MRIP Recreational Survey Data for Gray triggerfish and Blueline tilefish in the Atlantic

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INTRODUCTION

Recreational survey data for gray triggerfish and blueline tilefish 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.

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.

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 gray triggerfish MRIP estimates and the MRFSS estimates for the time period 2004-2011. Table 3 shows the differences between Atlantic blueline tilefish 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. Tables 4 and 5 show the ratio estimators used in the calibration for gray triggerfish and blueline tilefish, respectively. Figures 1 and 2 show the MRFSS versus MRIP adjusted AB1 estimates for Atlantic gray triggerfish and blueline tilefish, respectively.

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). Table 6 shows the Monroe county, Florida AB1 estimates by year for gray triggerfish and blueline tilefish.

Gray triggerfish is a reef associated species and Monroe county catches are most likely from the Atlantic side of the Keys. SEDAR 9 (Gulf of Mexico gray triggerfish) included Monroe county landings; however, these landings were low and will have a limited effect if they are excluded from the Gulf stock in the future. Blueline tilefish 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 both species 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. Tables 7 and 8 show the MRIP estimated landings in weight by year for Atlantic gray triggerfish and blueline tilefish, respectively.

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.

Unidentified Balistidae landings

Landings from the Leatherjacket family are shown in Tables 9 and 10. Table 9 shows the unidentified Balistidae landings by year and state. Table 10 shows the Balistidae landings (in number and by percentage) for gray triggerfish, ocean triggerfish, and queen triggerfish. A percentage of the unidentified Balistidae landings should be allocated to gray triggerfish. In SEDAR 9 (Gulf of Mexico gray triggerfish) all the unidentified Balistidae landings were considered gray triggerfish. In the Atlantic, however, ocean triggerfish and queen triggerfish make up a larger percentage of the total landings from the Balistidae family.

1981, wave 1 East Florida estimates

As previously discussed, the MRFSS began in 1981, wave 2. In the East coast of Florida, catch needs to be estimated for 1981, wave 1. The standard method used in other SEDARs (gag, red grouper, Spanish mackerel, cobia) is to fill this gap by determining the proportion of wave 1 to other waves in years 1982-1984 by fishing mode and area. These proportions are then used to estimate AB1 (in numbers and weight) and B2 catch estimates (and variances when available) in wave 1 in 1981 from the estimated catches in other waves of that year. Tables in this report do not include this substitution.

CATCH ESTIMATES and SAMPLING PROPORTIONS

Tables 11-15 show the MRIP catch estimates and CVs by mode and by state for gray triggerfish and blueline tilefish 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). Tables 16, 17, and 18 show the number of trips with measured gray triggerfish from the MRFSS/MRIP survey by year, mode and state. Table 19 shows the number of trips with measured blueline tilefish 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

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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. Gray triggerfish 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)	GRAY TRIGGERFISH	179,020	183,371	4,351	2.43%	23.0
FULL YEAR	2005	Calendar Year (Jan 1 - Dec 31)	GRAY TRIGGERFISH	198,280	111,387	-86,894	-43.8%	18.7
FULL YEAR	2006	Calendar Year (Jan 1 - Dec 31)	GRAY TRIGGERFISH	95,108	90,791	-4,318	-4.54%	17.3
FULL YEAR	2007	Calendar Year (Jan 1 - Dec 31)	GRAY TRIGGERFISH	243,494	240,030	-3,464	-1.42%	15.7
FULL YEAR	2008	Calendar Year (Jan 1 - Dec 31)	GRAY TRIGGERFISH	160,899	206,515	45,616	28.4%	19.1
FULL YEAR	2009	Calendar Year (Jan 1 - Dec 31)	GRAY TRIGGERFISH	266,562	253,420	-13,142	-4.93%	16.1
FULL YEAR	2010	Calendar Year (Jan 1 - Dec 31)	GRAY TRIGGERFISH	179,752	158,446	-21,306	-11.9%	13.6
FULL YEAR	2011	Calendar Year (Jan 1 - Dec 31)	GRAY TRIGGERFISH	130,780	103,351	-27,429	-21.0%	17.7

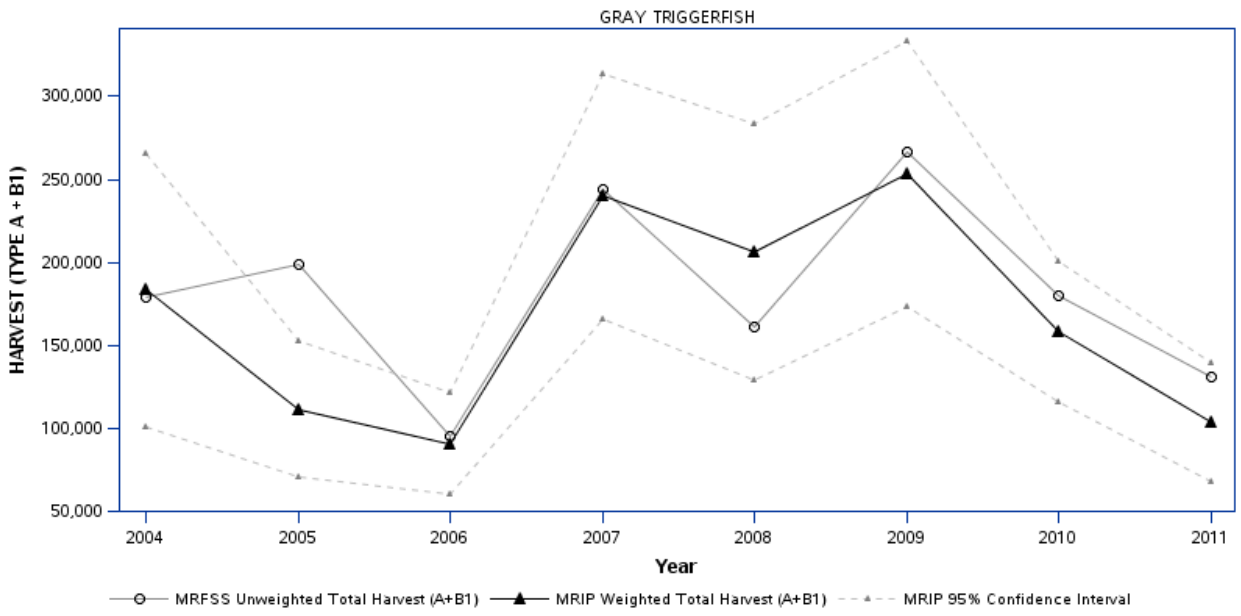

Table 3. Blueline tilefish MRIP vs MRFSS estimates of landings (number of fish) for the Atlantic (sub-regions 4-6) 2004-2011. See accompanying graph below table.

YEAR	MRFSS_ab1	MRIP_ab1
2004	789	1,823
2005	9,306	6,615
2006	65,902	54,991
2007	79,184	80,207
2008	83,274	71,567
2009	22,104	19,924
2010	10,921	8,688
2011	10,523	8,225
Grand Total	**282,003**	**252,041**

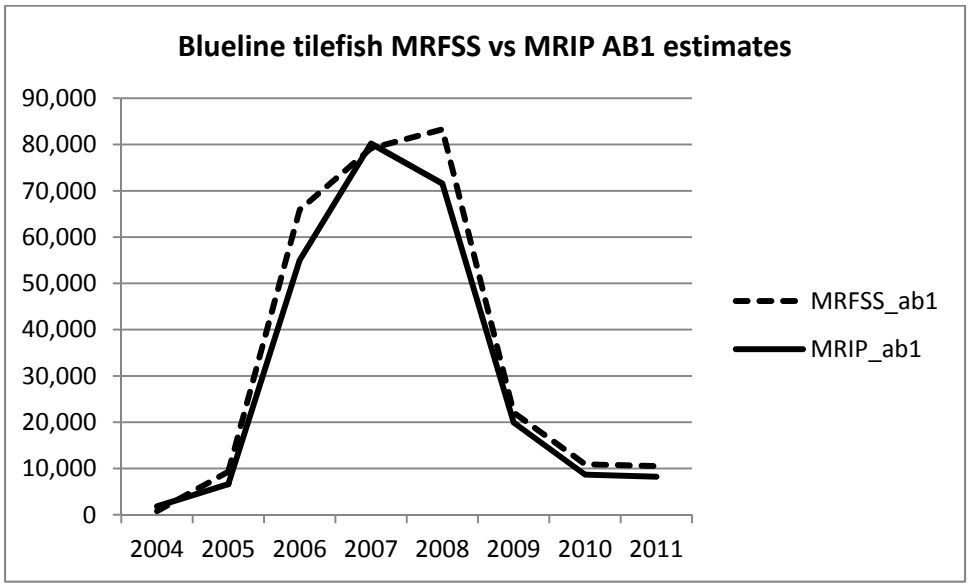

Table 4. Atlantic gray triggerfish ratio estimators for adjusting MRFSS numbers and variance estimates (AB1 and B2) to MRIP numbers and variances for 1981-2003. The variances of the numbers ratio estimators are also shown.

4a) South Atlantic gray triggerfish

	Numbers Ratio Estimator		Variance Ratio Estimator		Variance of Numbers Ratio Estimator	
MODE	**AB1**	**B2**	**AB1**	**B2**	**AB1**	**B2**
Charterboat	1.056788825	0.813218928	2.693635063	1.953466401	0.018505651	0.006452405
Private	0.947015805	0.911165706	1.535883173	2.966602244	0.008591749	0.003592274
Shore	0.548358547	0.532604492	0.334205942	0.500412821	0.001946289	0.005423957

4b) Mid-Atlantic gray triggerfish

	Numbers Ratio Estimator		Variance Ratio Estimator		Variance of Numbers Ratio Estimator	
MODE	**AB1**	**B2**	**AB1**	**B2**	**AB1**	**B2**
Charterboat/Headboat	1.021843616	0.401464718	3.707315149	0.230432502	0.00435919	0.016939357
Private	0.754616217	0.9105585	1.007607038	3.537733437	0.016575618	0.015200483
Shore	0.697249304	0.498368602	0.401640228	0.1998209	0.003767526	0.00207194

4c) North Atlantic gray triggerfish

	Numbers Ratio Estimator		Variance Ratio Estimator		Variance of Numbers Ratio Estimator	
MODE	**AB1**	**B2**	**AB1**	**B2**	**AB1**	**B2**
Charterboat/Headboat	1.384189827	1.492520608	2.535333875	2.218495179	0.010978338	
Private	1.307192489	0.802146593	2.067417525	0.674071113	0.207649243	0.010383869
Shore		0.264659498		0.070287824		
All	1.326858533	0.754169048	2.104508705	0.644742799	0.132017509	0.014817160

Table 5. Atlantic blueline tilefish 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.

5a) South Atlantic blueline tilefish

	Numbers Ratio Estimator		Variance Ratio Estimator		Variance of Numbers Ratio Estimator	
MODE	**AB1**	**B2**	**AB1**	**B2**	**AB1**	**B2**
Charterboat	0.940957836	3.386667186	1.683544932	95.79116016	0.002568455	1.864214942
Private	0.792645875	0.431283037	0.923946375	0.525147161	0.006332209	0.000000718
Shore						
All	0.895581082	1.875209525	1.372706765	17.71744704	0.001784787	0.076967739

5b) Mid-Atlantic blueline tilefish

	Numbers Ratio Estimator		Variance Ratio Estimator		Variance of Numbers Ratio Estimator	
MODE	**AB1**	**B2**	**AB1**	**B2**	**AB1**	**B2**
Charterboat/Headboat	0.518119641	2.733161358	0.442027215	2.522457909	0.003855225	0.518119641
Private						
Shore						
All	0.518119641	2.733161358	0.442027215	2.522457909	0.003855225	0.518119641

5c) blueline tilefish (all regions)

	Numbers Ratio Estimator		Variance Ratio Estimator		Variance of Numbers Ratio Estimator	
MODE	**AB1**	**B2**	**AB1**	**B2**	**AB1**	**B2**
All	0.893555073	1.877208483	1.376589982	17.71666722	0.001882132	0.076914683

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

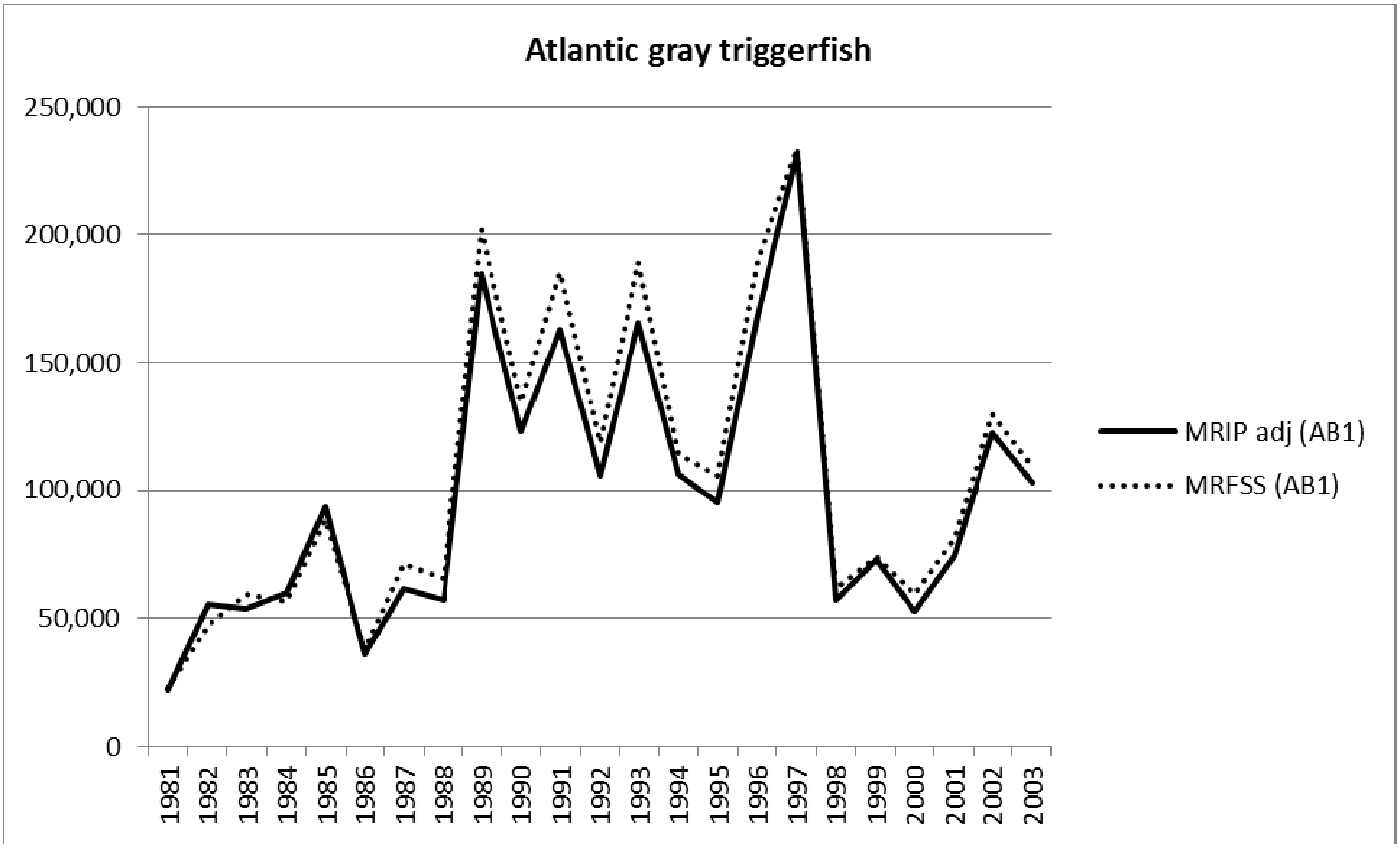

Figure 2. MRFSS AB1 estimates (number of fish) versus MRIP adjusted AB1 estimates for Atlantic blueline tilefish 1981-2003.

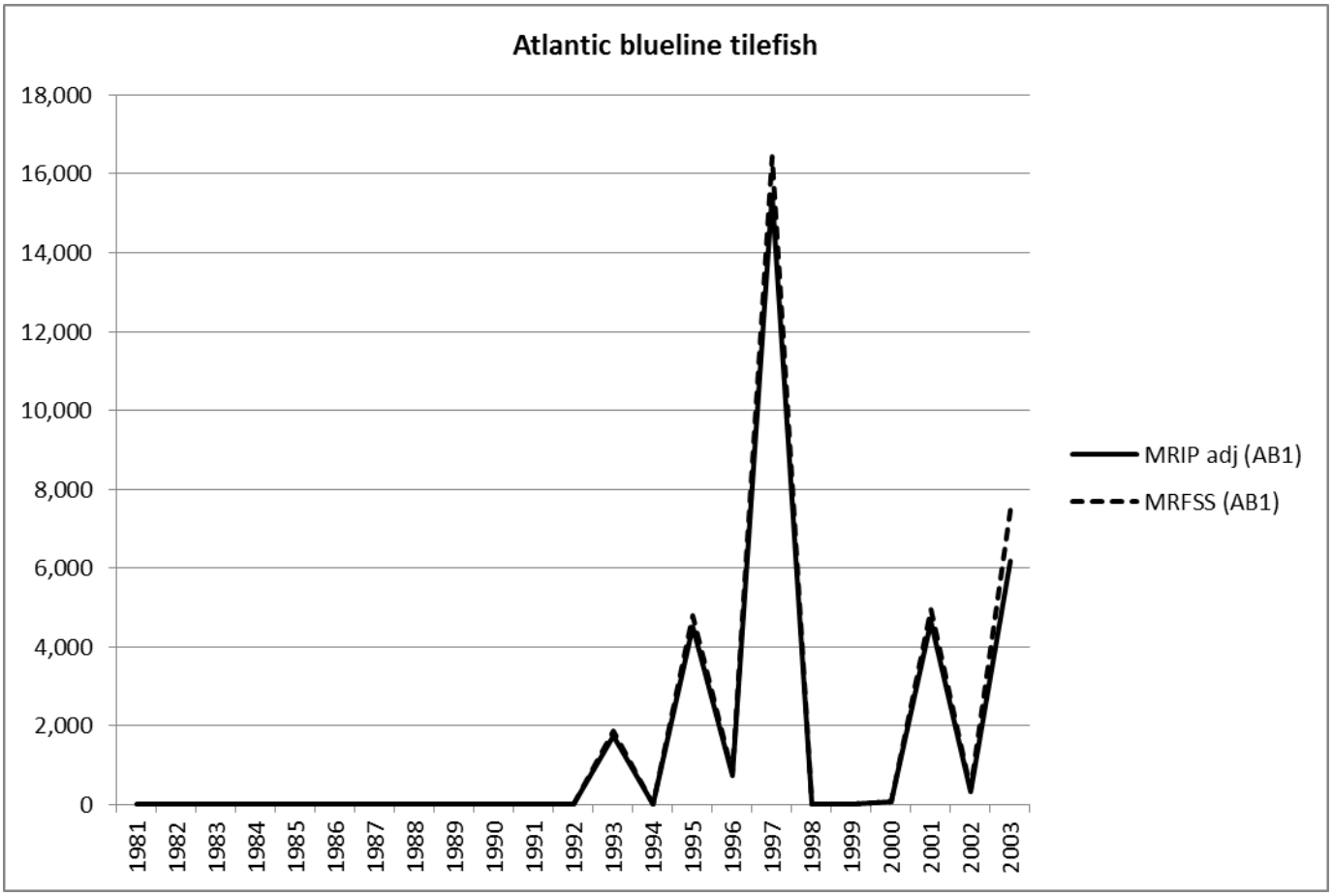

Table 6. Monroe county, Florida MRIP AB1 estimates (number of fish) for gray triggerfish and blueline tilefish.

YEAR	AB1 gray triggerfish	blueline tilefish
1981	19,173	0
1982	4,125	0
1983	360	0
1984	6,167	0
1985	0	0
1986	0	0
1987	0	207
1988	8,122	0
1989	2,517	0
1990	2,461	0
1991	22,631	0
1992	7,600	0
1993	4,693	671
1994	6,218	0
1995	2,000	0
1996	2,501	0
1997	8,242	334
1998	15	0
1999	3,039	776
2000	1,749	23
2001	258	142
2002	238	52
2003	1,844	615
2004	469	246
2005	305	1,175
2006	15,698	136
2007	11,808	2,292
2008	104	2,402
2009	9,024	3,577
2010	5,848	3,025
2011	510	0
Grand Total	**147,719**	**15,673**

Table 7. Atlantic gray triggerfish MRIP estimates of landings (whole weight in pounds) using the SEFSC weight estimation method by year and source.

lbsest_SECwwt	lbsestSEC_source*							
YEAR	s	sr	sry	srys	srysm	srysmw	srysmwa	Grand Total
1981		47,941						47,941
1982		121,343						121,343
1983		117,011						117,011
1984	3,984		25,941	67,703				97,627
1985		204,499						204,499
1986	7,971	69,152						77,123
1987		133,773						133,773
1988		124,257						124,257
1989	2,889		472,368					475,258
1990	1,387	39,332	306,209					346,929
1991	2,293	227,892	141,697					371,882
1992	1,880	29,983	192,964	50,851				275,679
1993	1,140		185,846	45,011	39,430		17,499	288,925
1994	2,343	42,535	77,827	531	46,202	11,353	61,578	242,368
1995		58,561	87,977	5,881	30,233		9,557	192,209
1996	2,964	128,908	78,679	1,372	32,759	51,682	67,365	363,729
1997	1,802		397,356	28,127	60,535			487,820
1998	3,366	21,177	115,461					140,004
1999		8,473	1,554	101,297	43,122	16,018		170,464
2000		28,822	83,842					112,664
2001		41,253	1,695	102,459	15,411		8,802	169,620
2002	1,171		54,318	151,348	66,700			273,537
2003	6,997	21,689	4,746	124,313	63,121			220,866
2004	14,705		189,858	115,728	56,198		6,685	383,174
2005	3		94,433	123,967	15,821			234,224
2006		8,266	2,103	38,404	149,131			197,905
2007	4,211		55,332	118,832	213,223	2,945	87,354	481,896
2008			131,991	129,162	227,042			488,195
2009	585		34,734	222,728	250,317	8,740	3,676	520,781
2010	38		69,893	10,509	269,935	4,774	9,577	364,726
2011		16,545		49,346	145,665	2,189	36,713	250,457
Grand Total	**59,730**	**1,491,412**	**2,806,823**	**1,487,569**	**1,724,845**	**97,701**	**308,805**	**7,976,885**

* 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 8. Atlantic blueline tilefish MRIP estimates of landings (whole weight in pounds) using the SEFSC weight estimation method by year and source.

lbsest_SECwwt	lbsestSEC_source*							
YEAR	s	sr	sry	srys	srysm	srysmw	srysmwa	Grand Total
1981								
1982								
1983								
1984								
1985								
1986								
1987								
1988								
1989								
1990								
1991								
1992								
1993		8,383						8,383
1994								
1995		21,615						21,615
1996		3,531						3,531
1997		74,276						74,276
1998								
1999								
2000		272						272
2001		22,319						22,319
2002		1,499						1,499
2003		29,639						29,639
2004		8,759						8,759
2005					25,960			25,960
2006					58,657	25,328	155,344	239,329
2007	1,656			71,162	9,608		327,867	410,293
2008	430		651	98,691	3,580	7,504	207,282	318,138
2009	1,317		15,887	51,727	43,407		4,103	116,441
2010			15,511	8,223	18,813	12,596		55,142
2011			17,607	2,531	27,429			47,567
Grand Total	**3,403**	**170,293**	**49,656**	**232,335**	**187,453**	**45,428**	**694,596**	**1,383,163**

* 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 9. Unidentified Atlantic Balistidae (leatherjacket family) MRIP AB1 estimates (number of fish) by year and state.

YEAR	FLKEYS	FLE	GA	SC	NC	VA	MD	DE	NJ	NY	RI	MA	G. Total
1981	0	2,507	0	0	0	0	0	0	0	0	0	0	2,507
1982	0	1,437	0	1,351	0	0	0	0	0	0	0	0	2,788
1983	0	4,103	0	0	0	3,970	587	718	0	0	0	1,446	10,823
1984	0	10,964	0	1,788	0	1,940	0	0	0	0	1,052	0	15,745
1985	534	5,196	0	0	3,479	396	0	0	0	0	0	0	9,605
1986	0	0	0	0	0	2,018	0	0	5,244	0	0	0	7,262
1987	1,104	6,522	599	0	1,984	0	0	0	0	0	0	0	10,209
1988	0	0	0	0	138	0	0	0	0	0	0	0	138
1989	0	15,478	0	0	234	0	0	0	11,274	0	0	0	26,986
1990	0	0	0	0	0	0	0	0	0	0	0	0	0
1991	6,820	0	0	0	295	0	0	0	0	0	0	0	7,115
1992	0	3,165	0	0	1,138	0	0	0	0	1,679	0	0	5,982
1993	0	2,282	0	0	644	0	0	0	0	0	0	0	2,927
1994	0	8,673	0	0	0	0	0	0	0	0	0	0	8,673
1995	0	951	0	0	4,557	0	0	0	0	0	0	0	5,508
1996	986	0	0	0	4,122	0	0	0	0	0	0	0	5,108
1997	0	3,951	0	0	451	0	0	0	0	0	0	0	4,402
1998	0	0	0	0	0	0	0	0	0	0	0	0	0
1999	0	0	0	0	0	0	0	0	0	0	0	0	0
2000	0	3,703		0	4,138	0	0	0	0	1,732	0	0	9,573
2001	0	30	0	0	0	0	0	0	0	0	0	0	30
2002	0	1,475	0	0	0	0	0	0	0	0	0	0	1,475
2003	0	516		2,507	733	0	0	0	0	0	0	0	3,756
2004	0	6,626	0	0	0	0	0	0	0	0	0	0	6,626
2005	2,004	3,911	0	0	0	0	0	0	0	0	0	0	5,915
2006	0	4,159	0	0	0	0	0	0	0	0	0	0	4,159
2007	7,045	0	0	0	0	0	0	0	0	0	0	0	7,045
2008	0	2,599	0	0	0	0	0	0	0	0	0	0	2,599
2009	63	0	0	0	0	0	0	0	0	0	0	0	63
2010	0	838	0	0	0	0	0	0	0	0	0	0	838
2011	1,497	0	0	0	0	0	0	0	0	0	0	653	2,150
G. Total	**20,054**	**89,086**	**599**	**5,647**	**21,913**	**8,324**	**587**	**718**	**16,518**	**3,411**	**1,052**	**2,099**	**170,007**

Table 10. Atlantic Balistidae family MRIP AB1 estimates (number of fish) by species and percentage of total.

YEAR	gray triggerfish		ocean triggerfish		queen triggerfish		Grand Total
1981	41,118	55%	25,387	34%	8,718	12%	75,223
1982	59,673	49%	29,669	24%	33,675	27%	123,017
1983	53,976	45%	41,203	34%	25,425	21%	120,604
1984	66,015	80%	2,741	3%	14,106	17%	82,863
1985	93,640	38%	1,663	1%	154,062	62%	249,365
1986	35,723	36%	57,873	58%	6,992	7%	100,588
1987	61,377	87%	7,118	10%	2,042	3%	70,537
1988	65,016	55%	48,295	41%	4,957	4%	118,268
1989	187,562	88%	6,117	3%	20,345	10%	214,024
1990	125,600	96%	359	0%	4,515	3%	130,474
1991	185,833	98%	0	0%	2,867	2%	188,700
1992	113,425	85%	6,286	5%	13,557	10%	133,267
1993	170,453	82%	27,310	13%	9,616	5%	207,379
1994	112,662	84%	21,240	16%	863	1%	134,765
1995	97,203	66%	40,314	28%	8,863	6%	146,380
1996	171,338	93%	8,796	5%	4,737	3%	184,870
1997	240,215	85%	37,729	13%	3,036	1%	280,979
1998	57,290	72%	13,657	17%	8,882	11%	79,829
1999	75,580	78%	10,193	11%	10,754	11%	96,527
2000	54,236	78%	9,836	14%	5,795	8%	69,867
2001	74,431	92%	6,222	8%	403	0%	81,057
2002	122,547	86%	14,938	10%	4,813	3%	142,299
2003	105,002	95%	4,114	4%	1,484	1%	110,601
2004	183,840	97%	1,245	1%	4,549	2%	189,633
2005	111,692	93%	2,097	2%	6,466	5%	120,255
2006	106,489	98%	1,284	1%	677	1%	108,450
2007	251,838	98%	4,554	2%	267	0%	256,659
2008	206,618	93%	9,758	4%	6,499	3%	222,875
2009	262,444	93%	18,658	7%	0	0%	281,103
2010	164,294	99%	1,168	1%	589	0%	166,051
2011	103,860	98%	1,108	1%	554	1%	105,522
G. Total	**3,760,990**	**82%**	**460,933**	**10%**	**370,108**	**8%**	**459203118.5%**

Table 11. Estimated MRIP AB1 catch (number landed) and coefficients of variations (CV) by mode for gray triggerfish 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.

	Cbt		Cbt/Hbt		Hbt		Priv		Shore		G.Total	
YEAR	**AB1**	**CV**	**AB1**	**CV**	**AB1**	**CV**	**AB1**	**CV**	**AB1**	**CV**	**AB1**	**CV**
1981	964		0	0.00	502		38,981	0.60	670	1.02	41,118	0.57*
1982	13,539		745	1.09	11,728		30,624	0.35	3,038	0.36	59,673	0.18*
1983	2,375		0	0.00	1,955		43,232	0.33	6,413	0.48	53,976	0.27*
1984	9,075		0	0.00	6,447		48,297	0.33	2,196	0.43	66,015	0.24*
1985	10,053		5,873	1.76	8,831		68,427	0.44	456	0.58	93,640	0.34*
1986	856	0.83	471	1.46			34,396	0.30	0	0.00	35,723	0.29
1987	2,094	0.65	4,583	1.92			46,896	0.29	7,805	0.43	61,377	0.27
1988	5,011	0.72	0	0.00			53,383	0.29	6,622	0.28	65,016	0.24
1989	3,112	0.55	5,150	0.57			177,567	0.38	1,732	0.38	187,562	0.36
1990	4,340	0.38	2,652	0.86			115,892	0.23	2,716	0.25	125,600	0.22
1991	7,676	0.38	31,340	0.73			123,612	0.19	23,204	0.48	185,833	0.19
1992	25,682	0.27	1,584	0.85			75,011	0.15	11,149	0.22	113,425	0.12
1993	25,942	0.43	29,580	0.86			97,545	0.18	17,385	0.23	170,453	0.19
1994	47,878	0.30	4,918	0.88			47,315	0.18	12,551	0.25	112,662	0.16
1995	38,195	0.37	5,193	1.08			47,994	0.25	5,820	0.23	97,203	0.20
1996	48,015	0.48	3,227	0.87			112,438	0.32	7,658	0.28	171,338	0.25
1997	59,593	0.48	113,080	0.87			60,897	0.32	6,645	0.35	240,215	0.44
1998	13,425	0.44	2,454	0.95			36,360	0.42	5,051	0.38	57,290	0.29
1999	28,357	0.38	3,552	0.90			43,291	0.24	380	0.58	75,580	0.20
2000	8,276	0.67	3,544	1.06			34,300	0.29	8,116	0.38	54,236	0.23
2001	14,787	0.46	2,728	0.86			54,737	0.27	2,179	0.45	74,431	0.22
2002	30,189	0.42	22,206	0.62			63,700	0.20	6,453	0.47	122,547	0.19
2003	30,359	0.47	3,814	0.74			66,511	0.24	4,318	0.32	105,002	0.21
2004	38,252	0.17			12,510	0.50	126,187	0.32	6,891	0.78	183,840	0.23
2005	20,792	0.25			301	0.39	78,647	0.23	11,952	0.71	111,692	0.19
2006	19,544	0.22			353	0.34	85,933	0.18	658	0.72	106,489	0.15
2007	92,554	0.32			14,034	0.53	141,478	0.15	3,771	0.44	251,838	0.15
2008	26,044	0.37			1,186	0.55	177,181	0.22	2,208	0.59	206,618	0.19
2009	31,996	0.19			6,238	0.41	195,764	0.19	28,447	0.46	262,444	0.16
2010	42,639	0.19			1,378	0.43	115,375	0.17	4,902	0.70	164,294	0.13
2011	30,755	0.29			1,566	0.38	69,860	0.23	1,678	0.70	103,860	0.18
G.Total	**732,370**	**0.08**	**246,695**	**0.43**	**67,031**	**0.15**	**2,511,829**	**0.05**	**203,065**	**0.11**	**3,760,990**	**0.05**

Table 12. Estimated MRIP B2 catch (number released alive) and and coefficients of variations (CV) by mode for gray triggerfish 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.

	Cbt		Cbt/Hbt		Hbt		Priv		Shore		G. Total	
YEAR	**B2**	**CV**	**B2**	**CV**	**B2**	**CV**	**B2**	**CV**	**B2**	**CV**	**B2**	**CV**
1981	139		0	0.00	82		10,971	1.00	627	0.71	11,818	0.93*
1982	984		0	0.00	1,084		0	0.00	3,359	0.56	5,428	0.34*
1983	1,147		0	0.00	852		6,957	1.54	0	0.00	8,955	1.19*
1984	371		0	0.00	374		4,875	1.72	0	0.00	5,619	1.49*
1985	3,204		0	0.00	2,698		39,661	1.24	2,370	0.52	47,933	1.03*
1986	107	1.39	0	0.00			60,646	0.50	22,323	0.38	83,076	0.38
1987	0	0.00	0	0.00			53,214	0.46	1,146	0.45	54,360	0.45
1988	94	1.39	0	0.00			78,569	0.47	986	0.71	79,649	0.46
1989	0	0.00	0	0.00			179,053	0.33	13,396	0.35	192,449	0.31
1990	0	0.00	0	0.00			72,120	0.38	1,613	0.71	73,732	0.37
1991	1,401	1.11	1,457	0.45			191,995	0.24	61,724	0.34	256,577	0.20
1992	1,225	1.64	156	0.56			76,067	0.23	14,837	0.21	92,285	0.20
1993	0	0.00	465	1.49			52,378	0.46	5,252	0.30	58,096	0.42
1994	179	0.87	189	0.49			47,780	0.40	5,461	0.23	53,609	0.36
1995	2,405	0.81	332	0.49			61,361	0.38	3,683	0.31	67,781	0.34
1996	2,515	0.85	55	0.56			59,475	0.40	21,395	0.20	83,440	0.29
1997	13,620	1.22	1,663	0.56			64,767	0.28	4,255	0.30	84,305	0.29
1998	0	0.00	0	0.00			26,233	0.38	1,493	0.43	27,726	0.36
1999	7,223	0.47	224	0.56			41,544	0.31	1,859	0.36	50,849	0.26
2000	1,179	0.75	1,159	0.32			45,844	0.31	3,617	0.41	51,798	0.27
2001	5,060	0.40	78	0.51			52,703	0.32	4,417	0.37	62,257	0.28
2002	4,935	0.36	439	0.53			88,442	0.28	1,060	0.45	94,877	0.26
2003	4,262	0.31	0	0.00			123,920	0.31	3,169	0.38	131,351	0.30
2004	13,333	0.24			8	1.00	127,651	0.22	4,011	0.68	145,003	0.20
2005	11,450	0.30			0	0.00	112,292	0.20	7,164	0.63	130,906	0.17
2006	8,266	0.27			0	0.00	129,792	0.25	235	1.00	138,292	0.23
2007	13,729	0.28			0	0.00	231,864	0.20	9,533	0.57	255,126	0.19
2008	11,351	0.19			0	0.00	140,125	0.17	10,190	0.44	161,665	0.15
2009	11,590	0.41			587	0.57	196,587	0.37	14,841	0.50	223,606	0.33
2010	5,324	0.32			0	0.00	137,495	0.29	8,317	0.55	151,135	0.26
2011	6,951	0.40			51	0.45	60,743	0.23	1,134	0.79	68,879	0.21
G. Total	**132,042**	**0.15**	**6,217**	**0.23**	**5,736**	**0.06**	**2,575,122**	**0.07**	**233,469**	**0.12**	**2,952,586**	**0.06**

Table 13. Estimated **MRIP AB1 (number of fish landed)** by year and state for gray triggerfish 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.

YEAR	FLKEYS	FLE	GA	SC	NC	VA	MD	DE	NJ	NY	CT	RI	MA	Grand Total
1981	19,173	21,142	0	343	460	0	0	0	0	0	0	0	0	41,118
1982	4,125	42,248	0	12,555	0	0	0	0	745	0	0	0	0	59,673
1983	360	43,197	0	114	0	0	0	0	10,305	0	0	0	0	53,976
1984	6,167	47,129	93	8,581	2,023	0	0	0	0	0	2,022	0	0	66,015
1985	0	71,006	231	15,344	1,186	516	0	0	5,357	0	0	0	0	93,640
1986	0	25,316	107	716	1,095	3,052	0	1,391	0	0	0	4,045	0	35,723
1987	0	30,089	214	811	3,336	1,708	0	0	4,583	20,635	0	0	0	61,377
1988	8,122	48,183	0	2,903	2,933	0	0	0	0	2,875	0	0	0	65,016
1989	2,517	139,364	446	5,287	4,175	613	2,911	587	3,157	27,038	1,251	215	0	187,562
1990	2,461	91,787	4,395	1,021	7,131	4,157	1,389	525	4,146	7,884	704	0	0	125,600
1991	22,631	95,213	1,941	3,750	3,413	3,996	6,668	1,457	42,102	3,498	0	1,163	0	185,833
1992	7,600	61,760	6,864	5,009	17,440	5,933	1,997	1,807	1,814	2,246	0	954	0	113,425
1993	4,693	45,285	16,245	7,614	37,747	22,649	0	1,740	29,110	4,792	0	578	0	170,453
1994	6,218	24,951	5,722	2,345	52,664	978	861	135	0	17,600	0	211	978	112,662
1995	2,000	28,075	14,305	4,066	21,807	1,193	4,395	2,626	8,153	10,583	0	0	0	97,203
1996	2,501	18,949	13,658	4,614	70,789	6,789	31,886	3,517	15,696	1,434	0	1,116	388	171,338
1997	8,242	32,873	11,358	15,738	44,347	2,243	4,228	3,961	114,204	2,106	0	915	0	240,215
1998	15	26,643	4,019	7,650	7,510	1,102	2,943	281	3,357	2,062	0	1,708	0	57,290
1999	3,039	33,596	646	17,919	16,480	35	0	1,160	2,704	0	0	0	0	75,580
2000	1,749	19,457	138	6,217	13,411	2,758	2,236	2,825	4,635	810	0	0	0	54,236
2001	258	21,995	759	6,679	25,756	2,089	0	3,396	6,396	7,104	0	0	0	74,431
2002	238	51,322	2,505	1,631	26,142	9,098	6,382	943	18,302	5,390	0	594	0	122,547
2003	1,844	56,819	5,158	2,362	25,288	2,646	96	897	1,678	4,664	0	3,551	0	105,002
2004	469	65,591	11,430	10,165	15,933	8,686	1,573	6,716	47,776	8,037	0		7,463	183,840
2005	305	55,209	4,769	854	11,476	14,728	7,161	1,260	4,083	11,846	0	2	0	111,692
2006	15,698	64,595	6,139	914	15,339	1,780	223	1,373		429	0	0	0	106,489
2007	11,808	86,618	18,557	11,399	72,582	7,301	768	10,886	23,391	6,391	0	37	2,100	251,838
2008	104	76,804	4,501	48,473	67,297	6,742		1,324	682	691	0	0	0	206,618
2009	9,024	103,410	744	7,728	75,807	3,049	34,449	10,883	10,075	6,978	0	297	0	262,444
2010	5,848	58,941	3,324	4,612	65,180	2,178	108	1,327	14,957	7,800	0	10	9	164,294
2011	510	57,390	1,175	2,236	34,935	31	29	41	6,971	542	0	0	0	103,860
G. Total	**147,719**	**1,644,957**	**139,445**	**219,650**	**743,681**	**116,049**	**110,303**	**61,058**	**384,380**	**163,436**	**3,977**	**15,397**	**10,938**	**3,760,990**

Table 14. Estimated **MRIP B2 (number of fish released alive)** by year and state for gray triggerfish 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.

YEAR	FLKEYS	FLE	GA	SC	NC	VA	MD	DE	NJ	NY	CT	RI	MA	G.Total
1981	220	11,598	0	0	0	0	0	0	0	0	0	0	0	11,818
1982	0	5,428	0	0	0	0	0	0	0	0	0	0	0	5,428
1983	5,225	3,730	0	0	0	0	0	0	0	0	0	0	0	8,955
1984	107	5,512	0	0	0	0	0	0	0	0	0	0	0	5,619
1985	0	43,264	0	3,642	1,028	0	0	0	0	0	0	0	0	47,933
1986	1,482	80,634	0	0	0	961	0	0	0	0	0	0	0	83,076
1987	0	53,072	142	0	0	0	0	0	0	1,146	0	0	0	54,360
1988	0	79,117	0	532	0	0	0	0	0	0	0	0	0	79,649
1989	0	192,170	0	0	0	0	0	0	0	279	0	0	0	192,449
1990	0	60,594	2,114	0	244	0	8,749	0	1,104	928	0	0	0	73,732
1991	31,728	216,676	0	633	0	4,572	0	0	1,457	896	0	306	310	256,577
1992	3,847	86,228	252	0	69	0	156	182	0	1,550	0	0	0	92,285
1993	2,409	29,433	941	0	3,366	20,071	0	0	1,056	354	0	0	465	58,096
1994	10,264	37,323	0	0	390	1,977	0	0	0	3,344	0	0	310	53,609
1995	1,163	62,832	0	0	2,405	0	1,303	0	0	0	0	79	0	67,781
1996	10,160	48,347	560	0	6,103	3,731	0	494	9,877	4,169	0	0	0	83,440
1997	10,355	62,116	0	2,225	3,439	0	0	203	1,663	2,325	0	0	1,979	84,305
1998	942	19,291	0	0	4,694	0	0	516	2,284	0	0	0	0	27,726
1999	4,426	39,882	59	880	3,769	1,353	0	0	224	0	0	257	0	50,849
2000	20	37,810	5,132	861	4,836	820	754	429	500	636	0	0	0	51,798
2001	1,468	33,773	0	3,880	11,064	5,514	0	260	3,281	3,017	0	0	0	62,257
2002	92	88,062	552	0	1,151	3,025	0	517	417	1,060	0	0	0	94,877
2003	298	122,849	617	0	2,869	4,418	0	0	0	0	0	300	0	131,351
2004	1,651	124,127	1,988	0	3,518	3,147	8	7,114	1,409	696	1,344	0	0	145,003
2005	120	113,025	7,873	475	6,756	0	0	1,432	1,073	0	0	154	0	130,906
2006	3,620	125,483	359	0	5,754	2,842	0	235	0	0	0	0	0	138,292
2007	10,160	175,007	1,852	116	10,770	17,748	0	1,635	36,893	944	0	0	0	255,126
2008	13,523	139,207	2,582	670	3,728	340	0	487	0	0	0	0	1,128	161,665
2009	1,155	187,320	23	2,897	8,691	13,471	1,590	730	1,114	6,338	0	0	276	223,606
2010	998	113,787	399	447	12,673	196	0	64	15,884	6,688	0	0	0	151,135
2011	153	60,252	0	537	1,217	520	0	1,569	0	4,632	0	0	0	68,879
G. Total	**115,585**	**2,457,949**	**25,445**	**17,792**	**98,535**	**84,706**	**12,561**	**15,866**	**78,234**	**39,003**	**1,344**	**1,096**	**4,469**	**2,952,586**

Table 15. Estimated MRIP AB1 (number of fish landed) and B2 catches (number of fish released alive) by year and state for blueline tilefish in the Atlantic (sub-regions 4-6 and Monroe county, FL). Charterboat estimates use the FHS method or are calibrated to the FHS method.

	FLKEYS		FLE		SC		NC		VA		DE		NJ		G.Total	
YEAR	**AB1**	**B2**	**AB1**	**B2**	**AB1**	**B2**	**AB1**	**B2**	**AB1**	**B2**	**AB1**	**B2**	**AB1**	**B2**	**AB1**	**B2**
1981	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	207	0	0	0	0	0	0	0	0	0	0	0	0	0	207	0
1988	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1990	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1991	0	3,556	0	0	0	0	0	0	0	0	0	0	0	0	0	3,556
1992	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1993	671	0	1,745	0	0	0	0	0	0	0	0	0	0	0	2,416	0
1994	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1995	0	0	0	0	0	0	4,498	0	0	0	0	0	0	0	4,498	0
1996	0	0	0	0	0	0	735	0	0	0	0	0	0	0	735	0
1997	334	0	0	0	0	0	15,457	0	0	0	0	0	0	0	15,791	0
1998	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1999	776	0	0	0	0	0	0	0	0	0	0	0	0	0	776	0
2000	23	0	0	0	57	0	0	0	0	0	0	0	0	0	79	0
2001	142	0	0	0	0	0	4,645	0	0	0	0	0	0	0	4,787	0
2002	52	0	312	0	0	0	0	0	0	0	0	0	0	0	364	0
2003	615	135	4,535	746	0	0	1,633	0	0	0	0	0	0	0	6,783	880
2004	246	0	164	0	0	0	1,659	0	0	0	0	0	0	0	2,069	0
2005	1,175	0	0	0	0	0	6,615	1,601	0	0	0	0	0	0	7,791	1,601
2006	136	0	0	0	0	0	54,991	925	0	0	0	0	0	0	55,127	925
2007	2,292	0	0	0	0	0	79,863	37,073	345	142	0	0	0	0	82,500	37,215
2008	2,402	0	143	0	0	0	71,335	0	0	0	0	0	89	0	73,969	0
2009	3,577	0	2,969	38	0	0	16,681	0	0	0	18	0	256	0	23,501	38
2010	3,025	0	2,465	0	0	0	6,222	1,814	0	0	0	0	0	0	11,712	1,814
2011	0	0	3,304	0	0	0	4,922	271	0	0	0	0	0	0	8,225	271
G. Total	**15,673**	**3,691**	**15,637**	**783**	**57**	**0**	**269,255**	**41,684**	**345**	**142**	**18**	**0**	**345**	**0**	**301,330**	**46,300**

Table 16. Number of angler trips with measured gray triggerfish in the Atlantic in the MRFSS by year and state for charter and headboat modes.

	Cbt											Hbt							
YEAR	**FLKEYS**	**FLE**	**GA**	**SC**	**NC**	**VA**	**MD**	**DE**	**NJ**	**NY**	**All**	**VA**	**MD**	**DE**	**NJ**	**NY**	**RI**	**MA**	**All**
1981																			
1982															1				1
1983				1							1								
1984				1							1								
1985			1								1	2							2
1986		1									1	2							2
1987				2							2				1				1
1988				1	2						3								
1989	1	1		3	3			1	1		10	1	2	1	1	5			10
1990	2			1	8				1		12			1					1
1991	1	1		1	8						11		1		8				9
1992			2	1	16	1	1				21		1	1					2
1993	1		4	1	9						15	1			3				4
1994	1		8		28						37	3				2			5
1995	1	1	3	1	20	1		1			28	2							2
1996			3	2	16	1					22	2			1				3
1997		1	8		11				1		21	1			10				11
1998	1	2	5	4	4						16								
1999	1	11	2	13	8	1					36			1	3				4
2000	4	4	1	5	1						15	1							1
2001	3	19	4	6	9				1		42	5			2				7
2002	4	41	4	5	13	2					69	7	1		15				23
2003	4	41	17	1	8						71	1		1		6			8
2004	2	43	17	16	7			1	1		87		4	1	6	4		2	17
2005	2	27	14	1	5			2			51	1	5		1				7
2006		20	13	5	5						43	2	6	2					10
2007	2	23	17	1	8	1		6	2		60	7	23	2	16	8	1		57
2008	2	23	10	1	14	3		3		1	57	6		1	3	2			12
2009	2	23	12	3	11	1	1	13	1		67	15	17	1	18	2	2		55
2010		38	15	4	25	1		4			87		4	1	1	3		1	10
2011	2	12	7		22			3			46	3	2	3	7	2			17
G.Tot	**36**	**332**	**167**	**80**	**261**	**12**	**2**	**34**	**8**	**1**	**933**	**62**	**66**	**16**	**97**	**34**	**3**	**3**	**281**

Table 17. Number of angler trips with measured gray triggerfish in the Atlantic in the MRFSS by year and state for private mode.

YEAR	FLKEYS	FLE	GA	SC	NC	VA	Priv MD	DE	NJ	NY	CT	RI	MA	All
1981		5												5
1982		5												5
1983		3							1					4
1984	1	4									1			6
1985		11	1		1									13
1986		12			2	6		1				1		22
1987	2	8	1		3	1				1				16
1988	2	13								2				17
1989	1	15			7	1	1		1	6	1			33
1990	1	4	1		4	3		2	2	4	1			22
1991	3	5	1		3	1	2	3		5		2		25
1992	1	9		6	3	3	1	3	1	1				28
1993	1	10	1	2	10	6		1		4		2		37
1994	3	4		1	8	1		1		3		1	1	23
1995	2	5			1	2			6					16
1996		3		2	11	4		5		2			1	28
1997	3	4			6			2		1				16
1998		5	1	1	2	2	1		1			1		14
1999	2	19		2	5			1						29
2000		5			5	2								12
2001		8	1		3	1		5	2	2				22
2002		16			6	2	1	1	4					30
2003		15		1	1	1		1	1			1		21
2004		12	1	2	4	2		2	1	1				25
2005		15			1	2		2	1	1				22
2006		32	2	1	1	1		2		1				40
2007	2	21	2	1	2	7		4	3	1			1	44
2008		24	2		5	5		2						38
2009	1	32		3	7		1	1	1					46
2010	1	27			11	1		3	3	2				48
2011		20		1	6				1					28
G.Tot	**26**	**371**	**14**	**23**	**118**	**54**	**7**	**42**	**29**	**37**	**3**	**8**	**3**	**735**

Table 18. Number of angler trips with measured gray triggerfish in the Atlantic in the MRFSS by year and state for shore mode.

					Shore					
YEAR	**FLKEYS**	**FLE**	**NC**	**VA**	**MD**	**DE**	**NJ**	**NY**	**RI**	**All**
1981	1									1
1982		2								2
1983		1								1
1984		3								3
1985		1								1
1986										
1987								2		2
1988		3								3
1989								2		2
1990			2					2		4
1991	2	1	1							4
1992		1	4					1	1	7
1993		1	3			1		1		6
1994		1	1		1			5		8
1995		1	4		1					6
1996		1	2	1			2		1	7
1997			1		2		1			4
1998			2							2
1999										
2000		1	1				1			3
2001		1				1				2
2002								1		1
2003		1	2							3
2004				1						1
2005		1	1			1				3
2006		1								1
2007		4				1				5
2008										
2009			4		1	1	1	1		8
2010		1	2					1		4
2011		1								1
G.Tot	**3**	**27**	**30**	**2**	**5**	**5**	**5**	**16**	**2**	**95**

Table 19. Number of angler trips with measured blueline tilefish in the Atlantic in the MRFSS by year, mode, and state.

	Cbt							Hbt		Priv				
Year	**FLKEYS**	**FLE**	**SC**	**NC**	**VA**	**DE**	**All**	**NJ**	**All**	**FLKEYS**	**FLE**	**NC**	**All**	**G.Tot**
1981														
1982														
1983														
1984														
1985														
1986														
1987														
1988														
1989														
1990														
1991														
1992														
1993		1					1			1			1	2
1994														
1995				1			1							1
1996				1			1							1
1997	1			1			2							2
1998														
1999	8						8							8
2000	1		1				2							2
2001	2			1			3							3
2002	1	1					2							2
2003	6			1			7				1		1	8
2004	2	1		1			4							4
2005	2			2			4							4
2006	1			11			12					5	5	17
2007	8			20	2		30					4	4	34
2008	3	2		36			41	1	1			2	2	44
2009	1	4		13		1	19	7	7	1		1	2	28
2010	2	2		18			22					1	1	23
2011		3		7			10				1	1	2	12
G.Tot	**38**	**14**	**1**	**113**	**2**	**1**	**169**	**8**	**8**	**2**	**2**	**14**	**18**	**195**