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

Shellfish Growers

Adam Stemle and Maura Condon

North Carolina Department of Environmental Quality
North Carolina Division of Marine Fisheries
License and Statistics Section
Morehead City, NC

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252-726-7021

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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. The North Carolina Division of Marine Fisheries administers the Shellfish Lease and Franchise Program for the purposes of shellfish cultivation, aquaculture, and mariculture within the State of North Carolina. The State of North Carolina has provided for the private use of public trust waters to cultivate shellfish on an otherwise unproductive bottom by allowing for bottoms to be leased.

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 fisheries management plans (FMP). 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.

Prior to this report, NCDMF had not conducted a socioeconomic study on shellfish growers with public leases. Because shellfish growing has been steadily capturing a greater percentage of total shellfish production in North Carolina, it is important to collect socioeconomic data on this rapidly growing industry to assist in the development of NC fishery management plans as well as to improve regulatory cost estimations and economic impact models for shellfish operations and to help fisheries managers make informed decisions on shellfish topics.

Study Area

The entirety of the North Carolina state coast serves as the study area for this report. Shellfish growers, either on bottom or water column leases can be found throughout state coastal territorial waters. Leases can be applied for through the NCDMF Habitat Enhancement Program from March 1st through September 30th of each calendar year. Proposed lease sites are then surveyed by NCDMF to be deemed suitable for culture and harvest of shellfish in commercial quantities. Several factors determine if a proposed site can be utilized as a shellfish lease such as: an area must not contain a natural shellfish bed, it must remain compatible with other uses, and the operation will not impinge upon riparian owners' rights. A tool showing a visual representation of data specifically related to shellfish aquaculture such as salinity, bottom type, depth, and shellfish growing area classifications is hosted and maintained by the University of North Carolina Wilmington. It was designed to assist new or current growers in siting new or expanding shellfish operations by providing a simple tool to assess conditions based on existing datasets. It can be found at the following url: https://uncw.edu/benthic/sitingtool/.

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Study Objectives

There were three primary objectives of this study:

1. To describe the socioeconomic characteristics of shellfish growers operating along the North Carolina coast, including demographics, dependence on shellfish growing and business characteristics;

2. To collect cost and earnings information from shellfish growers to improve estimates of the cost, earnings, and economic returns associated with commercial fishing; and

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

METHODOLOGY

Recruitment and Participation Rates

In 2017, a list of shellfish growers was compiled from the NCDMF license database. This list reported every individual or business that had an active lease for 2016. Licenses included were the Bottom Shellfish lease and the Water Column Amendment (also requires a Bottom Lease). A Bottom Shellfish lease enables the lessee to grow shellfish on or within 18 inches of the leased bottom. The Water Column Amendment allows lessees to use equipment not resting on the bottom or extending more than 18 inches above the bottom.

In 2017 the total number of eligible unique lease holders was 156. These leases constitute roughly 1,400 total acres of leased bottom or water column. A survey was sent to the entire population, rather than a representative sample because of the relatively few number of total lease holders. In January of 2018, all 156 lease holders 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 2018, fishermen who had not responded to the initial survey distribution were sent an additional mailing and a reminder letter about the study and the importance of their respective participation. In March of 2018 those lease holders who had still not responded were contacted by phone and encouraged to complete the survey. A final mailing was sent out the end of May 2018. Of the 156 possible respondents, 36 completed the survey for a raw response rate of approximately 23%. This response rate is slightly lower than the response rates of previous surveys of commercial fisherman. The majority of the non-responses were due to fishermen that were unable to be located and contacted. Roughly 8% of lease holders directly refused to complete the survey. Two surveys were returned as undeliverable and the lease holder could not be contacted by phone, and one was deemed ineligible for the study. The overall effective response rate was 24%.

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Survey Instruments

Typically, the NCDMF Fisheries Economics program has surveyed 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. Because shellfish lease holders had never been included in the previous data collections, a new instrument was designed for this study. NCDMF Fisheries Economics program aims to increase the frequency of it commercial data collection as well as routinely collect data on shellfish growing operation in the future. The NCDMF Fisheries Economics program consulted with the NCDMF's Shellfish and Aquaculture Lease Section staff to develop an appropriate survey of current shellfish growers in the state of North Carolina. Recent economic shellfish/aquaculture surveys from states such as Virginia, Washington, New Jersey, Massachusetts, and Alabama were utilized in the instrument's design. These surveys were conducted by state agencies, universities and federal programs such as Sea Grant. Additional literature from resource economic publications was also consulted.

The survey used in this study consists of 40 questions and took approximately 20 minutes to complete. The data collected in this survey (Appendix A) addressed five key areas of interest:

1. Individual lease holder's socio-demographics and reliance on shellfish growing;
2. Shellfish growing business characteristics and cost information;
3. Lease characteristics and expenses;
4. Target species and gear;
5. Perceptions and outlooks regarding shellfish growing and fisheries management.

Data from the survey was recorded by hand and then coded into a Microsoft Excel database. Frequency and univariate analyses were performed using Microsoft Excel and the R statistical computing environment. Economic impact estimates were calculated by an Input-Output model using IMPLAN modeling software and the NCDMF economic impact model.

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SURVEY RESULTS

Demographics

The shellfish lease survey respondents were predominately male (81%) and white (92%). The majority of respondents were married (61%) and most had attended or completed a college education (61%). Survey respondents indicated that they worked only part time as shellfish growers and the majority of their household income was not derived from shellfish growing (Table 1).

Table 1. Demographics of shellfish lease holder survey respondents.

	Frequency	Percent		Frequency	Percent
Gender			**Household Income**		
Male	29	81%	Less than $15,000	1	3%
Female	6	17%	$15,001-$30,000	4	11%
Refuse to answer	1	2%	$30,000-$50,000	5	14%
			$51,001-$75,000	5	14%
Race			$75,001-$100,000	8	22%
White	33	92%	More than $100,000	5	14%
African American	1	3%	Refuse to answer	7	19%
Asian American	0	0%	**Fisherman Status**		
Hispanic	1	3%	Full Time	15	42%
Refuse to answer	1	3%	Part Time	21	58%
			# of People in Household		
Marital Status			1	4	11%
Married	22	61%	2	20	56%
Divorced	6	17%	3	5	14%
Widowed	1	3%	4	5	14%
Separated	1	3%	5	1	3%
Never Married	5	14%	Refuse to answer	1	3%
Refuse to answer	1	3%	**Years Growing Shellfish**		
			Average	9	
Education			Minimum	0	
Less than High School	3	8%	Maximum	60	
High School Graduate	10	28%	**% Income from Growing Shellfish**		
Some College/2-year Degree	6	17%	Average	29	
College Graduate	16	44%	Minimum	0	
Refuse to answer	1	3%	Maximum	100	

The average respondent had 9 years of shellfish growing experience on NC leases, though there were respondents who only had an active lease for less than a year, and shellfish growers who had been active up to 60 years. Survey respondents typically lived in households with two (56%) to four (14%) residents and had an annual household income between $75,001-$100,000 or more dollars (36%). On average, respondents indicated that 29% of their income come from commercial shellfish growing, though results show that shell fishing can account for less than 1% and as much as 100% of an individual fisherman's income (Table 1). In comparison to wild harvest commercial fishing, shellfish growers have higher overall household incomes than their wild harvest counterparts, and are less dependent on their shellfish operations as primary means of income.

Vessels and Business Characteristics

Almost all respondents indicated that (87%) they owned at least one registered vessel for their shellfish growing operations. 41% one percent owned only one vessel, and another 41% owned at least two vessels. 14% of respondents indicated that they do not have a vessel associated with their shellfish growing operation. Primary and secondary vessel were on average of equal length and crew sizes. Of the 41% of respondents that indicate owning a second vessel, 64% of those had secondary lease sites. Vessel were reported for hauling gear, supplies and harvest to and from lease sites.

Table 2. Summary characteristics of shellfish grower vessels.

	Primary (n=32)	**Secondary (n=13)**
Average Length (feet)	20.5	20.8
Average Crew Size	2.1	2.0
Average Years Owned	9.1	6.3
Average Market Value	$9,333	$13,625

Table 3 shows the responses to a series of questions designed to profile the current shellfish growing operations and production for 2016. Nearly 5,100 bushels and 284,000 seeds on average were planted in 2016. Shellfish growers reported an average of 111 market sized bushels harvested and sold in 2016. The majority of growers sold to instate seafood dealers, rather than exporting their shellfish. A minority of growers, who also possess a Seafood Dealers license, sold directly to consumers or retailers themselves. The average price of a bushel of shellfish was 24.56 when sold to a dealer. Direct bushel sales to consumers commanded a slightly lower price.

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Table 3. Summary of average operational characteristics of shellfish growers.

Average Months from Seed to Harvest	16
Estimated Bushels Planted	5,089
Estimated Seeds Planted	283,636
Estimated Number of Market-Sized Bushels Sold	111
Percent of Bushels Sold in State	72%
Percent of Bushels Sold to Dealers	47%
Percent of Bushels Sold Direct	34%
Wholesale Bushel Price	$24.56
Direct Bushel Price	$21.93
Direct per Piece	$0.64

Table 4 shows the average operational characteristic of shellfish growing enterprises in North Carolina. Gears used to grow and harvest shellfish were relatively uniformly distributed amongst ground, bag, and cage gears. Tongs, Rake, or Hand methods are typical harvest methods of oysters grown on ground beds. The majority of shellfish growers grow oysters (83%) on their leases, however, clams are also grown either along with oysters or independently. Most lease holders are sole proprietorships (47%) and Limited Liability Corporations being the second most popular business structure (22%). Most business indicated that they did not have a problem finding buyers for their shellfish and most either had a relationship with a specific dealer to sell their product (28%) or possessed a Seafood Dealer license and sold their product themselves (36%).

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Table 4. Summary characteristics of shellfish growing business.

	Frequency	Percent		Frequency	Percent
Gear			**Business Ownership**		
Tongs, Rake, or Hand (Ground)	10	30%	Sole Owner	17	47%
Floating Bags	8	24%	Partnership	6	17%
Floating Cages	8	24%	Corporation	5	14%
Bottom Cages	7	21%	LLC	8	22%
			Relationship with Specific Dealer		
Species			No Independent	7	19%
Oysters	29	83%	Relationship with a specific dealer(s)	10	28%
Clams	1	3%	Licensed and sell own shellfish	13	36%
Both Oyster and Clams	5	14%	Both self-deal and work with others	2	6%
Licensed Dealer			**Has trouble finding a buyer**		
Yes	18	51%	Yes	4	11%
No	17	49%	No	31	89%

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Table 5 shows the estimated annual expenditures for shellfish. Both average and median expenditures were estimated. Using both estimates helps to account for variations in shellfish growing operation sizes. Larger leases 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 several times higher than matching median values.

Table 5. Mean and median fishing expenses of shellfish grower respondents.

Annual Expenses	Average	Median
Seed & Shellfish Payments	$5,066.75	$2,500.00
Labor	$4,984.67	$0.00
Vessel Loan	$1,223.89	$0.00
Vessel/Gear Repairs	$2,574.28	$1,000.00
Docking Fees	$116.67	$0.00
New Gear/Equipment	$7,152.61	$2,341.50
Insurance	$304.58	$0.00
Vessel Registration Fees	$211.14	$100.00
License/Leaseholder Permit Fees	$295.53	$236.50
Overhead	$622.72	$125.00
Boat Fuel Expenses	$792.86	$300.00
Truck/Transport Expense	$1,600.86	$100.00
Yearly Total	**$24,946.56**	**$6,703.00**

Income

In 2017, 50% of shellfish growers indicated making no profits or operating at a loss on their leases. Additionally, 50% of respondents indicated a total household income of greater than $30,000 (Table 6). The majority of respondents also indicated that they did not consider their shellfish growing operations to be their full-time employment and that only 29% of total household income was derived from commercial shellfish growing. It would seem that shellfish growers are better suited to absorb poor performance years than wild harvest commercial fisherman.

Table 6. 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	18	50%	-	-	-
$1-$5,000	6	17%	-	-	-
$5,001-$15,000	9	25%	>$15,000	1	3%
$15,001-$30,000	0	0%	$15,001-$30,000	4	11%
$30,000-$50,000	0	0%	$30,001 - $50,000	5	14%
$51,001-$75,000	1	3%	$50,001 - $75,000	5	14%
$75,001-$100,000	0	0%	$75,001 -$100,000	8	22%
More than $100,000	0	0%	More than $100,000	5	14%
Refuse to answer	2	5%	Refuse to answer	7	19%

Perceptions

Survey respondents were also asked to agree or disagree with statements on how shellfish growing influences their daily lives and local communities on a scale of 1 (completely disagree) to 10 (completely agree). Converse to other socioeconomic studies on wild harvest commercial fisherman , only 11% of shellfish growers did not agree with the statement "I will be able to make a living fishing in the future." Results suggest that shellfish growers perceive their operations as a very important role in the respondents' communities both in terms of their history (72%) and economy (83%). Majority of respondents felt they were respected in the community (58%) and that their community actively supported commercial fishing (83%). 72% of shellfish growers felt that they weren't working harder to catch fish now than they did in the past.

Table 7. List of perceptions held by shellfish growers survey respondents.

Ranking	Issue	Rating
1	Shellfish growing/aquaculture is important economically in my community.	7.3
2	I believe I will be able to make a living in shellfish growing/aquaculture in the future.	7.2
3	Shellfish growing/aquaculture has an important role in the history of my community.	6.9
4	Shellfish growers are respected in my community.	6.4
6	My community actively supports shellfish growing/aquaculture.	5.9
5	I have to work harder now to land the same amount of shellfish that I did a few years ago.	5.2
7	My health is affected by my shellfish growing/aquaculture.	4.6

Survey respondents were asked a series of questions concerning their opinion on the current state of commercial fishing. To understand the challenges facing shellfish growers, 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 weather. Of least concern was size limits and quotas (Table 8). When asked if they would still be fishing in ten years, 78% of respondents answered yes. The two concerns most often cited were water quality issues and old age.

Table 8. List of issues of concern to survey respondents.

Ranking	Issue	Rating
1	Development of the coast	7.8
2	Weather	7.7
3	Keeping up with proclamations or changes in rules	7.3
4	Environmental regulation	6.9
6	State regulations	6.9
5	Inability to predict the future for your business	6.8
7	Seafood prices	6.8
8	Losing working waterfronts	6.7
9	Seasonal or area closures	6.7
10	Startup costs	6.6
11	Imported seafood	6.1
12	Record keeping (trip tickets, tax purposes)	5.9
13	Cost of licensing and taxes	5.9
14	Federal regulations	5.6
17	Obtaining financing for repair/replacement costs	5.3
15	Gear restrictions	5.0
16	Fuel prices	4.9
18	Areas off limits to fishing	4.2
19	Crew or labor issues	4.1
20	Competition with local fishermen	3.7
21	Competition with non-local fishermen	3.6
22	Size limits	3.3
23	Quotas	3.1

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 9). State regulations were the most cited conflict, with 53% of shellfish growers indicating that they had negative experiences, followed by other commercial fishermen (25%), federal regulations (25%) and recreational fishermen (15%).

Table 9. Frequency of Core Sound and Southern District survey respondents indicating conflicts.

User Group	Frequency	Percent
Other Commercial Fishermen	9	25%
Recreational Fishermen	7	19%
Federal Regulation	9	25%
State Regulation	19	53%
Other Shellfish Growers	1	03%

Macroeconomics

The total annual ex-vessel value and overall volume of landings for shellfish grown on leases has more than doubled within the past ten years. In 2008 total shellfish grown on lease only accounted for roughly 87,000 pounds yielding a total value of just under $490,000. By 2017 landings have increased to roughly 467,000 pounds of shellfish accounting for a total value of over 2.5 million dollars (Figure 1).

Figure 1. Total shellfish landings and ex-vessel value 2008-2017.

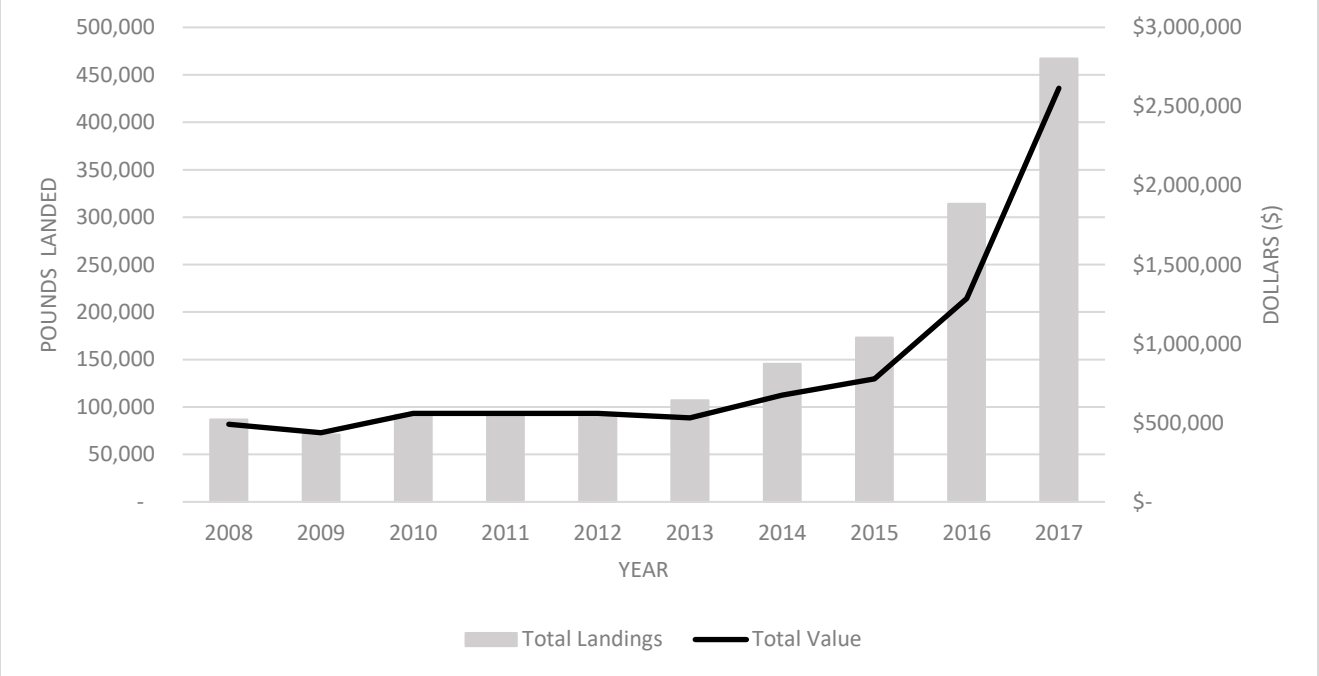
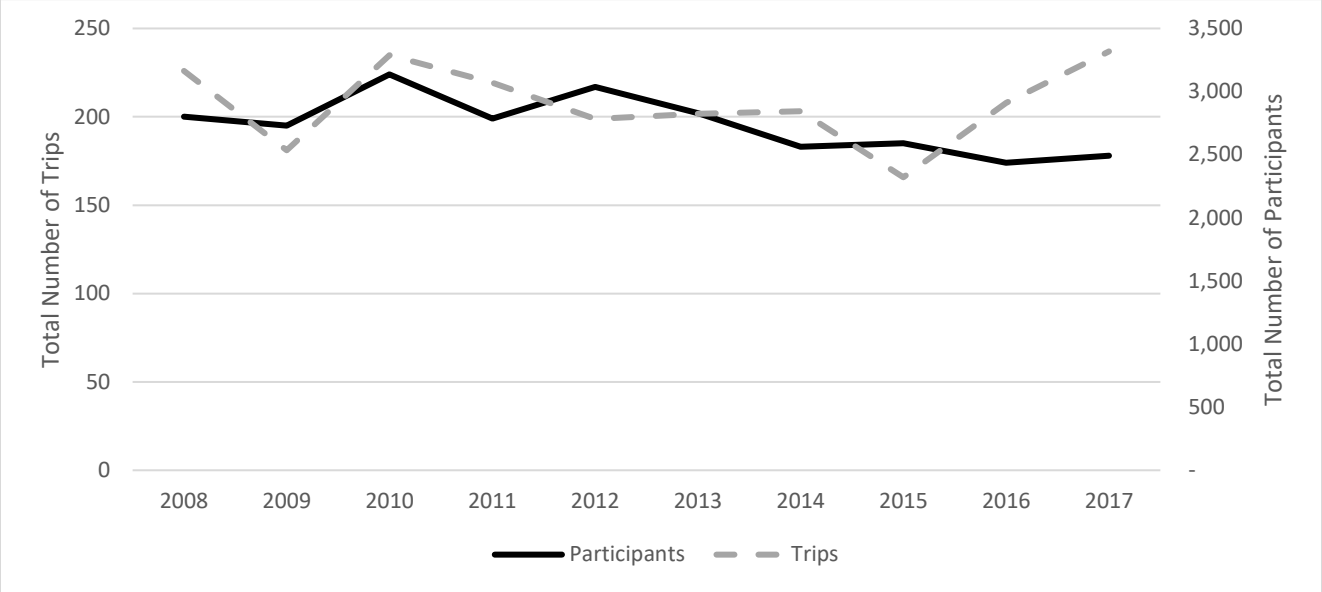


Figure 2 shows the total amount of trips and participants for 2008-2017. The number of participants landings shellfish from leases has remained relatively stable over the ten-year time period. The number of trips, representing the number recorded trip tickets for landings of shellfish grown on leases, has also fluctuated from year to year but overall has remained stable. This is due to the fact that oysters and clams usually require several months to grow to market size.

Figure 2. Total shellfish trips and participants 2008-2017.



Economic Impacts

The economic activity associated with harvesting commercially valuable shellfish species off bottom and water column leases in North Carolina is provided in Table 10. Commercial harvest of shellfish on private leases supported an estimated 803 full-time and part-time jobs, $1.7 million in income, and $4.2 million in output impacts (Table 10). 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, and insurance.

Table 10. Economic impacts of shellfish grown on leases in North Carolina.

Total Pounds[1]	Ex-Vessel Value[1]	Jobs[2,3]	Income Impacts (thousands of dollars)[3]	Output Impacts (thousands of dollars)[3]
467,287	$2,615,153	803	$1,734	$4,173

[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 shellfish grown on leases in North Carolina 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 socioeconomic surveys has dropped significantly in recent years. Although this was a pilot socioeconomic study for the industry by NCDMF, this survey was only able to reach a total of 36 lease holders in North Carolina, an effective response rate of 24%. The decrease in response rate comes primarily from lease holders who are unable to be reached. The online survey utilized during this survey did little to improve response rates. Mail surveys are becoming increasingly ineffective at soliciting information from commercial fisherman. Shellfish growers that did outright refuse the survey indicated concern that the information would result in the creation of additional regulatory requirements negatively affecting their businesses. Due to a contentious political atmosphere between lease holders, wild harvest commercial fisherman, and resource managers, mistrust of data collections coming from regulatory agencies was particularly high.

Because this study served as a pilot data collection on shellfish growers, temporal trends outside of historic landings and value cannot be identified immediately. Further data collections are needed to assess the economic performance and changes to the shellfish growing industry in the future. However, some immediate information is worth noting. The majority of respondents indicated that they had negative revenue associated with growing shellfish in 2016. Shellfish are filter feeders which can result in take up of any bacteria, viruses, or other pollutants that are present in the water. Because of this, the industry can be hindered by water quality issues and weather plays a large factor in the ability to of harvest shellfish. In turn, weather issues were listed as a top concern for survey respondents because shellfish areas can be closed after a significant rainfall event due to the resultant runoff. Shellfish growers did indicate that shellfish produced and sold from leases typically are not the primary source of income for most respondents, potentially indicating that they are better suited to absorb down years.

Average prices for oysters sold by the piece were comparable to recent studies done in Virginia and Massachusetts in 2015 (Hudon and Murray 2016, Barnes et al. 2015). Economics impacts from growing shellfish are estimated to be 1.59 times the direct output value of shellfish

harvested from leases. This is comparable to estimates from Barnes et al. 2015 which estimated a multiplier effect of 1.79 (Barnes et al. 2015).

Finally, perceptions of current management and the state of the commercial fishing industry have changed over the years. While fuel prices typically are reported to be a top concern of wild harvest fisherman, both shellfish growers and wild harvest commercial fisherman expressed a high level of concern about the development of the coast. Shellfish growers have a more positive outlook on their industry than response from wild harvest commercial fisherman in related studies.

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APPENDIX A: Economic Shellfish Leaseholder and Aquaculture Survey

2017 Economic Shellfish Leaseholder and Aquaculture Survey

Thank you for taking this **voluntary** survey. Please estimate the numbers to the best of your ability. Round any dollar amount to the nearest whole dollar value. You can leave **comments** on the back of this survey where you can also let us know if **you would like to receive the results of this study.**

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1. How many years have you been growing shellfish? _____

2. How many years have you had shellfish leases? _____

3. Please describe your 2017 shellfish leases/activities:

Size (Acres)	**Species**	**Gear Type**	**Months Grown** (ex. Jan-Mar; Sept)	**Bottom or Water Column?**

4. Please estimate the average time it takes you to grow from seed to harvest: _____ months

5. Estimated number of **BUSHELS** planted in 2017 _____

6. Estimated number of **SEED** planted in 2017 _____

7. Estimated number of "market-size" bushels harvested/sold in 2017 _____

8. Percent of bushels sold in-state _____%

9. Percent of bushels sold to wholesale seafood dealers _____%

10. Percent sold direct (directly to consumer, stores, or restaurants) _____%

11. Average wholesale price you received for your product $ _ _ _ _ .00

12. Average direct market price you received for your product per bushel $ _ _ _ _ .00

per piece $ _ _ _ _ / ¢. _ _

Shellfish/Aquaculture Participation

13. What is the ownership type that best describes your shellfish/aquaculture operation?

☐ Sole Owner ☐ Partnership ☐ Corporation ☐ LLC

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14. Do you consider yourself to be a full-time shellfish grower? ☐ No ☐ Yes

15. What percentage of your total individual income do you earn from shellfish growing? ____%

16. What other kinds of work, if any, do you do to earn income other than shellfish sales?

_____

17. **Please estimate your total annual expenditures for 2017**

Expense Category	**Amount ($)**
Seed & Shellfish (Payments for seed or shellfish for grow-out or resale)	$ _ _ _ , _ _ _ .00
Labor	$ _ _ _ , _ _ _ .00
Vessel loan payments	$ _ _ _ , _ _ _ .00
Vessel/Gear Repairs	$ _ _ _ , _ _ _ .00
Docking Fees	$ _ _ _ , _ _ _ .00
New Gear/Equipment	$ _ _ _ , _ _ _ .00
Insurance (Boat/Crop?)	$ _ _ _ , _ _ _ .00
Vessel Registration Fees	$ _ _ _ , _ _ _ .00
State Aquaculture License/Leaseholder Permit Fees	$ _ _ _ , _ _ _ .00
Other Professional Expenses/Fees	$ _ _ _ , _ _ _ .00
Boat Fuel Expenses	$ _ _ _ , _ _ _ .00
Truck/Transport Expense	$ _ _ _ , _ _ _ .00

18. Out of the following categories, please mark the amount of **revenue** you earned last year just from shellfish growing/aquaculture. Include only pre-tax profit, that is, **after you paid all expenses associated with your 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

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

☐ Increased ☐ Remained the Same ☐ Decreased

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20. Please describe some basic information about the vessel(s) used in your shellfish operations.

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

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

21. Where do you keep the boat(s) you use most often for your shellfishing trips?
- ☐ 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: _____

Demographic Questions

22. What is your age? _____

23. What is your gender? ☐ Male ☐ Female

24. What would you consider your ethnic background?

☐ White/Caucasian ☐ Hispanic/Latino ☐ African-American/Black

☐ Asian/Pacific-Islander ☐ Native American ☐ Other_____

25. What is the highest level of education you have completed?

☐ Some High School ☐ High School/GED ☐ Some College

☐ Associates ☐ Bachelors ☐ Graduate/ PhD.

26. What is your marital status?

☐ Never Married ☐ Married ☐ Divorced ☐ Widowed ☐ Separated

27. How many people live in your household? _____

28. What is the total income of everyone who lives in your household?

☐ <$15,000 ☐ $15,000 to $30,000 ☐ $30,001 to $50,000

☐ $50,001 to $75,000 ☐ $75,001 to $100,000 ☐ >$100,000

☐ Prefer not to answer

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Opinions on Shellfish/Aquaculture Operations

29. Do you think that you will be shellfish grower/aquaculturist 10 years from now?
- ☐ Yes
- ☐ No. Why? _____

30. 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 shellfish growing/aquaculture in the future.
_____ My health is affected by my shellfish growing/aquaculture
_____ Shellfish growing/aquaculture is important economically in my community.
_____ Shellfish growing/aquaculture has an important role in the history of my community.
_____ Shellfish growers/aquaculturists are respected in my community.
_____ My community actively supports shellfish growing/aquaculture.
_____ I have to work harder now to collect the same amount of shellfish than I did a few years ago. (*If you think there is no difference, your answer should be 5.)

31. Approximately how many hours per month do you typically spend on record keeping for your business to meet federal and state requirements?
   a. Hours spent on federally mandated shellfish growing/aquaculture record keeping? _____
   b. Hours spent on state mandated shellfish growing/aquaculture record keeping? _____

32. Have you had any trouble finding a buyer to sell your shellfish to?
   ☐ No ☐ Yes

33. Do you have a seafood dealer license?
   ☐ No ☐ Yes

34. Do you have a business relationship with a specific seafood dealer or are you independent?
   ☐ I am a seafood dealer and sell my own shellfish
   ☐ Independent (sells to whomever I wish)
   ☐ Relationship with a specific seafood dealer or dealers

35. Are you a member of any shellfishing or aquaculture organizations?
   ☐ Yes (NCSGA, NCAA, NCWU, etc.) ☐ No

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

With commercial fishermen	☐ Yes	☐ No
With recreational fishermen	☐ Yes	☐ No
With other shellfish growers	☐ Yes	☐ No
Involving federal regulations	☐ Yes	☐ No

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Involving state regulations ☐ Yes ☐ No

If yes, why? _____

37. Use the **scale of 1 to 10** and tell me how important you consider each of these issues to your 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".

a. Overfishing	a. _____
b. Competition with local fishermen	b. _____
c. Competition with non-local fishermen	c. _____
d. Environmental regulation	d. _____
e. Keeping up with proclamations or changes in rules	e. _____
f. Gear Restrictions	f. _____
g. Areas off limits to fishing	g. _____
h. Seasonal or area closures	h. _____
i. Size limits	i. _____
j. Quotas	j. _____
k. Federal regulations	k. _____
l. State regulations	l. _____
m. Seafood prices	m. _____
n. Imported seafood	n. _____
o. Startup costs	o. _____
p. Obtaining financing for repair/replacement costs	p. _____
q. Cost of licensing and taxes	q. _____
r. Record keeping (trip tickets, tax purposes)	r. _____
s. Crew or labor issues	s. _____
t. Weather	t. _____
u. Inability to predict the future for your business	u. _____
v. Fuel prices	v. _____
w. Losing working waterfronts like docks, marinas, and fish houses	w. _____
x. Development of the coast	x. _____

38. 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 shellfish grower, how likely is it that you would recommend being a shellfish grower? _____

39. Please provide an email address if you would like a copy of the results.

_____

40. Any additional comments?

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