Discards of greater amberjack (*Seriola dumerili*) for the headboat fishery in the US Gulf of Mexico

Fisheries Ecosystems Branch, National Marine Fisheries Service, Southeast Fisheries Science Center, Beaufort, NC.

SEDAR70-WP-09

26 June 2020

Please cite this document as:

Fisheries Ecosystems Branch, National Marine Fisheries Service, Southeast Fisheries Science Center, Beaufort, NC. 2020. Discards of greater amberjack (*Seriola dumerili*) for the headboat fishery in the US Gulf of Mexico. SEDAR70-DW09. SEDAR, North Charleston, SC. 12 pp.

Discards of greater amberjack (*Seriola dumerili*) for the headboat fishery in the US Gulf of Mexico

Fisheries Ecosystem Branch, National Marine Fisheries Service,
Southeast Fisheries Science Center,
101 Pivers Island Rd, Beaufort, NC 28516

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 (2004-2018). Discard estimates prior to 2004 are calculated using a proxy method. For greater amberjack the MRIP CH and mean 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 was considered "released alive" if it was able to swim away on its own. If the fish floated off or was obviously dead or unable to swim, it was 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. While some trips are sampled in AL, 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 (SEDAR 28-Assessment Workshop Report, 2012) were considered as sources for proxy discard estimates.

In SEDAR 33 the MRIP CH discard proxy method was used. The SEDAR 33 Stock Assessment Update Report implies that the large increase in the SRHS discards is a result of applying the SEDAR Best Practice method (mean MRIP CH:SRHS discard ratio proxy method). However, the recommendation for the update was to use the MRIP CH ratio proxy method to maintain consistency with the original SEDAR 33 proxy method (SEDAR 33-Stock Assessment Update Report, 2016). The increase in the SRHS discards during the SEDAR 33 update was a result of changes in the MRIP CH ab1 and b2 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 (2004-2018) or for a partial time-series. Greater amberjack 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 was compared between the SRHS and At-Sea Observer program in the state of FL and AL. 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. In AL SRHS and At-Sea Observer could be matched in 2007 only.

Discard proxy

Four for proxy discard estimates were considered. The MRIP charter boat mode (b2/ab1) was considered. In SEDAR 33 and SEDAR 33 update the MRIP charter boat mode discard proxy was used to estimate headboat discards (SEDAR 33-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. Due to variability in the MRIP CH discard ratios in Louisiana (which serves as the proxy for TX discard ratios), Gulf-wide mean MRIP CH discard ratio and Gulf-wide mean MRIP CH:SRHS discard ratio methods were considered in addition to the state ratio MRIP CH discard ratio and mean MRIP CH:SRHS discard ratio methods.

Results

SRHS vs MRIP At-Sea Observer comparison

The discard proportions between the SRHS and At-Sea Observer follow a similar pattern FLW in 2007-2018 (Figure 1a). The matched only At-Sea Observer and SRHS discard proportions survey follow a similar pattern in FLW but with differences in magnitude (Figure 1b) from 2009-2012. In 2016-2017 the discard proportions of the matched trips are nearly identical. Low sample sizes in the MRIP At-Sea Observer program could explain the differences in magnitude between the SRHS and the At-Sea program in earlier years (Table 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 in 2014-2016.

Discard Proxy

The RWG compared the greater amberjack discard ratios from the SRHS to the three proxy sources. Texas Parks and Wildlife Department (TPWD) does not collect discard information, therefore applying the discard ratio from LA to TX landings is the SEDAR Best Practice approved proxy method. However, in the case of greater amberjack the LA MRIP CH estimates were highly variable. Therefore, the GOM-wide discard ratio was used in place of the state discard ratios for both the MRIP CH discard ratio and mean MRIP CH:SRHS discard ratio methods (Figure 2). The MRIP CH discard ratio follows the same pattern as the SRHS from 2008-2018. However, there are large differences in magnitude between the SRHS and MRIP CH in certain years (Figure 3). The mean MRIP CH:SRHS discard ratio method follows the same pattern as the MRIP CH discard ratio, but is scaled to the SRHS landings. The calculated discards using all methods are presented in Figure 4.

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.

Option 1: Use the SRHS discard estimates in all areas 2008-2018 and the preferred proxy method (to be determined) 1981-2007.
Option 2: Use the preferred proxy method in all areas in all years.

Discard Proxy

The state discard ratios (MRIP CH and mean MRIP CH:SRHS discard ratio proxy) were eliminated from consideration due to the variability in the LA discard proxy estimates, which carried into the TX discard proxy estimates. The MRIP CH discard ratio (Gulf-wide) is much higher than that of the SRHS in 2004-2011 and 2013-2014, then dips below the SRHS discard ratio in 2015-2016 before nearly quadrupling the SRHS discard ratio in 2017. However the MRIP CH and SRHS discard ratios follow the same pattern in 2004-2014. The mean MRIP CH:SRHS discard ratio method is closer to the SRHS discard ratio in terms of magnitude. The mean 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.

Option 1: Use the GOM-wide MRIP CH discard ratio proxy method 1981-2007.
Option 2: Use the GOM-wide mean MRIP CH:SRHS discard ratio proxy method 1981-2007.

Literature Cited

SEDAR. 2011. SEDAR 25 – South Atlantic Black sea bass Stock Assessment Report. SEDAR, North Charleston SC. 480 pp. Available online at: http://sedarweb.org/sedar-25-stock-assessment-report-south-atlantic-black-sea-bass.

SEDAR. 2013. SEDAR 28 – Gulf of Mexico Cobia Stock Assessment Report. SEDAR, North Charleston SC. 616 pp. Available online at: http://www.sefsc.noaa.gov/sedar/Sedar_Workshops.jsp?WorkshopNum=28

SEDAR. 2016. SEDAR 33 – Gulf of Mexico Greater Amberjack Stock Assessment Report. SEDAR, North Charleston SC. 499 pp. Available online at: http://sedarweb.org/sedar-33-stock-assessment-report-gulf-mexico-greater-amberjack

Tables

Table 1. Number of greater amberjack positive trips reported in the SRHS and number of At-Sea Observer trips positive for greater amberjack by year and state, 2004-2018. No greater amberjack positive trips were sampled in the At-Sea Observer program in 2004.

	AL		FLW		Gulf of Mexico	
Year	At-Sea Observer	SRHS reported	At-Sea Observer	SRHS reported	At-Sea Observer	SRHS reported
2004		87		216		303
2005	5	22	33	202	38	224
2006	12	21	39	154	51	175
2007	9	67	41	168	50	235
2008		150		460	-	610
2009		162	9	654	9	816
2010		83	17	335	17	418
2011		133	18	419	18	552
2012		111	16	767	16	878
2013		195	8	595	8	790
2014		156	46	827	46	983
2015		215	69	1,036	69	1,251
2016		160	62	987	62	1,147
2017		163	52	729	52	892
2018		158	36	713	36	871

Table 2. Proportion of greater amberjack positive At-Sea Observer trips matched to SRHS reported trips by year and state, 2004-2018. No greater amberjack positive trips were sampled in the At-Sea Observer program in 2004.

	AL		FLW	
Year	Matched (n)	Matched (%)	Matched (n)	Matched (%)
2004				
2005		-	2	0.01
2006		-	1	0.01
2007	3	0.04	2	0.01
2008		-		-
2009		-	5	0.01
2010		-	8	0.02
2011		-	4	0.01
2012		-	9	0.01
2013		-	2	0.00
2014		-	25	0.03
2015		-	36	0.03
2016		-	33	0.03
2017		-	14	0.02
2018		-	16	0.02

Figures

Figure 1a. Mean discard proportion per trip by year (all trips) in the SRHS and At-sea Observer program in Florida and the overall Gulf of Mexico, 2004-2018. There were no greater amberjack positive trips sampled in the At-sea Observer program in 2004. No At-Sea Observer trips were made in 2008.

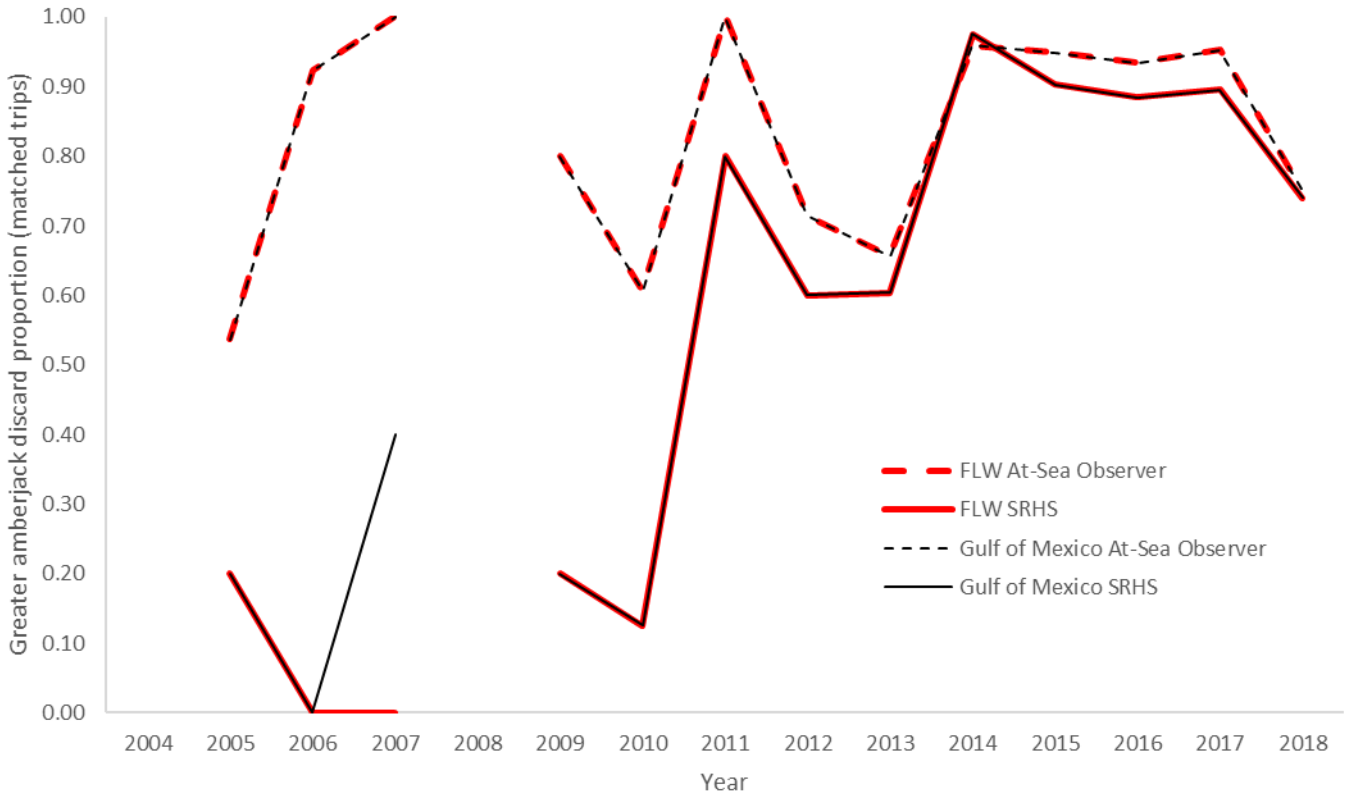

Figure 1b. Mean discard proportion per trip by year (matched trips only) in the SRHS and At-sea Observer program in FLW and the Gulf of Mexico, 2004-2018. Trips could only be matched in AL in 2007. There were no greater amberjack positive trips sampled in the At-sea Observer program in 2004. No At-Sea Observer trips were made in 2008.

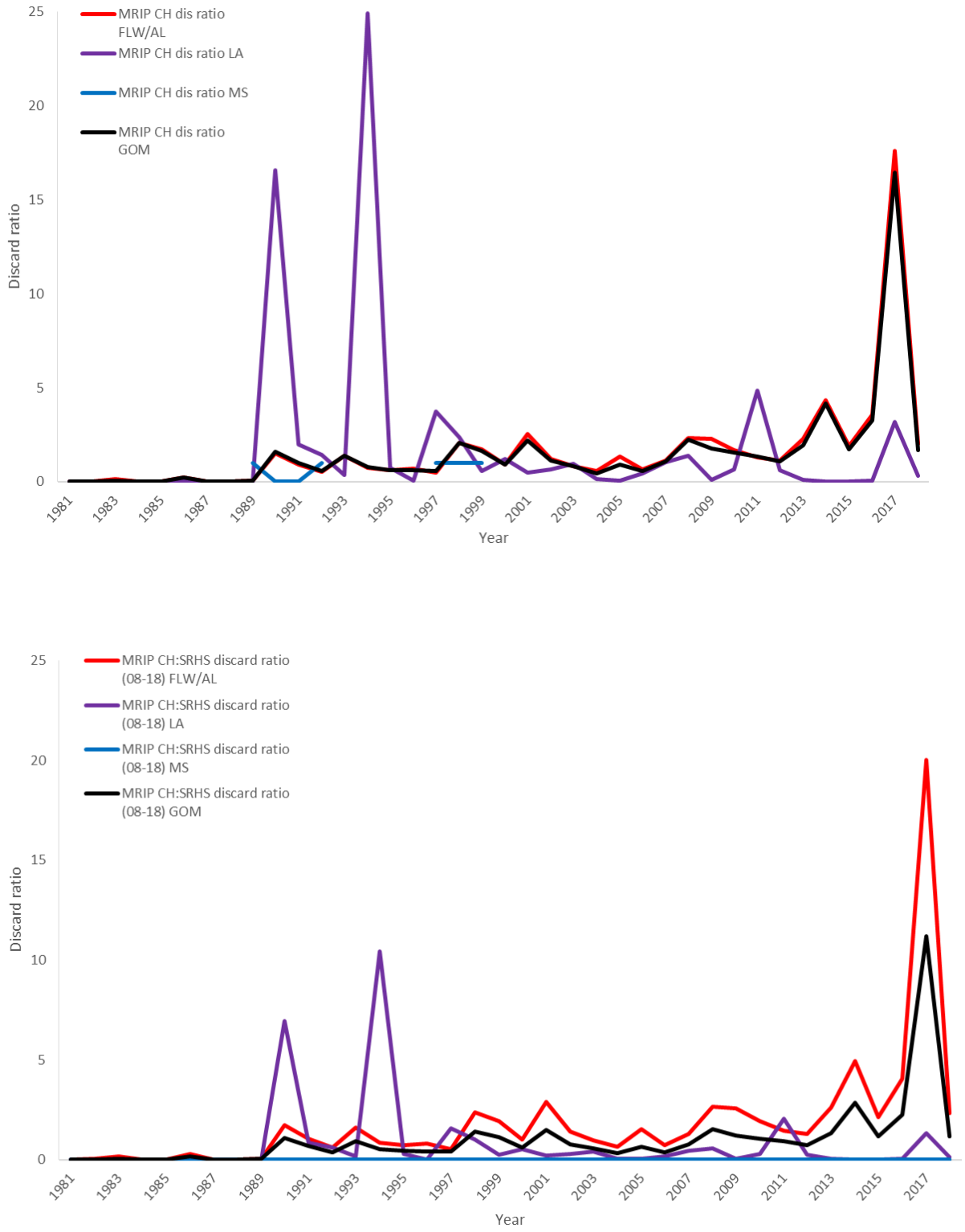

Figure 2. MRIP CH discard ratio method (1981-2018) and MRIP CH:SRHS discard ratio method (1981-2018), by state and for the Gulf of Mexico. TPWD does not collect discard information.

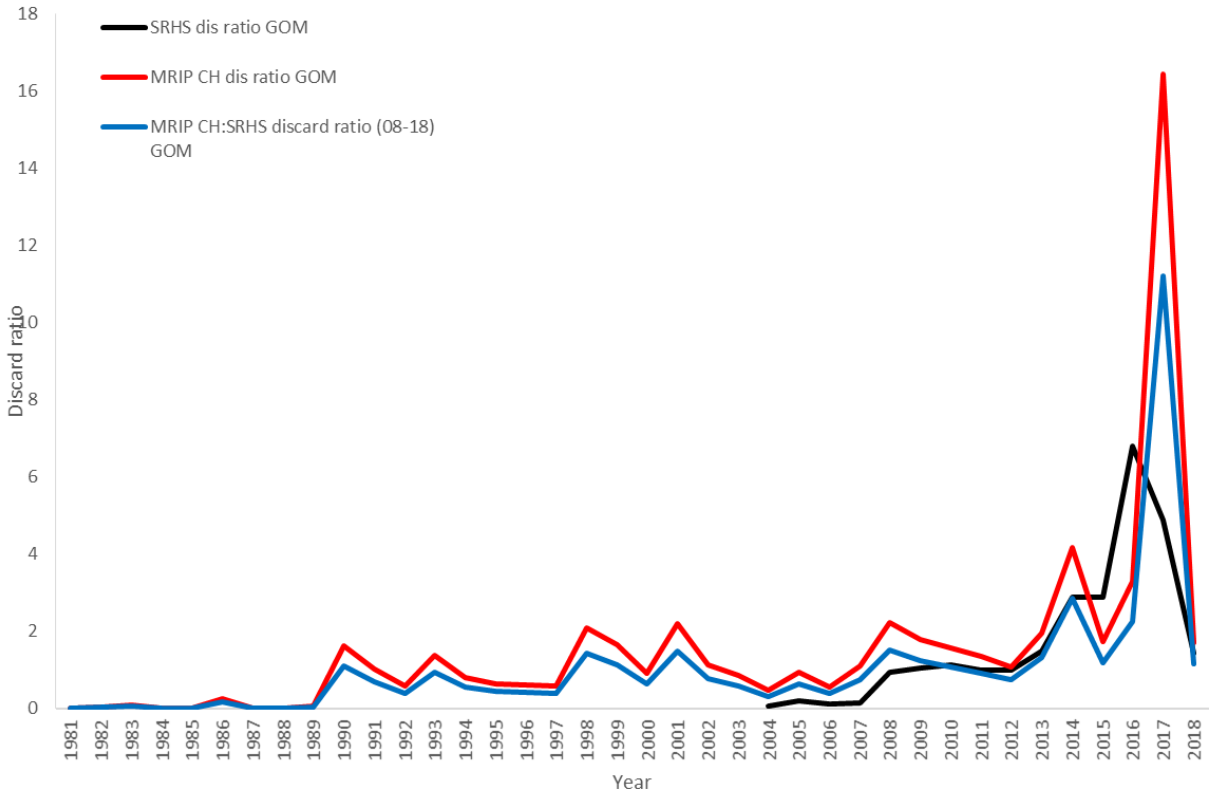

Figure 3. MRIP CH (1981-2018), MRIP CH:SRHS discard ratio methods (1981-2018), and SRHS discard ratios (2004-2018).

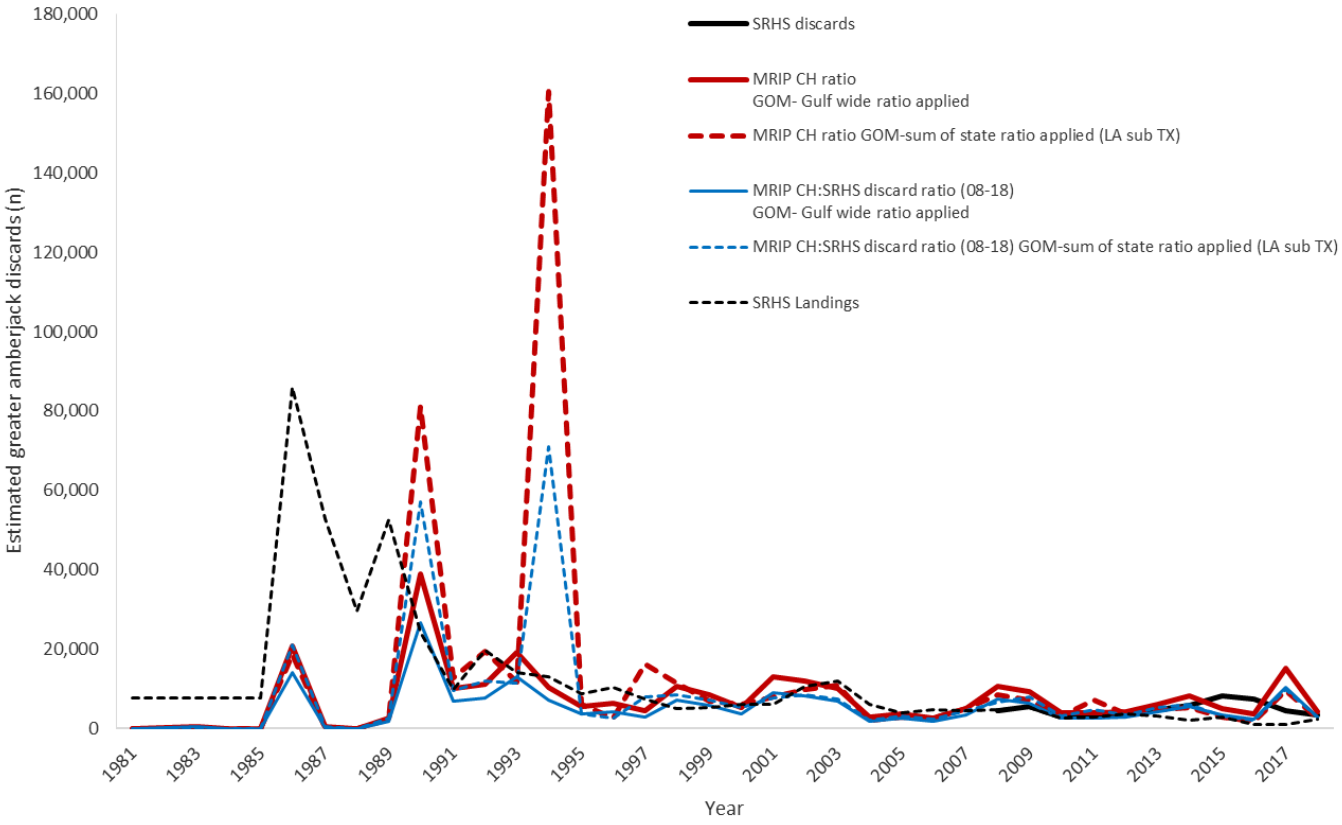

Figure 3. SRHS discards (2008-2018) and landings (1981-2018) with calculated discards using the MRIP CH proxy (1981-2018) and mean MRIP CH:SRHS discard ratio proxy methods (1981-2018).