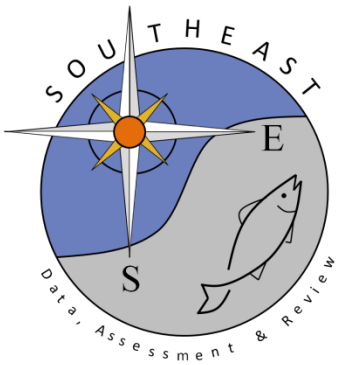
Commercial Landings of Gulf of Mexico Red Snapper (*Lutjanus campechanus*) from 1964 - 2023

Sarina Atkinson and Micki Pawluk

SEDAR98-DW-02

22 November 2024

Updated: 31 January 2025



Please cite this document as:

Atkinson, Sarina, and Micki Pawluk. 2025. Commercial Landings of Gulf of Mexico Red Snapper (*Lutjanus campechanus*) from 1964 - 2023. SEDAR98-DW-02. SEDAR, North Charleston, SC. 17 pp.

SEDAR 98 Working Paper

Commercial Landings of Gulf of Mexico Red Snapper (*Lutjanus campechanus*) from 1964 - 2023

Sarina Atkinson and Micki Pawluk

National Marine Fisheries Service, Southeast Fisheries Science Center, Sustainable Fisheries Division

Corresponding author: sarina.atkinson@noaa.gov

†Updated submission utilizes a new gutted to whole weight conversion factor produced by the Gulf States Marine Fisheries Commission. The conversion factor used to convert Red Snapper landed in gutted weight to whole weight was changed from 1.11 to 1.059.

Introduction

Commercial landings statistics are the quantities and value of seafood products caught by fishermen in the U.S. and sold to established (licensed) wholesale and retail seafood dealers. These data have been collected as early as the late 1890s. Currently, these data are collected by trip ticket programs (TTPs) managed by state agencies. In addition to the quantity and value, basic information on the gear used to catch the fish, the area where the fishing occurred and the county and state where the catch was landed are recorded (Gloeckner, 2014).

Commercial landings of Red Snapper for the Gulf of Mexico (hereafter referred to as the Gulf) are provided in whole weight (in pounds) for the period 1964-2023.

Methods

Commercial landings for Gulf Red Snapper were compiled using several data sources. The data were accessed from an Oracle database housed at the Southeast Fisheries Science Center (SEFSC) in Miami, Florida.

Data Sources

The Accumulated Landings System (ALS) is an Oracle database maintained by SEFSC. This database contains landings data from 1926 to present with data prior to 1962 considered historical. Historical landings are summarized annually. Beginning in 1977, landings were consistently provided as monthly summaries, while a few states for some species began reporting monthly in 1972. For more information on data collection of landings prior to the implementation of a state TTP (Trip Ticket Program) and ALS database structure, refer to Gloeckner (2014).

Data from state TTPs begin in various years, depending on the state (Donaldson, 2004). Trip ticket data for Texas, Louisiana, Mississippi, and Alabama were available through the Gulf of Mexico Fisheries Information Network (GulfFIN) housed at the Gulf States Marine Fisheries Commission (GSMFC). Florida trip ticket data were available through Atlantic Coastal Cooperative Statistics Program (ACCSP). Where data were available from state trip ticket programs, those data were used in lieu of data from ALS.

The Florida General Canvass dataset, within the ALS database, contains annual landings 1976-1996. These data were submitted by federal port agents responsible for a particular county within Florida (Gloeckner, 2014). The General Canvass data provides estimated proportions of the landings by gear and area. Those proportions are then used to apportion ALS or Trip Ticket landings by gear and area when gear or area information is missing for 1977-1996.

Stock Boundary

Commercial landings for Gulf of Mexico Red Snapper were compiled from Texas through West Florida. This boundary follows the Gulf of Mexico Fisheries Management Council (GMFMC) boundary which is a line from Riley's Hump, the Tortugas and US 1, where the North of US1 is assigned to the GMFMC and South of US 1 is considered outside of the GMFMC region and is assigned to the South Atlantic FMC region. For this assessment the Gulf of Mexico was further separated into three subregions based on FIN area codes. The East includes fishing areas 1-6,

744.1, and 748.1, Central is 7-12, and West is 13-21. (Figure 1). The fishing areas 744.1 and 748.1 specifically pertain to Florida Bay.

Gear Groups

Similar to the previous assessment (SEDAR 74), commercial landings were summarized into 2 main gears (Handline+ and Longline). Table 1 highlights the FIN gear codes associated with each gear group.

Data Compilation

The SEFSC maintained materialized view in ORACLE appropriately joins all data sources based on best practices (MV Landings). All data housed within ALS are in the NMFS coding system, whereas TTP data are provided in the Fisheries Information Network (FIN) standard. All gear, area, county, state, and species information are translated to the common FIN coding standard. The following data were used for each respective state:

Texas

- ALS from 1964-2013
- Trip ticket from 2014-2023

Louisiana

- ALS from 1964-1999
- Trip ticket from 2000-2023

Mississippi

- ALS from 1964-2014
- Trip ticket from 2015-2023

Alabama

- ALS from 1964-2001
- Trip ticket from 2002-2023

Florida

- ALS from 1964-1985
- Trip ticket from 1986-2023
- General Canvass to proportion landings by gear and area from 1977-1996

Area fished, county landed, and state landed are used to filter the data to the stock boundary (Figure 1). With just county or state landed information, one cannot assume landings are a part of Gulf of Mexico, South Atlantic, or foreign catch (Gloeckner, 2014). Therefore, area of capture is preferred when assigning catch to the appropriate region. For trip ticket data the area of capture is reported by the dealer, and prior to trip tickets in the ALS database, area is reported by the port agents. When area information is missing, then the recorded county and/or state landed is used to

assign landings to the Gulf of Mexico to account for these removals from the stock biomass. Landings reported from Monroe County, Florida follows a different procedure because the fishing areas off Monroe County are along the Council boundary. Rather than rely on dealer or port agent reported area of capture, the SEFSC Coastal Fisheries Logbook Program (CFLP) is used as the preferred source because area of capture is reported by fishers which is likely more accurate. For this reason, Monroe landings is apportioned to Gulf of Mexico and South Atlantic coasts using CFLP fisher-reported area of capture. This method is a deviation from SEDAR 74, but adopted for this assessment in order to be consistent with the methodology used in the South Atlantic Red Snapper assessment (SEDAR 73). From 1993-2023, the annual proportion of Monroe County landings fishing in Gulf of Mexico waters was used to proportion trip ticket landings from Monroe. From 1964-1992, an average proportion using pre-IFQ data (1993-2006) was used.

In order to attribute all Red Snapper landings to a gear group and fishing area, annual landings proportions were used to assign gear and/or area when gear and/or area information is missing. This method was applied to all states with the exception of Texas from 1978-1983. In 1978 and 1979 gear information is missing for the entire year. Therefore, gear proportions by area were calculated as an average from 1973-1977. Additionally, from 1980-1983, the only gear reported by Texas for Red Snapper is trawl gear. These landings are assumed to be non-trawl, therefore an average from 1984-1988 was used to proportion 1980-1983 Texas landings by gear and area. These methods are considered standard procedure.

Commercial landings for Gulf Red Snapper were provided in whole weight pounds. During the years where trip ticket data were available, only landings reported in gutted weight were converted to whole weight using the conversion factor 1.059 (GSMFC, 2024). For ALS data, Gloeckner (2014) defines pounds as round (whole) weight except for FL from 1985 and prior which are ‘as landed’. Since Goodyear (1992), FL landings from ALS were assumed landed gutted. For this reason, all FL landings from 1985 and prior were converted to whole weight using 1.059.

Coastal Logbook Proportioning to Assign Gear and Area to the Landings

For landings reported in 1993 and later, gear and area information from CFLP data were used to assign gear and area to the landings. Similar to using CFLP data to apportion Monroe landings, this decision was based on the general acceptance that records regarding gear(s) used and area(s) fished were probably more accurately reported on the fishermen’s coastal logbook, which are completed by the fishing boat captains or designees rather than on the dealer reported trip tickets, often reported online by secretarial staff. For a general description of the logbook data please review Atkinson et al. (2021) and Poffenberger (2003).

This method involves calculating the proportion of logbook landings by year, state, gear (e.g., Handline+ and Longline) and fishing area. These proportions are applied to the annual landings by month and state.

IFQ Program

In 2007, the Gulf of Mexico Fisheries Council started a program whereby fishermen own a portion of the annually allocated Red Snapper quota which is also tradeable from one permit holder to another. The Program is administered by the NOAA Fisheries Southeast Regional

Office (SERO). The IFQ landings data do not have gear information which is needed for the assessment process. In order to assure that the landings in the SEFSC Oracle databases are matching what is reported to SERO and which is deemed the most accurate data, Red Snapper landings are corrected to match the IFQ landings data. Annual IFQ correction factors are calculated from the difference between the SEFSC landings to SERO landings and applied to the SEFSC landings from 2007-2023.

Results

Changes from SEDAR 74

- An update in the gutted to whole weight conversion factor from 1.11 to 1.059 is the largest difference between assessments. This change led to as much as a 4.5 percent reduction in total annual landings.
- For SEDAR 74, TX landings from 1980 – 1983 were treated as any other landings, resulting in all the TX landings from those years being assigned to the Handline+ gear group. For this assessment, we have accounted for the known gear reporting issue, resulting in the TX landings from 1980 – 1983 being apportioned between Handline+ and Longline based on landings proportions from 1984 – 1988, resulting in a discrepancy in the landings totals by gear group for those years (1980 – 1983).
- For SEDAR 74, landings of unknown gear were lumped in with the Handline+ group, while for the current assessment, unknown gear was proportioned using annual proportions of gear and area. This resulted in some minor shifting of landings between gear groups, however, the impact of this difference was fairly minimal.
- For SEDAR 74, logbook proportioning of gear and area began in 1990 (the first year of the logbook program), while for the current assessment we begin using logbook data in 1993 when the program was fully implemented. This results in a relatively large increase in longline landings for the current assessment for 1990 – 1992, however, it does not impact the total landings across all gears.
- For SEDAR 74, area 7 was mistakenly included in the East region rather than the Central region, this was corrected for the current assessment and led to some shuffling of landings between east and central, however, the difference was minimal.
- For SEDAR 74, fishing area was used to assign landings to the Gulf or South Atlantic stocks. When fishing area was missing, county landed was used with Monroe county, FL being assigned to the Gulf of Mexico. For the current assessment, Monroe county landings were apportioned to the Gulf and the South Atlantic (regardless of reported fishing area) using coastal logbook data. This resulted in landings totals that were slightly different from the previous assessment, however, the impact of this procedure was minimal with the maximum difference in landings totals in any given year being -0.64 % (i.e. annual landings totals were less than 1% different in all years).

The impacts of these changes in methodology between SEDAR 98 and SEDAR 74 are shown by gear and subregion in Figure 2.

The calculated annual coastal logbook proportions for Monroe, FL landings fished in Gulf of Mexico waters are summarized in Table 2. These proportions by gear group were used to assign Monroe, FL Red Snapper landings to the Gulf of Mexico stock for this assessment. For Red Snapper landings in Monroe, FL from 1964-1992, the average proportion by gear group using 1993-2006 data was applied (Table 2). According to logbook data, across both gear groups, the majority of Red Snapper landings are fished in Gulf of Mexico waters.

When trip ticket data are used, landings may be reported in gutted weight or whole weight. Since this assessment requires landings in whole weight pounds, landings reported in gutted weight were converted to whole weight. Figure 3 highlights for the years trip ticket data are used, the majority of landings are reported in gutted weight and therefore converted to whole weight. Similarly, IFQ monitoring of this species is done in gutted weight and therefore the annual landings of Red Snapper reported by SERO needed to be converted to whole weight using the same conversion equation. This is why a change in the conversion factor led to the largest impact between assessments.

Annual calculated Red Snapper landings totals are summarized by subregion in Figure 4. The IFQ correction factors used to adjust landings from 2007-2023 are summarized in Table 3. The western Gulf of Mexico subregion contributes the most landed pounds of Red Snapper over time. There have been trends in Red Snapper landings with the early 1990's and mid 2000's at the start of the IFQ program having the years with the lowest annual pounds landed. Since the IFQ program was implemented landings of Red Snapper have continued to increase as the annual quota has steadily increased between 2007-2023. Figure 5 shows the annual landings totals summarized by gear group, with the majority of landings coming from the handline fishery. The longline fishery began in 1980 and has been relatively stable over time. Calculated Red Snapper landings by year, subregion, and gear group are highlighted in Table 4. Landings uncertainty estimates based on data collection protocols by state are summarized in Table 5. This standard table of uncertainty was added to commercial landings products for SEDAR 88 and may not have been previously provided for SEDAR 74.

Literature Cited

Atkinson, Sarina, Michael Judge, and Refik Orhun. 2021. Coastal Fisheries Logbook Program Metadata. SEDAR74-DW-3. SEDAR, North Charleston, SC. 17 pp.

Donaldson, D.M. 2004. Overview of the State Trip Tickets Programs in the Gulf of Mexico. SEDAR7-DW-20. SEDAR, North Charleston, SC. 11pp.

Gloeckner D.R. 2014. Description of Commercial Landings Programs in the Southeast and ALS Database. SEDAR-PW-RD57. SEDAR, North Charleston, SC. 13pp.

Gulf State Marine Fisheries Commission (GSMFC). 2024. Final Report: U.S. Gulf of Mexico Commercial Snapper/Grouper/Black Drum Conversion Factors Validation. SEDAR 98-RD04.

Goodyear, C. P. 1992. Red snapper in U. S. waters of the Gulf of Mexico. Contribution: MIA 91/91-170. National Marine Fisheries Service, Southeast Fisheries Science Center, Miami, Florida. 156 pp.

Poffenberger, J. 2003. Description of the Southeast Fisheries Science Center's Logbook Program for Coastal Fisheries. SEDAR-DW-29. SEDAR, North Charleston, SC. 9pp.

Tables

Table 1. Gears observed in the Red Snapper datasets, and their respective gear groupings used to the aggregate the data.

FIN Gear Code	Gear Name	SEDAR Gear Group
010	HAUL SEINES	HANDLINE PLUS
030	PURSE SEINE	HANDLINE PLUS
060	FYKE NETS	HANDLINE PLUS
091	OTTER TRAWL BOTTOM, CRAB	HANDLINE PLUS
092	OTTER TRAWL BOTTOM, FISH	HANDLINE PLUS
095	OTTER TRAWL BOTTOM, SHRIMP	HANDLINE PLUS
110	OTHER TRAWLS	HANDLINE PLUS
116	TRAWL, SKIMMER	HANDLINE PLUS
118	BUTTERFLY NETS	HANDLINE PLUS
130	POTS AND TRAPS	HANDLINE PLUS
132	POTS AND TRAPS, BLUE CRAB	HANDLINE PLUS
139	POTS AND TRAPS, FISH	HANDLINE PLUS
140	POTS AND TRAPS, SPINY LOBSTER	HANDLINE PLUS
145	POTS AND TRAPS, STONE CRAB	HANDLINE PLUS
200	GILL NETS	HANDLINE PLUS
205	GILL NETS, RUNAROUND	HANDLINE PLUS
207	GILL NETS, OTHER	HANDLINE PLUS
210	TRAMMEL NETS	HANDLINE PLUS
300	HOOK AND LINE	HANDLINE PLUS
301	HOOK AND LINE, MANUAL	HANDLINE PLUS
302	HOOK AND LINE, ELECTRIC	HANDLINE PLUS
303	ELECTRIC/HYDRAULIC, BANDIT REELS	HANDLINE PLUS
320	TROLL LINES	HANDLINE PLUS
321	TROLL LINE, MANUAL	HANDLINE PLUS
322	TROLL LINE, ELECTRIC	HANDLINE PLUS
323	TROLL LINE, HYDRAULIC	HANDLINE PLUS
324	TROLL LINE, GREEN-STICK	HANDLINE PLUS
551	CAST NETS	HANDLINE PLUS
660	SPEARS	HANDLINE PLUS
661	SPEARS, DIVING	HANDLINE PLUS
700	HAND LINE	HANDLINE PLUS
701	TROLL AND HAND LINES CMB	HANDLINE PLUS
750	BY HAND, DIVING GEAR	HANDLINE PLUS

FIN Gear Code	Gear Name	SEDAR Gear Group
760	BY HAND, NO DIVING GEAR	HANDLINE PLUS
801	UNSPECIFIED GEAR	HANDLINE PLUS
400	LONG LINES	LONGLINE
402	LONG LINES, SURFACE	LONGLINE
403	LONG LINES, BOTTOM	LONGLINE
404	LONG LINES, SURFACE, MIDWATER	LONGLINE
405	LONG LINES, TROT	LONGLINE
408	BUOY GEAR	LONGLINE

Table 2. The logbook proportion of Red Snapper landings from Monroe county, FL fished in Gulf of Mexico waters. These proportions were calculated by gear group (longline and handline plus). The average proportion using 1993-2006 data was used to apportion Monroe landings between 1964-1992. Given landings were restricted to a single county, there are more issues with confidentiality. The (*) cells indicate confidential data.

Year	Handline Plus	Longline
1993-2006	0.4768	0.9108
1993	0.5013	1
1994	0.6864	*
1995	0.6184	*
1996	0.1928	0.9578
1997	0.4304	1
1998	0.3194	*
1999	0.9031	*
2000	0.3846	*
2001	0.6935	*
2002	0.3892	*
2003	0.2144	*
2004	0.4712	*
2005	0.3402	*
2006	0.5303	0.8935
2007	0.7332	*
2008	0.4095	
2009	0.1603	*
2010	0.7772	*
2011	0.9873	*
2012	0.8626	
2013	0.8037	*
2014	0.8920	
2015	0.8496	
2016	0.4443	*
2017	0.5567	*

2018	0.3547	*
2019	0.5583	*
2020	*	*
2021	0.7477	*
2022	*	*
2023	*	*

Table 3. Annual IFQ correction factors used to adjust trip ticket total landings to match the reported total IFQ landings from 2007-2023.

Year	Correction Factor
2007	1.010
2008	0.989
2009	0.975
2010	1.004
2011	0.994
2012	0.985
2013	0.975
2014	0.975
2015	1.026
2016	1.009
2017	1.013
2018	1.018
2019	1.019
2020	1.006
2021	1.007
2022	1.006
2023	1.013

Table 4. The annual calculated Red Snapper landings by gear groupings for each Subregion from 1964 – 2023.

Year	Handline Plus			Longline		
	Central	East	West	Central	East	West
1964	1,864,278	1,571,416	3,520,477			
1965	1,996,739	1,536,245	3,573,809			
1966	1,596,131	1,384,325	2,991,560			
1967	1,874,032	983,998	4,157,812			
1968	1,572,370	1,011,753	5,078,133			
1969	1,467,321	894,670	4,100,454			
1970	1,309,992	914,952	4,565,273			
1971	1,366,740	765,881	5,278,110			
1972	1,448,878	813,997	4,768,943			
1973	1,879,092	734,680	4,791,681			
1974	1,870,547	1,748,572	4,362,869			
1975	1,887,997	1,550,810	3,859,590			
1976	1,674,302	1,489,938	3,263,297			1,074
1977	1,298,317	883,215	2,821,335			
1978	1,188,567	726,598	2,643,153			
1979	1,228,805	717,379	2,421,883			
1980	1,251,354	563,767	2,193,175	57,817	32,406	307,747
1981	1,513,540	527,672	2,626,190	84,091	86,774	499,698
1982	1,689,539	512,199	3,109,933	77,687	138,675	553,739
1983	1,882,066	411,038	3,649,590	103,298	321,092	603,677
1984	1,181,319	382,915	2,866,028	99,422	253,155	755,069
1985	821,047	366,805	2,071,348	49,807	96,710	698,562
1986	674,085	92,142	1,913,669	69,585		848,739
1987	567,594	61,656	1,558,932			743,171
1988	723,112	58,579	2,360,037	50,332		691,465
1989	570,425	49,864	1,890,290	24,752		481,862
1990	540,835	64,493	1,583,136	30,851		362,621
1991	428,741	29,258	1,410,099	9,251	21,870	297,829
1992	545,239	33,904	1,757,892	12,219	8,033	729,323
1993	401,335	36,585	2,924,504	2,009	14,381	18,066
1994	486,007	22,337	2,698,712	2,720	5,319	15,184
1995	155,841	12,767	2,746,949	1,202	7,011	19,061
1996	217,355	9,387	4,067,058	3,890	3,321	27,481

Year	Handline Plus			Longline		
	Central	East	West	Central	East	West
1997	171,622	7,037	4,595,753	1,148	3,232	31,328
1998	357,567	11,562	4,279,013	2,250	3,092	27,207
1999	486,494	45,737	4,234,487	677	5,532	91,383
2000	610,344	29,118	3,858,230	987	7,138	178,616
2001	741,390	34,517	3,632,376	652	9,275	123,627
2002	987,812	33,990	3,493,119	6,319	11,260	142,798
2003	946,597	49,534	3,146,041	3,566	9,989	171,131
2004	856,923	52,562	2,957,651	3,427	15,025	460,880
2005	695,343	70,056	3,020,189	1,718	18,276	289,735
2006	642,525	90,620	3,569,989	1,053	14,721	253,415
2007	765,358	53,541	2,018,955	9,391	5,274	183,979
2008	699,699	52,016	1,532,345	17,256	13,399	54,776
2009	761,184	99,813	1,445,349	6,038	7,601	49,470
2010	1,119,161	194,853	1,814,795	10,296	60,012	37,233
2011	1,280,632	240,251	1,813,470	4,363	72,529	18,152
2012	1,517,653	224,181	2,047,392	1,198	47,286	13,233
2013	1,971,453	288,537	2,785,079	2,147	102,068	48,922
2014	1,754,420	393,322	2,996,426	7,720	107,152	52,963
2015	2,479,789	525,958	3,560,426	37,517	203,062	47,373
2016	2,194,606	379,051	3,596,761	19,919	156,587	67,966
2017	2,313,055	474,516	3,639,317	6,729	161,958	62,446
2018	2,186,554	533,027	3,578,676	43,325	249,977	65,001
2019	2,278,916	713,407	3,763,239	32,682	369,117	148,919
2020	2,325,810	682,761	3,755,513	29,977	404,525	76,661
2021	2,126,730	756,483	3,759,797	46,362	430,072	181,306
2022	1,789,859	889,136	3,866,623	108,256	468,089	111,665
2023	1,747,608	755,842	4,669,711	104,768	457,341	116,453

Table 5. Uncertainty estimates by state and time block for the Red Snapper commercial landings.

Year	TX	LA	MS	AL	FL	Comments
1962-1976	0.2	0.2	0.2	0.2	0.2	Annual state summaries
1977-1985	0.1	0.1	0.1	0.1	0.1	Monthly state summaries
1986-1999	0.1	0.1	0.1	0.1	0.05	FL starts state trip ticket in 1985; used starting in 1986
2000-2001	0.1	0.05	0.1	0.1	0.05	LA starts state trip ticket in 1997; used starting in 2000
2002-2013	0.1	0.05	0.1	0.05	0.05	AL starts state trip ticket and used starting in 2002
2014	0.05	0.05	0.1	0.05	0.05	TX starts state trip ticket in 2008; used starting in 2014
2015-Present	0.05	0.05	0.05	0.05	0.05	MS starts state trip ticket in 2012; used starting in 2015

Figures

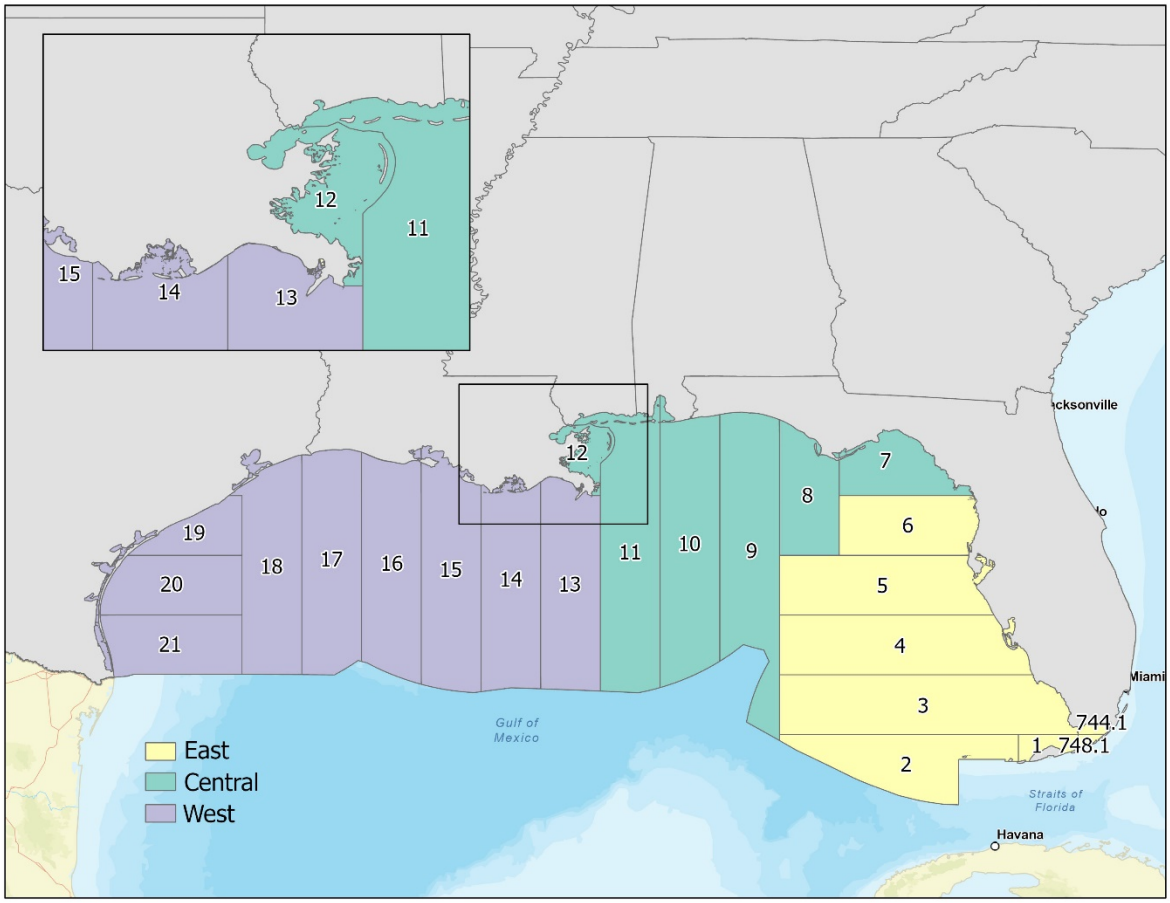


Figure 1. Gulf of Mexico commercial FIN fishing areas.

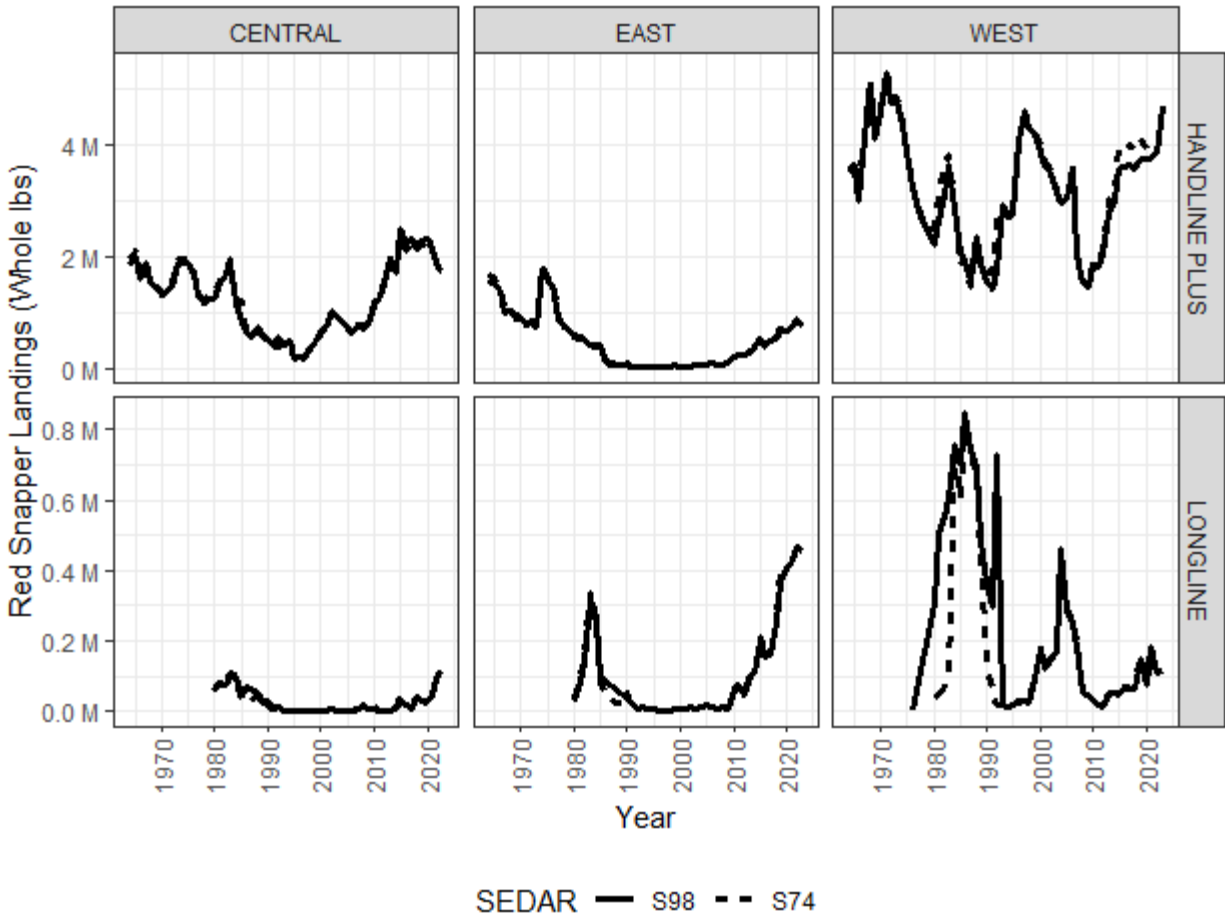


Figure 2. Annual calculated Red Snapper commercial landings (in whole weight pounds) by gear for the current SEDAR 98 compared to the previous assessment SEDAR 74 from 1964 - 2023. Confidential landings have been excluded.

Figure 3. Percent of state Red Snapper landings reported in gutted weight versus whole weight. This summary is limited to years when state trip ticket data are used because either weight type may be reported.

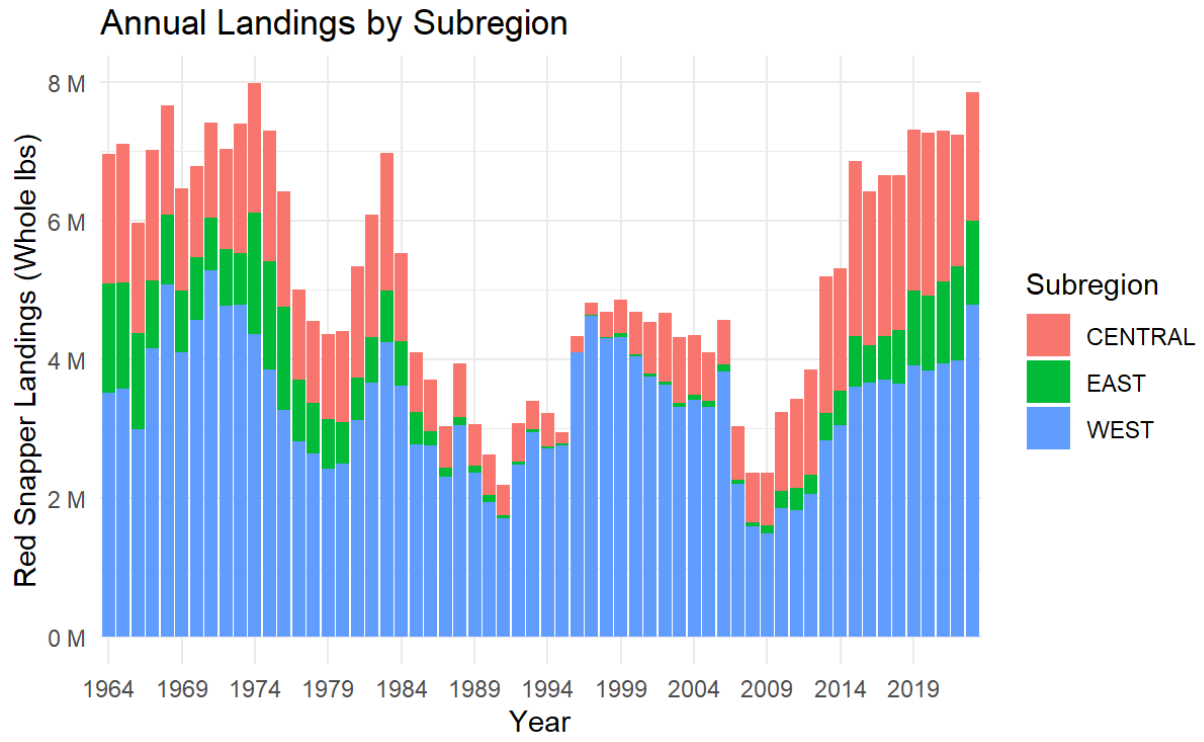


Figure 4. Annual calculated Red Snapper commercial landings for the East and West subregions.

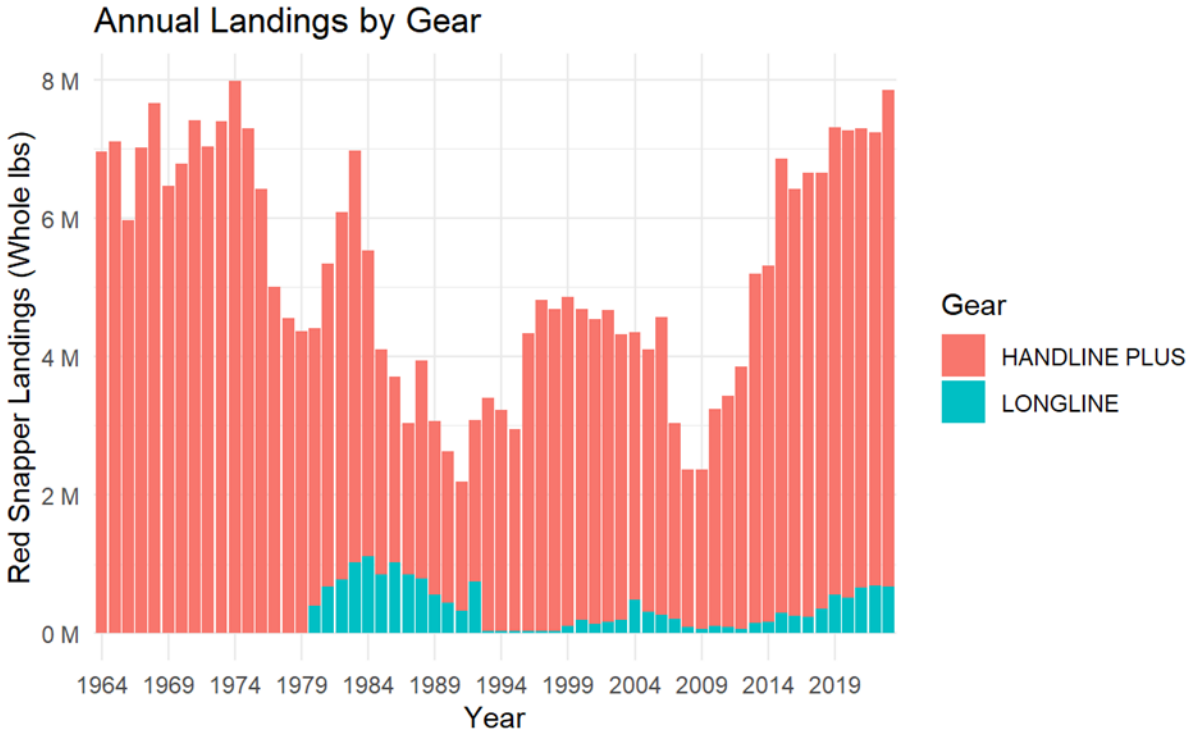


Figure 5. Annual calculated Red Snapper commercial landings for Handline+ and Longline gears. Confidential landings have been excluded.