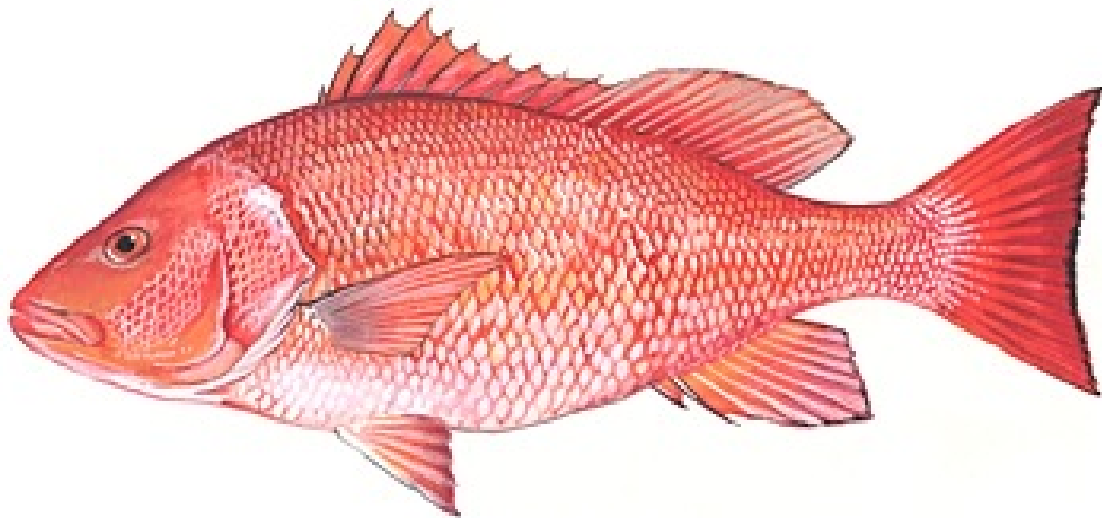


Total removals of Red Snapper (*Lutjanus campechanus*) in 2015
from the U.S. South Atlantic



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April 28, 2016

Introduction

This report provides 2015 estimates of the total removals (landings and dead discards) of Red Snapper (*Lutjanus campechanus*) from the South Atlantic Fisheries Management Council's (SAFMC) jurisdiction. These estimates were compiled for the dominant commercial and recreational fleets in the fishery and from several data sources, as described below. These estimates were compiled using methods determined in SEDAR 24 and do vary from more recent estimates determined for SEDAR 41. Therefore the estimates in this report should only be used in reference to SEDAR 24 and any management regulations based from that stock assessment.

Assessment Analysis History

The last reviewed and complete benchmark stock assessment for Red Snapper was completed as part of SEDAR 24 in October 2010. The Review Panel for SEDAR 24, which included Center for Independent Experts (CIE) reviewers, concluded that the model was adequate, appropriate, and applied correctly to the Red Snapper stock. The base run in the SEDAR 24 report was based on a headboat index likelihood component weight of 0.11. During the review of this stock assessment by the SAFMC Scientific and Statistical Committee (SSC) at their November, 2010 meeting, the SSC selected a set of equally plausible runs that applied a range of likelihood component weights for the headboat index of 0.2-0.3. Increasing the weight on the headboat index resulted in more optimistic stock status outcomes, although all runs indicated the stock was severely overfished and undergoing overfishing. The SAFMC selected the projection analysis using the headboat index weight of 0.3 for management purposes.

The SAFMC manages Red Snapper using an F_{MSY} proxy of $F_{30\%SPR}$. This F proxy is higher than the $F_{40\%SPR}$ proxy recommended by the SEDAR 24 review panel and the SSC. Should the SAFMC's choices of headboat weight and F_{MSY} proxy turn out to be overly-optimistic, then acceptable biological catches (ABC) summarized in this document may result in a higher risk of overfishing.

Data Sources

The total removal (landings and dead discards) estimates for the U.S. South Atlantic federal fisheries come from several different survey sources. These sources focus on particular sectors of the overall snapper-grouper fishery. Landings and discard data sources are broken out by commercial, recreational headboat, recreational charter boat, and private boat. This report is structured along the lines of the representative data collection systems for each, with reports of additional or auxiliary data sources included as well.

Commercial Landings

Data were queried for 2015 to obtain the landings estimate for the states of Florida, Georgia, South Carolina, and North Carolina by month. These data by month or state are confidential, and therefore, only the total landings of 3,162 (lb whole weight) can be presented in this report. Based on the average weight (5.68 lb whole weight) used for computing the quotas, this commercial landings weight estimate equates to 557 fish.

Of all our fishery-dependent data, the commercial landings are thought to be the most accurate. Despite that fact, there remains the possibility of some unknown amount of unreported or misreported catch that may have occurred.

Commercial Discards

Commercial discards were calculated for vertical line (handline and electric reel) vessels in the U.S. South Atlantic using the commercial logbooks. These self-reported logbooks are largely unverified. The annual discard estimate from these logbooks is computed using a delta-lognormal model to compute year-specific discard rates, which were then applied to total effort to calculate annual discards for the period 2002-2015. The value of total discards computed for 2015 is 47,453 Red Snapper. Data included in the calculation were filtered to remove records from fishers who reported “no discards” of any species for 75% or more of reported trips during years with four or more trips reported by the fisher. This data filter was necessary due to consistent non-reporting of discards by some fishers. The fact that this step is necessary indicates the potential bias due to under-reporting, particularly for discard information from self-reported data.

A potential rationale for under-reporting discards lies in the management regulations themselves. In the case of Red Snapper, the ABC was based on total removals and the management accountability measures are based on the ABC. This establishes a link between reported discards and the accountability measures, which dictate the opening and closing of the fishery, creating an incentive for under-reporting discards. That incentive may be enhanced by the lack of appropriate validation or verification. The degree to which this potential incentive for under-reporting might be affecting Red Snapper data is unclear. Despite the filtering of data to remove consistent non-reporting of discards, concerns about the potential bias of the remaining records still remain. In addition, there are other commercial fishing gears (e.g. longline and traps) that likely capture Red Snapper that are not considered in this discard summary. For those reasons, it is likely that estimates of commercial discards in this report represent a lower bound for the true value.

The SEDAR 24 report contains fleet-specific discard mortality rates that were used to compute the number of dead fish based on total releases. In the case of commercial caught fish the discard mortality rate of 0.48 was used. When applied to the data in this report, the estimate of total dead discards is $0.48 * 47,453 = 22,777$ dead fish.

Recreational Headboat Landings and Discards

The Southeast Region Headboat Survey (SRHS) estimates landings and discards for headboats in the U.S. South Atlantic and Gulf of Mexico. The estimates are computed from required, self-reported logbooks. The estimates of landings from the SRHS are not fully verified by dockside sampling. Discard estimates are partially verified by at-sea observers. The best estimate of total

landings from headboats is 750 fish (4,010 pounds whole weight) and the best estimate of total discards from headboats is 54,405 fish. Using the SEDAR 24 discard mortality rate of 0.41 on for-hire vessels, the best estimate of dead discards from headboats is $0.41 * 54,405 = 22,306$ dead fish.

Recreational Charter Boat and Private Boat: Landings and Discards

During SEDAR 24, Marine Recreational Fisheries Statistics Survey (MRFSS) estimates for charter boats and private recreational boats were used in the stock assessment and projections. For consistency with SEDAR 24, the Marine Recreational Information Program (MRIP) estimates have been converted to “MRFSS” equivalent estimates and are reported here for 2015. The conversion of MRIP to MRFSS estimates only takes into account the MRIP re-estimation change and does not account for the Access-Point Angler Intercept Survey (APAIS) change. The MRIP covers coastal Atlantic states from Maine to Florida and provides estimated catch per unit effort, total effort, landings, and discards for six two-month periods (waves) each year. The survey provides estimates for three recreational fishing modes: shore based fishing, private and rental boat fishing, and for-hire charter and guide fishing, though shore mode estimates are excluded for SA Red Snapper (SEDAR 24). The MRFSS equivalent estimates in this report were provided by the SEFSC Miami Laboratory.

The MRIP design incorporates three complementary survey methods for estimating catch and effort. Catch data are collected through dockside angler intercept surveys of completed, recreational fishing trips. Effort data are collected using two telephone surveys. The Coastal Household Telephone Survey (CHTS) obtains detailed information from anglers about the previous two months of recreational fishing trips. The weekly For-Hire Survey interviews charter boat operators (captains or owners) to obtain the trip information with a one-week recall period. These effort data and estimates are aggregated to produce the wave estimates. Catch rates from dockside intercept surveys are combined with estimates of effort from telephone interviews to estimate total landings and discards by wave, mode, and area fished (inland, state, and federal waters).

It should be noted that the MRIP is in practice an unbiased survey and that any error we see in the data is simply observation error likely due to low sample sizes. We used the SEDAR 24 discard mortality rates of 0.41 on charter vessels and 0.39 for private boats to compute the number of dead discards.

Total annual estimates of discarded Red Snapper from the SC logbook program were provided by the Southeast Regional Office (SERO), but ultimately not used in the final tally of landed and discarded fish.

Summary of Landings and Discards

Based on the methods discussed above from the various data collection programs and accounting for sector specific discard mortality rates, the final estimates are summarized in Table 2 below.

The uncertainty from all these data sources is considered to be quite high. Confidence intervals are not reported here because of the difficulty in combining data sources from different estimation designs and not all sampling programs are able to report uncertainty estimates. We simply note that the uncertainty is high, and likely higher than estimates typically seen for other snapper-grouper species. What may be of more concern for these estimates is possible bias, which unfortunately is largely unknown.

Table 1. Summary of MRIP (converted to MRFSS equivalent) and state survey estimates of red snapper landings and discards from 2015 from the charter and private boat sectors. Cell highlighted in yellow is from the SC charter logbook, but was not used in the final summary in Table 2.

State	Wave	LANDINGS (N) AB1				DISCARDS (N) B2			
		CHARTER		PRIVATE		CHARTER		PRIVATE	
		"MRFSS"	State Survey	"MRFSS"	State Survey	"MRFSS"	State Survey	"MRFSS"	State Survey
NC	1	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	-
	3	-	-	207	-	-	-	1,226	-
	4	-	-	-	-	581	-	562	-
	5	-	-	-	-	-	-	-	-
	6	-	-	-	-	-	-	-	-
NC Total		-	-	207	-	581	-	1,788	-
SC	1	-	-	-	-	-	8	-	-
	2	-	-	-	-	-	23	-	-
	3	-	-	-	-	132	454	2,367	-
	4	-	-	-	-	68	418	-	-
	5	-	-	-	-	-	105	-	-
	6	-	-	-	-	-	101	-	-
SC Total		-	-	-	-	200	1,109	2,367	-
GA	1	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	-
	3	-	-	-	-	303	-	457	-
	4	-	-	-	-	524	-	-	-
	5	-	-	-	-	341	-	-	-
	6	-	-	-	-	-	-	-	-
GA Total		-	-	-	-	1,169	-	457	-
FLE	1	-	-	-	-	1,384	-	18,596	-
	2	904	-	-	-	9,661	-	5,488	-
	3	-	-	-	-	61,605	-	243,466	-
	4	-	-	431	-	3,817	-	24,412	-
	5	-	-	-	-	4,935	-	65,639	-
	6	-	-	-	-	27,152	-	108,273	-
FLE Total		904	-	431	-	108,553	-	465,874	-

Table 2. Summary of estimates of U.S. South Atlantic landings and discards for Red Snapper in the 2015 calendar year.

Sector	Landings (numbers)	Landings (whole pounds)	Discards (numbers)	Dead Discards (numbers)	Total Removals (numbers)
Commercial	557	3,162	47,453	22,777	23,334
Recreational Headboat	750	4,010	54,405	22,306	23,056
Recreational Charter Boat	904	10,035	110,503	45,306	46,210
Recreational Private Boat	639	5,452	470,487	183,490	184,129
Total	2,850	22,659	682,848	273,879	276,729