

# A Social and Economic Profile of Ocean Fishing Piers in North Carolina

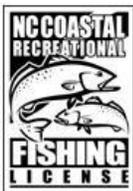
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## **INTRODUCTION**

Recreational fishing in North Carolina is an important economic driver for coastal economies. Often overlooked, ocean fishing piers are responsible for a sizable part of this economic impact. For decades, ocean fishing piers have served as an integral part of coastal communities and economies in North Carolina. They provide ample opportunities for fishing and recreation to local citizens and serve as an important draw for tourist and other visitors to beach communities. Coast-wide, the businesses operating these fishing piers stimulate considerable economic impacts directly through their operations as well as indirectly in other related businesses such as tackle shops, gas stations, restaurants, hotels, and rental properties.

The oldest North Carolina ocean fishing pier, Kure Beach Pier, was built in 1923 and is still in operation today (Baird 2011). By 1980, there were 36 piers coast-wide, with the majority of the piers being built in the 1950's and 1960's (Baird 2011) (North Carolina Fishing Pier Society 2012). Since the 1980's, the number of ocean piers has steadily decreased, mostly due to storm damage, increases in real-estate values and increasing business costs. In 2011, only 21 piers remained operational (Appendix I). Nevertheless, interest in ocean pier fishing has continued to be very strong, drawing thousands of anglers and tourists to the coast each year.

While most of the anglers in the state must possess a Coastal Recreational Fishing License (CRFL), ocean pier anglers are not required to do so as all ocean piers have purchased a blanket CRFL which covers the licensing requirement for anglers using their pier. The creation of the CRFL in 2007 resulted in increased attention to the economic impact of recreational fishing on the state's economy. The North Carolina Division of Marine Fisheries (NCDMF) conducted a socioeconomic survey of recreational anglers that delivered an initial estimate of the economic impact of CRFL holding saltwater anglers. Individuals who only fish off of ocean piers are exempt from having to purchase CRFLs and were therefore possibly left out of the sampling for this economic impact estimate. Additionally, neither the state of North Carolina nor the National Marine Fisheries Service has specifically assessed the economic impact of ocean fishing piers or completed a socioeconomic profile of ocean fishing pier users. This study intends to provide information to help fill both of these information gaps, thereby providing useful data for future fishery management plans and policy actions.

## **STUDY OBJECTIVES**

The specific objectives of this study are:

1. To collect information on business operation and perceptions of ocean pier operators;
2. To describe the demographic aspects of ocean pier anglers in North Carolina;
3. To collect expenditure information from these anglers to develop estimates of the economic impacts associated with their fishing activities; and
4. To assess perceptions of fishery regulations, conflict, and issues relevant to the future of fisheries management.

## METHODS

### RECRUITMENT AND PARTICIPATION

#### Pier Anglers

As mentioned, most recreational anglers in North Carolina are required to obtain a license before going fishing. The main exceptions to this requirement include blanket CRFL licenses that are obtained by for-hire vessel or ocean pier business operators to cover all anglers utilizing their businesses as well as license exemptions for anglers under 16. As a result, a sizeable segment of ocean pier anglers are not required to obtain a license and therefore NCDMF may not have contact information for many of these anglers. All prior NCDMF socioeconomic surveys had been conducted using a pool of participants chosen from a license database. In this case, this contact information was not available, therefore it was deemed necessary to take a new approach.

Initially, in the fall of 2010, survey respondents were solicited through a flier handed out to pier anglers that requested the angler take a survey online or reply via pre-paid postage with their contact information. A NCDMF representative would then contact them via telephone to conduct the survey. Due to a very low response rate (approximately 2.5%) as well as concerns about bias in the solicitation method, it was decided that the best approach would be to perform onsite intercept surveys at ocean fishing piers.

Ocean fishing piers are required to obtain an Ocean Pier License (\$4/ft) and may elect to obtain the blanket CRFL Pier License (\$0.50/ft). In 2011, NCDMF license records indicated that there were 21 ocean pier sites in operation, all of which also had obtained a blanket CRFL Pier License. For sampling purposes, the pier sites were broken down into 3 regions; the Northern Region (Kitty Hawk to Hatteras), the Central Region (Atlantic Beach to Topsail Island) and the Southern Region (Wrightsville Beach to Sunset Beach). Regions and sampling sites within each region were randomly selected and sampled by NCDMF representatives. Sites selected on days of extreme inclement weather were skipped due to safety concerns for the interviewer.

A goal of 400 completed surveys was considered to be a feasible target that balanced the need for an adequate sample size with the increases that are necessary for reducing the confidence intervals of the survey results. Average survey times were between 10 and 15 minutes per survey. Anglers under the age of 18 were not included in the study. NCDMF interviewers completed 421 interviews of ocean pier anglers for the study. This sample size provides confidence intervals of +/- 5% at a 95% confidence level assuming that the pier angler total population is less than the 450,000 licensed saltwater anglers state-wide. A total of 141 intercept surveys were completed in the Northern Region, 158 in the Central Region and 122 in the Southern Region. Most anglers (88%) agreed to be interviewed; however, 52 anglers refused, making for an overall refusal rate of 12% for the angler survey.

## **Pier Operators**

Pier operators were also surveyed for business operation expenses, perceptions and challenges faced in operating an ocean fishing pier. Interviews were conducted on-site with pier operators. All 21 ocean pier sites were contacted throughout coastal North Carolina. At least five attempts were made to reach a pier operator to inquire whether or not they were willing to participate in the survey. If these attempts were unsuccessful, it was considered a "passive refusal". For those that agreed to participate in the study, a meeting time was arranged that was convenient for the operator to take the survey. While the time spent on the surveys varied, each survey took approximately 30 minutes to complete. Of the 21 ocean fishing pier sites, 11 agreed to participate in the survey, six passively refused to participate in the survey, three directly refused to participate in the survey, and one was unavailable to be surveyed due to an early closure resulting from hurricane damage.

## **SURVEY INSTRUMENT**

The ocean pier angler and operator surveys used in this study can be found in Appendix II and III. Data collected from these surveys included questions concerning:

### *Angler survey:*

- (i) Socioeconomic and demographic information
- (i) Fishing activity
- (ii) Angler perceptions
- (iii) User group conflicts
- (iv) Fishing trip expenditures

### *Operator survey:*

- (i) Pier history and ownership structure
- (ii) Revenue and expenses
- (iii) Employment information
- (iv) Business perceptions

Ocean pier anglers were surveyed in June and July of 2011. Pier operators were surveyed throughout the summer and fall of 2011, depending on availability and scheduling. All angler responses were compiled in a Microsoft Excel database. Quantitative operator responses were entered into a Microsoft Excel database while qualitative responses were compiled in a Microsoft Word document. The data were analyzed using functions within Microsoft Excel as well as the Statistical Package for the Social Sciences software (SPSS release 12.0, 2003). Final data verification, assigning labels to variables, and additional variable calculations were completed along with all data analyses. The primary analyses in this report consist of frequency and simple univariate statistics.

## RESULTS

### PIER ANGLERS

#### Demographics

Demographic information was asked of each angler respondent (Table 1). Anglers interviewed were predominantly white (87%) and male (85%). Ages ranged from 18 to 87 years, with a mean age of 48 years. Most respondents (94%) had at least a high school level education and 39% had completed college. The majority of respondents (61%) had annual household incomes of greater than \$50,000 and 23% had annual household incomes greater than \$100,000. The most common classification of employment was private business (40%) followed by retired (27%) and government (10%). Respondents that indicated "Other" employment most commonly classified themselves as homemakers or students.

Table 1. Demographic information of survey respondents.

| Category          | Frequency | Percent | Category                | Frequency | Percent |
|-------------------|-----------|---------|-------------------------|-----------|---------|
| <u>Gender</u>     |           |         | <u>Residence</u>        |           |         |
| Male              | 357       | 85%     | North Carolina          | 266       | 63%     |
| Female            | 61        | 15%     | Other                   | 154       | 37%     |
| <u>Race</u>       |           |         | <u>Household Income</u> |           |         |
| White             | 359       | 87%     | <\$15,000               | 18        | 5%      |
| Black             | 30        | 7%      | \$15,001 to \$30,000    | 46        | 13%     |
| Latino            | 16        | 4%      | \$30,001 to \$50,000    | 78        | 21%     |
| Asian             | 3         | <1%     | \$50,001 to \$75,000    | 73        | 20%     |
| Mixed             | 3         | <1%     | \$75,001 to \$100,000   | 66        | 18%     |
| Native American   | 2         | <1%     | More Than \$100,000     | 83        | 23%     |
| <u>Employment</u> |           |         | <u>Education</u>        |           |         |
| Private Business  | 164       | 40%     | Less than High School   | 23        | 6%      |
| Retired           | 113       | 27%     | High School             | 134       | 32%     |
| Government        | 41        | 10%     | Some College            | 96        | 23%     |
| Healthcare        | 29        | 7%      | College or More         | 161       | 39%     |
| Other             | 23        | 6%      | <u>Age</u>              |           |         |
| Education         | 14        | 3%      | 18 to 29 Years          | 61        | 15%     |
| Military          | 13        | 3%      | 30 to 49 Years          | 148       | 36%     |
| Unemployed        | 11        | 3%      | 50 to 69 Years          | 178       | 43%     |
| Non Profit        | 6         | 1%      | 70 Years or More        | 29        | 6%      |

Almost two thirds (63%) of the survey participants were residents of North Carolina. These respondents represented 64 out of the 100 counties throughout the state. The most common county of residence was Brunswick (11%), followed by Wake (6%), Wayne (6%), Johnston (5%), Dare (5%), and Onslow (4%). These numbers are somewhat different than those found in the CRFL sales report for 2011, where the most common county of residence was Wake, followed by New Hanover, Onslow, Carteret, Brunswick, and Craven. The respondents who were out-of-state residents represented 24 other states and the country of Canada. The most common states of residence for non-residents were Virginia (36%), Ohio (12%), Pennsylvania (12%), West Virginia (6%), Maryland (5%) and Kentucky (4%).

## Fishing Activity

Anglers indicated an average of 24 years of saltwater fishing experience. When compared to their age, these anglers had been saltwater fishing an average of 47% percent of their life. Fourteen percent indicated that they fish at least one other region of the North Carolina coast and six percent said that they fished all regions of the coast. The average number of days spent ocean pier fishing per year was 30 and the average time spent fishing each day was 7.7 hours. Despite not being required for fishing on ocean piers, almost two thirds of anglers surveyed (65%) possessed a CRFL. Anglers traveled an average of 242 miles round trip and usually had two other people in their group. A majority (57%) of respondents indicated that the primary purpose of their trip to the coast was to go pier fishing.

June (69%) and July (69%) were the most common months that survey participants indicated that they go fishing off of ocean piers (Figure 1). Other popular months indicated by survey participants were August (50%), September (45%), May (44%) and October (41%). Included in these figures are the 5% of respondents that indicated fishing off of ocean piers year-round.

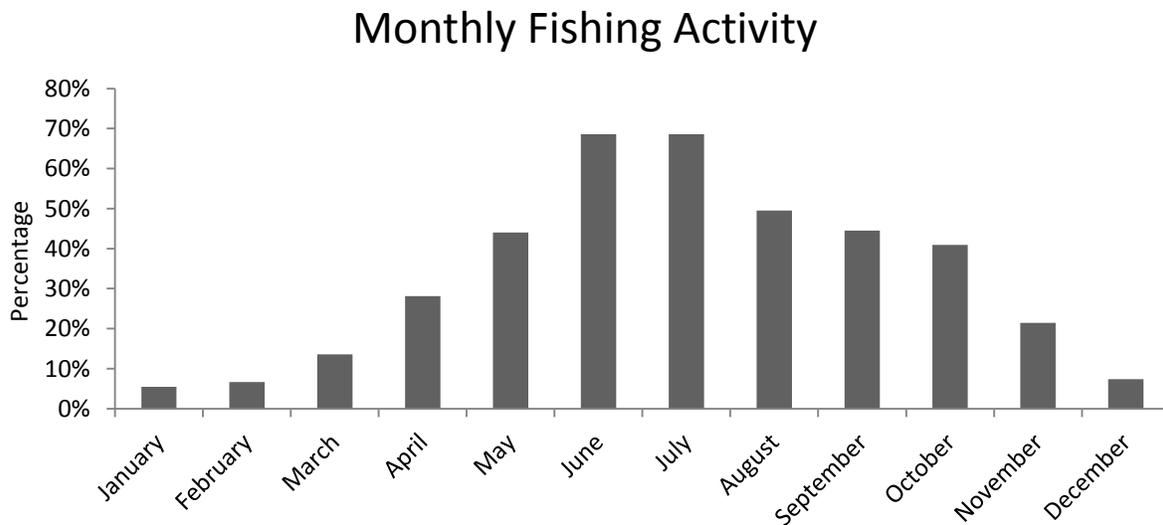


Figure 1. Monthly fishing activity of respondents.

## Targeted Species

The species targeted by respondents are listed in Table 2. The most common response was "all species" (47%). Some anglers proceeded to mention specific species after listing "all" while some simply did not have any target species in mind. The most common specific target species mentioned was spot (27%) followed by bluefish (23%), flounder (21%), Spanish mackerel (18%), sea mullet (15%) and Atlantic croaker (11%). Other species commonly mentioned were king mackerel, speckled trout, red drum, cobia, and pompano.

Table 2. Species targeted by respondents.

| Species              | Percent Targeted | Species (continued)   | Percent Targeted |
|----------------------|------------------|-----------------------|------------------|
| All                  | 47%              | Pompano               | 5%               |
| Spot                 | 27%              | Sharks                | 3%               |
| Bluefish             | 23%              | Black Drum            | 3%               |
| Flounder             | 21%              | Striped Bass          | 1%               |
| Spanish Mackerel     | 18%              | Sheepshead            | 1%               |
| Sea Mullet (Whiting) | 15%              | Tarpon                | 1%               |
| Atlantic Croaker     | 11%              | Gray Trout (Weakfish) | 1%               |
| King Mackerel        | 10%              | Pigfish               | <1%              |
| Speckled Trout       | 9%               | Jack Crevalle         | <1%              |
| Red Drum             | 8%               | Triggerfish           | <1%              |
| Cobia                | 5%               | Blue Crab             | <1%              |

## Perceptions

Anglers were asked to respond to a series of questions designed to elicit their opinions on issues that may affect ocean pier fishing (Table 3). Each participant rated each issue as "not important", "somewhat important", "very important" or "extremely important" in relation to ocean pier fishing. The most important issue that pier anglers felt affect ocean pier fishing was "losing fishing piers", followed by "water quality/pollution" and "finding enough time to go fishing". Least important was "competition with commercial fishermen" and "competition with other recreational fishermen".

Table 3. Issues of concern of angler respondents.

| Rank | Issue   |
|------|---|
| 1    | Losing fishing piers                                  |
| 2    | Water quality/pollution                               |
| 3    | Finding enough time to go fishing                     |
| 4    | Overfishing/too few fish                              |
| 5    | Access Issues (lack of piers, parking, limited hours) |
| 6    | Fuel prices   |
| 7    | Rules and regulations                                 |
| 8    | Weather   |
| 9    | Bag/size limits                                       |
| 10   | Competition with commercial fishermen                 |
| 11   | Competition with other recreational fishermen         |

### User Group Conflicts

Anglers were also asked if they had had any negative experiences with other user groups while ocean pier fishing within the last year. The overall majority of pier anglers (77%) did not report any negative experiences with other user groups. Most of those that did have a negative experience reported a conflict with other beach users (17%). Most commonly mentioned were surfers being too close to the pier. Eight percent reported a conflict with other recreational anglers and four percent reported a conflict with commercial fishermen. Very few (.02%) reported having a negative experience with state law enforcement officers.

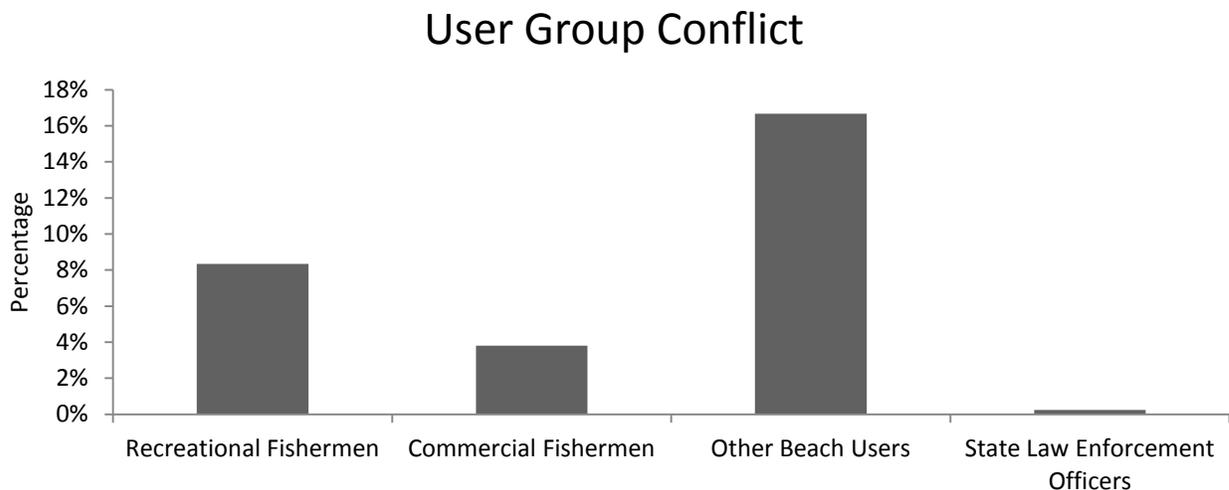


Figure 2. Percentage of respondents reporting conflicts with other user groups and state enforcement officers.

## Trip Expenditures

Survey respondents were asked to estimate their per-trip expenditures. Table 4 illustrates the average and median per-trip expenses incurred by ocean pier anglers as well as reported trip expenditures from NCDMF's 2008 survey of CRFL holders (Crosson 2010). Trip expenditures for pier admission and fishing tackle were not obtained in the 2008 survey. Average and median trip expenses for ocean pier anglers were considerably lower for bait, ice, and gasoline. "Other" expenses were also lower for ocean pier anglers on average, and all modes of fishing had a median "other" expense of \$0. Most ocean pier anglers did not indicate any other expenses, however the most common "other" expense was fishing equipment rental. Average expenses for groceries and lodging were slightly higher for ocean pier anglers, but median values were the same across all modes. When added together, the average ocean pier fishing trip expense was \$117.04 and the median trip expense was \$41.15. These values are lower than the average and median expenses of inshore and offshore anglers. On a nominal basis (not adjusted for inflation), the average trip expense was 19% higher for inshore anglers and 80% higher for offshore anglers. Median trip expenditures were 41% higher for inshore anglers and 104% higher for offshore anglers. Ocean pier anglers reported taking the highest number of fishing trips per year on average, however inshore CRFL holders reported a higher median number of fishing trips annually.

Table 4. Average and estimated ocean pier fishing expenditures of respondents (2011) compared to survey of CRFL license holders (2008).

| Trip Expenses  | Ocean Pier     |         | Inshore        |         | Offshore       |         |
|----------------|----------------|---------|----------------|---------|----------------|---------|
|                | Average (2011) | Median  | Average (2008) | Median  | Average (2008) | Median  |
| Pier admission | \$10.62        | \$10.00 | -              | -       | -              | -       |
| Bait           | \$7.03         | \$5.00  | \$12.00        | \$10.00 | \$20.00        | \$10.00 |
| Tackle         | \$8.74         | \$5.00  | -              | -       | -              | -       |
| Groceries      | \$22.10        | \$10.00 | \$20.00        | \$10.00 | \$20.00        | \$10.00 |
| Ice            | \$2.05         | \$1.15  | \$5.00         | \$3.00  | \$8.00         | \$4.00  |
| Gasoline       | \$25.98        | \$10.00 | \$61.00        | \$35.00 | \$123.00       | \$60.00 |
| Lodging        | \$40.27        | \$0     | \$38.00        | \$0     | \$40.00        | \$0     |
| Other expenses | \$0.26         | \$0     | \$4.00         | \$0     | \$3.00         | \$0     |
| Trip total     | \$117.04       | \$41.15 | \$139.00       | \$58.00 | \$211.00       | \$84.00 |
| Trips per year | 30.39          | 7       | 26.8           | 15      | 4.6            | 1       |

## **PIER OPERATORS**

### **Business Profile**

The ocean piers included in the operator survey had been in operation between 48 and 88 years with an average of 58.8 years. Some piers were open year round, but all were open at least April through November. Most piers were privately owned by a single owner and employed an average of seven part-time and two full-time workers. Part-time employees worked an average of 29 hours per week and full-time employees worked an average of 46 hours per week. The operation of the fishing pier was the primary source of income for the majority of pier operators, however less than half indicated that it was their only source of income. Revenue for the businesses included the sale of bait, tackle, merchandise, food and beverages, video games and entertainment, lodging and campgrounds, parking, and pier admission (annual and daily).

### **Perceptions and Business Challenges**

Ocean pier operators were asked a variety of questions on their perceptions of various aspects of their business. When asked about the most important fish species that inspire anglers to visit their pier, the most commonly mentioned species were spot and sea mullet, followed by bluefish, flounder and king mackerel. Other species mentioned were Spanish mackerel, cobia, pompano, spotted sea trout, red drum, black drum, Atlantic croaker, sharks, tarpon and pinfish. Other than fishing, operators felt that camaraderie, relaxation, affordability, opportunity to be outdoors and a family atmosphere were the reasons that anglers visited their pier. Most operators were confident that their pier would be in operation in 10 years, however this was often accompanied by the caveat of the pier not being destroyed by a hurricane in that timeframe. The majority of pier operators were unsure or did not think that they would be in charge of operating their pier in 10 years. Reasons given for this uncertainty included retirement, lease term expiration and a diminishing business environment.

Operators were asked to respond to a similar series of questions as those asked of anglers, which were designed to elicit their opinions on issues that may affect ocean pier fishing (Table 5). Each participant rated each issue as "not important", "somewhat important", "very important" or "extremely important" in relation to ocean pier fishing. The most important issue that pier operators felt affect pier fishing was "weather", followed by "overfishing/too few fish" and "losing fishing piers". Least important were "access issues" and "bag/size limits". "Weather" was ranked in such high regard, as many pier owners expressed concern over possible reductions in angler attendance and pier structural damage due to hurricanes.

Table 5. Issues of concern of ocean pier operator respondents.

| Rank | Issue   |
|------|---|
| 1    | Weather   |
| 2    | Overfishing/too few fish                              |
| 3    | Losing fishing piers                                  |
| 4    | Fuel prices   |
| 5    | Water quality/pollution                               |
| 6    | Competition with commercial fishermen                 |
| 7    | Rules and regulations                                 |
| 8    | Access Issues (lack of piers, parking, limited hours) |
| 9    | Bag/size limits                                       |

When operators were asked about important issues and challenges facing their business, answers varied considerably. The most commonly identified challenges involved maintaining the pier. This included general yearly upkeep as well as repairs that may be needed due to hurricane or storm damage. Another commonly expressed challenge was dealing with building permits should they want to expand or rebuild their pier. There was also concern, especially in the northern region, in regards to competition from Jeanette's Pier, which is state-run. Several pier operators in the southern region expressed concern over commercial fishing activities negatively affecting fish populations near their pier. Other challenges mentioned included economic uncertainty, fishing regulations (both over and under restrictive), conflicts with surfers, and the cost of licensing.

The North Carolina Aquarium has plans to operate three ocean piers along the coast. The pier on the Outer Banks, Jeanette's Pier, is currently operational with plans underway to build one pier in Emerald Isle and one pier in Carolina Beach. When pier operators were asked their opinion of these state-run piers, answers varied from supportive to highly opposed. Approximately three quarters of the survey participants relayed a negative opinion of these state-run piers. Those that were in favor indicated that they thought their pier served a different clientele and thought the aquarium piers would encourage the education of children as well as spark interest in fishing. Those that exhibited a negative opinion stated that they felt the competition from state-run piers was unfair due to the state-run piers not requiring a profit to remain open and operational. There was also concern over the perceived excessive cost of rebuilding Jeanette's Pier as well as the perception that the state was not held to the same stringent permitting standard as required of private ocean pier businesses.

### **Economic Impact**

The estimated economic impact of ocean fishing pier trips is shown in Table 6. This figure is based on IMPLAN Version 3 software, which uses an input-output model to estimate how money is spent and re-spent until it leaves the North Carolina economy, thereby estimating a total economic impact. The total economic impact includes direct, indirect and induced effects. In addition to the direct economic impact of angler expenditures, there are indirect and induced impacts that occur as the businesses that the anglers patronize as well as the employees of these businesses spend and re-spend this money in the state economy.

The total estimated economic impact to the state economy of ocean pier fishing trips is approximately \$151.7 million. This fishing activity supported 1,746 jobs and led to over \$48 million in labor income. According to the model, the industries most affected were lodging, amusement and recreation, food and beverage, gasoline, real estate, sporting goods, wholesale trade and commercial fishing (bait).

This estimate is based on the total number of ocean pier trips taken in 2010 and the average expenditures per fishing trip obtained from the survey. The Marine Recreational Information Program (MRIP) estimates coastal recreational fishing effort throughout the year in North Carolina. According to MRIP data, in 2010 anglers took 1,186,293 ocean pier fishing trips. This led to \$138,855,638 in estimated total trip expenditures.

Table 6. Estimated economic impact of ocean pier fishing trips.

| Impact Type     | Output        | Employment | Labor Income | Total Value Added |
|-----------------|---------------|------------|--------------|-------------------|
| Direct Impact   | \$86,622,360  | 1,225      | \$26,809,832 | \$47,034,112      |
| Indirect Impact | \$33,252,636  | 254        | \$11,166,410 | \$18,125,568      |
| Induced Impact  | \$31,831,744  | 267        | \$10,061,921 | \$18,534,976      |
| Total Impact    | \$151,706,736 | 1,746      | \$48,038,164 | \$83,694,592      |

## DISCUSSION

### Study Results and Methodology

The economic impact estimate does not include the sale of many common recreational fishing related durable goods, such as rods, reels, coolers and automobiles. This likely leads to an underestimate of the total economic impact of ocean fishing piers, however many durable goods tend to have multiple uses beyond pier angling and have varying useable life-spans. This makes it difficult to estimate their value on a per trip or even annual basis, therefore these expenses were left out of this impact estimate. Also left out of the estimate were pier operation expenses and revenue, as the sample size of pier operator responses was too small to confidently create a model. While left out, many of these expenses are partially accounted for by revenue generated during angler purchases made at the fishing pier (pier admission, groceries, bait, etc).

There is likely a seasonal bias present in the data due to the months that sampling occurred, although the survey results are in-line with reasonable expectations. The most common months anglers indicated fishing off of ocean piers were June and July followed by August, September, May, and October. MRIP recreational fishing effort data is divided into 2-month blocks or "waves". For 2010, MRIP surveys indicated that the most pier fishing effort occurred in wave 3 (May and June), followed by wave 4 (July and August) and wave 5 (September and October), thereby closely mirroring the results of the pier angler survey. Furthermore, preliminary data provided by the NCDMF Recreational Statistics Program indicates that according to pier admission log books, the most ocean pier fishing trips in 2011 occurred in July followed by June, October, September, August and May. Additionally, the top five species that anglers indicated targeting off of ocean piers were spot, bluefish, flounder, Spanish mackerel and sea mullet. This closely matches the species that pier operators felt were most important to their business, which were spot and sea mullet, followed by bluefish, flounder and king mackerel.

The average trip expenditure estimates based on the survey are also in-line with other recreational fishing economic impact studies that have been conducted in North Carolina. This study indicates that pier fishermen reported overall lower average trip costs (\$117) than those reported in an earlier NCDMF study of CFRL license holders fishing inshore (\$139) and offshore (\$211) (Crosson 2010). Many inshore trips and all offshore trips require additional expenses associated with boating, such as boat fuel and oil, therefore total trip expenditures for these modes would be expected to be higher on average. Additionally, the average trip cost for ocean pier anglers falls between estimates generated for North Carolina shore based anglers reported in a study published by Gentner and Steinback in 2008. Gentner and Steinback (2008) calculated separate trip costs for resident and non-resident anglers. State resident shore based anglers had an average trip cost of \$53.99 while non-resident anglers spent an average of \$177.89 per trip. Both state resident and non-resident anglers are included in this study of ocean pier anglers, therefore it can be expected that the average trip cost estimates would fall between those identified for residents and non-residents.

### Other Economic Impact Estimates

As stated, the economic impact of ocean pier fishing trips is \$151.7 million based on the estimated number of ocean pier fishing trips taken in 2010. While there have not been studies conducted specifically estimating the economic impact of fishing piers, the studies previously listed have estimated the economic impact of recreational fishing trips in North Carolina.

Gentner and Steinbeck (2008) reported an overall economic impact of approximately \$947.1 million for coastal recreational fishing trips in North Carolina based on the number of trips taken in 2006. Within this estimate, for-hire trips accounted for \$115.1 million, private or rental vessel trips accounted for \$143.3 million and shore based trips accounted for \$688.7 million. When trip and durable impacts were combined, the reported economic impact (output) of coastal recreational fishing in North Carolina was estimated to be \$2.5 billion (Gentner and Steinbeck 2008). This compares to the NCDMF study of CRFL holders which reported an estimated total economic impact of coastal recreational fishing trips to be \$1.6 billion based on the number of recreational trips taken in 2008 (Crosson 2010).

## **Perceptions and Angling Activity**

When asked about issues that affect ocean pier fishing, pier anglers and operators seemed to agree that overfishing and losing fishing piers were of great concern. This reflects sentiments that were often relayed during interviews of both groups over the loss of several ocean fishing piers throughout the coast. Since the 1980's, North Carolina has lost 42% of its ocean fishing pier sites. Furthermore, anglers tended to exhibit site fidelity to a pier or region, which was often thought of as their "home pier" or "home region". This view of angling behavior was expressed by several pier operators as well as demonstrated in angler survey responses where only 14% of anglers indicated pier fishing outside of the region where they were surveyed. Overfishing was of great concern to both parties, as it was often expressed that recent runs of certain commonly targeted species were not as strong as they had been historically. The most common species mentioned was spot, where anglers often said that both size and quantity have diminished. On the other end of the spectrum, bag limits and size limits were not a major concern of either anglers or operators. This is likely a result of very few restrictive regulations in place for several popularly targeted species such as spot, bluefish, sea mullet and Atlantic croaker.

## **Comparing Demographics**

When compared with the results reported by Crosson (2010), it appears that there are slight differences in demographics of pier anglers and CRLF holders (Table 7). Pier anglers were represented by a higher percentage of females and racial minorities. A higher percentage of ocean pier angler respondents had a high school education or less and the percentage that had a college degree was almost the same. A higher percentage of pier anglers reported household incomes of \$50,000 or less while the percentage of anglers with household incomes greater than \$100,000 were roughly the same. The average age of respondents was almost the same between studies; however, the respondents of the CRFL holder survey had an average of three more years of fishing experience (Crosson 2010).

The demographics of the pier anglers also varied from the overall demographics of the state of North Carolina (Table 7). Based on a comparison with results from the 2010 U.S. Census conducted by the U.S. Census Bureau, a substantially higher percentage of males were present among pier anglers when compared with the state population. A lower percentage of racial minorities was present in the survey respondents than the state population. A greater percentage of pier anglers had a high school education, however the percent that had some college education and at least a college degree was very similar. Pier anglers tended to be older than the overall state population, however the percentage of respondents under 29 years of age and 70 years or older were similar to that of the state. Pier anglers represented a much lower percentage of households making \$15,000 or less and a much higher percentage of households making more than \$75,000.

Table 7. Demographic information of ocean pier fishing survey respondents compared to CRFL survey respondents<sup>1</sup> and the general population of North Carolina<sup>2</sup>.

| Gender                | Pier Survey | CRFL Survey | State Population | Race                  | Pier Survey | CRFL Survey | State Population |
|-----------------------|-------------|-------------|------------------|-----------------------|-------------|-------------|------------------|
| Male                  | 86%         | 91%         | 49%              | White                 | 87%         | 92%         | 65%              |
| Female                | 14%         | 9%          | 51%              | Black                 | 7%          | 3%          | 22%              |
|                       |             |             |                  | Latino                | 4%          | 1%          | 8%               |
|                       |             |             |                  | Asian                 | <1%         | <1%         | 2%               |
|                       |             |             |                  | Native American       | <1%         | 2%          | 1%               |
|                       |             |             |                  | Mixed                 | <1%         | <1%         | 2%               |
| Education             | Pier Survey | CRFL Survey | State Population | Income                | Pier Survey | CRFL Survey | State Population |
| Less than High School | 9%          | -           | 16%*             | <\$15,000             | 5%          | 2%          | 15%              |
| High School           | 32%         | 28%**       | 28%*             | \$15,001 to \$30,000  | -           | -           | -                |
| Some College          | 22%         | 32%         | 21%*             | \$30,001 to \$50,000  | 34%****     | 30%****     | 39%*****         |
| College or More       | 37%         | 40%         | 35%*             | \$50,001 to \$75,000  | 20%         | 24%         | 19%              |
|                       |             |             |                  | \$75,001 to \$100,000 | 18%         | 19%         | 11%              |
|                       |             |             |                  | More Than \$100,000   | 23%         | 25%         | 16%              |
| Age                   | Pier Survey | CRFL Survey | State Population |                       |             |             |                  |
| 18 to 29 Years        | 15%         | -           | 14%***           |                       |             |             |                  |
| 30 to 49 Years        | 36%         | -           | 30%              |                       |             |             |                  |
| 50 to 69 Years        | 43%         | -           | 23%              |                       |             |             |                  |
| 70 Years or More      | 6%          | -           | 9%               |                       |             |             |                  |
| Median Age            | 48 years    | -           | 37 years         |                       |             |             |                  |

\*of population 25 years of age and older

\*\*"Less than High School" and "High School" combined

\*\*\*20 to 29 years of age

\*\*\*\*income ranges from \$15,001 to \$50,000 were combined

The larger representation of higher income households suggests that many pier anglers at times preferred ocean pier fishing even though they may be able to afford other, more traditionally expensive modes of fishing such as using a boat or hiring a fishing guide. While anecdotal and unrecorded in the survey, several anglers did indicate that they enjoy the convenience and family atmosphere that many fishing piers offered. Furthermore, it was noted that ocean piers offer anglers a stable platform from which to fish Atlantic Ocean waters without having to worry about themselves or someone in their party suffering from motion sickness ("sea-sickness"). The representation of higher income households is also a reflection of the high percentage of anglers that had traveled to the coast and were able to afford related expenditures such as motel rooms or vacation rentals and meals at local restaurants. This is reflected in the survey results, as 37% of total respondents were not residents of North Carolina and 66% of total respondents were not residents of coastal counties in North Carolina.

<sup>1</sup> (Crosson 2010)

<sup>2</sup>based on results of the US Census Bureau's 2010 US Census.

## **CONCLUSIONS**

Several ocean pier operators indicated that they are facing or may face significant headwinds in regard to the long-term operation of their businesses. Most felt that they anticipate being able to continue to operate for at least the next decade, however a catastrophic hurricane that severely damages or destroys their pier and the surrounding community may greatly jeopardize their business operations. It was indicated that a more lenient permitting process, even if temporary, would greatly help owners and operators rebuild and expand. Continued preservation and expansion of coastal fish stocks is also vital to the long term sustainability of ocean pier businesses.

The estimated \$151.7 million economic impact that can be attributed to ocean fishing piers is a sizable and noteworthy contribution to the state economy of North Carolina. These impacts are largely felt in coastal communities, which is particularly important during a time when other economic engines such as real estate and development have slowed. With the majority of respondents indicating that the sole purpose of their trip to the coast was to go pier fishing, it is clear that these fishing sites represent an important draw to coastal communities and serve as popular sources of recreation for anglers of all ages and backgrounds.

## REFERENCES

- Baird, Al. 2011. *North Carolina's Ocean Fishing Piers: From Kitty Hawk to Sunset Beach*. Charleston, SC: The History Press.
- Crosson, Scott. 2010. *A Social and Economic Survey of Recreational Saltwater Anglers in North Carolina*. North Carolina Department of Environment and Natural Resources, Division of Marine Fisheries.
- Gentner, Brad and Scott Steinback. 2008. *The Economic Contribution of Marine Angler Expenditures in the United States, 2006*. United States Department of Commerce, National Oceanic and Atmospheric Administration Technical Memorandum NMFS-F/SPO-94.
- North Carolina Fishing Pier Society. 2012. *Home Page*. Accessed January 25, 2012. <http://www.ncfps.com>
- U.S. Census Bureau. 2010. *North Carolina Quickfacts*. Accessed January 25, 2012. <http://quickfacts.census.gov/qfd/states/370001k.html>

# APPENDIX I- NORTH CAROLINA OCEAN FISHING PIER LOCATIONS, 2011 (NCDMF GIS PROGRAM)



**APPENDIX II- OCEAN PIER ANGLER SURVEY**

**Pier Name/Location:**

**Date:** **Weekday or Weekend ?**

1. How many years have you been saltwater fishing?
2. What months do you usually go fishing off of North Carolina ocean fishing piers?
3. Throughout the year, what species do you target while fishing from an ocean fishing pier?
4. What general regions do you fish from NC ocean fishing piers

**-North (VA line to Hatteras)      Yes      No**

**-Central (Atlantic Beach to Topsail Island)      Yes      No**

**-South (Wrightsville Beach to Sunset Beach)      Yes      No**

5. Approximately how many days per year do you go fishing of NC ocean fishing piers?
6. Including yourself, how many people are usually on those fishing trips?
7. Based on the following categories, what is the average cost PER PERSON of a NC ocean fishing pier trip:

**Pier admission:**      Daily:                      or                      Annual:

**Bait:**

**Tackle:**

**Groceries:**

**Ice:**

**Gasoline:**

**Lodging:**

**Other (Please explain):**

8. How many hours do you usually spend fishing on an average NC ocean pier trip:
9. Do you have an NC saltwater fishing license (note: not required for pier fishing)?
10. How far did you travel to fish on a NC ocean pier (in miles)?
11. How long (in hours) did it take you to travel to this fishing pier?
12. Was this trip to the coast primarily for fishing off of a pier? If not, what is the primary purpose?

13. What is your age?

14. Male or Female?      **Male**      **Female**

15. Ethnic background?

**Hispanic/Latino**   **White/Caucasian**   **African-American/Black**   **Asian/Pacific Islander**   **Native American**

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

17. Please indicate your household income based on the following categories:

**<\$15,000**

**\$15,001 to \$30,000**

**\$30,001 to \$50,000**

**\$50,001 to \$75,000**

**\$75,001 to 100,000**

**>\$100,000**

18. Which of the following best describes your primary job based on the following categories?

**Government**

**Military**

**Non-Profit**

**Education**

**Private business or industry**

**Healthcare**

**Retired**

**Unemployed**

**Other (Please Explain):**

19. What state is your primary residence?

20. If North Carolina, in which county do you live?

21. In the last year have you had negative experiences while fishing off of an ocean fishing pier with the following? If "yes" please explain.

**Other recreational fishermen?      Yes      No**

**Commercial fishermen?      Yes      No**

**Other beach users (swimmers, surfers, etc)?      Yes      No**

**State officers?      Yes      No**

22. Of the following issues or subjects, please rate the following as extremely important, very important, somewhat important, or not important in relation to ocean pier fishing.

-Finding enough time to go fishing:

**extremely important    very important    somewhat important    not important**

-Fuel prices:

**extremely important    very important    somewhat important    not important**

-Overfishing or too few fish:

**extremely important    very important    somewhat important    not important**

-Water quality or pollution:

**extremely important    very important    somewhat important    not important**

-Competition with commercial fishermen:

**extremely important    very important    somewhat important    not important**

-Competition with other recreational fishermen/crowding:

**extremely important    very important    somewhat important    not important**

-Losing fishing piers:

**extremely important    very important    somewhat important    not important**

-Keeping up with rules and regulations:

**extremely important    very important    somewhat important    not important**

-Bag/size limits:

**extremely important    very important    somewhat important    not important**

-Access issues(not enough piers, parking, limited hours):

**extremely important    very important    somewhat important    not important**

-Weather:

**extremely important    very important    somewhat important    not important**

23. Any other comments?

## APPENDIX III- OCEAN PIER OPERATOR SURVEY

### General Information:

1. Name of fishing pier
2. How many years has your pier been in operation?
3. What months are your pier open for business?
4. Is your pier privately owned by a single owner? If not, what is the ownership structure?

### Revenue:

5. What was the gross (pre-tax) revenue for your business in 2010?
6. In 2010, how much of your business revenue (in dollars) came from the following?
  - a. Selling fishing tackle:
  - b. Selling bait:
  - c. Merchandise sales (t-shirts, souvenirs, etc.):
  - d. Food and beverage sales:
  - e. Video game and entertainment sales:
  - f. Other (please explain):
7. Where do you purchase bait?
8. How many day use passes were sold for your pier in 2010? What was their cost?
9. How many annual passes were sold for your pier in 2010? What was their cost?

### Expenses:

#### *Employment and Associated Costs:*

10. Not including yourself, how many part-time and full-time employees do you have?
  - a. Part-time:
  - b. Full-time:
11. On average, how many hours per week do they work?
  - a. Part-time:
  - b. Full-time:
12. What is their average wage? This can be hourly or yearly.

- a. Part-time:
  - b. Full-time:
13. How much would you estimate that your business spent last year on the following?
- a. Benefits (healthcare, retirement, etc):
  - b. Other (please explain):
14. Office Operation: How much would you estimate that your business spent last year on the following?
- a. Buying office supplies:
  - b. Computer costs:
  - c. Accounting costs:
  - d. Legal costs:
  - e. Other (please explain):
15. Pier Operation: How much would you estimate that your business spent last year on the following?
- a. Utilities (water, electricity, phones):
  - b. Loan payments and banking costs:
  - c. Lease or rent payments:
  - d. Building repair or maintenance:
  - e. Property taxes:
  - f. Insurance:
  - g. License fees:
  - h. Other (please explain):
16. Other major expenses? Please explain.
17. Do you receive a "current use" tax break that allows property taxes to be assessed at the current value of the pier business rather than the actual property value (typically a "highest use" tax valuation)?

**Perceptions and Background:**

18. Is operation of a fishing pier your primary source of income? Your only source of income?

- 19. What are some important issues facing your business today? What is the biggest challenge to the operation of your business?
- 20. Do you expect to be operating your pier in 10 years? Do you expect your pier to be in operation in 10 years? Why or why not?
- 21. What are some of the most important fish species that keep anglers coming to your pier?
- 22. What are some of the major reasons that fishermen come to your pier?

23. Of the following issues or subjects, please rate the following as extremely important, very important, somewhat important, or not important in relation to ocean pier fishing.

-Fuel prices:

**extremely important   very important   somewhat important   not important**

-Overfishing or too few fish:

**extremely important   very important   somewhat important   not important**

-Water quality or pollution:

**extremely important   very important   somewhat important   not important**

-Competition with commercial fishermen:

**extremely important   very important   somewhat important   not important**

-Losing fishing piers:

**extremely important   very important   somewhat important   not important**

-Keeping up with rules and regulations:

**extremely important   very important   somewhat important   not important**

-Bag/size limits:

**extremely important   very important   somewhat important   not important**

-Access issues(not enough piers, parking, limited hours):

**extremely important   very important   somewhat important   not important**

-Weather:

**extremely important   very important   somewhat important   not important**

24. What are your thoughts on the NC aquarium piers?

25. Other Comments or Concerns: