

**SUPPORTING STATEMENT  
ANNUAL ECONOMIC SURVEY OF FEDERAL SOUTH ATLANTIC SHRIMP  
PERMIT HOLDERS  
OMB CONTROL NO. 0648-xxxx**

**B. COLLECTIONS OF INFORMATION EMPLOYING STATISTICAL METHODS**

**1. Describe (including a numerical estimate) the potential respondent universe and any sampling or other respondent selection method to be used. Data on the number of entities (e.g. establishments, State and local governmental units, households, or persons) in the universe and the corresponding sample are to be provided in tabular form. The tabulation must also include expected response rates for the collection as a whole. If the collection has been conducted before, provide the actual response rate achieved.**

The population of interest is all vessels fishing for penaeid and rock shrimp in the federal waters of the South Atlantic, i.e. off the States of North Carolina, South Carolina, Georgia, and Florida, during one calendar year. An excellent sampling frame is readily available for this and future survey efforts, because vessels shrimping in the South Atlantic and Gulf are required to have a federal permit. Their contact information should be up-to-date due to the annual permit renewal process. *Due to the overlap with the federal Gulf shrimp permit population, the South Atlantic survey will be administered together with the Gulf survey.* As a result, the effective population is all federally permitted shrimp vessels in the southeast region. For the 2009 survey effort (collecting 2008 annual data), the sampling frame will consist of all fishermen holding at least one of four federal shrimp permits at any time during 2008.

As of October 2008, we estimate this total population to be 2,320 vessels. Of these we propose to sample 861 vessels in order to arrive at approximately 771 completed surveys based on an expected overall response rate of 90% (the response rate achieved in the Gulf).<sup>1</sup> Due to the management and political importance attributed to delineation by state, we will stratify the total population of federal shrimp permit-owning vessels by state. Within each stratum we will randomly sample vessels in proportion to each stratum's weight in the total population. By sticking to a simple, straightforward design, we hope to avoid many potential problems.

Currently, the closest estimate of the final sampling frame consists of 2,320 vessels. Table 1 below breaks down this preliminary sampling frame into the strata, lists the permits held, offers some descriptive data for the vessels in each, and generates the tentative number of respondents sampled and surveys completed in each. Of the total sampling frame, 1,626 vessels (70% of the 2,320) hold only a Gulf shrimp permit and thus represent the dominant group (note: this information cannot be deduced from the table). There is significant variation within the industry across several variables, but none seems to further divide the population into discrete groups (offering no advantage of further stratification). These numbers are unlikely to change much by early 2009, when the actual sampling frame and sample will be generated. The actual number of permit holders in the fishery might change a little due to new entrants (the South Atlantic penaeid permit and rock shrimp permit (Carolinas zone) are open access permits), owners and vessels leaving the fishery (permits non-renewed or terminated), or changes in vessel ownership

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<sup>1</sup> Even though the data collection will be mandatory, a 100% is almost always impossible. Some permit holders will be unreachable, and others, who do not plan to renew their permit, are unlikely to voluntarily submit a survey.

and State of registration. The final sampling frame will use all the information available just prior to the survey implementation.

Since much of the above sample will be directed toward Gulf shrimp permit holding vessels, which are already being surveyed by a separate data collection (OMB Control No. 0648-0476), the actual additional sample due to adding those holding South Atlantic permits only, is only 160 surveys [711 vessels sampled for the Gulf survey alone; 861 vessels sampled for the combined surveys]. Among the South Atlantic vessel population sampled will be approximately 230 South Atlantic penaeid shrimp permit holders, 99 rock shrimp permit holders (open access), and 57 rock shrimp endorsement holders. Finally, the Gulf survey has already sampled about 63% of the Gulf population over the last two years, including some vessels that have South Atlantic permits. This will be taken into account during the sampling procedure.

The response rates for the Annual Economic Survey of Federal Gulf Shrimp Permit Holders have been above 90% in 2007 and 2008.

**2. Describe the procedures for the collection, including: the statistical methodology for stratification and sample selection; the estimation procedure; the degree of accuracy needed for the purpose described in the justification; any unusual problems requiring specialized sampling procedures; and any use of periodic (less frequent than annual) data collection cycles to reduce burden.**

We will then stratify the population by State as this is a policy relevant variable. We will then randomly sample in each strata proportional to each strata's weight in the population (with the help of an advanced statistical program). In 2009, we will sample approximately 37% of the population (see also Table 1). The very tractable proportional random sampling approach should require only simple adjustments to the inclusion probabilities used for the estimation of population means and other aggregate statistics (if non-response is significant and skewed across the strata).

The owner of each vessel selected will be contacted by mail early in 2009, first by a selection letter, followed by the survey package. The package will contain a cover letter, information material, instructions, the two page survey instrument and a return envelope. They will be asked to return the completed survey instrument to us in the enclosed, pre-paid envelope. If no response is received by April 30, up to two further letters will be sent (including additional survey instruments). We will also attempt to contact the non-responders by phone and urge them to return the survey. Information will not be collected during the phone call, and a further survey instrument will be sent – by mail or email – if requested.

After data entry, verification and cleaning, descriptive statistical analysis will be conducted on the relevant variables collected (costs and profits). Results will be reported by state and by other relevant post-stratifications (such as size of operation). The accuracy for the population level totals and means of the important variables should exceed the standard +/- 10% confidence interval at a 95% significance level. This level of accuracy would be the best ever collected on these variables in the South Atlantic shrimp fishery. Given the overall uncertainty inherent to policy assessments of economic conditions in fisheries and given the quality and accuracy of other data used, the standard accuracy should suffice. The accuracy of the results for subpopulations (>100 observations), such as rock shrimp permit holders, is unknown at this time.

Since the method being employed is new in this fishery; statistically meaningful data is urgently needed by the Council; and developments in this fishery have recently been occurring fast and are leading to large economic impacts, this data collection will be repeated annually for the first two or three years. The use of periodic instead of annual collection will be considered in the future. The burden on the public will depend on how frequently significant changes occur in this industry. Optimally, an annual survey with an adaptive sampling design could minimize this burden and yet retain the flexibility to generate timely and accurate data. Such advantages would need to be weighed against the administrative complexity and the required resources.

**3. Describe the methods used to maximize response rates and to deal with non-response. The accuracy and reliability of the information collected must be shown to be adequate for the intended uses. For collections based on sampling, a special justification must be provided if they will not yield "reliable" data that can be generalized to the universe studied.**

The central approach to maximizing the response rate is to make answering a very concise and simple survey a requirement for future permit renewal. The first cover letter will politely emphasize this point. The second and third reminder letters will be more explicit. The telephone call will also explain the consequences of not complying. The call has the further advantage of being a different mode of contact and should discover non-response due to an incorrect address. Given the potential loss of permit, we expect compliance from all fishermen wanting to continue to fish for shrimp in federal waters. The behavior by those who have left the fishery by the time of the survey, or are planning to leave it before their current permit expires, will not be influenced by the implicit threat. Since the data will be used primarily for assessments and predictions about future developments, under-reporting by individuals leaving the fishery is less problematic.

A good sampling frame, with annually updated contact information (through the ongoing permit renewal), will help to reduce the non-contact component of non-response. If necessary due to low response, at the conclusion of the survey, we will contact port agents (local federal employees who collect data and report from a limited area) and ask them for any information on non-responding vessels/individuals. Should non-response be a significant factor, we might even ask port agents to inquire themselves, and/or we will debrief a few (<10) individuals about reasons for not responding in order to establish potential non-response biases.

Beyond the above, we will take every action available to us to facilitate completing and returning the survey by the fishermen. General survey design techniques (Dillman method) and experience from the previous surveys will guide us. Noteworthy actions include:

- Timing of the survey during the slow shrimp fishing season (winter and spring) and coinciding with tax time, when business records are being consulted and financial concerns are “top of mind.”
- Conducting outreach in advance of the survey, including on NMFS and Council websites and through meetings, radio, shrimp association newsletters, and the grapevine.
- Disseminating together with the survey effort-specific outreach material (see figure 1 for an example).

- Using plain language and translating the survey into “language” spoken by South Atlantic shrimp fishermen.

The statistical design and size of this sample survey will allow for valid generalizations of the results to the population and larger subpopulation levels. The anticipated accuracy of the results is discussed in more detail in the last question (Part B, Question 2).

**4. Describe any tests of procedures or methods to be undertaken. Tests are encouraged as effective means to refine collections, but if ten or more test respondents are involved OMB must give prior approval.**

We are not testing any procedures or methods. We have drawn extensively on the experience generated by the very similar and successful annual cost data collection effort in the Gulf shrimp fishery (OMB Control No. 0648-0476).

**5. Provide the name and telephone number of individuals consulted on the statistical aspects of the design, and the name of the agency unit, contractor(s), grantee(s), or other person(s) who will actually collect and/or analyze the information for the agency.**

Individual consulted on the statistical aspects of the design:

James R. Waters, Ph.D.  
National Marine Fisheries Service  
Southeast Fisheries Science Center  
Beaufort Laboratory  
(252) 728-8710

Persons who will actually collect and analyze the information:

Christopher Liese, Ph.D.  
National Marine Fisheries Service  
Southeast Fisheries Science Center  
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**Table 1: Sampling Frame, Sampling Strata, Population Characteristics, Response Rate and Sample Size**

	Population	Permits/Percentage of Population by Permit Type				Vessel Characteristics (Length, HP and Year averaged by state and then per column)					Sample	Response Rate	E(Completed)
		SPA <sup>1</sup>	RS <sup>2</sup>	RSE <sup>3</sup>	GMSP <sup>4</sup>	Length	HP	Year	Steel Hull	Freezer			
<b>NC</b>	177	96%	43%	10%	24%	62	457	1982	37%	14%	66	0.9	59
<b>SC</b>	56	100%	13%	2%	7%	59	409	1975	13%	18%	21	0.9	18
<b>GA</b>	105	94%	12%	10%	5%	57	389	1974	12%	15%	39	0.9	35
<b>FL</b>	391	46%	17%	14%	80%	56	386	1980	25%	44%	145	0.9	130
<b>AL</b>	148	34%	35%	34%	93%	66	492	1987	68%	57%	55	0.9	49
<b>MS</b>	148	9%	5%	3%	100%	71	574	1988	82%	48%	55	0.9	49
<b>LA</b>	483	2%	1%	0%	100%	64	489	1987	77%	27%	179	0.9	161
<b>TX</b>	759	3%	1%	1%	100%	72	537	1984	88%	71%	281	0.9	252
<b>Other</b>	53	42%	51%	15%	57%	71	594	1987	72%	32%	20	0.9	18
<b>Total</b>	2320	27%	11%	7%	83%	65	487	1984	64%	46%	861		771

**Permit Type Count:** 619 265 154 1919

**Sample by Permit:** 230 99 57 711

<sup>1</sup> SPA: South Atlantic penaeid shrimp permit (open access).

<sup>2</sup> RS: South Atlantic rock shrimp permit (open access).

<sup>3</sup> RSE: South Atlantic rock shrimp permit (limited access).

<sup>4</sup> GMSP: Gulf of Mexico shrimp permit (limited access).

**Figure 1: Example of Information Material (draft)**

Your information is treated as confidential.

Your information will not be released.

We are interested only in industry-wide economic indicators.

Your information will be combined with the information from other fishermen.

With statistical methods we will estimate industry averages and industry totals.

The results of this research will be made available to you.

# Why we need to Know

Fishery Managers need up-to-date information about the economic health of the Gulf shrimp fishery in order to make sound decisions, such as producing Fishery Management Plan Amendments that take account of the economic situation and contribution of this important industry.

Most importantly, we, the scientists collecting and analyzing this data, need to know the total profit (or loss) generated by the industry. This information enables us to calculate the value of the shrimp fishery to fishermen and to the nation. Other things we report to the Council, decision makers, fishermen and the public include:

- Income shares of owners and crew in the industry
- Overall capital invested and total debt in the industry
- Financial risk the industry is exposed to
- The impact of fluctuating fuel and ice prices on the industry

**Table 2: Example of the Presentation of Results**

<b>Table 18: Results for the Average Vessel of the Active Gulf Shrimp Fleet by State</b>						
	# of Observations	Act Gulf	Active Gulf Shrimp Fleet			
		Shrimp FI	FL	AL+MS	LA	TX
		386	51	32 + 29	105	166
<b>Balance Sheet (end of 2006)</b>						
<b>Assets - Market value of vessel</b>		<b>192,938</b>	<b>141,976</b>	<b>291,818</b>	<b>182,018</b>	<b>176,057</b>
<i>Original value of vessel (at purchase price)</i>		300,185	191,362	421,946	246,889	324,355
<i>Replacement cost</i>		479,671	414,349	545,745	319,951	563,753
<b>Liabilities - Loan on vessel</b>		<b>104,597</b>	<b>78,185</b>	<b>173,641</b>	<b>73,710</b>	<b>108,768</b>
<i>% of vessels with loan</i>		53%	51%	59%	46%	57%
<b>Equity - Owner's equity in vessel</b>		<b>88,340</b>	<b>63,790</b>	<b>118,177</b>	<b>108,308</b>	<b>67,289</b>
<i>Insurance coverage (% of vessels / % of assets)</i>		48% / 72%	33% / 62%	67% / 85%	48% / 63%	45% / 70%
<b>Vessel Characteristics</b>						
Length	70		64	73	66	74
Gross tons	111		94	121	87	126
Horse power	531		429	602	488	561
Year built	1986		1982	1990	1988	1985
Hull material - Steel (%)	80%		22%	84%	83%	94%
Refrigeration - Freezer (%)	63%		67%	62%	28%	84%
Fuel capacity	14,184		8,812	16,399	10,593	17,218
State - Florida (%)	13%		100%	0%	0%	0%
State - AL or MS (%)	16%		0%	100%	0%	0%
State - Louisiana (%)	27%		0%	0%	100%	0%
State - Texas (%)	43%		0%	0%	0%	100%
<b>Vessel Operation (2006)</b>						
Actively shrimping (%)	100%		100%	100%	100%	100%
Owner-operator (%)	46%		25%	56%	80%	28%
Shrimp landed (in pounds)	101,268		68,914	105,251	111,468	103,496
Shrimp price per pound (vessels basis)	2.47		3.22	2.45	1.88	2.62
Annual fuel use (gallons)	52,931		41,092	61,378	42,724	60,062
Fuel price per gallon (vessels basis)	2.09		2.22	2.11	2.11	2.03
Fuel efficiency I (shrimp pounds/gallon)	2.6		2.0	2.2	4.3	1.9
Fuel efficiency II (shrimp revenue/gallon)	5.7		6.6	5.1	7.0	4.8
Days lost due to lack crew	35		36	34	23	41
<b>Cash Flow (2006)</b>						
<b>Inflow - Total</b>	<b>259,640</b>		<b>215,885</b>	<b>283,481</b>	<b>228,111</b>	<b>284,645</b>
Shrimp landings	244,136		202,549	258,833	216,469	269,175
Non-shrimp landings	1,842		1,866	6,275	729	934
Government payments received (shrimp related)	13,662		11,470	18,373	10,913	14,536
<b>Outflow - Total</b>	<b>243,415</b>		<b>212,572</b>	<b>283,425</b>	<b>204,160</b>	<b>264,427</b>
Fuel	108,775		87,127	125,662	89,806	121,275
Ice	2,287		518	2,001	5,318	1,026
Other supplies	19,699		14,367	19,761	15,613	24,101
Crew & captain (hired)	54,866		55,695	64,327	45,854	57,394
Regular maintenance (vessel and gear)	18,988		18,986	22,381	15,145	20,404
Major repair, replacement or haul-out	6,833		7,737	6,738	6,169	7,086
Overhead (excluding loan payments)	14,746		12,406	19,044	13,148	14,868
Interest payments made (on vessel loans)	7,140		7,468	10,716	4,065	7,800
Principal payments made (on vessel loans)	8,528		5,868	11,113	7,020	9,505
New investments and upgrades (in vessel)	1,552		2,400	1,684	2,022	968
<b>Net Cash Flow</b>	<b>16,225</b>		<b>3,313</b>	<b>55</b>	<b>23,951</b>	<b>20,218</b>

	Act Gulf Shrimp FI	Active Gulf Shrimp Fleet			
		FL	AL+MS	LA	TX
# of Observations	386	51	61	105	166
mean vessel length	70	64	73	66	74
<b>Income Statement (2006)</b>					
<b>Operating Activities</b>					
Revenue (from commercial fishing)	245,978	204,415	265,108	217,198	270,110
Expenses	253,407	213,631	297,332	225,752	268,174
<i>Variable costs - Supplies</i>	<u>51.6%</u>	<u>47.8%</u>	<u>49.6%</u>	<u>49.1%</u>	<u>54.6%</u>
Fuel	42.9%	40.8%	42.3%	39.8%	45.2%
Ice	0.9%	0.2%	0.7%	2.4%	0.4%
Other supplies	7.8%	6.7%	6.6%	6.9%	9.0%
<i>Variable costs - Labor</i>	<u>25.3%</u>	<u>29.1%</u>	<u>25.6%</u>	<u>27.4%</u>	<u>23.2%</u>
Crew & captain (hired)	21.7%	26.1%	21.6%	20.3%	21.4%
Owner's vessel time	3.6%	3.1%	4.0%	7.0%	1.8%
<i>Fixed costs</i>	<u>23.1%</u>	<u>23.1%</u>	<u>24.8%</u>	<u>23.6%</u>	<u>22.2%</u>
Regular maintenance (vessel and gear)	7.5%	8.9%	7.5%	6.7%	7.6%
Major repair, replacement and haul-out	2.7%	3.6%	2.3%	2.7%	2.6%
Depreciation	7.1%	4.8%	8.6%	8.3%	6.4%
Overhead (excluding loan payments)	5.8%	5.8%	6.4%	5.8%	5.5%
<b>Net Revenue from Operations</b>	<b>-7,429</b>	<b>-9,216</b>	<b>-32,224</b>	<b>-8,555</b>	<b>1,935</b>
<b>Non-Operating Activities</b>					
Interest payments made (on vessel loans)	7,140	7,468	10,716	4,065	7,800
Government payments received (shrimp related)	13,662	11,470	18,373	10,913	14,536
<b>Net Revenue (before taxes)</b>	<b>-907</b>	<b>-5,214</b>	<b>-24,567</b>	<b>-1,707</b>	<b>8,671</b>
<i>Owner's vessel time</i>	9,138	6,565	11,878	15,889	4,736
<i>Depreciation</i>	18,076	10,229	25,541	18,810	17,284