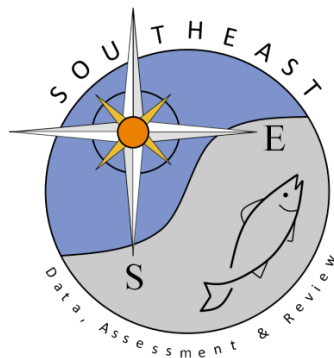


Discards of red snapper (*Lutjanus campechanus*) for the headboat fishery in the US Gulf of Mexico

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Discards of red snapper (*Lutjanus campechanus*) 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 (2004-2013). Discard estimates prior to 2004 are calculated using a proxy method. For red snapper the MRIP CH, MRIP CH:SRHS, and consistently reporting vessel 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, mean MRIP CH:SRHS discard ratio method used in SEDAR 28 (SEDAR 28-Assessment Workshop Report, 2012), and consistently reporting vessel discard ratio methods were all considered as sources for proxy discard estimates.

The At-Sea Observer program operated in the west coast of FL (2005-2007, 2009-2016) and AL (2005-2006, 2015-2016). Due to the extremely low number of trips observed and inconsistent time series of the At-Sea Observer program in AL, the analyses conducted and discussed pertain only to the west coast of FL.

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 (2004-2013) or for a partial time-series. Red snapper 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

Several sources for proxy discard estimates were considered. The MRIP charter boat mode (b2/ab1) was considered. In SEDAR 31 the consistently reporting vessel discard ratio method was used to estimate discards (Matter and Walter, 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. Discard ratios for all three 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 survey are drastically different in 2005-2007. In 2009-2012 the SRHS and At-Sea survey discard proportions follow a similar pattern but with differences in magnitude (Figure 1). The matched only At-Sea, overall SRHS discard, and overall At-Sea discard proportions are nearly identical in 2013-2016. Low sample sizes in the MRIP At-Sea Observer program could explain the differences in magnitude between the SRHS and the At-Sea program (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 red snapper 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 in FL exhibit the same pattern from 2009-2016 in the matched trips (there is no MRIP At-Sea Observer data available in 2008). This validates the SRHS discard estimates in those years. Due to a lack of coverage in the At-Sea Observer program it is only possible to validate the SRHS discard estimates in the west coast of FL.

The following options are for consideration by the RWG.

Option 1: Use the SRHS discard estimates in all areas 2008-2016 and the preferred proxy method (to be determined by the RWG) 1986-2007 (1981-2007 in Texas).

Option 2: Use the preferred proxy method (to be determined by the RWG) in all areas in all years 1986-2016 (1981-2016 in Texas).

Discard Proxy

The MRIP CH discard ratio is much higher than that of the SRHS in 2008-2016, however follows the same pattern. The MRIP CH:SRHS discard ratio method is closer to the SRHS discard proportion 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 consistently reporting vessel discard ratio method relied on vessels that consistently reported the magnitude of their discards in order to account for underreported discards, particularly in 2004-2007, (Matter and Walter, 2013). The term ‘consistent’ was defined by reporting discards in two of the four years in the year groups 2004-2007 and 2008-2011. This list of ‘consistent’ vessels was not updated through 2016, which eliminates any vessels that were added to the survey from 2011-2016. This method also excluded vessels that were new to the survey in those year groups. The grouping of years was arbitrary and could eliminate vessels that reported across year groups or were added to the SRHS after 2011, but were in fact consistently reporting vessels. Therefore, the consistently reporting vessel discard ratio is not recommended for consideration.

The following options are for consideration by the RWG.

Option 1: Use the MRIP CH discard ratio proxy method 1986- end year (determined by RWG).

Option 2: Use the MRIP CH:SRHS discard ratio proxy method 1986-end year (determined by RWG).

Recommendation: Use the MRIP CH:SRHS discard ratio proxy method 1986-2007 and the SRHS discards 2008-2016. The SRHS discards are validated by the At-Sea Observer data in 2008-2016. The MRIP CH:SRHS discard ratio proxy method is the current SEDAR Best Practices accepted method, and allows for changes in management and year class effects to be incorporated.

Literature Cited

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Tables

Table 1. Number of red snapper positive trips reported in the SRHS and number of At-Sea Observer trips positive for red snapper by year and state, 2004-2016. No red snapper positive trips were sampled in the At-Sea Observer program in 2004 or 2008.

YEAR	AL		FL		LA/MS		TX		Gulf of Mexico	
	At-Sea Observer	SRHS	At-Sea Observer	SRHS	At-Sea Observer	SRHS	At-Sea Observer	SRHS	At-Sea Observer	SRHS
2004		425		1,125				1,511		3,061
2005	28	331	60	1,106				1,522	88	2,959
2006	34	342	64	1,097				1,627	98	3,066
2007	21	438	70	1,068		82		1,643	91	3,231
2008		554		1,561		157		470		2,742
2009		781	49	1,731		164		1,019	49	3,695
2010		301	41	1,059		28		908	41	2,296
2011		753	61	1,650		151		803	61	3,357
2012		627	57	1,803		137		816	57	3,383
2013		709	54	1,842		142		747	54	3,440
2014		904	67	1,847		91		568	67	3,410
2015	3	937	104	1,892		119		871	107	3,819
2016	2	904	121	2,135		111		840	123	3,990

Table 2. Proportion of red snapper positive At-Sea Observer trips matched to SRHS reported trips, 2004-2016 in AL and FL. No red snapper positive trips were sampled in the At-Sea Observer program in 2004 or 2008.

YEAR	AL	FL
2004		
2005	0.02	0.02
2006	0.02	0.01
2007	0.01	0.01
2008		
2009		0.02
2010		0.03
2011		0.03
2012		0.02
2013		0.02
2014		0.03
2015	0.00	0.04
2016	0.00	0.04

Figures

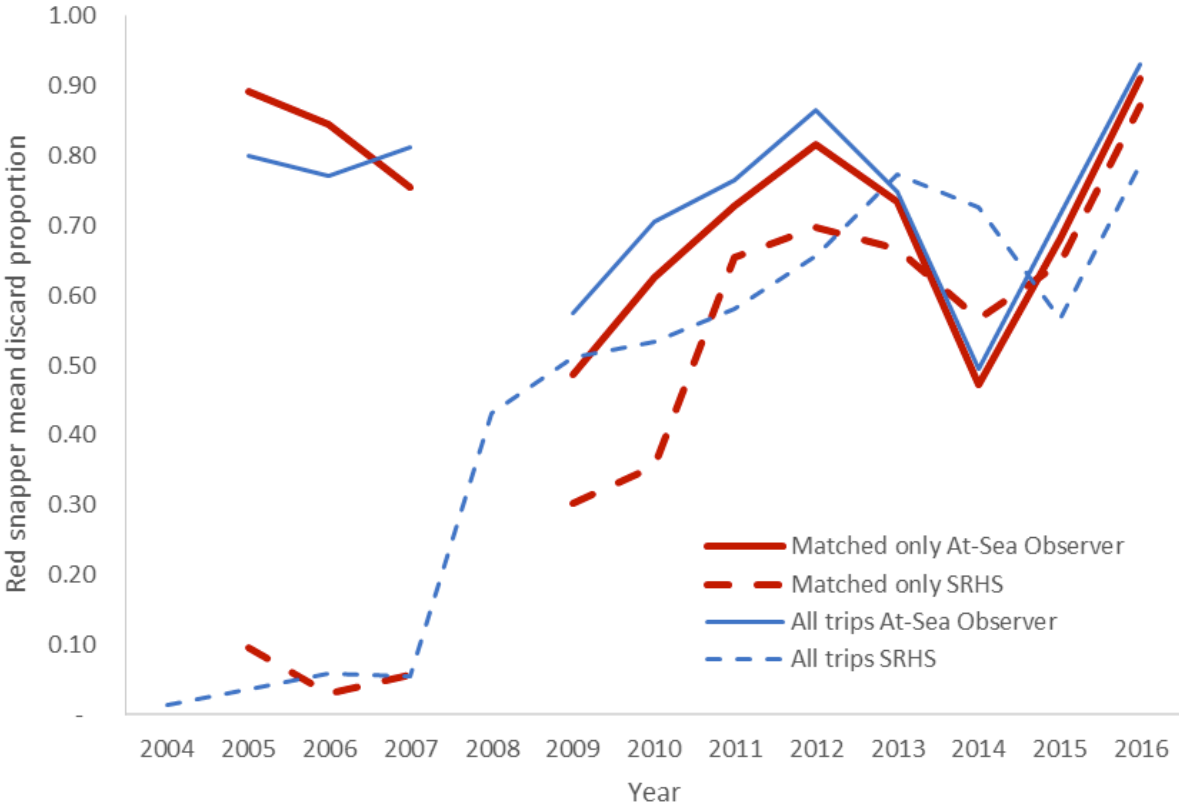


Figure 1. Mean discard proportion per trip by year in the SRHS and At-sea Observer program in FL, 2004-2016. There were no red snapper positive trips sampled in the At-sea Observer program in 2004 or 2008.

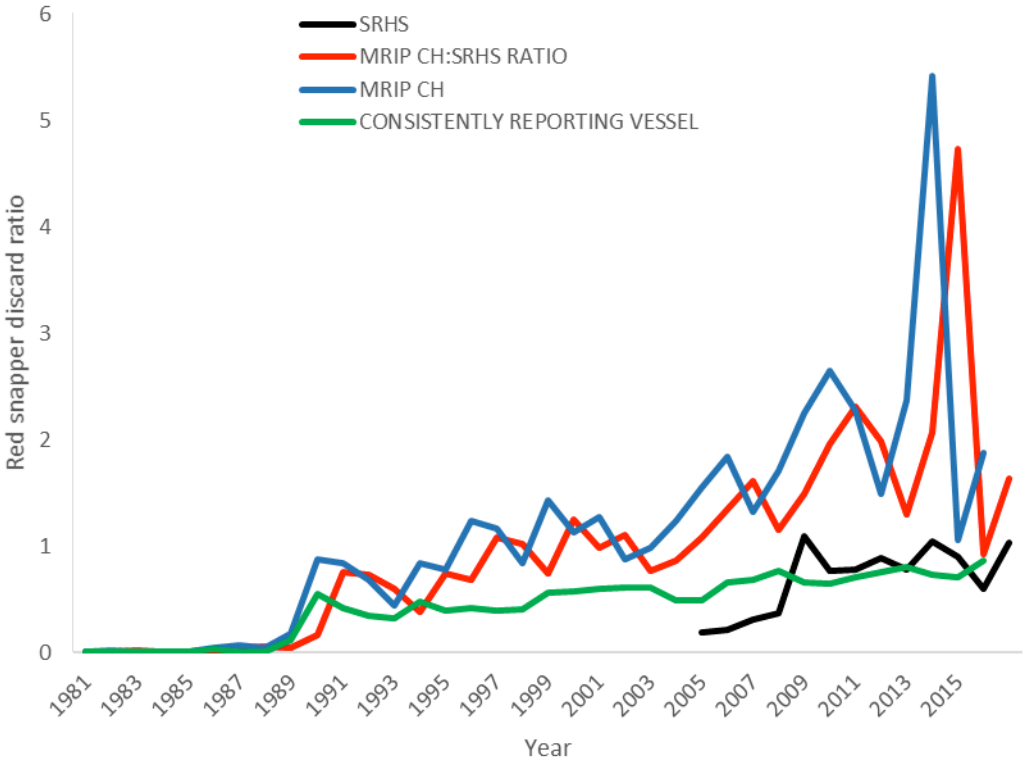


Figure 2. MRIP CH (1981-2016), MRIP CH:SRHS discard ratio methods (1981-2016), consistently reporting vessel discard ratio methods (1981-2016), and SRHS discard ratios (2004-2016).

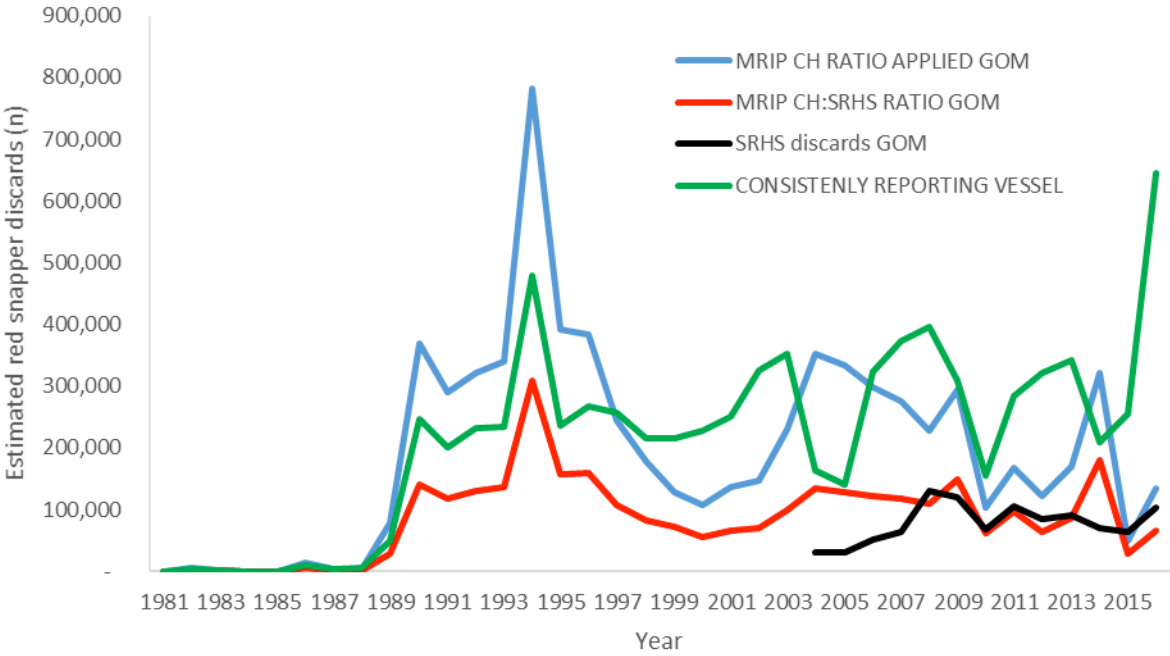


Figure 3. SRHS discards (2004-2016) with calculated discards using the MRIP CH proxy (1981-2016), consistently reporting vessel discard ratio proxy (1981-2016), and MRIP CH:SRHS discard ratio proxy methods (1981-2016).