercial fishermen have become increasingly difficult to reach. As a result, the number of completed surveys has dropped significantly. In 2006, 132 Core Sound fishermen completed the survey, a response rate of 46% (Crosson 2007b). In 2009, 153 South District fishermen completed the survey, a response rate of 25% (Crosson 2010). This survey was able to reach a total of 97 fishermen operating in Core Sound and/or the Southern District, a response rate of 19%. Due to this low response rate, Core Sound and Southern District response were analyzed together as opposed to separately. The decrease in response rate comes primarily from commercial fishermen who are unable to be reached. The online survey utilized during this survey has done little to improve response rates. The fishermen that did outright refuse the survey indicated concern that the information was not used properly. Due to regulatory turmoil during the current survey period, this mistrust of regulatory agencies was particularly high.

While Core Sound and Southern District surveys are combined for the current analyses, some trends can be identified. Median per trip and annual expenditures have remained relatively stable since the 2006 and 2009 studies (Crosson 2007b and Crosson 2010, respectively). In 2006, median per trip expenditures were $83 in Core Sound, compared to $15 in 2009 in the Southern District and $44 for the current survey group (2015). In 2006, median annual expenditures were $1,298 in Core Sound, comparted to $2,060 in 2009 in the Southern District and $1,985 for the current survey group (2015). While expenditures have remained the same income from commercial fishing has increased. In 2006 and 2006, only 6% and 5% of respondents, respectively, indicated making more than $30,000 from commercial fishing. The current survey indicates that 16% of commercial fishermen are making more than $30,000 from commercial fishing. Household income has increased slightly as well, with 25% and 20% of fishermen in 2006 and 2009, respectively, indicating a household income greater than $50,000, compared to 27% in the current survey.

As predicted in Crosson 2010, gill net fishing has decreased in Core Sound and the Southern District, possible as a result of a legal settlement related to the protection of endangered sea turtles (see: Karen Beasley Sea Turtle Rescue and Rehabilitation Center vs. North Carolina Division of Marine Fisheries). In 2006, 38% of Core Sound fishermen were utilizing gill nets. In 2009, 52% of Southern District fishermen were utilizing gill nets. However, this survey indicated that only 19% of respondents are using gill nets, primarily to target flounder and mullet species.

Finally, perceptions of current management and the state of the commercial fishing industry have changed over the years. While fuel prices used to be a top concern of Core Sound and Southern District fishermen, the recent decrease in diesel prices has alleviated some of the pressure on commercial fishing businesses. Alternatively, concerns about the development of the coast and imported shrimp remain high.

LITERATURE CITED

Cheuvront, Brian. 2002. A Social and Economic Analysis of Commercial Fisheries of Core Sound, North Carolina. NC Department of Environment and Natural Resources, Division of Marine Fisheries, Morehead City, NC. Atlantic Coastal Fisheries Cooperative Management Act, National Oceanic and Atmospheric Administration Award No. NA87FG0367-3.

Cheuvront, Brian. 2003. A Social and Economic Analysis of Commercial Fisheries in North Carolina: Beaufort Inlet to the South Carolina State Line. NC Department of Environment and Natural Resources, Division of Marine Fisheries, Morehead City, NC. A Report for the NC Technical Assistance to the South Atlantic Fisheries Management Council, Task 5: NEPA Related Activities, Contract No. SA-03-03-NC.

Cheuvront, Brian and Mary Neal. 2004. A Social and Economic Analysis of Snapper Grouper Complex Fisheries in North Carolina South of Cape Hatteras. NC Department of Environment and Natural Resources, Division of Marine Fisheries, Morehead City, NC. A Report for the NC Technical Assistance to the South Atlantic Fisheries Management Council, Task 5: NEPA Related Activities, Contract No. SA-03-03-NC.

Crosson, Scott. 2007a. A Social and Economic Analysis of Commercial Fisheries in North Carolina: Albemarle and Pamlico Sounds. NC Department of Environment and Natural Resources, Division of Marine Fisheries, Morehead City, NC. Conducted under the Fisheries Disaster Assistance Program, Section 312 of the Magnuson-Stevens Fisheries Conservation and Management Act, National Oceanic and Atmospheric Administration Award No. NA16FW1543.

Crosson, Scott. 2007b. A Social and Economic Analysis of Commercial Fisheries in North Carolina: Core Sound. NC Department of Environment and Natural Resources, Division of Marine Fisheries, Morehead City, NC. Conducted under the Fisheries Disaster Assistance Program, Section 312 of the Magnuson-Stevens Fisheries Conservation and Management Act, National Oceanic and Atmospheric Administration Award No. NA16FW1543.

Crosson, Scott. 2009. A Social and Economic Analysis of Commercial Fisheries in North Carolina: Atlantic Ocean. NC Department of Environment and Natural Resources, Division of Marine Fisheries, Morehead City, NC. NC Department of Environment and Natural Resources, Division of Marine Fisheries, Morehead City, NC. Atlantic Coastal Fisheries Cooperative Management Act, National Oceanic and Atmospheric Administration Award No. NA05NMF4741003.

Crosson, Scott. 2010. A Social and Economic Analysis of Commercial Fisheries in North Carolina: Beaufort Inlet to South Carolina State Line. NC Department of Environment and Natural Resources, Division of Marine Fisheries, Morehead City, NC. Atlantic Coastal Fisheries Cooperative Management Act, National Oceanic and Atmospheric Administration Award No. NA05NMF4741003.

Diaby, Souleymane. 2000. An Economic Analysis of Commercial Fisheries in the Albemarle Sound Management Area, North Carolina. NC Department of Environment and Natural Resources, Division of Marine Fisheries, Morehead City, NC. Atlantic Coastal Fisheries Cooperative Management Act, National Oceanic and Atmospheric Administration Award No. NA87FG0367-1.

Diaby, Souleymane. 2002. An Economic Analysis of Commercial Fisheries in the Pamlico Sound Area, North Carolina. NC Department of Environment and Natural Resources, Division of Marine

Fisheries, Morehead City, NC. Atlantic Coastal Fisheries Cooperative Management Act, National Oceanic and Atmospheric Administration Award No. NA87FG0367-2.

Hadley, J. & Wiegand, C. (2014). A Social and Economic Analysis of Commercial Fisheries in North Carolina: Albemarle and Pamlico Sounds. NC Department of Environment and Natural Resources, Division of Marine Fisheries, Morehead City, NC. Atlantic Coastal Fisheries Cooperative Management Act, National Oceanic and Atmospheric Administration Award No. NA08NMF4740476.

IMPLAN. 2009. Using IMPLAN V3: The IMPLAN V3 Modeling System. Stillwater, Minnesota.

SPSS (Statistical Package for the Social Sciences). 2002. release 12.0. SPSS, Inc. Chicago, IL.

APPENDIX A: <u>2016 Southern District Commercial Fishing Survey</u>

1. How many years have you been a commercial fisherman? _______

2. Compare yourself to other fishermen using a scale of 1 to 10. With 1 being “not at all successful as a commercial fisherman” to 10 being “no one has more success than I do”, how successful do you think you are? _________

3. Starting with January, what are the primary species that you target commercially and gears that you commonly use each month when fishing in southern NC.

Month	**Species**	**Gears**
January		
February		
March		
April		
May		
June		
July		
August		
September		
October		
November		
December		

4. Have you ever changed the species you target because of changes in regulations?

- ☐ No
- ☐ Yes

If "Yes", record any comments (briefly) ____

FISHERY PARTICIPATION

5. What is the ownership type that best describes your fishing operation?

- ☐ Sole Owner
- ☐ Partnership
- ☐ Corporation

6. How many vessels do you own that are registered for use in your commercial fishing operation?

____

Fill this out starting with the vessel used most often.

Vessel	**Years Owned**	**Market Value (including all gear)**	**Length (feet)**	**Crew Size***	**Operator Status****
Vessel #1					1 2 3
Vessel #2					1 2 3
Vessel #3					1 2 3
Vessel #4					1 2 3

*Include the captain (minimum crew size for every vessel is 1)
**1. Captain/Owner 2. Hired Captain 3. Other

7. Do you consider yourself to be a full-time fisherman?

- ☐ No
- ☐ Yes

8. What percentage of your total individual income do you earn from commercial fishing (*that is, sale of fish taken with commercial fishing gear*)?

_________ %

9. What other kinds of work, if any, do you do to earn income other than commercial fishing?

OPERATING EXPENSES

10. Please provide the average operating expense, per trip, for an average inshore fishing trip in 2015 on the vessel that you use the most. Round off your answers to the nearest dollar.

Expense Categories	**Amount ($)**
Fuel and Oil	$
Ice	$
Groceries	$
Bait	$
Other	$

11. Do you use a share system to pay the crew and captain of the vessel you use the most when you are fishing in southern NC?

- ☐ No
- ☐ Yes

If no, then how do you pay the captain and crew? (Per day? Per trip?)

If yes, what percentage of the net share (gross total revenues minus the expenses indicated above) goes to. . .

Boat's/Owner's share: _______ %

Captain's share: _______ %

Crew's share: _______ %

12. Total annual expenditures for 2015 for the vessel used most while fishing in southern NC.

Expense Category	**Amount ($)**
Labor-Captain and Crew	$
Vessel loan payments	$
Vessel/Gear Repairs	$
Docking Fees	$
New Gear/Equipment	$
Insurance	$
Vessel Registration Fees	$
State Commercial Fishing License and Permit Fees	$
Other Professional Expenses/Fees	$

13. Where do you keep the boat you use most often when you are fishing in southern NC?

- ☐ When I fish in southern NC I'm on someone else's boat
- ☐ At my home
- ☐ A rented slip
- ☐ A slip not at my home, but I don't pay rent (e.g. at a fish house)
- ☐ Other place

14. Out of the following categories, please mark the amount that you earned last year just from commercial fishing. Include only pre-tax profit, that is, after you paid all expenses associated with your commercial fishing business.

- ☐ $0 or lost money
- ☐ $1 - $5,000
- ☐ $5,001 - $15,000
- ☐ $15,001 - $30,000
- ☐ $30,001 - $50,000
- ☐ $50,001 - $75,000
- ☐ $75,001 - $100,000
- ☐ More than $100,000
- ☐ Prefer not to answer

15. Over the past three years, do you feel as though the profitability of your commercial fishing business has increased, decreased, or remained about the same?

- ☐ Increased
- ☐ Decreased
- ☐ Remained about the same

DEMOGRAPHIC QUESTIONS

16. What is your age? ________

17. What is your gender?

- ☐ Male
- ☐ Female

18. What do you consider to be your ethnic background?

- ☐ Hispanic/Latino
- ☐ Asian-Pacific Islander
- ☐ White/Caucasian
- ☐ American Indian
- ☐ African-American/Black

19. What was the highest level of education that you have completed?

- ☐ Less than high school diploma
- ☐ High school diploma
- ☐ Some college/technical school
- ☐ College diploma (or more)

20. What is your marital status?

- ☐ Currently married
- ☐ Widowed
- ☐ Separated
- ☐ Divorced
- ☐ Never married

21. Do you have health insurance?

- ☐ No (If no, please skip to question 27)
- ☐ Yes (If yes, please answer questions 22-26 if applicable)

22. Is your health insurance provided by yourself, another job, a spouse's employer plan, Medicare/Medicaid, or another source?

- ☐ Self
- ☐ Other Job
- ☐ Spouse's Employer Plan
- ☐ Medicare/Medicaid
- ☐ Other (please briefly explain):___________________

23. Does your plan cover on-the-water, commercial fishing related injuries?

- ☐ Yes
- ☐ No
- ☐ Do Not Know

24. How much are you paying in monthly premiums for your healthcare plan and how many people are covered by the plan?

- Monthly Premium: $___________
- Number of individuals covered: ___________

25. If you purchase healthcare for yourself, was your healthcare plan purchased through a federal exchange such as healthcare.gov?

- ☐ No
- ☐ Yes

26. If you purchased through a federal exchange, is your plan in the bronze, silver, gold or platinum category?

- ☐ Bronze
- ☐ Silver
- ☐ Gold
- ☐ Platinum
- ☐ Don't know

27. Has health insurance coverage effected your commercial fishing business? If so, please briefly explain?

- ☐ No
- ☐ Yes

If "Yes", record any comments (briefly) ____

28. How many people live in your household? _____

29. How many people in your family work in commercial fishing? _____

30. How many generations back have there been commercial fishermen in your family? _____

31. Out of the following categories, please mark the amount of the combined total income of everyone who lives in your household.

- ☐ Less than $15,000
- ☐ $15,001 - $30,000
- ☐ $30,001 - $50,000
- ☐ $50,001 - $75,000
- ☐ $75,001 - $100,000
- ☐ More than $100,000
- ☐ Prefer not to answer

32. What is the name of the community/town/city where you live? _______________

33. Which county is that located in? _______________

34. How many years have you lived in this community? _______________

<u>OPINIONS ABOUT COMMERCIAL FISHING</u>

35. Do you think that you will be a commercial fisherman 10 years from now?

- ☐ Yes
- ☐ No

If "No", record any comments (briefly) ____

36. Using a scale of 1 to 10, with 1 being "do not agree at all" to 10 being "extremely agree" tell me how much you agree or disagree with each of the following statements.

_______ I believe I will be able to make a living in fishing in the future.

_______ My health is affected by my fishing.
_______ Commercial fishing is important economically in my community.

_______ Commercial fishing has an important role in the history of my community.

_______ Commercial fishermen are respected in my community.

_______ My community actively supports commercial fishing.

_______ I have to work harder now to land the same amount of fish that I did a few years ago. (If you think there is no difference, your answer should be 5.)

37. Approximately how many hours per month do you typically spend on record keeping for your commercial fishing business to meet federal and state commercial fishing requirements (logbooks, vessel trip reports, trip tickets, etc.)?

- Hours spent on <u>federally</u> mandated commercial fishing record keeping? ______________
- Hours spent on <u>state</u> mandated commercial fishing record keeping? ______________

38. Have you had any trouble finding a buyer to sell your catch to?

- ☐ No
- ☐ Yes

39. Do you have a seafood dealer license?

- ☐ No
- ☐ Yes

40. Do you have a business relationship with a specific seafood dealer or are you independent?

- ☐ I am a seafood dealer and sell my own catch
- ☐ Independent (sells to whomever I wish)
- ☐ Relationship with a specific seafood dealer or dealers

If you have a relationship with a specific dealer, please answer the following three questions (41-43):

41. Does the dealer provide you with docking space?

- ☐ No
- ☐ Yes

42. Will the dealer give you an advance for bait or other necessities?

- ☐ No
- ☐ Yes

43. Does the dealer provide you with credit or loans?

- ☐ No
- ☐ Yes

44. Are you a member of any commercial fishing organizations?

- ☐ No
- ☐ Yes (NCFA, NCWU, etc.)

45. In the last year, have you had any negative experiences with the following:

- With other commercial fishermen

- ☐ No
- ☐ Yes

- With recreational fishermen

  - ☐ No
  - ☐ Yes

- Involving federal regulations

  - ☐ No
  - ☐ Yes

- Involving state regulations

  - ☐ No
  - ☐ Yes

46. Use the scale of 1 to 10 and tell me how important you consider each of these issues to your fishing business. 1 means "it's not important or doesn't affect me" and 10 means "it's extremely important or it affects my business a great deal".

_______ Overfishing
_______ Competition with local fishermen
_______ Competition with non-local fishermen
_______ Environmental regulation
_______ Keeping up with proclamations or changes in rules
_______ Gear Restrictions
_______ Areas off limits to fishing
_______ Seasonal or area closures
_______ Bag limits
_______ Size limits
_______ Quotas
_______ Federal regulations
_______ State regulations
_______ Seafood prices
_______ Imported seafood
_______ Start up costs
_______ Obtaining financing for repair/replacement costs
_______ Cost of licensing and taxes
_______ Record keeping (trip tickets, tax purposes)
_______ Crew or labor issues
_______ Weather
_______ Inability to predict the future for your fishing business
_______ Fuel prices
_______ Losing working waterfronts like docks, marinas, and fish houses
_______ Development of the coast

47. Use a scale of 1 to 10 again. This time the scale ranges from 1 meaning "not at all likely" to 10 meaning "extremely likely". If a young person came to you and said they wanted to be a commercial fisherman, how likely is it that you would recommend being a fisherman?

48. Would you like a copy of the final report for this survey once it has been completed and all results compiled? If "Yes", an email address must be provided below.

- ☐ No
- ☐ Yes: Please provide email address to receive the final report:

____

49. Any additional comments?