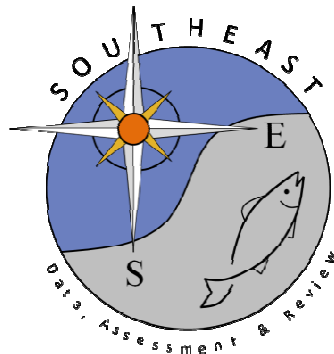


Discards of black sea bass (*Centropristis striata*) for the headboat fishery in the US South Atlantic

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SEDAR56-WP04

Submitted: 21 December 2017



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Please cite this document as:

Fisheries Ecosystems Branch, National Marine Fisheries Service, Southeast Fisheries Science Center, Beaufort, NC. 2017. Discards of black sea bass (*Centropristis striata*) for the headboat fishery in the US South Atlantic. SEDAR56-DW04. SEDAR, North Charleston, SC. 13 pp.

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Discards of black sea bass (*Centropristis striata*) for the headboat fishery in the US Gulf of Mexico

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Abstract

The Southeast Region Headboat Survey (SRHS) was modified in 2004 to collect self-reported discards for each reported trip. These self-reported data are currently not validated within the SRHS. The SRHS discard proportions were compared to the MRIP At-Sea Observer program discard proportions for validation purposes and to determine whether the SRHS discard estimates should be used for a full or partial time series (2004-2016). Discard estimates prior to 2004 are calculated using a proxy method. For black sea bass the MRIP CH and MRIP CH:SRHS discard ratio methods were evaluated as proxy methods for calculating discards from the headboat fishery.

Introduction

The Southeast Region Headboat Survey (SRHS) logbook form was modified in 2004 to collect self-reported discards for each reported trip. From 2004-2012 this was described on the form as the number of fish by species released alive and number released dead. Port agents instructed each captain on criteria for determining the condition of discarded fish. A fish is considered “released alive” if it is able to swim away on its own. If the fish floats off or is obviously dead or unable to swim, it is considered “released dead”. As of Jan 1, 2013 the SRHS began collecting logbook data electronically. Changes to the trip report were also made at this time, one of which removed the condition category for discards i.e., released alive vs. released dead. The new form now collects only the total number of fish released regardless of condition. These self-reported data are not currently validated within the SRHS.

The MRIP At-Sea Observer program was launched in FL in 2005 to collect more detailed information on recreational headboat catch, particularly for discarded fish. No trips were sampled in FL in 2008. Headboat vessels are randomly selected throughout the year in each state, and the east coast of Florida is further stratified into northern and southern sample regions. Biologists board selected vessels with permission from the captain and observe a subset of anglers as they fish on the recreational trip. Data collected include number and species of fish

landed and discarded. The At-Sea Observer program does not operate in the rest of the US Gulf of Mexico.

The discard proportions (b2/ab1b2) from the SRHS were compared with the MRFSS/MFIP At-Sea Observer program discard proportions in order to assess the validity of these discard estimates. Because discards were not added to the SRHS until 2004, a proxy is used to estimate headboat mode discards for previous years and any years in which At-sea validation does not support the SRHS discard estimates. The MRIP charter mode and mean MRIP CH:SRHS discard ratio method used in SEDAR 28 (SEDAR 28-Assessment Workshop Report, 2012) were considered as sources for proxy discard estimates.

One particular vessel was known to misreport discards of black sea bass. That vessel's discards were removed from all analyses and the state discard ratio applied to that vessel's landings in 2004 to 2016 in order to provide discard estimates.

Methods

SRHS vs MRIP At-Sea Observer comparison

The purpose of this analysis was to validate the SRHS discard estimates and determine if these data should be used for the entire time-series (2004-2016) or for a partial time-series. Black sea bass positive At-Sea Observer trips were compared to SRHS logbook trips to determine the adequacy of coverage by the At-Sea Observer program. The mean discard proportion per trip by year for matched trips only was compared between the SRHS and At-Sea Observer program in the state of FL. The mean discard proportion per trip by year was compared between the SRHS and At-Sea Observer program in the state of FL.

Discard proxy

Two sources for proxy discard estimates were considered. The MRIP charter boat mode (b2/ab1) was considered. In SEDAR 25 the MRIP charter boat mode discard proxy was used to estimate headboat discards (SEDAR 25-Assessment Workshop Report, 2013). This was the recommended method for calculating discards from the headboat fishery in all years. In SEDAR 28 the mean MRIP CH:SRHS discard ratio method was used to mitigate the differences in magnitude between the MRIP CH discard ratios and the SRHS discard ratios. This method is currently the SEDAR Best Practice for calculating headboat discards. Discard ratios for both sources were compared to the SRHS discard ratios.

Results

SRHS vs MRIP At-Sea Observer comparison

The discard proportions between the SRHS and At-Sea Observer survey follow a similar pattern but with differences in magnitude (Figure 1) throughout the time series. The matched only At-Sea Observer and SRHS discard proportions are nearly identical in South Carolina in 2013-2016 and in North Carolina and Florida in 2014-2016. Low sample sizes in the MRIP At-Sea Observer program could explain the differences in magnitude between the SRHS and the At-Sea Observer program in earlier years (Tables 1 and 2). When comparing the overall and matched trips, the mean (per trip) discard proportions are nearly identical in the matched trips and the overall trips from the At-Sea Observer program.

Discard Proxy

The RWG compared the black sea bass discard ratios from the SRHS to the three proxy sources. The MRIP CH discard ratio follows the same pattern as the SRHS from 2004-2016. However, there are large differences in magnitude between the SRHS and MRIP CH in certain years (Figure 2). The MRIP CH:SRHS discard ratio method follows the same pattern as the MRIP CH discard ratio, but with reductions in magnitude. The calculated discards using all three methods are presented in Figure 3.

Discussion

SRHS vs MRIP At-Sea Observer comparison

The SRHS and MRIP At-Sea Observer discard proportions exhibit the same pattern from throughout the time series in the matched trips. Differences in magnitude may be explained due to low sampling rates in the MRIP At-Sea Observer program.

The following options are for consideration by the RWG.

Option 1: Use the SRHS discard estimates in all areas 2004-2016 and the preferred proxy method (to be determined by the RWG) 1981-2003.

Option 2: Use the preferred proxy method (to be determined by the RWG) in all areas in all years (2004-2016).

Discard Proxy

The MRIP CH discard ratio is much higher than that of the SRHS in 2005-2011 then dips below the SRHS discard ratio in 2013. However the MRIP CH and SRHS discard ratios follow the same pattern with the exception of 2013. The MRIP CH:SRHS discard ratio method is closer to the SRHS discard ratio in terms of magnitude. The MRIP CH:SRHS discard ratio method presumes use of the SRHS discard estimates for at least a partial time series.

The following options are for consideration by the RWG.

Option 1: Use the MRIP CH discard ratio proxy method 1981- end year (determined by RWG).

Option 2: Use the MRIP CH:SRHS discard ratio proxy method 1981-end year (determined by RWG).

Literature Cited

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Tables

Table 1. Number of black sea bass positive trips reported in the SRHS and number of At-Sea Observer trips positive for black sea bass by year and state, 2004-2016. No black sea bass positive trips were sampled in the At-Sea Observer program in 2004.

YEAR	FL		GA		NC		SC		SouthAtlantic	
	At-Sea Observer trips sampled (n)	SRHS reported trips (n)	At-Sea Observer trips sampled (n)	SRHS reported trips (n)	At-Sea Observer trips sampled (n)	SRHS reported trips (n)	At-Sea Observer trips sampled (n)	SRHS reported trips (n)	At-Sea Observer trips sampled (n)	SRHS reported trips (n)
2004		1,575		147		581		1,441		3,744
2005	41	1,258	1	143	67	399	59	1,080	168	2,880
2006	37	1,275	4	141	63	410	49	1,372	153	3,198
2007	42	1,222	3	124	59	289	50	1,432	154	3,067
2008	55	1,556	3	100	45	437	37	1,386	140	3,479
2009	42	2,173	9	212	43	482	37	1,596	131	4,463
2010	59	2,415		206	63	686	2	1,849	124	5,156
2011	56	2,363	3	132	62	584	28	1,948	149	5,027
2012	52	2,224	11	116	73	601	38	2,112	174	5,053
2013	47	2,243	12	196	44	610	42	1,899	145	4,948
2014	52	2,164	12	207	31	644	39	2,041	134	5,056
2015	42	1,866	9	167	36	697	22	1,988	109	4,718
2016	26	1,741	7	162	36	603	22	2,195	91	4,701

Table 2. Proportion of black sea bass positive At-Sea Observer trips matched to SRHS reported trips by year and state, 2004-2016. No black sea bass positive trips were sampled in the At-Sea Observer program in 2004.

YEAR	FL	GA	NC	SC	South Atlantic
2004	-	-	-	-	-
2005	0.02	0.01	0.03	0.04	0.03
2006	0.01	0.02	0.08	0.03	0.08
2007	0.02	0.01	0.10	0.02	0.10
2008	0.02	-	0.05	0.02	0.05
2009	0.01	0.04	0.07	0.02	0.07
2010	0.02	-	0.07	0.00	0.07
2011	0.02	0.01	0.08	0.01	0.08
2012	0.02	0.06	0.09	0.01	0.09
2013	0.02	0.06	0.03	0.02	0.03
2014	0.02	0.05	0.04	0.02	0.04
2015	0.02	0.05	0.04	0.01	0.04
2016	0.01	0.04	0.04	0.01	0.04

Figures

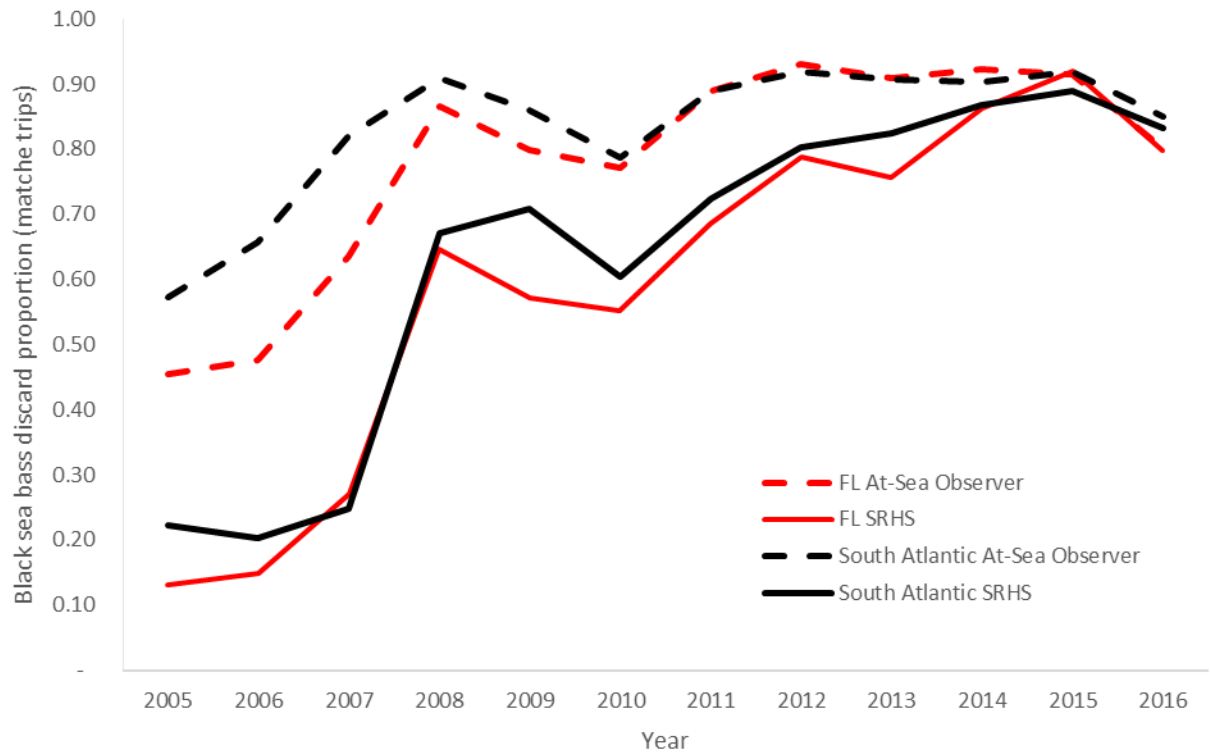


Figure 1a. Mean discard proportion per trip by year in the SRHS and At-sea Observer program in Florida and the overall South Atlantic, 2004-2016. There were no black sea bass positive trips sampled in the At-sea Observer program in 2004.

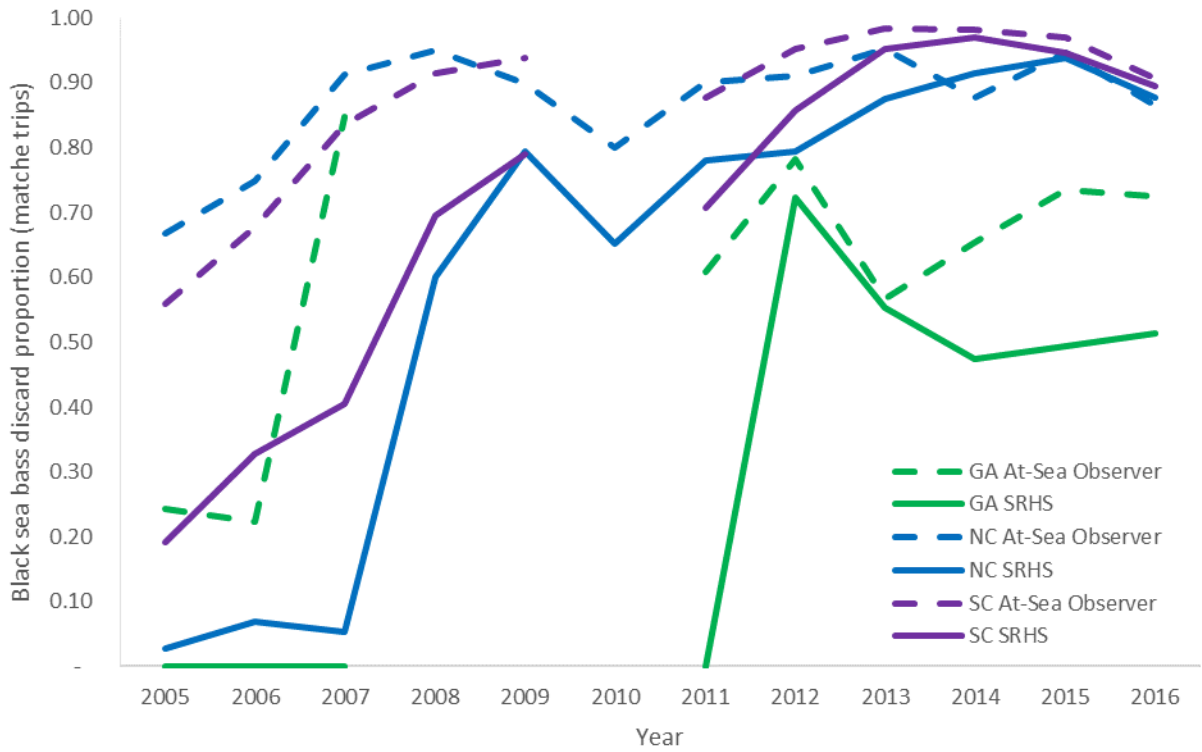


Figure 1b. Mean discard proportion per trip by year in the SRHS and At-sea Observer program in North Carolina, South Carolina, and Georgia, 2004-2016. There were no black sea bass positive trips sampled in the At-sea Observer program in 2004.

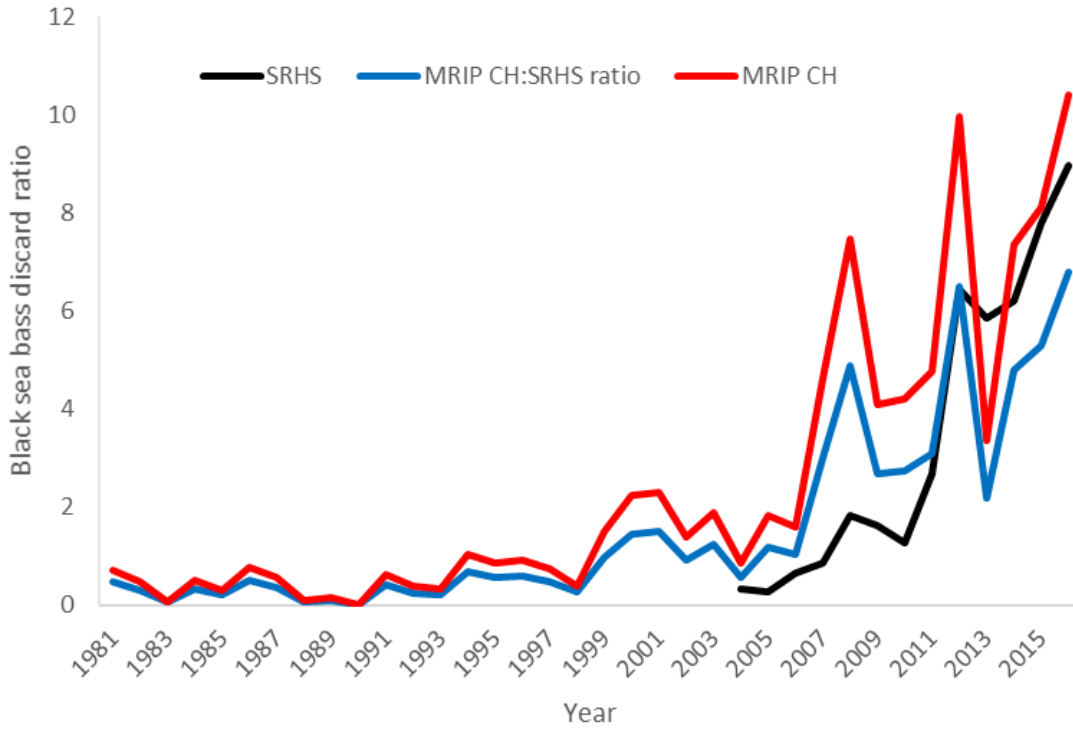


Figure 2. MRIP CH (1981-2016), MRIP PR (1981-2016), MRIP CH:SRHS discard ratio methods (1981-2016), continuity method (1981-2016), and SRHS discard ratios (2004-2016).

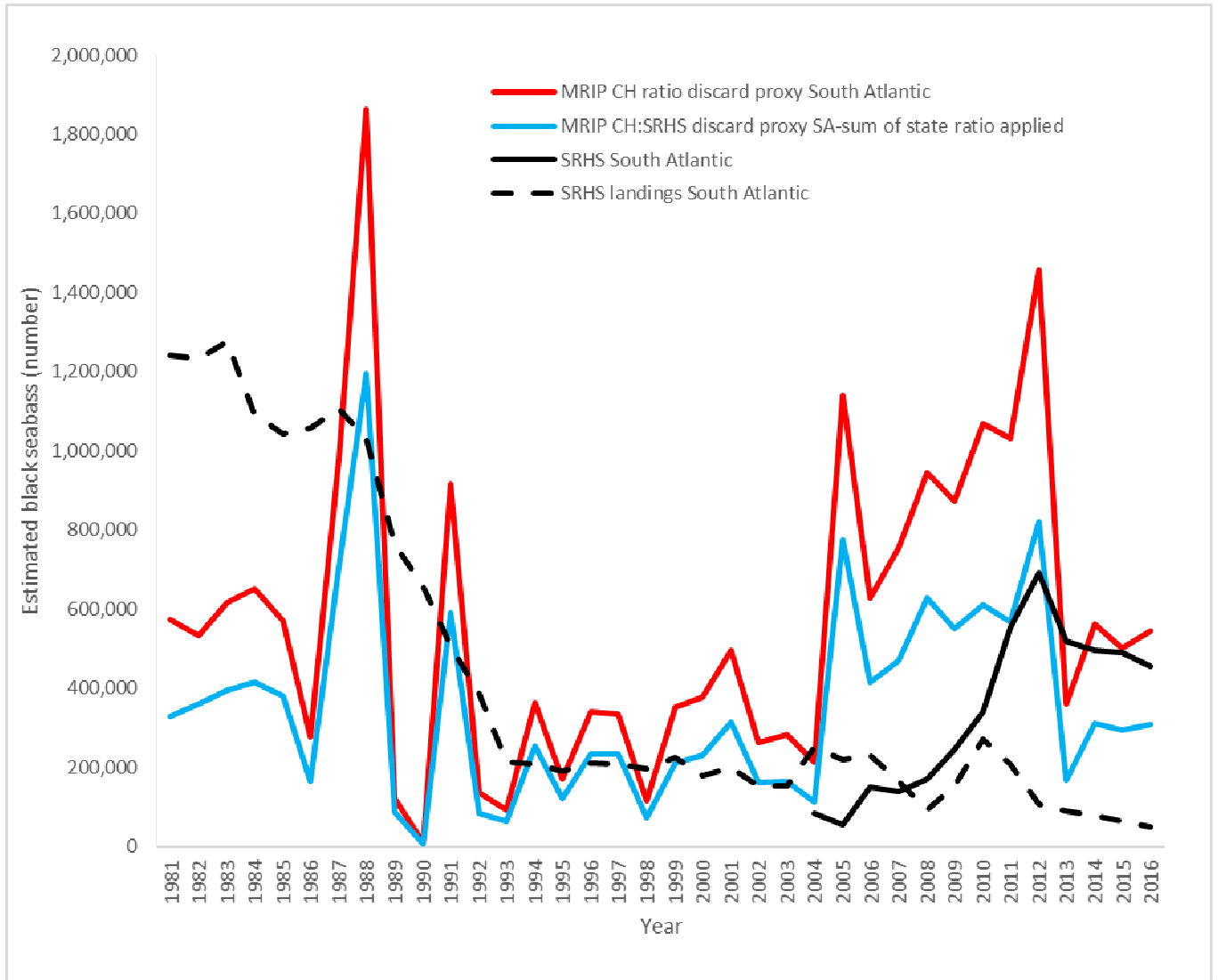


Figure 3. SRHS discards (2004-2016) and landings with calculated discards using the MRIP CH proxy (1981-2016) and MRIP CH:SRHS discard ratio proxy methods (1981-2016).