

Project Final Report

Factors Affecting Participation in Marine Fisheries: Case Studies in Georgia and North Carolina

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Project Final Report

I. Project Title: Factors Affecting Participation in Marine Fisheries: Case Studies in Georgia and North Carolina

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II. Abstract

The overall objective of this project is to characterize the state of fisheries in McIntosh County, Georgia, and Brunswick County, North Carolina during the decade 1994-2003. The characterization will be on the basis of the direction and approximate rate of growth or decline of commercial and recreational fisheries. A specific objective is to identify the factors that may be responsible for the changes during that period. Specific hypotheses are presented for testing, but the general predictions of changes are: (1) that in both counties the commercial fisheries will have experienced a gradual but steady decline in number of fishermen; (2) that in both counties a gentrification process will be underway, reflecting a decline in recreational fishing among long-term, multi-generational residents and an increase in more recently settled residents; but (3) that in Brunswick County, North Carolina, the gentrification process and thus the proportion of recreational fishermen will be considerably greater than in Georgia.

Paragraph Summary of the Final Report: The Final Report contains an Executive Summary, an overview of the research conducted, an account of who carried out data collection and analyses of the various aspects of the project, and a summary of the research findings. Detailed accounts are given of the dock intercept surveys in each of the two counties and of the questionnaire surveys that constitute the central part of the research.

III. Executive Summary

McIntosh County, Georgia, and Brunswick County, North Carolina represent two different points in the history of commercial fisheries. Although McIntosh County was not the place of origin of shrimping on the Georgia coast, the county has long been the major commercial fishing zone of all of the coastal counties of the state. Less than 10 percent of the coastal population is in McIntosh County, but approximately 40 percent of commercial landings are made there. The county remains rural and with low per capita income. Recreational fishing is pursued by a substantial number of the residents, as a relatively inexpensive way to enjoy relaxation. Infrastructure for commercialized recreational fishing and for tourism in general remains very low and undeveloped. Yet, changes are underway that are moving the county into a new developmental direction.

Within the past few years, real estate property and values have begun to change substantially. New sub-divisions have begun to appear, capitalizing on the access to waterways and relatively unspoiled beauty of the area. Golf courses have appeared for the first time. Condominiums on the riverfront in Darien, the county seat, are under construction, and property values are rising sharply. Gentrification is in the early stages but well underway. Pressures on commercial fishing are also underway, especially through the loss of waterfront property for tourism purposes. At the same time, lowered market value for shrimp due to huge volume of imports has made commercial fishing a very difficult way of making a living. The way of life in the county of a significant portion of the population practicing fishing as a way of life is beginning to undergo changes that will eventually lead the county in the direction of development in Brunswick County, but the major economic transformations are only in the beginning stages in McIntosh County. Upscale housing for retirees and second homes and increases in tourism are likely the wave of the future, with growth in recreational fishing and downsizing in commercial fishing the likely outcomes.

For much of the middle part of the twentieth century, Brunswick County resembled McIntosh County at the turn of the millennium. Brunswick was the ‘fishing capital’ of the North Carolina coast, and it was the center for the shrimp fishery. Commercial fishing was a focus of the communities in the county, a means of livelihood or of part-time, supplemental work as a way of making a living. Per capita income was relatively low, and the county had only a few small towns, principally the South Port and Oak Island region. Infrastructure for gentrification was relatively low, despite the easier access to the barrier islands and sandy beaches, compared to McIntosh County. The patterns of economic growth that are only beginning in McIntosh County, however, were present at least one generation earlier in Brunswick County. Upscale sub-divisions began to appear, each with its own golf course, and beachfront condominiums were constructed at an ever-increasing rate. By the 1990s, Brunswick County was radically changed, compared with the 1960s and 1970s. Population had grown rapidly, the percentage of the population that constituted retirees had increased, and real estate values had escalated. Tourism had also grown considerably, attracting tourists especially from the Myrtle Beach area directly to the south. Recreational fishing became a commercially valuable enterprise, with numerous head boat and charter boat businesses appearing. Commercial fishing had declined, through alienation of waterfront property, fall in market value of landings, and increased cost of operations. Since commercial fishing in Brunswick County had always been more diverse than in McIntosh County, in terms of numbers of types of fisheries, the overall impact may not be as direct, but commercial fishing is clearly in decline. Additionally the rate of gentrification appears to be accelerating, with major conflict in the county emerging between smaller-scale recreational fishing and preservation of historic neighborhoods and much higher scale waterfront development. Competition and conflict between commercial and recreational fishing remain, but the major activity is now within the gentrification process itself.

McIntosh County is likely to move in the direction of growth similar to what has happened in Brunswick County, but two factors may slow the rate of gentrification. One

is lack of access to sandy beaches for tourists, and the other is the related and present lack of infrastructure for tourism (restaurants, hotels, etc.). McIntosh County is likely to depend comparatively more on attracting retirees and second home owners as fuel for their economic growth.

IV. Purpose

A. Detailed description of problem or impediment of fishing industry that was addressed.

The problem addressed was the factors that motivate fishermen to leave or to enter (1) commercial fisheries, and (2) recreational fisheries. The major focus was on factors that have contributed to the decline of the number of commercial fishermen during the 10-year period 1994-2003 and on the factors that have led to an increase in number of recreational fishermen. The two types of factors that were expected to be the most important were decreasing profits for commercial fishermen and increasing tourism and residential growth. The latter would be expected to increase pressures to force commercial fishermen out of fisheries and to encourage more recreational fishing and to increase the number of recreational fishermen.

Two counties were selected for comparative research, McIntosh County, Georgia, and Brunswick County, North Carolina. Each county is undergoing changes in commercial and recreational fishing, but the nature and degree of pressure from tourism and gentrification appears to be greater in Brunswick County. A controlled comparison between the two counties is expected to help identification of specific agents of change and the types of pressure on commercial or recreational fishing.

B. Objectives of the project.

The objectives are: (1) to identify commercial fishermen in each of the two counties who have stopped fishing during the past decade and to learn why they chose to leave the fishery; (2) to identify fishermen who have entered commercial fishing in the past decade and learn why they chose to enter the fishery; (3) to document through dock intercept surveys increases in recreational fishing during the past decade and to ascertain the factors that motivate individuals to fish for recreation; (4) to document the general public's views, interest, and experience in fishing through questionnaire surveys; and (5) to characterize the nature and degree of gentrification that has changed the coastal fishing landscape and both discouraged commercial fishing and increased recreational fishing. Overall the objective is to characterize the nature and extent of changes in commercial and recreational fishing in terms of numbers of fishermen who have entered or left each fishery.

V. Approach

A. Detailed description of the work that was performed.

1. Interviews were held with 15 shrimpers in McIntosh County during June-July 2003. The interviews focused on the factors that lead shrimpers to either enter or leave the fishery. Content analyses were carried out, to get a general sense of the issues and factors.
2. A survey questionnaire was developed in relation to the interviews and tested with residents in the county. The survey questionnaire was then mailed to a systematic (random) sample of individuals in the county. A total of 429 questionnaires were sent, and 141 of them were returned (a 33% return rate). The questionnaire contains questions about fishing experience, commercial and recreational, and about views and attitudes about the importance of fishing to the well-being of the county.
3. A survey was made of the commercial docks in McIntosh County, and a list was made of the boats that currently tie up at each one.
4. A list of all licensed shrimp boats was obtained from the Coastal Resources Division of the Department of Natural Resources, and those were checked against a similar list obtained in 1999. A record is thus available of the boats that are no longer in the fishery and of those that have entered within the last four years.
5. Photocopies were made of all the front page articles in the local newspaper, the *Darien Times*, which were focused on fisheries, tourism, and economic growth and development from 1994 through 2003.
6. An inventory was made of all new suburban housing developments and of the number of new houses constructed within them in McIntosh County. The information will help to establish measures of gentrification.
7. Dock-intercept surveys were conducted with recreational fishermen during June-July 2003. Fifty intercept interviews were conducted at fishing docks in McIntosh County.
8. A survey was made of commercial fishing docks in Brunswick County, NC, during March-April 2004, and a record was made of the number of shrimp boats at each dock.
9. Interviews were held with 15 fishermen and dock owners/managers at commercial docks in Southport, NC. The interviews focused on their perceptions of the major problems that commercial fishermen face and that might drive them to leave fisheries.
10. One hundred dock-intercept surveys were made with recreational fishermen at three docks in Brunswick County.
11. Inventories were made of the number of new suburban housing developments and tourist resorts in Brunswick County, to help establish measures of gentrification and tourist growth.

12. Photocopies were made of all of the front page articles in the local newspaper, the *State Port Pilot*, which were focused on fisheries, tourism, and economic growth and development from 1994 through 2003.

13. A telephone survey was conducted by the Social Survey Center of the Institute of Behavioral Research at the University of Georgia of 1,000 residents of Brunswick County. The survey was based on the questionnaire developed and used initially in the survey of residents of McIntosh County.

B. Project management: List individuals and/or organizations actually performing the work and how it was done.

1. The interviews were conducted by the P.I., assisted in McIntosh County by Heather Fleming, who is a resident of McIntosh County and whose family is engaged in the commercial shrimp fishery. The interviews occurred at the fishermen's homes or at the docks where they tie up their boats. Interviews were approximately 20-30 minutes in length.

2. The survey questionnaire was constructed and pre-tested by the P.I. Mailing of the questionnaires and processing of the returned forms was done by two undergraduate hourly workers at the University of Georgia, Meredith Jones and Meredith Blount.

3. The survey of commercial docks was done by the P.I., with assistance from Heather Fleming.

4. The list of licenses was obtained by the P.I. from the Department of Natural Resources, and the review of the boats and their present status in the fishery was done by shrimpers in the Fleming and Skinner families, two related families in McIntosh County.

5. The photocopies of newspaper articles were done by Heather Fleming and Alicia Skinner, both residents of McIntosh County and both from shrimping families. Preliminary analysis of the articles was made by Leslie Thayer-Coleman, a graduate student in Anthropology at the University of Texas at San Antonio.

6. The survey of housing developments was conducted by the P.I., with assistance from Heather Fleming.

7. The dock-intercept surveys were done by Heather Fleming and Alicia Skinner. The survey form was constructed by the P. I. Preliminary analysis was done by Eva Sansome, a graduate student in Anthropology at the University of Texas at San Antonio.

8. The survey of docks in Brunswick County was made by the P.I.

9. The interviews of fishermen in Brunswick County were carried out by David

Greenawalt, then a Ph.D. student in Anthropology at the University of Georgia. Mr. Greenawalt had just concluded 12 months of research on fisheries on Roatan, Bay Islands of Honduras. The interview protocol was developed by the P. I.

10. The dock-intercept surveys were carried out by David Greenawalt, using the form developed by the P.I. and used also in McIntosh County. Preliminary analysis of the dock intercept surveys was done by Eva Sansome.

11. The inventory of suburban and vacation housing developments was constructed by the P.I., based on information collected by David Greenawalt and the P.I.

12. The photocopies of articles on fisheries in the Southport Pilot were made by David Greenawalt. Preliminary analyses of the newspaper articles were made by Leslie Thayer-Coleman.

13. The survey of residents in Brunswick County was carried out by the University of Georgia Survey Research Center, as noted above. The questionnaire was the same as the one used in the McIntosh County survey. Data analysis was done by the P. I., with assistance provided by Gabriel Ferreyra, a graduate student in anthropology at the University of Texas at San Antonio.

VI. Findings

A. Actual accomplishments and findings.

The project had 14 working hypotheses. The hypotheses and the results of their testing are listed below. Testing was on the basis of questionnaire survey results, or dock intercepts, where possible. In some instances reported data from interviews, surveys, and newspaper accounts were used as qualitative results. The data bases and background information are reported in the various sections of the two profiles, McIntosh and Brunswick, below.

H1. The majority of commercial fishermen will be more than 50 years of age.

In McIntosh County, information from interviews, license records, and the questionnaire survey indicated that the majority of the commercial fishermen were at least 50 years of age. In Brunswick County, information from the Department of Environmental and Natural Resources indicated that the average age was 49.

H2. Only a small number (< 5%) of commercial fishermen will be under 40 years of age.

This was the case in both counties. Interviewees in McIntosh County could name only four or five individuals who were under the age of 40. Due to the part-time work of commercial fishermen in Brunswick County, specific numbers were more difficult to

obtain, but interviewees all reported that all of the fishermen were middle-aged or older.

H3. Only a small number (< 5%) of commercial fishermen will have entered fisheries in the past decade.

Only two commercial fishermen entered the shrimp fishery in McIntosh County. The part-time nature of commercial fishing in Brunswick County made collection of data to test the hypothesis difficult, but commercial fishing was seen to be in decline and unlikely to attract new fishermen. Commercial fishing was not seen as an option as a way of making a living.

H4. Only the head boat and charter owners/fishermen will have entered fisheries in any appreciable number (> 5%) in the past decade.

There were no head boats in McIntosh County, and only a few charter boat businesses operated there. The numbers were too small to draw any conclusions. Both types of fishing increased substantially in Brunswick County in the past several years, consistent with increases in tourism.

H5. The major reason cited by commercial fishermen who have left a fishery in the past decade will be difficulty of “making a living”.

The questionnaire surveys confirmed this prediction for both counties.

H6. The major factor in the difficulty in “making a living” cited by commercial fishermen who have left a fishery will be diminished economic return.

This hypothesis was meant to test for the type of factors that led to difficulty in having a sufficient income to make a living. Multiple reasons tended to be cited, with the ‘cost’ of regulations, operating expenses, competition within the fishery, and increasing volume of imports identified as major factors in both counties. In Brunswick County, water quality (pollution from surface runoff) was also seen as a major factor.

H7. The major factor cited by commercial fishermen that motivates them to remain in fisheries will be to maintain a “way of living,” even if they have a marginally thin or even negative economic return.

This was confirmed in each county by data from the questionnaire surveys, but the attraction to commercial fishing was cited as primarily ‘being out in the open on the water,’ and secondarily ‘being independent’. It was a preferred way to make a living.

H8. Commercial fishermen will universally discourage young people, especially their children, from entering commercial fishing as a means of livelihood.

No one was encountered who was willing to encourage young people in general to enter

commercial fisheries. All of the fishermen interviewed indicated that they would not encourage young people to try to make a living by fishing commercially.

H9. Individuals who have exited commercial fisheries in the past decade will tend to be toward the lower end of the socioeconomic scale than those who remain in the fisheries.

Income data were not possible to obtain in either county, but the almost universal explanation for leaving commercial fisheries was the difficulty of making a living. Those who spent the least time in the fisheries were those who could not afford to remain. Fishermen tend to stay in the fisheries as long as they can, leaving only in last resort. Those who remain have the highest levels of income.

H10. Individuals who entered recreational fisheries in the past decade will tend to be toward the higher end of the socioeconomic scale than those who do not fish for recreation.

Income data proved to be virtually impossible to collect, and evidence to “test” this hypothesis has to be used inferentially. Recreational fishing was also very different in the two counties. In McIntosh County, recreational fishing was more widespread among the resident population and was a more “core” form of recreation. In Brunswick County, individuals who have begun to fish recreationally in the past few years are mostly individuals middle-aged or older, likely to be retired, and they tend to be new to the county. The hypothesis seems to hold up for Brunswick but not for McIntosh County.

H11. Individuals who have stopped fishing for recreation in the past decade will be toward the lower end of the socioeconomic scale than those who continue to fish.

This hypothesis could not be tested in McIntosh County, since recreational fishing is still widespread, and it applied only indirectly to Brunswick County. The motivation for the hypothesis was that gentrification would tend to ‘push’ or ‘drive’ lower socioeconomic fishermen from the activity. That appeared to be underway in Brunswick County, due to demographic and socioeconomic shifts in the structure of the county.

H12. More recreational fishermen will have begun to fish in the past decade than fishermen who have ceased to fish.

Data for McIntosh County did not support this hypothesis, but the population growth and the substantial increase in number of new fishermen in Brunswick County is supportive of the hypothesis. The number of new head and charter boat operations in Brunswick County from tourism also provides support for the hypothesis.

H13. The major increase in recreational fishing in Brunswick County will be by tourists, whereas the major increase in recreational fishing in McIntosh County will be by recent retirees.

The increases in Brunswick County were due principally to tourists and retirees. Increases in McIntosh County were small, but they appeared to be derived from the very recent influx of retirees.

H14. Only a small number (< 5%) of new recreational fishermen will be less than 25 years of age.

The survey and dock-intercept data both confirmed this hypothesis.

B. If significant problems developed which resulted in less than satisfactory or negative results, they should be discussed.

There were two types of problems that emerged, at least partly unexpectedly. Collecting income-level data was expected to be difficult, but it proved to be virtually impossible. Respondents considered questions about income to be intrusive, even in mail questionnaires. Secondly, the number of commercial fishermen in Brunswick County who were, or are, part-time made identification of the 'set' of commercial fishermen impossible without longer-term, full-scale ethnographic research.

C. Description of need, if any, for additional work.

As noted, the fact that many of the commercial fishermen in Brunswick County are part-time made their identification difficult. An in-depth ethnographic survey sustained over the course of a year would be needed to provide complete information.

VII. Evaluation

A. Describe the extent to which the project goals and objectives were attained. This description should address the following:

1. Were the goals and objectives attained? How? If not, why?

The project goals and objectives were met, with the caveat that socioeconomic data were more difficult to obtain directly than was anticipated. The data from interviews, records, newspapers, dock intercepts, and questionnaire surveys provided the data to test the project's hypotheses.

2. Were modifications made to the goals and objectives? If so, explain.

Modifications were not made to the goals and objectives, and accordingly the conduct of the research was realigned to devote more of the first year to data collection at the expense of data analysis. The second year of the project was devoted primarily to recording and organization of the data. The move from the University of Georgia to the University of Texas at San Antonio delayed the completion of the field research in

Brunswick County and the final analyses of the data.

B. Dissemination of Project Results:

Presentations have been made at seven conferences on preliminary results of the research project: (1) two presentations at an international conference on people and the sea in Amsterdam, focusing (a) on the negative impact on the shrimp fishery in McIntosh County resulting from imports and economic pressures, especially on African American fishermen; and (b) on the concept of resilience in the shrimp fishery in McIntosh County; (2) two annual meetings of the American Anthropological Association, in Chicago and in Washington, DC, in symposia on issues in public policy; and (3) three annual meetings of the Society for Applied Anthropology, in Dallas, Texas, Santa Fe, New Mexico, and Vancouver, British Columbia. In each instance a presentation was made on issues facing commercial fishing in the southeastern U. S.

Papers have been written and submitted to three professional journals in anthropology. One paper has been accepted for publication, and the other two are currently under review for publication. Several other papers are planned. This report will be forwarded to prominent maritime and coastal anthropologists who work in the South Atlantic region, and a copy will be posted on the author's web page, which will be established by 31 August 2006.

NOTICE

Responses to this collection are required of grant recipients under the Marine Fisheries Initiative Program (MARFIN) (15 U.S.C. 713c-3(d)). The information provided will be used to evaluate whether the project conducted under the grant was successfully completed. Confidentiality will not be maintained--the information will be available to the public. Public reporting burden for this collection of information is estimated to average 13 hours per response including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspects of this collection of information, including suggestions for reducing this burden, to the National Marine Fisheries Service, Southeast Regional Office, 263 13th Avenue South, St. Petersburg, FL 33701.

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RESEARCH RESULTS: NA04NMF4330316

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II. PROFILE – McINTOSH COUNTY, GEORGIA

Introduction

McIntosh County is one of six coastal counties in Georgia that fronts the Atlantic Ocean. Like each of those counties, a strip of salt marsh, including a network of tidal creeks and rivers, lies between the coastal plain and sounds. Each county has offshore islands of Pleistocene origin that buffer the sounds and mainland. There are eight major islands, but there are scores of smaller, unnamed islands, some of which appear only at low tide. The major island offshore in McIntosh County is Sapelo, once a large plantation growing rice, sugar cane, and cotton and now home to Hog Hammock, a small community of African Americans derived from African slaves. Sapelo Island is under the management of the Georgia Department of Natural Resources, and access to the island is limited. Although the island has several miles of sandy beaches, they are not open to the general public.

The physical geography is a configuration of sequential ecological systems: sandy beaches on the leeward side of the islands, the islands themselves, sandy and with palmettos and live oaks and Spanish moss, large sounds, numerous estuaries, salt marsh, and eventually ‘solid ground’ on the coastal plain. The effect is a coastal strip that is rich in wildlife and fish, especially crustaceans, but that inhibits road infrastructure and that historically limited population size, density, and economic growth and development. Only a few communities exist at the ends of roads that snake their way to the coast, and those are on the few regions where salt marsh is not contiguous with the sounds. Towns are mostly located on the mainland, inland from the salt marshes and sounds. In McIntosh County, which is almost 25 percent water, the only town is Darien, which has a population of approximately 2,000 people. The entire county is designated “rural” by the U. S. Census Bureau.

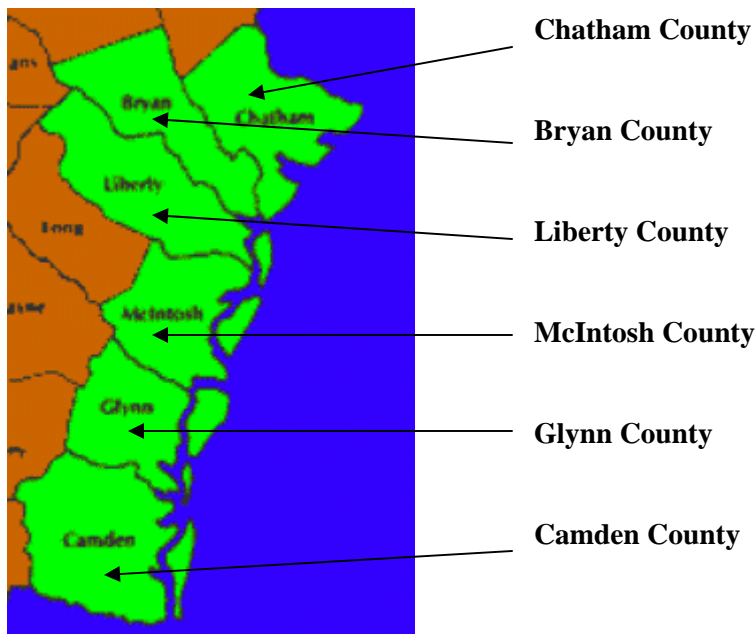
The map below, Figure MP1 (McIntosh Profile) shows the location of McIntosh County in relation to the state of Georgia

Figure MP1: McIntosh County and Georgia



McIntosh became a county in 1793, named after Lachlan McIntosh, a general in the Continental Army (http://en.wikipedia.org/widk/McIntosh_County%2C_Georgia). In 2003, the population was 11,085, placing the county 126 among the 159 counties of Georgia. Information from the 2000 census listed 4,202 households, and 3,012 families resident in the county. Population density was low, at 25 people per square mile. The ethnic makeup of the county was 61 percent European American, 37 percent African American, and all other ethnic groups made up the other two percent. The average household size was 2.5, the average family size was 3.0, and the median age was 37 years. The median income for households was \$30,102, and the median income for a family was \$34,363. The per capita income in 2000 was \$14,253, placing McIntosh number 153 of 159, but in 2002, the per capita income had increased to \$19,599, placing the state at number 131 among all counties (<http://www.bea.doc.gov/regional/>). The percentage of the population below the poverty line was 18.7 percent. McIntosh County, all in all, is not an easy place to make a living. Commercial fishing has been a mainstay for the past century and, despite increasing difficulty and hardship, fishing remains an important livelihood. In 1990, fishing (along with farming and forestry) was ninth among the occupations listed in the U.S. Census, at 193 in a total of 3,541 (5.4 percent). The major occupations were “precision production, craft, and repair operations (536)” and “service occupations (522)”.

Figure MP2: Map of Georgia Counties, Including McIntosh County



Commercial Fishing

The central importance of commercial fishing to McIntosh County can be seen in a number of ways. As noted above fishing, farming, and forestry were ninth in reported occupations in the county. That number is likely to be considerably underreported, since fishing and farming both can be part-time. The number of shrimp boats that tie up at docks in the county is variable from year to year but was more than 100 in 2003 (see Table MP3 below). The average income from ex-vessel landings from 1994-2004 was more than \$22 million. Table MP1 reports the year by ex-vessel values for the 12-year period.

Landings: Annual Dollar Value

Table MP1: Ex-Vessel Value of Commercial Fish, Coastal Georgia, 1994-2004*.

Year	Value (Dollars)	Percent (Approximate)
1994	26,751,093	11
1995	34,343,486	14
1996	21,573,803	9
1997	28,479,507	12
1998	24,052,778	10
1999	22,957,925	9
2000	21,661,218	9
2001	15,438,987	7
2002	15,593,041	7
2003	13,615,055	6
2004	14,718,680	6
2005	12,214,803	-
AVERAGE 1995-2004	22,428,689	100

*Derived from Georgia Department of Natural Resources, Coastal Resources Division

As Table MP1 shows, the value per year of landed commercial fish was considerably variable. The range was from \$34,343,486 in 1995 to \$12,214,803 in 2005. Note that the average does not include 2005, since the data were not complete at the time that the chart was constructed. The table also shows that the value per year declined across the 12-year span, with the sharpest break occurring between 2000 and 2001. As discussed below, the decline is an indicator of the escalating difficulty in making a living from commercial fishing.

When the information in Table 1 is disaggregated into fisheries, the major fishery by a considerable margin is shrimp, followed by hard blue crab. All of the other fisheries were small by comparison. Table MP2 contains information on the value of annual landings for shrimp, blue crab, and all other fisheries.

Table MP2: Ex-Vessel Value of Commercial Fish by Fishery, Georgia Coast, 1995-2005*.

Year	Food Shrimp	Hard Blue Crab	All Other Fisheries
1994	19,783,714	4,510,691	2,276,688
1995	27,002,973	5,020,608	2,319,905
1996	16,335,208	3,018,151	2,220,444
1997	22,254,286	3,853,798	2,371,423
1998	19,080,321	2,603,991	2,368,466
1999	18,364,973	2,045,645	2,547,307
2000	17,205,600	2,077,436	2,384,182
2001	10,459,975	2,500,704	2,478,308
2002	11,126,124	1,967,968	2,498,949
2003	9,299,556	1,901,227	2,414,272
2004	10,123,143	2,315,736	2,279,801
2005	7,555,881	2,653,522	2,005,400
AVERAGE 1995-2004	17,091,273	2,948,222	2,389,194

*Derived from Georgia Department of Natural Resources, Coastal Resources Division

A number of conclusions can be drawn from Table MP2. In any given year, the value of the shrimp landings was approximately four times the value of landed blue crab. The shrimp and blue crab fisheries declined substantially across the 12-year period. Shrimp landings declined by approximately 50 percent, with the sharpest break in 2001. Blue crab landings declined by more than 50 percent from 1995 to 2003, but there was a rebound in 2004 and 2005. A five-year drought from 1998 to 2003 likely affected both of the fisheries, especially the blue crab, but the decline in shrimp also reflects the rising volume of imported shrimp and resultant deflated prices. This will be discussed more below.

Importance of Fish/Seafood Houses

There were 21 fish or seafood houses in 2003. Listed for commercial purposes as “seafood” firms, the businesses are known locally as “fish houses,” establishments where fish/crustaceans are brought to be sold “off the boat” and processed to be sold wholesale to distributors or larger seafood processing agencies on the coast. While some of the fish houses processed or distributed blue crab in addition to shrimp, a number of small businesses served as distributors of blue crab only. Those are not included in the list below. The importance of fish houses as organization focal points demographically and economically is discussed below, following a list of the fish/seafood houses in the county.

1. Ben’s Seafood
2. Boone’s Seafood
3. Brannen’s Seafood
4. Brown & Sons, Inc.
5. Dewitt’s Seafood
6. Forsyth’s Seafood
7. Gore’s Seafood
8. Jacob’s Seafood
9. Marco Seafood
10. Phillip’s Seafood
11. PJ’s Crab Company
12. Sea Gardens Seafoods, Inc
13. Shell Creek Seafood
14. Skipper Seafood (sold in 2003)
15. Skinner Seafood
16. Smith & Sons Seafood
17. Southern Seafood, Inc.
18. Thompson Seafood
19. Valona Seafood
20. Walter’s Caviar
21. Ward’s Seafood

Fish Houses and Boats

Most shrimp boats in McIntosh County “tie up” at a ‘fish house,’ i.e., a seafood processor. Boats that tie up at a fish house sell their shrimp to the owner and purchase their fuel and ice there. Some of the boats may belong to the owner of the fish house. Those may be leased to an operator, or a captain may simply be hired. The financial arrangements are negotiated with the boat/fish house owner. While boats may tie up at a fish house on a more or less permanent basis, other boat owners move up and down the coast, changing where they tie up as they go. Interviews with owners of fish houses in McIntosh County indicated that each fish house tends to

have ‘steady’ or permanent shrimpers who tie up with them, but they reported that the number of boats changes from year to year and even within a shrimping season. Boats from the Carolinas, ‘following’ shrimp down the coast, may tie up for part of the season or even all of the season. Likewise, Georgia shrimpers may decide to change fish houses, usually moving to a different county rather than moving within the same county.

Knowledge about which boats ‘fish out of’ which fish houses within a county is important knowledge to shrimpers. Fish houses are, in fact, the focal points of socioeconomic interaction and integration. Shrimpers who tie up at the same fish house know well the other shrimpers, since they see and interact with them often, typically several times a week. They may be relatives or close friends who have known each other for years. At any one time, virtually any shrimper can provide a list of the boats that tie up at the same fish house as them, unless they are relatively new to the area. Typically shrimpers can also name the boats that fish out of other fish houses within the county. Proximity serves as a guide; shrimpers at fish houses more adjacent to other fish houses are more likely to know the names of the boats than would be the case for more distant fish houses. As noted, knowledge of who fishes in the same county is important, to know whether shrimp are being caught, to know who the competition is, and for cooperation when needed. Interviews with only a few shrimpers made several interesting facts clear. They tend to keep track of other shrimpers not by their names, unless they have reason to know each other well, but by the names of the boats. If asked who ties up at which fish house, the answer is in terms of the boats, typically naming a fish house, listing the boats that tie up there, and then repeating the process with each fish house. The cultural information that they share – the cultural models – is, first, the names of the fish houses, and then at a lower level, the names of the boats that tie up there. Moreover, when shrimpers talk with each other on the open water, via radio or phones, they identify themselves by the boat names, not their personal names.

Table MP3 below is a list of the shrimp boats in McIntosh County in 2003, constructed by members of one shrimping family. Interestingly, in most cases, the knowledge extended beyond the boat name and the related fish house to include the status of the boat, as to whether the boat was active, inactive, had sank, had burned, had been sold, and had left the county or even the country. In a few cases, the knowledge was incomplete, i. e., the status or whereabouts of a boat was unknown, but it is clear that salient local knowledge is about boats, whether they are ‘fishing,’ and where they tie up.

Table MP3: Shrimp Boats in McIntosh County, by Fish House

Name of Boat	Status	Location
Betty Lou	Active	Boone’s Seafood
Betty T	Active	Boone’s Seafood
Captain Dot	Active	Boone’s Seafood
Captain Wilson	Active	Boone’s Seafood
Captain Zack	Active	Boone’s Seafood
Dorothy E.	Active	Boone’s Seafood
Kevin and Brian	Active	Boone’s Seafood
Lynda Marie	Active	Boone’s Seafood
Miss Bertina	Active	Boone’s Seafood
Miss Rachel	Active	Boone’s Seafood
Miss Sally	Active	Boone’s Seafood
Salazar	Sunk	Boone’s Seafood
Shrimp Chaser	Active	Boone’s Seafood

Sue	Active	Boone's Seafood
Tex Mex	Active	Boone's Seafood
Sher Wan	Active	Boones Seafood
Captain Mack	Active	Brannen's Seafood
Donna Michelle (now Anna Lee)	Active	Brannen's Seafood
Lois Lee	Active	Brannen's Seafood
Shirley Ann	Active	Brannen's Seafood
Toad (now Wes Win)	Active	Brannen's Seafood
Turning Point	Active	Brannen's Seafood
Crusader	Active	Brown's Seafood
Miss Jackie	Active	Brown's Seafood
Miss Lewis	Active	Brown's Seafood
Babe	Active	Forsyth's Seafood
Bonny Richard	Active	Forsyth's Seafood
Chaparral	Active	Forsyth's Seafood
Struggler	Active	Forsyth's Seafood
Three Cees	Active	Forsyth's Seafood
Miracle	Sunk	Gore's Seafood
Miss Bobbie Ann	Sunk	Gore's Seafood
Stonefield Lady	Inactive	Gore's Seafood
Endeavor	Active	Jacob's Seafood
Notre Dame	Active	Jacob's Seafood
Tornado II	Active	Jacob's Seafood
Blessed Assurance	Active	Marco Seafood
Kim Sea King	? (Not sure of status)	Marco's Seafood
Sea Prowler	Active	Marco's Seafood
Smokin' Joe	Active	Marco's Seafood
T-Man	Active	Marco's Seafood
Blackbeard	Burned	Phillip's Seafood
Bossy Betty	Active	Phillip's Seafood
Miss Erika	Sunk	Phillip's Seafood
Miss Melody	Active	Phillip's Seafood
Patrick Sutton	Sunk	Phillip's Seafood
Sea Traveler (now Miss Nia)	Active	Phillip's Seafood
Waltar and Patty	Active	Phillip's Seafood
Captain Ross	Active	Sea Gardens
Friendship	Active	Sea Gardens
L & M	Active	Sea Gardens
Sundown	Active	Sea Gardens
God's Property	Active	Shell Creek Seafood
Miss Dee	Active	Shell Creek Seafood
Bob B	Burned	Shell Creek Seafood
Captain Gabby	Active	Shell Creek Seafood
Captain Gene	Active	Shell Creek Seafood
Caroline/Calandra	Active	Shell Creek Seafood
Cheryl Lynn	Active	Shell Creek Seafood
Elizabeth Rose	Active	Shell Creek Seafood
Gale Force	Active	Shell Creek Seafood
Jack Pot	Active	Shell Creek Seafood

Joyce G.	Active	Shell Creek Seafood
Lady Lou	Active	Shell Creek Seafood
Lady Jill	Active	Shell Creek Seafood
Miss Beverly Kay	Active	Shell Creek Seafood
Miss Debbie	Active	Shell Creek Seafood
Miss Latina	Active	Shell Creek Seafood
Miss Melissa	Active	Shell Creek Seafood
Nancy Lu	Active	Shell Creek Seafood
Sea Hawk	Active	Shell Creek Seafood
Turmoil	Active	Shell Creek Seafood
Virginia Lee	Active	Shell Creek Seafood
Wait and See	Active	Shell Creek Seafood
William Patrick	Active	Shell Creek Seafood
4 Ladies	Active	Shell Creek Seafood
Amber Waves	Active	Skinner's Seafood
Daddy's Girls	Active	Skinner's Seafood
Emily Lauren	Active	Skinner's Seafood
Golden Phase	Active	Skinner's Seafood
High Hopes	Inactive (for sale)	Skinner's Seafood
Lady Susie II	Active	Skinner's Seafood
Moon Shadow	Active	Skinner's Seafood
Pamela Ann	Active	Skinner's Seafood
Sapelo Lady	Active	Skinner's Seafood
Alligator	Active	Skipper's Seafood
Cumberland	Sunk	Skipper's Seafood
Amanda Renee	Active	Thompson's Seafood
Mary B	Active	Thompson's Seafood
Miss Kathy	Active	Thompson's Seafood
Santa Maria II	Active	Thompson's Seafood
Sea Raven II	Active	Thompson's Seafood
Sundance (was Payoff)	Active	Thompson's Seafood
Twilight	Active	Thompson's Seafood
Karen Hope	Active	Valona Seafood
Big Mac	Active	Ward's Seafood
Captain Jack	Active	Ward's Seafood
Mascot	Active	Ward's Seafood
Miss Haley	Active	Ward's Seafood
Miss Irene	Active	Ward's Seafood
Neta G (now Miss Haley)	Active	Ward's Seafood
Sea Hag	Active	Ward's Seafood
Dora F	? (Not sure of status)	(Moved to Brunswick)
Melina F (now Little Loyd)	? (Not sure of status)	(Moved to Brunswick)
Miss Debb	Active	(Moved to Brunswick)
Traitor	? (Not sure of status)	(Moved to Brunswick)
Two Girls	? (Not sure of status)	(Moved to Brunswick)
Sea King	Sunk?	(Moved to Carolina?)
Miss Caroline A	Sold	(Moved to New Jersey)
Captain Merit	Sold	(Moved to South America)
McIntosh Lady (was Henry	Sold	(Moved to South America)

Skipper)		
Prairie Schooner	? (not sure of status)	(No longer in McIntosh)
Danny	Sunk	?
Karma	Burned	?
Mr. Magoo (renamed Phoenix)	Sunk	?
Carol Ann	Burned	? (Not sure where it 'ties up')
Captain Clinton	Active	? (Not sure where it 'ties up')
Miss Edgefield (renamed?)	Active	? (Not sure where it 'ties up')
Paydirt (renamed?)	? (Not sure of status)	? (Not sure where the boat is)

Figure MP3: Shrimp Boats and Fish Houses at Darien



Reasons for Leaving the Shrimp Fishery

As one could infer from Table MP3, shrimpers leave the fishery as a means of livelihood due to their boats burning, sinking, or both. Some also sell their boats to foreign owners, who take them elsewhere. Since the boats that tie up at a given fish house change through time, a year by year record would be necessary in order to have a more or less exact count of departures from the fishery due to sale or loss of boats, but there are likely to be only a few each year. What the tables may not reflect accurately is the number of boats that are inactive, tied up at docks, out of use or service. The major factor is insurance in relation to loan payments to banks, i. e., restructuring of payments require that insurance be in place if the boats continue 'working,' and insurance is prohibitively expensive for many, maybe most, shrimpers. Although an exact count of inactive boats was not possible, the general sense from informal discussions with shrimpers was that there were only a small number of boats in that category. As an informed estimate, perhaps as few as 5-6 boats a year were lost to fire, sinking, and insurance problems.

In order to get a more accurate reading, questions were posed to respondents in informal discussion and interviews about who had left the fishery in recent memory and why they had chosen not to continue in that livelihood tradition. Nineteen individuals were identified. The factors that led to departure from the fishery are given in Table MP4.

Table MP4: Factors Leading to Departure from the Shrimp Fishery in McIntosh County

Factor	Number	Percent
“Better” Job/Occupation	11	58
Retirement	6	32
Health	1	5
Other	1	5
TOTAL	19	100

Almost to an individual, shrimpers say that they would prefer to keep shrimping if they could make a decent living, but they also all say that that objective is becoming more and more difficult. They acknowledge that often there is no choice but to “go work on the hill,” their term for work outside the fishery. For them “better” does not mean preferred but necessary. More explicitly it means a more steady income and thus security. For those individuals who were in a position to do so, they shifted their work to the fish house (which some of them owned or were owned by relatives) or to a restaurant allied to the fish house and docks. Three of the 11 individuals listed under “better job” fit that description. Among the other occupations were: operating a tug boat (3), truck driver (1), building houses (1), fireman (1), farming/ranching (1), and working at a local supply store. $\chi^2 = 14.62$, $df = 3$, $p < .005$.

Another relevant piece of information is that all of the individuals who left the fishery were middle-aged or older, except for one individual approximately 30 years old. In fact seven of the individuals were 60 years of age or older. Age clearly is an important factor in decisions to stop running a shrimp boat.

Reasons Not to Enter the Shrimp Fishery

Multiple reasons exist as to why shrimpers leave the fishery, but few reasons exist to enter the fishery. There are numerous obstacles, with the increasing difficulty of making a living as a core problem. Shrimpers tend to discourage their children from pursuit of commercial fishing as a way of life, arguing that it would condemn them to a life of hardship. However, even if young people wanted to become shrimpers, they would face formidable obstacles. Only someone with a large supply of cash, in the hundreds of thousands, could enter the fishery easily. Given the downward slope of earnings from commercial fishing, banks will not provide loans that would be necessary for virtually anyone to enter the shrimp fishery. As local shrimpers say, “Bankers would laugh you out of the bank if you asked them for a loan to buy a shrimp boat!” Given the impossibility of buying a shrimp boat, there are only two possible means to enter the fishery (other than as a striker). One of those is to lease or rent a shrimp boat from its owner, but owners will lease/rent boats only to experienced fishermen. None of the leased or rented boats were operated by an individual new to the fishery. The other means is to inherit or buy a boat from one’s father or grandfather, where no substantial outlay of cash is needed. Only two young men have entered the shrimp fishery in that way during the past decade, one a European American and one an African American (white and black in local terms), and in each case, they each simply took over operations from their father, who retired.

Recent Developments in the Shrimp Fishery

In 2003, the average price per pound (across sizes or ‘count’) that buyers of shrimp were paying at the docks in McIntosh County continued to fall toward the end of the season, eventually

falling from approximately \$4.00/\$4.50 per pound to \$3.60, then to \$1.50, and even to less than \$1.00. Even at \$3.60, shrimpers could not make a profit. The cost of catching the shrimp was more per pound than the selling price. The crisis at that point was full blown, leading to efforts at a national level, through the Shrimp Alliance, to seek legislation to limit “dumping” of imports and to seek financial relief. Although the efforts were successful in terms of legislation, the actual gains by the shrimpers are not clear. It seems unlikely that imports can be fully curbed, given the economics of the situation, namely that they can sell their shrimp cheaper than can shrimpers in “wild” fisheries.

Another strategy on the part of some shrimpers was to develop niche markets. Boone Seafood in Darien had experience in selling caviar and shrimp via the internet to businesses in California, and that may have been the basis for a more systematic strategy to develop niche markets. The Georgia Shrimp Association also hired an executive director, George Marra, to assist with an advertising campaign to sell Georgia “Wild-Caught Shrimp” to new markets, bypassing the traditional middle-men, principally the truckers who buy directly from the docks. At the same time, an enterprising group of 28 shrimpers formed their own company, the Georgia Shrimp Company, and began to market their shrimp catches primarily to niche markets. A major market was in California, but markets were also developed in Atlanta. Catching and processing shrimp for niche markets was a new way of doing business, and it is not clear how successful the effort is or how long it will continue. One of the members of the GSC referred to the business as their “last hurrah”. A more detailed account of the development of the GSC’ presented within a theory of culture and resilience, can be found a paper by Blount (2006).

An especially encouraging development for the marketing of Georgia Shrimp was the organization of a Georgia Shrimp Promotion Council. As reported in the University of Georgia Marine Extension Service (MAREX) Newsletter, *The Salty Dog*, the Council includes members “...from shrimp industry fishermen, packers and processors, the Georgia Department of Agriculture Consumer Protection and Marketing Divisions, the UGA Business Outreach Services, Georgia DNR, MAREX specialists in marketing, MAREX seafood and quality assurance experts, and a DNR fishery’s specialist” (2005). The Council has developed a Georgia Shrimp Certification Program (GSCP), which has launched a branded marketing initiative. The initiative is at regional and state level.

Blue Crab Fishery

Characteristics of the fishermen in the blue crab fishery derive from the dissertation of D. Robert Cooley (2003), supplemented by information from Orbach et al. (1997) and McIntosh (1996). Forty-nine crabbers were included in Cooley’s study, 30 percent of the 166 license-holders on the Georgia coast in 1999. The data were collected in 2001-2002. The average of the sample was 52, and the average age at which the fishermen had entered the fishery was 30. A substantial number of individuals entered the fishery between the 1970s and 1990s, ultimately prompting the implementation of a limited entry plan in 1999. Complaints largely by recreational fishermen and coast-line residents about the growing number of buoys to mark crab pots led the state legislature to encourage the crabbers to limit the number of crabbers and thus pots. The limited entry plan established a baseline number of licenses, which could be held by their “owners” if renewed annually but which could also be transferred to other individuals. Movement in and out of the fishery became legally defined and strictly controlled, under the authority of the Georgia Department of Natural Resources, Coastal Resources Division.

Under the limited entry system, individuals who hold licenses can opt not to renew them, thereby freeing those licenses for the lottery on an annual basis. The number of non-renewals

annually since 1999 is shown in Table MP5. The numbers are for all of the counties on the Georgia coast, not just McIntosh County.

Table MP5: Non-Renewals of Blue Crab Licenses*

Year	Number	Percent
1999-2000	5	25
2000-2001	8	40
2001-2002	1	5
2002-2003	6	30
TOTAL	20	100

*Derived from Georgia Department of Natural Resources, Coastal Resources Division

The total number of licenses issued in 2002-2003 was 159. Non-renewal of only six licenses is 30 percent of the five-year total of non-renewals, but it is only slightly more than three percent (3.15 %) of the total number of licenses. The non-renewal data suggest that only a fraction of blue crabbers leave the fishery each year. Data from license transfers, however, show that more movement in and out of the fishery occurs. Individuals can transfer their license directly to another individual. The number of transfers from 1998 through 2003 is given below in Table MP6, based on DNR license information. Again, as in Table MP5, the information is for the six coastal counties, including McIntosh.

Table MP6: License Transfer in the Blue Crab Fishery, 1998-2003*.

Year	Number	Percent
1998-1999	19	30
1999-2000	10	15
2000-2001	11	17
2001-2002	12	19
2002-2003	12	19
TOTAL	64	100

*Derived from Georgia Department of Natural Resources, Coastal Resources Division

As Table MP6 shows, more movement out of the fishery occurs from license transfers than for non-renewal, but the number is still not large. Twelve transfers in 2002-2003 made up 19 percent of the six-year total, but in relation to 159 licenses, they constitute 7.5 percent. Clearly with the advent of the limited entry plan, not many blue crabbers leave the fishery each year, despite the substantial decline of blue crab landings beginning in 1998 and continuing through 2003, as shown in Table 2.

Reasons for leaving the blue crab fishery are varied and not easy to discern. Many of the license-holders are part-time, and some of them hold the licenses but do not actually crab. Newcomers to the coast as retirees took up crabbing as a way to supplement, or possibly supplement, their incomes. Movement out of the fishery may not represent a substantial loss of income, if any, to some crabbers. Leaving the fishery does not represent as drastic or severe a change as is the case in the shrimp fishery. Age is also a factor in leaving.

Twelve of the 64 license transfers were in McIntosh County. Interviews indicated that age and retirement were the major factors in giving up a license. Of the 12 individuals, five left

the fishery through retirement, and another two of the total were in their 50s. The decline in catch levels and thus landing value was also a factor. Two members of the sample left crabbing to devote more time to shrimping, since the income derived from crabbing was declining more rapidly than was the case in shrimping. In addition, license transfers are not always what they seem at face value, since transfer can be to a family member or another relative and thus do not necessarily represent a departure from the fishery. When all factors are considered, the two major factors that lead individuals to leave the blue crab fishery in McIntosh County were age and decline in catch levels and thus income.

Despite the decline in catch levels, a number of individuals each year attempt to enter the fishery. The license-transfer data indicate that during the six-year period, 1998-2003, 64 individuals entered the fishery through that means. Again, considering the 12 transfers in McIntosh County, two factors stood out as primary. One was that the transfer was to a relative, and the other was that the recipients were considerably younger than the transferees, seven of the 12 in their 30s or 40s.

During the period 1999-2003, 20 individuals were able to enter the fishery through the license lottery. Those who won the lottery represent only a small percentage of those who apply. In the 2002-2003 lottery, 44 individuals entered, and they had only six winners, i.e., licenses available, for a success rate of 14 percent. Those figures are for the six coastal counties. Two of the winners were in McIntosh County, both of them individuals in families with members already engaged in the fishery.

In summary, movement of individuals in and out of the blue crab fishery in McIntosh County represents a recycling of licenses within crabber families and a withdrawal from the fishery on the part of some individuals due likely to age and declining supplemental income from lower catch levels.

Recreational Fishing

Recreational fishing has long been a mainstay for residents of McIntosh County. Respondents to the mail questionnaire indicated that fishing for recreation and relaxation is a very common practice. Approximately 80 percent of the respondents indicated that they have fished recreationally, and all of the respondents saw recreational fishing as a worthwhile activity.

In addition to measures of recreational fishing by residents, the project sought to get some approximate estimates of recreational fishing by non-residents, specifically to see if tourists were fishing recreationally, too. In 2003, there were no party or head boats operating in the county, and no charter boat fishing was advertised. In order to collect information, dock intercept surveys (Pollock, Jones, and Brown 1994) were conducted over a period of two months, during two summer months of 2003. The intercepts were carried out at three locations that have public docks, where recreational fishing occurs, and where boats dock when returning from fishing trips, i.e., at the places where tourists would be most likely to fish. Most of the scheduled times produced no intercepts at all, not that fishermen wouldn't participate but because there were no fishermen at all. The total number of intercepts was very small. The results presented below are collated from three locations, Two-Way Fish Camp, Blue N Hall, and Shellman Bluff. The number system, MD, refers to McIntosh Dock Survey.

Dock Survey Form – Recreational Fishing

Dock: _____ Time: _____ Date: _____

Question # 1: Do you live in McIntosh County: __ Yes, __ No [If Yes, continue; if No, go to #4]

Table MP7: Resident of McIntosh County

Resident	Number	Percent
Yes	11	65
No	16	35
TOTAL	17	100

As the table shows, more than one-half of the fishermen were not resident of the county. They were either visitors or tourists.

Question # 2: Native to McIntosh County: ____ Yes, ____ No

Table MP8: Native to McIntosh County

Native	Number	Percent
Yes	2	18
No	9	82
TOTAL	11	100

As can be seen in the table, the majority of the respondents were not native to McIntosh County.

Question # 3: Years resident in McIntosh County: _____

The response to this question yielded results ranging from two months to 65 years. The median was 20 years.

Question # 4: Year in which you first fished in McIntosh County: _____

The response to this question yielded results ranging from 1950 to 2003. The median year was 1987.

Question # 5: Total number of years fishing in McIntosh County: _____

The answers to this question gave a range of two years to 54 years. The median was 18 years.

Question # 6: Frequency of fishing in McIntosh County: (Whichever best applies, on the average)

- a. **Number of times per week:** _____
- b. **Number of times per month:** _____
- c. **Number of times per year:** _____

The responses to this question were highly variable. Six individuals indicated that they fished weekly, from one to 11 times (average 3.5). Two respondents indicated that they fished once each month, and two respondents reported that they fished yearly, one of them two times and the other 260 times.

Question # 7: Does your fishing tend to be seasonal? ____ Yes; ____ No

Question # 8: If fishing is seasonal, in which season are you most likely to fish?

- a. Summer: _____
- b. Fall: _____
- c. Winter: _____
- d. Spring: _____

Table MP9: Seasonal Fishing in McIntosh County

Seasonal	Number	Percent	Season	Number	Percent
			Summer	19	85
Yes	19	70	Fall	1	5
No	8	30	Winter	1	5
			Spring	1	5
TOTAL	27	100	TOTAL	22	100

As Table MP9 shows, fishing tends to be seasonal for most fishermen, and the preferred season by far is summer.

Question # 9: What is the primary reason why you fish (other than catching fish!)?

- a. Recreation/relaxation: _____
- b. Catch fish to eat: _____
- c. To spend time with family or friends: _____
- d. Other: _____

Table MP10: Primary Reason for Fishing, McIntosh County

Reason for Fishing	Number	Percent
Recreation/Relaxation	17	63
Have Fish to Eat	6	22
Time with Family/Friends	2	7.5
Other	2	7.5
TOTAL	27	100

The results in Table MP10 show that fishing is primarily for recreation and relaxation, secondarily to catch fish to eat. Spending time with family and friends is a lesser important factor. $\chi^2 = 23.60$, $df = 3$, $p < .005$.

Question # 10: If your primary reason for fishing is recreation/relaxation, which of the following do you consider to be the most important?

- a. Being out on the water in the open air
- b. Being away from everyday concerns and worries
- c. Sense of anticipation at catching fish
- d. Other: _____

Table MP11: Primary Factors in Recreation/Relaxation, McIntosh County

Factors	Number	Percent
Being on Open Water	17	63
Away from Everyday Concerns	6	22
Anticipation at Catching Fish	2	7.5
Other	2	7.5
TOTAL	27	100

Being out on the water in the open air is the major feature enjoyed in recreational fishing, outnumbering all of the other combined by a ratio of two to one. $\chi^2 = 23.60$, $df = 3$, $p < .005$

Question # 11: Do you practice “catch and release” (for regulation-size fish)?

- a. Almost always
- b. Sometimes
- c. Almost never

Question # 12: If you tend to keep the fish that you catch, what are you most likely to do with them once you get onshore?

- a. Keep them for self/family: _____
- b. Give them to friends/relatives: _____
- c. Give them to neighbors: _____
- d. Other: _____

Table MP12: Catch and Release, McIntosh County

Catch/Release	Number	Percent	Keep Fish	Number	Percent
Almost always	18	67	For self/family	21	78
Sometimes	7	26	Friends/Relatives	4	15
Almost never	2	7	Neighbors	0	0
			Other	2	7
TOTAL	27	100	TOTAL	27	100

As Table MP12 shows, catch and release is far more common than keeping all fish caught. When fish are kept, they are for self and family overwhelmingly. $\chi^2 = 14.88$, $df = 3$, $p < .005$

Question # 13: Do you typically fish for a particular species? ____ Yes, ____ No

The answer to question 13 was 44 percent ‘yes’ (12) and 56 percent ‘no’ (15).

Question # 14: If you fish or tend to fish for a particular species, what is/are the species?

- a. _____
- b. _____
- c. _____

Sixteen different species were listed. The listing in order is: mackerel (8); trout (7); bass (6); barracuda (6); sheepshead (3); kingfish (2); red fish (2); shark (2); whiting (2); black drum (1); catfish (1); dolphin (1); flounder (1); marlin (1); and trigger fish (1).

Question # 15: On average, where are you most likely to fish?

- a. Tidal Creek/River: _____
- b. Estuary/Sound: _____
- c. Open water/offshore: _____
- d. Other: _____

Table MP13: Type of Place to Fish, McIntosh County

Type of Place	Number	Percent
Open water/offshore	15	55
Tidal creek	7	26
Estuary/sound	4	15
Other	1	4
TOTAL	27	100

As the table shows, most of the fishing is from boats offshore, in open water. Approximately half as many of the respondents tend to fish in tidal creeks.

Question # 16: Are you most likely to fish?

- a. Alone: _____
- b. With family members: _____
- c. With friends: _____
- d. Other: _____

Table MP14: Fishing Alone or with Others, McIntosh County

Fishing Alone/with Others	Number	Percent
With friends	18	66
With family	7	26
Alone	1	4
Other	1	4
TOTAL	27	100

Two of every three individuals fish with friends, the predominant arrangement. Approximately one in four fishes with family members. $\chi^2 = 16.10$, $df = 3$, $p < .005$

Socioeconomic Information

Question # 17: Gender: ____ M, ____ F

Twenty-five of the respondents were male (93 percent); only two were female (seven percent).

Question # 18: Age range: ____ 15-24; ____ 25-34; ____ 35-44; ____ 45-54; ____ 55-64; ____ 65+

Table MP15: Age Range by Category, McIntosh County

Age Range	Number	Percent
15-24	4	15
25-34	3	11
35-44	5	19
45-54	10	37
55-64	3	11
65+	2	7
TOTAL	27	100

One-third of the respondents were between the ages of 45 and 54. More than 50 percent were in the range of 35-54. The fishermen were mostly lower middle-age. $\chi^2 = 7.85$, $df = 5$, $p < .10$

Question # 19: Occupation: _____

The responses to question 19 included 15 different occupations plus ‘unemployed’ and ‘retired’. The number of retirees was 4, commercial fishermen 2, unemployed 2, and all others were only one each. Those included several professions -- architect; judge; professor – and several occupations related to fisheries – marina owner, fish camp owner, and charter captain.

Summary of Dock Intercepts

The most revealing information about the dock intercepts is that there were very few of them. Despite hours of waiting at each of the three docks, only a few fishermen were available and provided responses. Those who had been fishing were typically male (93%), mostly early middle-age, and fewer than half were residents of McIntosh County. A variety of occupations were represented, but the most common response was “retired,” but only by 15 percent of the respondents. Those individuals not residents of McIntosh County can be assumed to be tourists, in a broad sense of the term. Responses to questions about year first fished in McIntosh, total years fished, and frequency of fishing provide a wide range of responses, with no strong tendencies apparent in the data. Likewise, fishing was not especially seasonal, but for those who indicated a seasonal preference, almost all of the responses were for the summer months. The primary reason for fishing was for recreation and relaxation, and the most valued aspect of that was being out on the water in the open air. The fishermen tended to fish offshore in open water but also in tidal creeks, and they typically fished with friends, secondarily with family members. The majority practiced catch and release, but if they kept the fish caught, they were typically for themselves and family. Most fishermen did not target particular species, but when they were

targeted, the most common fish were mackerel, trout, bass, and barracuda.

Tourism and Recreation Businesses

Aside from fish camps, in 2003 only a few small individual owned and operated recreational businesses existed, and they were not well advertised. In fact, one had to search to find them. Tourism was at best nascent – and still is – but it is growing. In 2006, the home web page for McIntosh County (<http://www.mcintoshcounty.com/tours.htm>) advertises a number of new businesses. These include three charter boat businesses, one for inshore, one for deep sea, and one for both inshore and offshore fishing, two charter boat and tour businesses, two saltwater tour businesses, one of those a kayaking firm that has several tours, a nature tour on Sapelo Island, and a walking tour of historic Darien.

While tourism numbers remain low, McIntosh County is beginning to develop new subdivisions for retirement and/or second homes. Interviews with local builders indicated that retirement and second homes was becoming the major industry in the county, a phenomenon reflected on the county's web page, extolling the virtues of living in the natural beauty of the county.

A clear indicator of the direction of development for tourism is the development of the waterfront on the Darien River in Darien. Historically the riverfront was occupied solely by several fish houses. In 2002, the central section of the waterfront was made into a pleasant and attractive walkway with benches, clearly to be attractive to tourists. In addition, one of the major fish houses, Skipper's Seafood, sold their waterfront property, and it has been replaced by a large and successful restaurant. Whereas fish houses now line one side of the waterfront, divided by the U.S. Highway 17 Bridge, the inland side is becoming entirely for tourists.

Figure MP4: Tourism Advertisement for Darien and McIntosh County



Several upscale sub-divisions were being planned or developed in 2003. Tolomato Island, near Darien, had approximately 200 lots in Phase I. The premier lots back onto a tidal creek and have private docks, providing an outlet into the sound. Five new sub-divisions are underway or planned for Shellman's Bluff. One of them, Cooper's Point, already had a golf course in 2003, the first one in the county, rapidly becoming a symbol of its future direction and growth. A second golf course has recently been constructed, the Sapelo Hammock Golf Course. Five new developments are planned or underway at a more remote part of the county, at Harris Neck. Belvedere Island Plantation is a gated community, and one development, Eagle Neck, includes a landing strip for small, private airplanes. Some of the houses there have a garage for the residents' plane.

Figure MP5: House at Belvedere Island Plantation with Personal Airplane Hangar



The residential developments have impacted the value of houses and lots significantly, doubling or tripling their value within the past few years. Interviewees in remote parts of the county indicated that their real estate value has increased substantially, propelling their property taxes upward. Houses that would have sold for \$100,000 in 2000 were selling for \$150,000 three years later. The prices of new houses in the upscale developments, designed to attract wealthy retirees, provide much of the impetus for the overall escalation of real estate value. In the 8 June 2006 issue of the Darien News, houses at Belvedere Island Plantation were listed in the price range of \$295,000 to \$435,000.

The scale and nature of developments on the Georgia coast was recently the subject of an article in the *Atlanta Journal-Constitution* (9 April 2006), entitled "The Battle for the Georgia Coast". The gist of the article is that the prime real estate zones and areas, especially water front,

are being bought up by large development firms who are building high-end homes and condominiums. The article listed 10 high-end developments, all advertised on local radio and billboards in Atlanta. The “battle” is between upscale developers and wealthy retirees or second-home owners, on the one hand, and local residents and businesses and environmentalists, on the other hand. The conflicts have escalated to the point that the state Board of Natural Resources has appointed a five-member panel, the Coastal Marshlands and Shore Protection Committee, and charged them with regulating development of coastal marshlands and beaches. The main point of contention is whether or the extent to which the construction of bridge, causeways, docks, and marinas negatively impact the salt marshes.

While none of the 10 developments are located in McIntosh County, the county is still affected directly by the gentrification of the coast. Conflicts over growth and protection of historic sites and environment are beginning to appear. A recent article in the *Florida Times Union* (15 March 2006) reported on a vote by the County Commission to approve a zoning change that, despite considerable opposition, will allow for the construction of a proposed condominium complex. Opponents charge that the complex, which lies with 50 yards of the visitor center of a historic British fort, will damage that property, the river, and the existing neighborhood. The Market Street Townhomes are already listed in the *Darien News* (8 June 2006) “from \$489,000.” Three weeks later (*Darien News* 29 June 2006) the price had increased to \$513,000. The number of realty agencies and realtors has increased substantially in the last few years. Whereas only two or three realty firms advertised in the *Darien News* prior to 2000, the 29 June 2006 issue of the paper included 14, including one newly opened firm. The battle is clearly “on,” but it is not a question of whether development will occur but of whether any controls can be placed to protect local interests, needs, and environment. The core problem is that nature is for sale to the highest bidder, and local residents are likely to deal with the consequences. Fishing in the county will certainly be changed.

Newspaper Coverage

Front page news stories about fisheries, environmental, and development were photocopied from the *Darien News* for the 11-year period 1994 through 2004. The assumption about these news accounts is that front page coverage is about topics and events that have high cultural salience. The accounts reflect what the editors consider to be the “pulse” of the community, the stories that the community most wants and needs to have covered. The accounts can be seen as a rough approximation of the cultural salience of topics within the community of readers. Changes in the topics through time can serve as a chart of directions in which the community is moving.

Although clippings from front page coverage were made on an opportunistic basis from other newspapers – *Brunswick News* (GA), *Savannah Morning News*, *Georgia Times Union*, *Athens Banner-Herald*, and *Atlanta Journal-Constitution* – the information presented here is all from the McIntosh County newspaper, the *Darien News*, which appears weekly. The front-page accounts were all classified as one of the topics below, based on the major focus of the story.

- Commercial Fishermen/Fishing
- Recreational Fishermen/Fishing
- Fishery Management/Regulations
- Environment
- Growth and Development

The front page stories were tabulated, by year. The results are shown below in Table MP16 (*Darien News*). In addition to topic/focus, keywords were identified and a summary account was created for each story. The keywords included and indicated the type of fish or fishery that was the focus of the story. In Table MP16, all of the accounts are about or relate to shrimp. Blue crab accounts will be provided in a separate table.

Table MP16: Newspaper Front-page Accounts of Topics, Shrimp Fishery, McIntosh County

Year	Commercial	Recreational	Management	Environment	TOTAL
1994	2	0	2	1	5
1995	6	0	3	0	9
1996	3	0	11	0	14
1997	4	0	14	1	19
1998	2	0	1	1	4
1999	2	0	1	0	3
2000	4	0	6	1	11
2001	9	0	4	0	13
2002	3	0	6	0	9
2003	9	0	4	0	13
2004	6	0	5	0	11
TOTAL	50	0	57	4	111

Every one of the newspaper accounts, again, is about shrimping. Classification of the accounts was difficult, since ‘management,’ ‘commercial,’ and ‘environment’ all were often discussed in the same front page story, and in that case, the account was classified as ‘management.’ Only if the focus was on the shrimp fishery independent of management or regulatory issues was the classification ‘commercial’ (similarly for ‘environment’). Almost all of the accounts listed as ‘commercial’ were about the annual Blessing of the Fleet or personal stories about the lives and experiences of individual shrimpers. As the table shows, there was no front page coverage about recreational fishing, although a portion to the management stories were about conflict between recreational cast-netters and commercial shrimpers. The environment accounts were about water rights and issues, related to concerns about pollution and fish disease.

A progression of the issues and problems faced by shrimpers through the 11-year period can be seen in the content of the newspaper accounts. In 1994-1995, the accounts were about shrimpers’ opposition to and problems caused by turtle excluder devices (TEDs). In 1995 accounts also focused on problems and efforts to effectively measure by-catch. A conflict between commercial shrimpers and recreational cast-netters began in 1996. The origin of the issue, as discussed in the newspaper accounts, was the ban on gillnets in Florida, leading to Floridian fishermen moving into southern Georgia and using cast-nets to catch shrimp. Cast-nets had already been in use in Georgia, of course, but on a smaller scale. The conflict was about allocation of fishing rights, and it became a political issue that eventually led to the passage of legislation at the state level. By most accounts, the legislation, passed in 2000, constituted a victory for the commercial fishermen. An effort to change the legislation occurred in 2006, but it did not succeed. Another issue that arose in 1997 and continued for several years was the implementation of a new federal requirement, the use of by-catch reduction devices (BRDs), primarily to protect weakfish. The ensuing issues led to legal action by the Georgia Shrimpers Association. The legal decision did not go in their favor.

Front-page accounts of governmental regulations and their impacts on the shrimp fishery and the conflict between shrimpers and cast-netters continued to appear through 2000. Although all of those accounts could be considered to be environmental, a specifically environmental issue also arose in 2000. The conflict was between shrimpers and the Sierra Club. A newspaper account reported that the local Sierra Club had developed a formal proposal for legislative consideration that would establish a three-mile offshore limit for shrimp trawling, specifically to reduce sea turtle deaths. Since the majority of trawling is within the three-mile area, the passage of legislation excluding them from the state-controlled waters would effectively close the fishery. Later newspaper accounts were about denials from the Sierra Club that they had ever proposed the idea and that the newspaper had erred in publishing the story initially.

Another milestone occurred in 2000 when a front page story about problems with imported shrimp appeared. The account was a personal story about how the deflation of prices due to imports was affecting a shrimper. In 2002, featured articles about imports and consequent problems began to appear regularly. Initially the accounts were about local shrimpers' complaints about the need for TEDs in foreign fisheries. The issues then began to focus more specifically on imported shrimp from Asia. Georgia shrimpers joined shrimpers from other areas of the South Atlantic and Gulf of Mexico, to create the Shrimp Alliance, to push for legislation to limit and control "dumping" of imports, primarily through tariffs. Newspaper accounts on those topics continued through 2003 and 2004, including the report of a ruling by the US Department of Commerce that China and Vietnam were guilty of "dumping" and that tariffs would be imposed on their imports. Also in 2004, a story surfaced that the Sierra Club had indeed been planning to push for the three-mile restriction, based on the "discovery of email evidence".

The 11-year period of front page newspaper accounts record conflicts throughout, with federal and state regulatory agencies over TEDs and BRDs, then cast-netting, then the Sierra Club, and eventually imported shrimp. The problems caused by imports and efforts to control their volume became frequent in 2002-2004. Essentially the period was of conflict, first with regulations and then with market-level economics.

The *Darien News* did publish a number of front page articles about the blue crab fishery, 19 all together over the 11-year period. All of the accounts were about management, licensing, and conflict. The fishery experienced a severe decline in catch levels during the late 1900s and early 2000s, due to drought and disease, and regulations were proposed for limited closures and for limitations on female and on peeler crabs. Those, of course, caused controversy, as reported in the newspaper accounts. Another major controversy occurred in the early 2000s about crab trap lines being cut. The newspaper reported in one article that 700 lines had been cut, in "territorial battles," and that the competition was turning violent. All in all, the lower number of articles about blue crabs reflects the relative importance of the fishery in comparison with shrimping, i.e., it is a much smaller fishery.

Interestingly, there were no front –page accounts during the period about real estate and growth and development. Articles focused on those topics did not begin to appear until 2005, but they did not become prevalent until 2006. Gentrification effectively began in 2005, leading to the beginnings of major changes in McIntosh County, as described earlier in this report.

III. QUESTIONNAIRE SURVEY -- McINTOSH COUNTY

As part of the NOAA research project on fisheries in McIntosh County, Georgia, and Brunswick County, North Carolina, a questionnaire was developed to elicit the general public's perceptions and preferences concerning recreational and commercial fishing in each county. The objective was to create profiles of the public's views about fishing and its current state in the two counties. This report is on the questionnaire results from McIntosh County.

The questionnaire was developed in relation to the goals of the research project, especially to gain understanding of the experiences of the public in regard to fishing and of their understanding of the place of fishing recreationally and commercially in their communities. Construction of the questionnaire was based also on informal interviews and discussions with fishermen and members of the public, including pre-testing earlier versions of the questionnaire. A final version was completed in August, 2003, and mailed to a systematically selected sample of residents in McIntosh County. The Dillman method was employed (Dillman 1978), which requires an initial letter sent to the members of the sample, explaining the nature of the project and the questionnaire and asking for their assistance. That letter was mailed on 28 August 2003, alerting the individuals that within 7-10 days they would receive the questionnaire. A follow-up letter was sent on 17 September 2003, reminding them to complete and return the questionnaire if they had not already done that and thanking them for their assistance.

A sample of 497 individuals was drawn from the most current voter registration list for McIntosh County, and the introductory letter was sent to each sample member. The sample represented 4.5 percent of the county's population, 11,085 in 2003. Of the 497 introductory letters, 68 were returned, principally because the addressee had moved. A total of 429 questionnaires were mailed during the first week of September, 2003. The total number of completed questionnaires returned was 141, giving a return rate of 33 percent. Typical return rates for mail questionnaires is 12-15 percent, and with the Dillman method, approximately 25 percent. The data from the questionnaires were entered into an Excel spreadsheet and analyzed. The results are presented in tabular and in graphic form in the body of the report below. The procedure is to list each question, present the results in a table, provide limited comments and observations, and then present the results in the form of a graph or chart.

In addition to information about fishing experience, preference, and perspectives, data were collected from the sample on standard demographic and socioeconomic variables. Eight of the 32 questions were on those variables. The information allows for the construction of profiles of the respondents, in range and type of responses, thereby allowing for a finer grained description of the views of residents of McIntosh County concerning recreational and commercial fishing.

The demographic and socioeconomic information provides another important function. The degree to which mail questionnaires accurately represent a population can always be called into question. In fact, mail questionnaire derived data can always be seen as skewed toward individuals who choose to participate in the survey, and by definition true representation is not achieved. That limitation, however, can be construed positively. The sample represents those individuals within the general public who have an interest in the topic of the questionnaire, and thus to some degree represent "interested parties," i. e., that portion of the general public who has an interest at hand. The demographic and socioeconomic information help to establish who those individuals are. In a direct way the data help to inform us as to whom the respondents are and provide indications of why they are "interested parties". The sample used here for McIntosh County can be taken in those regards.

Demographic Background

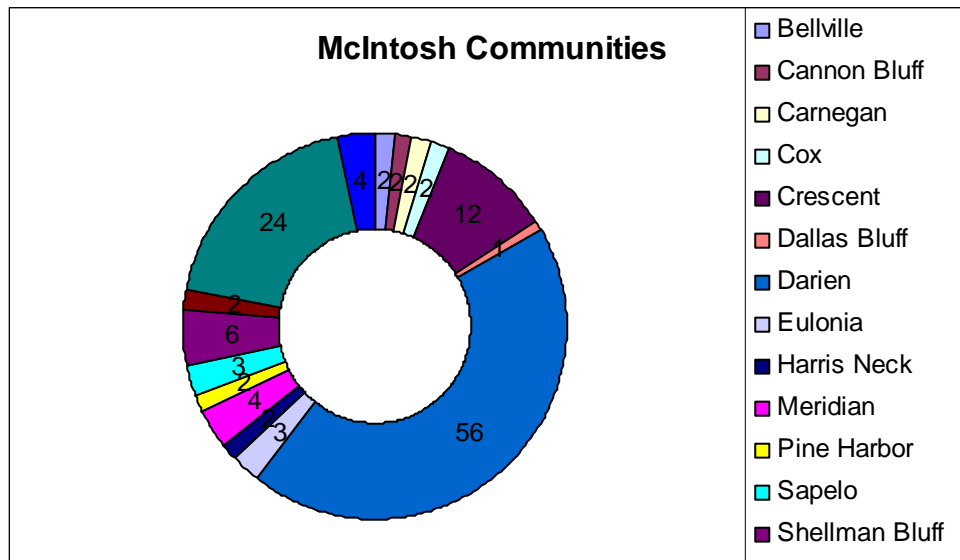
Question # 1: Town/community of residence: _____

Table MS1: List of Communities of Residence, McIntosh County

Community	Number
Belleville	2
Cannon Bluff	2
Carnegan	2
Cox	2
Crescent	12
Dallas Bluff	1
Darien	56
Eulonia	3
Harris Neck	2
Meridian	4
Pine Harbor	2
Sapelo	3
Shellman Bluff	6
Sutherland Bluff	2
Townsend	24
Valona	4
TOTAL	127

The list includes virtually all named communities in the county, and the number of respondents reflects the size of the communities. The only town in the county, as indicated by the United Census, is Darien, which includes 56 of the 172 respondents (44 percent), and the second largest community, Townsend, has 24 respondents (19 percent).

Figure MS1: Graphic Display of Communities of Residence, McIntosh County



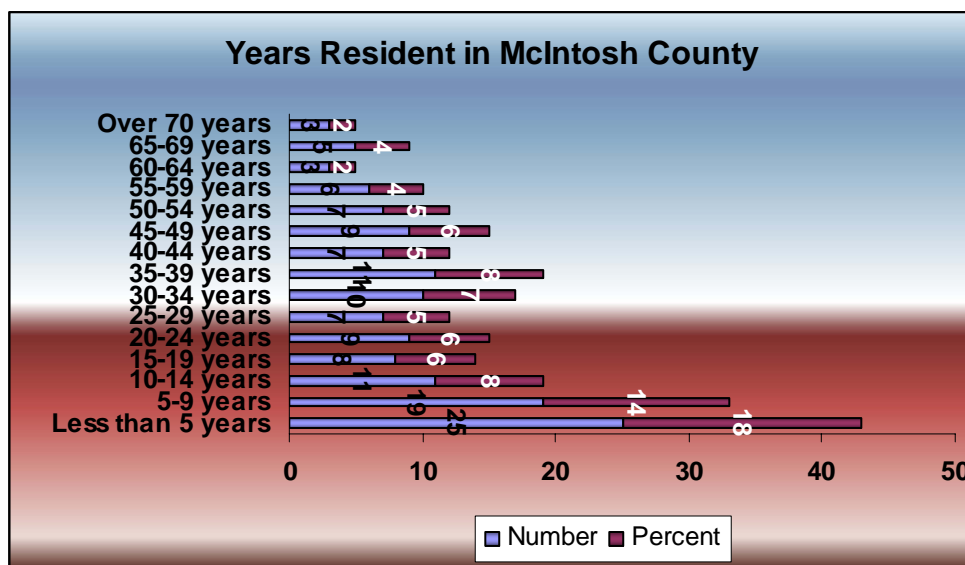
Question # 2: Years of residence in town/community/county: _____

Table MS2: Respondents' Years of Residence in McIntosh County

Years Residence	Number	Percent
Less than 5 years	25	18
5-9 years	19	14
10-14 years	11	8
15-19 years	8	6
20-24 years	9	6
25-29 years	7	5
30-34 years	10	7
35-39 years	11	8
40-44 years	7	5
45-49 years	9	6
50-54 years	7	5
55-59 years	6	4
60-64 years	3	2
65-69 years	5	4
Over 70 years	3	2
TOTAL	140	100

As Table MS2 shows, one-third of the respondents have lived in McIntosh County for less than 10 years. Slightly less than one-third have lived there for forty years or more, and the remaining one-third has been resident in the county from ten to forty years. The distribution reflects a skewing toward both newcomers and long-term residents. $\chi^2 = 50.22$, $df = 8$, $p < .005$.

Figure MS2: Graphic Representation of Years Resident in McIntosh County



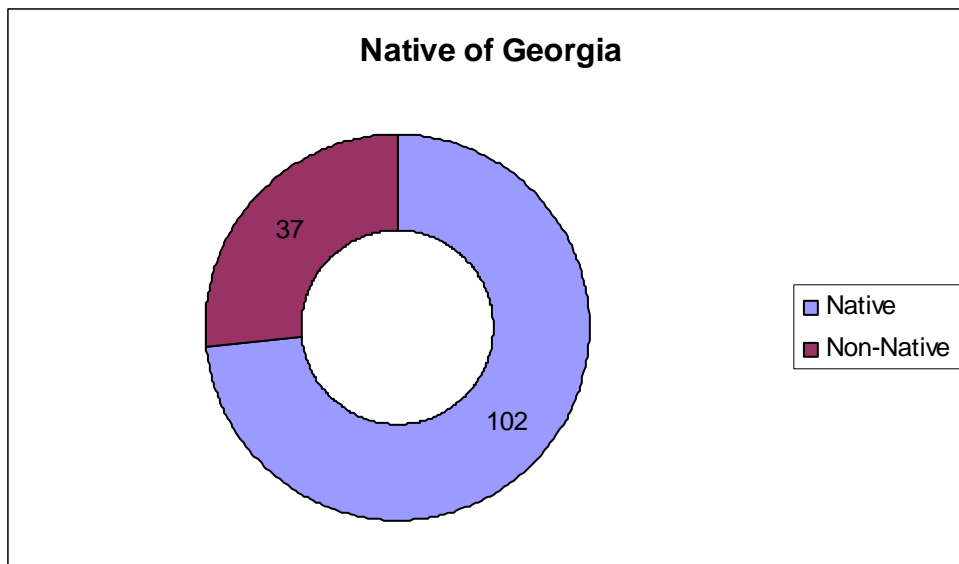
Question # 3: Native of Georgia? ___ Yes ___No

Table MS3: Distribution of Native vs. Non-native Residents

Georgia	Number	Percent
Native	102	73
Non-Native	37	27
TOTAL	139	100

As Table MS3 shows, almost three of every four residents are native to the state of Georgia.
 $\chi^2 = 30.39$, $df = 1$, $p < .005$.

Figure MS3: Graph, Distribution of Native vs. Non-native Residents



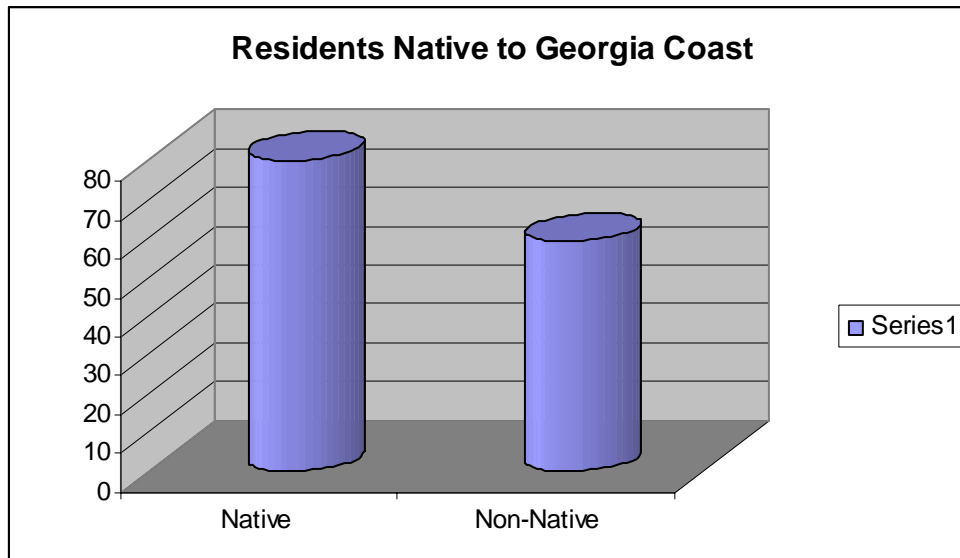
Question # 4: Native of Coastal Georgia? ___ Yes ___No

Table MS4: Distribution of Residents Native vs. Non-native to Georgia Coast

Coastal Georgia	Number	Percent
Native	80	58
Non-Native	59	42
TOTAL	139	100

As Table MS4 shows, approximately three of every five residents in McIntosh County are native to the Georgia coast. $\chi^2= 31.72$, $df = 1$ $p < .005$.

Figure MS4: Graphic Representation of Residents Native vs. Non-native, Georgia Coast



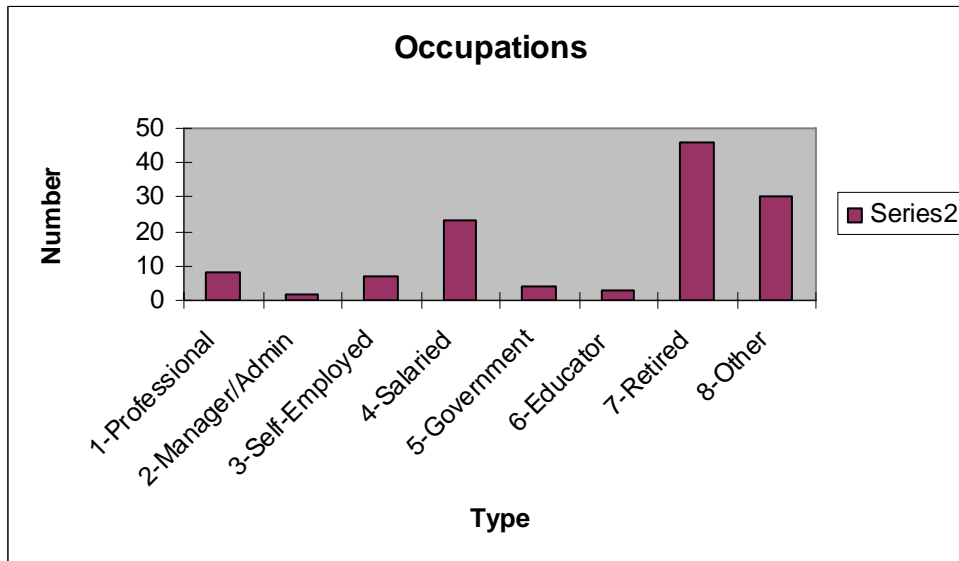
Question # 5: If currently employed, write in your occupation: _____ (Retired)___

Table MS5: Distribution of Occupation Categories

Occupational Type	Number	Percent
Professional	8	7
Manager/Admin	2	2
Self-Employed	7	6
Salaried	23	19
Government	4	3
Educator	3	2
Retired	46	37
Other	30	24
TOTAL	123	100

As Table MS5 shows, the largest category of respondents is ‘retired,’ accounting for slightly more than one-third of the sample. The category of ‘other,’ comprising a number of different occupational specialties, is second, followed by ‘salaried’ individuals. Together those three categories comprise 80 percent of the respondents’ occupational status. The relatively low levels of ‘professional’ and ‘manager’ may indicate that individuals who were in those positions may now be retired, as seen against attainment of educational levels (Table M8 below). $\chi^2 = 116.60$, $df = 7$, $p < .005$.

Figure MS5: Graphic Distribution of Occupational Categories



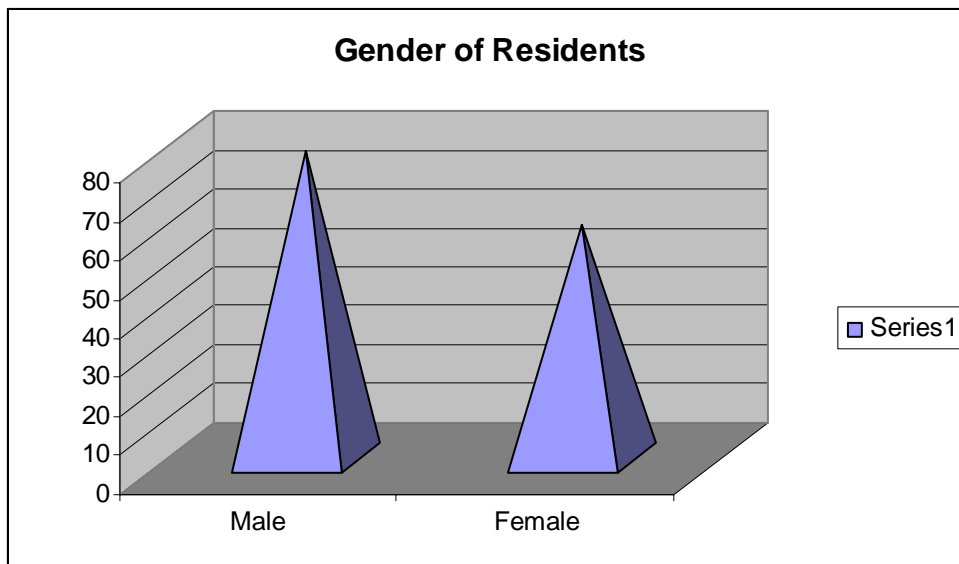
Question # 6: Gender ____ Male ____ Female

Table MS6: Number of Males and Females in the Sample

Gender	Number	Percent
Male	79	57
Female	60	43
TOTAL	139	100

As seen in Table MS6, approximately three of every five respondents were male and two of every five respondents were female. $\chi^2 + 2.60$, $df = 1$, $p < .10$.

Figure MS6: Graphic Distribution of Males and Females in the Sample



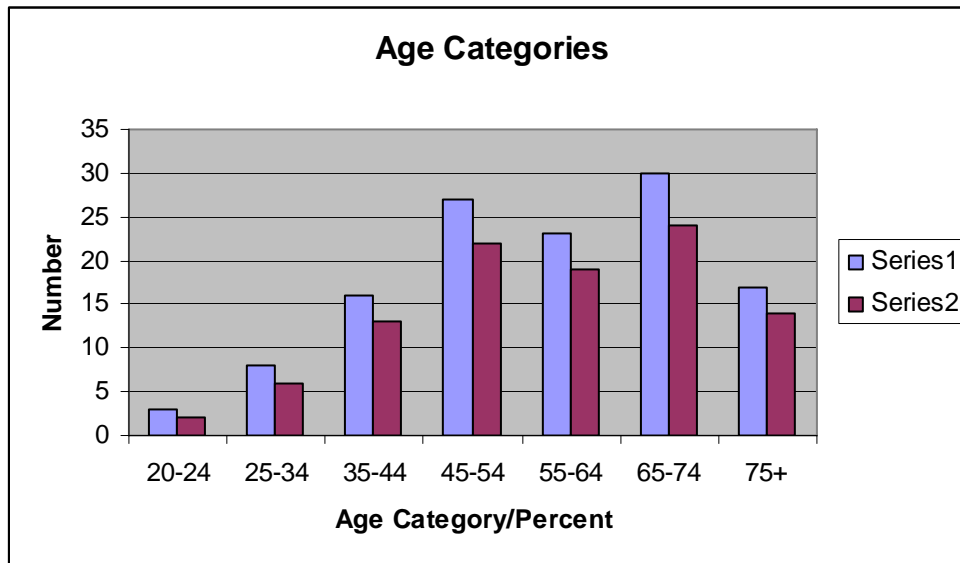
Question # 7: Age: ___ 20-24; ___ 25-34; ___ 35-44; ___ 45-54; ___ 55-64; ___ 65-74; ___ 75+

Table MS7: Distribution of Age Categories

Age Categories	Number	Percent
20-24	3	2
25-34	8	6
35-44	16	13
45-54	27	22
55-64	23	19
65-74	30	24
75+	17	14
TOTAL	124	100

As Table MS7 shows, the age distribution is skewed toward older residents. Only eight percent of the respondents were less than 35 years of age, whereas 38 percent are aged 65 and older. Almost fifty percent of the sample is 55 years of age or older. $\chi^2= 32.75$, $df = 6$, $p < .005$.

Figure MS7: Graphic Representation of Age Categories



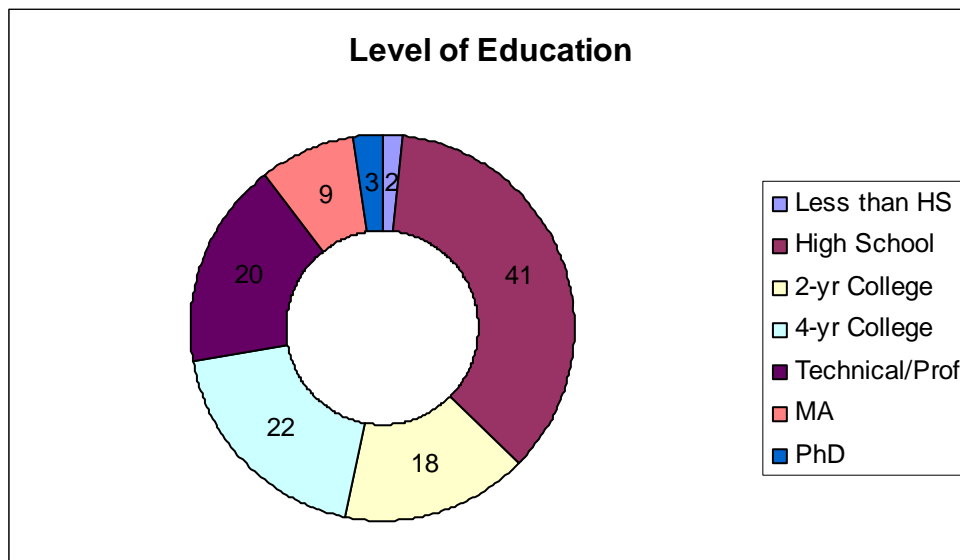
Question # 8: Education completed: ___High School; ___2 yr. College; ___4 yr. College; ___Technical/Professional Training; ___Master’s Degree; ___Doctoral Degree

Table MS8: Distribution of Level of Education by Category

Educational Level	Number	Percent
Less than HS	2	2
High School	41	36
2-yr College	18	16
4-yr College	22	19
Technical/Prof	20	17
MA	9	8
PhD	3	3
TOTAL	115	100

As shown in Table MS8, virtually all of the respondents have an education at high school or higher levels. Approximately one-third of the sample has a high school diploma, and also approximately one in three individuals have at least two years of college. Almost one-third of the sample has either technical or professional training or else has post-graduate degrees. To characterize the sample differently, approximately one half of the respondents have up high school or two-years of college, and the other one half has an educational attainment of college, technical or professional training, or post-graduate work. The educational level of the respondents is above average, especially for the county and even for the Georgia coast, where educational levels tend to be low in comparison with the rest of the state except for the most southern counties.

Figure MS8: Graphic Representation of Educational Level



Summary of Demographic Background

Characteristic profiles can be drawn from the responses to the eight questions on demographic background. McIntosh County residents tend to cluster demographically as either newcomers, living in the county for less than 10 years, or as long-term residents, living in the county for 40 years or more. Most of the residents of the county are native to Georgia, and a slight majority of them are native to the Georgia coast. This may mean that a portion of the newcomers have moved to McIntosh County from elsewhere on the coast. One in three respondents is retired, consistent with the skewing of years of residence from the center to newcomers and long-term residents. Those characteristics are also consistent with distribution of age ranges, which show that approximately 50 percent of the sample are aged 55 or over, and more than one-third of the sample is over the age of 65. The respondents show above average educational attainment for the coast, with approximately 50 percent having completed college and/or technical or professional training. Overall, the respondents are older than average, have higher educational levels than average, and have higher than average rates of retirement. Gender distribution is skewed only slightly to males, three of each five respondents.

Fishing Survey

Question # 9: Have you ever fished recreationally or commercially in McIntosh County?

- Yes
- No

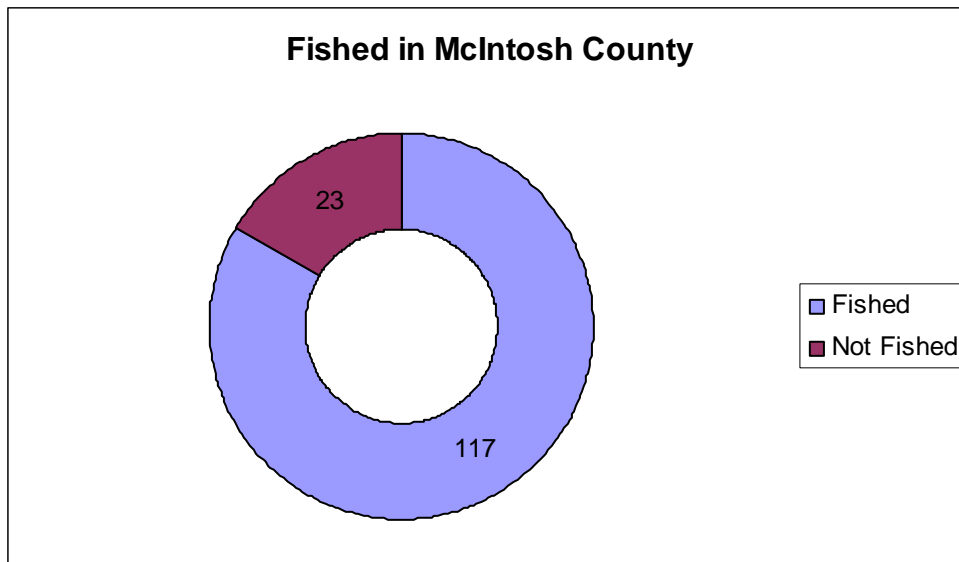
If the answer is No, go to question number 10
If the answer is Yes, go to question number 12

Table MS9: Individuals who Have Fished in McIntosh County

McIntosh County	Number	Percent
Fished	117	83
Not Fished	23	17
TOTAL	140	100

As can be seen in Table MS9, more than eight in every 10 respondents have fished recreationally or commercially in McIntosh County. The number is unusually high, suggesting that fishing is an activity in which most of the population engages. $\chi^2 = 63.12$, $df = 1$, $p < .005$.

Figure MS9: Graphic Representation, Individuals who Have Fished in McIntosh County



Question # 10: If you have never fished in McIntosh County, do you anticipate that you will fish within the next year?

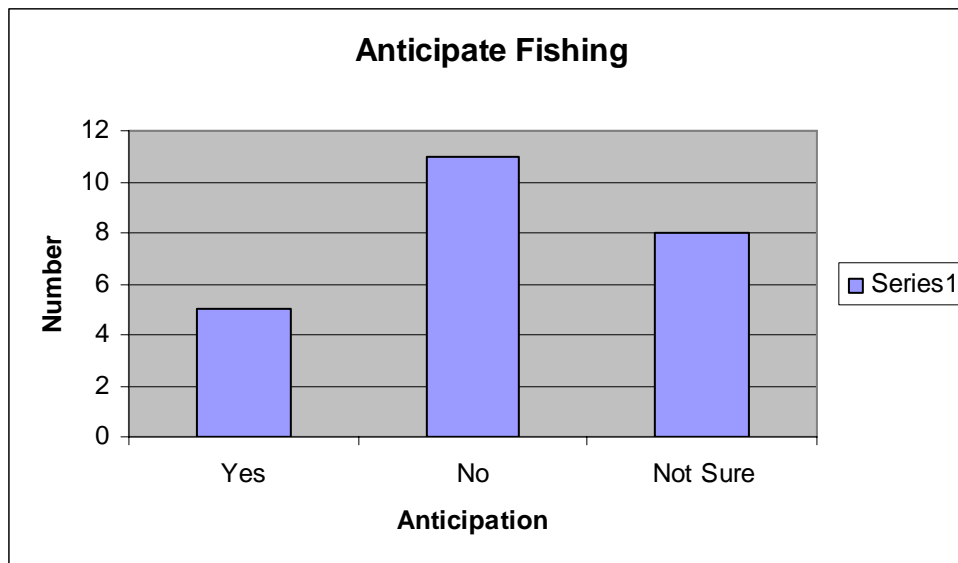
- Yes
- No
- Not sure

Table MS10: Percentage of Individuals Expecting to Fish in McIntosh County

Anticipate Fishing	Number	Percent
Yes	5	21
No	11	46
Not Sure	8	33
TOTAL	24	100

As Table MS10 indicates, the number of individuals who have not fished in McIntosh County and who do not expect to fish there is 19, counting those who are unsure. Although that is a majority of those who have not fished, it is a very small number in relation to the sample, constituting less than two percent (19 of 140). $\chi^2 = 2.75$, $df = 1$, $p < .10$.

Figure MS10: Graphic Representation of Individuals Expecting to Fish in McIntosh County



Question # 11: Even if you have never fished in McIntosh County, do you think that fishing is a worthwhile recreational activity?

- Yes
- No
- Not sure

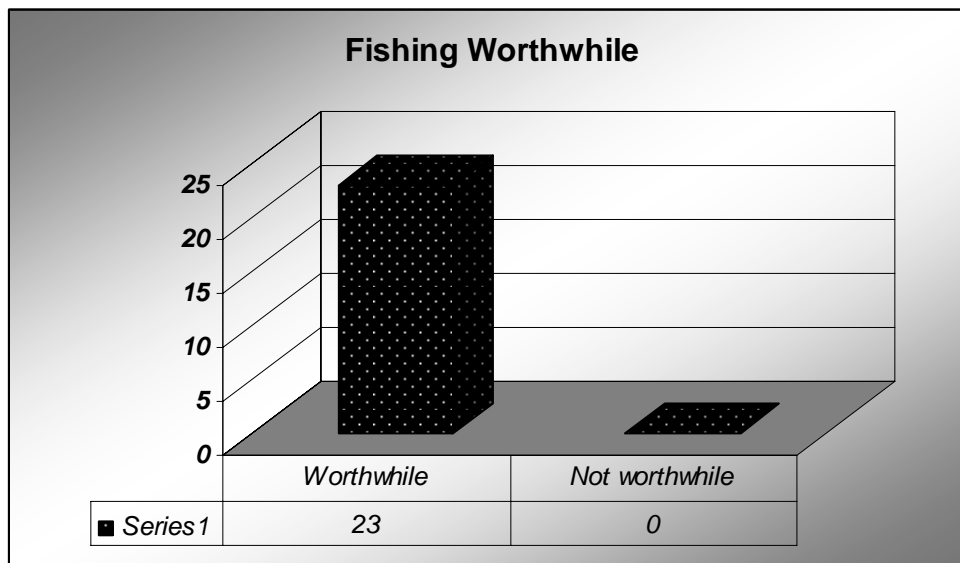
Go to question number 31

Table MS11: Fishing as a Worthwhile Activity

Recreational Fishing	Number	Percent
Worthwhile	23	100
Not worthwhile	0	0
Total	23	100

All of the individuals who have not fished in McIntosh County view fishing as a worthwhile recreational activity, even by those who also do not expect to fish there.

Figure MS11: Graphic Representation of Fishing as a Worthwhile Activity



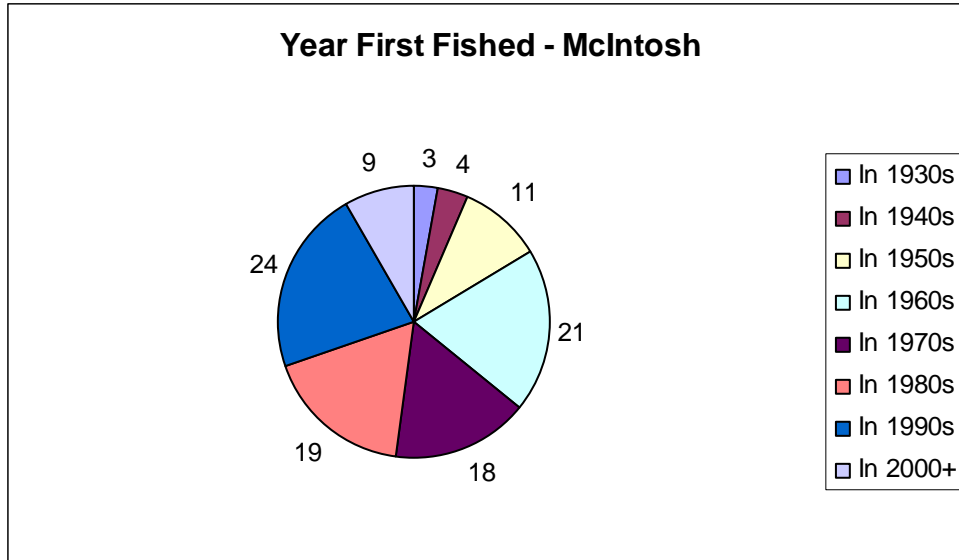
Question # 12: Year in which you first fished in McIntosh County: _____

Table MS12: Year First Fished in McIntosh County

Year First Fished	Number	Percent
In 1930s	3	3
In 1940s	4	4
In 1950s	11	10
In 1960s	21	19
In 1970s	18	17
In 1980s	19	17
In 1990s	24	22
In 2000+	9	8
TOTAL	109	100

As shown in Table MS12, approximately one-third of the respondents have fished in McIntosh County for the first time within the last 10-15 years. Slightly more than one-third of the respondents, however, first fished there more than 35-40 years ago. As many as 17 percent first fished there some 50 or more years ago. In fact, as many as 50 percent first fished there approximately 25-30 years ago, a number indicating again long-term residency by a sizeable portion of the population. $\chi^2= 32.53$ $df = 7$, $p < .005$

Figure MS12: Graphic Representation of Year First Fished in McIntosh County



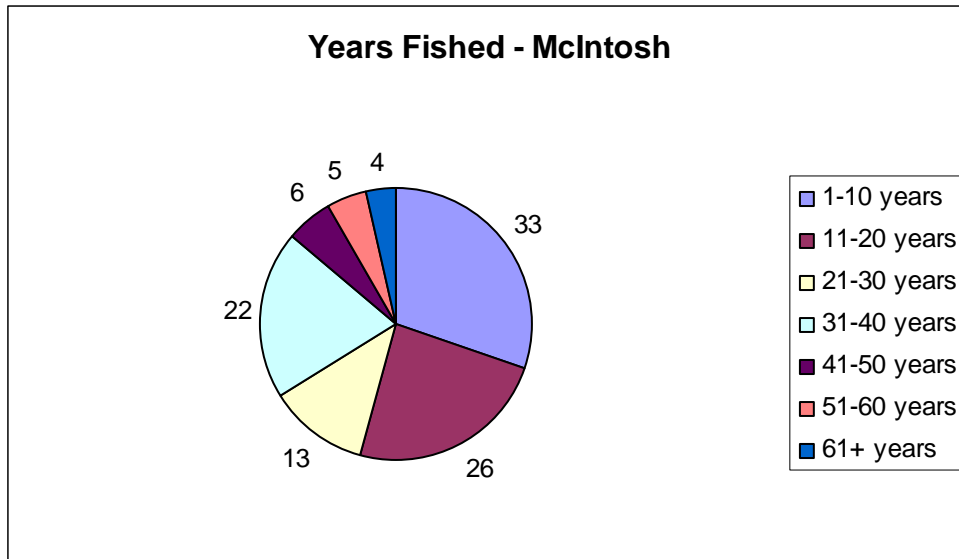
Question # 13: Total number of years fishing in McIntosh County: _____

Table MS13: Number of Years Fished in McIntosh County

Number Years Fished	Number	Percent
1-10 years	33	30
11-20 years	26	24
21-30 years	13	12
31-40 years	22	20
41-50 years	6	6
51-60 years	5	5
61+ years	4	4
TOTAL	109	100

Table MS13 shows that one-third of the respondents have fished 10 years or less, and more than half of the sample has fished for 20 years or less. Especially noteworthy is that 15 percent of the respondents have fished for more than 40 years and 37 percent have fished for more than 30 years. As for other questions, the responses indicate a skewing of years downward and upward, i.e., newcomers and long-term residents. $\chi^2 = 51.10$ df = 6, $p < .005$.

Figure MS13: Graphic Representation of Number of Years Fished in McIntosh County



Question # 14: Frequency of fishing in McIntosh County: (Whichever best applies, on the average)

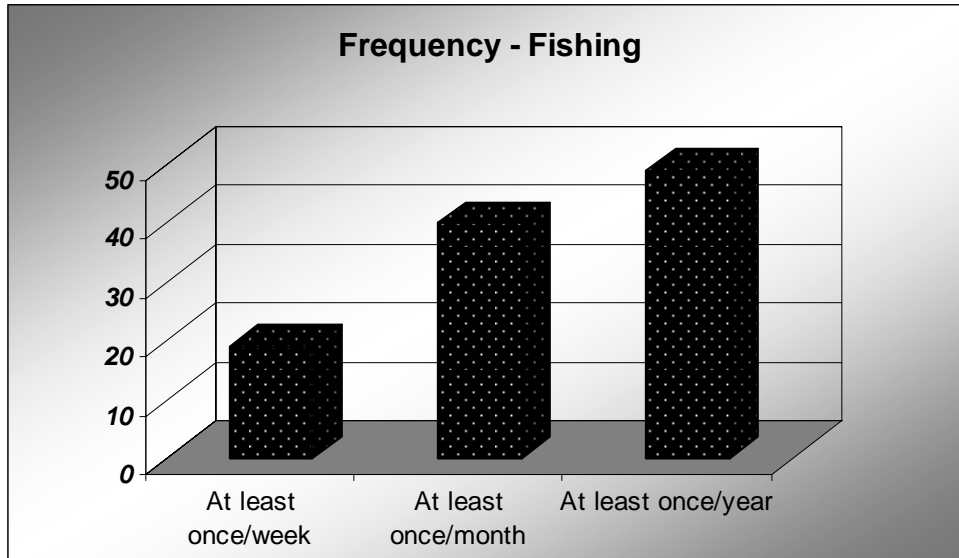
- a. Number of times per week: _____
- b. Number of times per month: _____
- c. Number of times per year: _____

Table MS14: Frequency of Fishing

Frequency Fishing	Number	Percent
At least once/week	19	18
At least once/month	40	37
At least once/year	49	45
TOTAL	108	100

As seen in Table MS14, approximately 50 percent of the respondents fish at least once a year, and the other 50 percent fish at least once a month. One in five of the respondents fish at least once a week.

Figure MS14: Graphic Representation of Frequency of Fishing



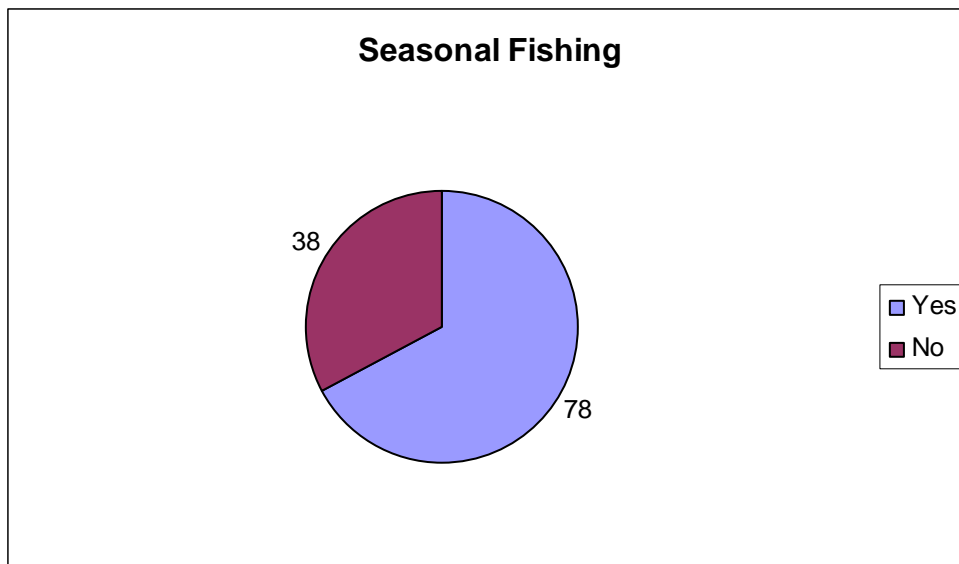
Question # 15: Does your fishing tend to be seasonal? ____ Yes; ____ No

Table MS15: Seasonal Fishing

Seasonal Fishing	Number	Percent
Yes	78	67
No	38	33
TOTAL	116	100

Two of every three respondents tend to fish seasonally. Seasonality does not appear to be as important to the remaining one-third of the sample. $\chi^2 = 13.80$, $df = 1$, $p < .005$.

Figure MS15: Graphic Representation of Seasonal Fishing



Question # 16: If fishing is seasonal, in which season are you most likely to fish?

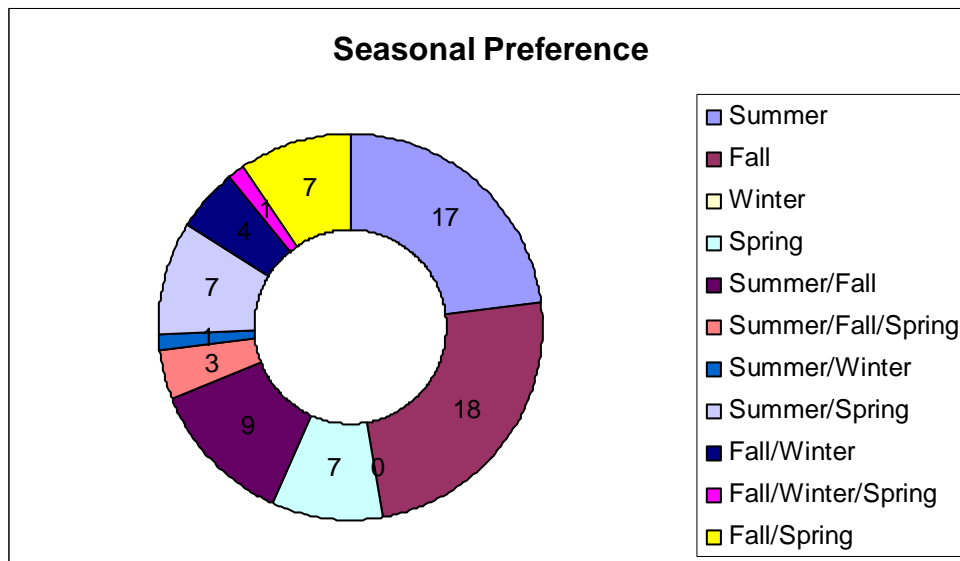
- a. Summer: _____
- b. Fall: _____
- c. Winter: _____
- d. Spring: _____

Table MS16: Preferred Season for Fishing

Seasonal Fishing	Number	Percent
Summer	17	23
Fall	18	24
Winter	0	0
Spring	7	10
Summer/Fall	9	12
Summer/Fall/Spring	3	4
Summer/Winter	1	1
Summer/Spring	7	10
Fall/Winter	4	5
Fall/Winter/Spring	1	1
Fall/Spring	7	10
TOTAL	74	100

Summer is clearly the preferred season to fish, followed by the fall. Summer is the only or first choice for 50 percent of the sample. The fall is the only or first choice for 30 percent of the sample. Spring also is favored, but by a smaller percentage of the respondents. Winter is the least preferred, listed as second choice by only six respondents.

Figure MS16: Graphic Representation of Preferred Season for Fishing



Question # 17: What is the primary reason why you fish (other than catching fish!)?

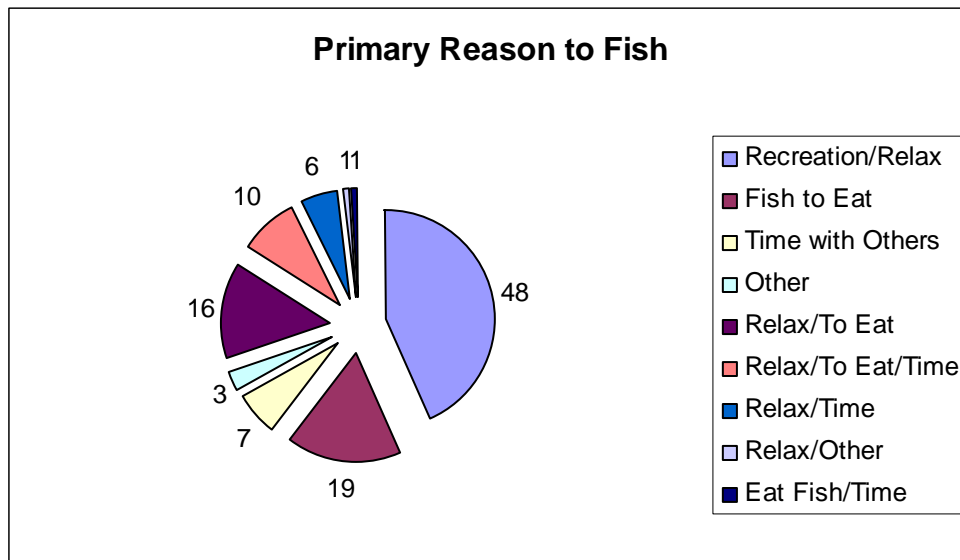
- a. Recreation/relaxation: _____
- b. Catch fish to eat: _____
- c. To spend time with family or friends: _____
- d. Other: _____

Table MS17: Primary Reason to Fish

Primary Reason to Fish	Number	Percent
Recreation/Relax	48	43
Fish to Eat	19	17
Time with Others	7	6
Other	3	3
Relax/To Eat	16	15
Relax/To Eat/Time	10	9
Relax/Time	6	5
Relax/Other	1	1
Eat Fish/Time	1	1
TOTAL	111	100

Relaxation and recreation is the primary reason to fish as expressed by almost 50 percent of the respondents. When combined responses are included, relaxation is listed as primary by 70 percent of the respondents. Having fish to eat is the second most common reason cited, listed as primary by 20 percent of the sample. Spending time with others is lower than expected, appearing as first choice only six percent of the time. $\chi^2 = 64.28$, $df = 3$, $p < .005$.

Figure MS17: Graphic Representation of Primary Reason to Fish



Question # 18: If your primary reason for fishing is recreation/relaxation, which of the following do you consider to be the most important?

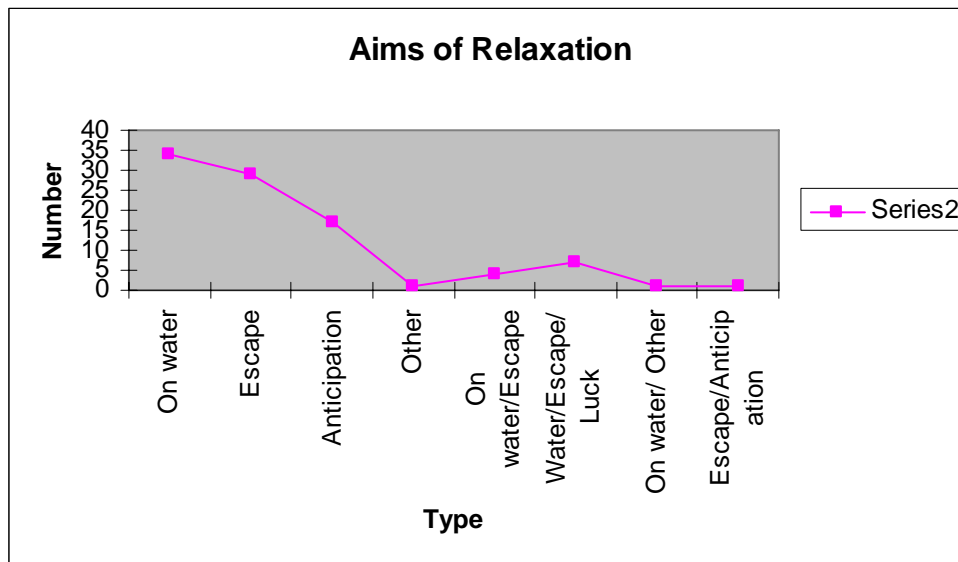
- a. Being out on the water in the open air
- b. Being away from everyday concerns and worries
- c. Sense of anticipation at catching fish
- d. Other: _____

Table MS18: Most Important Aspect of Relaxation/Recreation

Relax - Important Factors	Number	Percent
On water	34	36
Escape	29	31
Anticipation	17	18
Other	1	1
On water/Escape	4	4
Water/Escape/Luck	7	8
On water/ Other	1	1
Escape/Anticipation	1	1
TOTAL	94	100

By far, the most important factors in relaxation/recreation is ‘being on the water’ and away from everyday problems and concerns. Anticipation at catching fish also was listed by slightly less than 20 percent of the respondents. $\chi^2 = 29.51$, $df = 3$, $p < .005$.

Figure MS18: Graphic Representation of Important Aspects of Relaxation/Recreation



Question # 19: Do you practice “catch and release” (for regulation-size fish)?

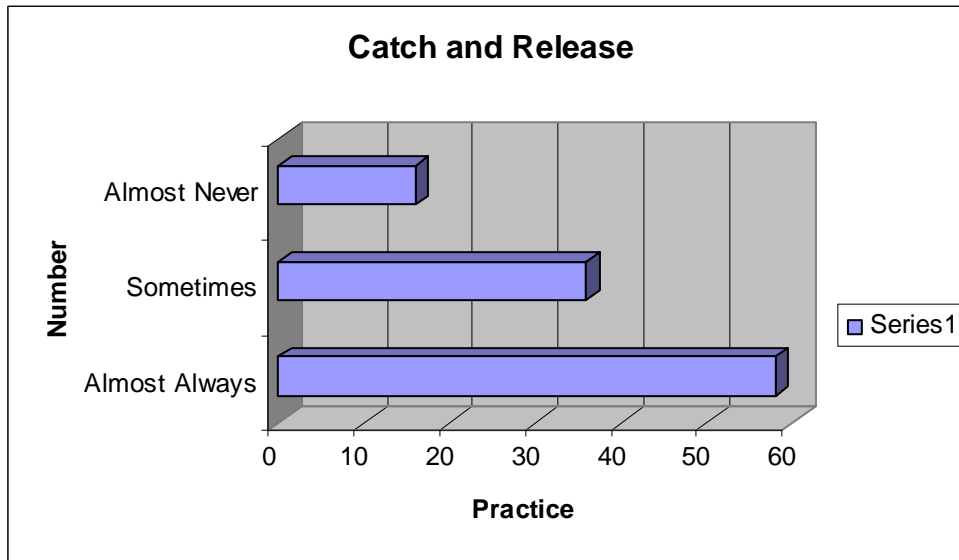
- a. Almost always
- b. Sometimes
- c. Almost never

Table MS19: Catch and Release

Catch and Release	Number	Percent
Almost Always	58	52
Sometimes	36	33
Almost Never	16	15
TOTAL	110	100

The most salient number in Table MS19 is the 50 percent of fishermen who almost always practice catch and release. The number is higher than anticipated. Likewise the number of fishermen who almost never practice catch and release is lower than expected.

Figure MS19: Graphic Representation of Catch and Release



Question # 20: If you tend to keep the fish that you catch, what are you most likely to do with them once you get onshore?

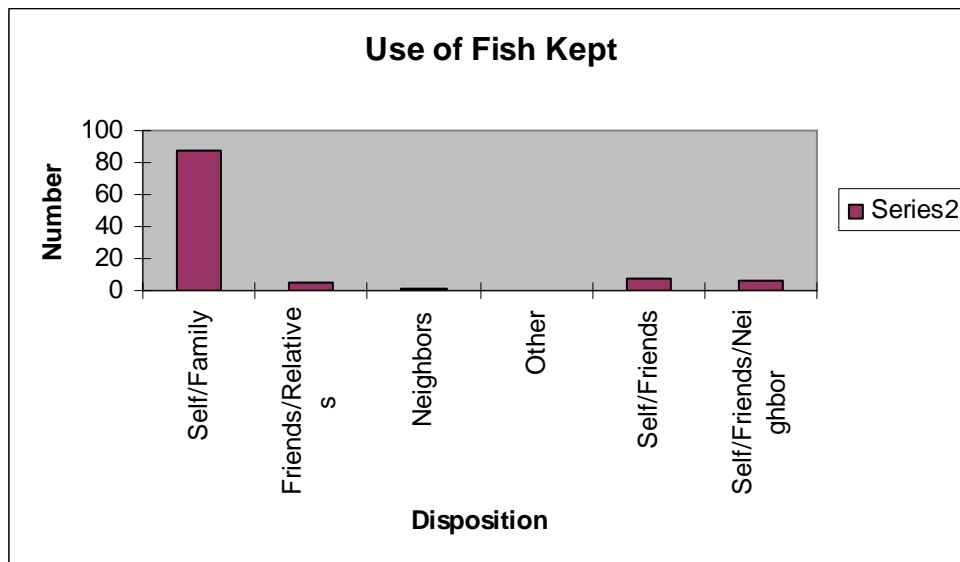
- a. Keep them for self/family: _____
- b. Give them to friends/relatives: _____
- c. Give them to neighbors: _____
- d. Other: _____

Table MS20: Disposition of Caught Fish

Use of Fish Kept	Number	Percent
Self/Family	88	81
Friends/Relatives	5	5
Neighbors	1	1
Other	0	0
Self/Friends	8	7
Self/Friends/Neighbor	6	6
TOTAL	108	100

As seen in Table MS20, virtually all of the fish caught and kept are used for oneself and one's family. Only a small percentage of fish are given to friends and relatives.

Figure MS20: Graphic Representation of Disposition of Fish



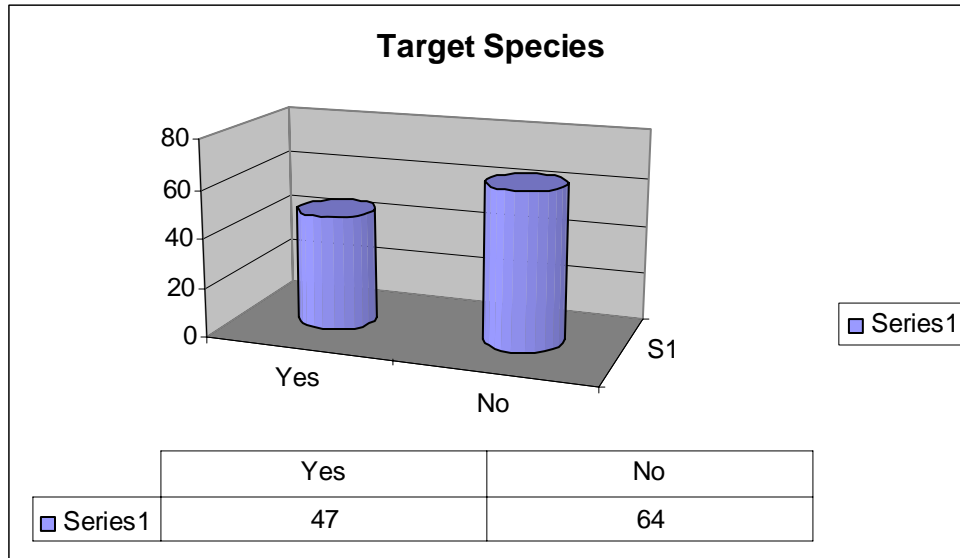
Question # 21: Do you typically fish for a particular species? ____ Yes, ____ No

Table MS21: Fishing for Particular Species

Target Species	Number	Percent
Yes	47	42
No	64	58
TOTAL	111	100

Only three of every five respondents tend to fish for particular species. Given, however, that the most important reason given to fish is relaxation and recreation, the percentage of respondents who target species may be somewhat high. $\chi^2 = 2.60$, $df = 1$, $p < .10$.

Figure MS21: Graphic Representation for Fishing for Particular Species



Question # 22: If you fish or tend to fish for a particular species, what is/are the species?

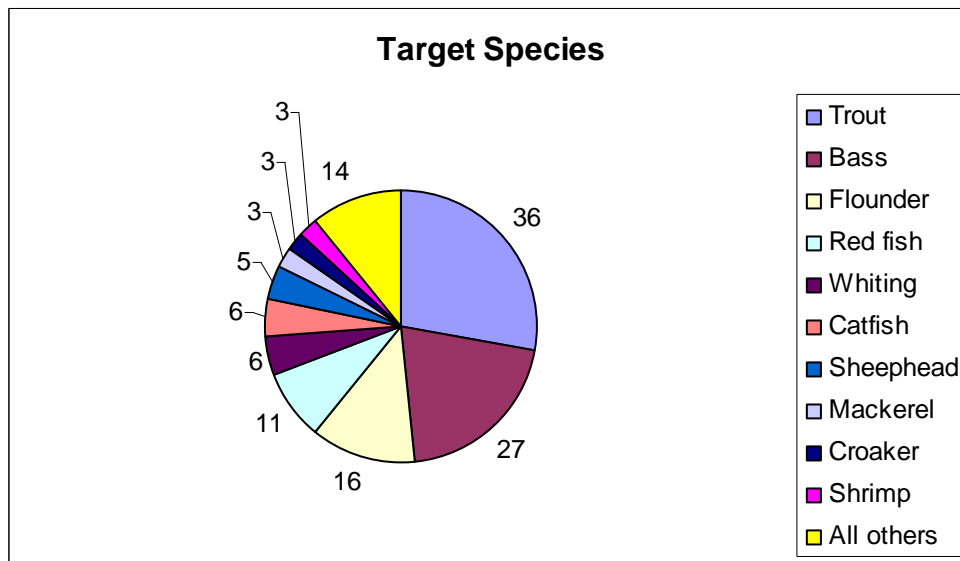
- a. _____
- b. _____
- c. _____

Table MS22: Targeted Species

Target Species	Number	Percent
Trout	36	28
Bass	27	21
Flounder	16	12
Red fish	11	8
Whiting	6	5
Catfish	6	5
Sheepshead	5	4
Mackerel	3	2
Croaker	3	2
Shrimp	3	2
All others	14	11
TOTAL	130	100

The numbers in Table MS22 refer not to the number of respondents who listed target species but to the numbers of times that the individual species were listed. As the numbers show, sea trout and sea bass were the species most commonly listed, constituting approximately 50 percent of all species identified. In fact, those two species and flounder and red fish collectively account for two-thirds of the frequency of species listing.

Figure MS22: Graphic Representation of Targeted Species



Question # 23: On average, where are you most likely to fish?

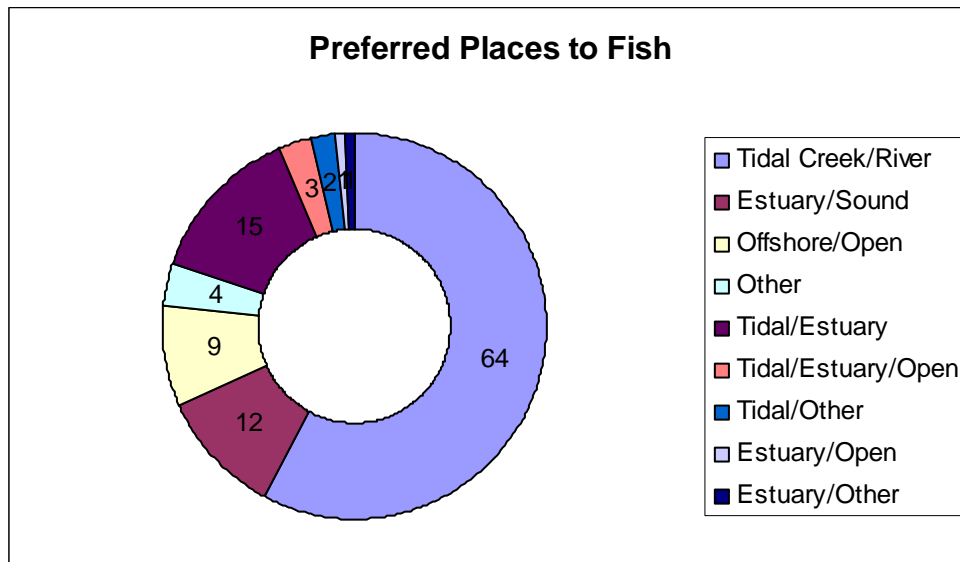
- a. Tidal Creek/River: _____
- b. Estuary/Sound: _____
- c. Open water/offshore: _____
- d. Other: _____

Table MS23: Types of Places Most Likely to Fish

Places to Fish	Number	Percent
Tidal Creek/River	64	58
Estuary/Sound	12	10
Offshore/Open	9	8
Other	4	3
Tidal/Estuary	15	14
Tidal/Estuary/Open	3	3
Tidal/Other	2	2
Estuary/Open	1	1
Estuary/Other	1	1
TOTAL	111	100

As seen in Table MS23, the most likely places where the respondents fish are, first, in the tidal creeks/ivers and secondly, in the estuaries and sounds. Relatively few respondents fish offshore in open water.

Figure MS23: Graphic Representation of Types of Places Most Likely to Fish



Question # 24: Are you most likely to fish?

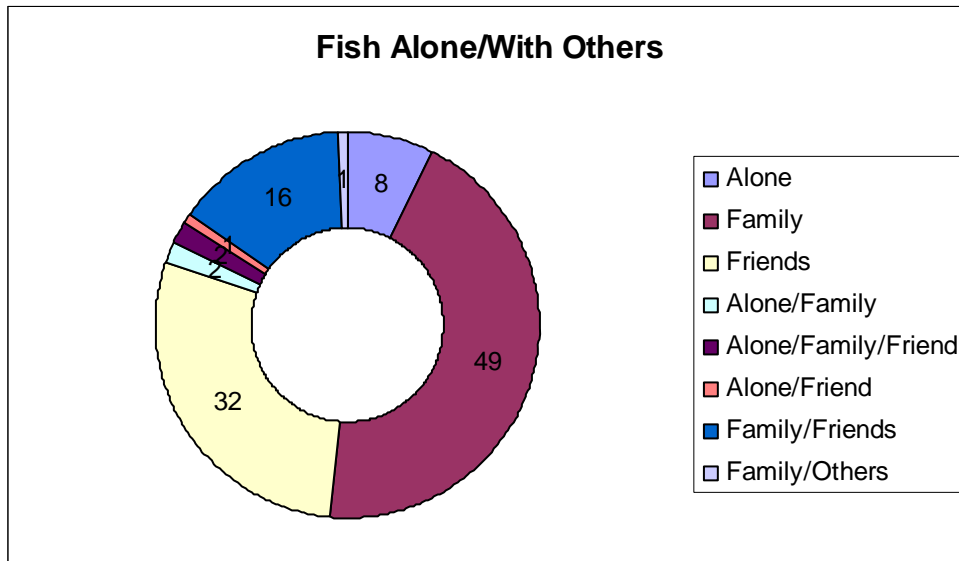
- a. Alone: _____
 - b. With family members: _____
 - c. With friends: _____
 - d. Other: _____
-

Table MS24: Fishing Alone and with Others

Alone/Others	Number	Percent
Alone	8	7
Family	49	44
Friends	32	29
Alone/Family	2	2
Alone/Family/Friend	2	2
Alone/Friend	1	1
Family/Friends	16	14
Family/Others	1	1
TOTAL	111	100

As Table MS24 shows, respondents fish mostly with family members, secondarily with friends. Almost fifty percent of the respondents listed fishing with family as the most likely occurrence, and fishing with friends accounted for almost one-third of the responses.

Figure MS24: Graphic Representation of Fishing Alone and with Others



Question # 25: Have you ever worked or been employed in commercial fishing in any capacity, e.g., as a fisherman, a striker, or processor?

- Yes
- No

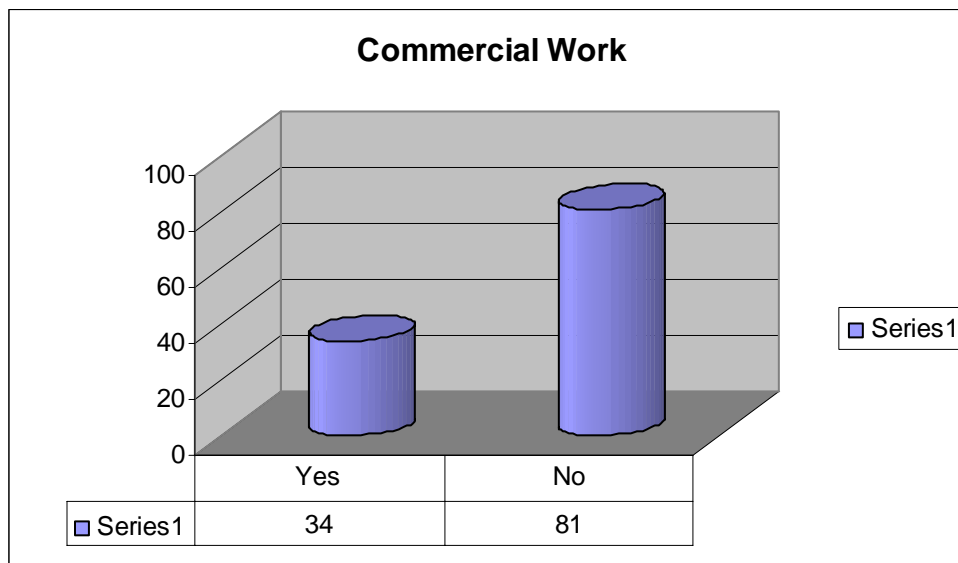
If the answer is No, go to question number 31

Table MS25: Employment in Commercial Fisheries

Commercial Work	Number	Percent
Yes	34	30
No	81	70
TOTAL	115	100

Almost one-third of the respondents reported having worked in a commercial fishery. A considerable portion of those respondents are likely to be long-term residents, given the historical reliance of fisheries for livelihood. Also, newcomers are less likely to work commercially, except possibly as seafood processors or in the blue crab fishery. $\chi^2 = 19.20$, $df = 1$, $p < .005$.

Figure MS25: Graphic Representation of Employment in Commercial Fisheries



Question # 26: In what capacity did you work in commercial fishing?

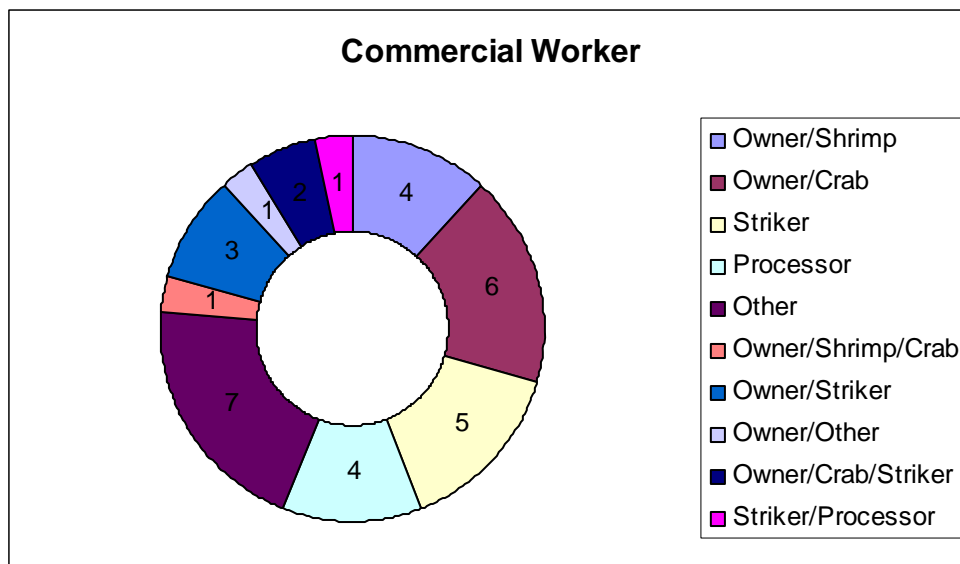
- ___ Owner or operator of a shrimp boat
- ___ Owner or operator of a crab boat
- ___ Striker/worker on a shrimp boat or a crab boat
- ___ Seafood processor
- ___ Other: _____

Table MS26: Type of Work in Commercial Fishing

Commercial Work	Number	Percent
Owner/Shrimp	4	12
Owner/Crab	6	17
Striker	5	15
Processor	4	12
Other	7	20
Owner/Shrimp/Crab	1	3
Owner/Striker	3	9
Owner/Other	1	3
Owner/Crab/Striker	2	6
Striker/Processor	1	3
TOTAL	34	100

Work experience in commercial fisheries was distributed across several categories, as can be seen in Table MS26. The most commonly listed type was as owner of a shrimp boat, crab boat, or as owner and then as another type of laborer. No particular trend other than ownership of a boat emerged from this question.

Figure MS26: Graphic Representation of Type of Work in Commercial Fishing



Question # 27: Years and location (county) worked in commercial fishing?

Years: _____

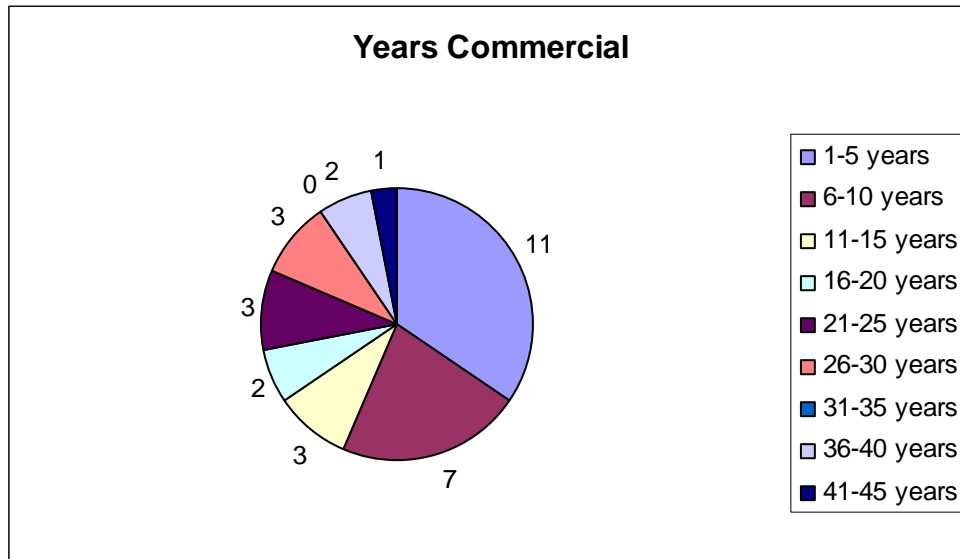
Location: _____

Table MS27: Years Worked in Commercial Fishing

Years Commercial	Number	Percent
1-5 years	11	34
6-10 years	7	22
11-15 years	3	9
16-20 years	2	7
21-25 years	3	9
26-30 years	3	9
31-35 years	0	0
36-40 years	2	7
41-45 years	1	3
TOTAL	32	100

Approximately 50 percent of the commercial fishermen worked for 10 years or less, one-third of them for five years or less. At the other end of the time scale, 10 percent of the respondents indicated that they had been in commercial fishing for more than 35 years. Compilation of the locations where commercial fishermen was not included here, since the lists of all locations was extensive and apparent trends were lacking. $\chi^2 = 27.48$, $df = 8$, $p < .005$.

Figure MS27: Graphic Representation of Years Worked in Commercial Fishing



Question # 28: If you are no longer working in commercial fishing, what was the major reason for leaving that work?

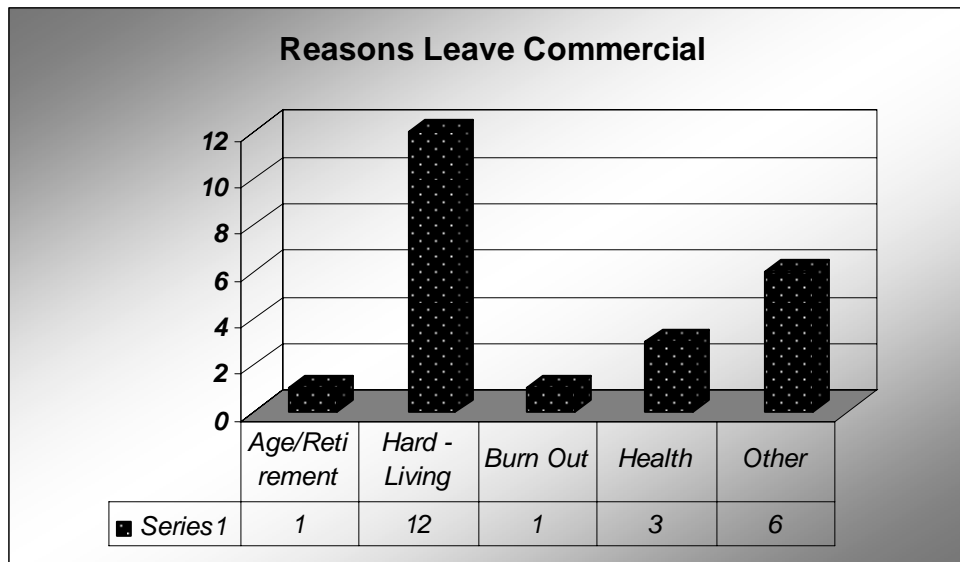
- Age/retirement
- Impossible to make a living
- “Burned out”/tired of the work
- Health factors
- Other: _____

Table MS28: Reasons for Leaving Commercial Fishing

Leave Commercial	Number	Percent
Age/Retirement	1	4
Hard - Living	12	53
Burn Out	1	4
Health	3	13
Other	6	26
TOTAL	23	100

Although only a small number of the respondents left commercial fishing, the apparent reason for most of them was the difficulty of making a living. That factor outweighed all of the others combined. $\chi^2 = 18.51$, $df = 4$, $p < .005$.

Figure MS28: Graphic Representation of Reasons for Leaving Commercial Fishing



Question # 29: If you still work in commercial fishing, what do you think will be the major factor in your decision to eventually stop?

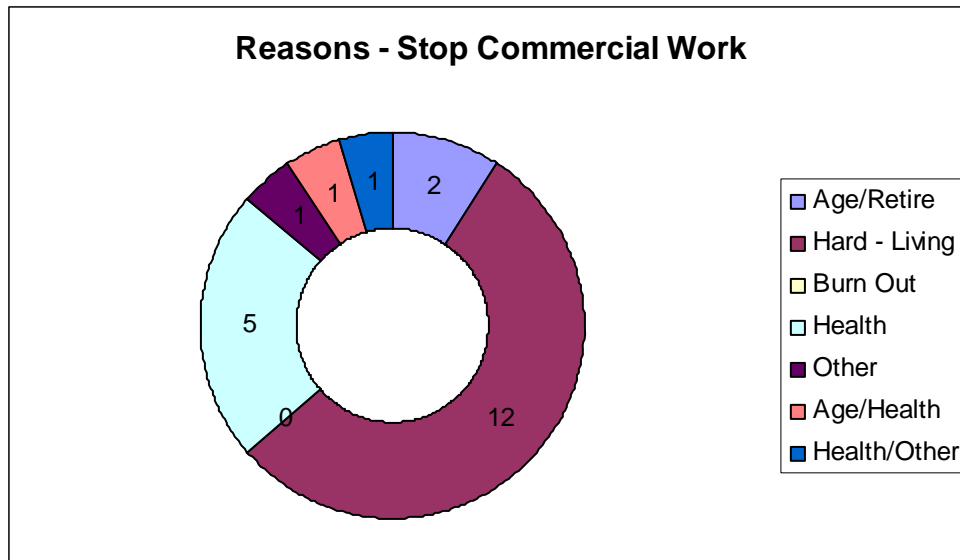
- ___ Age/retirement
- ___ Difficulty of making a living
- ___ “Burn out”/becoming tired of the work
- ___ Health factors
- ___ Other: _____

Table MS29: Factors in Leaving Commercial Fishing

Factors to Leave	Number	Percent
Age/Retire	2	9
Hard - Living	12	54
Burn Out	0	0
Health	5	22
Other	1	5
Age/Health	1	5
Health/Other	1	5
TOTAL	22	100

As in the case of factors that led individuals to leave commercial fishing, the anticipated factors are first and foremost the difficulty of making a living and, secondarily, health factors. Difficulty of making a living outweighs all of the other factors combined. $\chi^2 = 23.50$, $df = 4$. $p < .005$.

Figure MS29: Graphic Representation of Factors in Leaving Commercial Fishing



Question # 30: What appeals or appealed to you most in commercial fishing?

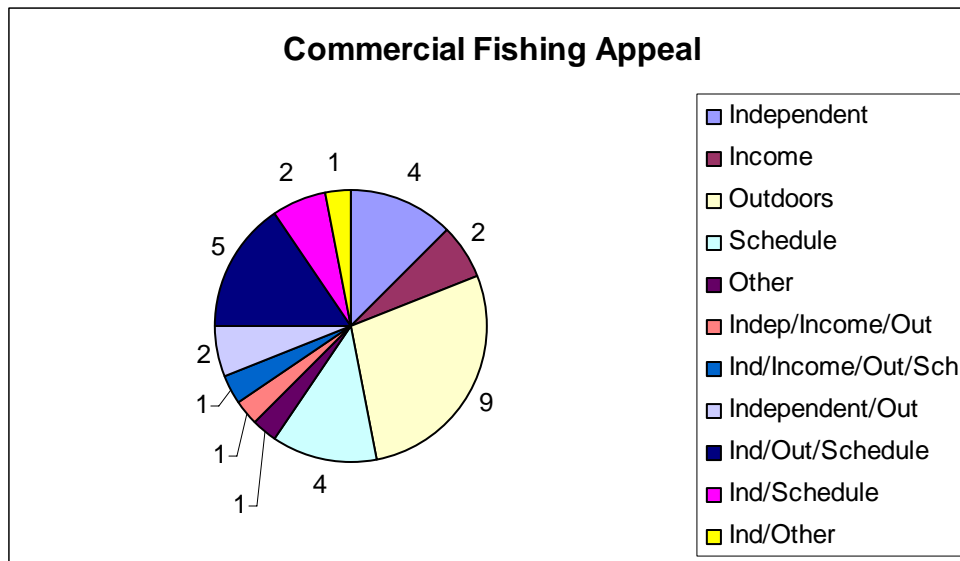
- ___ Independence/being own “boss”
- ___ Amount of money made
- ___ Being outdoors on the water
- ___ Ability to set own work schedule
- ___ Other: _____

Table MS30: Appeal of Commercial Fishing

Appeal Commercial	Number	Percent
Independent	4	13
Income	2	6
Outdoors	9	28
Schedule	4	13
Other	1	3
Independent/Income/Outdoors	1	3
Independent/Income/Outdoors/Schedule	1	3
Independent/Outdoors	2	6
Independent/Outdoors/Schedule	5	16
Independent/Schedule	2	6
Independent/Other	1	3
TOTAL	32	100

Respondents tended to see a combination of factors that appealed to them about commercial fishing. Being outdoors and on the water was the major factor, but being independent and setting one’s own schedule were also appealing factors. Income scored considerably lower than quality of life concerns. $\chi^2 = 9.50$, $df = 4$, $p < .025$.

Figure MS30: Graphic Representation of Appeal of Commercial Fishing



Question # 31: How important do you think that recreational fishing will be in the future in McIntosh County?

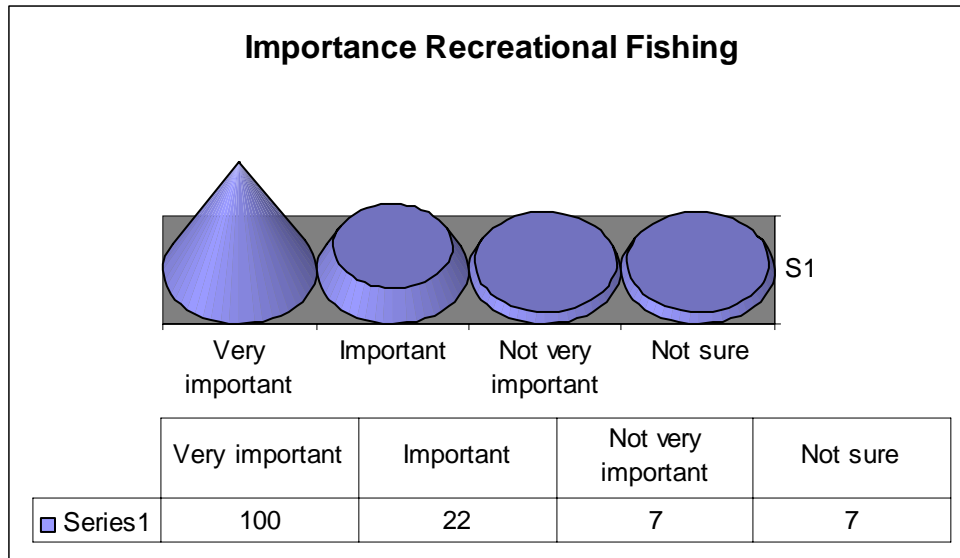
- ___ Very important
- ___ Important
- ___ Not very important
- ___ Not sure

Table MS31: Perceived Importance of Recreational Fishing

Recreational Importance	Number	Percent
Very important	100	74
Important	22	16
Not very important	7	5
Not sure	7	5
TOTAL	136	100

As Table MS31 shows, 90 percent of the respondents consider recreational fishing to be important for McIntosh County. Respondents see recreational fishing as an important of the future of the county. $\chi^2 = 175.04$, $df = 3$, $p < .005$.

Figure MS31: Graphic Representation of the Perceived Importance of Recreational Fishing



Question # 32: How important do you think that commercial fishing will be in the future in McIntosh County?

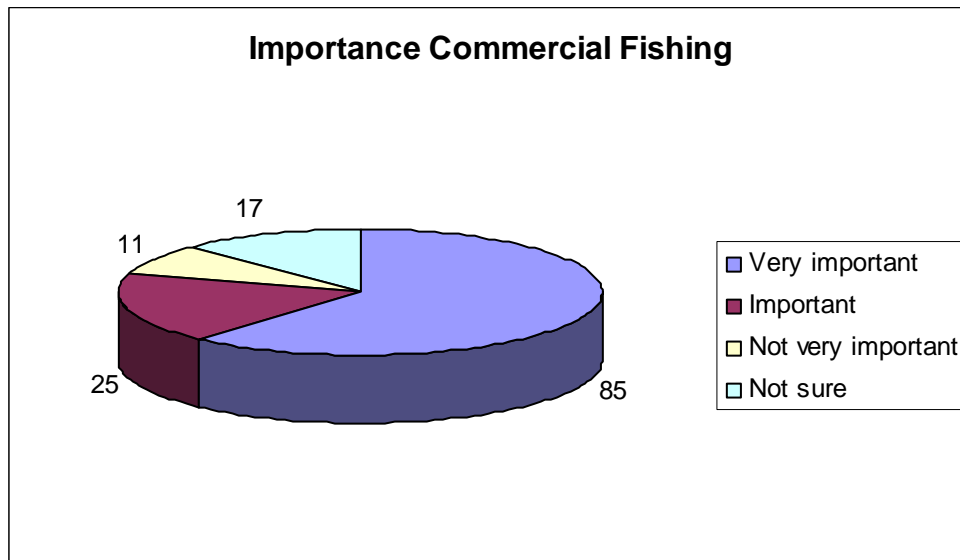
- ___ **Very important**
- ___ **Important**
- ___ **Not very important**
- ___ **Not sure**

Table MS32: Perceived Importance of Commercial Fishing

Commercial Importance	Number	Percent
Very important	85	62
Important	25	18
Not very important	11	8
Not sure	17	12
TOTAL	138	100

Eighty percent of the respondents consider commercial fishing to be important for McIntosh County and its future. While the numbers are lower than those for recreational fishing, the overwhelming majority of the respondents still endorse the importance of commercial fishing. $\chi^2 = 96.84$, $df = 3$, $p < .005$.

Figure MS32: Graphic Representation of Perceived Importance of Commercial Fisheries



Summary of Fishing Survey

The responses to the questions in the fishing section of the survey indicate that four of every five respondents have fished at one time or another in McIntosh County. Only a small number of respondents, 19 of 140, indicated that they have never fished and have no expectations to change. Even among those who have never fished there, the sentiment was unanimous that recreational fishing is a worthwhile activity. McIntosh County is clearly a region in which much of the population fishes and values fishing as a recreational activity.

Responses to questions about number of years fished and year when first fishing occurred also support the claim that McIntosh is a county in which fishing is frequent and valued. Whereas one-third of the respondents began fishing within the last 10-15 years, a more or less equal number began fishing more than 35-30 years ago. The number of years fishing shows a similar distribution, with one-third of the sample having fished 10 years or less and one-third having fished for more than 30 years. Fishing frequency is also high, with 50 percent of the sample fishing at least once a month and almost 20 percent fishing at least one a week.

For two-thirds of the sample, fishing is seasonal, with summer the preferred season, followed closely by the fall months. Spring is less preferred, and winter is a preferred season for almost none of the sample. The seasonality could be related to availability of fish, but the outdoor nature of fishing and the more pleasant and warmer weather of the summer and fall are certainly determining factors and reflective of the recreational nature of fishing. When asked for the primary reason for fishing, the majority response was for recreation and to relax, with 73 percent of the sample listing relaxation as the most important factor. Having fish to eat and spending time with others were also factors, but of lesser importance. When asked further about what is valued in fishing for recreation and relaxation, by far the most important factor was 'being out on the water in the open air'. Two other factors were of lesser importance, 'being away from everyday concerns and worries,' and 'sense of anticipation at catching fish'.

Turning more directly to specifics of fishing, approximately 50 percent of the sample indicated that they almost always practice 'catch and release,' and the same percentage indicated that they sometimes or almost never engage in that practice. The number that do practice 'catch and release' is higher than anticipated, perhaps reflecting that recreation is the prime objective and having fish to eat is secondary. When fish are caught and kept, four of every five respondents keep them for their family and themselves. Less than one-half, two of every five respondents, target particular species when they fish, again suggesting that the recreational nature of the activity is what is most important. When species are targeted, the species of sea trout and sea bass are primary, accounting for almost 50 percent of all species targeted. Flounder and red fish are also important. Preferred type of fishing area, by far, is tidal creeks and rivers. Estuaries and sounds are second in preferred area, and fewer than 10 percent prefer offshore and open water fishing. When respondents were asked if they tend to fish alone or with others, the responses indicated that mostly they fish with family members or with friends. Less than 10 percent indicated that they typically fish alone.

A series of questions were posed about employment in commercial fishing. Thirty percent of the sample indicated that they had at one time or another been employed in some capacity in commercial fishing. Various types of employment were recorded, but the most common type of employment was as the owner or operator of a shrimp or a crab boat or as an owner at one period of time and a 'worker' at another period, e.g., as a striker. Owner/operator status was the clearest operative factor. When asked about the number of years of working commercially, a surprising 50 percent indicated that they had worked for 10 years or less,

surprising in relation to the view of commercial fishing having a long and deep history in the county. Ten percent of the sample, however, did indicate that they had been in commercial fishing for more than 35 years.

Individuals who had retired from commercial fishing indicated that the primary reason for leaving, by a considerable margin, was the impossibility or difficulty in making a living. Health factors were a distant second in importance. A question to individuals who still work commercially about what might lead to retirement was answered in the same way, the difficulty of making a living being seen as the major factor, followed by health considerations. In neither case was retirement seen as a major reason for leaving commercial fishing. When asked about the appeal of commercial fishing as a way to make a living, the responses were similar to recreational fishing. The most important factor was being outdoors on the water, followed by being independent and being able to set one's own work schedule. No one responded that 'the amount of money made' was a factor.

The final two questions were about the importance to the future of McIntosh County of recreational fishing and of commercial fishing. The responses in each case were overwhelmingly in agreement that fishing was of future importance. In the case of recreational fishing, 90 percent of the respondents thought that it would be very important or important, with only five percent thinking that it would not be important. The numbers for commercial fishing was somewhat lower but still in substantially high agreement, with 80 percent of the respondents indicating that it would continue to be important in the county's future. Twenty percent were not sure or did not think that commercial fishing would continue to be important. The perspective on recreational fishing could reflect the historical importance of individuals and families fishing for recreation, but growth in tourism and its economic potential and impact could also be a factor. Despite the economic hard times for shrimp and crab fishing in McIntosh County, respondents still saw an important future for them. Perhaps it is difficult for residents to envision a McIntosh County with greatly reduced commercial fishing. McIntosh remains a fishing community.

Discussion of Fishing Survey

The Georgia coastal zone has long been one of the least developed areas of the state. The coastal counties collectively have historically low population size, less than 10 percent of the state's population, and low population density. There is only one city, Savannah, and only a few small towns, Brunswick being the largest. Educational levels in the coastal counties tend to be low, as is income level compared to the other areas of the state. Unlike most other states on the Atlantic seaboard, where coastal growth and development occurred historically early and on a large or massive scale, Georgia's coast until recently remained a marginal area economically and thus politically. Documentation of these characteristics can be found in Blount (2000), Blount (2004), Blount, Greenawalt, and Mueller (2000), Georgia County Guide (2005), and Stewart (1996).

Of the six coastal counties with frontage on the Atlantic Ocean, McIntosh is the least populated and developed. McIntosh in many respects represents the "Old Georgia," before economic growth and progress began to change the state fundamentally in economic growth and modernization, fueled in large part by the city of Atlanta. With only 12 percent of the coast's population, McIntosh produces 40 percent of the coastal fish landings. Fishing has long been the county's major means of livelihood. The "Old Georgia" can be seen in responses to the questionnaire, from individuals who have lived and worked on the coast for 30, 40, or even 50 years. The long-term commercial fishermen in the sample are individuals who grew up on the coast and made a living, at least in part, from fishing commercially. In an area where recreational

activities are very limited, fishing (and hunting) tended to fill that need or niche. Almost everyone fished for recreation and relaxation, as seen, again, in the responses to the questions in the survey.

Like the rest of Georgia, the coast has seen recent and accelerating growth and development. New subdivisions have appeared all along the coast, creating sprawl in the greater Savannah area. Again, McIntosh was the last of the counties to experience growth and development, fueled largely by tourism and by retirees moving to the coast for quality of life reasons. Sub-divisions, however, have recently begun to appear in the county, with expensive lots and homes, and tourism, while still nascent, is growing. In other words, gentrification is now underway, and new residents are moving to the area. The “newcomers” in the sample are drawn from that population, many of them retirees who have more formal education than the long-term residents tend to have.

In some respects, the sample represents three “populations” on the coast, the relative newcomers, who are comparatively well-off financially, the long-term residents, who have managed to make a living on the coast, much of that from fishing, and a ‘middle group,’ middle-aged, still working, as self-employed, salaried, or in commercial fisheries. The coast tends to be defined by the growth of the newcomers, by gentrification, as the older Georgia becomes displaced and disappears. McIntosh County is on the upswing of the cusp of change, and the older patterns of life, including fishing, are still prevalent. Making a living by fishing commercially is likely to become more and more difficult, but recreational fishing serves all of the population ‘segments,’ and moreover, it stands to be a core factor in the recreational activities associated with tourism and retirement. As the surrounding demography and socioeconomics change, recreational fishing remains. The questionnaire responses indicate the same.

IV. PROFILE – BRUNSWICK COUNTY, NORTH CAROLINA

Introduction

Brunswick is the southernmost coastal county in North Carolina, lying just south of the City of Wilmington and north of Myrtle Beach, South Carolina. The land area is 855 square miles. Like much of South Carolina, Georgia, and northern Florida, sections of the coast are lined with barrier islands, specifically Bald Head Island, Holden Beach, Ocean Isle Beach, Sunset Beach, and Bird Island. Unlike, the other states, however, the islands are near the mainland, separated mainly by the Intercoastal Canal. The sounds are very small in comparison with those of the other states to the south. Beaches are thus much more accessible, connected to the mainland by short causeways. Approximately 33 miles of sandy beaches are accessible for recreation (100 miles if all shoreline is counted). While there are sizeable salt grass marshes, the area is centered in the county and does not line the coastal zone, as is the case in Georgia, in particular. The county is comparatively well situated for tourists and retirees, with beach access, condominiums, and seafood restaurants. The infrastructure for tourists and especially for retirees is already well developed but still growing at a rapid rate. Brunswick County appears to have as a development strategy an appeal to retirees and to second-home buyers.

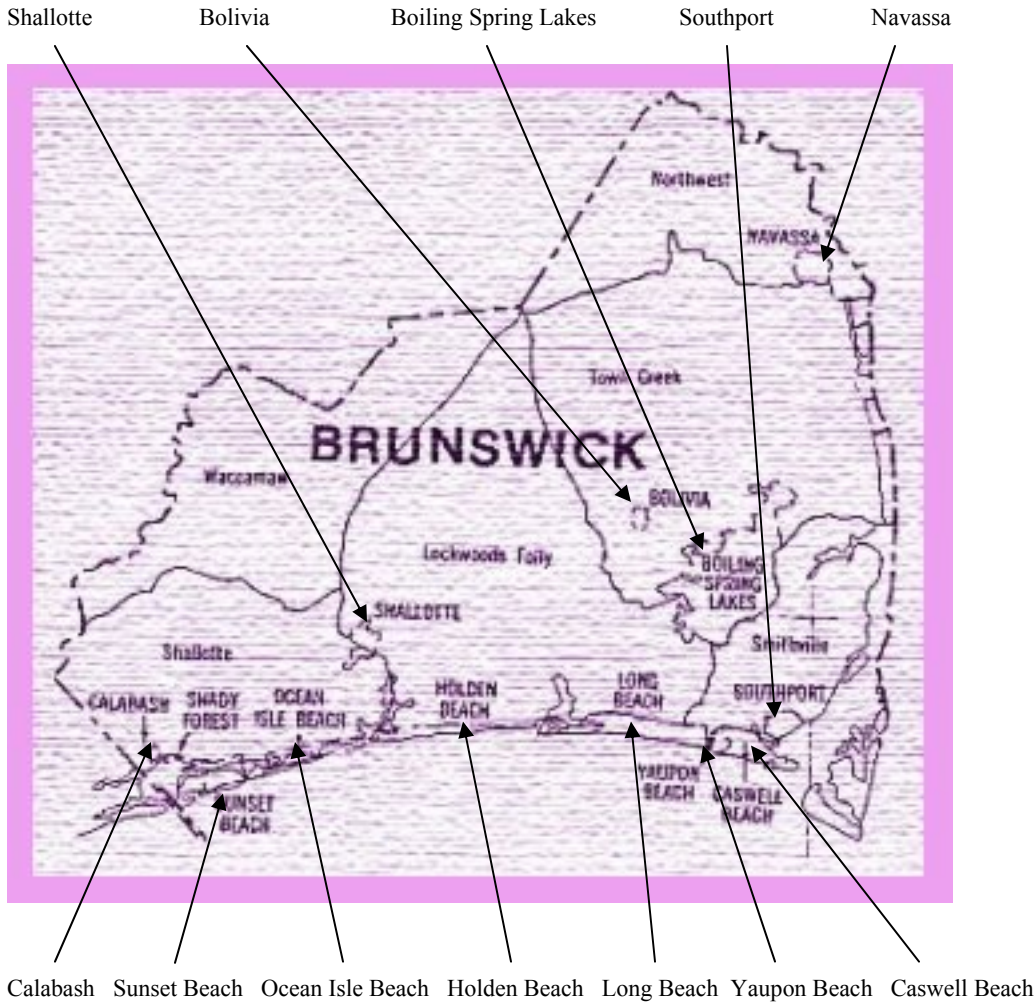
A map of North Carolina showing the location of Brunswick County is shown in Figure B1 (Brunswick) below.

Figure B1: Map of North Carolina, Including Brunswick County



Although there are no large towns in the county, the population in 2005 was estimated to be 89,162 (<http://quickfacts.census.gov/qfd/states/37/37019.html>). The largest town, Oak Island has approximately 5,000 residents. Nearby Southport is slightly smaller, followed by towns in the interior of the county, Shallotte, Leland, and the county seat Bolivia. Population density, in other words, is fairly low, at 85.6 persons per square mile, compared to North Carolina as a whole at 165.2. A map of Brunswick County is given below in Figure BP2.

Figure B2: Map of Brunswick County



The county is growing fast, population-wise, marked at 43.5 percent during the past decade. Population size and density are growing substantially during the present decade. During the period 2000 to 2005, the population grew at a rate of 21.9 percent (from 73,143 to 89,162). The projected population for 2010 is 93,753 (<http://www.sbichamber.com/>). Minority population is low, at approximately 15 percent for all ethnic minorities combined. African Americans constitute 13.1 percent of the total. Per capita income in 1999 was \$19,857, near the state average of \$20,307.

Population Growth

Population growth for Brunswick County by decade is given in Table BP1 (Brunswick Profile) below. As the table shows, the rate of growth has been high for several decades and is likely to continue in that mode.

Table BP1: Population Growth in Brunswick County by Decade

Decade	Population	Percent Change
1970	24,223	---
1980	35,777	32
1990	50,985	30
2000	73,143	22
2010	93,753 (projected)	17
2020	112,885 (projected)	---

The estimated peak season population is approximately double the year-round population. In 1990, the estimate peak was 153,000, and in 2000, it was 190,480, reflecting the substantial increase of tourists who visit during the summer months. Brunswick County advertises as a perfect place for vacation and as a place to live, especially for retirees. In fact, the low population density and relatively mild traffic are selling points in the advertisements. Although there is considerable growth in small-scale industry, the economic engine of the county is tourism, both seasonal and retired residents. Tourism revenues for the county in 1990 were \$115, 830,000, and in 2002 they were \$263,350,000, an increase of 127 percent.

Infrastructure and Gentrification

Infrastructure has developed rapidly during the past decade to attract and serve tourists and retirees. One measure of that growth is the number of golf courses. In 2005, the county had a total of 36 golf courses, an astoundingly large number for a county the size of Brunswick. Another measure is the appearance of planned residential communities. The June 21, 2006, issue of the Southport newspaper, the *State Port Pilot*, listed 12 residential communities. Two or three of those were new condominium complexes, but most of the communities are located outside of the towns, in the countryside, and each one has its own golf course. Bald Head Island is an upscale community that doesn't allow automobiles on the island, and many of the houses are in the \$1 million-plus range. Other than Bald Head, each island has a substantial number of inns, motels, and cottages to cater to tourism, and beach houses are available for rent and to buy. The growth in beachfront and near-beachfront property has expanded rapidly. Informal discussions and interviews with residents of Southport, for instance, pointed to huge increases in property values. Houses in Southport that several years ago would have been priced in the range of \$200,000 are now listed for more than \$1 million. Each issue of the *State Port Pilot* has a large section on real estate; the June 23 issue had 32 pages devoted to real estate. A cursory count of realty firms advertising property in that issue yielded 32 listings. An exceptionally large number of restaurants also exist to meet tourist demand. Calabash, with a population of less than 1,000 has approximately 30 seafood restaurants.

Figure B3: Condominiums on Ocean Isle Beach



The “run-away” growth of beach and waterfront property, the gentrification of the coast, has had the effect of making the property too expensive for fish/seafood houses. In 2004, only one seafood business, American Seafood, was still operating in Southport. In the previous decades, businesses were replaced with restaurants and with the Southport Marina. Beginning in 2005 and continuing to the present, the area of the Southport waterfront known as the Yacht Basin had undergone construction of large condominiums, replacing smaller homes and driving the cost of land even higher. American Seafood closed in 2006. The Yacht Basin has served as a focal point of conflict, with builders and developers on one side, and city residents and officials who want to try to preserve some of the town’s history and charm by limiting the type of growth. The issues have been addressed several times during the past two years by the City Council, but it appears inevitable that the gentrification process will continue.

The Southport Marina Controversy

During a brief visit to Brunswick County in March 2005, houses throughout Southport were observed to have small red and white signs in their yards with the slogan “Save the Marina!” Interviews with residents revealed an extraordinary account of community resistance to change, the story of which has been recorded by the *State Port Pilot*. The marina is located on the outskirts of Southport, and it has served the recreational fishing community since its construction in 1966. In addition to boats of various sizes docked at the marina, the facilities included a dock for unloading boats by the public without charge. The marina was a hub for offshore recreational fishing in the area, accommodating the growing number of boat owners and recreational fishermen. It was, in other words, a part of the gentrification process itself. The signs, however, were in response to an announcement that the Marina was for sale, was to be bought by a development firm, and turned into a multi-million dollar condominium development project. The information galvanized the community to protest and take action to avoid the marina area from becoming private development, thereby leaving them without a marina. A local committee was formed to organize the resistance, the Committee to Save Southport Marina.

Figure B4: Yard Signs in Southport Opposing Sale of the Marina



Over the course of two years, the issue took on a variety of legal maneuvers, not all of which are apparently resolved at the present. The marina was not torn down, and in fact, is slated to undergo renovation, but the Committee was not successful in shifting control of the marina to the city. The marina is owned by the North Carolina State Ports Authority, and is had been operated by Southport Marina, Inc. In order for the marina to be sold, the State Ports Authority had to take action to yield ownership, which according to some accounts was at least under some consideration. Separation of rumor and fact became difficult, but in the ensuing meetings and discussions, the ownership of the lease to manage the marina changed. The city of Southport wanted to become the lease owner, offering to buy the marina from the state for \$6 million, but the North Carolina Council of State granted it to another firm, developers in Raleigh, North Carolina (*State Port Pilot*, June 7, 2006). The lease was to extend through 2014 but has been extended to 2020. Although the city was not able to buy the marina, they did manage to gain some zoning restrictions control, through legislation passed by the North Carolina General Assembly in 2006 (*State Port Pilot*, October 26, 2005). The city's control does allow a ban on commercial development, which was a major aim of the Committee to Save Southport Marina, but the marina remains the property of the state.

The events concerning the marina point to the scale of gentrification underway in Brunswick County. When the news first broke that the marina might be sold, the spread of the account among some individuals included criticism of the Governor of the state, claiming that he had used his influence unduly to convince the Council of State to approve the sale of the property. While the Governor does not vote on the Council, he presides over it. The confrontation over the marina property escalated almost immediately to a conflict between the local and state levels. When the decision was made not to sell the marina to the city but rather lease it to a new firm, similar accusations were made. In fact, a formal complaint was filed against the Governor with the state board of ethics by the Committee to Save Southport Marina, charging that he had used his influence on the Council of State to pre-determine the outcome (*State Port Pilot*, June 7, 2006). The board of ethics concluded, however, that the charges were "frivolous," and dismissed them (*State Port Pilot*, June 14, 2006). What the entire set of events, discussions, and rulings were about, which is the point of interest here, was the resistance of local citizens to what they perceived as runaway waterfront development, radically changing the shoreline and replacing the

majority of local and long-time residents with wealthier newcomers. It appeared to be another version of nature for sell to the highest bidder.

Similar but smaller-scale accounts of the local and historical being replaced with condominium and tourism services could be told for all of the islands and shorefront in the county. One of the piers on Oak Island included in the dock intercept survey, Long Beach Pier, for example, was sold to a developer and was scheduled for demolition and to be replaced by oceanfront homes (*State Port Pilot*, December 28, 2005). The demolition was scheduled to a week 50 years after the pier was constructed. After demolition had begun, a new group of investors bought the property and ordered the demolition stopped, but the news was not all good. The preservation of the pier was to keep it available as a private pier, not one open to the general public (*State Port Pilot*, April 26, 2006). Upscale single-family homes are planned in the block where the pier is located.

The immediate and near future for Brunswick County is quite clear. The economic engine driving the county is upscale housing development on the waterfront and planned community housing and development away from the town centers, associated with golf courses. Menhaden boats lining the waterfront in Southport in the 1950s have long since moved on, as have the shrimp boats, the seafood houses, and more recently and still underway, small houses and bungalows in waterfront residential neighborhoods. The new landscape is large and upscale condominium clusters, boutique shops, and restaurants. For a while, at least, there will be a refurbished marina.

Clearly not everyone is pleased with the gentrification. One of the major complaints is the traffic, a common complaint in gentrified coastal areas. In order to gauge public opinion about development more broadly, a group known as the Leadership Brunswick County 2006 ran a web-based survey for the State Port Pilot. The survey was completed by 1,414 respondents (*State Port Pilot*, June 7, 2006). Not all of the 20 questions can be summarized here, but the results of several of the ones especially relevant to the current discussion can be reported. While 75 percent of the respondents were supportive of the growth over the past five years, they were slightly more reserved about growth for the next five years, with 50 favoring some growth but only 20 percent wanting “a great deal” of growth. Although 60 percent of the individuals surveyed felt that the impact of the growth on the community was positive, including 72 percent thought that availability of jobs was better, 92 percent were negative in terms of the consequences for traffic, 68 percent were negative about the effects of affordable housing, 65 percent were negative about the number of residential developments, 63 percent were negative about greenspace and water quality (the same category), and 60 percent were negative about property taxes. In other words, jobs were “up,” and quality of life was “down”. When asked what the number one problem was among the negative factors, the runaway winner was “traffic,” followed by much smaller percentages (e.g., 60% vs. 20%) on “property taxes” and “environmental issues”. A question about willingness to join a community group to explore the issues produced 50 percent “no” and 47 percent “yes”.

Several questions and their responses parallel ones included in the current research on Brunswick County, reported in the section below on the telephone survey. A question about how long respondents had lived in the county produced the response that 42 percent had lived there for five years or less. A question about being native to the county indicated that 83 percent were not native. A question on work status showed that 52 percent worked full-time, but 36 percent were retired. Though not an overwhelming trend, the picture is one of individuals who have recently moved to the county, a significant portion of whom are retired.

Commercial Fishing

John Maiolo's recent book (2004) on the North Carolina shrimp fishery provides a wealth of information about the history of shrimp and other marine fisheries. In one chapter (with William Still), Maiolo reported that 62 shrimp boats docked at Southport in 31, but by 1933, more than 100 boats were there (2004:26). By 1938, however, the low price received for seafood from the processors was low to the point that making a living became very difficult, and shrimpers went on strike. Not until WWII did the fishery make a substantial recovery (2004:47). Shrimp production in North Carolina peaked in 1953 at more than 14 million pounds, and by that time shrimp had replaced menhaden as the most valuable fishery (Maiolo 2004:55). Production levels vary, of course, from year to year, but in 1975, the ex-vessel landings for all of North Carolina were reported as 5,164,000, increasing to 11,683,427 in 1985, but falling to 8,669,100 in 1995 (Maiolo 2004: 84).

Although shrimp was 'king' in ex-vessel landings for several decades, that no longer is the case. It has been replaced by the blue crab fishery. Table BP2 reports on the top six species caught commercially in 2005.

Table BP2: Top Six Commercial Species in North Carolina by Pounds Caught, 2005*

Species	Pounds
Blue Crabs	25,418,408
Menhaden	13,308,895
Croaker	11,490,700
Summer Flounder	4,053,177
Bluefish	2,815,588
Shrimp	2,354,611

*Derived from North Carolina Division of Marine Fisheries, Annual Fisheries Bulletin

The number of finfish listed in the commercial landings data includes 71 species, including several species of shark. The shellfish species total 10 (listing blue crabs only once and not as hard, peeler, and soft). Commercial fisheries in North Carolina are highly diversified on the basis of species.

The top five species by value is reported in Table BP3.

Table BP3: Top Five Commercial Species in North Carolina by Dollar Value, 2005*

Species	Dollar Value
Blue Crab	\$20,253,134
Summer Flounder	\$7,478,729
Shrimp	\$4,403,317
Southern Flounder	\$3,452,999
Atlantic Croaker	\$3,278,757

*Derived from the North Carolina Division of Marine Fisheries Fish Dealer Report, April 2006

Notably the Fish Dealer Report indicates that the harvest figures for 2005 represent a decline from the 2004 figures of 21 percent, for both finfish and shellfish (excluding menhaden). When compared with the previous four-year average, the decline was 24 percent (again,

excluding menhaden). Fewer shrimp and hard crabs were caught in 2005 than in previous years. Despite the overall decline, however, softshell crab and peeler crab harvests increased, as did oyster, gag grouper, grunts, king mackerel, porgies, beeliners, red drum, swordfish, and bigeye tuna.

Figure B5: Shrimp Boat at Holden Beach



Regulations and Licenses

Commercial and recreational species are managed in state waters by the North Carolina Department of Environmental and Natural Resources (NCDENR). In federal waters, three miles to 100 miles offshore, some species are managed by the South Atlantic Fishery Management Council (SAFMC) and some by the Atlantic States Marine Fisheries Commission (ASMFC). Ample documentation of fishery management plans exist and need not be summarized here. The fishing license system of North Carolina, however, might profitably be outlined. Maiolo reported that regulations of state fisheries based on scientific research begin in 1964, in large part as a way of managing competition and reducing conflict in the state fisheries, particularly between commercial and recreational fishermen (2004:65-66). A milestone in the development of regulation was the passage of a new fisheries act by the state General Assembly. The new act, which went into effect in 1966, led to the creation of the state's fishery management agencies (Maiolo 2004:67-68). Numerous new policies and regulations were implemented during the next few decades, typically in reaction to conflict within commercial fisheries and between commercial and recreational fishermen and involving various committees and agencies from local to state levels.

A new multi-tiered license system went into effect in 1999, as the consequence of the passage of the Fisheries Reform Act by the state government. The licenses constitute to one degree or another a limited entry system. Commercial fishermen who had a valid license in 1999 could purchase a Standard Commercial Fishing License (SCFL) under the new system, and SCFL

is tied to the fisher, not the business. SCFL can be renewed annually, and they can be sold, under a specific set of rules. Maiolo notes that special provisions were provided for retired commercial fishermen, a Retired Standard Commercial Fishing License (R-SCFL) (2004:79). In addition, recreational fishermen who use only a limited range of commercial gear to catch fish for personal consumption can purchase a Recreational Commercial Fishing Gear License (RCGL) (Maiolo 2004:79). According to the April 2006 Fish Dealer Report, a new license goes into effect January 1, 2007, a Coastal Recreational Fishing License (CRFL), which will be required to recreationally harvest finfish in the state's coastal waters.

Socioeconomics

Valuable information on the socioeconomics of North Carolina's fishery was presented by a number of speakers in a Workshop in Socioeconomics held on May 13, 2004, at New Bern, North Carolina. Among these was a presentation by Brian Chevront of NCDMF, entitled "Profiles of North Carolina's Commercial Fishermen". Among the interesting information presented was the decline from 200-2003 in the number of commercial (SCFL) licenses sold, from 6,914 to 6,414, a reduction of 500 (7 percent). Retired commercial licenses (RSCFL) showed an increase, from 515 to 727, a difference of 212 (41 percent). Chevront also reported on the average age of fishermen, by license type. The results showed that only minor differences existed across the four-year period. The average age decreased for SCFL from 50 to 48, as was the case also for RSCFL, from 75 to 73. Interviews with fishermen indicated that approximately 70 percent of them also do shore-based work, a finding that paralleled results from similar research by Johnson and Orbach (1996). Lastly, questions to fishermen about their views on future ability to make a living from fishing showed that most of the fishermen were slightly pessimistic about that possibility (4.4 on a 10-point scale).

To set perspective for North Carolina's contribution to fish landings in the South Atlantic region, the state accounted for 74 percent of the total weight landed in 2002. Those landings accounted for 57 percent of the total value of landings in the Carolinas, Georgia, and Florida (east coast) (Burgess and Bianchi 2004:116). North Carolina fisheries are not only diverse in terms of finfish and shellfish, they are productive compared with the other South Atlantic states.

For perspective concerning Brunswick's contribution to the commercial fishing sector, the county, as reported elsewhere in this report, ranked fourth among the coastal counties of the state in terms of number of licenses issued, number of fishermen, number of vessels, number of dealers, but 17th of 19 counties in terms of average fishing income. What those numbers indicate is that the average landings per fishermen is considerably smaller than in the other counties, suggesting also that Brunswick has a higher than average number of fishermen who are part-time. Both of those possibilities would be consistent with the shift of the economic basis of the county to gentrification.

Reasons to Leave Commercial Fisheries

A host of factors likely combine to drive fishermen from commercial fisheries in North Carolina, and given the large number of different fisheries, the particular configuration of the factors may not be the same in each case. In the shrimp fishery, the volume of imports is likely to be the single-most important factor, whereas in other fisheries, the loss of seafood houses, alienation from waterfront access, and cost of operations may be comparatively more important. Combining all factors, gentrification and the huge increase in fish imports during the past several years are likely to be the most critical in driving fishermen from commercial fishing. The proximate cause, of course, is lowered income, the difficulty in make sufficient profit to continue

that form of livelihood. Chevront noted in his report (2004) that when fishermen were asked to state the issues that were the most important to them in their fishery, the listed six factors. In order of importance, those are: (1) keeping up with rules and proclamation changes; (2) too many rules; (3) low prices for seafood and imports; (4) overfishing; (5) closed areas; and (6) too much local competition. Interviews with fishers and dealers in the Southport area in spring 2004 produced another factor, water quality. Virtually everyone who was asked about the major problems facing fisheries listed decreased water quality and consequent habitat change. Those factors reflect the fishermen's frustrations in dealing with lowered catch levels, price levels, and financial decline.

That fishermen are leaving the fisheries is clear. Whereas Southport was the center of the shrimp fishery in North Carolina, Maiolo noted that there were only two shrimp boats operating from there in 2003 (2004:171). The number was the same in 2004. Maiolo also noted that there were fewer than two-dozen shrimp boats in nearby communities. Observations in the spring of 2004 and again in 2005 confirmed the small number of shrimp trawlers. Shrimp houses at Varnamtown and Holden Beach each had approximately 10-12 boats at the docks, although at Holden Beach, it was not clear if all of them were still operating as trawlers. One of the two docks at Holden Beach was being transformed into a recreational fishing center, including personal watercraft rentals and increased recreational fishing. One poignant scene was of a recreational fishermen casting from the back of shrimp trawler that was tied up at the dock.

Recreational Fishing

Data on recreational fishing in Brunswick County were collected during April 2003 at three fishing piers in the county. The piers, all on Oak Island, were Long Beach, Ocean Crest, and Yarpon. The dock intercepts were scheduled across different times of the day and across different days, in order to try to avoid bias in sampling. A total of 114 intercepts were completed. The tabular numbering system, BD, refers to Brunswick Dock Survey.

Dock Survey Form – Recreational Fishing

Dock: _____ Time: _____ Date: _____

Question # 1: Do you live in Brunswick County: __ Yes, __ No [If Yes, continue; if No, go to #4]

The responses to question # 1 are tabulated in Table BP4.

Table BP4: Resident of Brunswick County

Resident	Number	Percent
Yes	21	18
No	93	82
TOTAL	114	100

As the table shows, the majority of the respondents were not residents of Brunswick County. They were most likely tourists who were on Oak Island. $\chi^2 = 45.48$, $df = 1$, $p < .005$.

Question # 2: Native to Brunswick County: ____ Yes, ____ No

Table BP5: Native of Brunswick County

Native	Number	Percent
Yes	21	100
No	0	0
TOTAL	21	100

As the table shows, all of the individuals who were residents were also native to the county.

Question # 3: Years resident in Brunswick County: _____

The responses to the question gave a range from one to 20 years, with the median year at seven. Four of the respondents had lived in the county for less than 10 years, and 13 had lived there for more than 10 years. The average was 6.7 years, showing that the residents were for the most part relatively recent residents.

Question # 4: Year in which you first fished in Brunswick County: _____

The responses to question # 4 are tabulated in Table BP6.

Question # 5: Total number of years fishing in Brunswick County: _____

Table BP6: Year First Fished and Total Years Fished in Brunswick County

1 st Year Fished	Number	Percent	Total Years Fished	Number	Percent
1940s	1	1	1-5	28	29
1950s	3	3	6-10	15	16
1960s	4	4	11-15	12	12
1970s	13	11	16-20	9	10
1980s	25	22	21-25	12	12
1990s	33	29	26-30	7	7
2000s	34	30	30+	14	14
TOTAL	113	100	TOTAL	97	100

Table BP6 shows that the recreational fishermen began fishing in Brunswick County very recently, with one-third of them having fished for the first time in the last three or four years, and two-thirds within the past 15 years. $\chi^2 = 76.99$, $df = 6$, $p < .005$. The 'number of years fishing' also shows that most of the fishing has been recent, with three in 10 individuals having fished for five or fewer years and two-thirds of the respondents having fished for 20 years or less. Pier fishing is done primarily by newcomers. $\chi^2 = 24.22$ $df = 6$, $p < .005$.

Question # 6: Frequency of fishing in Brunswick County: (Whichever best applies, on the average)

- a. Number of times per week: _____
- b. Number of times per month: _____

c. Number of times per year: _____

Eighteen of the respondents indicated they fish weekly, one of them from 5-7 times per week. Eighteen respondents also reported that they fish monthly, most of them 1-2 times. Sixty-five respondents said that they fish annually, with 52 of them reporting fishing from 1-6 times. Only five of the individuals reported fishing more than 20 times per year. These figures indicate that approximately 20 percent of the individuals fish once a week or more (18 or 101), approximately 20 percent fish several times a month, and approximately 50 percent fish a few times per year. Counting those who fish annually more than a few times, approximately 50 percent of the individuals fish several times a month, and 50 percent fish a few times a year.

Question # 7: Does your fishing tend to be seasonal? ___ Yes; ___ No

The responses to question # 7 are tabulated in Table BP7.

Question # 8: If fishing is seasonal, in which season are you most likely to fish?

- a. Summer: _____
- b. Fall: _____
- c. Winter: _____
- c. Spring: _____

Table BP7: Seasonal Fishing

Seasonal	Number	Percent	Season	Number	Percent
			Summer	39	26
Yes	69	63	Fall	50	34
No	41	37	Winter	3	2
			Spring	57	38
TOTAL	110	100	TOTAL	*149	100

Two of each three pier fishermen report that their fishing is seasonal. $\chi^2 = 9.30$, $df = 1$, $p < .005$. The most frequently reported season was spring, followed by the fall, each with 50 or more responses. The summer was also a ‘targeted’ season for almost 40 percent of the respondents, but winter was listed only three times. *The total exceeds the number of respondents, due to several of them listing more than one preferred season.

Question # 9: What is the primary reason why you fish (other than catching fish!)?

- a. Recreation/relaxation: _____
- b. Catch fish to eat: _____
- c. To spend time with family or friends: _____
- d. Other: _____

Table BP8: Primary Reason for Fishing

Reason for Fishing	Number	Percent
Recreation/Relaxation	101	78
Fish to Eat	11	8
Time with Family/Friends	14	11
Other	4	3

TOTAL	130	100
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Clearly the primary reason for pier fishing is recreation and relaxation, listed as the number one factor by more than three-fourths of the respondents. Catching fish to eat and spending time with family and friends were of much smaller importance. $\chi^2 = 194.11$, $df = 3$, $p < .005$.

Question # 10: If your primary reason for fishing is recreation/relaxation, which of the following do you consider to be the most important?

- a. Being out on the water in the open air
- b. Being away from everyday concerns and worries
- c. Sense of anticipation at catching fish
- d. Other: _____

Table BP9: Primary Factors in Recreation/Relaxation

Factors	Number	Percent
Being on Open Water	40	33
Away from Everyday Concerns	59	49
Anticipation at Catching Fish	11	9
Other	10	9
TOTAL	120	100

The primary factor, reported by one half of the respondents, was to be away from everyday concerns and worries, in effect to set them aside temporarily. Being on the water and in the open air was also important, listed by two of each five respondents. $\chi^2 = 56.72$, $df = 3$, $p < .005$.

Question # 11: Do you practice “catch and release” (for regulation-size fish)?

- a. Almost always
- b. Sometimes
- c. Almost never

The responses to this question are given in Table BP10 below.

Question # 12: If you tend to keep the fish that you catch, what are you most likely to do with them once you get onshore?

- a. Keep them for self/family: _____
- b. Give them to friends/relatives: _____
- c. Give them to neighbors: _____
- d. Other: _____

Table BP10: Catch and Release

Catch/Release	Number	Percent	Keep Fish	Number	Percent
Almost always	46	40	Self/Family	69	79
Sometimes	40	35	Friends/Relatives	17	19
Almost never	28	25	Neighbors	1	1
			Other	1	1

TOTAL	114	100	TOTAL	88	100
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Catch and release is practiced almost always or sometimes by three of every four respondents, but overall the results are not significant ($\chi^2 = 4.42$, $df = 2$, $p > .10$). When fish are caught and kept, overwhelmingly they are for the fisher and family. In one in five instances, fish are reported to be given to friends or relatives. $\chi^2 = 141.65$, $df = 3$, $p < .005$.

Question # 13: Do you typically fish for a particular species? ___ Yes, ___ No

The responses to this question were that only 37 percent (42) target particular species, whereas 63 percent (71) do not target species.

Question # 14: If you fish or tend to fish for a particular species, what is/are the species?

- a. _____
- b. _____
- c. _____

Collapsing particular species (e.g., spotted trout) into generics (trout), the following types of fish were reported as targeted: trout (23); flounder (20); mackerel (11); “whites” (9); “blues” (6); mullet (2); and bass, blackfish, eels, fluke, grunt, red drum, porgy, shark, and shrimp (1 each).

Question # 15: On average, where are you most likely to fish?

- a. Tidal Creek/River: _____
- b. Estuary/Sound: _____
- c. Open water/offshore: _____
- d. Other: _____

Table BP11: Type of Place to Fish

Type of Place	Number	Percent
Open Water/Offshore	106	79
Estuary/Sound	17	13
Tidal Creek	11	8
Other	1	0
TOTAL	135	100

As Table BP11 shows, approximately four of every five individuals tend to fish in open water. Since the respondents were fishing from piers, the response is conditioned by that fact. A much smaller number are most likely to fish in an estuary or sound or tidal waterway.

Question # 16: Are you most likely to fish?

- a. Alone: _____
- b. With family members: _____
- c. With friends: _____
- d. Other: _____

Table BP12: Fishing Alone or with Others

Fishing Alone/With Others	Number	Percent
With Family	71	55
With Friends	30	23
Alone	28	22
Other	0	0
TOTAL	129	100

As the table shows, fishing with family is the most common pattern, occurring more than 50 percent of the time. Fishing with friends or fishing alone occurs approximately 20-25 percent of the time. $\chi^2 = 47.66$, $df = 3$, $p < .005$.

Socioeconomic Information

Question # 17: Gender: ____ M, ____ F

Eighty-six percent of the respondents were male (98), where was 14 percent were females (15).

Question # 18: Age range: ____ 15-24; ____ 25-34; ____ 35-44; ____ 45-54; ____ 55-64; ____ 65+

Table BP13: Age Range by Category

Age Range	Number	Percent
15-24	5	4
25-34	13	11
35-44	20	18
45-54	30	26
55-64	29	25
65+	18	16
TOTAL	115	100

As seen in Table BP13, one-fourth each of respondents was in the age range of 45-54 or 55-64, i.e., 50 percent were in the age range of 45-64. The respondents less than 35 constituted only 15 percent of the total, essentially the same as those over the age of 65. The majority of the fishermen, then, are middle-aged or older. $\chi^2 = 23.61$, $df = 5$, $p < .005$.

Question # 19: Occupation: _____

A large variety of occupations were listed. Those occurring more than once were: retiree (32); truck driver (11); sales (6); customer service (3); teacher (3); accountant (2); mechanic (2); and student (2). Most of the individuals were salaried; only a small portion were professionally trained: teachers (3); accountants (2); lab technician (1), nurse (1), and surveyor (1).

Summary of Dock Intercepts

The high percentage of respondents who were not residents of Brunswick County is important, since it likely reflects that much of pier fishing is done by tourists. The fact that none

of the respondents were native to the county supports that interpretation. The answers to the question as to when the individuals first fished in Brunswick County is also interesting, showing that the date tended to be recent, with one-third of them having fished for the first time in the last three or four years. The 'number of years fishing' also shows that most of the fishing has been recent, with three in 10 individuals having fished for five or fewer years. Pier fishing reflects tourism and relative newcomers to the county.

The pier fishermen also fish often, with eighteen of the respondents indicating that they fish weekly. Approximately 20 percent of the individuals fish once a week or more, 20 percent fish several times a month, and 50 percent fish a few times per year. Overall, 50 percent of the individuals fish several times a month, and 50 percent fish a few times a year. Fishing tends to be seasonal, as reported by two-thirds of the respondents, with the spring and fall as the preferred seasons. When asked what attracts them to fishing, three-fourths of the respondents indicated that the primary reason for pier fishing is recreation and relaxation. Catching fish to eat and spending time with family and friends were of lesser importance. The primary feature of recreation and relaxation, reported by almost 50 percent of the respondents, was to be away from everyday concerns and worries. Being on the water and in the open air was also important, but to a lesser degree.

Turning to fishing practices, catch and release is practiced at least sometimes by three of every four respondents, indicating that the primary objective is "to fish for relaxation," not to catch fish to eat. When fish are caught and kept, overwhelmingly they are for the fisher and family. The majority of the fishermen do not fish for a particular species, they "just fish". When species are targeted, the most common are trout and flounder. Although the individuals were pier fishing, they tend not to fish alone. More than 50 percent indicated that they typically fish with family members. Fishing with friends or fishing alone occurs approximately 20-25 percent of the time.

Turning to demographic information, 50 percent of the respondents were in the age range of 45-64. They constituted the core of the fishermen, with younger and older ages declining in number from the core. The majority of the fishermen, in other words, are middle-aged or older. Eighty-six percent of them were male; pier fishing is predominantly done by men. A large variety of occupations were listed, but by far the largest number were retirees, followed by truck drivers and sales/customer service.

The overall "picture" of pier fishing is that it is done by non-locals, mostly males, who fish for recreation and relaxation, to be away from everyday concerns and worries. The frequency of fishing is bimodal; they either fish several times a month or several times a year. Catch and release is typically observed, and for the most part, species are not targeted. Most of the fishermen are middle-aged, and many of them are retirees. They indicate that they tend to fish with other family members, but as many as 25 percent fish alone. Pier fishing appears to be predominantly a tourist activity.

Tourism and Recreational Businesses

The recent and rapid growth of tourism in Brunswick County has been described above, but further information about recreational fishing businesses can be provided. The town of Calabash, located at the southwestern tip of the county, promotes itself as the "Seafood Capital of the World." Note has already been made of the large number of seafood restaurants in the small town, 30 within a one square mile area. The development strategy was to capitalize on the huge crowds that can be found virtually year-round at Myrtle Beach, South Carolina, which is less than an hour drive away. The strategy seems to be working. Trips to Calabash in the late spring of

2004 and 2005 found huge numbers of tourists at the restaurants, most of which had long waits for dinner. A substantial number of the restaurants are located in the waterfront area of Calabash. The presence and concentration of the large number of tourists has provided the client basis for a substantial head-boat fishing operations. Two firms, each with several boats were operating in spring, 2005. Clients line up on a quay and wait prior to each departure of each boat, which occurs several times each day. The boats were packed with tourists on each trip departure. Some of the boats can accommodate more than 100 passengers a trip. Centered between the head-boat docks was a business selling fresh shrimp, which were landed by several shrimp boats that operate from the Calabash waterfront. The business appeared to be brisk. The shrimpers also sell directly to at least some of the seafood restaurants. In other words, they have a local, niche market.

Charter-boat businesses abound in the county. One firm, serving Southport and Oak Island, advertises 16 different boats of different sizes and capacities (one of which is a large head-boat, 70 feet). Charters range from 1/4th day to full-day to 4-days, including Gulf Stream trips, depending on the boat. Similar trips were advertised by the charter/head-boat firms at Calabash. A smaller charter-boat operation is located at Ocean Isle Beach. Other fishing charters operate out of Carolina Beach. Kayak businesses operate out of Southport and Carolina Beach, providing recreation through simply being on the water but also including fishing trips. Sail-boat excursions are also offered from the Southport Marina.

Figure B6: Advertisements for Charter Boats at Calabash



As waterfronts in the county become more and more developed and commercialized, access to open water for boating operations will become more constrained. Private charter-boat firms that capitalize on restricted access and on providing recreational services to tourists are likely to prosper in the foreseeable future. Their services are likely to be in more and more demand, given the direction of economic growth and gentrification in the county.

Figure B7: Tour Boat at Calabash



Newspaper Coverage

Based on the idea that front page coverage of newspapers contains stories and accounts of interest to the maximum number of readers, photocopies of articles were obtained from the *State Port Pilot*, the newspaper with the largest circulation in Brunswick County. Copies were made from each front page of the newspaper for each issue from 1994 through 2003. The newspaper is issued weekly. Copies were made of any article that focused on any aspect of the topics listed below:

- Commercial Fisheries
- Recreational Fisheries
- Fishery Management/Regulations
- Tourism
- Growth and Development

The articles on each of these topics were analyzed for (1) number of occurrences during a given year; (2) primary focus; and (3) the type of fish (finfish, shrimp, blue crab) if the focus was on fishing. Fishery management was included as a separate category, since a number of the articles were about the Marine Fisheries Commission and typically about both recreational and commercial fishing. As a caveat, the measures provided by the newspaper analyses are approximate and are intended to reflect a rough indication of the importance of a topic to the readership at any given time. The total number of articles in each issue of the newspaper might be quite different from the front page coverage, but the salience of front-page may be more important than total number of articles. The results of the tallies per year for the *State Port Pilot* are given in Table BP14.

Table BP14: Number of Occurrences of Type of Newspaper Article

Year	Commercial	Recreational	Management	Environment	TOTAL
1993	15	41	13	4	73
1994	3	6	10	1	20
1995	2	3	6	0	11
1996	0	2	5	0	7
1997	4	3	4	4	15
1998	5	5	6	1	17
1999	2	4	9	0	15
2000	0	4	0	0	4
2001	1	3	1	0	5
2002	0	3	1	0	4
2003	1	3	7	3	14
TOTAL	33	77	42	13	185

The trends observable in the table are (1) that stories about fishing were much higher at the beginning of the 11-year span than they were at the end; (2) stories about fishery management tended to be slightly more numerous than accounts about either commercial or recreational fishing, except for 1993; and (3) the environment was never a hot topic. In fact, the environmental stories were typically about unusual fish kills and dead fish washing up on shore. The extraordinarily high number of recreational fishing reports was due to the weekly Fishing Report and Cape Fear Fishing, which were initially on the front page but then was relegated to other sections of the paper. The number was also inflated with accounts of fishing tournaments, which were later moved to interior sections of the paper, except for the US Open Mackerel Tournament. Moving those articles off front page is clearly an indication of diminished interest in those topics. Another point of interest is that almost all of the accounts about management were reports on the outbreak of conflict between recreational and commercial fisherman, location of the source or cause of the conflict, and of efforts to resolve them.

Virtually all of the newspaper accounts focused on finfish, which is understandable given that almost all recreational fishing is for finfish and that almost all conflict with commercial fisherman is in regard to finfish. Of the 152 articles about fishing, 138 were on topics related to finfish, 10 related to shrimp, three related to blue crab, and one related to oysters. The most frequent accounts about finfish focused on dead menhaden washing ashore and the proposed menhaden fishing ban, especially in 1994 and 1999. Almost all of the stories on shrimp concerned the proposed inland shrimp trawling ban in 2003, which was defeated locally but then went to the state legislature for consideration. Only one story, 2003, was about shrimpers and the unfair trade with other countries; they filed an unfair trade petition. One story was about a car falling off a dock and onto a shrimp boat.

Overall, the newspaper accounts reflect more or less accurately the changes underway in the county. After 1994, fishing did not occupy as important a position in the news, and most of the coverage then and afterwards was about conflict between recreational and commercial fishermen. The conflict grew as commercial fishermen had more and more of a difficult time making a living and the number of recreational fishermen increased. Lastly, the concern with waterfront development is virtually all since 2003. A count of the front page stories from 2005 and 2006 would show that stories about the Southport Marina, the Yacht Basin, and plans for a major new port in Southport, one of the largest in the state, would dominate all other coverage.

V. QUESTIONNAIRE SURVEY – BRUNSWICK COUNTY

As part of the NOAA research project on fisheries in McIntosh County, Georgia, and Brunswick County, North Carolina, a questionnaire was developed to elicit the general public's perceptions and preferences concerning recreational and commercial fishing in each county. The objective was to create profiles of the public's views about fishing and its current state in the two counties. This section of the report is on the questionnaire results from Brunswick County.

Telephone Survey Methods

Between 18 and 31 March, 2004, a telephone survey of adult residents in Brunswick County, North Carolina was conducted by the Survey Research Center (SRC). The purpose of the study was to learn the attitudes and opinions of respondents towards a range of topics related to fishing. Prior to the survey, telephone interviewers attended two three-hour training sessions that covered survey methods, standard procedures of telephone interviewing, the purpose of the survey, an in-depth explanation of the survey instrument, and a practice session. In addition, at least one supervisor was present at all times during interviewing to provide quality control.

The first step in the process of conducting this study involved the development of the survey instrument. Survey Research Center staff developed a draft questionnaire that was then formatted for programming into SRC's CATI (Computer Assisted Telephone Interviewing) system. The questionnaire was pre-tested during the first night of data collection. The pretest procedure uncovered no problems with the interview schedule and data collection proceeded.

The design of the study called for conducting a total of 1000 telephone interviews from a random-digit dialed (RDD) sample of households in Brunswick County, North Carolina. Actual generation of the telephone numbers was the result of a stratified sampling procedure with probabilities of selection proportional to listed residential telephone numbers in the defined sample universe, the state of Georgia (Survey Sampling, Inc. 1998). The result of this procedure insures an equal and known probability of selection of sample elements. The procedures utilized were intended to ensure that all adult residents in the sample had an equal (or near equal) chance of being selected for inclusion in the sample. This provision of equal opportunity of selection is a necessary requirement if a probability sample is to be obtained. Bias in response is also minimized, and inferences about the general population can safely be made from the results obtained in the survey. Information on procedures is quoted below.

Assuming the sampling procedures outlined above produce a random sample of the population of interest, the estimated theoretical standard error associated with the sample estimates obtained ($n=1000$), when the population proportion (P) is 50 percent (i.e., a "worse case scenario"), is .016. In addition, the theoretical standard error decreases as the proportion (P) approaches 0 or 100. Thus, if 85% of the sample provides a given response, the standard error is .0111.

The standard errors are derived from the mathematical formula:

Square Root of:

$$\frac{P * Q}{n}$$

where: P = the proportion of the population exhibiting a characteristic (i.e., fished in last year)
 Q = $(1-P)$, the proportion not exhibiting the characteristic;
 n = size of the sample.

The standard errors can be used to estimate the sampling margin of error of the estimates (i.e., the probable difference in results between interviewing the entire population of adult residents of Brunswick County, North Carolina versus taking a scientific sample of the population) that extend 1.96 standard error units (i.e. the 95 percent confidence interval) around that value according to the following formula:

$$P \pm 1.96 * (\text{standard error})$$

Thus, with a random sample size of 1000 and a population proportion of 50 percent, the 95% confidence interval for the estimate would be:

$$\begin{aligned} .50 \pm 1.96 * .016 &= .50 \pm 0.031 \\ &= 50\% \pm 3.1\% \quad = 46.9\% \text{ to } 53.1\% \end{aligned}$$

The second step in the sampling process involves the selection of the respondent within the contacted household. In this case, the last birthday method of respondent selection was utilized. This method is based on the premise that assignment of birthday within a household should be a random occurrence, thus providing an accurate representation of gender and age across the sample.

Theoretically, these methods should produce a sample that is representative of the population under study. Of course, sample surveys are subject to additional sources of error besides sampling error and non-response error. Assuming a representative sample of adult Georgians was produced sampling error is no greater than +/- 3.1 percent, with a 95 percent level of confidence. That is, if 50 percent of the sample gave a certain response to a question, we can be 95 percent certain that between 46.9 and 53.1 percent of the population would provide that same response. This expected error decreases as the sample proportion approaches 0 or 100.

The Survey Table details the results of the telephone procedures. The cooperation rate* for the study was 46.4 percent. That is, of the 1450 eligible respondents contacted, 509 yielded complete interviews. Table 1 also shows the final disposition of each of the 4,016 numbers called in the study.

Once a respondent is located and cooperation obtained, quality-control procedures are set in place to ensure that high quality data are produced. Supervisors are assigned to monitor interviewers in progress; thus approximately one-fifth to one-quarter of all interviews is monitored, and any interviewer errors are eliminated. Retraining of interviewers takes place, if necessary.

Survey Table: Final Disposition of Telephone Procedures

	N	% Category
<u>Interview</u>		
Complete	1004	97.3
Partial	28	2.7
Total	1032	100.0
<u>Eligible, Non-Interview</u>		
Final Refusal	839	46.4
Resp. Never Available	3	0.2
Ans. Machine, No Msg	764	42.2
Ans. Machine, Message	0	0
<u>Other</u>		
Dead	0	0.0
Phys/Mentally Unable	37	2.0
Language Unable	19	1.1
Misc. Unable	0	0.0
Callback, Resp Not Selected	140	7.7
Callback, Resp Selected	7	0.4
Total	1809	100.0
<u>Unknown Eligibility: Non-Interview</u>		
Unknown if Household		
Busy	125	7.0
No Answer	1628	91.6
Technical Phone Problems	24	1.4
Unknown: No Screener	0	0.0
Unknown: Other	0	0.0
Total	1777	100.0
<u>Not Eligible</u>		
Out of sample	10	0.7
Fax/Data Line	226	15.8
Non-working number	60	4.2
Disconnected number	698	48.8
<u>Technological circumstances</u>		
Number changed	14	1.0
Cell phone	3	0.2
Call forwarding	26	1.8
<u>Not a household</u>		
Business/government/other	313	21.9
Institution	6	0.4
Group quarters	0	0.0
No eligible respondent	73	5.1
Total	1429	99.9
COOP 3		53.7

* Cooperation rate is computed using the American Association for Public Opinion Research (AAPOR) guidelines for reporting results of survey. The rate computed here is AAPOR Cooperation Rate 3 (COOP3). COOP3 = Interviews/(Interviews +Partials + Refusals)

Telephone Survey Procedure

Hello, my name is [NAME], and I'm calling from the University of Georgia in Athens. The Survey Research Center is conducting a research study this evening about fishing in Brunswick County and I'd like to interview a member of your household. The study should take about 10-12 minutes to complete. Would you be willing to help us out for a few minutes this evening?

[INTERVIEWER: THE SURVEY SHOULD LAST ABOUT 10 - 12 MINUTES]

In order for the results of the survey to be representative of the state's population, I need to speak with the adult 18 years or older who last celebrated a birthday. Would that be you?

1. Yes [CONTINUE]
2. No [MAY I SPEAK TO THAT PERSON PLEASE?]

[REINTRODUCE YOURSELF AND THE STUDY OR ARRANGE TIME FOR CALL-BACK AND GET THE RESPONDENT'S FIRST NAME]

Thank you. Before we begin, let me assure you that all of the information that you provide will be kept strictly confidential. The interview is voluntary, and if you don't want to answer any particular question, just tell me and we'll skip to the next one. Also, my Supervisor may listen to part of the interview for quality control purposes.

For your information, the title of the research study is: Factors Affecting Participation in Marine Fisheries: Case Studies in Georgia and North Carolina.

Rather than listing each question sequentially as it was stated in the survey, the questions are given below, each followed by a table or a summary that includes the results, followed in most cases by a figure showing a graphic representation of the results. BS refers to "Brunswick Survey". The survey contains two sections, eight questions that elicited demographic background, and 24 questions about fishing experience, practices, and perspectives.

Survey Questions – Demographic Background

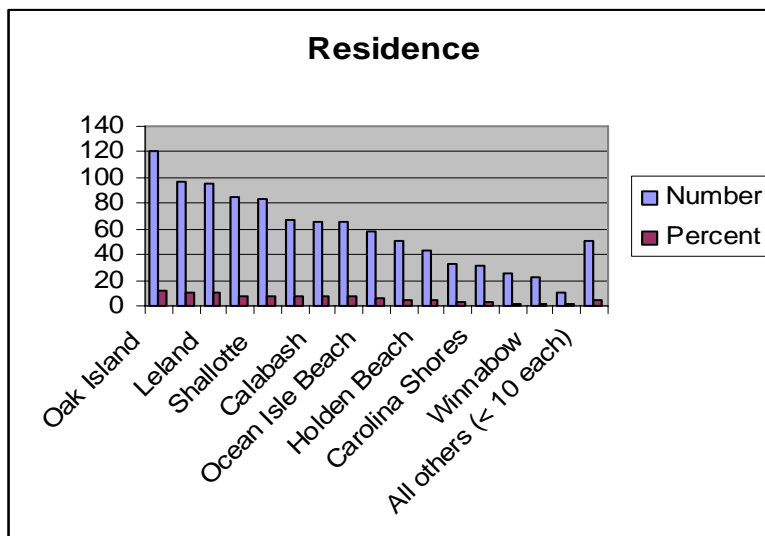
Question # 1 – What town or community do you live in? _____

Table BS1: Town or Community of Residence, Brunswick County

Town/Community	Number	Percent
Oak Island	120	12
Southport	97	10
Leland	96	10
Supply	85	8
Shallotte	84	8
Brunswick County (rural)	67	7
Calabash	66	7
Sunset Beach	65	7
Ocean Isle Beach	58	6
Bolivia	50	5
Holden Beach	43	4
Boiling Spring Lakes	33	3
Carolina Shores	32	3
Ash	25	2
Winnabow	23	2
Varnamtown	11	1
All others (< 10 each)	51	5
TOTAL	1006	100

Each of the named towns and communities in Brunswick County included respondents, and although no direct measure was made of percent representation in relation to actual population, the relationship is more or less linear. Oak Island is the most populous town, followed by Southport, Leland, Supply and Shallotte, matched by the order of the number of respondents. At the lower end of the list, none of the smallest communities had more than 10 respondents.

Figure BS1: Graphic Representation of Residence, Brunswick County



Question # 2: How long have you lived in [IMPORT TOWN/COMMUNITY NAME]?

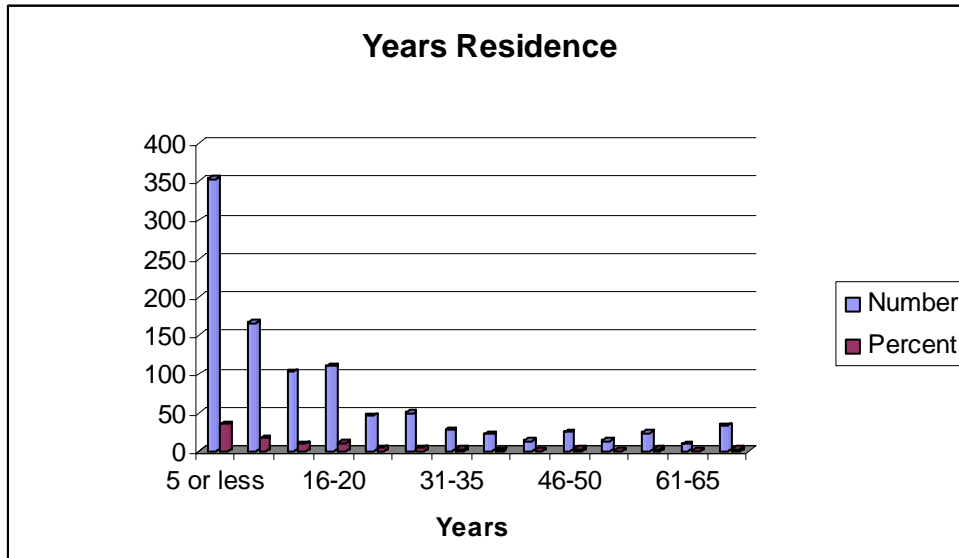
_____ **YEARS**

Table BS2: Years Lived in Brunswick County

Years	Number	Percent
5 or less	353	35
6-10	166	17
11-15	103	10
16-20	110	11
21-25	46	5
26-30	50	5
31-35	27	3
36-40	22	2
41-45	14	1
46-50	25	3
51-55	13	1
56-60	24	3
61-65	9	1
Over 65	33	3
TOTAL	995	100

As the table shows, Brunswick County is populated more by “newcomers” than by long-term residents. More than one-third of the respondents have lived in the county for five years or less. In fact, 124 of the total number of residents have lived there for one year or less, constituting 12.5 percent. More than 50 percent of the respondents have lived in the county for 10 years or less, compared with 12 percent who have lived there for more than 40 years. Stated differently, slightly more respondents have lived in Brunswick County for less than one year than those who have lived there for more than 40 years.

Figure BS2: Graphic Representation of Years Residence in Brunswick County



Question # 3: Are you a native of North Carolina?

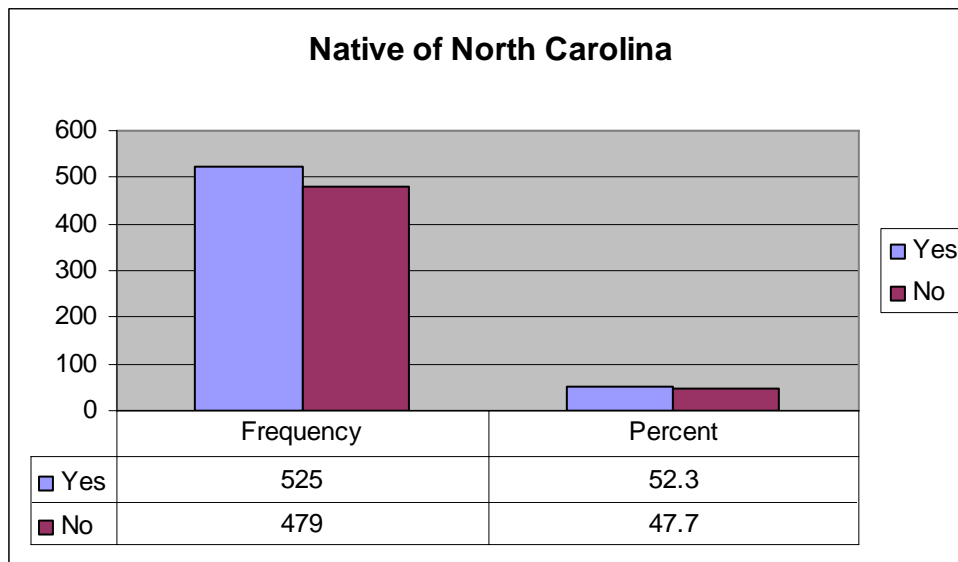
1. Yes
2. No [SKIP TO Q5]

Table BS3: Native of North Carolina

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	525	52.3	52.3	52.3
No	479	47.7	47.7	100
Total	1004	100	100	

As one can see from Table BS3, slightly more than one-half of the respondents are residents of North Carolina, but the distribution is not significant ($\chi^2 = 2.10$, $df = 1$, $p > .10$).

Figure BS3: Graphic Representation of Respondents who are Native of North Carolina



Question # 4: Are you a native of coastal North Carolina?

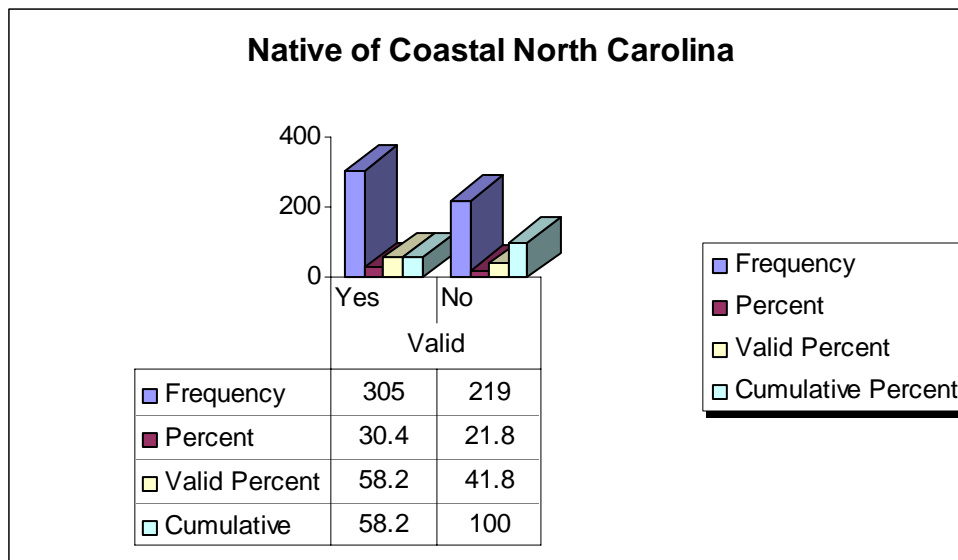
1. Yes
2. No

Table BS4: Native of Coastal North Carolina

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	305	30.4	58.2	58.2
	No	219	21.8	41.8	100
	Total	524	52.2	100	
Missing	Don't know	1	0.1		
	No Answer	479	47.7		
	Total	480	47.8		
Total		1004	100		

As seen in Table BS4, almost one-half of the respondents did not answer the question. Of those who did provide an answer, approximately three of every five individuals indicated that they were native to the North Carolina coast. $\chi^2 = 14.12$, $df = 1$, $p < .005$.

Figure BS4: Graphic Representation of Respondents Native to Coastal Carolina



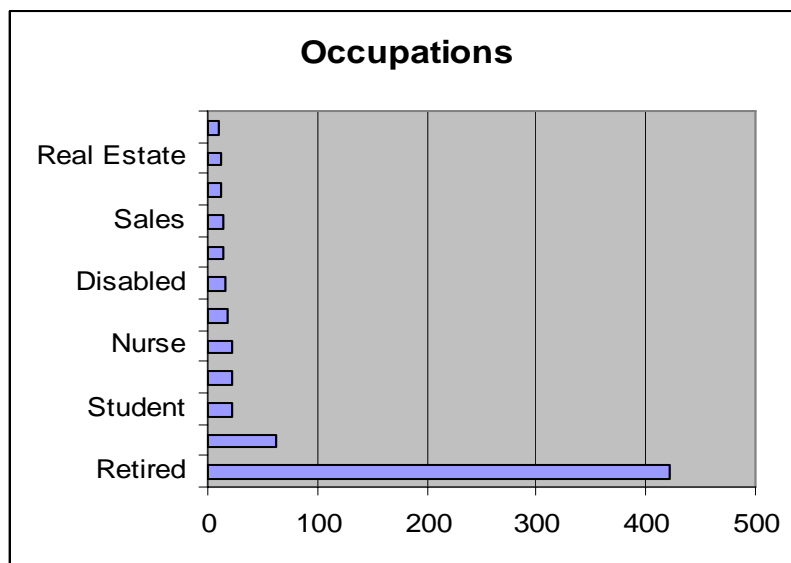
Question # 5: What is your current occupation?

Table BS5: Major Occupations of Respondents

Occupation	Number
Retired	422
Housewife/Homemaker	62
Student	23
Self-employed	23
Nurse	22
Unemployed	18
Disabled	17
Construction	15
Sales	14
Salaried	12
Real Estate	12
Teacher	11

The respondents gave a total of 229 different occupations, including disabled, unemployed, and 'none'. Of the occupations listed, by far the most common was 'retired,' indicated by 422 of the 997 responses (42 percent). Table 5 lists the 12 most frequently indicated occupations, including all of the ones with 10 or more responses. Classification is somewhat arbitrary, since respondents tended to use different terms for the same or similar occupations, e.g., 'salaried, clerk, office worker'. Nonetheless, the table gives an indication of the most common occupations, including the huge number of retired individuals. Interesting responses included "I don't do anything because I am 92 years old," expressive arts therapist, and seamstress and pastor (together).

Figure BS5: Graphic Representation of Occupations



Question # 6: [RECORD GENDER]

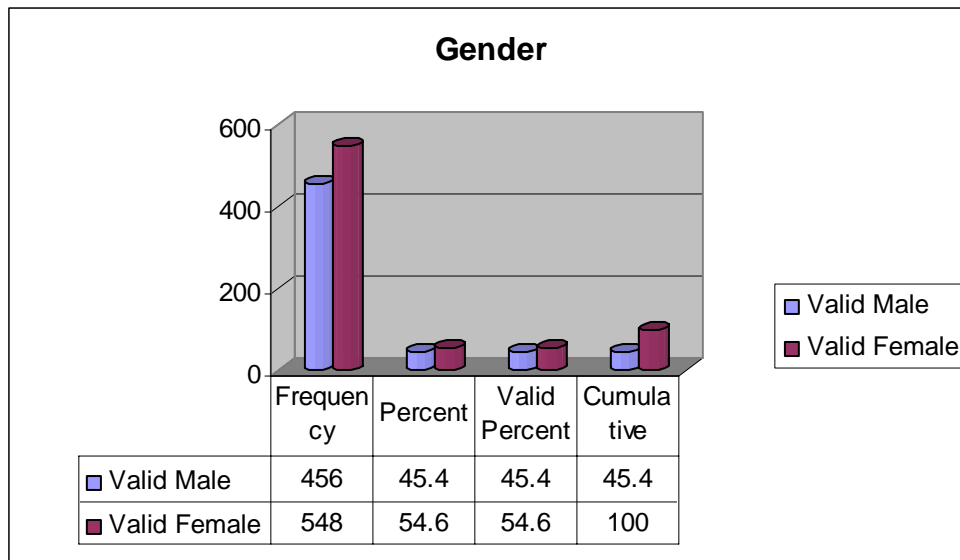
1. Male
2. Female

Table B S6: Gender of Respondents

	Frequency	Percent	Valid Percent	Cumulative Percent
Male	456	45.4	45.4	45.4
Female	548	54.6	54.6	100
Total	1004	100	100	

As Table BS6 shows, more than one-half of the respondents were female, approximately 11 of every 20 individuals. $\chi^2 = 8.43$, $df = 1$, $p < .005$.

Figure BS6: Graphic Representation of Distribution of Gender



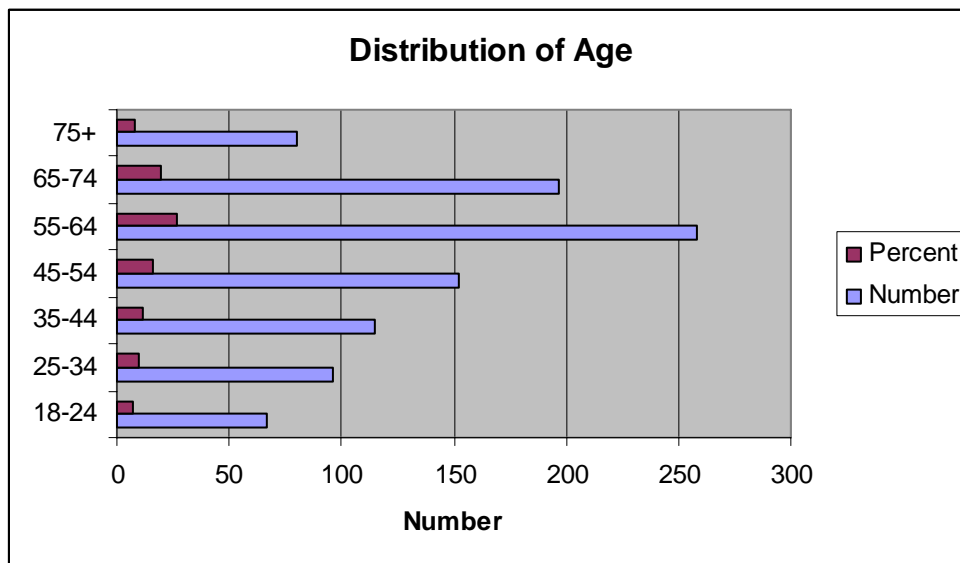
Question # 7: What is you age? _____ years old

Table BS7: Distribution of Age by Category

Age Category	Number	Percent
18-24	67	7
25-34	96	10
35-44	115	12
45-54	152	16
55-64	258	27
65-74	197	20
75+	80	8
Total	965	100

As can be seen in Table BS7, the ages of the respondents, by category, are slanted toward later middle age. Slightly more than one-fourth of the respondents are 65 years of age or older, and approximately two in every five individuals are in the age range of 45-64 years. Only one-third of the sample is less than 45 years of age. The distribution indicates that a sizeable number of the residents of the county are of retirement or near-retirement age. $\chi^2 = 209.01$, $df = 6$, $p < .005$.

Figure BS7: Graphic Representation of Age



Question # 8: What is the highest grade of school or year of college you have completed?

1. High School Grad or less
2. Some College/Tech School
3. College Graduate
4. Masters Degree
5. Doctoral Degree
6. Professional Training

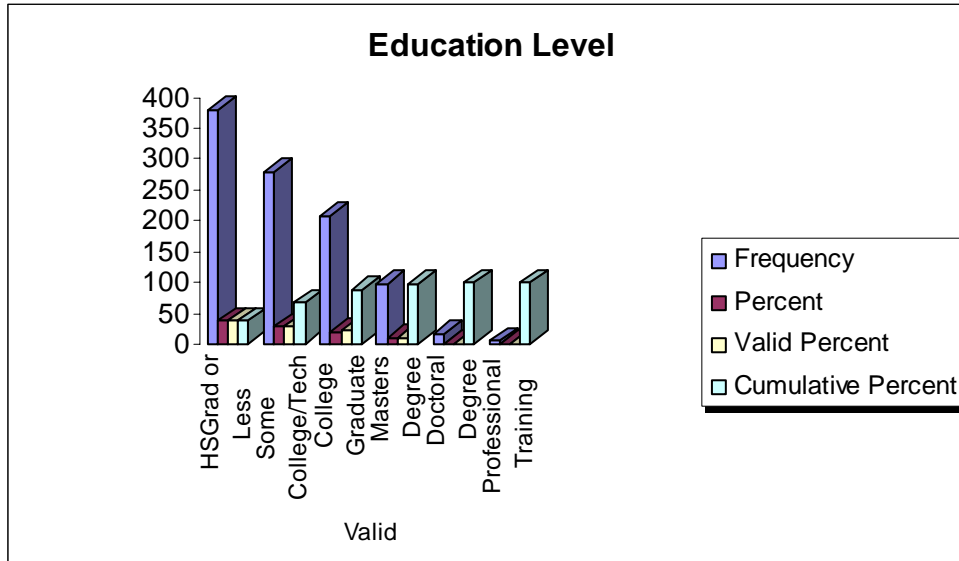
- 7 - Refused
- 8 – Don’t Know
- 9 – Not Ascertained

Table BS8: Distribution of Education Level by Category

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	HS Grad or Less	379	37.7	38.4	38.4
	Some College/Tech School	279	27.8	28.3	66.7
	College Graduate	209	20.8	21.2	87.9
	Masters Degree	97	9.7	9.8	97.8
	Doctoral Degree	16	1.6	1.6	99.4
	Professional Training	6	0.6	0.6	100
	Total	986	98.2	100	
Missing	7	12	1.2		
	8	3	0.3		
	9	3	0.3		
	Total	18	1.8		
Total		1004	100		

The table shows that approximately one-third of the respondents were high school graduates or less, whereas approximately one-third had four or more years of college. Slightly less than one-third of the respondents had some college or technical school training. Eleven percent of the sample had graduate degrees. Overall, the sample could be considered as having above average educational training, with two-thirds having education beyond high school.

Figure BS8: Distribution of Educational Level by Category



Summary of Demographic Background

The most salient characteristic of demographic background is that 42 percent of the respondents give ‘retired’ as their occupation. The other significant demographic features relate to or follow from that statistic. More than one-third of the respondents have lived in Brunswick County for five years or less, i.e., they are relative newcomers, and many of them are retired. Brunswick County advertises for retirement, and it appears that they are having considerable success. Approximately one-half of the respondents are not native to North Carolina, and two of every five members of the sample are not native to the North Carolina coast. Slightly more than one-fourth of the respondents are 65 years of age or older, and approximately two in every five individuals are in the age range of 45-64 years, a distribution consistent with retirement in the county. The sample consists of individuals who are relatively well educated, with two of every three individuals having attained educational levels above high school. Slightly more than one-half of the respondents were female, which might reflect gender distribution at more advanced ages, i.e., the percentage of females increased relative to age category.

Fishing Survey

Question # 9: Have you ever fished recreationally or commercially in Brunswick County?

- 1. Yes [SKIP TO Q12]
- 2. No

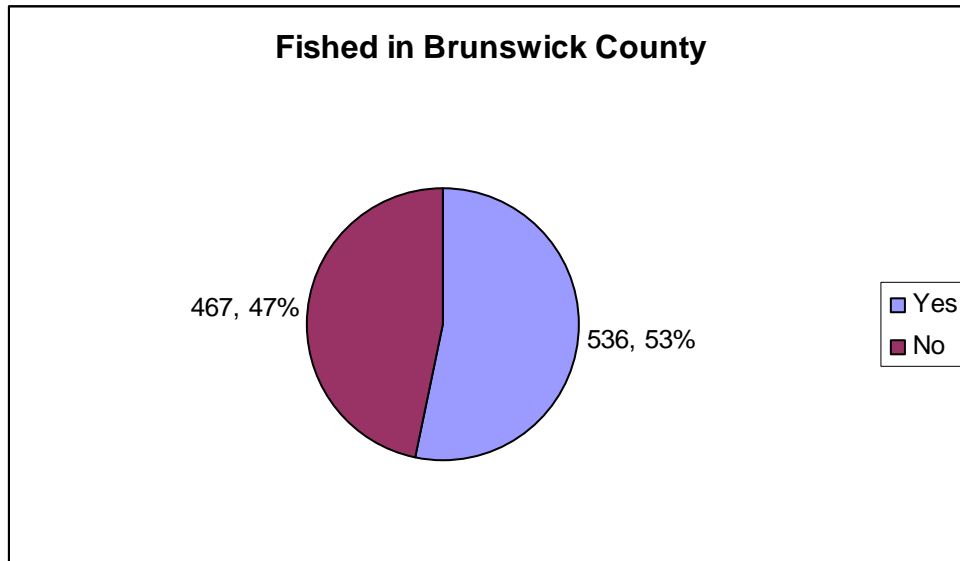
8 – Don't Know

Table BS9: Fished Recreationally or Commercially in Brunswick County

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	536	53.4	53.4	53.4
	No	467	46.5	46.6	100
	Total	1003	99.9	100	
Missing	8	1	0.1		
Total		1004	100		

At Table BS9 shows, slightly more than one-half of the respondents, 11 of every 20, indicated that they had fished wither recreationally or commercially in Brunswick County. $\chi^2 = 4.60$, $df = 1$, $p < .05$.

Figure BS9: Graphic Representation of Respondents who Have Fished in Brunswick County



Question # B10: Do you anticipate that you will fish within the next year?

- 1. Yes
- 2. No

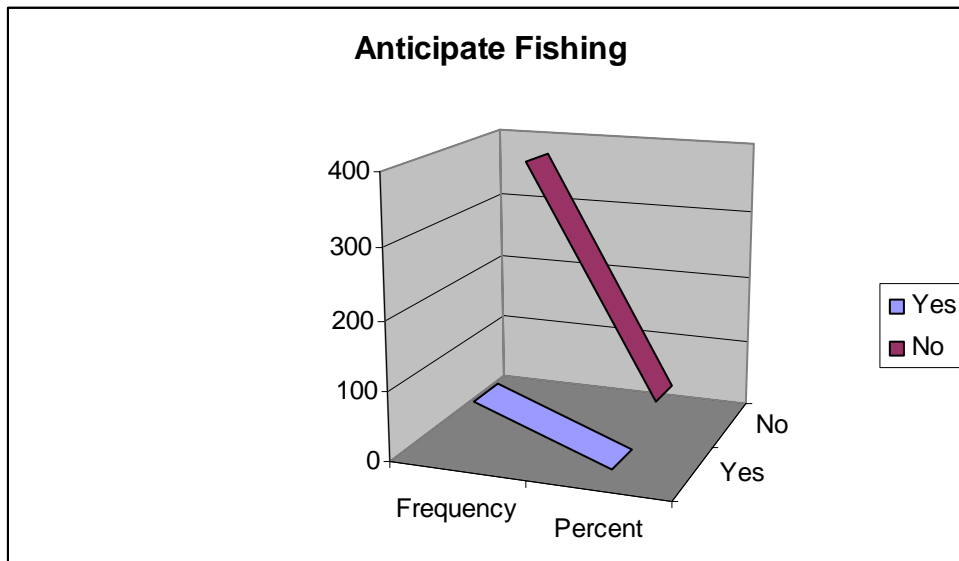
- 8 – Don't Know
- 9 – Not Ascertained

Table BS10: Expect to Fish in Brunswick County within the Next Year

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	79	7.9	17.2	17.2
	No	379	37.7	82.8	100
	Total	458	45.6	100	
Missing	8	10	1		
	9	536	53.4		
	Total	546	54.4		
Total		1004	100		

As Table BS10 shows, only a small portion of the respondents who have not fished in Brunswick County anticipate fishing there within the next year, less than 20 percent of those who responded to the question. Individuals who have not fished there earlier are not likely to fish within the coming year. The p value is less than .005.

Figure BS10: Graphic Representation of Expect to Fish in Brunswick County



Question # 11: Even if you have never fished in Brunswick County, do you think that fishing is a worthwhile recreational activity?

- 1. Yes
- 2. No
- 3. Not Sure

- 7 - Refused
- 9 - Not Ascertained

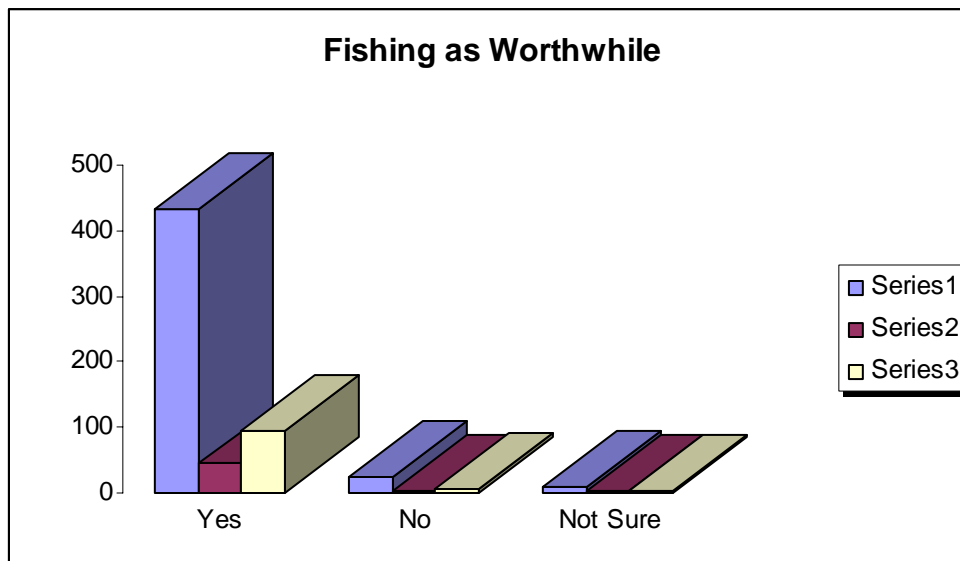
[SKIP TO Q31]

Table BS11: Fishing as a Worthwhile Activity

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	433	43.1	92.9	92.9
	No	24	2.4	5.2	98.1
	Not Sure	9	0.9	1.9	100
	Total	466	46.4	100	
Missing	7	2	0.2		
	9	536	53.4		
	Total	538	53.6		
Total		1004	100		

The intent of this question was to see if individuals who do not fish still subscribe to a cultural perspective that fishing is a worthwhile recreational activity. Clearly the majority of them say “yes,” by a factor of more than nine to one. The p value is less than .005.

Figure BS11: Graphic Representation of Fishing as a Worthwhile Activity



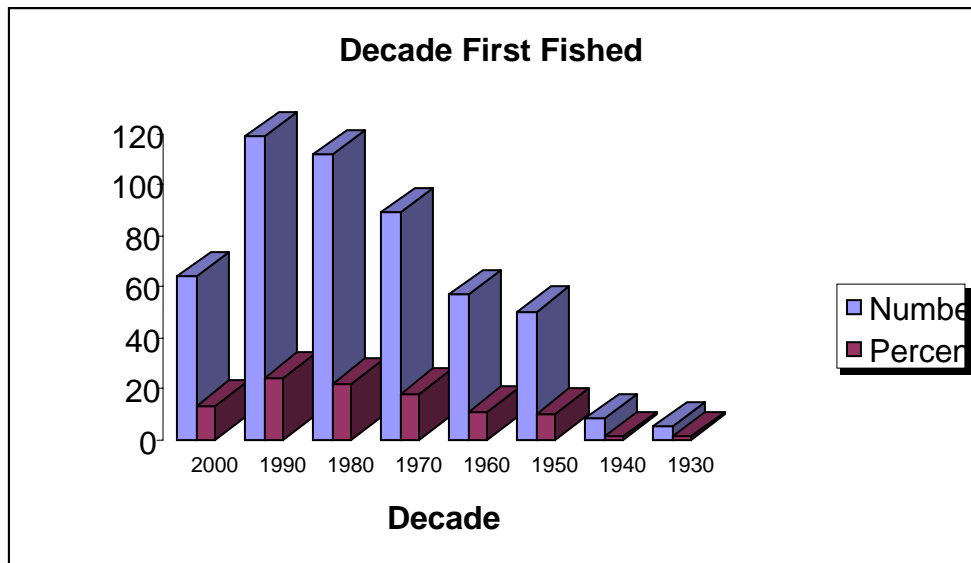
Question # 12: What is the first year that you fished in Brunswick County?

Table BS12: First Year Fished by Decade in Brunswick County

Decade	Number	Percent
2000	64	13
1990	119	24
1980	112	22
1970	89	18
1960	57	11
1950	50	10
1940	8	1
1930	5	1
TOTAL	504	100

The ‘decade’ 2000 includes only four years, from 2000 through 2003, compared to 10 years for each of the other decades. The figure of 13 percent thus indicates that one in every seven individuals first fished in Brunswick County in the past four years. When the decade of the 1990s is included, slightly more than one-third of all of the respondents have first fished in the county during the past 14 years, with the other two-thirds span six decades. Fishing as a first instance in the county is thus comparatively recent. $\chi^2 = 157.16$, $df = 7$, $p < .005$.

Figure BS12: Graphic Representation of First Decade Fishing in Brunswick County



Question # 13: How many years have you been fishing in Brunswick County?

_____ years

98 – Don’t Know

99 – Not Ascertained

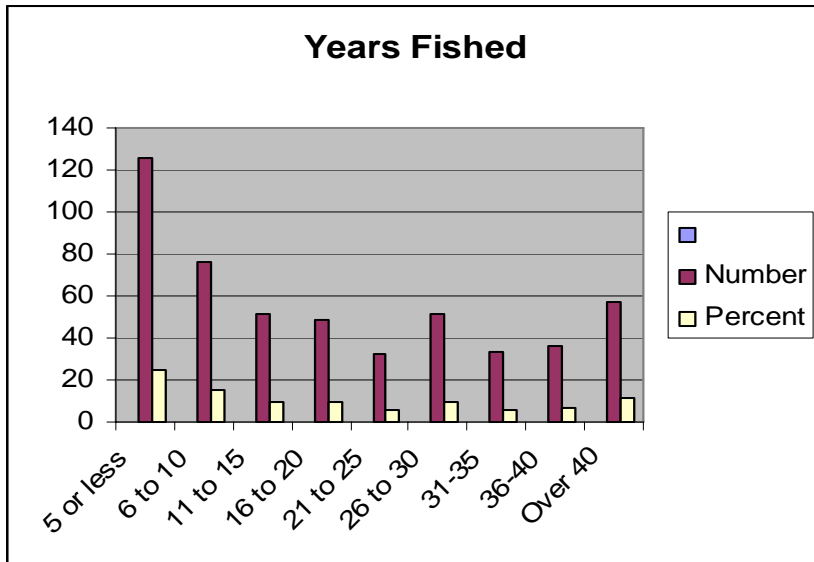
Table BS13: Years Fished in Brunswick County

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	30	3	5.9	5.9
	2	20	2	3.9	9.8
	3	28	2.8	5.5	15.3
	4	24	2.4	4.7	20
	5	24	2.4	4.7	24.7
	6	12	1.2	2.4	27.1
	7	7	0.7	1.4	28.4
	8	20	2	3.9	32.4
	9	6	0.6	1.2	33.5
	10	31	3.1	6.1	39.6
	11	6	0.6	1.2	40.8
	12	9	0.9	1.8	42.5
	13	8	0.8	1.6	44.1
	14	8	0.8	1.6	45.7
	15	20	2	3.9	49.6
	16	3	0.3	0.6	50.2
	17	6	0.6	1.2	51.4
	18	7	0.7	1.4	52.7
	19	4	0.4	0.8	53.5
	20	29	2.9	5.7	59.2
	21	1	0.1	0.2	59.4
	22	10	1	2	61.4
	23	3	0.3	0.6	62
	24	9	0.9	1.8	63.7
	25	9	0.9	1.8	65.5
	26	3	0.3	0.6	66.1
	27	3	0.3	0.6	66.7
	28	3	0.3	0.6	67.3
	29	5	0.5	1	68.2
	30	34	3.4	6.7	74.9
	31	3	0.3	0.6	75.5
	32	4	0.4	0.8	76.3
	33	2	0.2	0.4	76.7
	34	13	1.3	2.5	79.2
	35	11	1.1	2.2	81.4
	37	5	0.5	1	82.4
	38	2	0.2	0.4	82.7

	39	5	0.5	1	83.7
	40	24	2.4	4.7	88.4
	41	1	0.1	0.2	88.6
	42	1	0.1	0.2	88.8
	43	2	0.2	0.4	89.2
	44	6	0.6	1.2	90.4
	45	8	0.8	1.6	92
	46	1	0.1	0.2	92.2
	47	2	0.2	0.4	92.5
	48	1	0.1	0.2	92.7
	49	4	0.4	0.8	93.5
	50	19	1.9	3.7	97.3
	52	1	0.1	0.2	97.5
	53	1	0.1	0.2	97.6
	54	2	0.2	0.4	98
	55	1	0.1	0.2	98.2
	56	1	0.1	0.2	98.4
	58	1	0.1	0.2	98.6
	64	1	0.1	0.2	98.8
	70	1	0.1	0.2	99
	71	2	0.2	0.4	99.4
	74	1	0.1	0.2	99.6
	76	1	0.1	0.2	99.8
	80	1	0.1	0.2	100
	Total	510	50.8	100	
Missing	98	17	1.7		
	99	9	0.9		
	System	468	46.6		
	Total	494	49.2		
Total	1004	100			

Almost 25 percent of the respondents have fished in Brunswick County for five or fewer years. Those who have fished for 10 or fewer years make up almost 40 percent, and for 15 years or less, the percentage is 50. Fishing in Brunswick County is a relatively recent activity for at least one-third of the respondents. Remarkably six of the respondents have fished there for 70 years or more, one of those for 80 years.

Figure BS13: Graphic Representation of Years Fished in Brunswick County



Question # 14: On average, how many times per month do you normally fish in Brunswick County?

_____ times per month

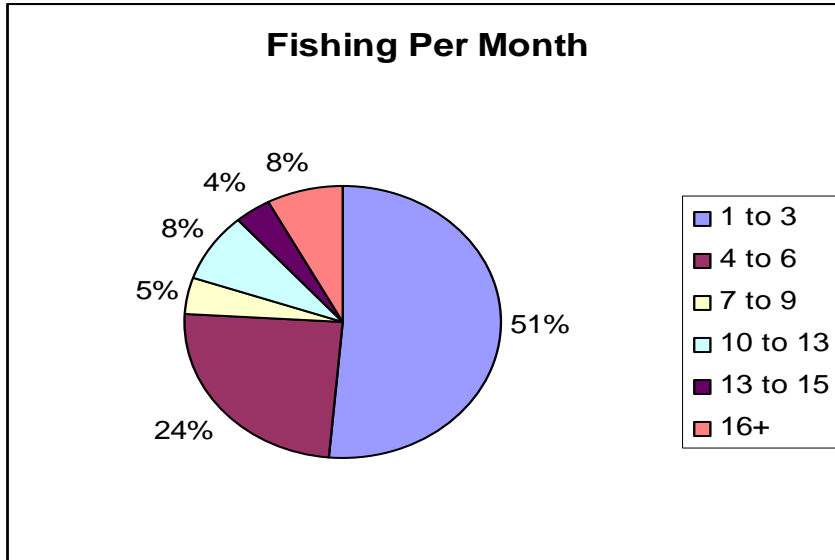
97 – R/DK/NA

Table BS14: Number of Times Fishing per Month

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	115	11.5	23.5	23.5
	2	87	8.7	17.8	41.2
	3	50	5	10.2	51.4
	4	61	6.1	12.4	63.9
	5	28	2.8	5.7	69.6
	6	30	3	6.1	75.7
	7	5	0.5	1	76.7
	8	16	1.6	3.3	80
	9	2	0.2	0.4	80.4
	10	18	1.8	3.7	84.1
	12	22	2.2	4.5	88.6
	13	1	0.1	0.2	88.8
	14	3	0.3	0.6	89.4
	15	14	1.4	2.9	92.2
	16	1	0.1	0.2	92.4
	18	1	0.1	0.2	92.7
	20	16	1.6	3.3	95.9
	21	1	0.1	0.2	96.1
	24	1	0.1	0.2	96.3
	25	5	0.5	1	97.3
	30	9	0.9	1.8	99.2
31	4	0.4	0.8	100	
	Total	490	48.8	100	
Missing	97	46	4.6		
	System	468	46.6		
	Total	514	51.2		
Total		1004	100		

Table BS14 shows that the range of number of times fishing per month is from one to 31. Slightly more than one-half of the respondents, however, fish three or fewer times per month, and slightly more than three in four fish six times or less per month. Only approximately 10 percent fish as many as 15 times or more per month.

Figure BS14: Graphic Representation of Number of Times Fishing per Month



Question # 15: Does your fishing tend to be seasonal?

- 1. Yes
- 2. No [SKIP TO Q17]

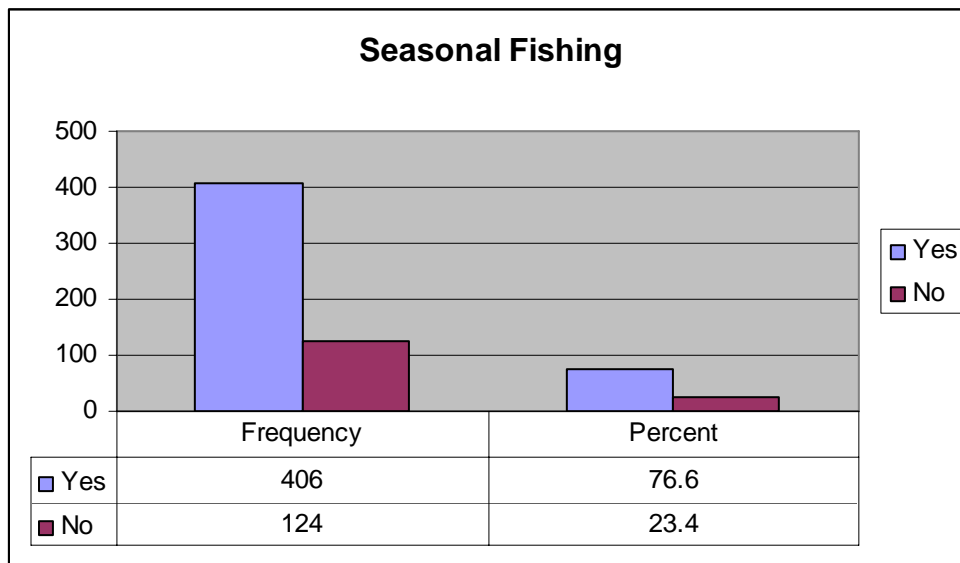
- 8 – Don't Know
- 9 – Not Ascertained

Table BS15: Seasonal Fishing

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	406	40.4	76.6	76.6
	No	124	12.4	23.4	100
	Total	530	52.8	100	
Missing	8	4	0.4		
	9	2	0.2		
	System	468	46.6		
	Total	474	47.2		
Total		1004	100		

The respondents' answer to question 15 was yes, by a margin of slightly more than three to one. The p value is less than .005.

Figure BS15: Graphic Representation of Distribution of Seasonal Fishing



Question # 16: Which season are you most likely to fish?

1. Summer
2. Fall
3. Winter
4. Spring

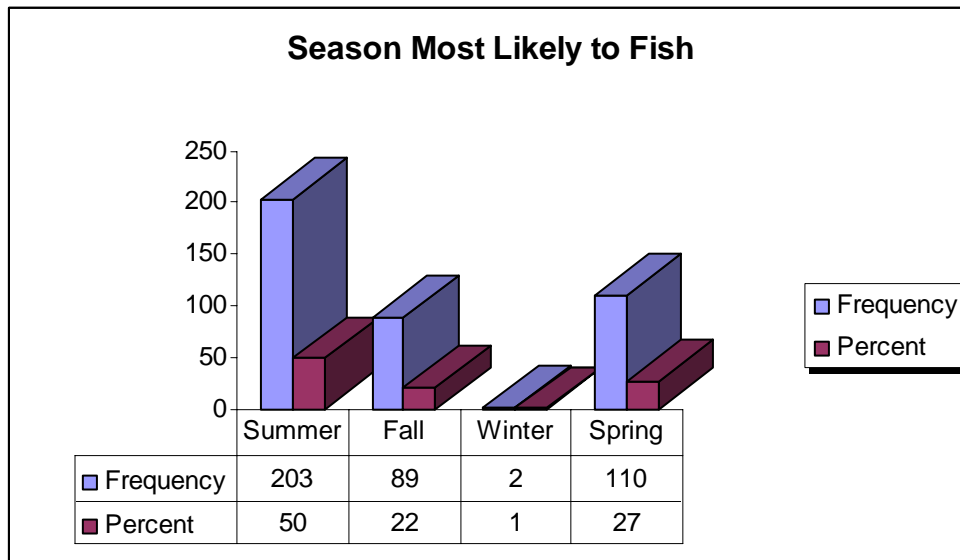
8 – Don't Know

Table BS16: Season Most Likely to Fish

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Summer	203	20.2	50.2	50.2
	Fall	89	8.9	22	72.3
	Winter	2	0.2	0.5	72.8
	Spring	110	11	27.2	100
	Total	404	40.2	100	
Missing	8	2	0.2		
	System	598	59.6		
	Total	600	59.8		
Total		1004	100		

The table shows that respondents are most likely to fish in the summer, secondly in the spring, thirdly in the fall, and almost not at all in the winter. One-half fish in the summer, and more than three in four fish in the summer and spring. Fourteen of the respondents (not shown in the table) chose more than one season, with summer and spring occurring in 11 of those instances.

Figure BS16: Graphic Representation of Season Most Likely to Fish



Question # 17: What is the primary reason why you fish other than just to catch fish?

- | | |
|---------------------------------------|---------------------|
| 1. Recreation/relaxation | 7 - Refused |
| 2. Catch fish to eat | 8 – Don’t Know |
| 3. Spend time with family and friends | 9 – Not Ascertained |
| 4. Other Reason [SPECIFY _____] | |

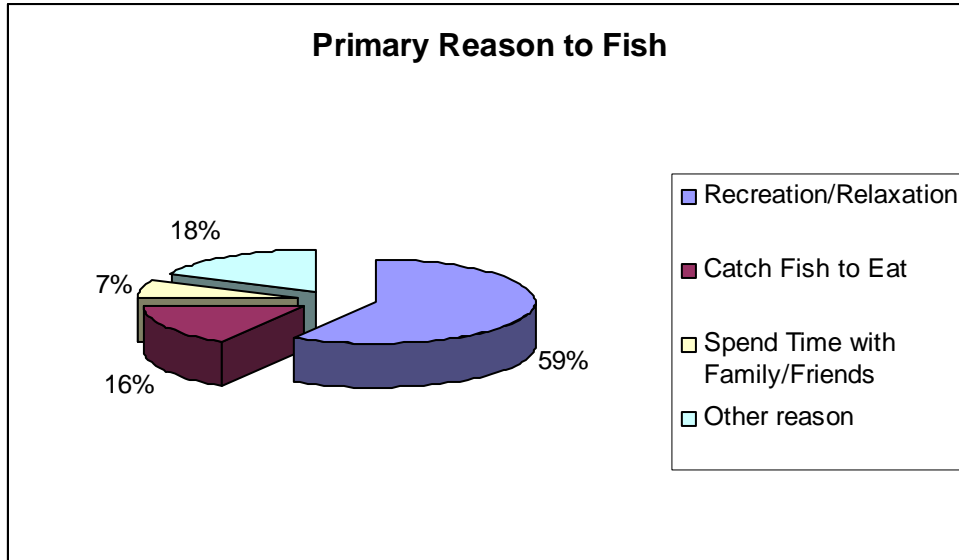
[IF RESPONSE = ‘1’, ASK Q18; OTHERWISE SKIP TO Q19]

Table BS17: Primary Reason to Fish

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Recreation/Relaxation	311	31	58.7	58.7
	Catch Fish to Eat	85	8.5	16	74.7
	Spend Time with Family/Friends	39	3.9	7.4	82.1
	Other reason	95	9.5	17.9	100
	Total	530	52.8	100	
Missing	8	3	0.3		
	9	3	0.3		
	System	468	46.6		
	Total	474	47.2		
Total		1004	100		

Approximately three of every five individuals indicated that recreation/relaxation is the primary reason to fish. Only one of every six individuals indicated that catching fish to eat is the most important reason, and surprisingly, less than four percent saw spending time with family and friends as the primary reason. Fifty-three of the respondents identified two or more of the choices as equally primary (not shown in the table), and of those, 26 were ‘all of the above’. Another 43 respondents identified other reasons, of which ‘enjoyment’ and ‘fun’ were the most common. Creative answers were also provided, such as ‘drink beer,’ ‘put shoes on my children,’ and ‘to get a tan and look cool for the guys’. P value is less than .005.

Figure BS17: Graphic Representation of Primary Reason to Fish



Question # 18: Which of the following do you consider to be most important – being out on the water in the open air, being away from everyday concerns and worries, a sense of anticipation at catching fish, or some other reason?

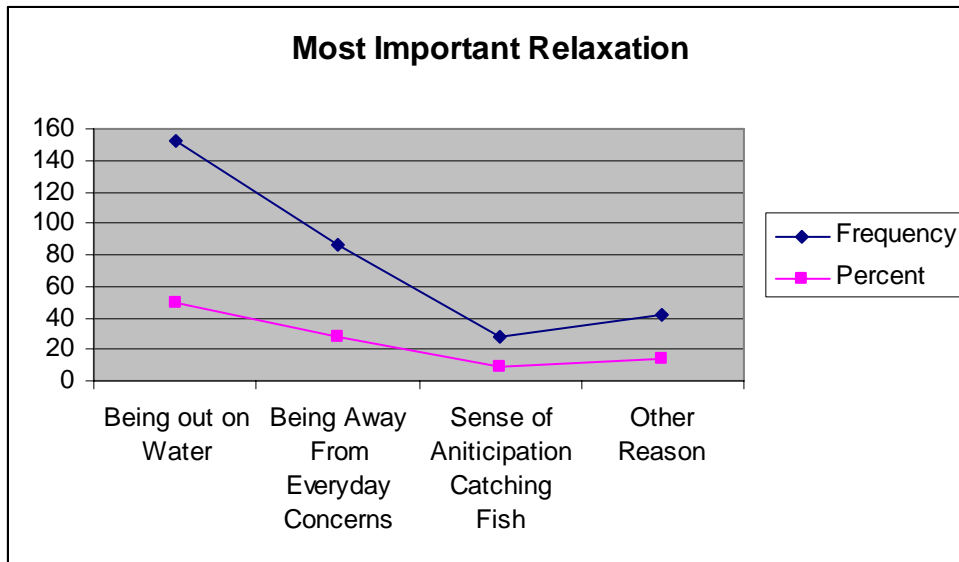
1. Being out on the water in the open air
 2. Being away from everyday concerns and worries
 3. Sense of Anticipation at catching fish
 4. Other Reason [SPECIFY _____]
- 8 – Don't Know**

Table BS18: Most Important Factor in Recreation and Relaxation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Being out on Water	152	15.1	49.4	49.4
	Being Away From Everyday Concerns	86	8.6	27.9	77.3
	Sense of Anticipation Catching Fish	28	2.8	9.1	86.4
	Other Reason	42	4.2	13.6	100
	Total	308	30.7	100	
Missing	8	3	0.3		
	System	693	69		
	Total	696	69.3		
Total		1004	100		

‘Being out on the water’ is the most important factor contributing to relaxation, as identified by approximately 50 percent of the respondents. ‘Being away from everyday concerns’ was second, indicated by three of each 10 individuals. Forty-three respondents chose ‘other,’ and of those individuals, 25 said that ‘all of the above’ was the best answer. $\chi^2 = 121.19$, $df = 3$, $p < .005$.

Figure BS18: Graphic Representation of Most Important Factor in Recreation and Relaxation



Question # 19: Do you practice ‘catch and release’ for regulation size fish almost always, sometimes, or almost never?

1. Almost always [SKIP TO Q21]
2. Sometimes [SKIP TO Q21]
3. Almost Never

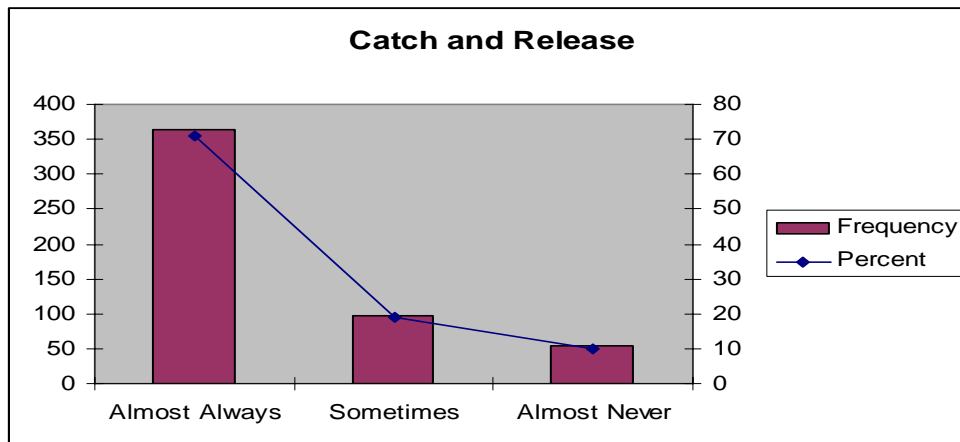
8 – Don’t Know
9 – Not Ascertained

Table BS19: Practice Catch and Release

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Almost Always	364	36.3	70.5	70.5
	Sometimes	98	9.8	19	89.5
	Almost Never	54	5.4	10.5	100
	Total	516	51.4	100	
Missing	8	9	0.9		
	9	11	1.1		
	System	468	46.6		
	Total	488	48.6		
Total		1004	100		

As can be seen in the table, seventy percent of the respondents reported that they almost always practice catch and release. Only one individual in ten indicated that they almost never release caught fish. The ratio of seven to one is higher than expected. $\chi^2 = 327.12$, $df = 2$, $p < .005$.

Figure BS19: Graphic Representation of Catch and Release



Question # 20: If you tend to keep the fish that you catch, what are you most likely to do with them once you get onshore? Do you keep them for yourself or your family, give them to friends or relatives, give them to neighbors, or something else?

1. Keep for self
2. Give to friends/relatives
3. Give to neighbors
4. Something else [SPECIFY _____]

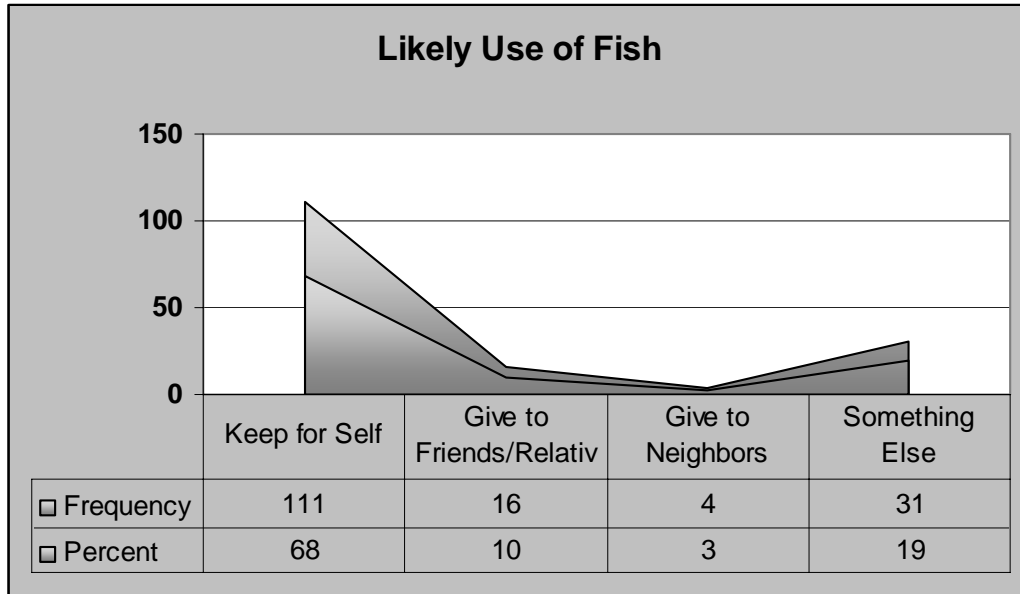
8 – Don't Know
9 – Not Ascertained

Table BS20: Most Likely use of Fish that are Caught and Kept

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Keep for Self	111	11.1	68.5	68.5
	Give to friends/relatives	16	1.6	9.9	78.4
	Give to Neighbors	4	0.4	2.5	80.9
	Something Else	31	3.1	19.1	100
	Total	162	16.1	100	
Missing	8	4	0.4		
	9	6	0.6		
	System	832	82.9		
	Total	842	83.9		
Total		1004	100		

Slightly more than two-thirds of the respondents indicated that when they keep fish, it is for themselves and family. One in 10 respondents said that they give fish to friends or relatives, whereas hardly any of them give fish to neighbors. Thirty-one respondents selected “other,” 14 of which were “all of the above,” and six were “sell them”. One respondent admitted that he usually doesn't catch any fish. P value is less than .005.

Figure BS20: Graphic Representation of Most Likely use of Fish that are Caught and Kept



Question # 21: Do you typically fish for a particular species?

1. Yes
2. No [SKIP TO Q23]

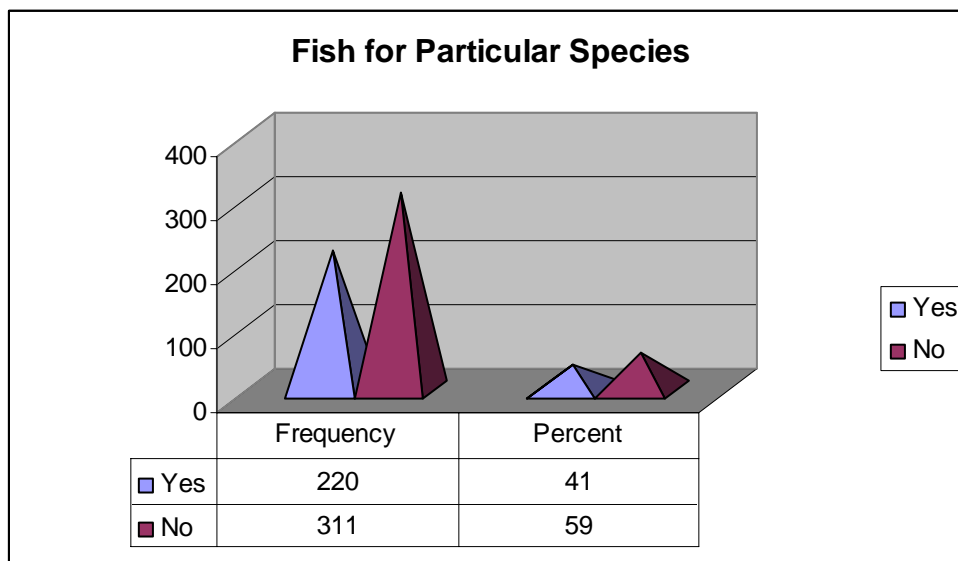
- 7 - Refused
 8 – Don't Know
 9 – Not Ascertained

Table BS21: Fish for a Particular Species

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	220	21.9	41.4	41.4
	No	311	31	58.6	100
	Total	531	52.9	100	
Missing	8	2	0.2		
	9	3	0.3		
	System	468	46.6		
	Total	473	47.1		
Total		1004	100		

The table shows that less than one-half of the respondents, two in every five, target particular species when they fish. $\chi^2 = 12.84$, $df = 1$, $p < .005$.

Figure BS21: Graphic Representation of Fishing for a Particular Species



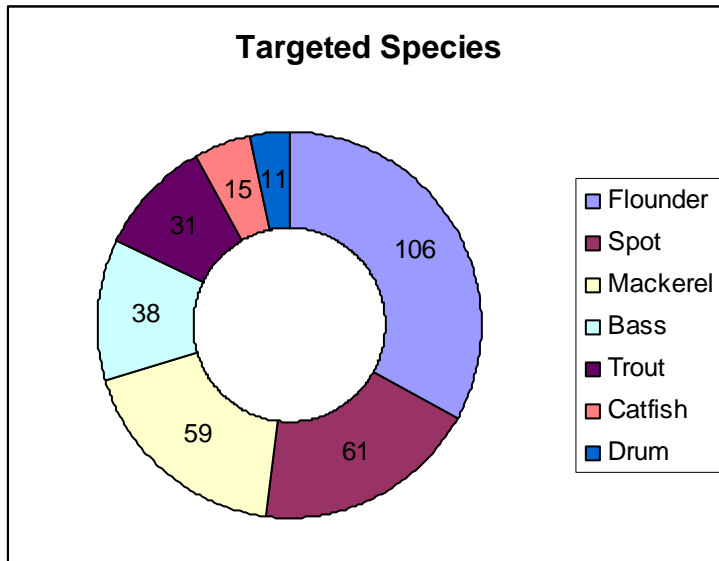
Question # 22: Which species do you typically fish for?

Table BS22: Species Typically Targeted

Species	Number
Flounder	106
Spot	61
Mackerel	59
Bass	38
Trout	31
Catfish	15
Drum	11

An actual count of the named targeted species was fraught with difficulty. Some respondents gave generic names – trout, bass, drum, etc. -- while others gave common names for species – spotted sea trout, black sea bass, red drum, etc. Some respondents also named only one species, whereas others named several species that were targeted. In order to count the species, all specific names were collapsed into generics, e.g., all bass were simply counted as ‘bass,’ all mackerel as ‘mackerel.’ The numbers in Table 22 also indicate the total number of times that the generic was named. The numbers indicate that flounder was by far the most targeted, with spots and mackerel following. In the mackerel category, king mackerel was listed twice as often as Spanish mackerel.

Figure BS22: Graphic Representation of Targeted Species



Question # 23: On average, where are you most likely to fish? In a tidal creek or river, in an estuary or sound, in open water or offshore, or somewhere else?

1. Tidal Creek/river
2. Estuary/sound
3. Open water/offshore
4. Somewhere else [SPECIFY _____]

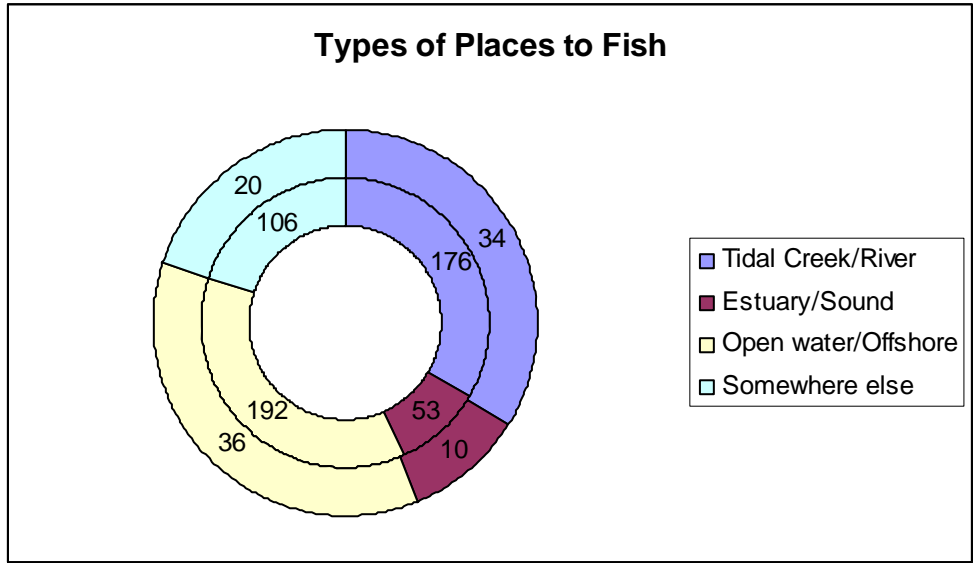
- 7 - Refused
 8 – Don’t Know
 9 – Not Ascertained

Table BS23: Types of Places to Fish

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Tidal Creek/River	176	17.5	33.4	33.4
	Estuary/Sound	53	5.3	10.1	43.5
	Open water/Offshore	192	19.1	36.4	79.9
	Somewhere else	106	10.6	20.1	100
	Total	527	52.5	100	
Missing	7	1	0.1		
	8	6	0.6		
	9	2	0.2		
	System	468	46.6		
	Total	477	47.5		
Total		1004	100		

Of the 527 respondents, approximately one-third each indicated that they typically fish in open water, offshore or in tidal creeks and rivers. Ten percent stated that they likely to fish in an estuary or sound. Of the 106 individuals who indicated “somewhere else,” 26 responded “pier,” 21 listed the “intercoastal waterway,” 16 indicated “surf,” 13 listed “lake,” and 13 named “all of the above.” Other locations, e.g., ponds, had less than 10 occurrences. Clearly recreational fishermen fish at a number of different types of locations, but mostly offshore or in tidal waterways. $\chi^2 = 94.34$, $df = 3$, $p < .005$.

Figure BS23: Graphic Representation of Types of Places to Fish



Question # 24: Are you most likely to fish alone, with family members, or with friends?

1. Alone
2. With family members
3. With friends
4. Other [SPECIFY _____]

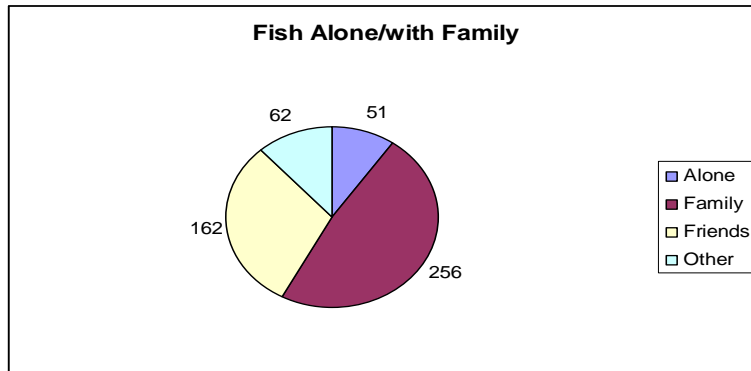
8 – Don't Know
9 –Not Ascertained

Table BS24: Fish Alone or with Family or Friends

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Alone	51	5.1	9.6	9.6
	Family	256	25.5	48.2	57.8
	Friends	162	16.1	30.5	88.3
	Other	62	6.2	11.7	100
	Total	531	52.9	100	
Missing	8	3	0.3		
	9	2	0.2		
	System	468	46.6		
	Total	473	47.1		
Total		1004	100		

Individuals rarely fish alone, less than 10 percent of the time. As the table shows, almost 50 percent fish with family members, and another one-third, approximately, responded that they tend to fish with friends. “Other” was listed by 62 individuals (12 percent), which included “family and friends” 31 times and “all of the above” 17 times. Clearly, family and friends predominate.

Figure BS24: Graphic Representation of Fish Alone or with Family or Friends



Question # 25: Have you ever worked or been employed in commercial fishing in any capacity (for example as a fisherman, a striker, or a processor?)

1. Yes
2. No [SKIP TO Q31]

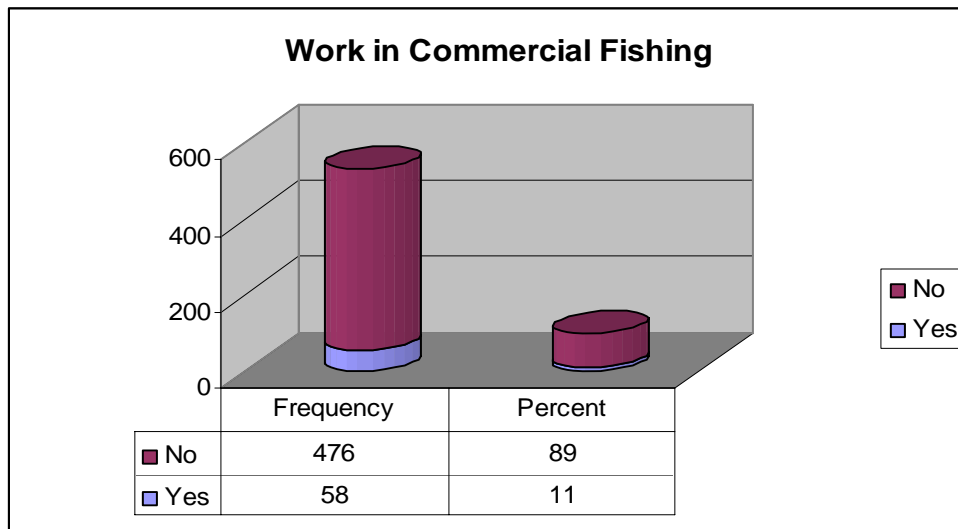
9 – Not Ascertained

Table BS25: Worked in Commercial Fishing

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	58	5.8	10.9	10.9
	No	476	47.4	89.1	100
	Total	534	53.2	100	
Missing	9	2	0.2		
	System	468	46.6		
	Total	470	46.8		
Total		1004	100		

As Table BS25 shows, only a minority of the respondents had ever been employed or worked in commercial fishing, slightly less than 11 percent. Taking into account, however, that more than one-half of the respondents were females, the number is probably closer to 20 percent.

Figure BS25: Graphic Representation of Work in Commercial Fishing



Question # 26: In what capacity did you work in commercial fishing?

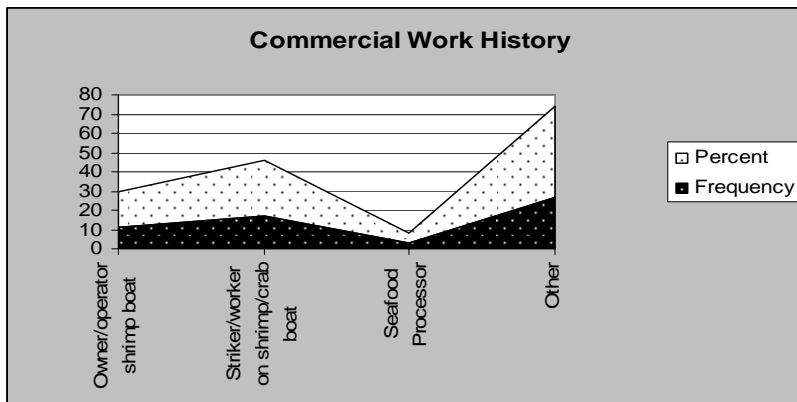
- | | |
|---|---------------------|
| 1. Owner or operator of a shrimp boat | 7 - Refused |
| 2. Owner or operator of a crab boat | 8 – Don't Know |
| 3. Striker/worker on a shrimp boat or crab boat | 9 – Not Ascertained |
| 4. Seafood processor | |
| 5. Other [SPECIFY _____] | |

Table BS26: Type of Work in Commercial Fishing

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Owner/operator shrimp boat	11	1.1	19	19
	Striker/worker on shrimp/crab boat	17	1.7	29.3	48.3
	Seafood Processor	3	0.3	5.2	53.4
	Other	27	2.7	46.6	100
	Total	58	5.8	100	
Missing	System	946	94.2		
Total		1004	100		

As Table BS26 shows, the type of work listed most frequently, slightly less than one-third, was as a striker on a shrimp boat or a worker on a crab boat. The most frequent response was “other,” at 47 percent. Those 27 responses included a number of job/work types: charter fishing (5); owner of a commercial boat (4), work on other kinds of boats (4), packing/sales (3), and a number of other positions, e.g., guide and fisheries extension technician.

Figure BS26: Graphic Representation of Type of Work in Commercial Fishing



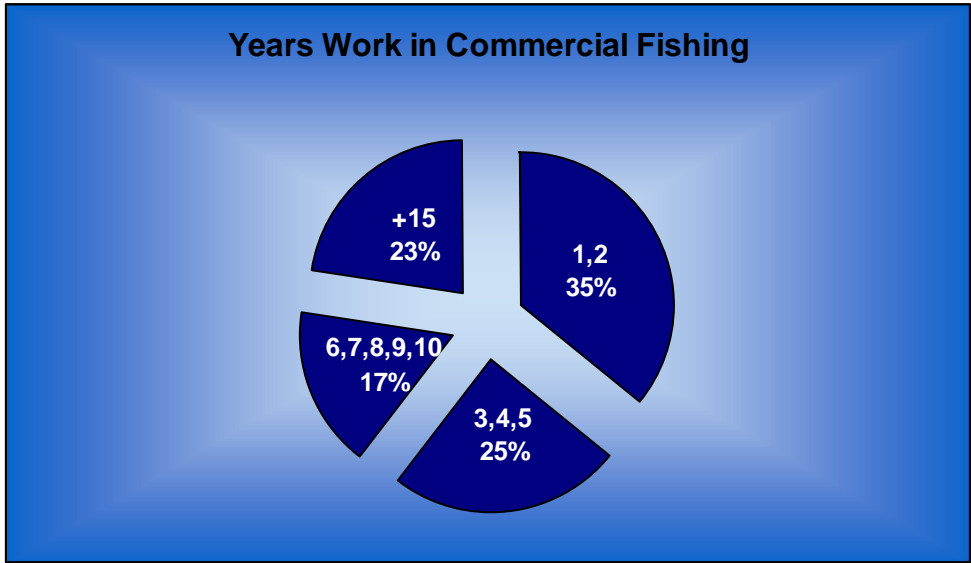
Question # 27.1: How many years did you work in commercial fishing?

Table BS27.1: Years Worked in Commercial Fishing

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	10	1	18.5	18.5
	2	9	0.9	16.7	35.2
	3	7	0.7	13	48.1
	4	3	0.3	5.6	53.7
	5	3	0.3	5.6	59.3
	6	1	0.1	1.9	61.1
	7	3	0.3	5.6	66.7
	8	1	0.1	1.9	68.5
	9	2	0.2	3.7	72.2
	10	2	0.2	3.7	75.9
	15	4	0.4	7.4	83.3
	17	1	0.1	1.9	85.2
	18	1	0.1	1.9	87
	22	1	0.1	1.9	88.9
	29	1	0.1	1.9	90.7
	30	1	0.1	1.9	92.6
	32	1	0.1	1.9	94.4
	42	1	0.1	1.9	96.3
	54	1	0.1	1.9	98.1
	[95] No response	1	0.1	1.9	100
Total		54	5.4	100	

As the table shows, the majority of individuals worked in commercial fishing for four years or less. Approximately one-third of the respondents were in the industry for two years or less, and the majority of those were for one year. Only eight individuals worked for more than 15 years, approximately 15 percent of the total.

Figure BS27.1: Years Worked in Commercial Fishing



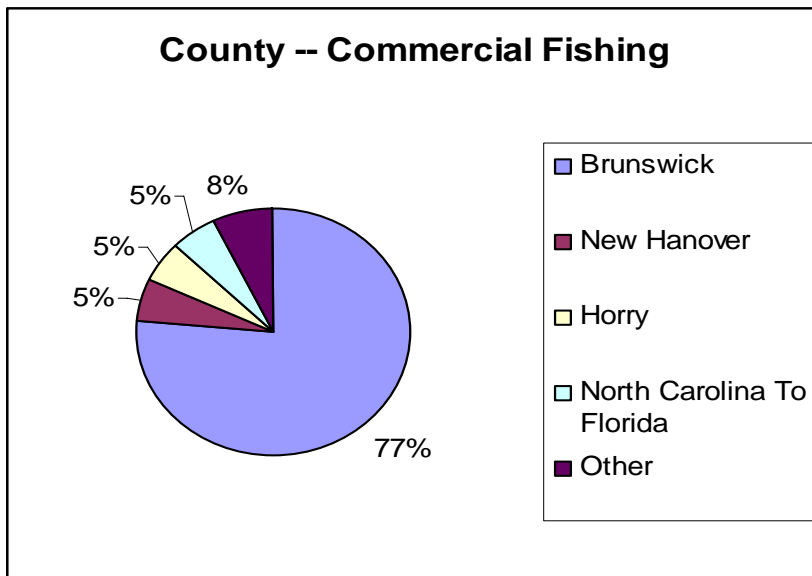
Question # 27.2: In what county (counties) did you work in commercial fishing?

Table BS27.2: County – Commercial Fishing

County	Number
Brunswick	42
New Hanover	3
Horry	3
North Carolina To Florida	3
Other	4
TOTAL	55

Slightly more than three-fourths of the commercial fishermen worked in Brunswick County. Other North Carolina counties accounted for six of the fishermen, and another seven had worked more extensively along the southeastern Atlantic coast (one individual listed “everywhere”).

Figure BS27.2: Graphic Representation of County – Commercial Fishing



Question # 28.1: Do you still work in commercial fishing?

- 1. Yes [SKIP TO Q29]
- 2. No

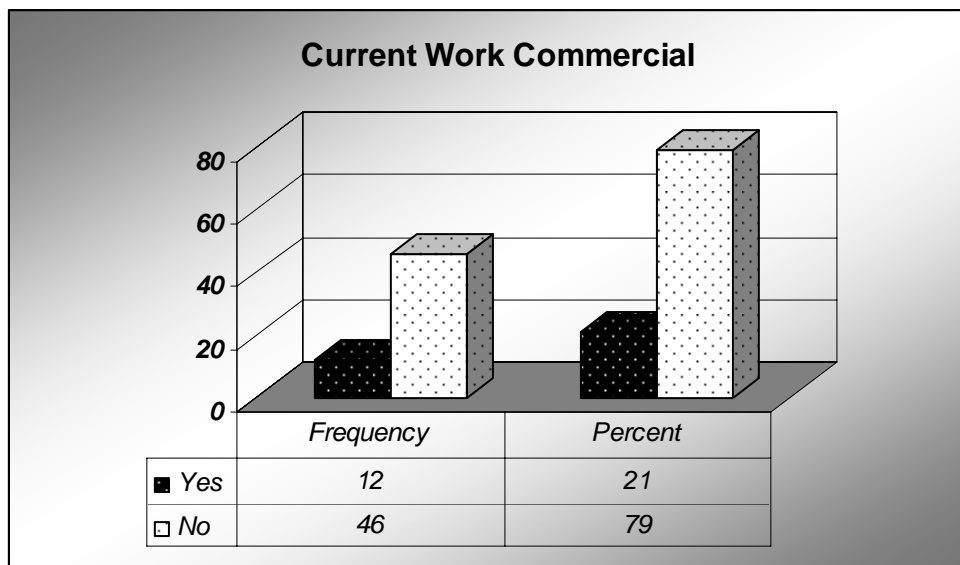
- 7 - Refused
- 8 - Don't Know
- 9 - Not Ascertained

Table BS28.1: Still Work in Commercial Fishing

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	12	1.2	20.7	20.7
	No	46	4.6	79.3	100
	Total	58	5.8	100	
Missing	System	946	94.2		
Total		1004	100		

As the table shows, only one in five of the individuals who worked in commercial fishing still work in that capacity. The percentage of commercial fishermen in the sample of 1,000 individuals is only slightly more than one percent, but again, males made up only one-half of the sample.

Figure BS28.1: Graphic Representation of Workers Still in Commercial Fishing



Question # 28.2: What was the main reason you stopped working in commercial fishing?

1. Age/Retirement
2. Impossible to make a living
3. Burned out/tired of the work
4. Health Factors
5. Other [SPECIFY _____]

- 7 - Refused
8 – Don't Know

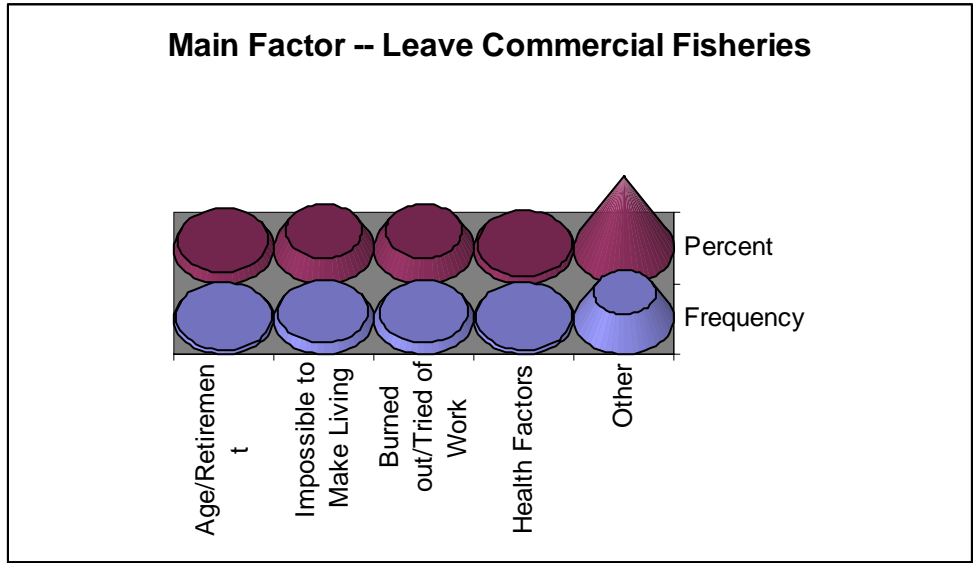
[SKIP TO Q30]

Table BS28.2: Main Reason for Leaving Commercial Fishing

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Age/Retirement	3	0.3	6.8	6.8
	Impossible to Make Living	7	0.7	15.9	22.7
	Burned out/Tried of Work	7	0.7	15.9	38.6
	Health Factors	2	0.2	4.5	43.2
	Other	25	2.5	56.8	100
	Total	44	4.4	100	
Missing	7	1	0.1		
	8	1	0.1		
	System	958	95.4		
	Total	960	95.6		
Total	1004	100			

Several reasons were given as the basis for leaving commercial fishing. “Health factors” and “impossible to make a living” were each cited by approximately one in six of the respondents. “Retirement” and “health factors” were each less than 10 percent. “Other” was by far the most frequently cited factor, at 57 percent. Of those 25 responses, seven of the individuals indicated that the money was too little, five indicated that the work had always been just part-time, and two each said that keeping up with equipment and gas was too much, that they got a full time job, or they went back to school. One respondent indicated that “the captain was crazier than I was”. Considering all of the answers, the difficulty or impossibility of making a living was the major factor.

Figure BS28.2: Graphic Representation of Main Reason for Leaving Commercial Fishing



Question # 29: What do you think will be the major factor in your decision to eventually stop working in commercial fishing?

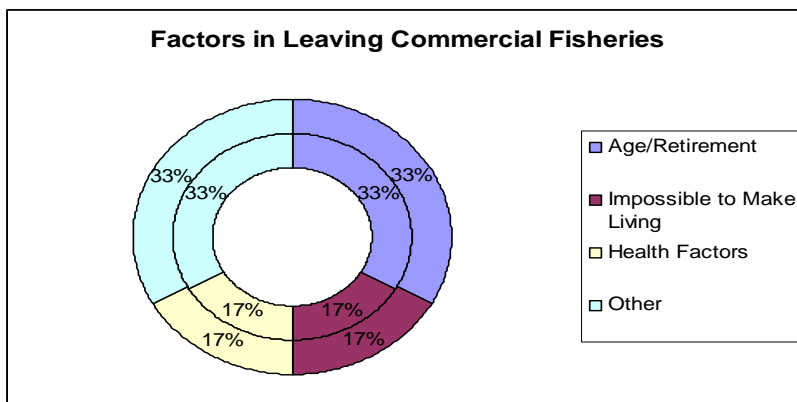
- | | |
|---------------------------------|---------------------|
| 1. Age/Retirement | 7 - Refused |
| 2. Impossible to make a living | 8 – Don’t Know |
| 3. Burned out/tired of the work | 9 – Not Ascertained |
| 4. Health Factors | |
| 5. Other [SPECIFY _____] | |

Table BS29: Eventual Major Factor in Leaving Commercial Fishing

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Age/Retirement	4	0.4	33.3	33.3
	Impossible to Make Living	2	0.2	16.7	50
	Health Factors	2	0.2	16.7	66.7
	Other	4	0.4	33.3	100
	Total	12	1.2	100	
Missing	System	992	98.8		
Total		1004	100		

The number of individuals who were in a position to answer this question was very small, a total of 12, or 1.2 percent of the total sample. As the table shows, four each listed “age/retirement” and “other”. The latter included the only instance of “imports” as a factor, listed by one individual. Another individual listed “bankruptcy”.

Figure BS29: Graphic Representation of Major Factor in Leaving Commercial Fishing



Question # 30: What appeals or appealed to you the most in commercial fishing?

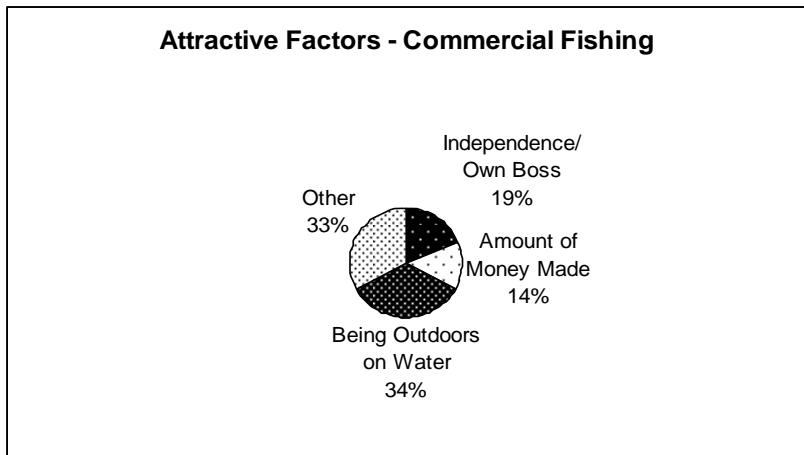
1. Independence/being own boss
2. Amount of money made
3. Being outdoors on the water
4. Ability to set own work schedule
5. Other [SPECIFY _____]

Table BS30: Major Appeal of Commercial Fishing

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Independence/Own Boss	11	1.1	19	19
	Amount of Money Made	8	0.8	13.8	32.8
	Being Outdoors on Water	20	2	34.5	67.2
	Other	19	1.9	32.8	100
	Total	58	5.8	100	
Missing	System	946	94.2		
Total		1004	100		

As the table shows, being outdoors and on the water was the major factor cited by the respondents, with slightly more than one-third citing that option. Being independent and one's own boss was cited by approximately one in five individuals. Approximately one-third of the respondents selected "other," which included a number of different factors, none really prevailing. Tradition and enjoyment were cited three times each, but all other factors appeared only once each. $\chi^2 = 7.25$, $df = 3$, $p < .05$.

Figure BS30: Graphic Representation of Attraction of Commercial Fishing



Question # 31: How important do you think that recreational fishing will be in the future of Brunswick County? Would you say very important, somewhat important, or not Very important?

- 1. Very Important
- 2. Somewhat Important
- 3. Not Very Important
- 4. Not Sure

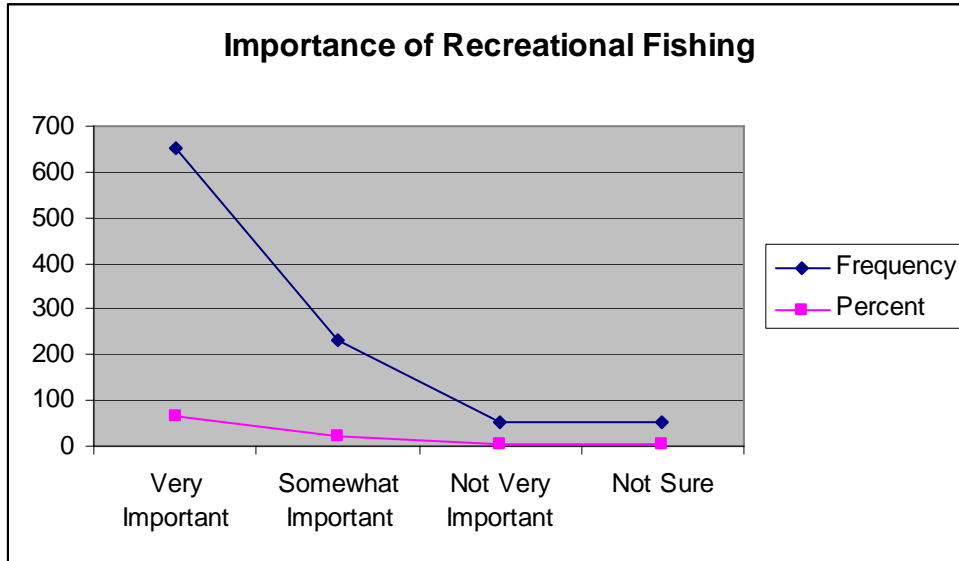
- 7 - Refused
- 8 – Don’t Know
- 9 – Not Ascertained

Table BS31: Importance of Recreational Fishing in Brunswick County

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Important	654	65.1	65.9	65.9
	Somewhat Important	231	23	23.3	89.2
	Not Very Important	54	5.4	5.4	94.7
	Not Sure	53	5.3	5.3	100
	Total	992	98.8	100	
Missing	7	1	0.1		
	8	10	1		
	9	1	0.1		
	Total	12	1.2		
Total		1004	100		

As the table shows, seven in each 10 individuals considered recreational fishing to be of continued importance in Brunswick County. Only 11 percent were of the opinion that it would not be important or were not sure of that point. Stated otherwise, approximately nine of every 10 individuals thought that recreational fishing would continue to be important, at least to some degree. P value is considerably less than .005.

Figure BS31: Continued Importance of Recreational Fishing



Question # 32: How important do you think that commercial fishing will be in the future of Brunswick County? Would you say very important, somewhat important, or not Very important?

- 1. Very Important
- 2. Somewhat Important
- 3. Not Very Important
- 4. Not Sure

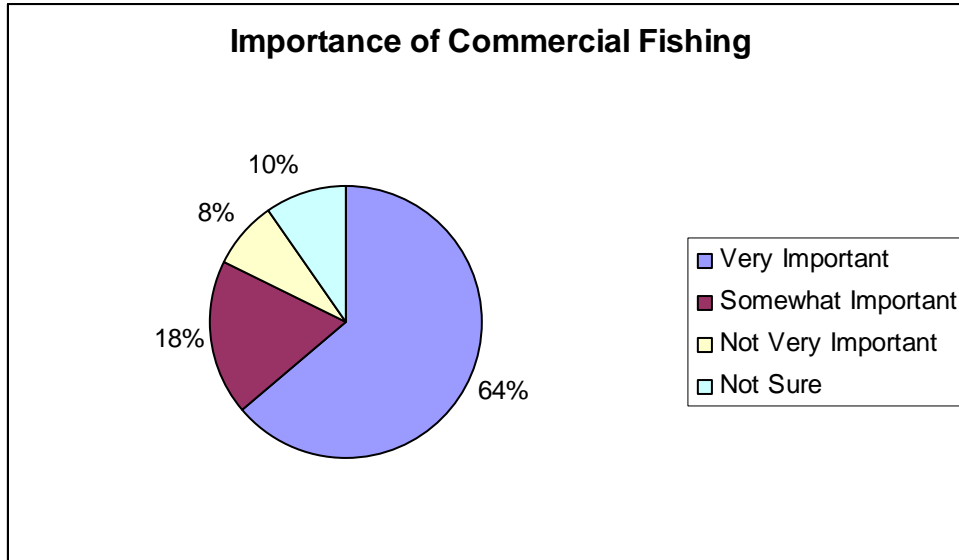
- 7 - Refused
- 8 – Don’t Know
- 9 – Not Ascertained

Table BS32: Importance of Commercial Fishing

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Important	628	62.5	63.8	63.8
	Somewhat Important	182	18.1	18.5	82.3
	Not Very Important	77	7.7	7.8	90.1
	Not Sure	97	9.7	9.9	100
	Total	984	98	100	
Missing	7	1	0.1		
	8	18	1.8		
	9	1	0.1		
	Total	20	2		
Total		1004	100		

As Table BS32 shows, approximately two-thirds of the respondents thought that commercial fishing would continue to be important. Approximately 18 percent thought that it would not be important or were not sure whether that would be the case. Stated otherwise, approximately 82 percent of the respondents thought that commercial fishing would continue to be important. P value is considerably less than .005.

Figure BS32: Graphic Representation of Continued Importance of Commercial Fishing



Summary of Fishing Survey

Only slightly more than one-half of the respondents to the telephone survey indicated that they have ever fished recreationally in Brunswick County. Of those individuals, less than 20 percent indicated that they expected to fish there within the coming year. Since the survey is primarily about experiences and perspectives concerning recreational and commercial fishing, the size of the sample is considerably reduced by the individuals who do not fish or expect to fish. Still, the non-fishermen indicate that approximately one-half of the county residents do not fish, at least not regularly. Those individuals, however, still overwhelmingly see fishing as a worthwhile recreational activity, even if they do not participate in it. Fishing for recreation is a widely held cultural model.

Of the sample members who have fished in the county, a considerable number are recent. The percent who has fished for the first time in the last four years is 13, and the percent who first fished there during the past 14 years is 37 percent. While 10 percent or more of the respondents first fished in the county each decade since the 1950s, the percentage increases with each decade. If the percent for 2000-2003 is extrapolated for the entire decade, the percentage would be 26, assuming no further accelerated rate of increase. The trend is clearly toward fishing for the first time recently. Responses to the number of years fishing in the county show the same trend. Approximately one-fourth of the respondents have fished for five or fewer years, whereas the percentage of individuals who have fished for 10 or fewer years is 40.

Answers to the question of how often individuals fish per month showed that approximately one-half of the respondents fish three or fewer times. Only 10 percent of the respondents fish as often as 15 times per month. Fishing is a recreational activity pursued a few times a month by most of the sample. Fishing is also seasonal; 75 percent of the sample indicated that they tend to fish seasonally. The season most preferred is the summer, secondly in the spring, less in the fall, and almost not at all in the winter.

Turning to the question of why people fish, the majority of the respondents indicated that recreation and relaxation was the primary factor. Catching fish to eat was the second-most important factor, followed by an unexpected low percentage (8) of spending time with family. Approximately nine percent of the sample indicated that all of the factors were important. Of the respondents who indicated that recreation and relaxation were the most important, the most important factor was seen as being out on the water, followed by being away from everyday concerns. All other factors combined were less than 25 percent.

Questions about fishing practices showed, firstly, that most of the respondents practice catch and release. Only 10 percent reported that they almost never release fish once caught. When asked what they tend to do with fish that have been caught and kept, the respondents indicated that they mostly keep them for their family and themselves. Approximately 10 percent of them give the fish to friends and relatives. Only two-fifths of the sample fish for a particular species, the other three-fifths not targeting particular species. When a species is targeted, the most common one is flounder, by far, followed by spot, mackerel, bass, trout, catfish, and drum. Two types of places are the most likely places to fish. One-third of the sample fishes offshore in the open water, whereas another one-third tends to fish in tidal creeks and rivers. A smaller number of the sample fish from piers, in the surf, or in intercoastal waterways. Lastly, individuals tend not to fish alone but rather fish predominantly with family, secondarily with friends. Fishing tends to be a social activity.

The questions in the survey about commercial fishing were relevant to only a small portion of the entire sample. Only 58 individuals indicated that they had worked or been employed in commercial fishing, approximately 11 percent of those who answered the question and six percent of the sample. The majority of those who had worked commercially had been employed as a striker on a shrimp boat or worker on a crab boat. Owner or operator of a shrimp, crab, or other type of boat was second in the type of work experience. While one may think typically of career commercial fishermen, approximately two-thirds of the respondents had worked for four years or less. Only eight individuals had worked for more than 15 years. The picture is thus of workers and a smaller core of boat owners. The majority of all of those workers or owners were in Brunswick County.

Only 12 of the 58 respondents with commercial experience still work in the industry, a figure of slightly more than one percent for the whole sample. When asked for the main reasons for leaving the industry, the most common answer was that it was difficult or impossible to make a living, followed by “burn out”. For the very few still fishing commercially, the answer to the question of what factor might eventually lead to their leaving the fishery was age or retirement. When asked about what factor was the most attractive about commercial fishing, the answer was being outdoors and on the water, followed by being independent and one’s own boss.

Two questions asked about the continued importance of fishing to Brunswick County, recreationally and commercially. Ninety-three percent of the respondents saw recreational fishing as important or very important to the county. That is a large number, again considering that approximately 50 percent of the members of the sample were not fishermen in the county. The number of individuals who saw commercial fishing of importance was lower, but only marginally at 82 percent. Fishing in general seems to be a part of the cultural model of the character of the county.

Discussion of Fishing Survey

As described in the Profile of Brunswick County, commercial fishing has been an economic mainstay for much of the county’s history. The commercial shrimp fishery began in Southport in the 1930s, and menhaden was an important early fishery, both contributing to the county’s ranking in the state as the center for commercial fishing (Maiolo 2004). Despite occasional severe setbacks, World War II and Hurricane Hazel, which destroyed much of the infrastructure for fisheries in 1957, commercial fishing has continued to be important. In 2003, Brunswick ranked fourth among all of the counties of North Carolina in number of commercial fishing licenses, with 880 licenses, following Carteret, Dare, and Onslow Counties. Brunswick was also fourth in the number of fishermen, with 358, and in the number of vessels, with 358 (North Carolina Division of Marine Fisheries 2003). Despite those rankings, Brunswick County ranked 17th among 19 coastal counties. Those statistics indicate that among the Brunswick commercial fishermen, many of them are part-time, moving in and out of fishing seasonally and as economic conditions fluctuate. Maiolo established the same point in his in-depth history of commercial fishing in North Carolina (2004). The part-time nature of commercial fishing is reflective of the changes in the economic base of the county in recent decades, as the importance of commercial fishing has waned, recreational fishing has increased, and the county is undergoing gentrification. The responses to the questionnaire reflect those changes and are best interpreted in the context of change.

As noted earlier, the fact that 42 percent of the individuals in the sample are retired is indicative of the attractiveness of the county for retirees and a consequence of promotion by the county Chamber of Commerce (<http://www.sbichamber.com>). A larger portion of the sample

than expected have lived in the county for five years or less, and only 50 percent of the sample are native to North Carolina. Members of the sample also are middle-aged or older and are relatively well educated. Approximately 50 percent of them have ever fished recreationally in the county, and many of those have fished for the first time in the county within the past few years, i.e., they tend to be newcomers who have only recently begun to fish in Brunswick County. They typically fish only a few times a month, and fishing tends to be seasonal, mostly in the spring and summer. The primary reason for fishing is recreation and relaxation, and being out in the open and out on the water are the most satisfying aspects of the recreation. In recreational fashion, catch and release is typically practiced, and although some species are targeted, in the majority of instances, the individuals just fish, not aiming to catch particular species.

While recreational fishing is increasing, along with population growth and increase in number of retirees, commercial fishing is declining. Only six percent of the sample had ever had any experience in commercial fishing, and most of them are no longer in the industry. Only 12 individuals indicated that they still work in commercial fisheries, less than one percent of the sample. The primary reason for leaving commercial fisheries was the difficulty or impossibility of making a living. As one respondent noted, “My family and I almost starved”.

Despite the increases in recreational fishing and decreases in commercial fishing, the public, as represented by the sample, still see both as important to the future of the county. To see recreational fishing in that light is understandable, given that all of the aspects of gentrification point in that direction. It is more difficult to understand why more than 80 percent of the sample viewed commercial fishing in the same way. It may be that the public sees any coastal county as rich in seafood resources and attributes availability of seafood abundance to local commercial fishing. Another factor might be the visibility of retail seafood distributors, many of whom in Brunswick County are small business operations. Another factor may be simply that the history of the county is founded on commercial fishing, and the continued importance of it is taken for granted. Most likely, multiple factors are involved. The high percentage of support is an interesting finding that requires further consideration.

VI. COMPARISONS AND SUMMARY

McIntosh County, Georgia, and Brunswick County, North Carolina have similar histories in several regards, deriving from the fact that each has been the number one commercial fishing county of the state and that the primary fishery was shrimp. Each county’s identity has been associated with commercial fishing and the way of life that it entailed. Each county has been predominantly rural, with only a few small towns, and tourism was nascent and not a major economic force. The physical geography is similar. The coastal zone is lined with barrier islands, and sizeable sections of each county consisted of marsh or swamp. The US Highway 17, the ‘old’ New York–Miami axis, runs through both counties, dividing the area into coastal, marine orientation to the east and a more sparsely populated, more agricultural area to the west.

Despite the similarities from a historical perspective, there also have been fundamental differences. Commercial fisheries have been more diverse in Brunswick County, including a number based on finfish. Fisheries in Brunswick County, including shrimp, have been of larger scale than those of McIntosh County. The fundamental difference, however, lies in the fact that the basis of the economy in Brunswick County began to change earlier, at least by a decade. Tourism and gentrification began earlier in

Brunswick, setting the county on a vector of development that has wrought fundamental changes, especially to commercial and recreational fishing.

The first wave of changes began with the growth of tourism, due to public relations promotions for beach tourism. The barrier islands in Brunswick County are much more accessible than those in McIntosh, and access to sandy beaches is much easier. With an increase in number of tourists, infrastructure development was necessary, and each island saw the emergence of beachfront cottages and condominiums, motels, and restaurants. The proximity of the mega-tourist Myrtle Beach directly to the south was also a major catalyst for the waterfront economy. Efforts to develop other sources of recreation followed beach tourism, and the solution has been golf courses. As noted, there are almost 40 golf courses in the county, and the number continues to grow. The availability of golf has led not only to attraction of more tourists but the development of a new industry, residential communities. In recent years, the number of residential communities has expanded considerably, drawing more and more retirees to the county. The county's focus on economic growth is now on real estate, both waterfront property and residential communities. Population growth has increased substantially, again disproportionately toward people moving into the county.

The changes in the base economy have marginalized commercial fishing in several ways. One major consequence is alienation of waterfront property. The value of waterfront property has increased to the point that the tax base is prohibitive for fish houses where boats can "tie up," and relatively few are left in the county except for small operations. At the same time, fisheries have become more regulated, in part due to protection of threatened or endangered species, and in part due to resolution of conflict with recreational fishing. With increase in population size and density and with the growth in tourism, recreational fishing has increased, leading to competition and conflict. Regulations have increased operating costs, another factor contributing to the decline of commercial fisheries. The volume of imported fish, especially shrimp, has had a major impact in the past few years, driving down the market value of locally caught fish. Although commercial fisheries remain important to the economy of the county, the relative contribution continues to decline, giving way to recreational fishing geared to attract tourists but especially to the more commercially lucrative real estate development.

The same developments that have transformed Brunswick County are now underway in McIntosh County. They are much more recent, having begun only in the past few years, and they have been on a smaller scale. Infrastructure for tourism has only barely begun. Infrastructure for each barrier island in Brunswick County exceeds the entirety of development for McIntosh County. The more rural nature of the county and the lack of access to sandy beaches will severely limit the growth of tourism, compared to Brunswick County. The avenue open for economic growth and development is gentrification, especially attracting retirees and second-home owners. The lack of other forms of development, the rural nature of the county, serves to attract individuals and families who want to live in undeveloped, pristine areas of natural beauty. McIntosh County has seen the development recently of upscale residential areas, creating a huge increase in the value of land. Golf courses are beginning to appear.

McIntosh County remains comparatively more dependent on commercial fisheries, but gentrification will continue to erode the relative place and importance of commercial fishing. Since shrimp is the major fishery in the county, the impact of imports has been comparatively more critical, diminishing the prospects for making a living in commercial fishing. Shrimpers have begun to turn to new avenues of advertising and marketing, including niche markets, as a way to try to cope with the changes. While commercial fishing is severely impacted by recent shifts in the county's economic base, recreational fishing does not appear to have changed as substantially. Recreational fishing has long been a mainstay of relaxation for residents of the county, and that appears to continue. Commercially based recreational fishing is on a much smaller scale than is the case in Brunswick County, given the disproportionately smaller number of tourists. The recreational growth is likely to be in golf resorts. A front page article in a recent issue of the Darien News (July 13, 2006) was devoted to the emergence of the problem of law enforcement and golf carts. Golf carts have become popular, even in areas where there are no golf courses, leading to traffic problems on local streets and roads. More golf courses can't be far behind.

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VII. REFERENCES CITED

- Bernard, H. Russell. 2005. *Research Methods in Anthropology: Qualitative and Quantitative Approaches*. Walnut Creek, CA: Altamira Press (4th edition).
- Blount, Ben G. 2000. Coastal Refugees: Marginalization of African-Americans in Marine Fisheries of Georgia. *Urban Anthropology* 29(3): 285-313.
- Blount, Ben G. 2004. *Public Perception Concerning Water Use and Planning in Georgia Coastal Counties*. Final Report Submitted to the Coastal Resources Division, Georgia Department of Natural Resources, Brunswick, GA.
- Blount, Ben G. 2006. Culture and Resilience among Shrimpers on the Georgia Coast (USA): Responses to Globalization. *MAST (Maritime Studies)*: 5(1) [in press].
- Blount, Ben G., David Greenawalt, and Eileen Mueller. 2000. *Population Characteristics of the South Atlantic Bight: Demographic Change on the Coasts of South Carolina, Georgia, and Northeast Florida, 1850-1990*. Occasional Paper No. 2, Coastal Anthropology Laboratory, Department of Anthropology. Athens, GA: University of Georgia.
- Boatright, Susan R. and Douglas C. Bachtel, Eds. 2000. *The Georgia County Guide*. Athens, GA: Center for Agribusiness and Economic Development (19th edition).
- Burgess, Christine C., and Alan J. Bianchi. 2004. *An Economic Profile Analysis of the Commercial Fishing Industry of North Carolina Including Profiles for State-Managed Species*. Morehead City, NC: North Carolina Department of Environmental and Natural Resources.
- Brunswick North Carolina Chamber of Commerce. 2006. Economic Development. <http://www.sbichamber.com>.
- Chevront, Brian. 2004. Understanding the Value and Importance of North Carolina's Marine Fisheries: A Workshop in Socioeconomics. New Bern, NC: North Carolina Division of Marine Fisheries.
- Cooley, D. Robert. 2003. Cultural Models and Fishing Knowledge: A Case Study of Commercial Blue Crab Fishermen in Georgia, USA. Unpublished Doctoral Dissertation, Athens, GA: University of Georgia.
- Dillman, D. A. 1978. *Mail and Telephone Surveys: The Total Design Method*. New York: John Wiley.
- Georgia County Guide. 2005. College of Agriculture and Environmental Sciences. Athens, GA: Center for Agribusiness and Economic Development. <http://www.agecon.uga.edu/~countyguide/guideinfo.html>
- Johnson, Jeffrey, and Michael Orbach. 1996. *Effort Management in North Carolina Fisheries: A Total Systems Approach*. Raleigh, NC: North Carolina Sea Grant.
- Maiolo, John. 2004. *Hard Times and a Nickel a Bucket: Struggle and Survival in North*

- Carolina's Shrimp Industry*. Chapel Hill, NC: Chapel Hill Press.
- McIntosh, Pamela G. 1996. Management Alternatives for the Georgia Blue Crab Fishery. Unpublished Masters Thesis, Nicholas School of the Environment, Durham, NC: Duke University.
- North Carolina Division of Marine Fisheries. 2003. Annual Fisheries Bulletin. Morehead City, NC: License and Statistics Section.
- North Carolina Division of Marine Fisheries. 2006. Annual Fisheries Bulletin. Morehead City, NC: License and Statistics Section.
- North Carolina Division of Marine Fisheries. 2006. Fish Dealer Report (April 2006). Morehead City, NC: License and Statistics Section.
- Orbach, Michael, Grant D. Murray, and Michael Lewis. 1997. Georgia Blue Crab Management Plan. Draft for Comment, Compiled for the Georgia Department of Natural Resources and the Blue Crab Issues Sub-committee, Coastal Fisheries Advisory Committee. Brunswick, GA: Department of Natural Resources, Coastal Resources Division.
- South Atlantic Fishery Management Council. 1998. Comprehensive Amendment Addressing Sustainable Fishery Act Definitions and Other Required Provisions in Fishery Management Plans of the South Atlantic Region. Charleston, SC: SAFMC.
- Stewart, Mart A. 1996. *“What Nature Suffers to Groe”*: Life, Labor, and Landscape on the Georgia Coast, 1680-1820. Athens, GA: University of Georgia Press.
- Survey Sampling, Inc. 1998. Random Digit Telephone Sampling Methodology. Fairfield, Connecticut.
- Pollock, K. H., C. M. Jones, and T. L. Brown. 1994. Angler Survey Methods and their Application in Fisheries Management. American Fisheries Society Special Publication 25. Bethesda, MD: American Fisheries Society.