MRIP Recreational Survey Data for Snowy Grouper in the Atlantic

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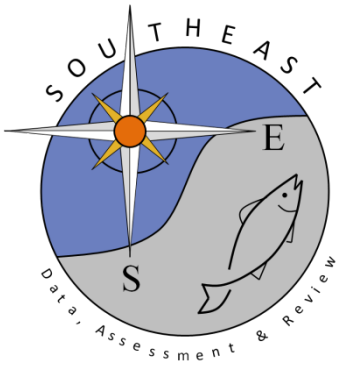

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INTRODUCTION

Recreational survey data for snowy grouper from the Marine Recreational Fisheries Statistics Survey (MRFSS) and the Marine Recreational Information Program (MRIP) in the Atlantic are presented, including summaries of catch estimates and sampling proportions. Issues addressed include the calibration of MRFSS charterboat estimates back in time, 1981-1985 adjustments and substitutions, calibration of MRFSS estimates for 1981-2003 to MRIP estimates, and estimating recreational landings in weight. The data in this report is current as of the date of this documentation.

MRFSS and MRIP

The MRFSS began in 1981 and provides information on participation, effort, and species-specific catch. Data are collected to provide catch and effort estimates in two-month periods ("waves") for each recreational fishing mode (shore fishing, private/rental boat, charterboat, or headboat/charterboat combined) and area of fishing (inshore, state Territorial Seas, U.S. Exclusive Economic Zone) by state. Starting in 1986, MRFSS stopped covering headboats in the Gulf of Mexico and South Atlantic. In recent years MRIP has re-incorporated headboats in some states, but these headboat estimates are not official. Official headboat estimates for the South Atlantic and Gulf of Mexico come from the Headboat Survey. Before 1986, charterboats and headboats were combined as one mode in the South Atlantic and the Gulf of Mexico. In the mid and North Atlantic, charterboats and headboats remained combined until 2003. Beginning in 2004, the charter and headboat modes in these regions were separated. No survey was conducted in wave 1 of 1981. Catch estimates are made for strata used in the intercepts: fish landed whole and observed by the samplers ("Type A"), fish reported as killed by the fishers ("Type B1") and fish reported as released alive by the fishers ("Type B2").

For Hire Survey and calibration of old method estimates with the new method.
Two surveys within MRFSS provide the information described above: the "traditional" MRFSS and the For-Hire Survey (FHS), or "new charterboat method," discussed below. The traditional MRFSS design is based on an intercept survey of anglers and telephone survey of coastal households and has been used since the inception of the MRFSS. It applies to all fishing modes included in the survey. For 1981-1985 in TX to ME and for 1981-2003 in VA to ME, the traditional MRFSS covered charterboats and headboats as a combined mode.

In 1998, the FHS began providing estimates for charterboats in the Gulf of Mexico. The traditional MRFSS and FHS operate concurrently, but the FHS estimates have been phased in as the "official" charterboat estimates starting with LA through FL West Coast in 2000. (This was expanded to the FL East Coast in 2003 and to GA through ME starting in wave 2 of 2005.) There are also ‘unofficial’ FHS estimates from GA-ME in 2004. This new method was

needed because of the low number of charterboat anglers contacted in the traditional telephone survey of coastal households.
In the FHS, directories of charterboats are developed for each state and are continuously updated. Each week, a sample of 10% of the listed charterboats are surveyed by telephone to ask about their fishing effort during the previous week, including the number of vessel trips, the number of anglers, areas fished and other information. Validation surveys by field samplers directly observe some charterboat effort on the docks to allow correction of over and under-reporting of trips in the telephone survey. The MRFSS intercept survey of anglers at boat access sites is conducted as usual, encountering some charterboats. This allows calculation of a correction factor for charterboat trips on unlisted boats (not in the charterboat directory): (total intercepted cbt angler trips) / (intercepted cbt angler trips on listed boats).

Thus the estimate of total charterboat angler trips for an area of fishing is:

Estimated total charterboat angler trips =

(total charterboat angler trips in on listed boats) * (correction factor for trips on unlisted boats) where the total charterboat angler trips on listed boats is based on the 10% sample in the telephone survey and corrected for over/under reporting by the validation survey.

The FHS estimates of catch then follow in the same manner as for the traditional MRFSS, with the mean catch per trip coming from the MRFSS intercept survey. The pilot study of new charterboat methods in the Gulf of Mexico found that the annual effort at the state and Gulf level were not significantly different between the pilot study and the traditional MRFSS. However, the effort from the new charterboat methods differed from the traditional MRFSS in the distributions of effort by area and season.

Conversion factors have been estimated for the South Atlantic to calibrate the traditional MRFSS charterboat/headboat estimates in 1981-1985 (SEDAR28-DW-12, Matter et.al., 2012) and the traditional MRFSS charterboat estimates in 1986-2003 (SEDAR16-DW-15, Sminkey, 2008) with the FHS. For the Mid-Atlantic calibration factors were developed for 1981-2003 (SEDAR17-Data Workshop Report, 2008). 1986-2003 South Atlantic calibration factors were updated in 2011 (SEDAR25-Data Workshop Report, 2011). The relationship between the old charterboat method estimates of angler trips and the FHS was used to estimate the conversion factors. Since these factors are based on effort, they can be applied to all species' landings. Table 1 shows the conversion factors and standard errors (in parentheses) for the South Atlantic and the Mid-Atlantic.

Separation of SA combined charter/headboat mode

In the South Atlantic, 1981-1985 charter and headboat modes were combined into one single mode for estimation purposes. Since the NMFS Southeast Region Headboat Survey (SRHS) began in this region in 1981, the MRFSS combined charter/headboat mode must be split in order to not double estimate the headboat mode for these years. MRFSS charter/headboat mode was split in these years by using a ratio of SRHS headboat angler trip estimates to MRFSS charter boat angler trip estimates for 1986-1990. This method has been used in the past (SEDAR 28-Spanish mackerel and cobia). The mean ratio was calculated by state (or state equivalent to match SRHS areas to MRFSS states) and then applied to the 1981-1985 estimates to strip out the headboat component. These headboat estimates were then eliminated from the MRFSS estimates.

MRIP estimates and the calibration of MRFSS estimates

The Marine Recreational Information Program (MRIP) was developed to provide more accurate recreational catch estimates by accounting for potential biases such as possible differences in catch rates at high-activity and low-activity fishing sites, or the amount of fishing occurring at different parts of the day. Revised catch and effort estimates, based on this improved estimation method, were released on January 25, 2012. These estimates are available for the Atlantic and Gulf Coasts for 2004 through 2011. To learn more about the peer-reviewed re-estimation process, along with any implications for fisheries science and management, visit **www.countmyfish.noaa.gov**. (NOAA Fisheries, Office of Science and Technology). Table 2 shows the differences between Atlantic snowy grouper MRIP estimates and the MRFSS estimates for the time period 2004-2011.

Since new MRIP estimates are only available for a portion of the recreational time series that the MRFSS covers, calibration factors between the MRFSS estimates and the MRIP estimates were developed in order to maintain one consistent time series for the recreational estimates. The MRFSS to MRIP calibration process is detailed in SEDAR31-DW25 and SEDAR32-DW02. Table 3 shows the ratio estimators used in the calibration for snowy grouper. Figure 1 shows the MRFSS versus MRIP adjusted AB1 estimates for Atlantic snowy grouper.

Monroe County, Florida
Official MRFSS Florida estimates are divided into two estimates by coasts, Florida east coast (FLE) and Florida west coast (FLW). FLE includes the area from the GA/Florida border to the Miami-Dade/Monroe county line. FLW includes Monroe county through the AL/Florida border. Unofficial post-stratified estimates are available that break up the state in to five regions, including Monroe county (fl_reg=3). These estimates were not available in SEDAR 4. Table 4 shows the Monroe county, Florida AB1 estimates by year for snowy grouper. The 1981 landings estimate of 62,969 fish is based on one intercept where an interviewer saw 23 fish (and measured 10) from 2 contributors on that trip. It is from wave 4, private mode, and ocean>10miles.

Snowy grouper is a deep-water species and Monroe county catches are most likely from the Atlantic side of the Keys. This species would not be associated with the shallow Gulf waters of Monroe county. Tables and figures in this report (excluding the MRFSS versus MRIP tables and figures) include the Monroe county landings for snowy grouper as part of the Atlantic stock.

Calculating landings estimates in weight
The MRFSS and the MRIP surveys use different methodologies to estimate landings in weight. To apply a consistent methodology over the entire recreational time series, the Southeast Fisheries Science Center (SEFSC) implemented a method for calculating average weights for the MRIP (and MRIP adjusted) landings. This method is described in SEDAR32-DW-02. Table 5 shows the MRIP estimated landings in weight by year and source for Atlantic snowy grouper. Table 6 shows the MRIP estimated landings in weight by year and mode for Atlantic snowy grouper.

Variances
Variances are provided by MRFSS/MRIP for their recreational catch estimates. Variances are adjusted to take into account the variance of the conversion factor when an adjustment to the estimate has been made (FHS and MRIP conversions). However, the variance estimates of the charter and headboat modes in 1981-1985 are missing. This is due to the MRIP calibration procedure, which requires the combined charter/headboat mode to be split in order to apply the MRIP adjustment to the charter mode back to 1981. In addition variance estimates are not available for weight estimates generated through the SEFSC method described above.

CATCH ESTIMATES and SAMPLING PROPORTIONS

Tables 7-8 show the MRIP catch estimates and CVs by mode and by state for snowy grouper in the Atlantic. In the tables, estimated A+B1 is the catch that was killed and B2 is the catch that was released alive. Tabulated estimates use the new charterboat method (FHS) or are calibrated to the new using the discussed calibration factors. MRIP or MRIP adjusted landings are used for all years (except for headboat mode 1981-1985). Headboat estimates from 2003-2012 are from the mid and North Atlantic sub-regions. Tables 9 and 10 show the number of trips with measured snowy grouper and the number of snowy grouper measured from the MRFSS/MRIP survey by year, mode and state.

References

General overview of the MRFSS has been adapted from the following:
Recreational Survey Data for Gag and Black Grouper in the Gulf of Mexico. Patty Phares, Vivian Matter, and Steve Turner. National Marine Fisheries Service, Southeast Fisheries Science Center, Sustainable Fisheries Division, January, 2006. Sustainable Fisheries Division Contribution No. SFD-2006-008. SEDAR10-DW-26.

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. Guillermo A. Diaz and Patty Phares. National Marine Fisheries Service, Southeast Fisheries Science Center, Sustainable Fisheries Division, August, 2004. Sustainable Fisheries Division Contribution No. SFD-2004-036. SEDAR7-AW-03

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. Tom Sminkey. National Marine Fisheries Service, Office of Science and Technology, February 2008. SEDAR16-DW-15.

Estimated Recreational Catch in Weight: Method for Filling in Missing Weight Estimates from the Recreational Surveys with Application to Yellowedge Grouper, Tilefish (golden), and Blueline Tilefish. Vivian M. Matter and Stephen C. Turner. National Marine Fisheries Service, Southeast Fisheries Science Center, Sustainable Fisheries Division, March, 2010. Sustainable Fisheries Division Contribution No. SFD-2010-003. SEDAR22-DW-16.

TABLES AND FIGURES

Table 1. Atlantic MRFSS charterboat conversion factors and standard errors (in parentheses).

Table 1a) Apply to 1981-1985 charterboat/headboat mode in the South Atlantic.

	WAVE					
STATE	1	2	3	4	5	6
NC	-	2.151 (0.12)	2.294 (0.12)	1.444 (0.12)	1.763 (0.12)	0.857 (0.12)
SC	-	1.035 (0.04)	1.085 (0.04)	1.437 (0.04)	0.891 (0.04)	0.750 (0.04)
GFE	0.845 (0.02)	0.951 (0.02)	0.985 (0.02)	1.016 (0.02)	0.811 (0.02)	0.696 (0.02)

Table 1b) Apply to 1986- 2002 charterboat mode in FLE
*FHS began in the east coast of Florida in 2003.

	Wave					
Area	1	2	3	4	5	6
INSHORE	1.600 (0.65)	2.786 (0.65)	2.201 (0.65)	2.894 (0.65)	1.630 (0.65)	2.386 (0.65)
OCEAN	0.664 (0.10)	0.852 (0.10)	0.828 (0.10)	1.006 (0.10)	0.478 (0.10)	0.549 (0.10)

Table 1c) Apply to 1986- 2003 charterboat mode in GA and SC

	Wave				
Area	2	3	4	5	6
INSHORE	1.635 (0.90)	3.100 (0.90)	2.092 (0.90)	0.931 (0.90)	0.757 (0.90)
OCEAN	0.939 (0.36)	1.272 (0.33)	2.161 (0.32)	0.835 (0.33)	0.638 (0.36)

Table 1d) Apply to 1986- 2003 charterboat mode in NC

	Wave				
Area	2	3	4	5	6
INSHORE	11.850 (3.48)	10.026 (2.63)	6.616(2.84)	3.766 (2.84)	9.415 (3.11)
OCEAN	2.188 (0.58)	2.504 (0.58)	1.565 (0.60)	2.102 (0.60)	0.661 (0.60)

Table 1e) Apply to 1981-2003 charterboat mode in the mid-Atlantic
*originally only said to apply to 1986-2003 data, but the cbt/hbt combined mode in sub_reg=5 was consistent from 1981-2003 and there is no HBS data providing headboat estimates in this sub-region.

	Wave				
State	2	3	4	5	6
DE / MD	1.294 (0.52)	1.599 (0.54)	1.930 (0.54)	0.861 (0.52)	1.171 (0.56)
NJ	1.289 (0.36)	1.179 (0.34)	1.644 (0.34)	0.809 (0.34)	1.115 (0.36)
NY	1.187 (0.48)	2.048 (0.54)	2.665 (0.48)	1.210 (0.51)	0.617 (0.48)
VA	0.770 (0.25)	0.680 (0.21)	0.761 (0.21)	0.324 (0.22)	0.313 (0.22)

Table 2. Snowy grouper MRIP vs. MRFSS estimates of landings (number of fish) for the Atlantic (sub-regions 4-6) 2004-2011. See accompanying graph below table.

Estimate Status	Year	Fishing Year	Common Name	MRFSS Unweighted Total Harvest (A+B1)	MRIP Weighted Total Harvest (A+B1)	Difference: MRIP - MRFSS	% Change from MRFSS	PSE for MRIP Weighted Total Harvest (A + B1)
FULL YEAR	2004	Calendar Year (Jan 1 - Dec 31)	SNOWY GROUPER	13,079	10,998	-2,082	-15.9%	41.2
FULL YEAR	2005	Calendar Year (Jan 1 - Dec 31)	SNOWY GROUPER	10,935	19,806	8,871	81.1%	70.8
FULL YEAR	2006	Calendar Year (Jan 1 - Dec 31)	SNOWY GROUPER	13,487	18,675	5,187	38.5%	37.8
FULL YEAR	2007	Calendar Year (Jan 1 - Dec 31)	SNOWY GROUPER	3,771	3,095	-677	-17.9%	47.2
FULL YEAR	2008	Calendar Year (Jan 1 - Dec 31)	SNOWY GROUPER	1,770	2,228	459	25.9%	47.5
FULL YEAR	2009	Calendar Year (Jan 1 - Dec 31)	SNOWY GROUPER	3,825	2,826	-999	-26.1%	37.6
FULL YEAR	2010	Calendar Year (Jan 1 - Dec 31)	SNOWY GROUPER	1,989	3,249	1,259	63.3%	30.8
FULL YEAR	2011	Calendar Year (Jan 1 - Dec 31)	SNOWY GROUPER	88	45	-44	-49.4%	77.9

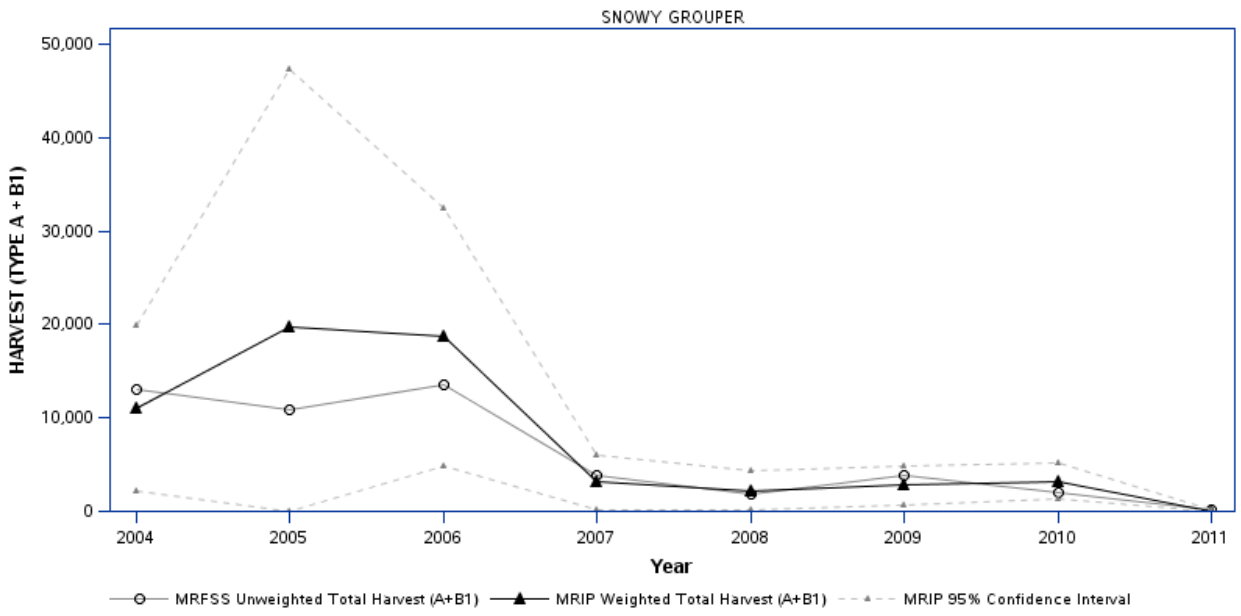

Table 3. Atlantic snowy grouper ratio estimators for adjusting MRFSS numbers and variance estimates (AB1 and B2) to MRIP numbers and variances for 1981-2003. The variances of the numbers ratio estimators are also shown.

4a) South Atlantic snowy grouper

	Numbers Ratio Estimator		Variance Ratio Estimator		Variance of Numbers Ratio Estimator	
MODE	**AB1**	**B2**	**AB1**	**B2**	**AB1**	**B2**
Charterboat	1.18309365	0.963883567	1.739864052	4.740098084	0.020800002	0.02183795
Private	1.08973494	0.601987711	3.477535501	0.85678465	0.228753475	0.002761638
All	1.149877089	0.68991855	2.480792481	1.106974274	0.058085172	0.011067975

4b) snowy grouper (all regions)

	Numbers Ratio Estimator		Variance Ratio Estimator		Variance of Numbers Ratio Estimator	
MODE	**AB1**	**B2**	**AB1**	**B2**	**AB1**	**B2**
All	1.096839896	1.051288793	2.4513201	2.353457676	0.036027345	0.037147887

Figure 1. MRFSS AB1 estimates (number of fish) versus MRIP adjusted AB1 estimates for Atlantic snowy grouper 1981-2003.

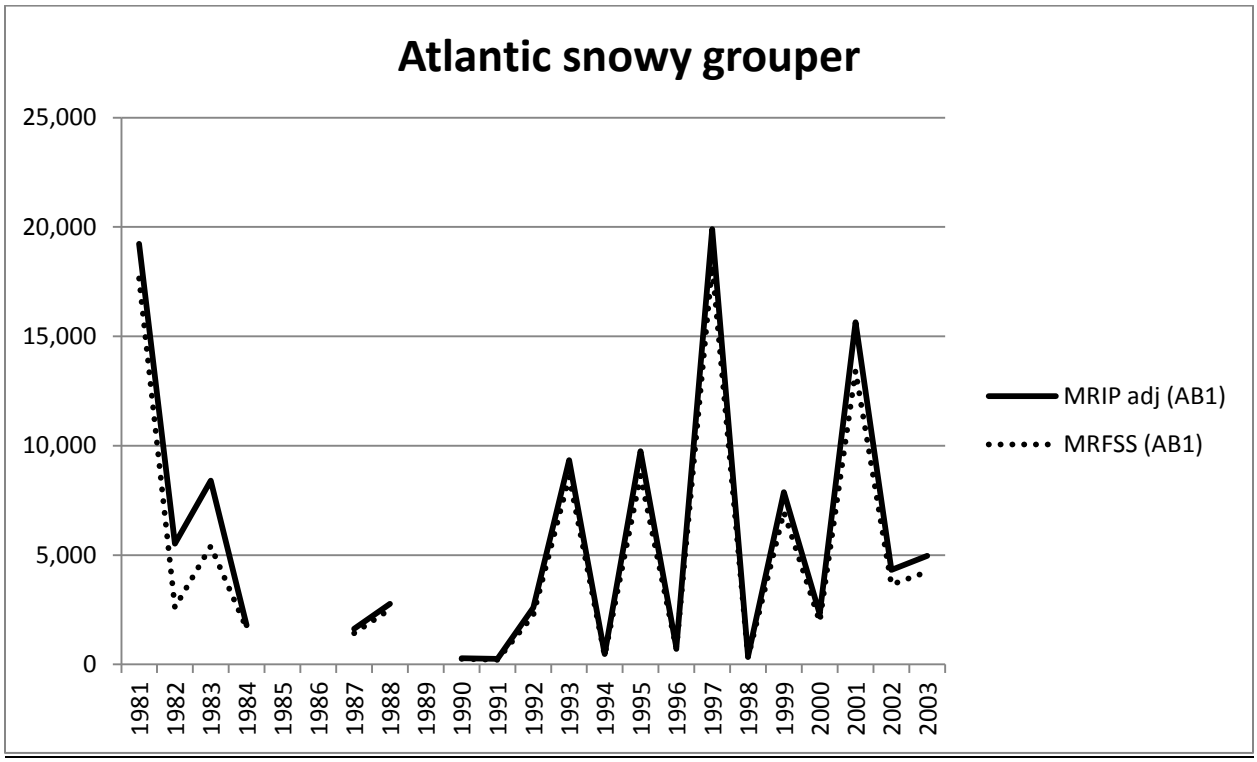

Table 4. Monroe county, Florida MRIP AB1 estimates (number of fish) for snowy grouper.

YEAR	AB1	B2
1981	69,969	0
1982	0	0
1983	0	0
1984	0	0
1985	0	0
1986	0	0
1987	0	0
1988	0	0
1989	0	0
1990	0	0
1991	0	0
1992	0	0
1993	0	0
1994	0	0
1995	0	0
1996	0	0
1997	0	0
1998	0	0
1999	489	48
2000	255	0
2001	191	12
2002	81	907
2003	178	0
2004	1,975	29
2005	635	0
2006	0	0
2007	1,355	0
2008	276	50
2009	2,651	1,181
2010	2,567	0
2011	39	0
2012	15,282	0
Grand Total	**88,946**	**2,227**

Table 5. Atlantic snowy grouper MRIP estimates of landings (whole weight in pounds) using the SEFSC weight estimation method by year and source.

lbsest_SECwwts	lbsestSEC_source*					
YEAR	sr	sry	srys	srysm	srysmwa	Grand Total
1981	574,305					574,305
1982	41,056					41,056
1983	81,631					81,631
1984	23,902					23,902
1985						
1986						
1987	21,646					21,646
1988	36,940					36,940
1989						
1990	3,758					3,758
1991	3,346					3,346
1992	34,614					34,614
1993	124,310					124,310
1994	6,257					6,257
1995	129,718					129,718
1996	10,173					10,173
1997	265,003					265,003
1998	4,932					4,932
1999	104,804			2,284		107,088
2000	31,953					31,953
2001	209,228					209,228
2002	57,868					57,868
2003	67,010					67,010
2004	156,380					156,380
2005	266,869					266,869
2006		15,978		827	227,705	244,510
2007	6,852	36,362	4,737	25,898		73,848
2008	31,057					31,057
2009	13,400	32,482		22,616		68,497
2010	12,974		8,691	46,644	26,266	94,576
2011	793					793
2012	65 95,159					95,224
Grand Total	**65 2,415,939**	**84,822**	**13,428**	**98,268**	**253,972**	**2,866,494**

* The hierarchy used for each estimate of weight is recorded in the variable 'lbsestSEC_source' and uses the first letter of each variable used from the hierarchy (**s**pecies, **r**egion, **y**ear, **s**tate, **m**ode, **w**ave, and **a**rea). For example an estimate with 'lbsestSEC_source'=srys, would have used an average weight from the combined samples in for the strata defined by that species, region, year, and state. All modes, waves, and areas in that stratum would have been included.

Table 6. Atlantic snowy grouper MRIP estimates of landings (whole weight in pounds) using the SEFSC weight estimation method by year and mode.

YEAR	Cbt	Priv	Grand Total
1981	0	574,305	574,305
1982	41,056	0	41,056
1983	39,872	41,759	81,631
1984	0	23,902	23,902
1985	0	0	0
1986	0	0	0
1987	12,769	8,877	21,646
1988	3,314	33,626	36,940
1989	0	0	0
1990	0	3,758	3,758
1991	3,346	0	3,346
1992	22,171	12,443	34,614
1993	1,812	122,498	124,310
1994	6,257	0	6,257
1995	59,228	70,490	129,718
1996	0	10,173	10,173
1997	5,749	259,254	265,003
1998	4,932	0	4,932
1999	48,011	59,077	107,088
2000	31,953	0	31,953
2001	171,959	37,269	209,228
2002	57,868	0	57,868
2003	59,482	7,529	67,010
2004	97,547	58,833	156,380
2005	99,832	167,037	266,869
2006	244,510	0	244,510
2007	39,037	34,811	73,848
2008	31,057	0	31,057
2009	26,346	42,152	68,497
2010	73,617	20,959	94,576
2011	793	0	793
2012	7,425	87,799	95,224
Grand Total	**1,189,945**	**1,676,549**	**2,866,494**

Table 7. Estimated MRIP AB1 catch (number landed) and B2 catch (number released alive) and coefficients of variations (CV) by mode for snowy grouper in the Atlantic. MRIP estimates and FHS charter estimates are used (or calibrated to MRIP and FHS). *CVs for all modes in 1981-1985 only reflect the private and shore mode CVs, since charter and headboat mode CVs are unavailable. Hbt estimates are from sub-regions 4 and 5 (mid and North Atlantic) from 2003+. Shore mode excluded.

	Cbt				Hbt				Priv				Grand Total			
YEAR	AB1	CV	B2	CV	AB1	CV	B2	CV	AB1	CV	B2	CV	AB1	CV	B2	CV
1981	0	0.00	0	0.00					82,200	0.77	0	0.00	82,200	0.77	0	0.00
1982	3,084	0.00	0	0.00					0	0.00	220	0.93	3,084	0.00	220	0.93
1983	2,995	0.00	0	0.00					3,137	1.73	0	0.00	6,132	0.89	0	0.00
1984	0	0.00	0	0.00					1,796	1.37	0	0.00	1,796	1.37	0	0.00
1985	0	0.00	0	0.00					0	0.00	0	0.00	0	0.00	0	0.00
1986	0	0.00	0	0.00					0	0.00	0	0.00	0	0.00	0	0.00
1987	959	0.80	0	0.00					667	0.78	2,546	0.67	1,626	0.57	2,546	0.67
1988	249	0.61	0	0.00					2,526	1.73	0	0.00	2,775	1.58	0	0.00
1989	0	0.00	0	0.00					0	0.00	0	0.00	0	0.00	0	0.00
1990	0	0.00	0	0.00					282	0.97	808	0.93	282	0.97	808	0.93
1991	251	0.90	0	0.00					0	0.00	0	0.00	251	0.90	0	0.00
1992	1,666	0.72	0	0.00					935	1.73	518	0.93	2,600	0.77	518	0.93
1993	136	0.95	0	0.00					9,202	1.73	0	0.00	9,338	1.71	0	0.00
1994	470	1.31	54	2.16					0	0.00	0	0.00	470	1.31	54	2.16
1995	4,449	0.89	0	0.00					5,295	1.73	588	0.93	9,745	1.02	588	0.93
1996	0	0.00	0	0.00					764	1.25	521	0.93	764	1.25	521	0.93
1997	432	1.31	0	0.00					19,476	0.79	0	0.00	19,907	0.78	0	0.00
1998	370	0.93	0	0.00					0	0.00	0	0.00	370	0.93	0	0.00
1999	3,924	0.49	48	0.70					4,438	1.27	164	0.93	8,362	0.71	212	0.73
2000	2,559	0.76	0	0.00					0	0.00	702	0.93	2,559	0.76	702	0.93
2001	13,036	0.85	12	0.99					2,800	1.46	392	0.93	15,836	0.74	404	0.90
2002	4,397	0.80	0	0.00					0	0.00	1,211	1.43	4,397	0.80	1,211	1.43
2003	4,579	1.00	0	0.00	0	0.00	0	0.00	566	1.73	638	0.93	5,145	0.91	638	0.93
2004	8,553	0.42	67	0.60	0	0.00	0	0.00	4,420	0.64	455	1.01	12,972	0.35	522	0.89
2005	7,894	0.85	0	0.00	0	0.00	0	0.00	12,548	0.98	1,581	0.96	20,442	0.69	1,581	0.96
2006	18,675	0.38	47	1.00	0	0.00	0	0.00	0	0.00	0	0.00	18,675	0.38	47	1.00
2007	2,803	0.25	1,125	0.91	0	0.00	0	0.00	1,646	0.82	0	0.00	4,450	0.34	1,125	0.91
2008	2,504	0.42	185	0.57	0	0.00	0	0.00	0	0.00	442	1.00	2,504	0.42	627	0.73
2009	1,557	0.30	0	0.00	0	0.00	0	0.00	3,920	0.24	1,487	0.21	5,476	0.19	1,487	0.21
2010	3,041	0.31	67	1.00	0	0.00	0	0.00	2,774	0.12	0	0.00	5,815	0.17	67	1.00
2011	84	0.41	18	1.02	0	0.00	0	0.00	0	0.00	0	0.00	84	0.41	18	1.02
2012	610	0.36	1,257	1.00	0	0.00	24	1.04	16,024	0.70	1,347	0.69	16,634	0.68	2,628	0.60
Grand Total	**89,280**	**0.19**	**2,882**	**0.57**	**0**	**0.00**	**24**	**1.04**	**175,414**	**0.40**	**13,619**	**0.25**	**264,693**	**0.27**	**16,525**	**0.23**

Table 8. Estimated **MRIP AB1 (number of fish landed)** and **B2 (number released alive)** by year and state for snowy grouper in the Atlantic (sub-regions 4-6 and Monroe county, FL). Charterboat estimates use the FHS method or are calibrated to the FHS method. MRIP estimates (or MRFSS estimates adjusted to MRIP estimates) are used. Shore mode excluded.

YEAR	FLKEYS		FLE		GA		SC		NC		DE		NY		Grand Total	
	AB1	B2	AB1	B2	AB1	B2	AB1	B2	AB1	B2	AB1	B2	AB1	B2	AB1	B2
1981	62,969	0	19,230	0	0	0	0	0	0	0	0	0	0	0	82,200	0
1982	0	0	0	220	0	0	3,084	0	0	0	0	0	0	0	3,084	220
1983	0	0	6,132	0	0	0	0	0	0	0	0	0	0	0	6,132	0
1984	0	0	1,796	0	0	0	0	0	0	0	0	0	0	0	1,796	0
1985	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1987	0	0	0	2,546	0	0	0	0	1,626	0	0	0	0	0	1,626	2,546
1988	0	0	2,526	0	0	0	0	0	249	0	0	0	0	0	2,775	0
1989	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1990	0	0	0	808	0	0	0	0	282	0	0	0	0	0	282	808
1991	0	0	0	0	0	0	0	0	251	0	0	0	0	0	251	0
1992	0	0	935	518	0	0	0	0	1,666	0	0	0	0	0	2,600	518
1993	0	0	9,202	0	136	0	0	0	0	0	0	0	0	0	9,338	0
1994	0	0	470	0	0	0	0	0	0	54	0	0	0	0	470	54
1995	0	0	9,745	588	0	0	0	0	0	0	0	0	0	0	9,745	588
1996	0	0	0	521	0	0	0	0	764	0	0	0	0	0	764	521
1997	0	0	12,996	0	0	0	0	0	6,912	0	0	0	0	0	19,907	0
1998	0	0	370	0	0	0	0	0	0	0	0	0	0	0	370	0
1999	489	48	6,990	164	0	0	0	0	883	0	0	0	0	0	8,362	212
2000	255	0	385	702	0	0	0	0	1,918	0	0	0	0	0	2,559	702
2001	191	12	3,012	392	0	0	0	0	12,633	0	0	0	0	0	15,836	404
2002	81	907	105	304	0	0	0	0	4,212	0	0	0	0	0	4,397	1,211
2003	178	0	1,202	638	0	0	0	0	3,764	0	0	0	0	0	5,145	638
2004	1,975	29	7,183	493	0	0	0	0	3,815	0	0	0	0	0	12,972	522
2005	635	0	12,736	1,581	0	0	0	0	7,071	0	0	0	0	0	20,442	1,581
2006	0	0	17,339	0	0	0	0	0	1,335	47	0	0	0	0	18,675	47
2007	1,355	0	1,731	40	0	0	0	0	1,364	1,086	0	0	0	0	4,450	1,125
2008	276	50	169	479	0	0	0	0	2,059	97	0	0	0	0	2,504	627
2009	2,651	1,181	1,693	306	0	0	0	0	1,133	0	0	0	0	0	5,476	1,487
2010	2,567	0	0	0	0	0	0	0	3,249	67	0	0	0	0	5,815	67
2011	39	0	0	0	0	0	0	0	45	18	0	0	0	0	84	18
2012	15,282	0	823	1,347	0	0	0	0	522	1,257	6	0	0	24	16,634	2,628
Grand Total	**88,946**	**2,227**	**116,770**	**11,647**	**136**	**0**	**3,084**	**0**	**55,751**	**2,627**	**6**	**0**	**0**	**24**	**264,693**	**16,525**

Table 9. Number of angler trips with measured snowy grouper in the Atlantic in the MRFSS by year, mode, and state.

	Cbt				Priv				
YEAR	FLKeys	FLE	NC	All	FLKeys	FLE	NC	All	Grand Total
1981					1	1		2	2
1982									
1983		1		1		1		1	2
1984						1		1	1
1985									
1986									
1987							1	1	1
1988			1	1		1		1	2
1989									
1990							1	1	1
1991			1	1					1
1992									
1993						1		1	1
1994		1		1					1
1995		2		2		1		1	3
1996							2	2	2
1997			1	1		1	1	2	3
1998		2		2					2
1999	6	7		13		1		1	14
2000	5	1		6					6
2001	4	2	2	8		2		2	10
2002	1	1	3	5					5
2003	2	7	4	13		1		1	14
2004	2	5	1	8		1		1	9
2005	3	1	2	6					6
2006		2	6	8					8
2007	6	2	8	16			1	1	17
2008	3	1	7	11	1			1	12
2009	2	1	12	15	1	4		5	20
2010	1		22	23	1		1	2	25
2011			1	1					1
2012	1		10	11	2			2	13
Grand Total	**36**	**36**	**81**	**153**	**6**	**16**	**7**	**29**	**182**

Table 10. Number of snowy grouper measured in the Atlantic in the MRFSS by year, mode, and state.

	Cbt				Priv				
YEAR	FLKeys	FLE	NC	All	FLKeys	FLE	NC	All	Grand Total
1981					10	5		15	15
1982									
1983		4		4		1		1	5
1984						1		1	1
1985									
1986									
1987							1	1	1
1988			1	1		1		1	2
1989									
1990							1	1	1
1991			3	3					3
1992									
1993						1		1	1
1994		1		1					1
1995		5		5		5		5	10
1996							2	2	2
1997			2	2		2	4	6	8
1998		3		3					3
1999	20	12		32		1		1	33
2000	9	1		10					10
2001	5	2	25	32		5		5	37
2002	1	2	16	19					19
2003	2	11	8	21		1		1	22
2004	5	22	8	35		2		2	37
2005	8	3	14	25					25
2006		33	9	42					42
2007	10	2	37	49			1	1	50
2008	4	1	28	33	1			1	34
2009	3	1	40	44	2	4		6	50
2010	1		72	73	1		2	3	76
2011			1	1					1
2012	1		10	11	4			4	15
Grand Total	**69**	**103**	**274**	**446**	**18**	**29**	**11**	**58**	**504**