A Description of the Economics of the South Atlantic Red Snapper Fishery

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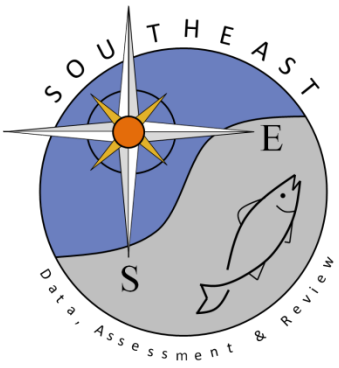
SEDAR90-DW-25

April 2025



Please cite this document as:

Crosson, Scott. 2025. A Description of the Economics of the South Atlantic Red Snapper Fishery. SEDAR90-DW-25. SEDAR, North Charleston, SC. 6 pp.

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Introduction

The purpose of this paper is to provide background information on economic aspects of the red snapper fishery, especially those that may aid in understanding the drivers of the behavior of commercial or recreational harvesters. The paper also addresses TOR #6: “Consider social and economic information for inclusion into the stock assessment as practicable.” Red snapper has traditionally been an important component of the snapper-grouper fishery, particularly for northeast Florida and Georgia. Understanding the place of red snapper in the portfolio of a commercial or recreational fishing portfolio adds value to changes that may have occurred in the harvest of red snapper apart from fluctuations in the abundance of the stock.

Economics of the commercial fishing industry

NOAA’s Southeast Fisheries Science Center has required all federally permitted fishing vessels in the region to submit trip reports in the form of logbooks since 1993. This includes vessels with limited-access South Atlantic Snapper Grouper Permits, which is a requirement for harvest red snapper in the area under the jurisdiction of the South Atlantic Fishery Management Council. Since 2002, economists at the Center have surveyed approximately 20% of the fleet annually using both trip- and annual-level form to estimate the profitability of the fleet overall as well as for boats participating in different parts of the fishery. By combining the economic surveys with the trip reports, they estimate the economic returns from commercial fishing activity, including estimates of net revenue and fisheries rents (Overstreet, Perruso, and Liese 2018). We focus here on the Snapper Grouper Unlimited permit, which allows full harvest of snapper and grouper species (excepting wreckfish, which is differently permitted and managed) under existing regulations, rather than the non-transferable “225” permits which are utilized by much smaller and aging fishing operations and expire when fishermen exit the fishery.

Largely because of the requirement that new entrants into the Snapper Grouper fishery buy two existing Snapper Grouper permits and retire one of them, the total number of these permits has consistently decreased over time, from 639 in 2009 to 513 in 2023.

Because of the overfished and overfishing status of South Atlantic red snapper, commercial trip limits for red snapper have been small over the past decade, and red snapper does not constitute the majority of snapper grouper landings even on red snapper-landing trips. Information from Amendment 59 to the Fishery Management Plan for the Snapper-Grouper Fishery of the South Atlantic Region explains the most recent economic contribution of red snapper to these vessels portfolio and is included herein:

The information in Tables 3.3.1.4 and 3.3.1.5 describe the landings and revenue for vessels that harvested South Atlantic red snapper each year from 2019 through 2023, other jointly landed species, and non-jointly landed species. Additionally, landings and revenue from species harvested in the Gulf by these vessels are shown to provide a full accounting of the commercial fishing activity of commercial South Atlantic red snapper vessels. Vessel participation declined on average each year by 1%. Total landings of red snapper were relatively stable, and only declined on average each year by less than 1%. Landings of other species caught on red snapper trips declined by 7% on average each year. Landings of other species caught on non-red snapper trips declined by 8% on average each year. Gulf trips landings declined on average by 16% each year (Table 3.3.1.4). Red snapper accounted for approximately 3.5% of total landings by commercial vessels harvesting South Atlantic red snapper.

Table 3.3.1.4. Number of vessels and landings (lb gw), by year for permitted commercial South Atlantic red snapper vessels. SATL= South Atlantic.

Year	Number of Vessels	SATL Red Snapper Species Landings (gw)	Other jointly caught Species	Other SATL Landings	Other Gulf Landings	Total Landings
2019	195	105,378	379,106	3,031,984	184,234	3,700,702
2020	209	113,388	411,761	2,888,800	171,553	3,585,502
2021	197	107,339	369,541	2,282,376	154,277	2,913,533
2022	175	106,158	340,777	2,042,707	113,800	2,603,442
2023*	182	104,832	274,176	2,113,719	89,558	2,582,285

Source: SEFSC-SSRG Socioeconomic Panel (Oct 2024 version).

*Data in this year are preliminary

Dockside revenue of red snapper increased by 4% on average each year. Revenue from other species caught on South Atlantic red snapper trips decreased by 9% on average each year. Revenue from other South Atlantic species not caught on red snapper trips and revenue from Gulf trips decreased on average each year, by 6% and 16%, respectively. The maximum total revenue for a vessel that harvested red snapper during this time period was $434,804 (2023$). On average from 2019-2023, red snapper accounted for approximately 6% of the total revenue by commercial vessels harvesting South Atlantic red snapper, suggesting there is little financial dependency specifically on South Atlantic red snapper landings. However, on red snapper trips, in particular, red snapper accounted for approximately 33% of trip revenue on average, which may be indicative of targeting behavior. The average annual price per lb gw for red snapper during this period was $6.95 (2023 dollars).

Table 3.3.1.5. Number of vessels and revenues (2023$) by year for South Atlantic red snapper vessels.

Year	Number of Vessels	Red Snapper Revenue	Other jointly caught species w/ Red Snapper Revenue	Other SATL Revenue	Gulf Revenue	Total Gross Revenue
2019	195	$738,639	$1,676,183	$11,106,624	$643,210	$16,652,132
2020	209	$755,960	$1,739,722	$10,765,788	$718,919	$16,221,369
2021	197	$750,249	$1,500,318	$8,341,417	$568,527	$12,381,744
2022	175	$761,582	$1,483,785	$8,394,714	$445,278	$11,489,409
2023	182	$724,837	$1,135,222	$8,506,522	$303,493	$10,670,074
AVG	**192**	**746,253**	**1,507,046**	**9,423,013**	**535,885**	**13,482,946**

Source: SEFSC-SSRG Socioeconomic Panel (Aug 2023 version).

Because commercial vessels cannot specialize in red snapper harvest and remain economically variable, a reliable subsample of the economics of red snapper-harvesting vessels is not viable for estimating its commercial profitability as is possible for stocks with larger catch limits like vermillion snapper or black sea bass. NOAA economists do generate estimates of economic returns to the commercial fleet overall. Again quoting from Amendment 59:

Liese (2023) generated annual vessel-level estimates of costs (as a percentage of revenue) and net revenue from operations for vessels that harvested snappers and groupers in the South Atlantic. Estimates of PS can be calculated from the cost information contained in Liese (2023) in conjunction with estimates of annual revenue from the SEFSC-SSRG Socioeconomic Panel. PS is total annual revenue minus the costs for fuel, other supplies, hired crew, and the opportunity cost of an owner's time as captain. Net revenue from operations, which most closely represents economic profits to the owner(s), is total annual revenue minus the costs for fuel, other supplies, hired crew, vessel repair and maintenance, insurance, overhead, and the opportunity cost of an owner's time as captain, as well as the vessel's depreciation. According to Liese (2023), PS for commercial vessels that harvested South Atlantic snapper grouper was approximately 37.7% of their annual gross revenue, on average, from 2014 through 2018. Net revenue from operations was 8.2% of their annual gross revenue, on average, during this period. Applying these percentages to the results provided in Table 3.3.1.5 would result in an estimated per vessel average annual PS of $26,401 (2023 dollars) and an average annual net revenue from operations of $5,742 per year. Liese (2023) also provides annual trip-level estimates of costs (as a percentage of trip revenue) and trip net revenue for vessels that harvested snappers and groupers in the South Atlantic. According to Liese (2023), labor, including both hired and owner's time, consumed 48.4% of trip revenue and fuel and supplies consumed 26%, leaving a trip net revenue margin of 25.6%, on average, from 2014 through 2018.

It is not feasible to generate an estimate of how commercial harvesters would naturally pursue red snapper versus other species due to the regulatory system, which utilizes vessel trip limits for species rather than market-oriented individual transferable quotas favored by the neighboring Gulf of Mexico Fishery Management Council (Liese and Crosson 2023). Trip limits are the drivers of commercial fishing activity throughout the snapper grouper fishery rather than market demand (and producer response).

The following commercial time series data were provided to the SEDAR 90 Workshop from 1993-2023 from the NMFS economic databases. "Adjusted" revenue are nominal revenue adjusted for inflation using the gross domestic product implicit price deflator from the U.S. Bureau of Economic Analysis, available at the website for the Federal Reserve Bank of St Louis (tool A191RD3A086NBEA).

Year

Region (South Atlantic only)

Reported Landings (gutted weight) of red snapper

Number of vessels reporting red snapper landings

Trips landing red snapper

Total days of fishing for red snapper

Days/trip (mean)

crew/trip (mean)

Average landings (lbs/trip)

Nominal Revenue for red snapper per year

Nominal Revenue for red snapper per year adjusted to 2023 dollars

Other species jointly landed on red snapper trips (gutted weight)

Other species jointly landed on red snapper trips (nominal revenue)

Other species jointly landed on red snapper trips (revenue adjusted to 2023 dollars)

Other trips taken by vessels that landed red snapper (count)

Other trips taken by vessels that landed red snapper (days)

Other trips taken by vessels that landed red snapper

Other trips landings (gutted weight)

Other trips landings (nominal revenue)

Other landings (revenue adjusted to 2023 dollars)

Other regions landings (outside the South Atlantic) taken by vessels that landed red snapper (gutted weight)

Other regions landings (outside the South Atlantic) taken by vessels that landed red snapper (nominal revenue)

Other regions landings (outside the South Atlantic) taken by vessels that landed red snapper (revenue adjusted to 2023 dollars)

Other regions landings (outside the South Atlantic) taken by vessels that landed red snapper (trip count)

Other regions landings (outside the South Atlantic) taken by vessels that landed red snapper (days)

Economics of recreational fishing (both private and for-hire)

The recreational sector has both private angler and for-hire components. Economists characterize the value of these activities differently. The utility of private angling for saltwater fish, including red snapper, is indicated by the maximum amount of money that anglers would be willing to pay for the fishing experience (the indifference point) above the amount that they actually do pay. This will vary depending on the actual fishing experience, but economists summarize it as consumer surplus, which is measured as willingness to pay (WTP). When NOAA changes bag limits or other regulations that affect anglers' ability to retain their catch, agency economists use WTP as an approximation of changes in CS for the private recreational sector. The current WTP value of $100.98 (2023$) used by the agency for South Atlantic red snapper is derived from Carter and Liese (2012). Increases and decreases in the number of red snapper allowed by regulations in the South Atlantic are multiplied by this number to estimate the change in overall welfare for the private recreational angling sector. Note that each additional fish caught by a particular angler has a lower price due to declining marginal returns. This stands in contrast to commercial fishing, where additional fish are valued at a linear rate. However, red snapper bag limits have not changed dramatically in recent years, so NOAA still uses the listed WTP estimate for the second fish from Carter and Liese (2012).

The economic value of the for-hire component of the recreational sector is calculated by trips, not fish. In the South Atlantic, Souza and Liese (2019) estimated that net revenue to be 40% of total revenue for the charter fleet and 54% for the headboats. After dividing by the average number of angling clients, PS per angler trip is estimated to be $138 for charter vessels and $88 for headboats.

Citations

Carter, D.W. and Liese, C., 2012. The economic value of catching and keeping or releasing saltwater sport fish in the Southeast USA. North American Journal of Fisheries Management, 32(4), pp.613-625.

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