

SEDAR19-DW-07 - South Atlantic Region Recreational Fishery Catches of Red and Black Grouper,  
1981 - 2008 and Gulf of Mexico Landings of Black Grouper.

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## **INTRODUCTION** (modified after Diaz and Phares, 2004 for Atlantic Coast)

The Marine Recreational Fishery Statistics Survey (MRFSS) was established to create a reliable data base for estimating catch and effort by the marine recreational fishery

(<http://www.st.nmfs.gov/st1/recreational/survey/overview.html>). In the traditional MRFSS methodology, data are collected by a telephone survey of households in coastal counties (the CHTS) and by interviewing anglers at fishing access sites (Angler-Intercept Survey). The MRFSS acknowledged that the estimation of effort for the charterboat sector is difficult due to the low incidence of this type of fishing trip by residents of the coastal households contacted by the CHTS. To reduce the effect of rare event small sample sizes on charterboat effort estimation, data from a 5 year period are combined for estimation of charterboat fishing effort using the traditional MRFSS method. Pooling data across years provides a larger data set to produce more reliable estimates of effort. However, this approach tends to mask interannual trends in the fishery, effects of annual weather patterns, economic conditions, fishery regulations, etc. To improve the accuracy and precision of the effort estimation of charterboat fishing, the MRFSS started testing a new survey protocol named the For-Hire Survey (FHS) in 1995 ([http://www.st.nmfs.gov/st1/recreational/pubs/charter\\_method.pdf](http://www.st.nmfs.gov/st1/recreational/pubs/charter_method.pdf)). To implement the new FHS, charterboat directories were created by NMFS, partner state agencies, and contractors, and are maintained by the survey contractor(s), with regular input from cooperating state agencies. Approximately 10% of the charterboats in the directory are randomly contacted by phone each week and asked for relevant information regarding their fishing activities of the previous week (e.g., number of trips and anglers, area of fishing, etc.). The MRFSS concluded that the FHS produced significantly 'more efficient, precise, and credible charter angler effort estimates than the traditional MRFSS method'. The FHS was officially adopted as the new charterboat method in the Gulf of Mexico in 2000 and expanded to the Atlantic Coast in 2004. Conversion factors to adjust effort estimates obtained by MRFSS prior to

implementation of the FHS to the similar effort levels of those produced by the FHS were previously produced using a general linear regression method for Gulf of Mexico landings (Diaz and Phares 2004) and southeast US Atlantic landings (Sminkey 2008). The adjusted effort levels were applied to landings' catch rates to produce adjusted historical finfish landings in the respective regions of the US charterboat fisheries.

This document will provide an application of these models to the Atlantic coast landings of red and black groupers and discuss the feasibility and application of the Gulf of Mexico model to the historical landings of the Gulf black grouper.

## **METHODS**

From 2004 to 2007, the NMFS estimated charterboat effort using both the MRFSS (old) and FHS (new) protocols along the Atlantic Coast. Thus, differences in effort estimates produced for each stratum by the methodologies can be directly compared only for that period of time. Each stratum is defined by a unique combination of state, year, wave, and fishing-area, where wave corresponds to bimonthly periods starting in January (or March north of Florida). The MRFSS defined fishing areas for most states as: a) Inshore waters (bays, river estuaries, lagoons, sounds), b) Ocean, < 3 miles from shore (State Territorial Sea, or STS), and c) Ocean, > 3 miles from shore (federal waters, or EEZ).

For the period 1986-2003, charterboat effort was estimated using only the MRFSS protocol. To calibrate MRFSS charterboat effort estimates (1986-2003) to FHS levels, conversion factors (ratios) between FHS and MRFSS charterboat effort were estimated using 2004-2007 data and applied to the 1986-2003 MRFSS effort estimates. A generalized linear model (GLM procedure, SAS Inst.) was used to identify significant factors and to estimate the predicted ratios. The factors included in the model were year, wave, fishing area, state and the interaction terms. In the event that a factor was found non-significant ( $Pr > 0.05$ ), it was removed and the regression re-run until all (highest order)

model terms were significant (Hocking 1976, Draper and Smith 1981). In the South Atlantic region the significant factors were water body (Ocean vs. Inland), wave and state, but GA and SC clustered together (Table 1). The predicted ratios (stratum level) were used as the conversion factors which were then applied to the original cell-level effort estimates produced by the traditional MRFSS survey. The adjusted effort estimates were multiplied by the catch per trip by species to generate the adjusted charterboat mode catch and landings estimates. The charterboat estimates could then be summed with the MRFSS private boat and shore catch statistics to produce the revised annual landings in numbers of fish. Weight landings were then produced using the average weight per fish landed by stratum then summing to produce annual state landings and annual coast or stock landings in pounds of fish.

From 1981 to 1985, the MRFSS considered charterboats and headboats as part of single fishing mode (party-charter, or PC). Thus, the conversion factors estimated with 2004-2007 charterboat data (used to calibrate 1986-2003 charterboat effort estimates) can not be used to calibrate the 1981-1985 estimates. To calibrate the 1981-1985 combined party-charter catch estimates, conversion factors will be estimated using 1986-1990 catch estimates, by species, instead of 2004-2007 to minimize possible effects of changes in the fishery over time. To produce comparable party and charter boat estimates in the 1986-90 period, headboat catches produced by the NMFS Headboat Survey were added to the charterboat catch estimates produced by the MRFSS for the same period, by species, for each year and wave. These newly combined estimates were then modeled against the MRFSS-only catch estimates to produce a time series factor for conversion of the PC estimates from the 1981-1985 period to a revised time series of annual charterboat-only catch estimates for 1981-1985.

## **RESULTS**

### South Atlantic Red and Black Grouper Catch Statistics

Red and black grouper landings derived from MRFSS and modified using the FHS-derived ratios produce the time series of landings in numbers and pounds in Tables 2a-b and 3a-b. The percent standard error (PSE) is presented with the landings and is computed by:  $PSE = 100 * (\text{sqrt}(\text{estimate variance}) / \text{estimate})$ .

### MRFSS Party-Charter Mode Red Grouper Landings Estimation for 1981-1985

The conversion of the MRFSS party-charter estimates from 1981-1985 could not be calculated due to a paucity of charter-boat only landings of red grouper in 1986-1990. This lack of charterboat landings during this time period compared to the SEHB headboat landings records (Table 2c.) suggests the MRFSS party-charter estimated landings from 1981-90 are derived entirely from headboats. It is recommended then, that the time series of charter boat landings included in the 1981-90 MRFSS total (all modes) landings be set to 0 for each of these years, and the headboat landings from the SEHB be used for that mode.

A further analysis of the black grouper landings will be completed at the SEDAR 19 DW.

### Gulf of Mexico Black Grouper Landings

Black grouper landings estimates from the Gulf of Mexico in the 1980's are problematic, at best. The annual landings, in numbers, for the Panhandle and Peninsula regions of Florida are two orders of magnitude higher than the typical annual landings in any year since 1990 (Table 5a.). Plus personal communications, anecdotal information, and black grouper life history traits suggest that the fish's identification during those years (1982-1989) were wrong and many, if not all, fish coded as being black grouper were actually gag grouper. The annual landings in these two regions, contained large quantities of charter boat or party-charter boat caught fish in some of the years (Table 5b.). Before

any further analysis or conversion of black grouper landings in the Gulf of Mexico were attempted a review, discussion, and direction from the SEDAR DW group will be solicited.

## **REFERENCES**

2004 Diaz, Guillermo A. and Patty Phares, Estimated Conversion Factors for Calibrating MRFSS Charterboat Landings and Effort Estimates for the Gulf of Mexico in 1981-1997 with the For Hire Survey Estimates with Application to Red Snapper Landings. National Marine Fisheries Service, Southeast Fisheries Science Center, Sustainable Fisheries Division, August, 2004. Sustainable Fisheries Division Contribution No. SFD-2004-036.

2008 Sminkey, Thomas R., Estimated conversion factors for calibrating MRFSS charterboat landings and effort estimates from the Southeastern US (North Carolina to Florida-east coast) in 1981-2003 with For-Hire Survey estimates with application to King Mackerel landings. National Marine Fisheries Service, Office of Science and Technology, Silver Spring, MD

Table 1. Predicted ratios and standard errors (in parenthesis) between FHS and MRFSS charterboat effort estimates (to be applied to 1986-2003) for the South Atlantic states (note header for specific state application).

**LSMEAN RATIOS - South Atlantic Region** - Significant factors are Water body, Wave, and State with SC and GA clustering together.

**EAST FLORIDA**

Area	Wave					
	1	2	3	4	5	6
INSHORE	2.051 (0.73)	3.357 (0.73)	1.919 (0.73)	3.302 (0.73)	0.887 (0.73)	1.281 (0.82)
OCEAN	0.671 (0.12)	0.980 (0.12)	0.805 (0.12)	1.036 (0.12)	0.520 (0.12)	0.616 (0.14)

**NORTH CAROLINA**

Area	Wave				
	2	3	4	5	6
INSHORE	12.182 (3.68)	13.291(3.68)	7.966(4.25)	0.973 (4.25)	6.134 (5.20)
OCEAN	1.660 (0.45)	1.947 (0.45)	1.116 (0.48)	1.075 (0.48)	0.684 (0.52)

**SOUTH CAROLINA, GEORGIA**

Area	Wave				
	2	3	4	5	6
INSHORE	2.083 (1.56)	4.881 (1.56)	2.887 (1.56)	1.252 (1.56)	0.618 (1.80)
OCEAN	1.018 (0.54)	1.708 (0.52)	2.812 (0.52)	0.940 (0.54)	0.652 (0.74)

Table 2a. South Atlantic region RED GROUPER landings (numbers of fish), 1986-2008.

**SOUTH ATLANTIC - ALL MODES**

YEAR	Harvest (numbers of fish, A+B1)					PSE - % std error				
	EFL	GA	NC	SC	TOTAL	EFL	GA	NC	SC	TOTAL
<b>1986</b>	20,559	0	0	0	<b>20,559</b>	28.3	0	0	0	28.3
<b>1987</b>	32,210	0	831	0	<b>33,041</b>	39.3	0	71.4	0	38.3
<b>1988</b>	23,852	0	667	0	<b>24,518</b>	31.7	0	38.6	0	30.9
<b>1989</b>	8,250	0	989	0	<b>9,239</b>	39.2	0	35.6	0	36.3
<b>1990</b>	3,587	0	6,199	0	<b>9,785</b>	59.3	0	44.4	0	35.5
<b>1991</b>	1,274	0	1,390	0	<b>2,664</b>	100.0	0	52.6	0	56.6
<b>1992</b>	7,784	0	1,016	0	<b>8,800</b>	30.4	0	31.9	0	27.5
<b>1993</b>	18,100	0	3,706	0	<b>21,806</b>	20.8	0	41.6	0	18.7
<b>1994</b>	12,969	0	750	0	<b>13,719</b>	25.6	0	20.4	0	24.5
<b>1995</b>	7,046	0	1,209	0	<b>8,255</b>	36.0	0	47.1	0	32.1
<b>1996</b>	14,403	0	781	0	<b>15,184</b>	28.2	0	54.3	0	27.5
<b>1997</b>	19,081	0	57	0	<b>19,139</b>	30.5	0	100.8	0	30.4
<b>1998</b>	20,609	91	295	327	<b>21,321</b>	27.7	96.3	57.9	98.4	26.9
<b>1999</b>	12,377	0	2,350	1,569	<b>16,296</b>	19.1	0	49.5	62.5	17.4
<b>2000</b>	12,343	0	490	28	<b>12,861</b>	27.9	0	100.2	98.9	27.1
<b>2001</b>	11,716	0	2,500	0	<b>14,216</b>	21.0	0	45.9	0	19.1
<b>2002</b>	21,680	0	7,691	0	<b>29,371</b>	20.0	0	34.3	0	17.5
<b>2003</b>	12,784	0	4,721	0	<b>17,505</b>	21.7	0	37.4	0	18.9
<b>2004</b>	11,523	0	12,333	150	<b>24,006</b>	23.5	0	42.5	69.7	24.6
<b>2005</b>	13,489	0	16,750	0	<b>30,239</b>	22.8	0	32.5	57.9	20.7
<b>2006</b>	10,947	0	28,439	816	<b>40,202</b>	20.4	0	28.5	54.3	21.1
<b>2007</b>	26,355	0	43,502	3,786	<b>73,643</b>	55.5	0	31.7	71.1	27.3
<b>2008</b>	7,235	0	77,748	52	<b>85,035</b>	37.2	0	26.0	92.2	24.0



Table 2b. South Atlantic region RED GROUPER landings (POUNDS of fish), 1986-2008.

YEAR	Harvest (POUNDS of fish, A+B1)					PSE - LBS				
	EFL	GA	NC	SC	TOTAL	EFL	GA	NC	SC	TOTAL
1986	27,000	0	0	0	27,000	32.6	0.0	0.0	0.0	32.6
1987	38,325	0	2,930	0	41,255	34.2	0.0	72.8	0.0	32.2
1988	70,536	0	2,089	0	72,625	7.4	0.0	0.0	0.0	7.2
1989	38,058	0	3,937	0	41,995	42.1	0.0	29.0	0.0	39.3
1990	0	0	14,667	0	14,667	0.0	0.0	56.4	0.0	56.4
1991	6,461	0	5,449	0	11,910	100.0	0.0	58.0	0.0	62.0
1992	51,181	0	9,786	0	60,967	50.5	0.0	40.0	0.0	43.7
1993	107,297	0	17,625	0	124,922	23.4	0.0	36.3	0.0	20.9
1994	54,083	0	3,808	0	57,891	19.0	0.0	23.6	0.0	18.0
1995	18,979	0	8,904	0	27,883	49.3	0.0	52.1	0.0	38.4
1996	102,957	0	5,786	0	108,743	29.3	0.0	54.8	0.0	28.6
1997	106,763	0	839	0	107,602	35.4	0.0	100.1	0.0	35.2
1998	153,789	729	2,263	2,634	159,415	30.1	96.6	61.1	98.6	29.2
1999	87,905	0	9,496	13,316	110,717	18.8	0.0	49.9	63.1	17.4
2000	94,448	0	3,728	0	98,176	33.6	0.0	100.1	0.0	32.5
2001	88,773	0	31,408	0	120,181	24.2	0.0	51.6	0.0	22.2
2002	146,886	0	54,460	0	201,346	21.7	0.0	32.6	0.0	18.6
2003	107,402	0	35,117	0	142,519	22.4	0.0	38.9	0.0	19.6
2004	99,608	0	140,859	847	241,314	27.3	0.0	55.6	69.5	34.4
2005	67,055	0	139,148	0	206,203	29.2	0.0	35.5	60.7	25.7
2006	57,454	0	407,258	6,751	471,463	22.9	0.0	35.9	54.7	31.2
2007	198,474	0	366,914	24,685	590,073	50.3	0.0	36.7	69.3	28.6
2008	60,918	0	1,016,389	304	1,077,611	39.4	0.0	27.6	92.1	26.2

Table 2c. Red Grouper Headboat Landings from SEHB and Charterboat landings from MRFSS, 1986 - 1990.

HEADBOAT - SEHB		CHARTER - MRFSS		RATIOS
Harvest (numbers)		Harvest (numbers)		
	EFL		EFL	
1986	4,134	1986	144	<b>0.0336</b>
1987	4,905	1987	0	
1988	3,957	1988	0	
1989	2,065	1989	0	
1990	2,139	1990	0	
Harvest (POUNDS)		Harvest (POUNDS)		
1986	20,650	1986	412	
1987	23,480	1987	0	
1988	18,290	1988	0	
1989	8,959	1989	0	
1990	12,758	1990	0	

Table 3a. South Atlantic region BLACK GROUPER landings (numbers of fish), 1986-2008.

YEAR	Harvest (numbers of fish, A+B1)					PSE - % std error				
	EFL	GA	NC	SC	TOTAL	EFL	GA	NC	SC	TOTAL
<b>1986</b>	17,114	0	0	166	<b>17,280</b>	32.1	0	0	100.3	31.9
<b>1987</b>	13,138	0	0	0	<b>13,138</b>	30.6	0	0	0	30.6
<b>1988</b>	0	0	0	0	<b>0</b>	0.0	0	0	0	0.0
<b>1989</b>	4,823	0	0	287	<b>5,110</b>	58.8	0	0	58.6	56.9
<b>1990</b>	0	0	0	0	<b>0</b>	0.0	0	0	0	0.0
<b>1991</b>	2,593	0	0	0	<b>2,593</b>	100.0	0	0	0	100.0
<b>1992</b>	5,108	0	0	0	<b>5,108</b>	32.1	0	0	0	32.1
<b>1993</b>	0	0	0	0	<b>0</b>	0.0	0	0	0	0.0
<b>1994</b>	836	0	0	0	<b>836</b>	99.9	0	0	0	99.9
<b>1995</b>	6,740	0	0	0	<b>6,740</b>	42.2	0	0	0	42.2
<b>1996</b>	16,388	0	79	0	<b>16,467</b>	25.2	0	99.4	0	25.1
<b>1997</b>	10,388	0	0	0	<b>10,388</b>	36.2	0	0	0	36.2
<b>1998</b>	8,992	0	0	0	<b>8,992</b>	29.3	0	0	0	29.3
<b>1999</b>	3,010	0	2,813	0	<b>5,822</b>	36.6	0	72	0	37.0
<b>2000</b>	3,928	0	0	0	<b>3,928</b>	33.5	0	0	0	33.5
<b>2001</b>	6,670	0	0	0	<b>6,670</b>	27.5	0	0	0	27.5
<b>2002</b>	4,137	0	0	0	<b>4,137</b>	41.2	0	0	0	41.2
<b>2003</b>	5,162	0	0	0	<b>5,162</b>	35.3	0	0	0	35.3
<b>2004</b>	5,120	0	0	0	<b>5,120</b>	38.5	0	0	0	38.5
<b>2005</b>	4,586	0	0	70	<b>4,656</b>	48.7	0	0	101	48.0
<b>2006</b>	1,440	0	0	0	<b>1,440</b>	57.9	0	0	0	57.9
<b>2007</b>	3,843	0	0	0	<b>3,843</b>	44.0	0	0	0	44.0
<b>2008</b>	2,560	0	0	0	<b>2,560</b>	47.1	0	0	0	47.1

Table 3b. South Atlantic region BLACK GROUPER landings (POUNDS of fish), 1986-2008.

YEAR	HARVEST (A+B1, pounds)					PSE - LBS				
	EFL	GA	NC	SC	TOTAL	EFL	GA	NC	SC	TOTAL
1986	88,225	0	0	0	88,225	27.5	0.0	0.0	0.0	27.5
1987	74,562	0	0	0	74,562	38.2	0.0	0.0	0.0	38.2
1988	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
1989	254,160	0	0	3,539	257,699	61.7	0.0	0.0	58.6	61.2
1990	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
1991	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
1992	59,443	0	0	0	59,443	31.1	0.0	0.0	0.0	31.1
1993	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
1994	26,709	0	0	0	26,709	0.0	0.0	0.0	0.0	0.0
1995	38,748	0	0	0	38,748	41.5	0.0	0.0	0.0	41.5
1996	146,378	0	349	0	146,727	29.3	0.0	100.4	0.0	29.3
1997	71,277	0	0	0	71,277	38.1	0.0	0.0	0.0	38.1
1998	93,555	0	0	0	93,555	32.0	0.0	0.0	0.0	32.0
1999	28,360	0	0	0	28,360	46.0	0.0	0.0	0.0	46.0
2000	41,543	0	0	0	41,543	35.0	0.0	0.0	0.0	35.0
2001	82,715	0	0	0	82,715	31.3	0.0	0.0	0.0	31.3
2002	23,066	0	0	0	23,066	55.6	0.0	0.0	0.0	55.6
2003	23,760	0	0	0	23,760	17.7	0.0	0.0	0.0	17.7
2004	22,981	0	0	0	22,981	0.0	0.0	0.0	0.0	0.0
2005	62,705	0	0	538	63,243	59.5	0.0	0.0	0.0	59.0
2006	19,484	0	0	0	19,484	0.0	0.0	0.0	0.0	0.0
2007	47,037	0	0	0	47,037	60.5	0.0	0.0	0.0	60.5
2008	37,392	0	0	0	37,392	21.6	0.0	0.0	0.0	21.6

Table 4. Predicted ratios and standard errors (in parenthesis) between FHS and MRFSS charterboat effort estimates (to be applied to 1986-1997) for the Gulf of Mexico states (note header for specific state application). Note that Texas is not included because it has not been included in the MRFSS or FHS surveys.

**LSMEAN RATIOS - Gulf of Mexico Region** - Significant factors are Area fished, Wave, and State with AL, LA and MS clustering together.

Apply to 1986 – 1997 charterboat mode in AL, LA, and MS

Area	<u>WAVE</u>					
	1	2	3	4	5	6
Inshore	1.26 (1.31)	1.54 (1.27)	3.82 (1.26)	4.67 (1.26)	3.28 (1.27)	1.48 (1.28)
< 3 miles	0.74 (1.37)	0.75 (1.26)	1.49 (1.25)	2.28 (1.24)	0.64 (1.28)	0.52 (1.40)
> 3 miles	0.44 (1.28)	0.63 (1.24)	2.23 (1.23)	1.87 (1.24)	1.26 (1.23)	0.53 (1.28)

Apply to 1986- 1997 charterboat mode in FLW

Area	<u>WAVE</u>					
	1	2	3	4	5	6
Inshore	3.17 (0.16)	5.31 (0.16)	5.71 (0.16)	5.33 (0.16)	3.49 (0.16)	3.70 (0.16)
<10 miles	0.95 (0.16)	1.10 (0.16)	1.78 (0.16)	0.70 (0.16)	0.48 (0.16)	0.98 (0.16)
>10 miles	0.38 (0.16)	0.58 (0.16)	0.77 (0.16)	0.73 (0.16)	0.59 (0.16)	0.55 (0.16)

Table 5a. Gulf of Mexico Black Grouper landings and PSE from MRFSS, 1982 - 2008.

**BLACK GROUPER RECREATIONAL FISHERY HARVEST (A+B1, numbers)**

**ALL MODES**

YEAR	PANHANDLE		PENINSULA		THE KEYS		West FLORIDA		West FLORIDA	
	Harvest	PSE	Harvest	PSE	Harvest	PSE	Harvest	PSE	Wgt (lbs)	PSE- lbs
1982	<b>120,434</b>	<b>29.7</b>	<b>64,367</b>	<b>30.2</b>	18,489	34.6	203,290	20.4	1,132,951	22.9
1983	<b>125,353</b>	<b>39.5</b>	<b>545,939</b>	<b>44.8</b>	20,214	57.0	691,506	21.8	2,293,362	23.1
1984	<b>803</b>	<b>100.0</b>	<b>144,642</b>	<b>23.7</b>	65,289	38.8	210,734	20.2	381,850	35.6
1985	<b>176,426</b>	<b>53.6</b>	<b>191,542</b>	<b>20.5</b>	48,337	50.8	416,305	24.9	1,417,904	35.4
1986	<b>358,035</b>	<b>17.0</b>	<b>183,836</b>	<b>15.3</b>	44,963	27.5	586,835	11.5	4,244,796	14.5
1987	<b>219,213</b>	<b>20.5</b>	<b>74,929</b>	<b>21.8</b>	42,497	24.7	336,639	14.3	2,162,973	18.0
1988	<b>329,618</b>	<b>13.4</b>	<b>91,176</b>	<b>19.1</b>	30,228	34.9	451,022	10.8	2,909,177	15.5
1989	<b>184,535</b>	<b>25.7</b>	<b>59,498</b>	<b>31.4</b>	22,921	42.7	266,954	19.3	1,729,297	26.0
1990	1,464	90.5	4,459	44.3	21,959	60.2	27,882	48.2	105,115	15.3
1991	0	0	1,497	58.4	29,376	33.6	30,872	32.4	348,948	14.3
1992	0	0	1,880	55.4	28,122	20.6	30,003	19.7	247,663	21.7
1993	0	0	0	0	26,343	20.3	26,343	20.4	136,218	22.9
1994	0	0	955	70.9	20,113	20.3	21,068	20.0	154,073	19.9
1995	2,802	43.4	2,604	49.7	17,126	28.1	22,532	29.5	204,468	32.8
1996	0	0	0	0	22,564	19.1	22,564	27.6	192,830	34.0
1997	156	24.3	1,156	31.2	36,707	18.4	38,019	22.1	385,906	23.9
1998	3,110	58.2	244	52.6	12,494	15.2	15,848	20.6	259,003	24.2
1999	63	31.1	2,457	38.0	2,441	27.6	4,961	19.1	104,950	17.7
2000	23	37.4	664	39.9	3,863	33.3	4,550	27.2	61,768	33.0
2001	0	0	39	48.7	3,373	36.8	3,413	36.3	45,005	41.0
2002	0	0	662	87.7	6,840	41.2	7,502	42.0	93,202	44.0
2003	35	35.5	777	54.3	10,549	18.6	11,361	26.8	181,776	28.1
2004	18	50.9	261	43.8	10,186	14.9	10,465	22.4	94,300	23.8
2005	30	36.6	3,313	43.9	4,944	21.4	8,287	25.4	86,599	27.8
2006	0	0	0	0	6,292	33.5	6,292	33.5	74,873	49.3
2007	0	0	1,086	41.1	9,685	16.8	10,771	22.2	117,106	29.0
2008	0	0	254	43.3	11,857	33.4	12,111	52.9	134,529	63.7

Table 5b. Gulf of Mexico CHARTER BOAT Black Grouper landings and PSE from MRFSS, 1982 - 2008.

<b>CHARTER BOAT MODE ONLY (86-08)</b>								
(party/charter boats 82-85)								
YEAR	PANHANDLE		PENINSULA		THE KEYS		West FLORIDA	
	Harvest	PSE	Harvest	PSE	Harvest	PSE	Harvest	PSE
1982	5,731	42.1	.	.	2,648	60.8	8,378	34.6
1983	313	100	.	.	748	64.1	1,060	54.0
1984	803	100	9,682	34.6	5,477	36.2	15,963	24.9
1985	6,117	69.9	109,028	29.1	4,389	46.3	119,534	26.8
1986	95,091	17.2	79,018	20.2	494	55.1	174,603	13.1
1987	80,001	36.6	17,433	38.1	143	100	97,578	30.9
1988	52,300	32.7	10,988	37.2	7,376	59.8	70,665	25.7
1989	838	48.8	0	.	581	75.7	1,419	42.3
1990	143	65.8	1,937	43.7	0	.	2,080	40.9
1991	.	.	.	.	2,705	34.8	2,705	34.8
1992	0	.	503	71.8	6,618	32.3	7,120	30.4
1993	.	.	.	.	4,579	35.2	4,579	35.2
1994	.	.	.	.	7,849	25.3	7,849	25.3
1995	.	.	1,640	74.4	8,169	48.9	9,809	42.6
1996	.	.	.	.	4,338	21.3	4,338	21.3
1997	156	24.3	1,156	31.2	11,805	18.8	13,117	17.1
1998	516	46.4	77	50.9	14,083	12.4	14,676	12.0
1999	122	31.3	410	25.5	5,801	13.1	6,332	12.1
2000	23	37.4	664	39.9	1,677	13.5	2,363	14.7
2001	.	.	39	48.7	2,166	13.1	2,206	12.9
2002	0	.	82	32.9	2,444	14.7	2,526	14.3
2003	35	35.5	52	50.4	3,934	12.1	4,021	11.9
2004	18	50.9	261	43.8	4,962	12.7	5,241	12.3
2005	30	36.6	56	60.1	2,923	12.5	3,009	12.2
2006	.	.	.	.	1,468	21.7	1,468	21.7
2007	.	.	360	39.7	4,270	19.6	4,629	18.3
2008	.	.	254	43.3	1,716	14.5	1,970	13.8