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A Social Census of Georgia's Working Waterfronts

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Current data on the Georgia seafood industry's demographics, economics, and social conditions has been missing. This research project fills that gap through its investigation of 1) Current demographic, economic, and social conditions of the seafood industry, and how these compare to historical trends, and 2) Labor supply conditions for the industry, and strategies that can address the distressed workforce and aging of the fleet.

Intellectual Merit: This project conducted a social census of Georgia's working waterfronts to provide a current snapshot of Georgia's seafood industry, and an assessment of changes in the industry over the last 20-40 years. This collaborative research engagement with the fishing community has produced findings that may prove useful to other working waterfronts around the nation.

Broader Impacts: The project has identified labor force concerns voiced by the industry, and identified best practices to remedy these issues, assisted by case study analysis. Drawing on these case studies, the collaborative work with those in fishing communities, and analysis conducted in this project, project outreach has the potential to assist policy-makers, businesses, and fishing families in identifying solutions to sustain Georgia's commercial seafood industry.

Georgia Sea Grant Final Report

Title of project: A Social Census of Georgia's Working Waterfronts
Duration of the project: 35 months
Completion date: January 2021
Name of PIs and co-PIs:

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Abstract:
Current data on the Georgia seafood industry's demographics, economics, and social conditions has been missing. This research project fills that gap through its investigation of 1) Current demographic, economic, and social conditions of the seafood industry, and how these compare to historical trends, and 2) Labor supply conditions for the industry, and strategies that can address the distressed workforce and aging of the fleet. **Intellectual Merit:** This project conducted a social census of Georgia's working waterfronts to provide a current snapshot of Georgia's seafood industry, and an assessment of changes in the industry over the last 20-40 years. This collaborative research engagement with the fishing community has produced findings that may prove useful to other working waterfronts around the nation. **Broader Impacts:** The project has identified labor force concerns voiced by the industry, and identified best practices to remedy these issues, assisted by case study analysis. Drawing on these case studies, the collaborative work with those in fishing communities, and analysis conducted in this project, project outreach has the potential to assist policy-makers, businesses, and fishing families in identifying solutions to sustain Georgia's commercial seafood industry. This project had substantial educational impacts as it incorporated both undergraduate researchers and volunteers, and graduate research assistants at two Georgia universities.

Research Methods and Analysis:
Six data gathering methods were used to address our research questions. We incorporated both quantitative and qualitative methods in this study, allowing quantitative data (survey responses and historical data) to be complemented by the richness of qualitative strategies (interviews and participant observation). Of primary importance was our dedication to collaborative work with the seafood industry. We used participatory research to emphasize the involvement of local

people in the research process, because seafood industry insiders have an enhanced ability to identify key elements of problems and possible solutions (van Willigen 2002).

By using multiple methods and data sources, we increased our confidence in our development of accurate and effective research findings. We were guided by Robert Putnam: "No single source of data is flawless, but the more numerous and diverse the sources, the less likely that they could all be influenced by the same flaw" (2000: 415). Thus, in our analysis we practiced triangulation (Yin 2008) in which combinations of multiple methods, data sources and/or interviews were used to confirm information. These data gathering methods and their relationship to our research questions are summarized in the tables at the end of this section.

Research Methods

1. Mapping Infrastructure

A primary goal of this study was to create a census of seafood industry infrastructure in coastal Georgia. This task was difficult because of the absence of contemporary accurate data. Thus, we had to creatively rely on existing historical and anecdotal evidence, as previous studies are often contradictory. For example, a 1975 study (Nix, Glenn, and Whitted 1975) identified 31 commercial docks in Georgia, while Blount (2006) cited 21 in McIntosh County. Beginning with historical data (from secondary sources, historical records, interviews, and the published literature) we identified previous locations of docks, fish houses, and other infrastructure. Next, the locations of all currently active fishing industry infrastructure were identified through public records and interviews. An undergraduate research team (lead by Yandle) researched the history of each historic and current location, then geocoded and created photographic records of current conditions at each site in spring of 2019. This information was then spatially analyzed and mapped to identify and illustrate the changing patterns of industry activity and related land use along the Georgia coast. The undergraduate team participated in a special course "ENVS 387 Coastal Georgia: Geography, History, and Politics of Fishing Culture" at Emory University. This course included a week of intensive field-work during the students' Spring Break focused on geo-locating current and historic industry infrastructure, documenting current conditions, and using public records to determine historic ownership (see course syllabus in Appendix).

2. Surveys

We planned to survey all the key participant groups in Georgia's coastal seafood industry, and with assistance from Julie Califf of Georgia DNR, we were able to receive the state database of individuals who hold commercial fishing licenses (for finfish, shrimp, shellfish, and crabs). We developed a "questionnaire warning" postcard to (1) alert license-holders of imminent mailed questionnaires, with the goal of improving response rates, and (2) determine which addresses in the database were no longer accurate, and thus the expensive mailed questionnaire could be avoided.

As developing culturally relevant and methodologically sound survey instruments is essential to gathering quality data for social and economic analysis, the study team had to draw from existing survey instruments and data sets that would provide comparability while simultaneously balancing the need for them to be salient and comprehensible to this study

population. The study team created original survey instruments and pre-tested them before broader implementation.

From the state database we developed a mailing list and sent out 972 paper questionnaires via US mail on May 9, 2019. Along with each questionnaire we included a one dollar bill in the envelope. The literature shows that enclosing a one dollar bill in a paper mail questionnaire increases the response rate (Church 1993; James and Bolstein 1992). In the end, our response rate was significantly less than we expected and this affected our ability to do many of the statistical analyses that we had planned. Based on the data received, it appears there are two reasons for this low response rate: (1) DNR definitions of commercial fishers include individuals who wish to use particular gear that is only allowable under a commercial license (such as gillnets for shad), or they wish to harvest larger quantities for personal or family use than is allowed under recreational use. Therefore, estimates of numbers of commercial fishers that are actually fishing for commercial purposes is artificially inflated in this database. (2) Sensitive questions, particularly those that address income, money, health, and substance use or abuse, can reduce response rates (Tourangeau and Yan 2007).

Of the 91 responses that we received back, 51 were excluded from the analysis due to a failure to identify their main fishery or because they were deemed to be non-commercial operators. The remaining 40 responses formed the basis for our descriptive statistics provided in this report. Where possible, we conducted inferential statistics and within the report, we note the statistical test and p-values obtained. Despite our data limitations, we were able to gather important quantitative and qualitative data that can help inform current and future policy directions and future data needs.

Table 1: Study Population

Study Sample	Interviews	Surveys
Oysters	7	0
Crabs	11	15
Shrimp/Finfish	5	25
Dock Manager/Owner	5	0
Seafood Market	2	0
Decline to answer/non-commercial		51
	N=23	N= 40

3. Interviews:

We conducted individual semi-structured interviews with individuals across each subpopulation as illustrated in Table 1. Recruitment was grounded in purposive sampling (Bernard 2002: 182) in which we sought knowledgeable individuals, followed by snowball sampling (Bernard 2002: 185) from the initial contacts to others that the participant thought would be informative to us. Semi-structured interviews allow for a deep understanding of the research topic, and encapsulate

the experience of these individuals. These interviews are open ended to allow for new information to emerge, but also follow a general script to cover desired topics. This interviewing style allows the researcher to "steer the interviews around to the issue of interest and let informants teach" (Bernard 2006, 215).

4. Secondary Data Gathering:
Where available, we also gathered existing data on key social and economic variables by accessing (federal, state, and local) government websites, reports, and repositories (e.g. US Census Bureau data, NOAA Digital Coast, Georgia Corporate Records, Georgia Department of Natural Resources, etc.) along with other relevant fisheries-related sources (PEW Charitable Trusts, World Bank Group). We also consulted academic research, and historical sources (Georgia State Archives, and materials at the Bryan-Lang Historical Archives (Camden County), Ida Hilton Public Library (McIntosh County) and the Bull Street Archives/Library (Chatham County). Secondary data gathering (particularly by students) was supervised by faculty and research library staff at the Emory Woodruff Library.

5. Participant Observation:
Researchers conducted participant observation throughout this project (Bernard 2006, 343), and also drew from participant observation data gathered during a variety of other previous and overlapping research projects. We observed interactions, nonverbal communication, and the themes and topics of interest to each group. Our research included participant observation on fishing docks and in fishhouses, in fishers' homes and backyard seafood processing operations, in the seafood processing facilities of small and large distribution companies, on a shrimp research vessel and in oyster flats on an oyster skiff, and in retail and wholesale seafood spaces across the six coastal counties for over seven years. Informal conversations with local extension agents, state and federal employees, fisheries management staff, and chefs interested in purchasing Georgia seafood situated and confirmed the data that emerged throughout the course of the research. The researchers engaged in numerous casual, unstructured interviews with a variety of fishing community members throughout the study period, which serves to frame and contextualize these twenty-three in-depth qualitative interviews conducted with members of the commercial fishing industry between February 2018 and February 2020. By repeatedly and consistently immersing ourselves in these communities, we have been able to gather data beyond that which was reported to us. Recorded observations of behavior and interactions have been compared to stated sentiments from the study informants, and used to triangulate reported data with that which is systematically observed.

6. Case Study:
Existing workforce development programs were studied as models for Georgia's seafood industry. Case studies included: Extreme Gloucester Fishing, North Carolina Sea Grant: Coast Watch, Farmer Veteran Coalition, and Caribbean Fisheries Training Program. These, and other case studies, are described in detail under Workforce Development Opportunities below.

The six data gathering methods described above were combined to provide a comprehensive approach to data gathering. As described in Table 2, each research question used multiple methods, systematically developing triangulation among data sources (Yin 2008).

Table 2: Relationship Between Data Sources and Research Questions

Question 1: What are the demographic, economic and social wellbeing patterns for businesses, workforce, and community in Georgia's coastal seafood industry? How do these patterns change over time?						
	Surveys	Interviews	Mapping	Secondary Data	Participant Observation	Case Studies
Demographic	X	X		X	X	
Economic	X	X		X		
Workforce	X	X		X	X	
Social Wellbeing	X	X		X	X	
Geographic Patterns		X	X	X		
Question 2: What strategies can improve the long-term sustainability of Georgia's seafood industry workforce?						
	Surveys	Interviews	Mapping	Secondary Data	Participant Observation	Case Studies
Problem Identification	X	X	X	X	X	
Workforce Development Models				X		X
Analysis	X	X	X	X	X	X
Recommendations		X	X	X	X	X

Data Analysis
In keeping with the multidisciplinary nature of this research team and project, we relied on five different data analysis methods. Each of these methods is described below.

1. Qualitative Data Analysis:
Qualitative data was used for anthropological and policy analysis. This analysis from participant observation and interviewing enables researchers to better understand the why and how of human behavior (Miles and Huberman 1994; Bernard 2006). This analysis incorporated transcription, review, and coding of interviews, reviewing field notes from participant observation, and reviewing themes that emerge across methodologies. The sample size is sufficient for a qualitative culturally rich analysis for anthropological exploration.
2. Social Network Analysis:
The project graduate students led the development of social network research tools, and the social network analysis. While we had hoped these data would provide us with modeling of the figures in the seafood industry who their peers deem the most reliable, forward-thinking and likely to succeed at leading workforce development efforts (Maiolo 2007), the small sample size and lack of collective trust among fishing community members has rendered this analysis less useful than we had anticipated.

3. Quantitative Data Analysis:
This approach used quantitative data gathered from the mailed questionnaire and other secondary data sources, including the US Census Bureau to document the historic and current state of the fishery and to conduct statistical analyses where possible.

4. Economic Data Analysis:
This approach used data gathered from secondary sources, the mailed questionnaire, and interviews to conduct economic and policy analysis. This included collecting and analyzing data on the economic condition of the fishing sector, the share of household income derived from fishing, and number of years that respondents stated they can financially continue working in the fishery.

5. Spatial Analysis:
The geographic data on current and historic locations of seafood industry infrastructure has been used to map the changes in the spatial location of these activities over time. These data have been topically linked to our survey results to gain a better understanding of the relationships between seafood industry economic activity and characteristics of industry participants and the broader communities.

The five methods of data analysis described above will be used to address the project research questions. The relationship between questions and analysis methods are described in Table 3 (below).

Table 3: Relationship Between Research Questions and Data Analysis Methods

Question 1: What are the demographic, economic and social wellbeing patterns for businesses, workforce, and community in Georgia's coastal seafood industry? How do these patterns change over time?					
	Qualitative	Social Network	Quantitative	Economic	Spatial
Demographic	X		X	X	
Economic			X	X	
Workforce	X		X	X	X
Social Wellbeing	X		X	X	
Geographic Patterns	X				X
Question 2: What strategies can improve the long-term sustainability of Georgia's seafood industry workforce?					
	Qualitative	Social Network	Quantitative	Economic	Spatial
Problem Identification	X	X	X	X	
Workforce Development Models	X				
Analysis	X	X	X	X	X
Recommendations	X	X	X	X	X

Research Results:

A key problem facing the Georgia seafood industry was the lack of current, rigorous data on demographic, economic and social well-being conditions. Specifically, we examined:

1) *What are the demographic, economic and social wellbeing patterns for businesses, workforce, and community in Georgia's coastal seafood industry? How do these patterns change over time?*

2) *What strategies can improve the long-term sustainability of Georgia's seafood industry workforce?*

Research Topics

To fully address each of the questions above, the following topics were studied:

1. Demographic Data:

This section focuses on traditional demographic measures, how they changed over time, and how characteristics of the questionnaire respondents compared to broader (e.g. county) demographic trends.

a. Historical demographics (1970) vs. Current demographics (2018).

Of the six counties associated with commercial fishing (Bryan, Camden, Chatham, Glynn, Liberty, and McIntosh), Chatham had the largest total population (187,767) in 1970 according to the US Census (Table 73). The two smallest counties were Bryan (6,539) and McIntosh (7,371). All six counties experienced total population growth, ranging from a 53% increase in Chatham County to a 449% increase in Bryan County. Despite having the lowest rate of growth between 1970 and 2018, Chatham County was still the largest of the six counties with a total population of 287,049. While Bryan's total population increased 449% to 35,885, it still ranks as the second smallest county of the six. The smallest county, McIntosh, had its total population increase 92% to 14,120 in 2018.

Other comparable data between 1970 and 2018 involves the racial breakdown of each county (Tables 81-86). Full comparisons between the two years is difficult to make given that the data reported in 1970 was not as detailed as it is in 2018. In general, the racial composition of the counties has not varied that much from the reported breakdowns in 1970.

The median age for each county is reported in Table 78. In 2018, Liberty County had the youngest median age (28.1) while McIntosh County had the oldest median age (49.7). In terms of median income, Liberty County had the lowest reported median income ($45,959) while Bryan County had the highest ($71,322) (Table 74). We were not able to find comparable historic information from 1970.

b. Demographics of the questionnaire respondents

Based on our survey results, many of the people who have active commercial fishing licenses were not actively fishing commercially in the prior year. Of the 91 completed responses that we

received, 33 did not commercially fish in the prior year, and an additional 18 individuals did not provide information to allow us to determine their main fishery. This left us with 40 responses that were spread across the following fisheries (Crab=15 respondents, Finfish =10 respondents, and Shrimp=15 respondents) (Table 4). Only two of the individuals who reported commercially shrimping also commercially crabbed in the prior year (Table 5). No finfish participants commercially crabbed in the prior year. Of the 15 crab participants, 13 reported commercially crabbing in the prior year. One crabber reported not crabbing commercially in the prior year and one respondent did not provide a response to this question.

The average age of the respondents was 55.67, and when broken down by fishery it was: Finfish=53.00; Crab=55.73; and Shrimp=57.50 (Table 73). When asked how long they have worked fishing the responses were: Finfish=22.40; Crab=30.37; and Shrimp=32.57 (Table 71). The majority of respondents were the first in their family to participate in the seafood industry (Table 72). Only one crabber reported being the fourth generation to participate in the seafood industry. In terms of educational attainment, there was a range of responses, with the most common response being "High School" (36.8%). (Table 74). The majority of the respondents were white (Table 75).

Of the respondents who work in their main fishery, 62% reported working only in that fishery in the prior year. (Table 7). Two shrimp participants reported working in one other fishery in the prior year, five finfish respondents reported working in one other fishery, and one finfish respondent reported working in three or more fisheries in the prior year. Of the crab respondents, six reported working in one other fishery, and one reported working in two other fisheries in the prior year.

In terms of the number of days worked in the main fishery in the prior year, there was a statistically significant difference between the average number of days reported by crab participants (223.57 days) vs finfish participants (62.5 days) ($p < .001$ using the Welch test)[1] (Table 8). The average number of days worked by shrimp participants was 126.96 days. The majority of respondents across all fisheries captain a boat they own (Table 9). In terms of the dock that participants normally use, shrimp participants reported using Skinner (5) and Brunswick (3) most frequently among the responses provided in the open-ended question (Table 10). For finfish participants, Phillips was chosen (4) most frequently, and for crab participants, only one location received two responses (Half Moon Marina), while the remaining 13 responses were spread out across unique responses (Tables 11 and 12). There was a statistically significant difference between the reported share of the catch that is sold at the dock. 66.7% of crab respondents reported selling no catch at the dock, while 64.3% of shrimp respondents reported selling 100% of their catch at the dock ($p < .001$ using the Welch test) (Table 13). For finfish respondents, 50% reported selling no catch at the dock and 30% reported selling 100% at the reported dock.

When asked about buying ice at the dock, the majority of respondents (60.5%) reported doing so "Always" or "Often" (Table 14). When asked about buying gas at the dock, an even larger

[1] The Welch test was used here and elsewhere in the report when the data violated the assumptions of normality and homogeneity of variances. Where the data violated the assumption of normality but not the assumption of homogeneity of variances, the Kruskal-Wallis test was used.

percentage reported doing so (79.5%) "Always" or "Often" (Table 15).
Relating the questionnaire responses back to county-level data, the percent of residents who did not have health insurance ranged from 11.2% in Bryan County to 15.9% in McIntosh County (Table 79). The average response across the questionnaire was 15.4% (Table 53). While the percent of crab respondents who reported no insurance was 35.7%, this result was not statistically significant at the 5% level ($p = .058$ using the Binomial test). Finally, the percent of residents residing in owner-occupied or renter-occupied housing by county is reported in Table 80. This percentage ranged from a low of 44.5% in Liberty County to a high of 77.8% in McIntosh County. The observed proportion of questionnaire respondents who reported owning a home (87.5%) was not statistically different from the percentage reported in McIntosh County, but the proportion was statistically different compared to the proportion reported for the five remaining counties ($p < .001$ using the Binomial test).

2. Economic Conditions:

We looked at the economic condition of the fishery from two angles. First, we asked questions related to their income and financial viability in the fishery (Questions 14, 23, and 25). We also asked questions related to the economic conditions of their main fishery, local community, and country (Question 10), how they were managing financially (Question 12), and how their financial condition compared to their parents when they were their age (Question 13). We also asked whether they missed fishing days due to economic reasons and 93.1% of respondents reported missing no fishing days (low prices and/or high costs (fuel, bait) (Table 21).

There was a statistically significant difference between the income reported from fishing for crab respondents vs finfish respondents ($p = .050$ using the Welch test) (Table 69). We also asked about the degree to which the respondents were satisfied with their fishing income (Table 45). There was a statistically significant difference between crab and finfish responses ($p = .042$ using the Kruskal-Wallis test) and crab and shrimp responses ($p = .033$ using the Kruskal-Wallis test). When asked about their ability to continue working in the fishery, either financially or physically, there was a statistically significant difference between shrimp and finfish responses for both questions ($p = .005$ and $p = .008$, respectively, using the Kruskal-Wallis test) (Table 71). We also asked respondents how they were managing financially, and there was again a statistically significant difference between shrimp and crab responses ($p = .040$, using the Kruskal-Wallis test), as well as with shrimp and finfish responses ($p = .003$ using the Kruskal-Wallis test) (Table 26). Overall, 75% of respondents stated that they were "Living comfortably" or "Doing ok" (Table 26). When asked to rate their financial condition relative to their parents at their same age 53% of respondents chose "Much better off" or "Somewhat better off" (Table 27). We also asked them to rate the economic condition of their local community and the responses were statistically different among the groups. 69.3% of crab respondents reported the economic condition of their local community as "Good" or "Excellent" while only 13.4% of shrimp respondents chose "Good" or "Excellent" ($p = .004$ using the Kruskal-Wallis test) (Table 24. When asked to rate the economic condition of the country, again, there was a statistically significant difference between shrimp respondents and crab respondents ($p = .046$ using the Kruskal-Wallis test) and shrimp and finfish respondents ($p = .044$ using the Kruskal-Wallis test) (Table 25).

3. Workforce:

Our interview subjects predominantly described a lack of viable employees available to hire to either captain or crew a shrimping vessel, or work at the docks. They gave several reasons for this issue, ranging from the gloomiest assessments that the population has a generally poor work ethic, and descriptions of serious drug addiction issues, to the insightful critique that the unreliability of the income deterred potentially good workers from engaging in the industry.

a. Crew Labor Unavailable

Within oyster shellfish work, hiring employees is even more difficult. One shellfish harvester explained "anybody that's ever done it doesn't want to do it again." He had experienced success in some cases, "I've had a couple guys that lasted a year or two" but also noted: "I've had some guys that I've sent to Brunswick to get their permit and never showed up. I had one person that sent to Brunswick never made it to the office." A dock manager summed it up emphatically: "We have no workforce, we're dying here!"

Interestingly, when asked to report how many work days they missed in their main fishery due to not enough crew, 66.7% of survey respondents chose zero days (Table 18). Based on the conflict between the survey responses and the qualitative data gathered during interviews and participant observation, we think zero days may be more indicative of *who* completed the survey, rather than representative data. especially given the low response rate.

b. Poor Work Ethic

Some participants described a population trend towards people wanting easy work, and workers simply not being reliable. One shrimper felt this was age-dependent, saying "Definitely, the younger they are, the sorrier they are. No doubt about it." He further explained that this spoke to the individual natures of the people, because "You can't teach character. You can't teach a work ethic. You either have it or you don't." One individual explained "basically nobody really wants to work hard. You know they get on the boat, they want time paid, they don't know how to do anything, and they don't want to work, they want to do the bare minimum to get it." Many participants explained that people don't want to labor outdoors anymore, "Nobody wants to get out in the environment, in the outdoors," and that "they can work at McDonald's in the air conditioning not the heat, these kids aren't leaving their homes. … They don't have to go outside."

c. Financial Uncertainty Deters Crew

The inability of captains and boat owners to hire dependable, hard-working crew is also attributed to poor financial viability of the fishing trips. An individual explained this is the "number one issue of the seafood state of Georgia. If we could pay a little bit more … we could get a little better quality employees." They describe struggling to keep crew members returning for multiple trips, particularly when the most recent catch has been poor. While a prosperous week on the water can result in a payday of $600-$1000 to the crew member, the crew also partake of a percentage of the poor fishing days, and may get paid $200 the following week. Captains explained that those poor weeks often resulted in crew who didn't want to return to the boat, explaining that "then you're begging them, 'come on man, please come on man!'" They explain that in the past, the catch was more consistently good, and in those days, crew was easy

to hire: “if this was a good paying job, you'd have a lot more people down here trying to get on them. And we used to, it used to be a dime a dozen.”

d. Crew Instability Causes Financial Hardship

Paradoxically, the opposite is also often described. One shrimper recounted a conversation he had with a license-holder friend: “You can’t find a crew. He said, ‘I could make tons of money if I had a crew.’” So while crew is possibly difficult to find and retain because a reliable work force wants to engage in labor that results in a reliable paycheck, the experience of captains and boat owners is that money is there to be made, if only reliable crew could be found. They describe disappearing crew that “just want to work until they get enough money and that’s it, they quit for a while.” One shrimper explained that the only long-term crew labor force was comprised of crew who “travel around, they get to make money, and they go from town to town. They go to Florida, they go to North Carolina.” A dock manager concurred, saying that “it’s the same little bunch in the county here, and they move from boat to boat and if they miss one boat, then the next boat will pick them up.”

e. Crew Force Available for Fair Wages

Younger fishers in the fleet agree that crew is necessary to make money, but also that reliable profit is essential to retaining crew. One of the youngest shrimpers in the Georgia industry explained “I make my crew money most times. I don’t really have a problem keeping a crew. But you go out there and you pay people two, three, four hundred a week—ain’t nobody wants to work for that. Like, not that kind of work.” In assessing the state of the fleet, another dock manager pointed out that a large part of the issue is that while captains and boat owners are generally able to stay afloat on their portion of the catch profit, the amount in the crew share of that profit is not sustainable for the workers: “there’s a lot of raggedy boats out there…When you’re working a day boat, that’s not going to make money, that’s not where it’s at anymore in shrimping. These boats that are working a day or two days and coming in, I mean those guys make a good check but your crew, you don’t have any.”

f. Drug Abuse

A common sentiment across these interviews was that a key issue with the available crew labor force (or lack thereof) is drug addiction. The research team was regularly told that drugs were one of the biggest problems the industry faces, and a member of the industry even started a conversation with the team one day by asking if we knew what the real problem in fishing was for Georgia, then asking in a hushed whisper, “Have you heard about *the dope*?” Most interview subjects voiced something along the lines of this sentiment: “I can tell you there’s a huge problem with drugs in this county. And it’s hard to find somebody to work that’s not on drugs of some sort.” One shrimper responded to our question about drugs impeding his ability to find crew for multiple-day shrimping trips by stating “It’s really the number one thing… all the young guys that would be willing to do that type of work, they’re not willing to stay gone that long because they run out of whatever they need, or they sneak it on the boat, or they just, they can’t stay away from it. And then they become so ill that you have to take them in.”

When asked what types of drugs are causing the most trouble in the fishing industry, the responses varied. One captain stated “Drugs, drinking, all of—any kind of drugs you can think

of." Another responded "Meth is really bad around here right now. It's terrible." A third added "they like them pills too. Every time you give 'em a dollar and they go buy 'em."

We were informed that the levels of drug use varied by fishery—with "Crabbers not so bad, there's a few of them that are on drugs but they usually don't last long. They get in there and then the first time someone offers them money for their license their mind says, 'Woo! Money, drugs!' Well now you're out" of crabbing because the license is gone. Shrimping boats are different, as one crabber explained "when you get into shrimp boats… it's not the captains of the boat usually, it's their deck hands. I mean they'll come in and make a hell of a check and then they're broke by the time the boat leaves again" because they have spent their entire check on drugs. Drug addiction is partly the cause of the unreliability of the workforce, as one shrimper described "if you pay a man a good chunk of money. much of the time they leave. They're gone. They're gonna get some drugs, then you never see them again, and you have to try to find another man and once you give him a paycheck then he's gone. That's how most of them do it."

Several acknowledged that they would hire someone they knew to be on drugs to crew for them, as the options were so very limited: "It's like you're replacing a crackhead with a crackhead, literally." They acknowledged that "you're hiring someone whose body is not able to do it because of the things they do" but the potential labor force is so low that there were few other options. Another described a friend's experience: "You know I had a friend that ran one of those snapper boats one time and he said that's why he quit doing it. He said 'man I had to go buy five hundred dollars' worth of drugs just to get them to come to the boat. Now when the drugs run out they don't want to work anymore, they want to go get more drugs.'" Ultimately, drug addiction in the crew labor force is becoming a reality that the industry is learning to work around, because "they go out there and get enough for a couple of rocks, they'll work for me tomorrow. Might not work for me the next day, but then they'll lay out. I hate to say it, but crackheads make some of the best workers."

While our qualitative data revealed drugs as a problem, the responses to our questionnaire suggest a more nuanced story about the type of drugs abused. The majority of respondents (69.7%) chose "Never" or "Rarely" when asked about the use of cocaine or crack in the seafood industry and a similar percentage (66.7%) chose "Never" or "Rarely" when asked about meth use (Tables 66 and 68). An even higher percentage (81.8%) chose "Never" or "Rarely" when asked about heroin use in the seafood industry (Table 67). However, when asked about the use of opioids or prescription painkillers, only 47% reported "Never" or "Rarely". In fact, equal numbers of respondents (29.4%) reported "Many times a week" and "Rarely", while 11.8% said "Many times a day" and 17.6% chose "Never". The use of marijuana was also reported to be more prevalent, with only 41.2% reporting "Never" or "Rarely" (Table 64). Further, when asked about whether people working in the seafood industry drink alcohol to the point of being impaired 38.9% chose "Never" or "Rarely" while 44.5% of respondents chose "Many times a day" or "Many times a week"(Table 63).

4. Health and Well-Being:

a. Physical Health

When asked how they decide when to seek medical care, one shrimper responded "I mean, just depends on how tough you are, in my opinion." He further explained that he "didn't go to the doc for about a day for when I broke my arm, but like, I just wrapped it up, it took me awhile to get to the dock." He elaborated, "Oh, it was broke, I just, I didn't really feel like goin' in at the moment. But I was starting to getting' really nauseous and felt really bad and I had to end up goin' in." Medical care was not an option often sought, and is perhaps not often necessary, as "most times not too many people get hurt. You get your cuts, and stuff like that" while another noted "I know one boy he got staph and everything-- he had to get off the boat [before] the trip, could take him some antibiotics and stuff like that." An older shrimper who is new to the industry noted how quickly his body was feeling the effects of the hard physical labor, noting the new "arthritis in my hands and in my lower back in one year's time on the back of that boat."

One shrimper did note that this lack of injuries may be attributed to careful working conditions, explaining "on my boat anyway, we try to keep it as safe as possible. So nobody does get hurt, you know? Tryin' to get in no hurries. You do have a lot of dangerous equipment around here. Lot of overhead stuff."

Similarly, when asked to respond to the statement "I am satisfied with my safety when fishing", the majority of the respondents (94.7%) "Strongly Agree" or "Somewhat Agree"(Table 43). In terms of the number of work days missed "in your main fishery due to an injury (fishing or non-fishing related)" the majority of respondents (79.3%) chose zero days (Table 19).

b. Health Insurance

Related to health and injuries in the industry, we inquired about the commonality of health insurance. Fishers were often amused at this idea, responding similarly to one man who laughed: "Do you have medical insurance? Of course not." They explained "if you're a shrimper, you on your own." Some participants viewed this as problematic, and discussed other people they knew who were able to be insured through their spouses' plans. One remarked "I got to figure me somethin' out and get me somethin'. Shrimpers have no insurance, no kind of retirement, none of that good stuff." When we asked how fishers were able to obtain health care when they needed it, they described avoiding seeking care. When the injury or illness couldn't be ignored, they would have to pay their own bills in full, as was described by this shrimper: " I got to pay cash, last time I broke my arm, I had to pay my doctor with cash...I have to pay all of my doctor bills by cash and ... that really sucks."

When captains or license-holders were asked how the situation was handled if a crewmember or hired captain was injured on a boat, interview participants often joked that injuries weren't allowed, and workers would be wise not to mention them. However, they explained "if someone really gets hurt on the boat, and... it's somethin' that's kinda to do with our fault, maybe like, it was mechanical wire, or somethin', we'll pay for it, like out of our pocket. But other than that, I don't really know what most of 'em do. Most of them don't have anything, you know? Like that one striker I worked with I don't think he got no insurance, no anything." They are aware of the fact that they may be responsible for covering the costs of medical care for their crew or

employees, and one explained, "If you're the owner of the boat, you just have to be smart with your money and put you somethin' up for when you do need it." In this way, they can mitigate the potential risks of injuries to uninsured employees.

The majority of survey respondents did have health insurance, either as the primary person covered (69.2%) or as someone covered by a relative who is the primary person covered (15.4%) (Table 53). Of those who have health insurance, 67.6% did not purchase it through ACA/Obamacare, 5.9% did not know how it was purchased, and 26.5% did purchase their health insurance through ACA/Obamacare (Table 54).

When asked if, "in the past year, I needed to see a doctor but didn't see one because of the cost, 55% of respondents either "Strong Disagree" or "Somewhat Disagree" (Table 58).
There was a statistically significant difference between the number of respondents in the crab and shrimp fisheries reporting that "in the past year I have needed a dentist but did not see one because of the cost (Table 59). 73.3% of crab respondents "Strongly Disagree" with the statement while there was an even distribution of responses (20%) across all five choices ("Strongly Disagree" to "Strongly Agree") for shrimp respondents. There was also a statistically significant difference between finish and shrimp responses regarding the statement "I am satisfied with my dental health" ($p = .014$ using the Kruskal-Wallis test) While 66.7% of finfish respondents "Strongly Agree" with the statement, only 6.7% of shrimp respondents "Strongly Agree" (Table 60). When asked about their satisfaction with their physical health, 74.4% "Strongly Agree" or "Somewhat Agree" (Table 61).

There was a dispersion in responses to the question "My health is affected by fishing" (Table 55). In general, the majority of respondents (57.5% and 70%, respectively), strongly disagreed with the statement "in the past 30 days poor physical health or dental health kept me from my usual activities" (Tables 56 and 57).

The most common injuries seen or experienced while fishing were soft tissue injury (sprains, etc.) (39%) and major cuts and punctures (31%) (Figure 1 below). The most commonly cited causes of injuries seen or experienced were slip and fall (31%) and interactions with other marine life (rays, etc.) (21%) (Figure 2 below).

Figure 1: Q20: Please circle the top three most common injuries you have seen or experienced while fishing.

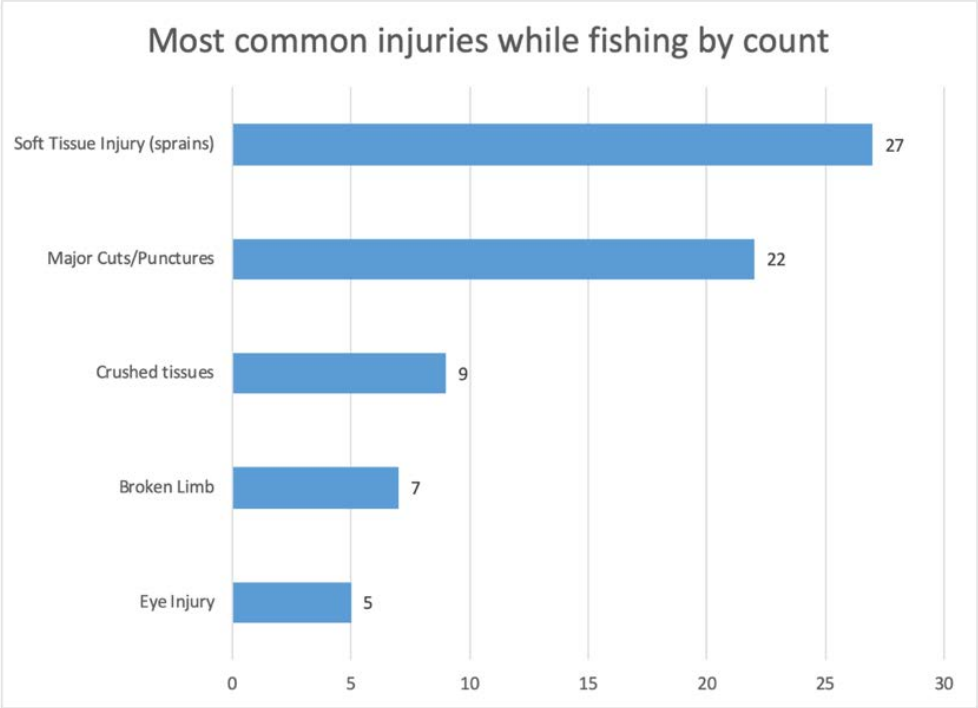
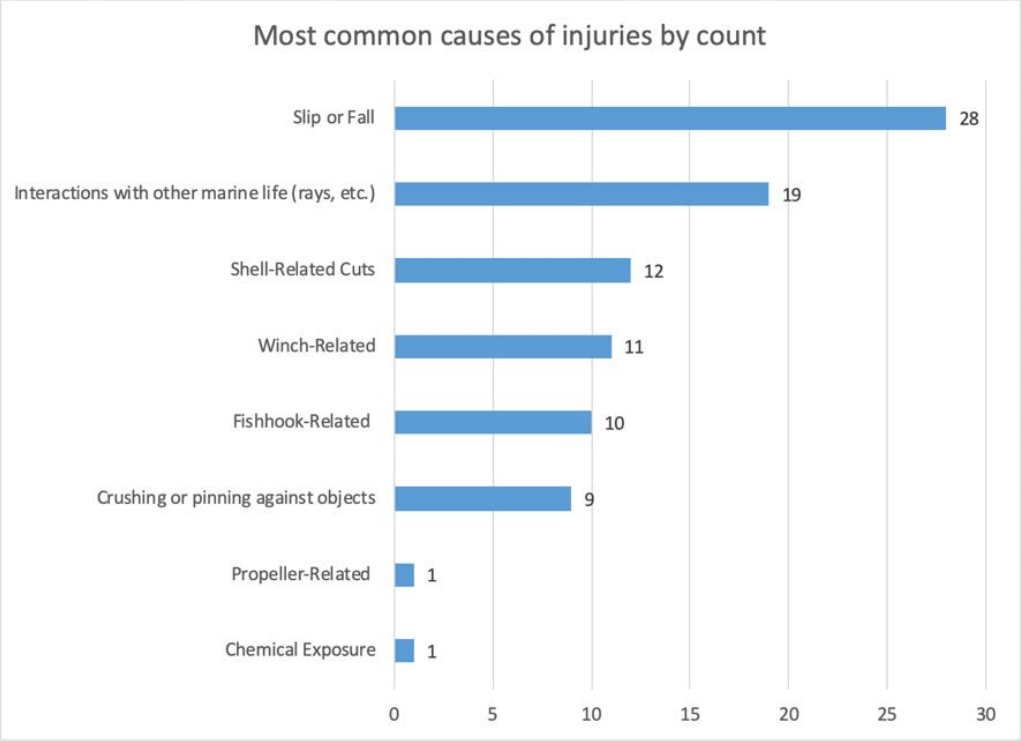


Figure 2

Q21: Please circle the top three most common causes of injuries you have seen or experienced while fishing.



5. Trust in Industry Participants and Regulatory Bodies

a. Relationships to management

Our participants described a wide range of relationships with management, and diverse descriptions of trust in the regulatory bodies to make wise decisions that are equally concerned with the sustainability of the stock biomass and the social and economic well-being of the humans involved in the fishery.

A few participants described distrustful relationships with the Department of Natural Resources (the agency tasked with enforcement in state waters). They were unhappy that they were asked to declare the price they were able to procure per pound of crabs, as they felt "I don't need them knowing how much money I make," not understanding that this data was gathered in order to aggregate the value of the resource to the county or state. Some described positive interactions with DNR while on the water, but several respondents alluded to *other* people who have issues with enforcement, often along the lines of "I haven't really had a problem, but I met some other people that had a problem". One participant painted the analogy: "No different than you going down the road and getting pulled over, 'What did I do?,' 'Let me see your license and registration', you know and everybody tends to get a little defensive and especially if you've been out there all day, cold, you're sunburnt, [could not understand], and all you want is to get your stuff to the hill, you get pulled over and they start jabbing you with this and jabbing you with that." However, another declared that "Our government are terrorists to our citizens. They're terrible. Have the DNR board your boat out there. Just people out there fishing and your extinguisher's expired. I've heard horror stories, [they've] threatened to take people to jail." Thus, there appears to be a wide range of personal reactions to regulatory bodies and interactions with those organizations.

When asked about fishing out of season, there was a spread in the responses, with 38.9% reporting "Sometimes", 22.2% reporting "Seldom", 22.2% reporting "Never", and 8.3% reporting "Not relevant" (Table 48). In terms of catching more fish than the trip limit, there was a nearly even split with 41.7% reporting "Often" or "Sometimes" and 47.2 % reporting "Seldom" or "Never" (Table 49).

With regard to how often respondents think commercial participants are "keeping undersized or oversized fish" in the Georgia commercial fishery, there was a spread across categories with 13.9% reporting "Often", 27.8% reporting "Sometimes", 22.2% reporting "Seldom" and 27.8% reporting "Never", while 8.3% of responses claimed this question was "Not relevant" (Table 50). When asked about how often respondents think "using illegal gear" occurs, the majority of respondents (61.1%) chose "Never" or "Seldom"(Table 51). Finally, when asked about the prevalence of "not using the required gear", the majority of respondents (63.9%) chose "Never" or "Seldom"(Table 52).

Interestingly, most interview subjects did not express a strong dislike of bycatch reduction devices. A younger fisher noted "the older shrimpers don't like it 'cause it might've been different from when they was younger but to me, it's, I mean I think it's pretty good," but few of the older fishers expressed a strong feeling on the topic. One explained regulations thusly: "What we have in Georgia, we can work with. But I mean there's not but so many holes that you

can cut in your net before you start losing. You know what I mean? … at some point they've got to see that what they have is working and there's nothing else you can do. I mean, what they have works, and I can say that the turtle shooter's a great thing, the fish eye does work, but how many more holes can you cut in your net before it's not… You know we're the ones having to supply all the money for the fuel and everything, we've got the bills to make a living, and what they've got works, and I think it's all you can do." This shrimper hesitantly agreed that the existing bycatch reduction devices were effective, but he is clearly concerned that future gear regulations might not be as amenable. Many expressed sentiments similar to these: "I used to .. be resentful that you had to have these turtle excluders, and you had to have this thing, that and the other, but actually that's not true. I mean, you just have a lot more fish that you had to deal with to get your shrimp because you catch a lot more. And most of that wouldn't be stuff you'd want to keep. That's good."

Most respondents (59%) "Strong Disagree" or "Somewhat Disagree" with the statement that "Fishermen have a voice in fisheries management decisions" while 30.8% "Somewhat Agree" with the statement (Table 35). Interestingly 89.7% of respondents "Somewhat Agree" or "Strongly Agree" that fishermen should participate in fisheries management (Table 36); however, the majority of respondents "Seldom" or "Never" attend either a Federal or Georgia fishing meeting (72.2% vs 71.1%, respectively) (Tables 30 and 33). Similarly, the majority of respondents "Never" or "Seldom" speak up at a Federal or Georgia fishing meeting (83.4% vs 80.6%, respectively) (Tables 31 and 34).

In terms of "trust[ing] fisheries regulators to make the right decisions", 59% of respondents "Strongly Disagree" or "Somewhat Disagree" with that statement (Table 37). This is the same percentage of respondents who said that they "Strong Disagree" or "Somewhat Disagree" with the statement that "Fishermen have a voice in fisheries management decisions"(Table 35). Further, 61.6% of respondents "Strongly Disagree" or "Somewhat Disagree" with the statement that "Fisheries regulators take the fishermen's opinions seriously" (Table 38).
In terms of reading materials by the Georgia fishing regulators (DNR), there is a split of responses across categories. Across all fisheries, 32.4% of respondents "Often" read the materials, 37.8% "Sometimes" read the materials, and 29.7% "Never" or "Seldom" read materials (Table 32).

b. Intercommunity relationships

Within each fishery we found varying levels of intercommunity trust and conflict. In terms of how often respondents "discuss issues with people in the industry", the majority (79.5%) reported doing so "Often" or "Sometimes"(Table 28). Often shrimpers try to learn from each other where active trawls are taking place, but many shrimpers doubt the honesty of each other: "Lot of 'em like to pump information out of you, and see what you catching, but they don't want to tell you nothing" and "I don't trust none of them bastards around here." Few shrimpers described trust in each other, except for trust within shrimping families, which was often mentioned.

Crabbers find ways to coexist with each other in the waterways where they set their crab traps, as their licenses do not come with specified access to any particular land or property. They explain that they often form "gentlemen agreements" over territory, and that strategy "works good

sometimes and sometimes it don't" which is when they "Butt heads!" However, crabbers tend to work this problem out amongst themselves, because "it's our problem. It ain't the DNR's. We work it out. I ain't never called the DNR over nobody…We work it out." They explain that while "the law says that I can crab anywhere in open Georgia waters. The crabbers say, 'this is my territory'…We've got a lot of mutual respect between crabbers, but they don't respond to new crabbers very well." They describe cases of some crabbers stealing crabs from each other's traps, and sometimes setting their own traps too close to another crabbers traps—accidentally or intentionally. One crabber mentioned the occasional "crab cutting war" wherein "Two crabbers get to fighting and they cutting traps and stuff. They [DNR] get down in the middle of that…most of the time they do alright. They go talk to one another and straighten it out, but then sometimes they don't. Especially these younger crabbers."

Shellfish lease owners regularly contend with other members of the community taking from their lease. As one lease owner explained of people in the community "They poach up my lease and sell them out of like Walmart parking lot or behind the ice store, something like that. There's one guy that's been doing it forever. I'd love to have him working for me, but he's so unscrupulous, I can't trust him. But he's a really good picker. He's making a living!" However, of the three harvesting populations addressed in this project, shellfish harvesters were the only subpopulation that did not describe animosity amongst the other in their fishery. Several harvesters mentioned friendships with others in the oyster and clam business, and one explained "Everyone watches out for one another."

6. Geographic Distribution of Fishing Industry

a. Changes in Distribution of Infrastructure: Historic to Current

Historic data on the distribution of fishing infrastructure in Georgia is sparse. The starting point for this analysis is the (Georgia Sea Grant funded) 1975 report "Locational Inventory of Docks and Shrimp Trawlers on the Coast of Georgia." (Nix et al. 1975) While it is the best available historic record of docks at that point in time, it cannot be regarded as comprehensive. Without great effort, we located one (now closed) shrimp dock in Darien that was not in the Nix et al study, but a local source confirmed to be open in 1975.

With the support of undergraduate students at Emory University, every site identified in the 1975 study was visited, on-the-ground geo-located (latitude and longitude), and current site conditions and status (open vs closed) documented. In addition, the team conducted open records searches on all these properties, and compiled histories of each site. The location and current status of each dock identified in the 1975 study is presented in Figures 3-8 below.

Figure 3: Overview of Docks on the Georgia Coast

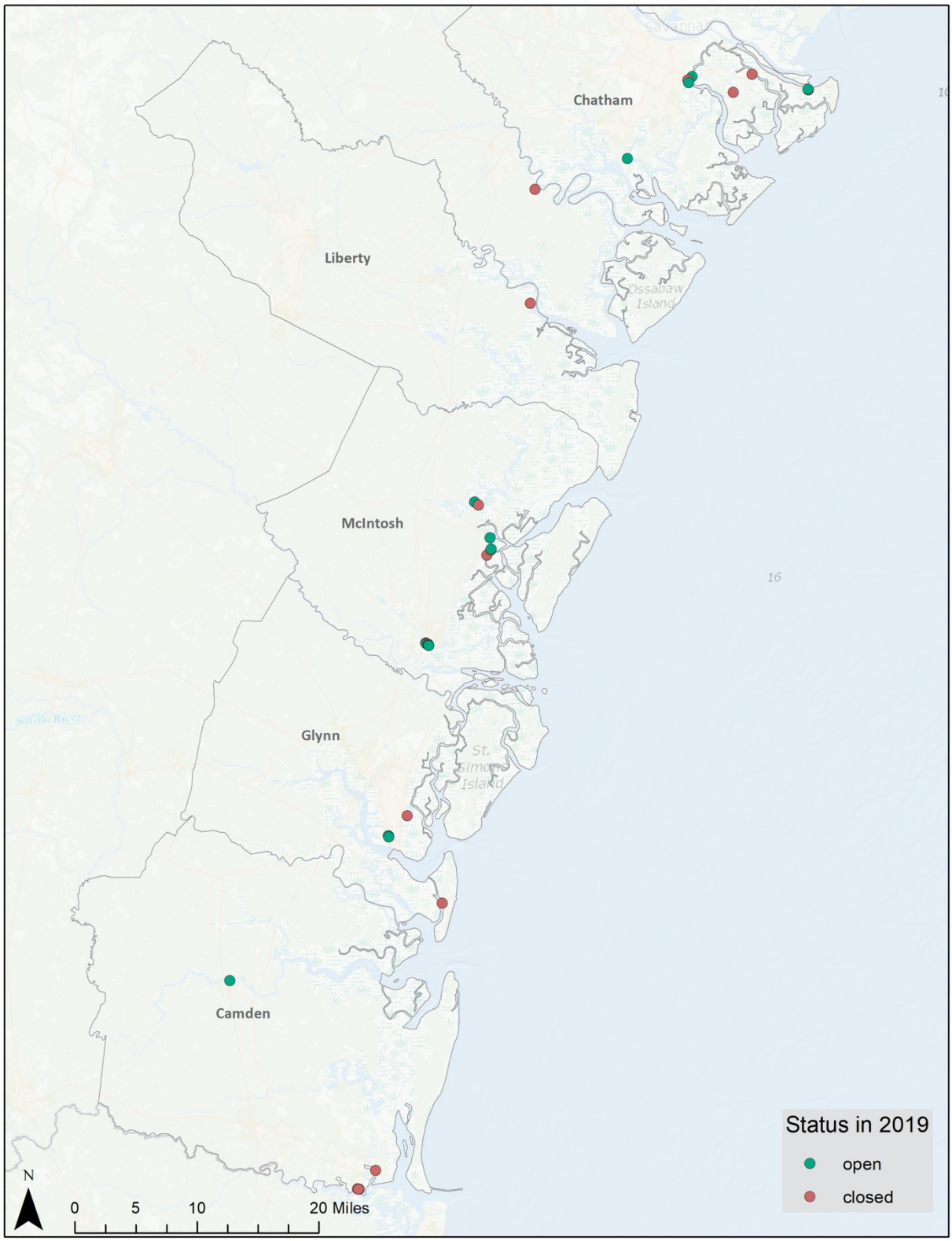


Figure 4: Camden County

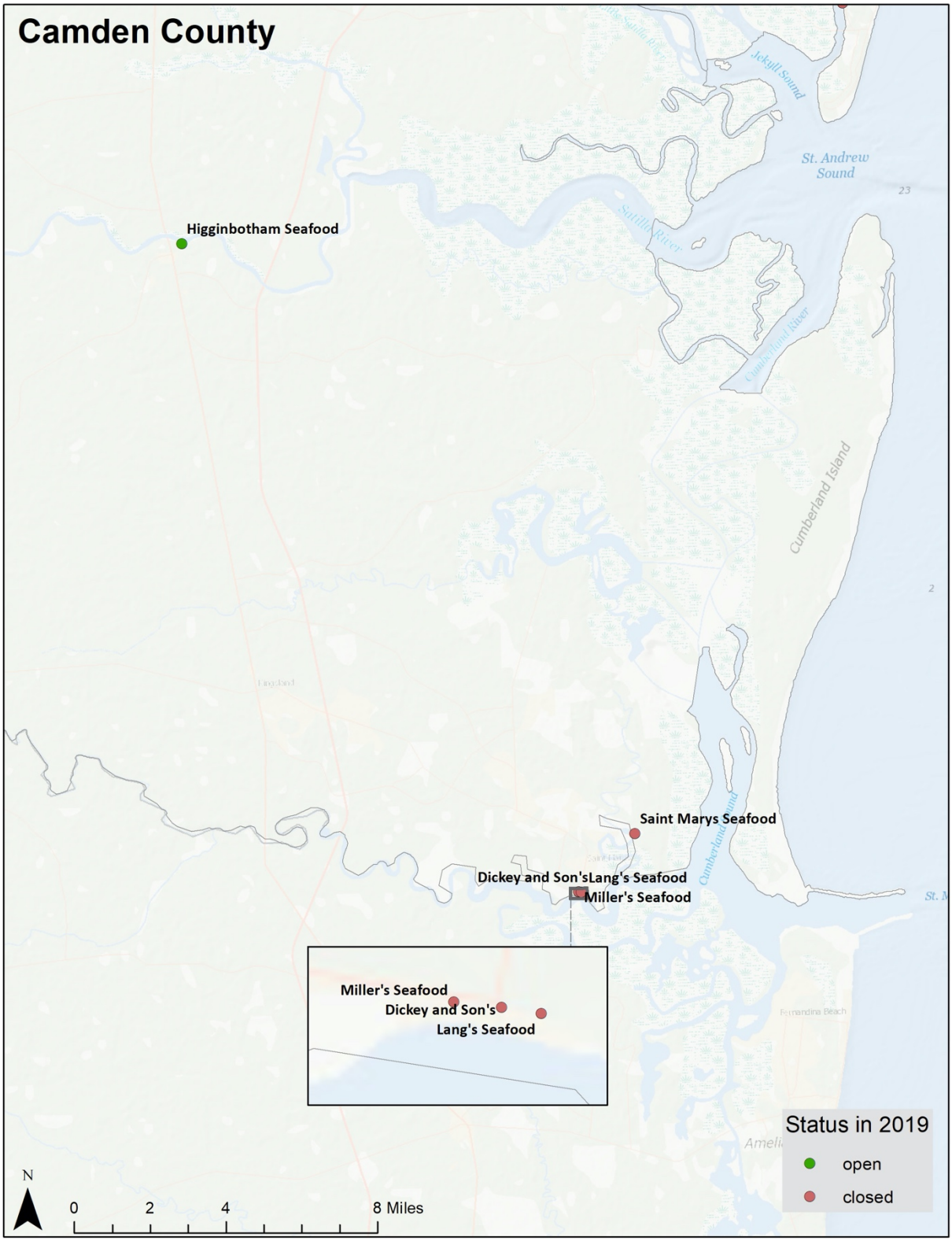


Figure 5: Glynn County

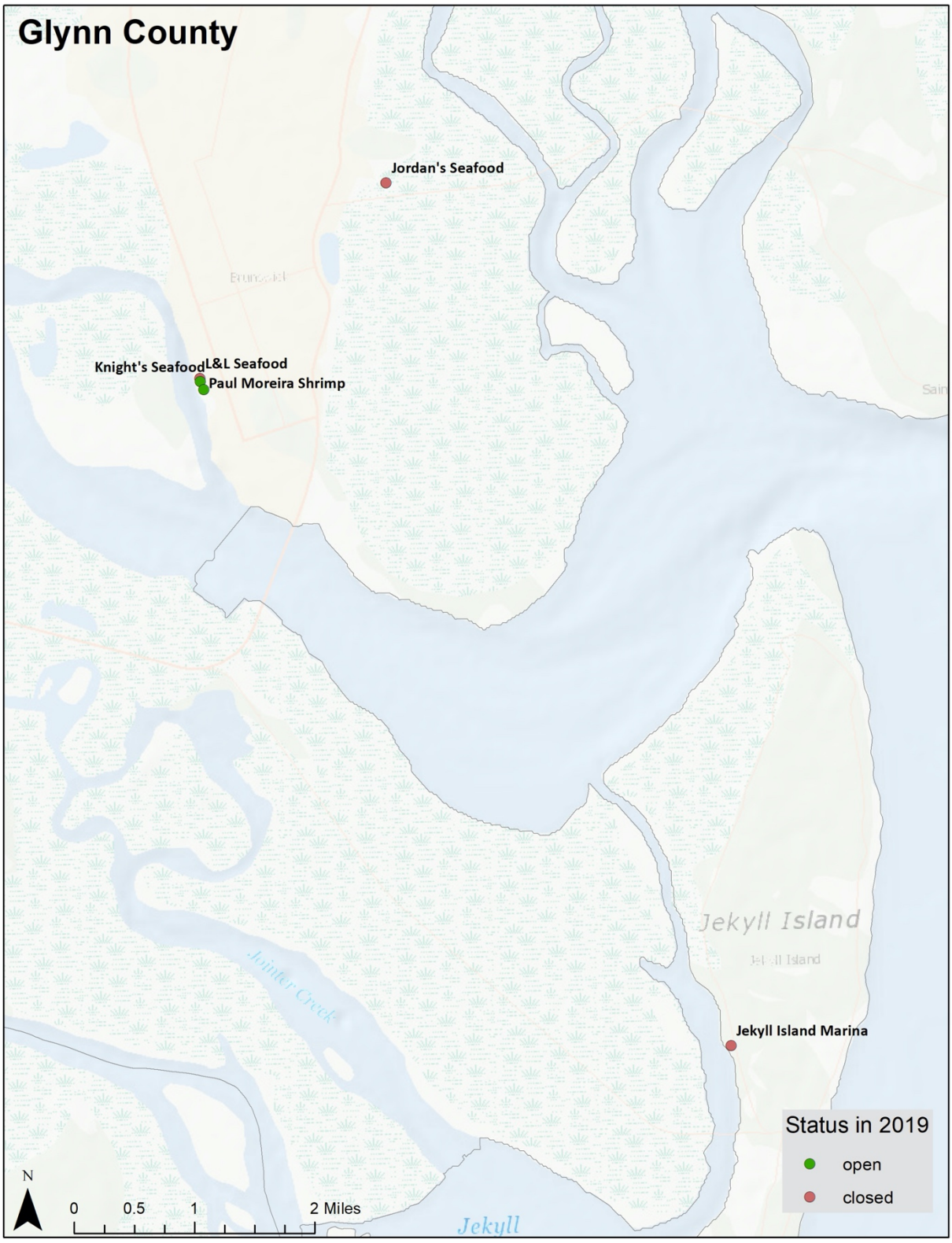


Figure 6: McIntosh County

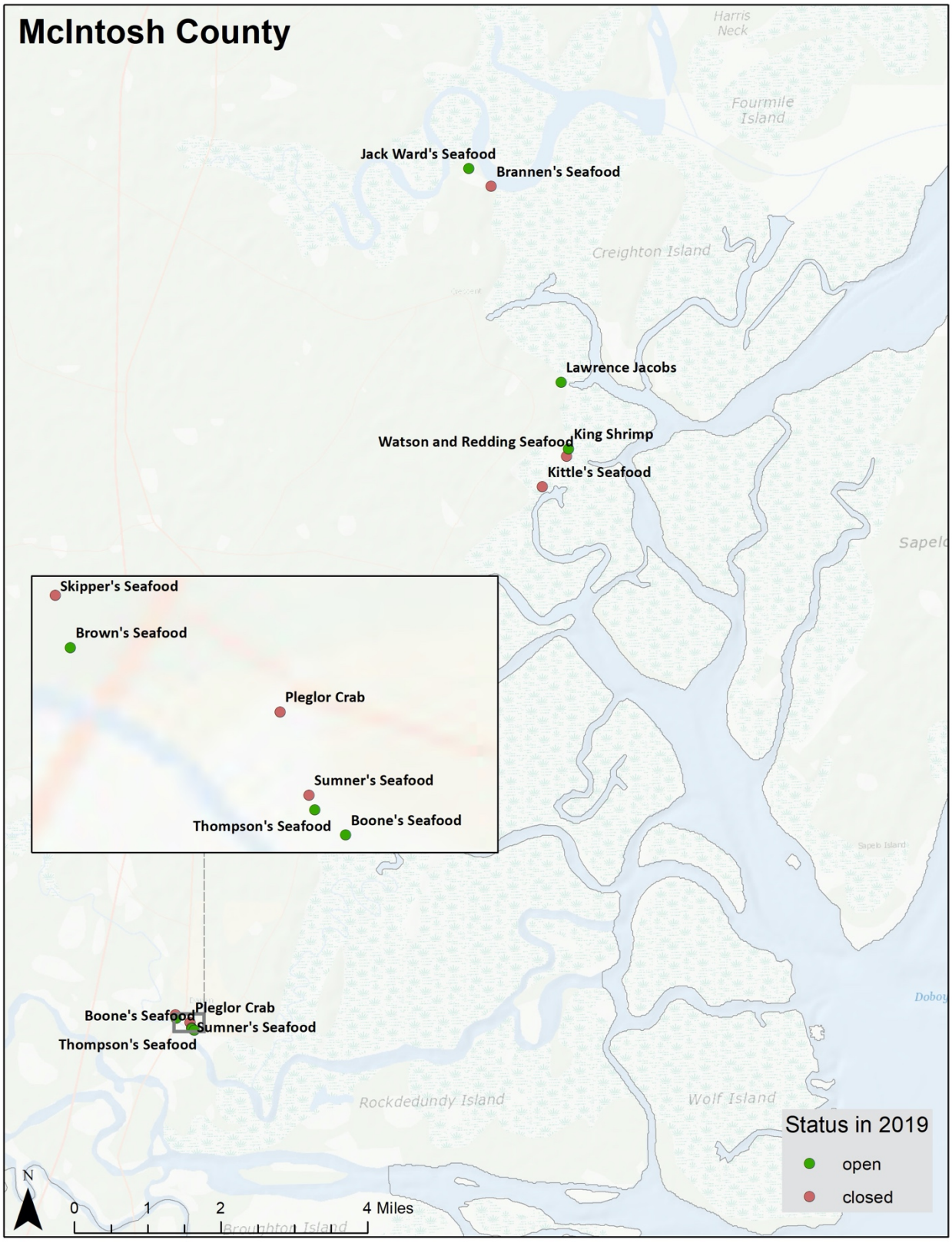


Figure 7: Liberty County

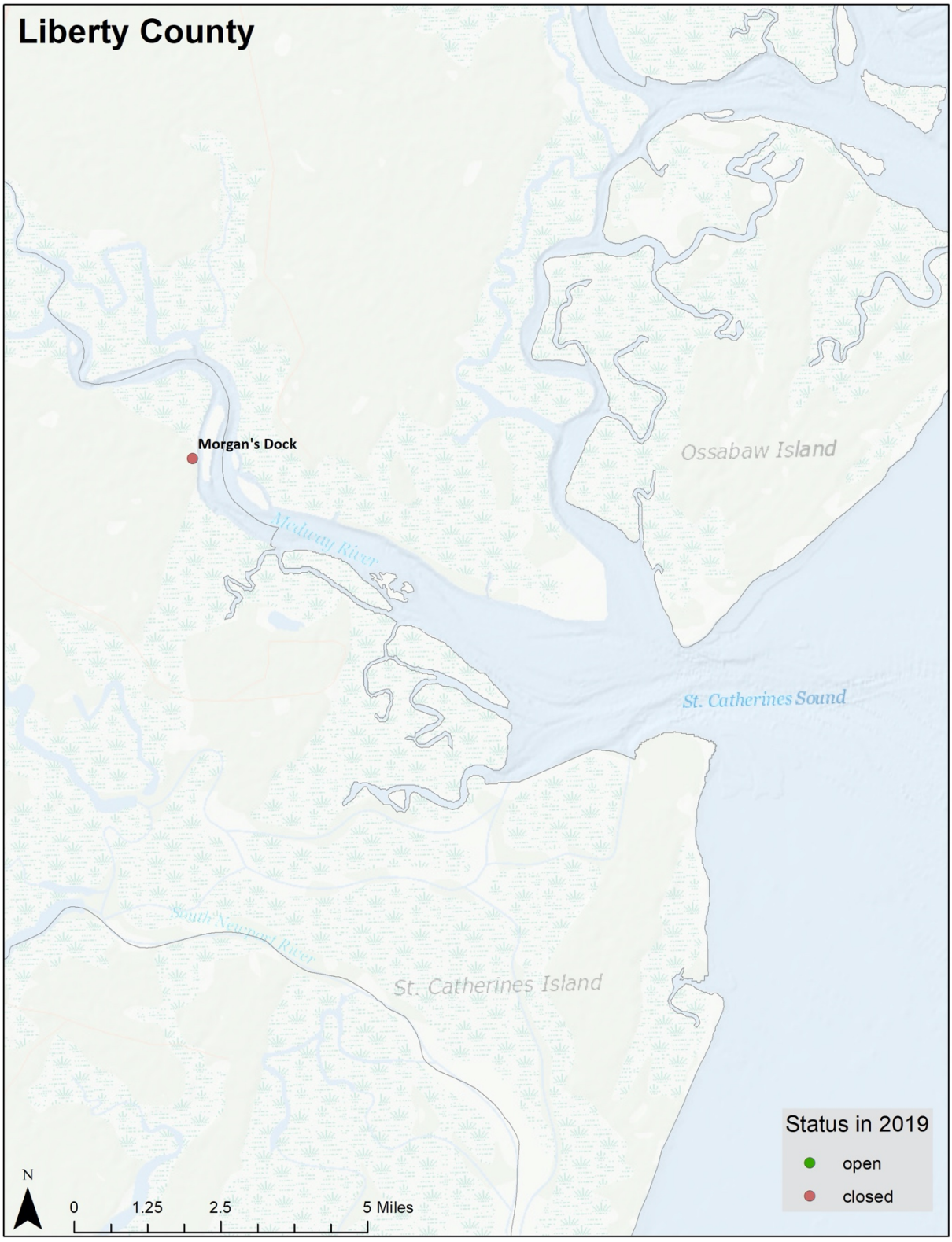
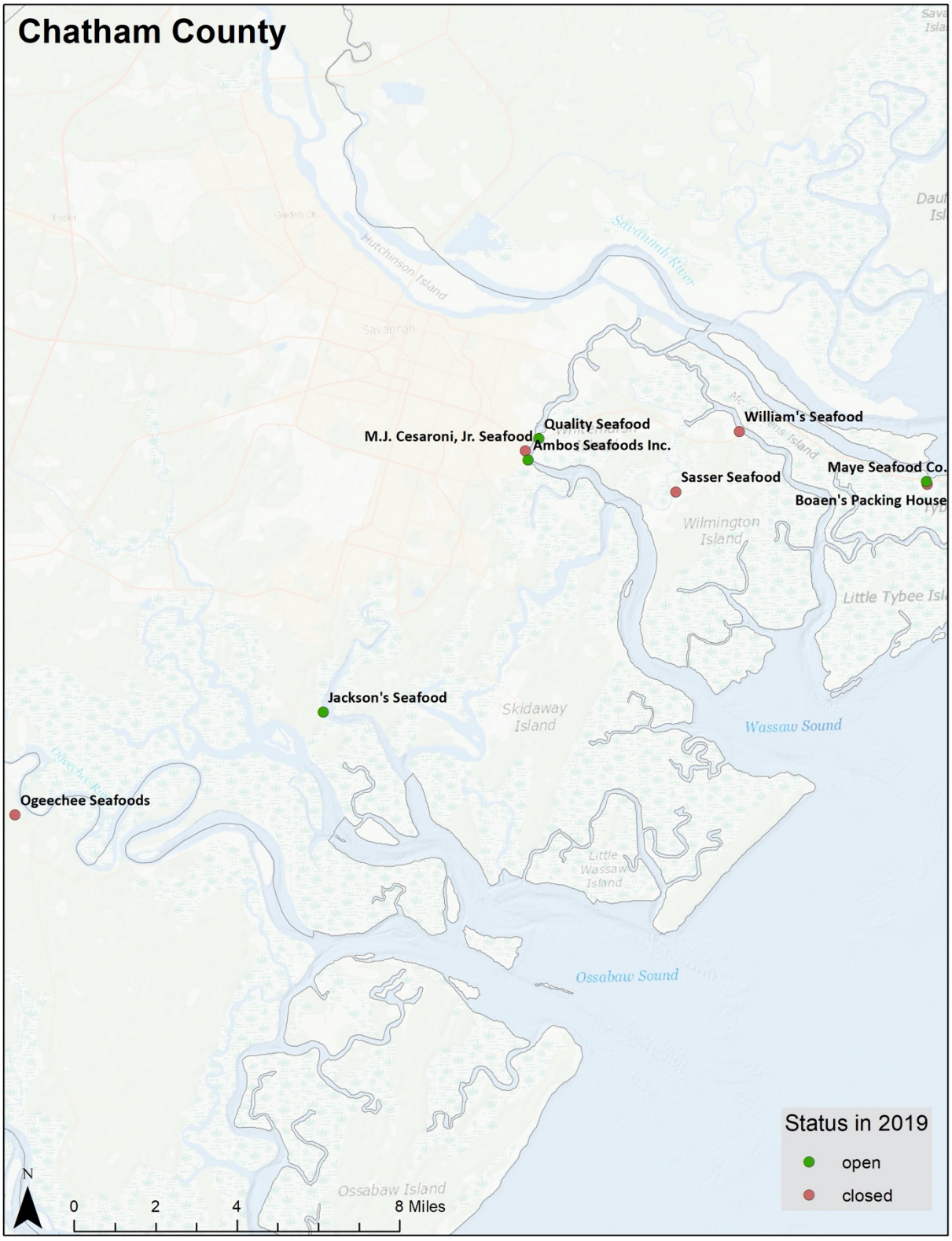
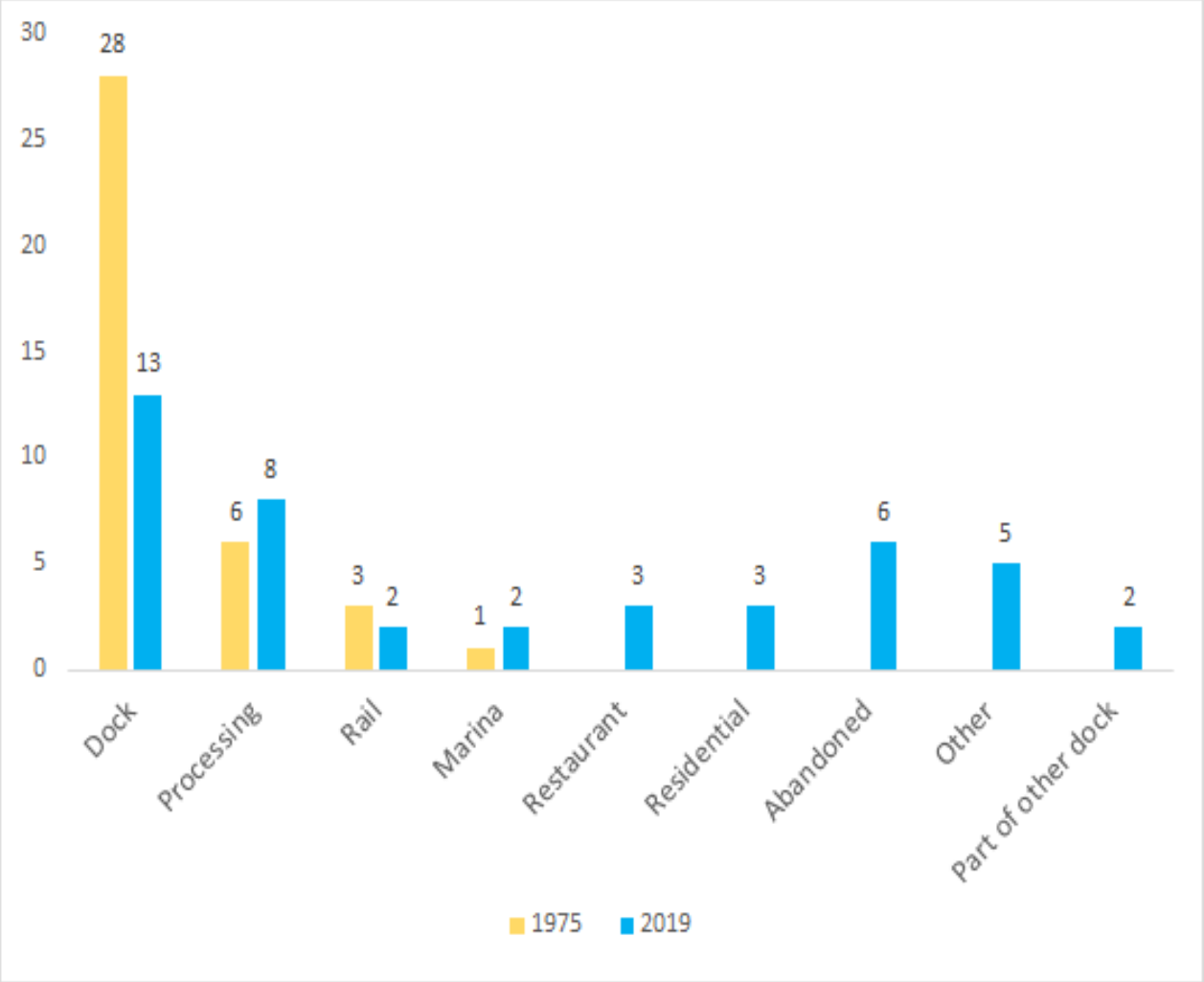


Figure 8: Chatham County



This analysis shows that of the 34 docks open in 1975 13 (or 35%) are open today. As would be expected, use of these sites has changed significantly over time, as is summarized in Figure 4, below. Historic and current uses were coded as dock, processor, marine rail, and marina (sites coded more than one use as appropriate)for 1975 and dock, processor, marine rail, marina, restaurant, residential, abandoned, wholesale, retail, part of other dock and other (sites coded more than one use as appropriate) for 2019. Figure 9, below, shows the shift in infrastructure use with the number of docks decreasing and processing facilities increasing slightly, with the majority of docks now also having processing capacity. When combined with a few docks that have become part of other still functioning facilities, this suggests the industry has experienced a large degree of consolidation. Marine rail capacity has also reduced (probably more than estimated since Nix et al. did not document this infrastructure). Among infrastructure no longer in use for docks, the most frequent category is abandoned followed by restaurant, retail, and the catch-all category of "other" This suggests that while some infrastructure is converted to different uses, there is also true loss of broader social and economic productivity when facilities are simply lost.

Figure 9: Dock infrastructure change 1975 to 2019



In discussions with industry, multiple hypotheses emerged to explain dock closures. The two dominant ones were distance to legally fishable waters (essentially closure of the sounds to shrimp trawling made some docks economically uncompetitive); and that docks which were close to the I-95 corridor (which opened in Georgia in 1977) gained a competitive advantage. A chi-square test comparing observed and expected open and closed docks and their status of nearer to I-95 or fishable waters showed no statistically significant difference between the categories ($P = 0.46$) suggesting that neither explanation is likely to explain the pattern of dock closures. Instead, it is more likely to be an exogenous influence, such as the overall decrease in the shrimping industry due to the competition from imports.

b. Current Distribution of Fishing Infrastructure

In addition to mapping changes over time, this project also analyzed where fishing industry infrastructure is presently located and its uses. This analysis began with the open docks identified in the Nix et al (1975) study, then expanded based on Sea Grant personnel expertise and observation. It is designed to capture a broader view of the seafood industry including: docks, processing, rail, marina, restaurant, residential (conversion from 1975 and included in newly identified sites), wholesale, part of other dock, retail, and other. This analysis identified 26 facilities, which are described in figures 10-16. These are preliminary maps (marked "DRAFT"), please do not distribute without permission of research team.

Figure 10: Seafood Infrastructure open in Georgia 2019

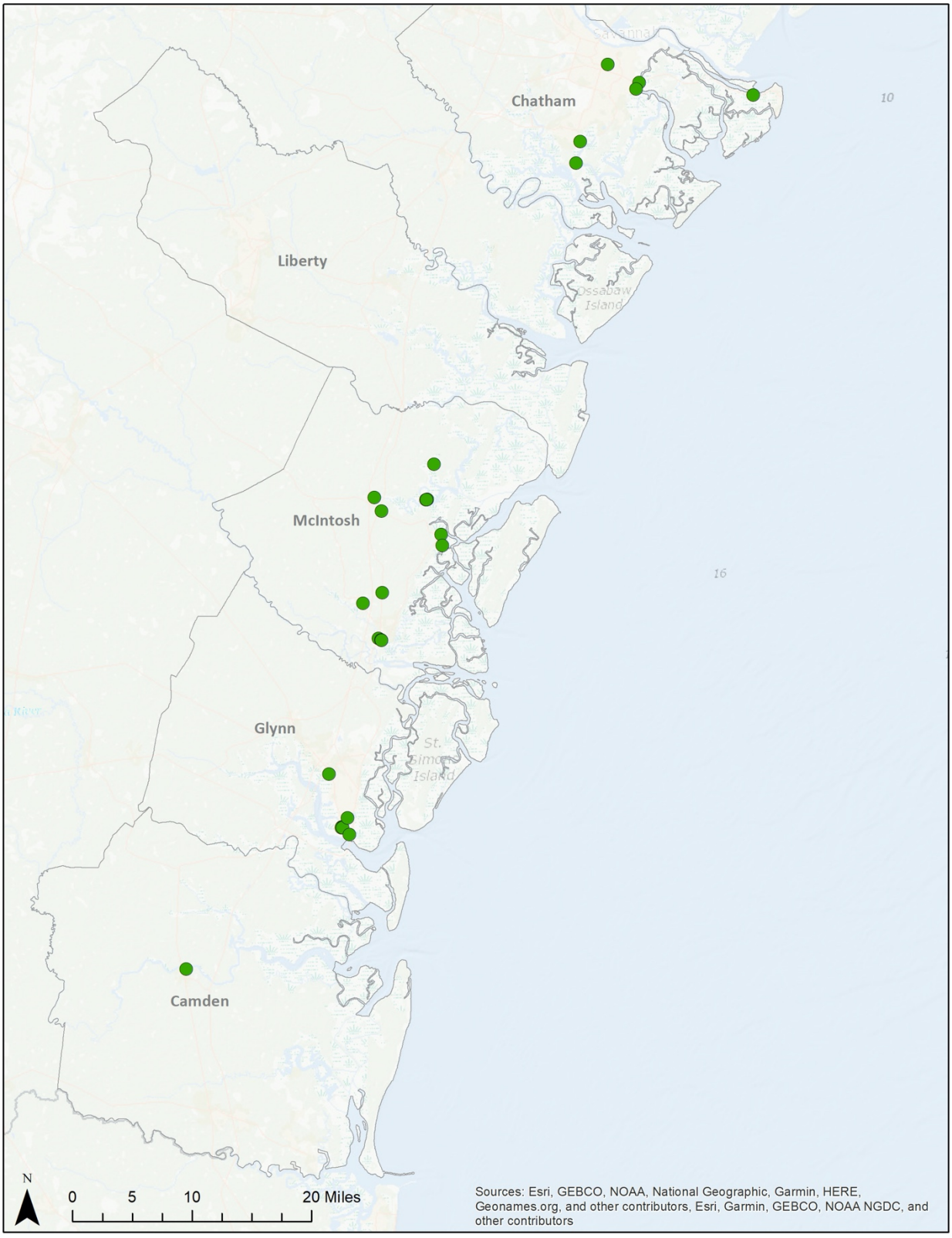


Figure 11: Glynn and Camden Counties: Infrastructure open in 2019

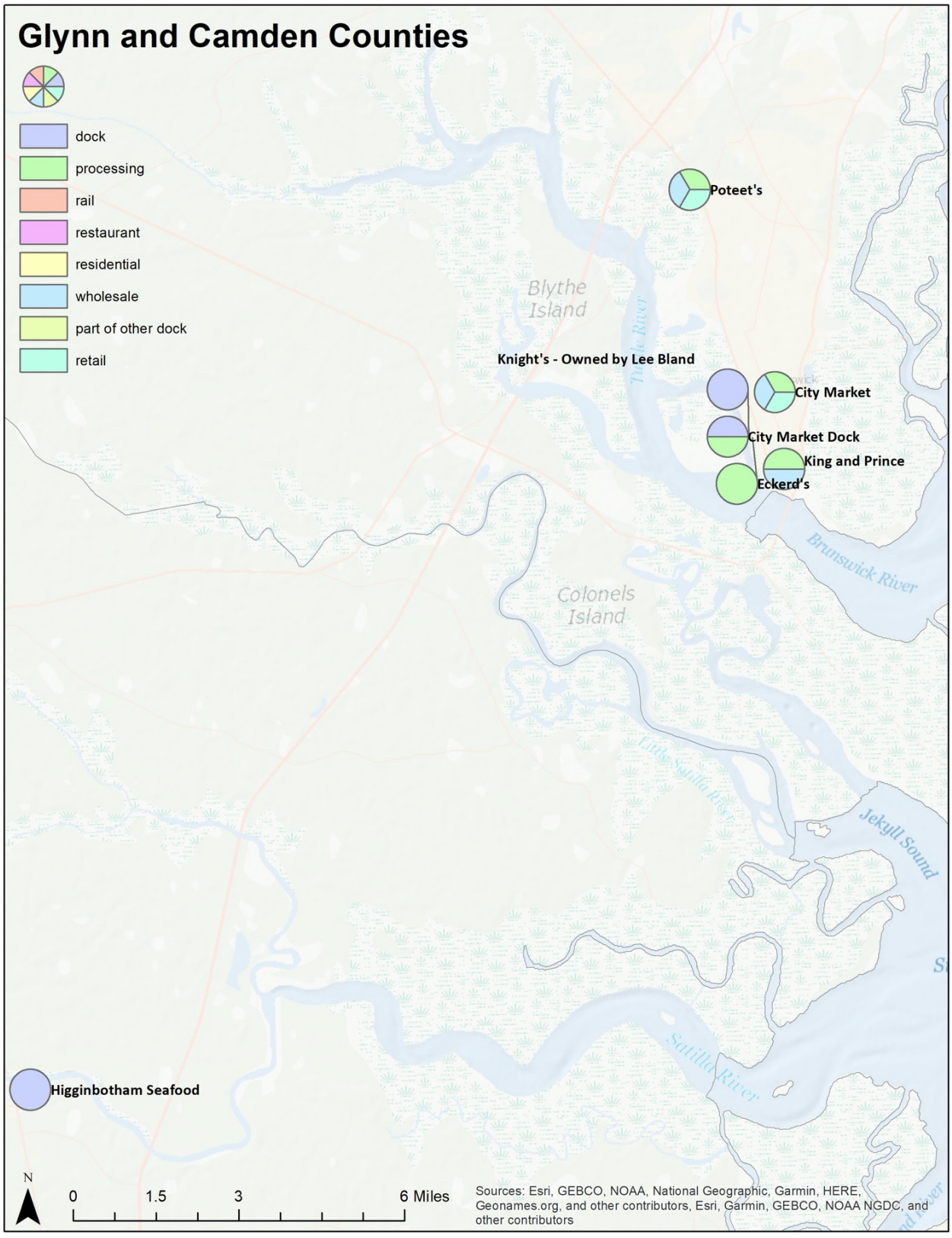


Figure 12: McIntosh County: Infrastructure open in 2019

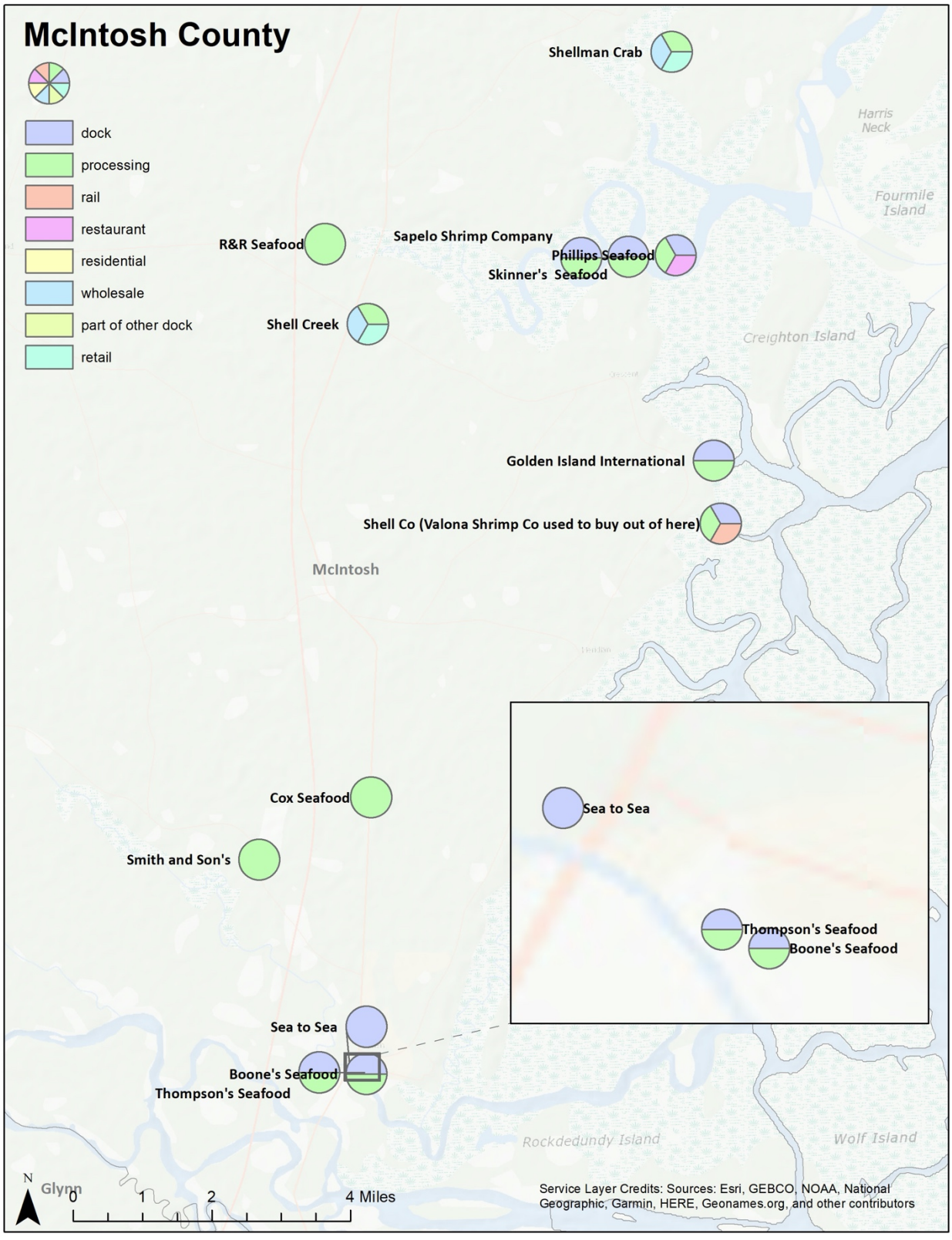
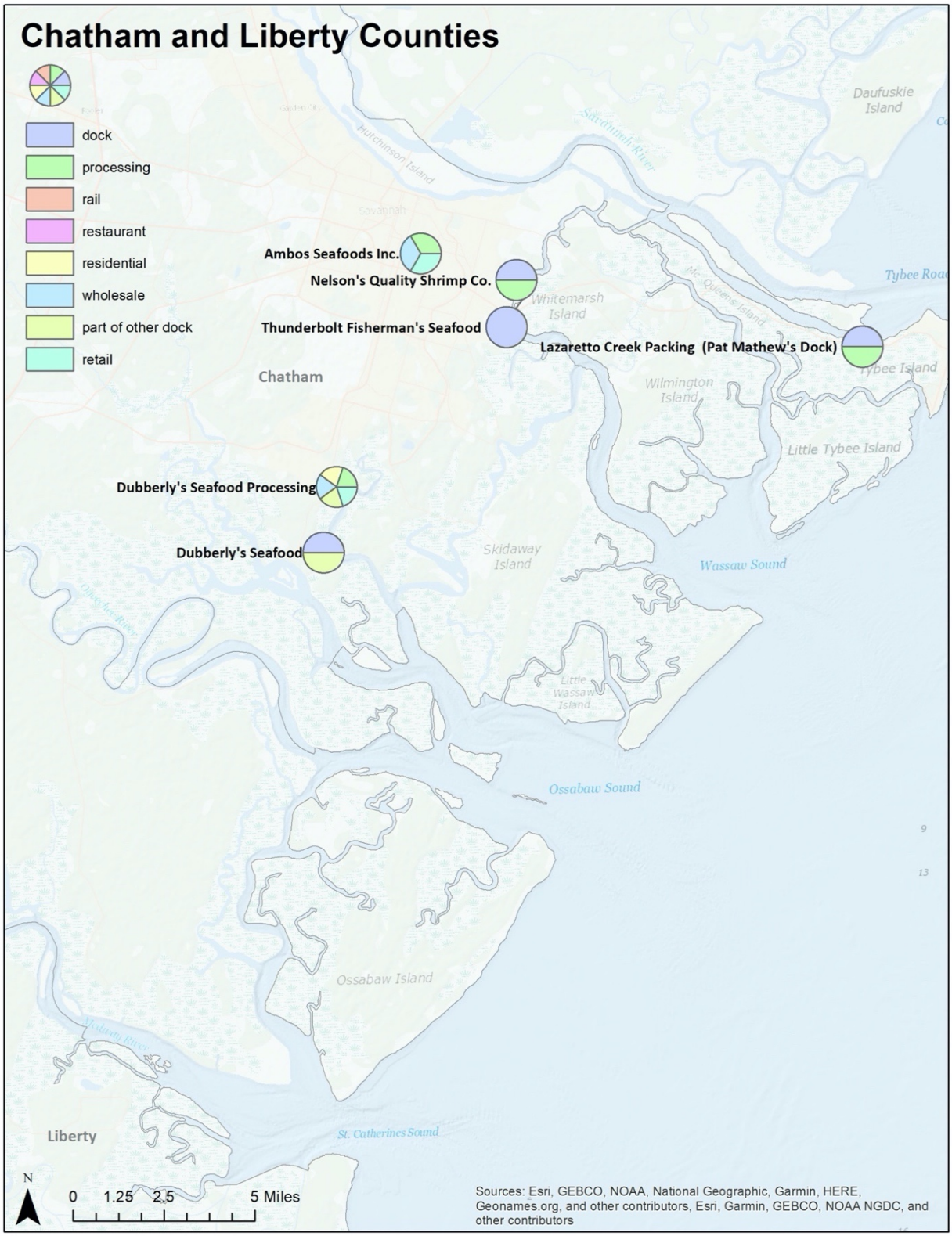


Figure 13: Chatham and Liberty Counties: Facilities open in 2019



7. Industry Sustainability: Current and long-term challenges to the industry's sustainability are impacted by the broad categories described below.

a. Impacts of Management

Surprisingly, among both crabbers and shrimpers there was a desire for stricter regulations and more stringent enforcement of the existing regulations. Crabbers utilize a body size measurement across the crabs body, from point to point, to determine if the crab is a legal size to keep. One crabber explained that this was a faulty measurement, and that often small crabs had long points that erroneously classified them as large and mature enough to harvest. He argued that true body size measurements would prevent overexploitation of this stock. Additionally, several crabbers spoke vehemently against what they perceived to be lenient softshell crab regulations. Coming from multi-generational crabbing families, they explained that they had foreseen the problematic nature of intensive softshell harvest, as it pulls fertile females from the ecosystem before they are able to reproduce. One explained that when DNR was proposing to open softshell harvest, their reaction was "if you start with this you're gonna kill the industry." Another crabber agreed, "If that would not have happened my feeling is that all of us would've been crabbing right now." They argue that they are seeing lower quantities of blue crab in the water, and blame softshell regulations in part for this, saying that too many are being harvested before they can successfully reproduce.

State waters in Georgia are closed for shrimping each year, generally in a period somewhere around January to June. DNR relies on information about the size and location of the shrimp to make sure they have already spawned for the year, to determine when to open state waters for shrimping. However, many shrimpers feel that these state waters are often opened too soon, which negatively impacts the shrimp biomass for the rest of the season. One shrimper would prefer DNR "leave the season closed until July 1st and allow the brownies to grow to the size they're going to grow to, and then not get any bigger. And then open the beaches and we've asked them to do that, I mean because that would be better for us. We would have more roe shrimp spawn, you would have more spawnings that have spawned then get back into the estuaries and have a better chance of a better fall [crop of shrimp]."

b. Enforcement

Shrimpers would like to see greater involvement of enforcement in the shrimp fishery. They do not think DNR checks out-of-state boats as closely as local boats, explaining "they need to watch the beaches more, don't let 'em steal, and they need to check out of town boats for they're draggin' out illegal weapons," meaning nets that are not compliant with regulations for state waters. They call this fishing along the state-federal water border and ducking into state waters "stealing shrimp" because several shrimpers assert that they are not using TEDs, and are catching shrimp from state waters while state waters are closed. Furthermore, they would prefer that shrimp that are caught in Georgia waters are counted in Georgia's landings data, and would like to see the penalty for trawling in closed state waters intensified to more closely resemble penalties in neighboring states—as one shrimper explained, enforcement in North and South Carolina and Florida will confiscate all gear from vessels violating this closure, but penalties are much lighter in Georgia. One participant described his friend who was caught trawling in

restricted state waters, and he was disgusted with the penalty imposed by DNR: “It says it’s fifty-five hundred dollars you get caught... Shit they catch him and hell they ain’t but a thousand or something dollars.”

c. Foreign competition

Shrimp produced in other countries with less stringent environmental and employment guidelines was a problem consistently raised by the participants across the interviews. One person explained what they perceived to be the start of the problem: “back in the 80s when they started letting all that foreign shrimp come in, that's why shrimpers cannot work for as cheap as it is...We cannot compete. They can't compete.” This topic repeatedly emerged, with statements such as “I guess with the imports have been the biggest part [of the problem]...I would say that the imports hurt us” and even the recommendation that the government “shut down the imported shrimp. That would do wonders for the shrimping in the state of Georgia.”

Many explained that by purchasing cheaper imported shrimp, consumers were jeopardizing the future of the fishing industry, explaining “It's not just the fish you're buying guys, and think about it, yes, it's expensive. But guess what? It's actually artificially low, the price of seafood, because they don't pay any of those men on those slave ships. So, ...think about this way, you're supporting American fishermen. If you don't want to do that, you keep buying from Walmart, and then there won't be any more fishermen.” We were frequently told that many people who haven’t eaten fresh caught wild shrimp simply didn’t perceive the extreme quality difference in the product, and that “People don’t know what they eatin’-its not seafood really! That pond shrimp they ain’t.” One person proposed that the best governmental support would be in “testing the imports as they come in, ...the biggest thing they can do is catch the imports that keep coming in, have them being tested for all of the chemicals. I mean when they do that they see that they’ve got the chemicals and...whether they ship them back or make them throw it away, I mean that helps us” Participants hoped that eliminating some of this inexpensive imported product would ensure a stronger consumer demand for wild Georgia seafood.

d. Changing ecosystem

Over the seven years in which this team has conducted research in fishing communities of Georgia, the topic of climate change, or global warming has arisen naturally. Community members have predominantly responded in ways that indicate their doubt of the severity or even existence of this phenomenon. However, during the course of this project, different opinions began to emerge. New perspectives were volunteered during the November 2019 interviews, with several master shellfish pickers and crabbers suggesting that they are seeing a difference in the weather and seafood patterns in their daily lives. These sentiments are represented by the response of one participant to the researcher question: “We hear a lot about climate change, do you think that’s happening down here that you see? Is the climate changing?” and the crabber’s immediate response of an emphatic “No doubt.” Comments like the following were heard: “some people don't believe it, I think it's true. I think we have climate change. I do. I think sea levels are rising and I think there's climate change. I think it's hotter. I think it *is* hotter.”

The change is being seen in the oyster fishery, as one producer explained, ““I noticed our [oyster] season was getting shorter. So they open it October 1, that doesn't mean we're going to be out there. We usually don't even start picking this early because of the temperature of the

water ...and they're not fat enough...so it's normally a nine month season, but there's been times it's been so warm that we've only picked for six months."

Shrimpers have noticed a change in the shrimp biomass, noting that "we've seen more storms in the last two years… and that storm ... definitely changed our shrimpin'." Another mentioned changing ocean temperature, saying "The water, you know, being so warm? I don't know if that's that global warming or whatever it is, but its been a lot of shrimp caught here this year."

One oysterman explained that when he was a child "we went in the river when there was ice on the boat. Back then it was getting real cold ...and you had to go and break the ice up in the boat and the water would be in the boat. We sitting up there freezing, going down the river to pick oysters." He elaborated "We used to walk ... the door and it would be so cold that the ground would be crunchy.." Another reminiscent that "Back in the old days it used to get colder earlier. It used to get a little chilly in August back in the days. In September you get your first cold snap. Weather has a lot do to with it. We have a lot of warm weather now. Oysters they are in the mud and for some reason when daddy, he said "when you get that cold … you'll see more oysters". Weather has to do with a lot of things."

When we asked interview participants "Do you think it's not as cold now as it was?" one oysterman answered immediately: "No. It's not at all. It has changed. ...That's something I wanted to bring up too. When you're dealing with science, climate change has a lot to do with the fishing industry." He went on to explain the ways his family, who have crabbed and oystered for four generations, used the seasonal weather changes to guide their seafood harvest: "I remember a time when ...we knew when the crab was gonna pick up. We know the certain time of year when we'd start even seeing crabs. When they're gonna mature. We know we're gonna have the heavy run of female crabs. We know when we're gonna have the egg crabs...Now crabbing is in the wintertime. You have mild winters, so the crabs don't go nowhere and these guys now catching crabs in the wintertime like how we used to catch them in the summer time...It's changed...It has a lot to do with weather...Climate change has a lot to do with it...Oyster season supposed to start in September but now it starts in October. Late October." As another individual remarked: "It used to be a good industry but it's so expensive now and weather changes so much. It costs you a lot."

Another explained "At one time you could gauge everything because of the seasons and the months. In September you're gonna a heavy run of silky [softshell] crabs. You don't see that anymore

Participants also mentioned changes to the local environments unrelated to global climate change, explaining that many of these ecosystem changes have "…to do with salinity of the water and rain and whatnot. A lot of these swamps have been drained back in the 80's. When they wanted to plant all these pine trees they drained a lot of this lower land and that's what they did. At the time I don't think anyone really knew exactly how important them swamps was...we didn't understand what we know now. And they drained them, they drained a lot of the crab planting trees, and I guess you have to have trees too, but it's hurt us. Things that used to trickle off freshwater to us over the year that was loaded up ... It's been a lot of things changed."

Ultimately both crabbers and shellfish producers connected changing weather to changing health of the species biomass, as this following crabber explained: “in the past three years I’ve been on Blackbeard Beach in January. I mean come on, it's seventy-five degrees in January, that should tell you something. I definitely believe in climate change, I think it’s overexaggerated in some areas, but if you don’t over exaggerate, how’re you going to get people to react to it? ...But yes you definitely see it. Just temperature wise and the way things move, like peelers. You used to not even catch a peeler crab the ones we shed for softshell and juvenile females, virgin females. You used to not catch until late, late March to middle of April. You know usually around middle of April we’d start shedding crabs. The past two years we’ve been shedding crabs in February. So something’s changed.” He elaborated that softshell crab season used to consist of a very busy and active two to three week period, and explained “now it’s a constant trickle and it lasts for like two months. It’s like the crabbers that used to bring two or three thousand? Now it’s like a constant five hundred, eight hundred. It lasts longer and it keeps us from shipping so many softshell that they cut the price way down, but it’s not right. I know because my whole life doing this, it’s not right”

Other participants concurred that those changes in the species were widespread, as this crabber explained: “Everything that lived on the bottom-- we used to have what we called a ‘hard-head cap’ and you don’t see those anymore. They’re gone. Starfish, gone. Seahorses, gone. You don’t see them anymore. The bottom’s no good. You used to be sick with those catfish when I was a kid, try to catch anything and it was just catfish. I mean you’d go on the boat crabbing or something and you’d have a box of those catfish to re-bait your male crab traps with it every day. And now you don’t even see one...Certain species are just gone, I mean just disappeared...like that little catfish? God, there were thousands of them and you don’t see one anymore.” Similarly, an oysterman explained “the things that lived on the bottom aren’t there anymore. Places that you used to catch crabs you don’t catch crabs anymore...a lot has changed. I mean oysters, we used to produce huge single oysters here, beautiful oysters, and now it’s all clustered junk.”

Of course, alternative viewpoints were also expressed. One shellfish picker explained that in “February of ‘74...Time Magazine came out with their global cooling edition, ‘we’re all gonna freeze to death in 30 or 40 years.’ ...It was a big deal back then. Hysteria about that died down, and then next thing we know it’s global warming, and then it’s climate change, and then it’s whatever else. They’re still beating that dead horse...it's not been proven, probably never will be proven in my lifetime, and if the sea level out there rises, well it’s up to the bottom of [the dock] today, tomorrow it won’t be.” Another industry member explained “the way I look at it, there's so many people manipulating the world right now. For example, Saudi Arabia and all the money they have over there. How many islands have they built off there? Where does that water go on that water? When ...anybody that sticks a water bottle down into a pot of water or pouring into it, what happens, right? The water table rises. So I want everybody to stop talking about the ice glaciers meltdown. I'm sure they are. But if Joe Blow’s over here doing this over here and putting a whole new island in, that water had to be dispersed somewhere. Yeah, it's dispersed across the world. And if enough people were out there and manipulating it, guess what? They're going to flood somebody at some point in time.” Thus, disputing opinions about current and future climate and weather events are common, with no prevalent community viewpoint coalescing around any particular scientific theories.

Similarly, responses from the questionnaire indicated a concern about the changing ecosystem; however, there was disagreement over the source of the climate and weather pattern changes. When asked if "Climate and weather patterns have changed in the past 20 years" 68.4% "Somewhat Agree" or "Strongly Agree" with the statement (Table 42). However when asked whether "Climate and weather pattern changes are natural" 77.1% "Somewhat Agree" or "Strongly Agree" (Table 43). In contrast, when asked whether "Climate and weather pattern changes are man-made" only 27.3% "Somewhat Agree" or "Strongly Agree" while 42.4% "Somewhat Disagree" or "Strongly Disagree" (Table 44). There was consensus on the question "The ocean is large and cannot be overfished" where 71.1% "Strongly Disagree" or "Somewhat Disagree" with the statement, while 25% "Neither Agree nor Disagree", and only 13.9% "Strongly agree" or "Somewhat agree" with the statement (Table 41). When asked to respond to the statement that "I work hard not to harm my fishery", 94.6% of respondents chose "Strongly agree" and the remaining 5.4% chose "Somewhat agree" (Table 39).

8. Workforce Development Opportunities: We reviewed existing models of food production workforce development programs, and discuss their potential application in Georgia below.

   a. *Training Programs:* These organizations below provide training meant to improve the fishing communities in their areas. Each focuses on future producer education as the primary program goal.

Extreme Gloucester Fishing

The Extreme Gloucester Fishing training program was created by Maine Fisherman, Jo Sanfillppo who perceived a lack of capable crew force in his area, and decided to remedy the problem. The vocational training program also assists with job placement for his graduates. He has created 40 learning modules that take 830 hours of in class time to complete, with topics ranging from net mending to financial planning. For more information visit www.extremegloucesterfishing.com

Farmer Veteran Coalition

The Farmer Veteran Coalition cultivates a new generation of farmers and food leaders and develops viable employment and meaningful careers through the collaboration of the farming and military communities. Training programs include hands-on and classroom education and provide certifications for specific skills. This is not a seafood focus program, but provides a useful model for apprenticeships that could be transferable to the seafood industry. For more information, visit https://farmvetco.org/programs/education/.

North Carolina Sea Grant: Coast Watch

The North Carolina Sea Grant: Coast Watch hosts Fish Camp, which is part of the Next Generation Coastal Communities project, a Sea Grant-funded research effort to assess the extent to which North Carolina fishing communities are experiencing changes in the workforce and in leadership. Commercial fishers in the NC area are invited to "Fish Camp", a small, two-day, regional meeting to learn networking, skill-building, leadership, and communication skills. One of Fish Camp's goals has been to engage participants in conversations about why fishermen and

fishing matter. For more information, visit https://ncseagrant.ncsu.edu/coastwatch/previous-issues/2018-2/spring-2018/welcome-to-fish-camp/.

Louisiana Fisheries Forward

The Louisiana Fisheries Forward is a voluntary education and training program Louisiana Department of Wildlife and Fisheries and Louisiana Sea Grant College Program at LSU. Their website offers educational resources for commercial fishermen, dealers & processors, business management, and industry information. They also have fact sheets and resources for crabbers, shrimpers, oyster harvesters, and finfish fishermen. For more information, visit https://www.lafisheriesforward.org/.

b. *Region Specific*: While each of the following training programs is region specific, they all offer models for successful fisher training that could be modified to utilize in Georgia, should the need arise.

Caribbean Fisheries Training Program

Caribbean Fisheries offers four training topics in their program: hazard vulnerability and risk assessment, community-based fisheries co-management, data collection and analysis methods, and learning GIS. Their program provides an extended training opportunity to Gulf and Caribbean-based fisheries professionals to promote greater collaboration, synergy, and knowledge sharing among organizations that manage and promote the sustainability of shared Gulf of Mexico and Caribbean fishery resources. For more information, visit https://www.flseagrant.org/fisheries/caribbean/training-program/.

United Nations University Fisheries Training Programme

The United Nations University Fisheries Training Programme offers a 6-month training course in Iceland that runs from September to February that is divided into three parts; the introductory course, the specialization line, and the individual research project. The aim of the course is to strengthen the professional capacity of UNU-FTP fellows to actively contribute to the work done in their organizations and to recognize development potential in their home countries. For more information, visit http://www.unuftp.is/en.

New Zealand Primary ITO

The New Zealand Primary ITO offers a variety of courses that works with individuals, businesses, industries, and communities to help them develop and maintain national standards for more than 250 qualifications across the agriculture, horticulture, food processing, seafood, equine and sports turf industries. New Zealand Primary ITO also provides educational resources for farming, fishing, horticulture, and processing industries, as well as providing industry consulting and advocacy. For more information, visit https://www.primaryito.ac.nz/about-us/.

c. *Aquaculture:* The following programs are intended to improve skills and career development in aquaculture. While Georgia currently presents a unique set of circumstances for aquaculture intensification, the information available through these resources may prove useful in the future as the industry develops in the state.

University of St. Andrews

The University of St. Andrews' training program offers various certificates for undergraduate and postgraduate students that assist them to advance their career development in aquaculture. Postgraduate diplomas require 120 credits that can be gained from taught modules over a two year period, consisting of a series of compulsory core modules and a choice of optional modules that are matched to students' specific interests. For more information, visit https://thefishsite.com/learn.

Food and Agriculture Organization of the United Nations: Fisheries and Aquaculture Department
The Food and Agriculture Organization of the United Nations has developed a large number of manuals and software programs for fisheries monitoring and analyses. The modules they provide range from catch assessment to inland fisheries. For more information, visit http://www.fao.org/fishery/fishcode-stf/training/en

School of Fisheries, Aquaculture and Aquatic Sciences at Auburn
The School of Fisheries, Aquaculture and Aquatic Sciences at Auburn host a wide range of courses that can range in duration from 1-3 weeks (short-term) or from 4-16 weeks (long-term), and are conducted at Auburn University or in host countries where suitable facilities and housing arrangements exist. Course topics range from genetics to pond design and reconstruction. For more information, visit https://sfaas.auburn.edu/programs-of-study/training-programs-2/.

d. *Fisheries Management:* While these programs are intended to enhance the background and education of individuals interested in participating in management and regulation, this type of training information is also useful to modern fishers interested in staying in compliance and abreast of current and future regulatory paths.

Alaska Fisheries Technology Program
The University of Alaska Southeast perceived a growing need for fisheries technicians and fisheries biologics, and developed the Alaska Fisheries Technology Program to meet this growing need. Run by a collaborative of the Sitka Campus and various industry members and regulatory agencies, the program consists of lecture classes online or at the Sitka campus, lab courses, and internships, with scholarships, work experience and training available. This program primarily benefits its students and their future employers who work with Alaska fisheries. For more information, see http://www.uas.alaska.edu/career_ed/fisheries/index.html#tab2.

Hadlow College
Hadlow College emphasizes the need for courses in fisheries management. Their team specializes in various aspects of fisheries management, including construction, marine, fish health and disease, angling, fish farming, and aquatics specialists. Students offered this course will develop and enhance a range of skills relating to fisheries management. They offer part-time and full-time courses. For more information, visit https://www.hadlow.ac.uk/courses/fisheries-management.

U.S. Fish & Wildlife Service: Conservation Training Center

The U.S. Fish & Wildlife Service's Conservation Training Center works in collaboration with various entities related to the U.S. Fish & Wildlife service. The training programs they provide include specialized skill development pathways. They provide courses that give resources in audio, video, still image, documents, and reference materials. For more information, visit https://nctc.fws.gov/courses/catalog/.

Essential Fisheries Field Skills Certificate

The Essential Fisheries Field Skills Certificate is a two week program that is offered by the Natural Resources Extension Program. This training program is designed to provide relevant, in-demand training to individuals seeking to acquire or upgrade fisheries field skills. The graduates of this program may then become certified technicians, ideally suited for employment conducting fish habitat inventory and assessment. For more information, visit https://scitech.viu.ca/natural-resource-extension/essential-fisheries-field-skills-certificate-program-0

e. Current Effort

A recent development in coastal Georgia is Commercial Fisheries training offered at McIntosh Academy in Darien, Georgia (https://sites.google.com/mcintosh.k12.ga.us/rtodd/commercial-fisheries?authuser=0). The academy has long offered a forestry program but recognizing the interest in fishing in the region, and the importance of commercial fishing to many students whose families had long fished, they elected to create a fisheries-focused track. Developed as a dual-enrollment program between Coastal Pines Tech and McIntosh Academy, UGA Marine Extension/Georgia Sea Grant provided technical knowledge and important contextual information to Coastal Pines as they developed program goals. The program design drew on local commercial seafood experts to determine the necessary skills to include, and it is modelled after the forestry careers program. The curriculum concentrates on professional skills, safety training, navigational competency, radio communication, and safe seafood handling, through two courses:

1. Commercial Fisheries: Safety, Watch-keeping, and Healthy Oceans
2. Fishing Management and Fisheries Science

The program intends future expansion with the integration of Drill Conductor Safety at Sea skills, and a concentration on oyster aquaculture skills.

Local fishing community responses to this program are largely positive, although one participant offered the critique "you cannot teach-- I don't know what they can even *teach* in commercial fishing class! I mean you can't teach crabbing in a classroom!" Unfortunately, soon after the program started, global pandemic COVID-19 affected schools in Georgia, so it has been less active during the 2020-21 school year than was anticipated.

9. Future directions

a. Greying of the fleet

Like many fisheries workforces across the United States, the average age of fishers in Georgia

seems to be increasing. Fishers report that they see an aging labor force, explaining " a lot of them are older cats. A lot of them are 60 and 70..." while another more optimistically assessed "You know you have fifty, sixty-year-old guys." Another fisher argued that "They're in their 80s! They're in their 80s for God's sake. We're all old. All of us are aging out, and there's nobody to take their place. They're getting tired. They only keep doing it because they love it. They've been doing it their whole lives, but there's nobody" to take over in the next generation. Drawing on their knowledge of the small rural counties that are home to these fishing communities in which everyone knows-- or is at least aware of-- most everyone else, they ask "who's the last 40 year old crabber you sat down with? Probably never." The youngest shrimper we have interviewed was well aware of his unique age status in the profession. When we asked about other young fishers, he replied that there are "not too many. I mean, there's strikers, younger ones, but I've never met anybody else running a boat even close to my age. The other youngest dude I've ever met was [name removed], and he's 30 something."

When asked about younger fishers entering the profession, one shrimper explained there's a lack of interest: "You can't get a volunteer. I've had teenagers on the water. I tried to do an apprenticeship program. Here guys, here's your little acre, half an acre of clam farm right here. I'll start you out" but the apprentices quickly leave after they experience the back-breaking work in the extreme Georgia weather. Fishers are disappointed by this demographic and industry shift, saying "I hate it. I hate it for these young people around here whose daddy did it. Granddaddy did it. They thought they were gonna do it. But now they're working at a tire store somewhere. And they – you know, what? They would've been great at it. I'm sure." Other interview subjects think this optimistic assessment of the younger generation's potential is misplaced, explaining "We're right on the coast, I know that, but we have no docks that are fishing anymore. Captain [name removed] passed away. And once they die, they're gone. Their kids aren't going to do it, they got their inheritance...they're not shrimping."

When asked, "Physically, how many years can you continue working in the fishery", the average response across all three fisheries was 16.12 years (Table 71). There was a statistically significant difference at the 5% level between shrimp and finfish respondents ($p < .001$ using the Kruskal-Wallis test) . Shrimp respondents stated that they could work an additional 8.77 years on average, while finfish respondents reported 22.78 years. The average age of the shrimp respondents was 57.50 while the average age of the finfish respondents was 53 (Table 73). Overall, the average age across all fisheries was 55.67 years. In terms of how long shrimp respondents worked in the commercial fishery, the average number of years was 32.57 while the average was 22.40 for finfish responses (Table 71). Overall, the average number of years spent commercially fishing was 29.12 years.

b. Aging of the boats

Fishing community members explain that historically, shrimping boats of the mid to late twentieth century were wooden boats that averaged around 50-70 feet in length. Many of those boats are still in operation, but as one fisher described them, "the smaller boats, the local boats, so many of them have either gotten old, died, and got out of it, or just got used to that. I mean they've basically get to the stage where they just kind of retire and give it up." These smaller boats are now being forced to compete with larger, newer, out-of-state vessels that are more

resilient to rougher waters further offshore, and can stay out longer. One shrimper explained that "you do have smaller, local boats, but there's more of the big boats and so they're seeing more of them because there's fewer of the others. It's to North Carolina and up, your fleet owners, they have the big boats, so of course wherever the shrimp is the best is where they're going to be. It's the same way as it's been forever, but before you have lots of smaller boats" which were fishing simultaneously. However, to many observers, the larger vessels now seem to outnumber the smaller, local vessels.

Shrimpers note that larger vessels have more options about how they engage with the fishery each season, and this influences the time commitment that they invest in each trip. One explained that more active shrimpers, "the ones that do it full time. got bigger boats and they have to travel to Carolina, to Florida, to here, South Carolina." This ability to range further from the calmer inshore waters also allows them to conserve fuel by avoiding a daily trip to shore to offload. They explain of the larger vessels "fuel is high so if you run farther you've got to stay another day or two longer to overcome your expense, and some of them boats, I guess you could say, are not equipped to do so. I mean they would have to change their style of fishing in order to do that. Or improve their boats."

Interestingly, despite this qualitative data indicating that age of vessels is of significance, the average age of the boat across all three fisheries was 18.68 years (Table 71). There was no statistical significance in the age of the boats across the fisheries.

Dissemination of Project Results:

A key focus of this project from its inception has been its collaborative nature and dedication to collaborating with local stakeholders. COVID-19 impacted these originally planned components of the project, but we have developed alternate outreach efforts to disseminate the results widely despite the lack of travel opportunities in 2020-21. Each component of the project is culturally appropriate and we anticipate it will be well-received by local populations.

1. **Open Access Presentation**
   Research findings have been summarized in a brief recorded presentation available to stakeholders, researchers, and other interested parties. This presentation is available at: WorkingWaterfronts.org and we hope to see it posted to Georgia Sea Grant and UGA Marine Extensions pages as well.

2. **SEP presentation**
   The researchers will present the project and key findings to the SocioEconomic Panel of the South Atlantic Fishery Management Council in the spring of 2021.

3. **Dock Stories hosted on Georgia Coastal Atlas**
   Descriptions, GIS coordinates, and photographs of all currently open docks have been shared with the leadership of the Georgia Coastal Atlas, and will be uploaded to the site when they are finalized. The site can be viewed at http://georgiacoastatlas.org/index.html

4. **Personalized Dock Posters**
   We have created a personalized poster specific to the spatial, historical, and photographic traits of each active commercial fishing dock in the state. Final draft of posters

(simultaneously educational historical outreach and appreciation gift) has been provided to Sea Grant, and we are happy to assist Sea Grant in any revisions they request. These posters will then be printed onto water-resistant, fade-resistant paper (provided to the Brunswick Station), and will be distributed in person by Bryan Fluech and this team across the coast over the next few months.

5. **Infographic**
   Bryan Fluech is overseeing the extended, beyond-the-project-period outreach efforts for this project, and he and his team will craft an infographic that summarizes key project findings, in order to facilitate communication about these topics across multiple audiences.

6. **Media**
   As part of the extended, beyond-the-project-period outreach efforts for this project, Bryan Fluech and his team will solicit opportunities for the research team to extend the reach of the findings via media sources such as: via Amy Thurman @ Southern Tides magazine; NPR's show "On Second Thought;" etc.

7. **Academic Manuscripts in Progress**
   Described in detail under "Publications" below.

Key Findings:

The project incorporated six data gathering methods to address the guiding research questions. By incorporating both quantitative and qualitative methods in the study we ensured quantitative data (survey responses and historical data) could be complemented by the richness of qualitative strategies (interviews and participant observation). By using multiple methods and data sources, we increased our confidence in our development of accurate and effective research findings, further strengthened by utilizing triangulation (Yin 2008) in which combinations of multiple methods, data sources and/or interviews were used to confirm information.

Of primary importance was our dedication to collaborative work with the seafood industry. We used participatory research to emphasize the involvement of local people in the research process, because seafood industry insiders have an enhanced ability to identify key elements of problems and possible solutions (van Willigen 2002).

We have identified key issues facing the industry, and identified best practices to remedy these issues, assisted by case study analysis. These findings and recommendations are detailed below.

1. **Increased Data Clarity Would Enhance Transparency**
   Finding*:* Our research shows there are fewer active commercial seafood producers and harvesters than appear to be practicing in the DNR data. In some cases, individuals have or intend to use their permits to catch commercial quantities of seafood in order to sell it to make a profit. In other cases, individuals would like to catch more seafood than is allowable under recreational harvest, or utilize different gear than is allowed under recreational fishing regulations.

Recommendation: More nuance in data record keeping would create a better understanding of the fishing industry realities. Standardized documentation about what information is publicly available from DNR, and clarification about fisher intentions to actually commercially sell seafood would illuminate these conflicts.

2. **Upland Wetland Issues and Fishing Industry Impacts**

Finding: Changes in the local ecosystem and environment are likely impacting the seafood available to resource users. Observations by crabbers, shellfish pickers, and shrimpers about environmental impacts affecting nursery grounds in creeks and marshes are not valued or heard.

a. Specifically, this is seen in crabber concerns that draining of marshland inland to be used for pine agriculture has changed the salinity of the downstream waterways, thus reducing habitat for crabs and shrimp nurseries.
b. It is possible that the biomass of the most commercially important species have declined over the last few decades. Blue crab biomass is not actively tracked (and the last blue crab management plan was crafted in 2008). Increased harvest of soft shell crabs could be impacting the size of the subsequent crab populations.
c. Shrimpers are deeply concerned about the apparent decline in the visible quantity of the species. These concerns are not often raised publicly, as they are afraid that the sentiment may result in further restrictions upon the industry (gear restrictions, seasonal closures, or further restrictions on limited entry licenses).

Recommendation: Effort is needed to incorporate fishing industry concerns into environmental management.

a. The cultural and political perspectives of some fishing communities make them unlikely to concur with science that appears "environmental" or politically biased in any way. However, through the use of very carefully designed scientific appeals to shared common concerns about the local land, waterways, and marshes, there is the opportunity for long-term, meaningful collaboration between these local communities who spend their lives in the ecosystem and scientists at agencies and organizations who hold similar goals.
b. Since the shrimp and crab industry are financially important to the coast and their product is dependent on healthy wetlands, it is vital for the success of the industry that Georgia coastal wetlands are appropriately managed and preserved. Evidence from the Gulf of Mexico illustrates this important connection (Engle 2011).

3. **Rapid Loss of Infrastructure is Detrimental to Industry**

Finding: Infrastructure is dwindling. There are no public or municipal dock options in Georgia, thus the industry relies on privately owned docks to sustain their operations. With a decrease in privately owned dock space to support fishers, there will not be sufficient capacity to keep boats running, to keep boats stocked with ice, or to offload most of the product.

a. Deep water, waterfront property demands high property taxes that are difficult to support on the small profit margin received.

b. Across the 100 miles of coastline, there are only two remaining railways, and only one of them is able to handle larger, steel-hulled freezer boats which the industry is increasingly adopting.
c. Of the 31 docks identified in a 1975 dock survey (Nix et al, 1975), 13 are still operating, and an additional two docks are operating that were not identified or open in the initial study. This is a decline of over 50%.
d. As no discernable pattern could be identified in dock closures, it appears to not be driven by a locally based cause. Instead, dock closures appear to reflect the overall national decline of the fishing industry.

Recommendation: Local and state policy intervention should be considered to preserve infrastructure.

a. If not already current practice in urban or gentrifying areas, consider taxing active working commercial fishing docks at a lower rate than nearby residential property.
b. State and local governments may consider the provision of municipal commercial docks (including access to ice and fuel services) as a means of preserving not only industry but also local culture that attracts tourists and residents (McElroy et al. 2005).

4. **Boat Quality affects Crew Labor Force**

Finding: Older, smaller boats are not able to attract the quality of crew labor force that younger captains with larger boats who stay out longer are attracting. The volume of the product, thus crew share of the landings, has to be appealing enough to balance the required time off-shore and the intense physical labor.

Recommendation: Smaller day boats may be able to better compete on quality rather than quantity, and should be encouraged to shift to higher margin opportunities such as direct markets (Shamshak et al. 2020). Increased profits would allow them to hire a more qualified workforce.

Potential Applications and Impacts

This project addressed concerns about the sustainability of Georgia's commercial fishing industry by conducting a comprehensive census of Georgia's seafood infrastructure, including surveying and interviewing stakeholders in the industry. Through our work with the industry, we have identified key challenges to the fishing industry's sustainability. We have compared these findings with historic data to better illustrate the social and economic changes in Georgia's coastal seafood industry. This systematic data collection and analysis allow us to provide unbiased information to understand these threats. Insights from this analysis have been combined with case study results to better understand the industry's long-term workforce sustainability challenges.

We have used research methods from multiple social science disciplines (anthropology, economics, institutional policy analysis) and methodologies (interviewing, surveying, spatial). By engaging in this applied project, we have brought the innovation of integrative multi-method and multi-disciplinary analysis to a project that will benefit the Georgia coastal seafood industry

and the communities in which it is embedded. This research provides qualitative depth, complementing and updating the existing social science research literature. Our study updates quantitative information but also goes beyond the numbers to explain the dynamics of industry changes. We have provided recommendations to best address the key issues raised during this research, and implementation by the relevant stakeholders can positively impact Georgia's coastal communities and commercial fishing industry.
In addition to the applied benefits described above, this research advances the academic literature in natural resource management, fisheries economics, and policy analysis. The project increased opportunities for multiple undergraduate and graduate students at both Georgia Southern and Emory Universities to gain knowledge and experience in the science and management of watershed, coastal, and marine resources through their work on the project.

Finally, this project provides important, fine-scale baseline data for tracking future growth or shrinkage of Georgia's fishing industry and its impacts on coastal communities in the future.

Media coverage
N/A

Publications
1. "Where Did all the Shrimp Boats Go?' Changes in Commercial Fishing Docks Over 30 Years." In preparation for *Southern Spaces: A Journal About Real and Imagined Spaces and Places of the US South and their Global Connections*

2. "The Difficult Choice: Critical Relevance or Data Comparability?" In preparation for *Qualitative Research*.

3. "Perspectives on Climate Change in Georgia's Fishing Communities." In preparation for *American Anthropologist* or *Weather, Climate, and Society*.

4. "'Have You Heard About *the Dope?'* Drug Abuse in Georgia's Coastal Fishing Industry" for *Practicing Anthropology*.

Undergraduate and graduate students involved:
1. Terra Schmenger (Georgia Southern University)- Terra is the UGA MarEx/GSG sponsored graduate student and project manager. Terra organizes the day to day operations of the project, and assists Sweeney Tookes with managing the multi-university collaborations at the core of the project.
2. Erin Scooler and Julia Thomas (Georgia Southern University)- Julia and Erin are Honors Scholars who have elected to collaborate with Sweeney Tookes to gather data to support their own Senior Honors Theses. Their data will supplement that gathered by the research team.
3. Danielle Sayre (Georgia Southern University) is an Honors Scholar who is collaborating with Sweeney Tookes to gather data on health and well-being among fishing crew of Chatham County. Her data will inform this project.

4. Emilio Arias (Emory University) is an undergraduate work-study student supported by this grant and Shirley Ma, Alyssa Milton, and Henry Furman (Emory University) are undergraduate project volunteers. They have supported Yandle and Fluech in developing the database on historically recorded docks and fishouses, and are supporting development of ENVS 387. Nathan Kennedy (Emory University) is an undergraduate who provided driving and logistics support during Spring Break field work.
5. Robyn Tippins and Jake Grubb (Georgia Southern University) are graduate students in the MA in Social Sciences (MASS) program who completed the Social Network Analysis component of this project.
6. Leigha Williams (Georgia Southern University) is a graduate student in the MASS program who completed all final interview transcripts, organization of study participant database, and assisted with qualitative data analysis.
7. Undergraduate students of Yandle's course at Emory University course ENVS 387 "Coastal Georgia: Geography, History and Politics of Fishing Culture": Emilio Arias, Maya Bradford, Nadia Fradkin, Olivia Milloway, Camille Mosley, Willie Park, Medha Prakash, Ananda Woods provided significant contributions to research and gained valuable in-depth education about the Georgia coast and fishing industry.

Project partnerships: Student Traineeship (UGA Subaward SUB00001830)

Related projects: This project was built upon the insights of our earlier Sea Grant research project, where the theme of concerns for long-term industry sustainability and the difficulty of building a reliable workforce emerged from our analysis. In addition, we noted the lack of systematically gathered data about infrastructure and current socio-economic conditions. Thus, this project is a direct extension of an earlier funded Sea Grant Project.

In addition, information gained from existing, ongoing and completed projects by the research team have supported and enriched this project. These include: expansion of local markets for Georgia oysters (USDA Sustainable Agriculture Research and Education project which includes Sweeney Tookes, Yandle, & Fluech), two oral history projects with Georgia fishermen (Georgia Department of Natural Resources which includes Sweeney Tookes & Fluech, 2017-2019 and 2020-2021), a pilot study examining health and well-being among fishing crew in the Savannah River Basin (Marine Fisheries Initiative project which included Sweeney Tookes, Yandle, & Shamshak), and a sustainable seafood outreach project at Georgia Southern University (GSU Center for Sustainability funded, which included Sweeney Tookes & Fluech).

Appendix:

Fisheries Course Syllabus

Tables

Table 4:
Q1: What did you consider to be your main fishery last year?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Crab	15	37.5	37.5	37.5
	Finfish	10	25.0	25.0	62.5
	Shrimp	15	37.5	37.5	100.0
	Total	40	100.0	100.0	

Table 5:
Q2a: Did you fish for crab commercially last year?

		Did you fish for crab commercially last year?		
		No	Yes	Total
What is your main fishery?	Crab	1	13	14
	Finfish	9	0	9
	Shrimp	13	2	15
Total		23	15	38

Table 6:
Q2b: If no, when did you last fish for crab commercially?

		When did you last fish for crab commercially?				
		Never	1987	1990	2019	Total
What is your group in the fishery?	Crab	1	0	0	2	3
	Finfish	7	0	1	0	8
	Shrimp	7	1	0	0	8
Total		15	1	1	2	19

Table 7:

Q3 How many other fisheries did you work in last year?

		How many other fisheries did you work in last year?				
		0	1	2	3+	Total
What is your main fishery?	Crab	7	6	1	0	14
	Finfish	4	5	0	1	10
	Shrimp	13	2	0	0	15
Total		24	13	1	1	39

Table 8:

Q4: How many days did you work in your main fishery last year?

Crab	N	Valid	14
		Missing	1
	Mean		223.57
	Median		250.00
	Mode		300
	Std. Deviation		103.820
Finfish	N	Valid	10
		Missing	0
	Mean		62.50
	Median		44.00
	Mode		10[a]
	Std. Deviation		58.705
Shrimp	N	Valid	13
		Missing	2
	Mean		126.96
	Median		84.00
	Mode		365
	Std. Deviation		120.694

a. Multiple modes exist. The smallest value is shown

Table 9:

Q5: Which of these best describes you?

What is your main fishery? * What best describes you? Crosstabulation

			What best describes you?			
			Captain a boat I own	Captain a boat I don't own	Work on a boat I don't own or captain	Total
What is your main fishery?	Crab	What is your main fishery?	64.3%	21.4%	14.3%	100.0%
		Count	9	3	2	14
	Finfish	What is your main fishery?	100.0%	0.0%	0.0%	100.0%
		Count	10	0	0	10
	Shrimp	What is your main fishery?	78.6%	7.1%	14.3%	100.0%
		Count	11	1	2	14
Total		What is your main fishery?	78.9%	10.5%	10.5%	100.0%
		Count	30	4	4	38

Table 10:

Q6a: Which dock do you usually use in Georgia? (Shrimp responses)

Which dock do you normally use?[a]

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Brunswick	3	20.0	20.0	20.0
	Hickory Bluff Marina	1	6.7	6.7	26.7
	Home	1	6.7	6.7	33.3
	Lazaretta Seafood	1	6.7	6.7	40.0
	McIntosh	2	13.3	13.3	53.3
	my own	1	6.7	6.7	60.0
	Skinner	5	33.3	33.3	93.3
	Thompson	1	6.7	6.7	100.0
	Total	15	100.0	100.0	

a. What is your group in the fishery? = Shrimp

Table 11:
Q6a: Which dock do you usually use in Georgia? (Finfish responses)

Which dock do you normally use?[a]

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Brunswick	1	10.0	10.0	10.0
	Fort Mac	1	10.0	10.0	20.0
	Ft. McAllister Marina	1	10.0	10.0	30.0
	JC Landing	1	10.0	10.0	40.0
	Phillips	4	40.0	40.0	80.0
	Two Way	1	10.0	10.0	90.0
	Tybee Island	1	10.0	10.0	100.0
	Total	10	100.0	100.0	

a. What is your group in the fishery? = Finfish

Table 12:
Q6a: Which dock do you usually use in Georgia? (Crab responses)

Which dock do you normally use?[a]

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.	2	13.3	13.3	13.3
	Boat Ramp	1	6.7	6.7	20.0
	Half Moon Marina	2	13.3	13.3	33.3
	Hickory Bluff Marina	1	6.7	6.7	40.0
	Home	1	6.7	6.7	46.7
	Jekyll Boat	1	6.7	6.7	53.3
	KilKenny	1	6.7	6.7	60.0
	McIntosh	1	6.7	6.7	66.7
	My own	1	6.7	6.7	73.3
	None	1	6.7	6.7	80.0
	North River St. Mary's GA	1	6.7	6.7	86.7
	R & R Seafood, but not Bellevill Ramp	1	6.7	6.7	93.3
	Turner Creek Boat Ramp	1	6.7	6.7	100.0
	Total	15	100.0	100.0	

a. What is your group in the fishery? = Crab

Table 13:
Q6b: How much catch do you sell there?

What is your main fishery? * How much catch do you sell there? Crosstabulation

			How much catch do you sell there?								Total
			0	2	10	70	80	95	99	100	
What is your main fishery?	Crab	What is your main fishery?	66.7%	8.3%	8.3%	0.0%	0.0%	0.0%	0.0%	16.7%	100.0%
		Count	8	1	1	0	0	0	0	2	12
	Finfish	What is your main fishery?	50.0%	0.0%	0.0%	0.0%	10.0%	0.0%	10.0%	30.0%	100.0%
		Count	5	0	0	0	1	0	1	3	10
	Shrimp	What is your main fishery?	21.4%	0.0%	0.0%	7.1%	0.0%	7.1%	0.0%	64.3%	100.0%
		Count	3	0	0	1	0	1	0	9	14
Total		What is your main fishery?	44.4%	2.8%	2.8%	2.8%	2.8%	2.8%	2.8%	38.9%	100.0%
		Count	16	1	1	1	1	1	1	14	36

Table 14:
Q7a: How often do you buy ice when you dock in Georgia?

What is your main fishery? * How often do you buy ice when you dock in Georgia? Crosstabulation

			How often do you buy ice when you dock in Georgia?					Total
			Always	Often	Occasionally	Rarely	Never	
What is your main fishery?	Crab	Count	3	2	1	1	7	14
		% within What is your main fishery?	21.4%	14.3%	7.1%	7.1%	50.0%	100.0%
	Finfish	Count	6	1	0	1	1	9
		% within What is your main fishery?	66.7%	11.1%	0.0%	11.1%	11.1%	100.0%
	Shrimp	Count	7	4	1	2	1	15
		% within What is your main fishery?	46.7%	26.7%	6.7%	13.3%	6.7%	100.0%
Total		Count	16	7	2	4	9	38
		% within What is your main fishery?	42.1%	18.4%	5.3%	10.5%	23.7%	100.0%

Table 15:
Q7b: How often do you buy fuel when you dock in Georgia?

What is your main fishery? * How often do you buy fuel when you dock in Georgia? Crosstabulation

			How often do you buy fuel when you dock in Georgia?				Total
			Always	Often	Occasionally	Never	
What is your main fishery?	Crab	Count	9	1	1	4	15
		% within What is your main fishery?	60.0%	6.7%	6.7%	26.7%	100.0%
	Finfish	Count	5	1	0	3	9
		% within What is your main fishery?	55.6%	11.1%	0.0%	33.3%	100.0%
	Shrimp	Count	11	4	0	0	15
		% within What is your main fishery?	73.3%	26.7%	0.0%	0.0%	100.0%
Total		Count	25	6	1	7	39
		% within What is your main fishery?	64.1%	15.4%	2.6%	17.9%	100.0%

Table 16:

Q8a: Over the last fishing season, how many work days did you miss in your main fishery due to weather?

What is your group in the fishery? * How many days did you miss due to weather? Crosstabulation

			How many days did you miss due to weather?					Total
			< 1	1 - 10	11 - 30	31 - 64	65+	
What is your group in the fishery?	Crab	Count	2	5	5	2	0	14
		% within What is your group in the fishery?	14.3%	35.7%	35.7%	14.3%	0.0%	100.0%
	Finfish	Count	3	4	1	0	1	9
		% within What is your group in the fishery?	33.3%	44.4%	11.1%	0.0%	11.1%	100.0%
	Shrimp	Count	2	4	6	0	0	12
		% within What is your group in the fishery?	16.7%	33.3%	50.0%	0.0%	0.0%	100.0%
Total		Count	7	13	12	2	1	35
		% within What is your group in the fishery?	20.0%	37.1%	34.3%	5.7%	2.9%	100.0%

Table 17:

Q8b: Over the last fishing season, how many work days did you miss in your main fishery due to mechanical/gear/boat issues/lack of ice?

What is your group in the fishery? * How many days did you miss due to mechanical/gear/boat issues/lack of ice? Crosstabulation

			How many days did you miss due to mechanical/gear/boat issues/lack of ice?					Total
			< 1	1 - 10	11 - 30	31 - 64	65+	
What is your group in the fishery?	Crab	Count	7	3	3	0	0	13
		% within What is your group in the fishery?	53.8%	23.1%	23.1%	0.0%	0.0%	100.0%
	Finfish	Count	6	1	1	0	1	9
		% within What is your group in the fishery?	66.7%	11.1%	11.1%	0.0%	11.1%	100.0%
	Shrimp	Count	3	3	4	2	0	12
		% within What is your group in the fishery?	25.0%	25.0%	33.3%	16.7%	0.0%	100.0%
Total		Count	16	7	8	2	1	34
		% within What is your group in the fishery?	47.1%	20.6%	23.5%	5.9%	2.9%	100.0%

Table 18:

Q8c: Over the last fishing season, how many work days did you miss in your main fishery due to not enough crew?

What is your group in the fishery? * Not Enough Crew Days (Binned) Crosstabulation

			Not Enough Crew Days (Binned)			
			< 1	1 - 10	11 - 30	Total
What is your group in the fishery?	Crab	Count	7	3	1	11
		% within What is your group in the fishery?	63.6%	27.3%	9.1%	100.0%
	Finfish	Count	6	2	0	8
		% within What is your group in the fishery?	75.0%	25.0%	0.0%	100.0%
	Shrimp	Count	5	0	3	8
		% within What is your group in the fishery?	62.5%	0.0%	37.5%	100.0%
Total		Count	18	5	4	27
		% within What is your group in the fishery?	66.7%	18.5%	14.8%	100.0%

Table 19:

Q8d: Over the last fishing season, how many work days did you miss in your main fishery due to injury (fishing or non-fishing related)?

What is your group in the fishery? * Injury (Fishing or Non-Fishing related) (Binned) Crosstabulation

			Injury (Fishing or Non-Fishing related) (Binned)				
			< 1	1 - 10	11 - 30	31 - 64	Total
What is your group in the fishery?	Crab	Count	8	1	2	0	11
		% within What is your group in the fishery?	72.7%	9.1%	18.2%	0.0%	100.0%
	Finfish	Count	7	2	0	0	9
		% within What is your group in the fishery?	77.8%	22.2%	0.0%	0.0%	100.0%
	Shrimp	Count	8	0	0	1	9
		% within What is your group in the fishery?	88.9%	0.0%	0.0%	11.1%	100.0%
Total		Count	23	3	2	1	29
		% within What is your group in the fishery?	79.3%	10.3%	6.9%	3.4%	100.0%

Table 20:

Q8e: Over the last fishing season, how many work days did you miss in your main fishery due to regulatory restriction days?

What is your group in the fishery? * Regulatory Restriction Days (Binned) Crosstabulation

			Regulatory Restriction Days (Binned)				
			< 1	11 - 30	31 - 64	65+	Total
What is your group in the fishery?	Crab	Count	12	0	0	0	12
		% within What is your group in the fishery?	100.0%	0.0%	0.0%	0.0%	100.0%
	Finfish	Count	6	1	0	1	8
		% within What is your group in the fishery?	75.0%	12.5%	0.0%	12.5%	100.0%
	Shrimp	Count	9	0	2	1	12
		% within What is your group in the fishery?	75.0%	0.0%	16.7%	8.3%	100.0%
Total		Count	27	1	2	2	32
		% within What is your group in the fishery?	84.4%	3.1%	6.3%	6.3%	100.0%

Table 21:

Q8f: Over the last fishing season, how many work days did you miss in your main fishery due to economic reasons (low prices and/or high costs (fuel, bait)?

What is your group in the fishery? * Economic Reasons Days (Binned) Crosstabulation

			Economic Reasons Days (Binned)			
			< 1	1 - 10	31 - 64	Total
What is your group in the fishery?	Crab	Count	12	0	0	12
		% within What is your group in the fishery?	100.0%	0.0%	0.0%	100.0%
	Finfish	Count	8	0	0	8
		% within What is your group in the fishery?	100.0%	0.0%	0.0%	100.0%
	Shrimp	Count	7	1	1	9
		% within What is your group in the fishery?	77.8%	11.1%	11.1%	100.0%
Total		Count	27	1	1	29
		% within What is your group in the fishery?	93.1%	3.4%	3.4%	100.0%

Table 22:

Q9: IF you experienced lost work days, were you able to make up that lost income by working additional days in your main fishery?

What is your group in the fishery? * Were you able to make up lost work days in your main fishery? Crosstabulation

			Were you able to make up lost work days in your main fishery?			
			No	Yes	Not Applicable	Total
What is your group in the fishery?	Crab	Count	4	2	6	12
		% within What is your group in the fishery?	33.3%	16.7%	50.0%	100.0%
	Finfish	Count	3	0	6	9
		% within What is your group in the fishery?	33.3%	0.0%	66.7%	100.0%
	Shrimp	Count	8	2	5	15
		% within What is your group in the fishery?	53.3%	13.3%	33.3%	100.0%
Total		Count	15	4	17	36
		% within What is your group in the fishery?	41.7%	11.1%	47.2%	100.0%

Table 23:

Q10a: How would you rate economic conditions today in your main fishery?

What is your group in the fishery? * How would you rate the economic conditions today in your main fishery? Crosstabulation

			How would you rate the economic conditions today in your main fishery?				
			Poor	Only Fair	Good	Excellent	Total
What is your group in the fishery?	Crab	Count	0	5	7	3	15
		% within What is your group in the fishery?	0.0%	33.3%	46.7%	20.0%	100.0%
	Finfish	Count	2	5	2	1	10
		% within What is your group in the fishery?	20.0%	50.0%	20.0%	10.0%	100.0%
	Shrimp	Count	4	5	6	0	15
		% within What is your group in the fishery?	26.7%	33.3%	40.0%	0.0%	100.0%
Total		Count	6	15	15	4	40
		% within What is your group in the fishery?	15.0%	37.5%	37.5%	10.0%	100.0%

Table 24:

Q10b: How would you rate economic conditions today in your local community?

What is your group in the fishery? * How would you rate the economic conditions today in your local community? Crosstabulation

			How would you rate the economic conditions today in your local community?				
			Poor	Only Fair	Good	Excellent	Total
What is your group in the fishery?	Crab	Count	0	4	6	3	13
		% within What is your group in the fishery?	0.0%	30.8%	46.2%	23.1%	100.0%
	Finfish	Count	1	5	3	1	10
		% within What is your group in the fishery?	10.0%	50.0%	30.0%	10.0%	100.0%
	Shrimp	Count	5	8	1	1	15
		% within What is your group in the fishery?	33.3%	53.3%	6.7%	6.7%	100.0%
Total		Count	6	17	10	5	38
		% within What is your group in the fishery?	15.8%	44.7%	26.3%	13.2%	100.0%

Table 25:

Q10c: How would you rate economic conditions today in this country?

What is your group in the fishery? * How would you rate the economic conditions today in the country? Crosstabulation

			How would you rate the economic conditions today in the country?				
			Poor	Only Fair	Good	Excellent	Total
What is your group in the fishery?	Crab	Count	1	4	5	3	13
		% within What is your group in the fishery?	7.7%	30.8%	38.5%	23.1%	100.0%
	Finfish	Count	1	2	3	3	9
		% within What is your group in the fishery?	11.1%	22.2%	33.3%	33.3%	100.0%
	Shrimp	Count	3	10	2	0	15
		% within What is your group in the fishery?	20.0%	66.7%	13.3%	0.0%	100.0%
Total		Count	5	16	10	6	37
		% within What is your group in the fishery?	13.5%	43.2%	27.0%	16.2%	100.0%

Table 26:

Q11: How well are you managing financially these days?

What is your group in the fishery? * How well are you managing financially these days? Crosstabulation

			How well are you managing financially these days?				
			Finding it difficult to get by	Just getting by	Doing Ok	Living comfortably	Total
What is your group in the fishery?	Crab	Count	0	2	6	7	15
		% within What is your group in the fishery?	0.0%	13.3%	40.0%	46.7%	100.0%
	Finfish	Count	0	0	3	7	10
		% within What is your group in the fishery?	0.0%	0.0%	30.0%	70.0%	100.0%
	Shrimp	Count	1	7	5	2	15
		% within What is your group in the fishery?	6.7%	46.7%	33.3%	13.3%	100.0%
Total		Count	1	9	14	16	40
		% within What is your group in the fishery?	2.5%	22.5%	35.0%	40.0%	100.0%

Table 27:

Q12: Think of your parents when they were your age. Would you say you (and your family) are better, the same, or worse off financially than they were?

What is your group in the fishery? * Thinking of your parents when they were your age. Would you say that you and your family are better, the same or worse off financially than they were? Crosstabulation

			Thinking of your parents when they were your age. Would you say that you and your family are better, the same or worse off financially than they were?					
			Much worse off	Somewhat worse off	About the same	Somewhat better off	Much better off	Total
What is your group in the fishery?	Crab	Count	0	1	4	5	5	15
		% within What is your group in the fishery?	0.0%	6.7%	26.7%	33.3%	33.3%	100.0%
	Finfish	Count	0	1	4	1	4	10
		% within What is your group in the fishery?	0.0%	10.0%	40.0%	10.0%	40.0%	100.0%
	Shrimp	Count	1	6	1	4	2	14
		% within What is your group in the fishery?	7.1%	42.9%	7.1%	28.6%	14.3%	100.0%
Total		Count	1	8	9	10	11	39
		% within What is your group in the fishery?	2.6%	20.5%	23.1%	25.6%	28.2%	100.0%

Table 28:
Q13a

What is your group in the fishery? * How often do you discuss issues with people in the industry? Crosstabulation

			How often do you discuss issues with people in the industry?				
			Never	Seldom	Sometimes	Often	Total
What is your group in the fishery?	Crab	Count	3	3	4	5	15
		% within What is your group in the fishery?	20.0%	20.0%	26.7%	33.3%	100.0%
	Finfish	Count	1	0	4	5	10
		% within What is your group in the fishery?	10.0%	0.0%	40.0%	50.0%	100.0%
	Shrimp	Count	1	0	4	9	14
		% within What is your group in the fishery?	7.1%	0.0%	28.6%	64.3%	100.0%
Total		Count	5	3	12	19	39
		% within What is your group in the fishery?	12.8%	7.7%	30.8%	48.7%	100.0%

Table 29:
Q13b

What is your group in the fishery? * How often do you read materials by Federal fishing regulators? Crosstabulation

			How often do you read materials by Federal fishing regulators?					
			Not Relevant	Never	Seldom	Sometimes	Often	Total
What is your group in the fishery?	Crab	Count	0	2	5	3	2	12
		% within What is your group in the fishery?	0.0%	16.7%	41.7%	25.0%	16.7%	100.0%
	Finfish	Count	1	2	2	1	4	10
		% within What is your group in the fishery?	10.0%	20.0%	20.0%	10.0%	40.0%	100.0%
	Shrimp	Count	0	1	2	6	5	14
		% within What is your group in the fishery?	0.0%	7.1%	14.3%	42.9%	35.7%	100.0%
Total		Count	1	5	9	10	11	36
		% within What is your group in the fishery?	2.8%	13.9%	25.0%	27.8%	30.6%	100.0%

Table 30:
Q13c

What is your group in the fishery? * How often do you attend Federal fishing meetings? Crosstabulation

			How often do you attend Federal fishing meetings?					
			Not Relevant	Never	Seldom	Sometimes	Often	Total
What is your group in the fishery?	Crab	Count	3	7	3	0	0	13
		% within What is your group in the fishery?	23.1%	53.8%	23.1%	0.0%	0.0%	100.0%
	Finfish	Count	0	4	4	0	2	10
		% within What is your group in the fishery?	0.0%	40.0%	40.0%	0.0%	20.0%	100.0%
	Shrimp	Count	0	3	5	5	0	13
		% within What is your group in the fishery?	0.0%	23.1%	38.5%	38.5%	0.0%	100.0%
Total		Count	3	14	12	5	2	36
		% within What is your group in the fishery?	8.3%	38.9%	33.3%	13.9%	5.6%	100.0%

Table 31:
Q13d

What is your group in the fishery? * How often do you speak at Federal fishing meetings? Crosstabulation

			How often do you speak at Federal fishing meetings?				
			Not Relevant	Never	Seldom	Sometimes	Total
What is your group in the fishery?	Crab	Count	3	8	1	1	13
		% within What is your group in the fishery?	23.1%	61.5%	7.7%	7.7%	100.0%
	Finfish	Count	0	7	1	2	10
		% within What is your group in the fishery?	0.0%	70.0%	10.0%	20.0%	100.0%
	Shrimp	Count	0	9	4	0	13
		% within What is your group in the fishery?	0.0%	69.2%	30.8%	0.0%	100.0%
Total		Count	3	24	6	3	36
		% within What is your group in the fishery?	8.3%	66.7%	16.7%	8.3%	100.0%

Table 32:
Q13e

What is your group in the fishery? * How often do you read materials by Georgia fishing regulators (DNR)? Crosstabulation

			How often do you read materials by Georgia fishing regulators (DNR)?				
			Never	Seldom	Sometimes	Often	Total
What is your group in the fishery?	Crab	Count	1	4	5	3	13
		% within What is your group in the fishery?	7.7%	30.8%	38.5%	23.1%	100.0%
	Finfish	Count	2	2	3	3	10
		% within What is your group in the fishery?	20.0%	20.0%	30.0%	30.0%	100.0%
	Shrimp	Count	1	1	6	6	14
		% within What is your group in the fishery?	7.1%	7.1%	42.9%	42.9%	100.0%
Total		Count	4	7	14	12	37
		% within What is your group in the fishery?	10.8%	18.9%	37.8%	32.4%	100.0%

Table 33:
Q13f

What is your group in the fishery? * How often do you attend Georgia fishing (DNR) meetings? Crosstabulation

			How often do you attend Georgia fishing (DNR) meetings?					
			Not Relevant	Never	Seldom	Sometimes	Often	Total
What is your group in the fishery?	Crab	Count	1	8	3	1	1	14
		% within What is your group in the fishery?	7.1%	57.1%	21.4%	7.1%	7.1%	100.0%
	Finfish	Count	0	4	2	3	1	10
		% within What is your group in the fishery?	0.0%	40.0%	20.0%	30.0%	10.0%	100.0%
	Shrimp	Count	0	6	4	3	1	14
		% within What is your group in the fishery?	0.0%	42.9%	28.6%	21.4%	7.1%	100.0%
Total		Count	1	18	9	7	3	38
		% within What is your group in the fishery?	2.6%	47.4%	23.7%	18.4%	7.9%	100.0%

Table 34:
Q13g

What is your group in the fishery? * How often do you speak at Georgia fishing (DNR) meetings? Crosstabulation

			How often do you speak at Georgia fishing (DNR) meetings?					
			Not Relevant	Never	Seldom	Sometimes	Often	Total
What is your group in the fishery?	Crab	Count	2	8	2	1	0	13
		% within What is your group in the fishery?	15.4%	61.5%	15.4%	7.7%	0.0%	100.0%
	Finfish	Count	1	5	1	2	1	10
		% within What is your group in the fishery?	10.0%	50.0%	10.0%	20.0%	10.0%	100.0%
	Shrimp	Count	0	11	2	0	0	13
		% within What is your group in the fishery?	0.0%	84.6%	15.4%	0.0%	0.0%	100.0%
Total		Count	3	24	5	3	1	36
		% within What is your group in the fishery?	8.3%	66.7%	13.9%	8.3%	2.8%	100.0%

Table 35:
Q14a:

What is your group in the fishery? * Fishermen have a voice in fisheries management decisions. Crosstabulation

			Fishermen have a voice in fisheries management decisions.					
			Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree	Total
What is your group in the fishery?	Crab	Count	7	1	2	4	1	15
		% within What is your group in the fishery?	46.7%	6.7%	13.3%	26.7%	6.7%	100.0%
	Finfish	Count	3	3	1	3	0	10
		% within What is your group in the fishery?	30.0%	30.0%	10.0%	30.0%	0.0%	100.0%
	Shrimp	Count	4	5	0	5	0	14
		% within What is your group in the fishery?	28.6%	35.7%	0.0%	35.7%	0.0%	100.0%
Total		Count	14	9	3	12	1	39
		% within What is your group in the fishery?	35.9%	23.1%	7.7%	30.8%	2.6%	100.0%

Table 36:
Q14b:

What is your group in the fishery? * Fishermen should participate in fisheries management. Crosstabulation

			Fishermen should participate in fisheries management.				
			Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree	Total
What is your group in the fishery?	Crab	Count	1	2	3	9	15
		% within What is your group in the fishery?	6.7%	13.3%	20.0%	60.0%	100.0%
	Finfish	Count	0	0	4	6	10
		% within What is your group in the fishery?	0.0%	0.0%	40.0%	60.0%	100.0%
	Shrimp	Count	0	1	3	10	14
		% within What is your group in the fishery?	0.0%	7.1%	21.4%	71.4%	100.0%
Total		Count	1	3	10	25	39
		% within What is your group in the fishery?	2.6%	7.7%	25.6%	64.1%	100.0%

Table 37.
Q14c:

What is your group in the fishery? * I trust fisheries regulators to make the right decisions. Crosstabulation

			I trust fisheries regulators to make the right decisions.					
			Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree	Total
What is your group in the fishery?	Crab	Count	8	4	1	1	1	15
		% within What is your group in the fishery?	53.3%	26.7%	6.7%	6.7%	6.7%	100.0%
	Finfish	Count	2	3	1	4	0	10
		% within What is your group in the fishery?	20.0%	30.0%	10.0%	40.0%	0.0%	100.0%
	Shrimp	Count	4	2	7	1	0	14
		% within What is your group in the fishery?	28.6%	14.3%	50.0%	7.1%	0.0%	100.0%
Total		Count	14	9	9	6	1	39
		% within What is your group in the fishery?	35.9%	23.1%	23.1%	15.4%	2.6%	100.0%

Table 38.
Q14d:

What is your group in the fishery? * Fisheries regulators take the fishermen's opinions seriously, Crosstabulation

			Fisheries regulators take the fishermen's opinions seriously,					
			Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree	Total
What is your group in the fishery?	Crab	Count	7	3	3	1	1	15
		% within What is your group in the fishery?	46.7%	20.0%	20.0%	6.7%	6.7%	100.0%
	Finfish	Count	1	5	1	3	0	10
		% within What is your group in the fishery?	10.0%	50.0%	10.0%	30.0%	0.0%	100.0%
	Shrimp	Count	4	4	2	4	0	14
		% within What is your group in the fishery?	28.6%	28.6%	14.3%	28.6%	0.0%	100.0%
Total		Count	12	12	6	8	1	39
		% within What is your group in the fishery?	30.8%	30.8%	15.4%	20.5%	2.6%	100.0%

Table 39:
Q14e:

What is your group in the fishery? * I work hard not to harm my fishery. Crosstabulation

			I work hard not to harm my fishery.		
			Somewhat Agree	Strongly Agree	Total
What is your group in the fishery?	Crab	Count	0	14	14
		% within What is your group in the fishery?	0.0%	100.0%	100.0%
	Finfish	Count	1	9	10
		% within What is your group in the fishery?	10.0%	90.0%	100.0%
	Shrimp	Count	1	12	13
		% within What is your group in the fishery?	7.7%	92.3%	100.0%
Total		Count	2	35	37
		% within What is your group in the fishery?	5.4%	94.6%	100.0%

Table 40:
Q14f:

What is your group in the fishery? * The ocean is large and cannot be overfished. Crosstabulation

			The ocean is large and cannot be overfished.					
			Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree	Total
What is your group in the fishery?	Crab	Count	4	1	4	1	3	13
		% within What is your group in the fishery?	30.8%	7.7%	30.8%	7.7%	23.1%	100.0%
	Finfish	Count	5	4	1	0	0	10
		% within What is your group in the fishery?	50.0%	40.0%	10.0%	0.0%	0.0%	100.0%
	Shrimp	Count	4	4	4	1	0	13
		% within What is your group in the fishery?	30.8%	30.8%	30.8%	7.7%	0.0%	100.0%
Total		Count	13	9	9	2	3	36
		% within What is your group in the fishery?	36.1%	25.0%	25.0%	5.6%	8.3%	100.0%

Table 41:
Q14g:

What is your group in the fishery? * The environment is important to me. Crosstabulation

			The environment is important to me.			
			Neither Agree nor Disagree	Somewhat Agree	Strongly Agree	Total
What is your group in the fishery?	Crab	Count	1	1	11	13
		% within What is your group in the fishery?	7.7%	7.7%	84.6%	100.0%
	Finfish	Count	0	2	8	10
		% within What is your group in the fishery?	0.0%	20.0%	80.0%	100.0%
	Shrimp	Count	0	0	13	13
		% within What is your group in the fishery?	0.0%	0.0%	100.0%	100.0%
Total		Count	1	3	32	36
		% within What is your group in the fishery?	2.8%	8.3%	88.9%	100.0%

Table 42:
Q14h:

What is your group in the fishery? * Climate and weather pattern have changed in the past 20 years. Crosstabulation

			Climate and weather pattern have changed in the past 20 years.					
			Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree	Total
What is your group in the fishery?	Crab	Count	3	2	1	2	6	14
		% within What is your group in the fishery?	21.4%	14.3%	7.1%	14.3%	42.9%	100.0%
	Finfish	Count	2	0	2	3	3	10
		% within What is your group in the fishery?	20.0%	0.0%	20.0%	30.0%	30.0%	100.0%
	Shrimp	Count	0	2	0	7	5	14
		% within What is your group in the fishery?	0.0%	14.3%	0.0%	50.0%	35.7%	100.0%
Total		Count	5	4	3	12	14	38
		% within What is your group in the fishery?	13.2%	10.5%	7.9%	31.6%	36.8%	100.0%

Table 43:
Q14i:

What is your group in the fishery? * Climate and weather pattern changes are natural. Crosstabulation

			Climate and weather pattern changes are natural.				
			Strongly Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree	Total
What is your group in the fishery?	Crab	Count	3	2	2	5	12
		% within What is your group in the fishery?	25.0%	16.7%	16.7%	41.7%	100.0%
	Finfish	Count	0	0	3	7	10
		% within What is your group in the fishery?	0.0%	0.0%	30.0%	70.0%	100.0%
	Shrimp	Count	1	2	6	4	13
		% within What is your group in the fishery?	7.7%	15.4%	46.2%	30.8%	100.0%
Total		Count	4	4	11	16	35
		% within What is your group in the fishery?	11.4%	11.4%	31.4%	45.7%	100.0%

Table 44:
Q14j:

What is your group in the fishery? * Climate and weather pattern changes are man-made. Crosstabulation

			Climate and weather pattern changes are man-made.					
			Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree	Total
What is your group in the fishery?	Crab	Count	4	2	2	1	1	10
		% within What is your group in the fishery?	40.0%	20.0%	20.0%	10.0%	10.0%	100.0%
	Finfish	Count	3	1	2	3	1	10
		% within What is your group in the fishery?	30.0%	10.0%	20.0%	30.0%	10.0%	100.0%
	Shrimp	Count	0	4	6	3	0	13
		% within What is your group in the fishery?	0.0%	30.8%	46.2%	23.1%	0.0%	100.0%
Total		Count	7	7	10	7	2	33
		% within What is your group in the fishery?	21.2%	21.2%	30.3%	21.2%	6.1%	100.0%

Table 45:
Q14k:

What is your group in the fishery? * I am satisfied with my fishing income. Crosstabulation

			I am satisfied with my fishing income.					
			Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree	Total
What is your group in the fishery?	Crab	Count	1	0	3	3	7	14
		% within What is your group in the fishery?	7.1%	0.0%	21.4%	21.4%	50.0%	100.0%
	Finfish	Count	2	0	5	3	0	10
		% within What is your group in the fishery?	20.0%	0.0%	50.0%	30.0%	0.0%	100.0%
	Shrimp	Count	2	3	3	6	0	14
		% within What is your group in the fishery?	14.3%	21.4%	21.4%	42.9%	0.0%	100.0%
Total		Count	5	3	11	12	7	38
		% within What is your group in the fishery?	13.2%	7.9%	28.9%	31.6%	18.4%	100.0%

Table 46:
Q14l:

What is your group in the fishery? * I am satisfied with my safety when fishing. Crosstabulation

			I am satisfied with my safety when fishing.			
			Neither Agree nor Disagree	Somewhat Agree	Strongly Agree	Total
What is your group in the fishery?	Crab	Count	1	0	13	14
		% within What is your group in the fishery?	7.1%	0.0%	92.9%	100.0%
	Finfish	Count	0	3	7	10
		% within What is your group in the fishery?	0.0%	30.0%	70.0%	100.0%
	Shrimp	Count	1	4	9	14
		% within What is your group in the fishery?	7.1%	28.6%	64.3%	100.0%
Total		Count	2	7	29	38
		% within What is your group in the fishery?	5.3%	18.4%	76.3%	100.0%

Table 47:
Q14m:

What is your group in the fishery? * I am satisfied with my life as a fisherman. Crosstabulation

			I am satisfied with my life as a fisherman.					
			Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree	Total
What is your group in the fishery?	Crab	Count	0	1	1	1	11	14
		% within What is your group in the fishery?	0.0%	7.1%	7.1%	7.1%	78.6%	100.0%
	Finfish	Count	0	1	0	2	7	10
		% within What is your group in the fishery?	0.0%	10.0%	0.0%	20.0%	70.0%	100.0%
	Shrimp	Count	1	0	1	6	6	14
		% within What is your group in the fishery?	7.1%	0.0%	7.1%	42.9%	42.9%	100.0%
Total		Count	1	2	2	9	24	38
		% within What is your group in the fishery?	2.6%	5.3%	5.3%	23.7%	63.2%	100.0%

Table 48:
Q15a:

What is your group in the fishery? * Fishing out of season (when season is closed). Crosstabulation

			Fishing out of season (when season is closed).					
			Not Relevant	Never	Seldom	Sometimes	Often	Total
What is your group in the fishery?	Crab	Count	0	3	4	4	1	12
		% within What is your group in the fishery?	0.0%	25.0%	33.3%	33.3%	8.3%	100.0%
	Finfish	Count	1	0	3	6	0	10
		% within What is your group in the fishery?	10.0%	0.0%	30.0%	60.0%	0.0%	100.0%
	Shrimp	Count	2	5	1	4	2	14
		% within What is your group in the fishery?	14.3%	35.7%	7.1%	28.6%	14.3%	100.0%
Total		Count	3	8	8	14	3	36
		% within What is your group in the fishery?	8.3%	22.2%	22.2%	38.9%	8.3%	100.0%

Table 49:
Q15b:

What is your group in the fishery? * Catching more fish than trip limit. Crosstabulation

			Catching more fish than trip limit.					
			Not Relevant	Never	Seldom	Sometimes	Often	Total
What is your group in the fishery?	Crab	Count	0	4	2	5	1	12
		% within What is your group in the fishery?	0.0%	33.3%	16.7%	41.7%	8.3%	100.0%
	Finfish	Count	2	2	2	3	1	10
		% within What is your group in the fishery?	20.0%	20.0%	20.0%	30.0%	10.0%	100.0%
	Shrimp	Count	2	4	3	3	2	14
		% within What is your group in the fishery?	14.3%	28.6%	21.4%	21.4%	14.3%	100.0%
Total		Count	4	10	7	11	4	36
		% within What is your group in the fishery?	11.1%	27.8%	19.4%	30.6%	11.1%	100.0%

Table 50:
Q15c:

What is your group in the fishery? * Keeping undersized or oversized fish. Crosstabulation

			Keeping undersized or oversized fish.					
			Not Relevant	Never	Seldom	Sometimes	Often	Total
What is your group in the fishery?	Crab	Count	0	4	2	4	2	12
		% within What is your group in the fishery?	0.0%	33.3%	16.7%	33.3%	16.7%	100.0%
	Finfish	Count	2	1	3	3	1	10
		% within What is your group in the fishery?	20.0%	10.0%	30.0%	30.0%	10.0%	100.0%
	Shrimp	Count	1	5	3	3	2	14
		% within What is your group in the fishery?	7.1%	35.7%	21.4%	21.4%	14.3%	100.0%
Total		Count	3	10	8	10	5	36
		% within What is your group in the fishery?	8.3%	27.8%	22.2%	27.8%	13.9%	100.0%

Table 51:
Q15d:

What is your group in the fishery? * Using illegal gear (e.g. wrong mesh size) Crosstabulation

			Using illegal gear (e.g. wrong mesh size)					
			Not Relevant	Never	Seldom	Sometimes	Often	Total
What is your group in the fishery?	Crab	Count	0	5	3	4	0	12
		% within What is your group in the fishery?	0.0%	41.7%	25.0%	33.3%	0.0%	100.0%
	Finfish	Count	2	3	1	4	0	10
		% within What is your group in the fishery?	20.0%	30.0%	10.0%	40.0%	0.0%	100.0%
	Shrimp	Count	0	7	3	3	1	14
		% within What is your group in the fishery?	0.0%	50.0%	21.4%	21.4%	7.1%	100.0%
Total		Count	2	15	7	11	1	36
		% within What is your group in the fishery?	5.6%	41.7%	19.4%	30.6%	2.8%	100.0%

Table 52:
Q15e:

What is your group in the fishery? * Not using required gear (e.g. TEDs or BRDs) Crosstabulation

			Not using required gear (e.g. TEDs or BRDs)				
			Not Relevant	Never	Seldom	Sometimes	Total
What is your group in the fishery?	Crab	Count	0	7	1	4	12
		% within What is your group in the fishery?	0.0%	58.3%	8.3%	33.3%	100.0%
	Finfish	Count	3	1	2	4	10
		% within What is your group in the fishery?	30.0%	10.0%	20.0%	40.0%	100.0%
	Shrimp	Count	0	7	5	2	14
		% within What is your group in the fishery?	0.0%	50.0%	35.7%	14.3%	100.0%
Total		Count	3	15	8	10	36
		% within What is your group in the fishery?	8.3%	41.7%	22.2%	27.8%	100.0%

Table 53:
Q17: Do you have health insurance?

What is your group in the fishery? * Do you have health insurance? Crosstabulation

			Do you have health insurance?			
			No	Yes, I am primary person covered	Yes a relative is the primary person covered	Total
What is your group in the fishery?	Crab	Count	5	7	2	14
		% within What is your group in the fishery?	35.7%	50.0%	14.3%	100.0%
	Finfish	Count	0	6	4	10
		% within What is your group in the fishery?	0.0%	60.0%	40.0%	100.0%
	Shrimp	Count	1	14	0	15
		% within What is your group in the fishery?	6.7%	93.3%	0.0%	100.0%
Total		Count	6	27	6	39
		% within What is your group in the fishery?	15.4%	69.2%	15.4%	100.0%

Table 54:

Q18: If you have health insurance, was it purchased through ACA/Obamacare?

What is your group in the fishery? * If you have health insurance, was it purchased through ACA/Obamacare? Crosstabulation

			If you have health insurance, was it purchased through ACA/Obamacare?			
			No	Yes	Don't Know	Total
What is your group in the fishery?	Crab	Count	9	2	0	11
		% within What is your group in the fishery?	81.8%	18.2%	0.0%	100.0%
	Finfish	Count	10	0	0	10
		% within What is your group in the fishery?	100.0%	0.0%	0.0%	100.0%
	Shrimp	Count	4	7	2	13
		% within What is your group in the fishery?	30.8%	53.8%	15.4%	100.0%
Total		Count	23	9	2	34
		% within What is your group in the fishery?	67.6%	26.5%	5.9%	100.0%

Table 55:

Q19a:

What is your group in the fishery? * My health is affected by fishing. Crosstabulation

			My health is affected by fishing.					
			Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree	Total
What is your group in the fishery?	Crab	Count	5	2	1	1	6	15
		% within What is your group in the fishery?	33.3%	13.3%	6.7%	6.7%	40.0%	100.0%
	Finfish	Count	2	1	0	3	3	9
		% within What is your group in the fishery?	22.2%	11.1%	0.0%	33.3%	33.3%	100.0%
	Shrimp	Count	2	1	6	5	1	15
		% within What is your group in the fishery?	13.3%	6.7%	40.0%	33.3%	6.7%	100.0%
Total		Count	9	4	7	9	10	39
		% within What is your group in the fishery?	23.1%	10.3%	17.9%	23.1%	25.6%	100.0%

Table 56:
Q19b:

What is your group in the fishery? * In the past 30 days, poor physical health kept me from my usual activities. Crosstabulation

			In the past 30 days, poor physical health kept me from my usual activities.					
			Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree	Total
What is your group in the fishery?	Crab	Count	10	0	1	2	2	15
		% within What is your group in the fishery?	66.7%	0.0%	6.7%	13.3%	13.3%	100.0%
	Finfish	Count	3	2	2	3	0	10
		% within What is your group in the fishery?	30.0%	20.0%	20.0%	30.0%	0.0%	100.0%
	Shrimp	Count	10	0	2	3	0	15
		% within What is your group in the fishery?	66.7%	0.0%	13.3%	20.0%	0.0%	100.0%
Total		Count	23	2	5	8	2	40
		% within What is your group in the fishery?	57.5%	5.0%	12.5%	20.0%	5.0%	100.0%

Table 57:
Q19c:

What is your group in the fishery? * In the past 30 days, poor dental health kept me from my usual activities. Crosstabulation

			In the past 30 days, poor dental health kept me from my usual activities.				
			Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Total
What is your group in the fishery?	Crab	Count	13	0	1	1	15
		% within What is your group in the fishery?	86.7%	0.0%	6.7%	6.7%	100.0%
	Finfish	Count	6	1	3	0	10
		% within What is your group in the fishery?	60.0%	10.0%	30.0%	0.0%	100.0%
	Shrimp	Count	9	2	4	0	15
		% within What is your group in the fishery?	60.0%	13.3%	26.7%	0.0%	100.0%
Total		Count	28	3	8	1	40
		% within What is your group in the fishery?	70.0%	7.5%	20.0%	2.5%	100.0%

Table 58:
Q19d:

What is your group in the fishery? * In the past year I needed a doctor but didn't see one because of cost. Crosstabulation

			In the past year I needed a doctor but didn't see one because of cost.					
			Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree	Total
What is your group in the fishery?	Crab	Count	9	0	5	0	1	15
		% within What is your group in the fishery?	60.0%	0.0%	33.3%	0.0%	6.7%	100.0%
	Finfish	Count	5	2	1	1	1	10
		% within What is your group in the fishery?	50.0%	20.0%	10.0%	10.0%	10.0%	100.0%
	Shrimp	Count	4	2	5	2	2	15
		% within What is your group in the fishery?	26.7%	13.3%	33.3%	13.3%	13.3%	100.0%
Total		Count	18	4	11	3	4	40
		% within What is your group in the fishery?	45.0%	10.0%	27.5%	7.5%	10.0%	100.0%

Table 59:
Q19e:

What is your group in the fishery? * In the past year I needed a dentist but didn't see one because of cost. Crosstabulation

			In the past year I needed a dentist but didn't see one because of cost.					
			Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree	Total
What is your group in the fishery?	Crab	Count	11	0	2	2	0	15
		% within What is your group in the fishery?	73.3%	0.0%	13.3%	13.3%	0.0%	100.0%
	Finfish	Count	6	2	1	0	1	10
		% within What is your group in the fishery?	60.0%	20.0%	10.0%	0.0%	10.0%	100.0%
	Shrimp	Count	3	3	3	3	3	15
		% within What is your group in the fishery?	20.0%	20.0%	20.0%	20.0%	20.0%	100.0%
Total		Count	20	5	6	5	4	40
		% within What is your group in the fishery?	50.0%	12.5%	15.0%	12.5%	10.0%	100.0%

Table 60:
Q19f:

What is your group in the fishery? * I am satisfied with my dental health. Crosstabulation

			I am satisfied with my dental health.					
			Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree	Total
What is your group in the fishery?	Crab	Count	1	1	2	5	6	15
		% within What is your group in the fishery?	6.7%	6.7%	13.3%	33.3%	40.0%	100.0%
	Finfish	Count	0	1	0	2	6	9
		% within What is your group in the fishery?	0.0%	11.1%	0.0%	22.2%	66.7%	100.0%
	Shrimp	Count	1	2	6	5	1	15
		% within What is your group in the fishery?	6.7%	13.3%	40.0%	33.3%	6.7%	100.0%
Total		Count	2	4	8	12	13	39
		% within What is your group in the fishery?	5.1%	10.3%	20.5%	30.8%	33.3%	100.0%

Table 61:
Q19g:

What is your group in the fishery? * I am satisfied with my physical health. Crosstabulation

			I am satisfied with my physical health.					
			Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree	Total
What is your group in the fishery?	Crab	Count	1	0	2	4	8	15
		% within What is your group in the fishery?	6.7%	0.0%	13.3%	26.7%	53.3%	100.0%
	Finfish	Count	0	1	0	4	4	9
		% within What is your group in the fishery?	0.0%	11.1%	0.0%	44.4%	44.4%	100.0%
	Shrimp	Count	0	0	6	7	2	15
		% within What is your group in the fishery?	0.0%	0.0%	40.0%	46.7%	13.3%	100.0%
Total		Count	1	1	8	15	14	39
		% within What is your group in the fishery?	2.6%	2.6%	20.5%	38.5%	35.9%	100.0%

Table 62:
Q22a:

What is your group in the fishery? * How often do you think people working in the seafood industry smoke cigarettes? Crosstabulation

			How often do you think people working in the seafood industry smoke cigarettes?				
			Never	Many times a month	Many times a week	Many times a day	Total
What is your group in the fishery?	Crab	Count	1	1	1	8	11
		% within What is your group in the fishery?	9.1%	9.1%	9.1%	72.7%	100.0%
	Finfish	Count	0	0	1	8	9
		% within What is your group in the fishery?	0.0%	0.0%	11.1%	88.9%	100.0%
	Shrimp	Count	1	1	3	9	14
		% within What is your group in the fishery?	7.1%	7.1%	21.4%	64.3%	100.0%
Total		Count	2	2	5	25	34
		% within What is your group in the fishery?	5.9%	5.9%	14.7%	73.5%	100.0%

Table 63:
Q22b:

What is your group in the fishery? * How often do you think people working in the seafood industry drink alcohol to the point of being impaired? Crosstabulation

			How often do you think people working in the seafood industry drink alcohol to the point of being impaired?					
			Never	Rarely	Many times a month	Many times a week	Many times a day	Total
What is your group in the fishery?	Crab	Count	2	3	2	4	1	12
		% within What is your group in the fishery?	16.7%	25.0%	16.7%	33.3%	8.3%	100.0%
	Finfish	Count	0	2	2	2	3	9
		% within What is your group in the fishery?	0.0%	22.2%	22.2%	22.2%	33.3%	100.0%
	Shrimp	Count	1	6	2	5	1	15
		% within What is your group in the fishery?	6.7%	40.0%	13.3%	33.3%	6.7%	100.0%
Total		Count	3	11	6	11	5	36
		% within What is your group in the fishery?	8.3%	30.6%	16.7%	30.6%	13.9%	100.0%

Table 64:
Q22c:

What is your group in the fishery? * How often do you think people working in the seafood industry use marijuana? Crosstabulation

			How often do you think people working in the seafood industry use marijuana?					
			Never	Rarely	Many times a month	Many times a week	Many times a day	Total
What is your group in the fishery?	Crab	Count	2	2	1	3	3	11
		% within What is your group in the fishery?	18.2%	18.2%	9.1%	27.3%	27.3%	100.0%
	Finfish	Count	1	1	2	2	3	9
		% within What is your group in the fishery?	11.1%	11.1%	22.2%	22.2%	33.3%	100.0%
	Shrimp	Count	0	8	1	4	1	14
		% within What is your group in the fishery?	0.0%	57.1%	7.1%	28.6%	7.1%	100.0%
Total		Count	3	11	4	9	7	34
		% within What is your group in the fishery?	8.8%	32.4%	11.8%	26.5%	20.6%	100.0%

Table 65:
Q22d:

What is your group in the fishery? * How often do you think people working in the seafood industry use opioid or prescription painkillers? Crosstabulation

			How often do you think people working in the seafood industry use opioid or prescription painkillers?					
			Never	Rarely	Many times a month	Many times a week	Many times a day	Total
What is your group in the fishery?	Crab	Count	3	1	3	3	1	11
		% within What is your group in the fishery?	27.3%	9.1%	27.3%	27.3%	9.1%	100.0%
	Finfish	Count	1	3	0	2	3	9
		% within What is your group in the fishery?	11.1%	33.3%	0.0%	22.2%	33.3%	100.0%
	Shrimp	Count	2	6	1	5	0	14
		% within What is your group in the fishery?	14.3%	42.9%	7.1%	35.7%	0.0%	100.0%
Total		Count	6	10	4	10	4	34
		% within What is your group in the fishery?	17.6%	29.4%	11.8%	29.4%	11.8%	100.0%

Table 66:
Q22e:

What is your group in the fishery? * How often do you think people working in the seafood industry use cocaine or crack? Crosstabulation

			How often do you think people working in the seafood industry use cocaine or crack?					
			Never	Rarely	Many times a month	Many times a week	Many times a day	Total
What is your group in the fishery?	Crab	Count	4	4	1	0	1	10
		% within What is your group in the fishery?	40.0%	40.0%	10.0%	0.0%	10.0%	100.0%
	Finfish	Count	2	4	1	1	1	9
		% within What is your group in the fishery?	22.2%	44.4%	11.1%	11.1%	11.1%	100.0%
	Shrimp	Count	3	6	2	3	0	14
		% within What is your group in the fishery?	21.4%	42.9%	14.3%	21.4%	0.0%	100.0%
Total		Count	9	14	4	4	2	33
		% within What is your group in the fishery?	27.3%	42.4%	12.1%	12.1%	6.1%	100.0%

Table 67:
Q22f:

What is your group in the fishery? * How often do you think people working in the seafood industry use heroin? Crosstabulation

			How often do you think people working in the seafood industry use heroin?					
			Never	Rarely	Many times a month	Many times a week	Many times a day	Total
What is your group in the fishery?	Crab	Count	5	4	1	0	0	10
		% within What is your group in the fishery?	50.0%	40.0%	10.0%	0.0%	0.0%	100.0%
	Finfish	Count	3	4	1	0	1	9
		% within What is your group in the fishery?	33.3%	44.4%	11.1%	0.0%	11.1%	100.0%
	Shrimp	Count	5	6	0	3	0	14
		% within What is your group in the fishery?	35.7%	42.9%	0.0%	21.4%	0.0%	100.0%
Total		Count	13	14	2	3	1	33
		% within What is your group in the fishery?	39.4%	42.4%	6.1%	9.1%	3.0%	100.0%

Table 68:
Q22g:

What is your group in the fishery? * How often do you think people working in the seafood industry use meth? Crosstabulation

			How often do you think people working in the seafood industry use meth?					
			Never	Rarely	Many times a month	Many times a week	Many times a day	Total
What is your group in the fishery?	Crab	Count	4	4	1	1	0	10
		% within What is your group in the fishery?	40.0%	40.0%	10.0%	10.0%	0.0%	100.0%
	Finfish	Count	1	4	2	1	1	9
		% within What is your group in the fishery?	11.1%	44.4%	22.2%	11.1%	11.1%	100.0%
	Shrimp	Count	1	8	2	3	0	14
		% within What is your group in the fishery?	7.1%	57.1%	14.3%	21.4%	0.0%	100.0%
Total		Count	6	16	5	5	1	33
		% within What is your group in the fishery?	18.2%	48.5%	15.2%	15.2%	3.0%	100.0%

Table 69:
Q23a, b, and c:

Report

What is your group in the fishery?		What do you estimate is your annual income for everyone living in your household?	What do you estimate is your annual personal income from fishing?	What do you estimate is your total annual personal income (including other jobs)?
Crab	Mean	94375.00	32625.00	45250.00
	Median	100000.00	30000.00	50000.00
	Std. Deviation	34788.904	20479.519	29309.920
	N	8	8	8
	Minimum	45000	1000	0
	Maximum	160000	60000	85000
Finfish	Mean	122857.14	9771.43	125666.67
	Median	100000.00	4500.00	95000.00
	Std. Deviation	89202.819	9744.180	101117.094
	N	7	7	6
	Minimum	50000	0	24000
	Maximum	300000	24000	300000
Shrimp	Mean	69277.78	18642.86	31928.57
	Median	25000.00	11000.00	20000.00
	Std. Deviation	69803.792	28176.104	26892.422
	N	9	7	7
	Minimum	12000	0	12000
	Maximum	175000	80000	80000
Total	Mean	93270.83	20904.55	63785.71
	Median	90000.00	15000.00	60000.00
	Std. Deviation	68051.608	22115.831	68667.418
	N	24	22	21
	Minimum	12000	0	0
	Maximum	300000	80000	300000

Table 70:

Q24: For your living situation do you rent or own?

What is your group in the fishery? * For your living situation, so you rent or own? Crosstabulation

			For your living situation, so you rent or own?		
			Rent	Own	Total
What is your group in the fishery?	Crab	Count	3	12	15
		% within What is your group in the fishery?	20.0%	80.0%	100.0%
	Finfish	Count	1	9	10
		% within What is your group in the fishery?	10.0%	90.0%	100.0%
	Shrimp	Count	1	14	15
		% within What is your group in the fishery?	6.7%	93.3%	100.0%
Total		Count	5	35	40
		% within What is your group in the fishery?	12.5%	87.5%	100.0%

Table 71:
Questions 25a and b and 26 a and b:

What is your group in the fishery?		Financially, how many years can you continue working in fishing?	Physically, how many years can you continue working in fishing?	How long have you worked fishing (years)?	How old is the boat you usually fish on (years)?
Crab	Mean	23.57	18.75	30.37	13.45
	Median	15.00	15.00	30.00	15.00
	Std. Deviation	17.252	17.678	18.315	7.133
	N	7	8	15	11
Finfish	Mean	30.67	22.78	22.40	17.60
	Median	20.00	20.00	21.50	16.00
	Std. Deviation	27.368	10.341	16.601	7.677
	N	9	9	10	10
Shrimp	Mean	10.14	8.77	32.57	23.92
	Median	10.00	10.00	40.00	20.00
	Std. Deviation	6.157	6.463	17.443	13.943
	N	11	11	14	13
Total	Mean	20.46	16.12	29.12	18.68
	Median	15.00	15.00	30.00	15.00
	Std. Deviation	19.937	12.923	17.602	11.067
	N	27	28	39	34

Table 72:
Q27: How many generations has your family been in the seafood industry?

What is your group in the fishery?	How many generations has your family been in the seafood industry? (1-You are the first)	How many generations has your family been in the seafood industry? (2-Parents, Uncles, etc.)	How many generations has your family been in the seafood industry? (3-Grandparents, etc.)	How many generations has your family been in the seafood industry? (4+)
Crab	8	2	3	1
Finfish	6	2	2	0
Shrimp	8	4	3	0
Total	22	8	8	1

Table 73:
Q28: What year were you born? (Converted in age in 2019)

Age in 2019

What is your group in the fishery?	Mean	Median	Std. Deviation	Minimum	Maximum	N
Crab	55.73	57.00	15.791	18	86	15
Finfish	53.00	56.00	14.629	27	75	10
Shrimp	57.50	61.50	12.924	23	69	14
Total	55.67	59.00	14.241	18	86	39

Table 74:
Q29: What is the highest level of education that you have completed?

What is your group in the fishery? * What is the highest level of education that you have completed? Crosstabulation

			What is the highest level of education that you have completed?						Total
			Some high school	GED	High School	Some colllege/Associates	College degree (BA/BS)	Advanced degree	
What is your group in the fishery?	Crab	Count	2	3	5	3	0	1	14
		% within What is your group in the fishery?	14.3%	21.4%	35.7%	21.4%	0.0%	7.1%	100.0%
	Finfish	Count	0	1	3	2	2	2	10
		% within What is your group in the fishery?	0.0%	10.0%	30.0%	20.0%	20.0%	20.0%	100.0%
	Shrimp	Count	1	3	6	3	0	1	14
		% within What is your group in the fishery?	7.1%	21.4%	42.9%	21.4%	0.0%	7.1%	100.0%
Total		Count	3	7	14	8	2	4	38
		% within What is your group in the fishery?	7.9%	18.4%	36.8%	21.1%	5.3%	10.5%	100.0%

Table 75:
Q30: What racial and ethnic categories best describe you?

What is your group in the fishery? * What racial and ethnic categories best describe you? Crosstabulation

			What racial and ethnic categories best describe you?		Total
			Native American	White	
What is your group in the fishery?	Crab	Count	1	12	13
		% within What is your group in the fishery?	7.7%	92.3%	100.0%
	Finfish	Count	0	9	9
		% within What is your group in the fishery?	0.0%	100.0%	100.0%
	Shrimp	Count	0	11	11
		% within What is your group in the fishery?	0.0%	100.0%	100.0%
	Not Commercially Fishing	Count	0	27	27
		% within What is your group in the fishery?	0.0%	100.0%	100.0%
Total		Count	1	59	60
		% within What is your group in the fishery?	1.7%	98.3%	100.0%

Table 76: Total population in Georgia by county

	Total Population 1970	Total Population 2018	Percent Change
Bryan	6,539	35,885	449%
Camden	11,334	52,714	365%
Chatham	187,767	287,049	53%
Glynn	50,528	85,292	69%
Liberty	17,569	62,108	254%
McIntosh	7,371	14,120	92%

Sources: U.S. Census Bureau; American Community Survey, 2018 American Community Survey 5-Year Estimates, Table B01003; generated by Gina Shamshak; using data.census.gov; <https://data.census.gov/cedsci/>; (8 Dec 2020).
U.S. Bureau of the Census. Census of Population. 1970. Vol 1, Characteristics of the Population, Part 12, Georgia.

Table 77: Median Household Income in Georgia by county

	Median Household Income (2018)
Bryan	71,322
Camden	56,397
Chatham	54,911
Glynn	59,004
Liberty	45,959
McIntosh	47,114

Sources: U.S. Census Bureau; American Community Survey, 2018 American Community Survey 5-Year Estimates, Table DP03; generated by Gina Shamshak; using data.census.gov; <https://data.census.gov/cedsci/>; (8 Dec 2020).

Table 78: Median Age in Georgia by county

	Median Age (2018)
Bryan	34.6
Camden	32.2
Chatham	35.2
Glynn	42.1
Liberty	28.1
McIntosh	49.7

Sources: U.S. Census Bureau; American Community Survey, 2018 American Community Survey 5-Year Estimates, Table S0101; generated by Gina Shamshak; using data.census.gov; <https://data.census.gov/cedsci/>; (8 Dec 2020).

Table 79: Percent without health insurance coverage

	Percent without Health Insurance (2018)
Bryan	11.20%
Camden	11.70%
Chatham	14.50%
Glynn	14.10%
Liberty	12.50%
McIntosh	15.90%

Sources: U.S. Census Bureau; American Community Survey, 2018 American Community Survey 5-Year Estimates, Table DP03; generated by Gina Shamshak; using data.census.gov; <https://data.census.gov/cedsci/>; (8 Dec 2020).

Table 80: Percent owner-occupied and renter-occupied housing in Georgia by county

	Percent of Owner-Occupied Housing (2018)	Percent Renter-Occupied Housing (2018)
Bryan	69.8%	31.1%
Camden	62.1%	37.9%
Chatham	54.8%	45.2%
Glynn	62.2%	37.8%
Liberty	44.5%	55.5%
McIntosh	77.8%	22.2%

Sources: U.S. Census Bureau; American Community Survey, 2018 American Community Survey 5-Year Estimates, Table DP04; generated by Gina Shamshak; using data.census.gov; <https://data.census.gov/cedsci/>; (8 Dec 2020).

Table 81: Population by race in Bryan County, Georgia

	Bryan 1970	Bryan 2018
American Indian and Alaska Native		0.5%
Asian		1.5%
Black or African American		14.8%
Hispanic or Latino		6.8%
Native Hawaiian and other Pacific Islander		0.1%
Other	21%	2.5%
Two or more races		3.7%
White	79%	77.1%

Sources: U.S. Census Bureau; American Community Survey, 2018 American Community Survey 5-Year Estimates, Table DP05; generated by Gina Shamshak; using data.census.gov; <https://data.census.gov/cedsci/>; (8 Dec 2020).
U.S. Bureau of the Census. Census of Population. 1970. Vol 1, Characteristics of the Population, Part 12, Georgia.

Table 82: Population by race in Camden County, Georgia

	Camden 1970	Camden 2018
American Indian and Alaska Native		0.7%
Asian		2.1%
Black or African American		18.7%
Native Hawaiian and other Pacific Islander		0.1%
Other	36%	1.9%
Two or more races		3.5%
White	64%	72.9%

Sources: U.S. Census Bureau; American Community Survey, 2018 American Community Survey 5-Year Estimates, Table DP05; generated by Gina Shamshak; using data.census.gov; <https://data.census.gov/cedsci/>; (8 Dec 2020). U.S. Bureau of the Census. Census of Population. 1970. Vol 1, Characteristics of the Population, Part 12, Georgia.

Table 83: Population by race in Chatham County, Georgia

	Chatham 1970	Chatham 2018
American Indian and Alaska Native		0.3%
Asian	0.1%	2.6%
Black or African American	34%	39.8%
Hispanic or Latino		6.3%
Native Hawaiian and other Pacific Islander		0.1%
Other	0.2%	1.6%
Two or more races		3%
White	66%	52.7%

Sources: U.S. Census Bureau; American Community Survey, 2018 American Community Survey 5-Year Estimates, Table DP05; generated by Gina Shamshak; using data.census.gov; <https://data.census.gov/cedsci/>; (8 Dec 2020). U.S. Bureau of the Census. Census of Population. 1970. Vol 1, Characteristics of the Population, Part 12, Georgia.

Table 84: Population by race in Glynn County, Georgia

	Glynn 1970	Glynn 2018
American Indian and Alaska Native		0.4%
Asian	0.3%	1.3%
Black or African American	25%	26.1%
Hispanic or Latino		6.6%
Native Hawaiian and other Pacific Islander		0.1%
Other	0.1%	1.8%
Two or more races		2.4%
White	75%	67.9%

Sources: U.S. Census Bureau; American Community Survey, 2018 American Community Survey 5-Year Estimates, Table DP05; generated by Gina Shamshak; using data.census.gov; <https://data.census.gov/cedsci/>; (8 Dec 2020). U.S. Bureau of the Census. Census of Population. 1970. Vol 1, Characteristics of the Population, Part 12, Georgia.

Table 85: Population by race in Liberty County, Georgia

	Liberty 1970	Liberty 2018
American Indian and Alaska Native		0.5%
Asian	0.9%	2.1%
Black or African American	35%	41.1%
Hispanic or Latino		12.6%
Native Hawaiian and other Pacific Islander		0.5%
Other	0.5%	3.3%
Two or more races		6%
White	65%	46.5%

Sources: U.S. Census Bureau; American Community Survey, 2018 American Community Survey 5-Year Estimates, Table DP05; generated by Gina Shamshak; using data.census.gov; <https://data.census.gov/cedsci/>; (8 Dec 2020). U.S. Bureau of the Census. Census of Population. 1970. Vol 1, Characteristics of the Population, Part 12, Georgia.

Table 86: Population by race in McIntosh County, Georgia

	McIntosh 1970	McIntosh 2018
American Indian and Alaska Native		0.5%
Asian	0.1%	2.1%
Black or African American	49.9%	41.1%
Hispanic or Latino		12.6%
Native Hawaiian and other Pacific Islander		0.5%
Other	0.1%	3.3%
Two or more races		6%
White	49.9%	46.5%

Sources: U.S. Census Bureau; American Community Survey, 2018 American Community Survey 5-Year Estimates, Table DP05; generated by Gina Shamshak; using data.census.gov; <https://data.census.gov/cedsci/>; (8 Dec 2020). U.S. Bureau of the Census. Census of Population. 1970. Vol 1, Characteristics of the Population, Part 12, Georgia.

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"It's no fish ye're buying – its men's lives."
Sir Walter Scott (The Antiquary, 1816)

ENVS 387 – Coastal Georgia: Geography, History, and Politics of Fishing Culture

Instructor:	Dr. Tracy Yandle	E-Mail:	tyandle@emory.edu
Classroom:	Science-Math West 507	Office:	Science-Math East 514
Class Hours:	T, Th 11:30 – 12:45	Office Phone:	404-727-6314
Office Hours:	T,Th 1:00 to 2:00 & by appointment		

Course Description/Objectives:

"Geography, History, and Politics of Fishing Culture" is an intermediate research-focused course. It is designed to

- Introduce the practice of social science research, including a week of field work during Spring Break.
- Explore the geography, history, and culture of the Georgia fishing industry
- Present the complexity of US fisheries management.

Success in this class will require an orientation towards social science, and ability to work as an active member of a research team. In the process, you will learn about an industry and culture unique to Georgia and the Southeastern United States. By the end of the semester, you should be able to:

1. Understand the social regulatory and economic drivers and challenges of Georgia's fishing industry.
2. Appreciate the historic context of Georgia fishing and discuss to what extent it drives current industry dynamics.
3. Define the regulatory regime driving US Fisheries management
4. Accurately describe our research project and your role in the project
5. Master several of the tools necessary to conduct historical and social science research
6. Work as part of a team to assess conduct social science field research
7. With your team produce high-quality research-driven profiles of multiple locations of Georgia fishing infrastructure

This course is designed to serve as an introduction to the practice of applied social science field research. You will gain knowledge of Georgia fishing culture, politics, and geography in the context of applying it to active research.

Communication:

Canvas
This course uses Canvas. To log onto canvas, go to: http://www.emory.instrucure.com
E-Mail
I make all efforts to answer e-mails within 24-48 hours. When I am traveling or extremely busy, I may miss this goal. Please e-mail me at tyandle@emory.edu.

Course Structure:

This course will be driven by your participation and engagement with both the materials and the research process.

From a weekly perspective, we will have a regular routine. Each week we will start by discussing readings (loosely defined, may include book chapters, articles, podcasts, videos, etc) and building our knowledge of Georgia fishing culture. This will usually take all of Tuesday's class, and may take part of Thursday's class. The primary focus of Thursday's class will be research – either the learning the practice and ethics of research or working on our research project. There may be additional reading for research practice, but not every week.

From a broader perspective, the central part of this course is the Spring Break field research week. Before Spring Break, research effort will focus of background work necessary to understand the history of each site. During Spring Break we will conduct field work, and after Spring Break we will focus of analyzing and writing up our finding ready for web presentation.

Required Readings:

There are no textbooks assigned for this course. Readings will be posted for each week, and the reading and a reflection on the reading must be completed by the Tuesday of each week before class. Occasionally, there will be additional Thursday research readings. You are REQUIRED to complete ALL readings by 9:00am on Tuesday of the week due. Readings will evolve over the semester depending on our interests, and needs. While topics are listed in the syllabus, individual readings are not. Instead, please use Canvas.

Grading:
Grading is weighted to value your participation – both individually and as a team member. Please plan on being deeply engaged with this class.

- **Reading Reflections: 25%**
  Each week you will submit a reflection of the readings for the week. Readings reflections have two goals: 1) Show me you completed and understood the readings. (this should be about 1/3 of the writing.) 2) Demonstrate your thinking about the materials (This should be about 2/3 of the writing.) A separate document provides guidance on writing a quality reflection;

- **In Class Participation: 15%**
  Hard work and participation are important. I expect you to come to class prepared, and to participate fully in the learning process. Examples of activities that influence your participation grade are: quality of contribution to class discussion, any collected in-class materials, participation in in-class exercises. The best way to do well is consistent and contentious effort throughout the semester.

- **Peer Evaluation of Team Work: 10%**
  Several times during the semester, you will evaluate team members on their performance, and they will evaluate your performance. This is designed to ensure consistent good-faith effort among group members and to reduce free-riding.

- **Field Work: 20% (Participation 10%, Field Notes/Reflection 10%**
  Field work is intensive experience that requires effort and reflection. Participation grade will reflect effort and submitting field notes provides an opportunity for reflection. More details about work expectations and on field notes expectations will be provided closer to Spring Break.

- **Team Final Submission: 20%**
  Each team will submit a research-driven analysis of each site in their portfolio, these analyses will be in a format ready to be published to the Web. More details will be provided later in the semester.

- **Small Assignments: 10%**
  Brief assignments will be submitted during the semester, focused on specific aspects of the course learning objectives

Course Policies:
I really don't like writing this section any more than you enjoy reading it. College is a time of discovery and living life to its fullest. It is also supposed to be a time of work and shared learning. Unfortunately, some students occasionally forget the balance. Therefore, the following policies apply to this course.

1. **Handing in assignments:** Unless otherwise specified, you are expected to hand in all assignments via Canvas. Reading Reflections are due at 9:00am every Tuesday. Other assignments are due at 5:00pm of the due date.
2. **Late or Missed Assignments:** In case of a schedule conflict or any personal issues affecting your ability to hand in an assignment, it is your responsibility to contact me and arrange an extension. You must arrange the extension before the assignment or test is due. Unexcused late assignments will be penalized at 1/3 of letter grade per day. For example, if an assignment is due on Thursday September 30, but is handed in on Saturday October 3, it is two days late, so a B+ would become a B-. If that same assignment (due on Thursday September 30) was handed in on Thusday October 7, it would be seven days late, so a B+ would become a D.
3. **Corrupted Files:** Corrupted (unreadable) files are NOT an excuse for turning in an assignment late. It is your responsibility to back up your work to multiple locations and make sure that the work you submit is in a readable format. Corrupted files will incur the late penalty described above, and will not be eligible for an extension, EVEN IF I DO NOT DISCOVER THE CORRUPTED FILE FOR SEVERAL DAYS AFTER SUBMISSION. Double-check your work before you submit it.
4. **Attendance:** Attendance is not required. However, participation is a significant part of your semester grade, and you cannot participate if you are not attending. So, missing classes will definitely have an effect on your final grade.
5. **Lateness:** Clearly, I prefer that you arrive on time, and habitual lateness will be penalized. But, if there is an occasional situation where the choice is between coming late or not coming at all, please come to class.
6. **Accommodations:** Emory University is committed under the Americans with Disabilities Act and its Amendments and Section 504 of the Rehabilitation Act to providing appropriate accommodations to individuals with documented disabilities. If you have a disability-related need for reasonable academic adjustments in this course, provide the instructor(s) with an accommodation notification letter from Access,

Disabilities Services and Resources office. Students are expected to give two weeks-notice of the need for accommodations. If you need immediate accommodations or physical access, please arrange to meet with instructor(s) as soon as your accommodations have been finalized.

Honor Code Reminder:

The honor code is in effect throughout the semester. By taking this course, you affirm that it is a violation of the code to cheat on exams, to plagiarize, to deviate from the teacher's instructions about collaboration on work that is submitted for grades, to give false information to a faculty member, and to undertake any other form of academic misconduct. You agree that the teacher is entitled to move you to another seat during examinations, without explanation. You also affirm that if you witness others violating the code you have a duty to report them to the honor council. http://catalog.college.emory.edu/academic/policies-regulations/honor-code.html

Be sure you understand what is plagiarism. Most of you already realize that you *must* use quotation marks when directly quoting a text, and you must let the reader know who and where the quote came from. However, even when you paraphrase a quote or use someone else's ideas you must also give them name your source (e.g. cite the source). Not doing so also constitutes plagiarism. In addition, you must be careful when taking notes from web sources so that you do not inadvertently plagiarize web sites. We will provide information on proper documentation of sources in the term paper assignment. If you have any questions about the difference between plagiarism and paraphrasing, please see me or Emory University Writing Center. For a quick discussion of plagiarism, see http://www.emory.edu/ENGLISH/WC/plagiarism.html In addition, the library offers a workshop on avoiding plagerism. For information, go to: http://web.library.emory.edu/services/instruct/workshops.html#plagiarism

What about working together on assignments? I have no problem with you discussing assignments with your peers *as long as you submit your own original work*. However, I strongly urge you not to share notes or other written materials with each other. Doing so makes it very easy to slide into plagiarizing each other's material. This is an honor code violation and will be dealt with appropriately. *It is expected that you will submit your own original work.*

Extra Credit

The points available from extra credit are modest. If a grade is on the edge (e.g., between a B and a B+), the extra credit may be enough to make a difference in the final grade. Extra credit will not be enough to create a dramatic change (e.g., a C- to a B or an F to a C-). You may do a maximum of one extra credit projects. Details about the extra credit project will be posted on Canvas.

Extra credit can be earned in this class in one way only:
Below is a list of books that have nothing (or nothing obvious) to do with environmental policy. There are 20 books, covering a variety of genres – reports, science fiction, history, novels autobiography, popular fiction, classics, etc. There should be SOMETHING here that would interest you. You must choose a book that you have not read before, read it, then write a 1 page single-spaced commentary on the book that accomplishes the following:

Course Schedule:
Below is an outline of the plan for the semester. Please note: Additional assignment will be added and reading reflections are due every Tuesday at 9:00am. Topics may change by mutual agreement. Please see Canvas for specific readings and assignments.

Week/ Dates	Topic	Notes
Week 1 Jan 15-17	Welcome	Introductory Readings: Adler – "Should we really be eating shrimp?" (Vogue) Greenburg – "American Catch" Chapter 2 Reflection Due by Thursday at 5:00PM.
Week 2 Jan 22-24	Coastal Geography and Natural History	Assignment: CITI Certification due 1/24 Read: Martin "Life Traces of the Georgia Coast" Ch. 2 (Part 1 & Part 2) Martin "Life Traces of the Georgia Coast" Ch.2 Martin Ch.2 part 1.pdf and Martin Ch.2 part 2-1.pdf also, please read this and carefully watch the video that is embedded.
Week 3 Jan 29-31	History Part 1	Read: Bell – Race, Resistance Thompson & Turch – Native American Economics Part I, II, and III of Georgia's 8th grade history textbook There's going to be three reading this week -- two journal articles and excerpts from Georgia's 8th grade history textbook. All together its a lot of pages. The goal is for you to skim these for big ideas/patterns/contrasts between the articles and the textbook. The textbook is really light read (middle-school), but it is interesting on a couple levels. First, it provides basic summary information about Georgia history, particularly in the colonial era. Second, the perspective it uses and how it presents or doesn't present certain information is worth thinking about critically. This 1999 text was used in Georgia classrooms as recently as three years ago. I do not endorse its perspectives, but it is an informative read, particularly when contrasted with the journal articles. Article 1: Bell - Race, Resisteance.pdf Article 2:Thompson & Turch -- Native American Economies .pdf Textbook: Week 3 textbook part 1 of three.pdf Week three textbook part 2 of 3.pdf Week three textbook part 3 of 3.pdf

Week/ Dates	Topic	Notes
Week 4 Feb 5-7	History Part 2	Read: Another installment of Georgia's History Textbook (Week 4 Parts 1, 2, & 3) Articles discussing the curious and sad case of Harris Neck (Articles 1 & 2) Listen to "Undisclosed" Podcast, Season 3, Episode 20 "Election Time" This week we have three different sets of "readings" looking at 19th/ 20th century history in Georgia, particularly in coastal Georgia. Another installment of the Georgia history textbook: Week 4 textbook part 1 of 3.pdf Week 4 textbook part 2 of 3.pdf Week 4 textbook part 3 of 3.pdf Two articles about curious and sad case of Harris Neck (which we will visit when we are on the coast) Article 1 (2010) Article 2 (2015-ish) A roughly 1 hour podcast from "Undisclosed" about the history, politics and race relations in Camden County. "Undisclosed - Season 3 Episode 20 - Election Time" It is context on the case of a murder convict in the county (which covers all of Season 3) but useful for our purposes. If you like podcasts and have the time, I highly recommend listening to the entire season.
Week 5 Feb 12-14	Coastal Culture and Demographic	Listen to "Undisclosed" Episode 19, "Papertown Gothic" Read: Blount & Kitner 2007: "Life on the Water: A Historical-Cultural Model of African American Fishermen of the Georgia Coast" Gatewood & McCay: "Comparison of Job Satisfaction in Six New Jersey Fisheries: Implications for Management" Three quite different "readings" this week -- two focused different aspects of coastal Georgia, and one taking a more quantitative approach to understanding fisher behavior -- the research was done in New Jersey, but the findings are believed to be broadly applicable. Apologies for the marked up .pdf, it's from my paper files because I couldn't find it in the Emory database. • Undisclosed -- Episode 19 Papertown Gothic: Another podcast episode. This will particularly resonate after today's class. • Blount & Kitner 2007 "Life on the Water: A Historical-Cultural Model of African American Fishermen of the Georgia Coast" Blount-2007-NAPA_Bulletin (1).pdf • Gatewood & McCay - "Comparison of Job Satisfaction in Six New Jersey Fisheries: Implications for Management" Gatewood & McCay.pdf

Week/ Dates	Topic	Notes
Week 6 Feb 19-21	Shrimping	Read: The Mystery of Black Gill: Shrimpers in the South Atlantic Face Off with a Cryptic Parasite Century of Shrimping: Portrait of an American Industry Listen to at least one oral history: Richard Puterbaugh LC Scott Michael Edward Vernon & Renee Audrey Jones Robert Todd The Mystery of Black Gill: Shrimpers in the South Atlantic Face Off with a Cryptic Parasite Century of Shrimping: Portrait of an American Industry Four oral histories with Georgia shrimpers (recorded last Spring) are linked below. Please listen to 1 of them as assigned below. Each oral history is approximately hour 15 minutes. During class, we will compare fisher experience, so please pay careful attention so you can report back to class. • Emilio, Will: Oral History: Richard Puterbaugh • Maya, Camille: Oral History: LC Scott • Nadia, Ananda: Oral History: Michael Edward Vernon & Renee Audrey Jones • Olivia, Medha, Shantal: Oral History: Robert Todd
Week 7 Feb 26-28	Finfishing	Read: Kitner 2006: “Beeliners, Pinkies, and Kittie” Yandle & Crosson 2015: “Whatever happened to the Wreckfish Fishery” Colemen et al: “Long Lived Reef Fishes: The Grouper-Snapper Complex” Kitner 2006 "Beeliners, Pinkies and Kittie" Kitner 2006.pdf Yandle & Crosson 2015 "Whatever happened to the Wreckfish Fishery?" Yandle and Crosson 2014.pdf Colemen et al "Long Lived Reef Fishes: The Grouper-Snapper Complex"Coleman et al .pdf

Week/ Dates	Topic	Notes
Week 8 March 5-7	Crabbing	Read: Chapter 5 of Warner's "Beautiful Swimmers" Appendix A & Appendix B of Dr. Dana Cooley's Dissertation Listen to one of these Oral Histories: David Anthony Karwacki Tommy Brown Read Chapter 5 of Warner's "Beautiful Swimmers" -- This is in the Chesapeake Bay (not GA) but the fundamentals apply. Warner Ch. 5.pdf Read Appendix A and Appendix B of this dissertation: cooley_dana_r_200305_phd.pdf As assigned, listen to one of these oral histories: • Emilio, Nadia, Shantal , Medha, Ananda: David Anthony Karwacki • Maya, Olivia, Will, Camile: Tommy Brown
Week 9 March 9-17	SPRING BREAK FIELD WORK!	SPRING BREAK FIELD WORK!
Week 10 March 19-21	Debriefing	
Week 11 March 26-28	Fisheries Science	Read: Atlantic States Marine Fisheries Commission Guide for Fisheries Science and Stock Assessment Please read this entire document carefully -- it's not one that you can skim. Atlantic States Marine Fisheries Commission_Guide for Fisheries Science and Stock Assessment
Week 12 April 2-4	Fisheries Economics and Management	Read: 2017 Status of Stocks NOAA Climate Change Please read the two attached document. The second (climate change) is long and can just be skimmed. Economics is not explicitly addressed in these readings, but we will discuss in class. 2017 Status of Stocks.pdf NOAA Climate Change.pdf

Week/ Dates	Topic	Notes
Week 13 April 9-11	SSC Week	Webinar
Week 14 April 16-18	Aquaculture	Assignment: Webinar Reflection Due Read: Parts 1-4 of "A High Low Tide: The Revival of a Southern Oyster by Andre The files below all together make up a goodly chunk on the book "A High Low Tide: The Revival of a Southern Oyster" by Andre Joseph Gallant, published in late 2018. It is a lovely light read with lots of names that will be familiar to you (like Charlie Phillips and Tom Bliss, to name a few.) Below are the readings broken up into 4 **uneven** chunks depending on the whims of the scanner. These are the readings for this week and next. I'm giving them all to you here so you can adjust the amount of reading you do this week and next depending on your workload in other classes. **Fair Warning: Whatever you do not read this week, you will need to read for next week's reflection!** As you read this, please treat is as a light enjoyable skim, not an academic text that needs to be analyzed. Even though there are a lot of pages here, this should not be time-consuming, and reading should be more of a break from other work than a burden. For each reflection, please note the pages you read (don't worry about pages I didn't scan, so eg., 1-192,etc) and write your reflection as you normally would. You should also have opportunities (if you want, not required) to discuss this book relative to your Spring Break field experience. Here are the reading files: Gallant 1 of 4.pdf Gallant 2 of 4.pdf Gallant 3 of 4.pdf Gallant 4 of 4.pdf Joseph Gallant
Week 15 April 23-25	Wrapping it all up	Presentations and Final Team Submissions Read: Finish Parts 1-4 of "A High Low Tide: The Revival of a Southern Oyster" by Andre Joseph Gallant Please see assignment for Week 14, and write a reflection on whatever you did not read for that week. Please note pages read. Also, if you would like to include any more generalized reflections on the course and your experience in it, that would make me quite happy.

Acknowledgements:

This project supported in part by an Institutional Grant (NA18OAR4170084) to the Georgia Sea Grant College Program from the National Sea Grant Office, National Oceanic and Atmospheric Administration, U.S. Department of Commerce.

All views, opinions, findings, conclusions, and recommendations expressed in this material are those of the author(s) and do not necessarily reflect the opinions of the Georgia Sea Grant College Program or the National Oceanic and Atmospheric Administration.

We would like to thank Georgia Sea Grant and UGA Marine Extension for supporting our work.