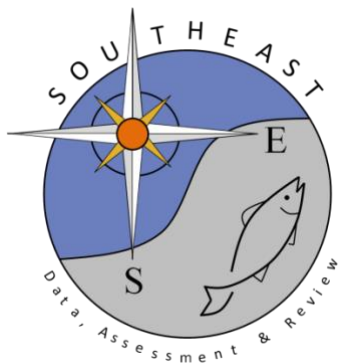


Commercial Landings of Red Grouper (*Epinephalus morio*) in the Gulf of Mexico

Beth M. Wrege and M. Refik Orhun

SEDAR61-WP-21

21 June 2019



This information is distributed solely for the purpose of pre-dissemination peer review. It does not represent and should not be construed to represent any agency determination or policy.

Please cite this document as:

Wrege, Beth M. and M. Refik Orhun. 2019. Commercial Landings of Red Grouper (*Epinephalus morio*) in the Gulf of Mexico. SEDAR61-WP-21. SEDAR, North Charleston, SC. 9 pp.

Commercial Landings of Red Grouper (*Epinephalus morio*)
In the Gulf of Mexico

Beth M. Wrege and M. Refik Orhun

Fisheries Statistics Division
Southeast Fisheries Science Center
NOAA Fisheries Service
US Department of Commerce

Data Sources

Commercial landings of Red Grouper from the Gulf of Mexico (hereafter “Landings”) were compiled from different recorded sources. Historical Landings from 1880 to 1962 were obtained from Saul (2006) who had analyzed the US and Cuban Gulf of Mexico Red Grouper Fishery. Landings from 1963 to 1986 were compiled from the Accumulated Landings System (ALS) hosted by NOAA’s Southeast Fisheries Science Center (SEFSC).

These landings data originated from the following four ALS data tables in ORACLE:

1. ALS.TALS_GCANV6071: Texas to Florida Annual landings data from 1963 to 1971
2. ALS.ALS_LANDINGS7278: Texas to Florida Annual landings data from 1972 to 1976
3. ALS.ALS_GENERAL_CANVASS (also called the Florida General Canvass): Annual landings data Florida from 1976 – 1985. 1976 data for Florida are duplicates of landings data in table ALS_LANDINGS7278.
4. ALS.ALS_LANDINGS: Monthly landings data for Texas, Louisiana, Mississippi and Alabama from 1977 to present. This is the main ALS table that is still currently in use and new landings data are accumulated to this table.

Landings after 1986 were compiled following guidance from the benchmark assessment of SEDAR 42, and decisions made and methods used for SEDAR 42 were followed in SEDAR 61.

Please refer to the commercial sections of the SEDAR 42 http://sedarweb.org/docs/sar/S42_SAR_0.pdf and SEDAR <http://sedarweb.org/sedar-12-stock-assessment-report-gulf-mexico-red-grouperreports> for more details.

These data sources were the Florida Trip Ticket Program (FTTP) that has trip-level landings data that was used 1986 – 2017 and the ALS landings data for Gulf of Mexico states other than Florida, i.e. Texas, Louisiana, Mississippi and Alabama.

Proportioning of Red Grouper from Unclassified Grouper Landings before and after 1986

Classification of groupers in landings by species did not begin until 1986. In years prior, all grouper landings had been lumped together into an unclassified grouper category, i.e. NMFS code 1410, exceptions being the Goliath and Warsaw groupers.

Florida 1963-1985. In order to decide which data source(s) to use to assign a portion of the unclassified groupers to Red Grouper prior to 1986 from Florida, comparisons were made by the commercial working group at SEDAR 42 between Florida’s Trip Ticket Program’s (FTTP) and NMFS’s Coastal Fisheries Logbook Program’s (CFLP) landings data for the years from 1986 to 2013. It was concluded that both datasets were very similar in landing trends and level of landings reported in Florida for matching years and that the FTTP landings data was preferred because it had finer, trip-level resolution compared to the monthly ALS.

To apportion a portion of the unclassified groupers to Red Grouper, a mean Red Grouper proportion was calculated by year and state red grouper/all classified grouper using the years 1986-1989 and applied back in time for the years 1963-1985.

Florida 1986-2017. For proportioning of Red Grouper from unclassified grouper landings beginning in 1986, it was decided that only trips that had only unclassified groupers were going to be used, rationale being that if a trip was coded to species, then the major species, i.e. red grouper, would have been reported. To apportion red grouper from unclassified groupers, the ratio of red grouper to total classified groupers was calculated for 1992-2017 by year and gear and applied to trips that only unclassified groupers for those years from the FTT.

Non-Florida Gulf States 1963-1985. For the Gulf of Mexico states other than Florida, i.e. Texas, Louisiana, Mississippi and Alabama, the ALS 1986-1989 landings were used to calculate an average annual red grouper proportion by state that was to applied back in time for the years 1963-1985.

Non-Florida Gulf States 1986-2017. These states had quite low red grouper landings and therefore apportioning red grouper from unclassified groupers for the years after 1986 was done by using the annual average ratio of red grouper landings to total classified groupers landings. The proportions were then applied that to all unclassified groupers landings by state and year, rather than using just the trips that had reported only unclassified grouper in their trip as done for Florida.

Proportioning of Landings by Gear and Area

Monthly landings beginning in 1977 often had missing gear and area information, i.e. no gear and area information is recorded in the monthly ALS for:

- Florida 1977-1996
- Louisiana 1990-1999
- Texas 1990-2011

The decision to use logbook data for apportioning red grouper landings to gear and area after 1992 was based on the general acceptance that gear and location data are more accurately reported on fishermen's logbook records than on dealer reported trip tickets. Therefore, proportions of red grouper landings by year, gear and area were calculated from the CFLP logbook from 1993 - 2017.

Florida 1977-2017. For proportioning landings from Florida from 1977 - 1985 and by gear and area fished, i.e. gear-type and water body information, the annual ALS (Florida) General data were used. Magnitude of landings for Florida from the annual and monthly ALS are identical for those years (1977-1985) but the Florida General Canvass had gear and area fished/water body information and was therefore used for those years.

For Florida landings 1986-1992, again gear and area proportions were used from the ALS (Florida) General Canvass, but these proportions were now scaled to Florida Trip Ticket landings data rather than ALS.

For Florida landings after 1992, annual gear and area proportions were calculated from the CFLP logbook for Florida and then applied to Florida trip ticket Red Grouper landings data.

Non-Florida Gulf States 1977-1992. As established in SEDAR 12, for the Gulf States other than Florida, average annual proportions of gear and area by state were calculated from the logbook for 1993-2006 and applied back in time for the years prior to 1993.

Non-Florida Gulf States 1992-2017. For non-Florida landings after 1992, same as for Florida, annual gear and area proportions were calculated from the CFLP logbook by state and then applied to ALS Red Grouper landings data by state.

Gear Groupings

As in SEDAR 42, workgroup’s recommendation was to categorize landings into four gear groups: handline, longline, trap, and other.

Table 1. ALS Gear Groupings used (same as in SEDAR 42)

NMFS Code	Description	Group
600	Troll & Hand Lines Cmb	Handline
610	Lines Hand, Other	Handline
611	Rod and Reel	Handline
612	Reel, Manual	Handline
613	Reel, Electric or Hydraulic	Handline
614	Long Line, Vertical	Handline
616	Rod and Reel, Electric (Hand)	Handline
675	Lines Long Set With Hooks	Longline
676	Lines Long, Reef Fish	Longline
677	Lines Long, Shark	Longline
345	Pots and Traps, Fish	Trap
355	Pots and Traps, Spiny Lobster	Trap
* All other codes		Other

IFQ Correction

In SEDAR 42, the first benchmark SEDAR for Red Grouper since the inception of the Individual Fishing Quota Program (IFQ) for Red Grouper in 2010, it was decided that the IFQ landings had probably the most accurate landings data in terms of volume landed. So to maintain the accuracy of the landings volume an annual IFQ correction was calculated from the difference between the annual ALS landings to the annual report IFQ landings from this site:

<https://portal.southeast.fisheries.noaa.gov/reports/cs/CommercialQuotasCatchAllowanceTable.pdf>

and the annual correction factor was then applied to the landings across all gear and area strata.

Coding Irregularities

Additionally, in late 2016 it was discovered that some area fished data were miscoded for a number of trips reported from fishing areas around the Tortugas from 2008-2016. This issue was related to a programmatic change applied to trips whose depth indicated they were in state or federal waters when the opposite was reported. However, a programming error caused some records for the Tortugas to switch coasts, which was never the intention of this correction. The affected records were identified and the areas were corrected back to the original coast (Gulf or South Atlantic) reported on the trip ticket.

Below is a summary of the effects of this correction as compared to the data used in SEDAR 42. The largest difference was in 2011 with 15,094 pounds added to Gulf red grouper landings over SEDAR 42. This difference was only 0.32% of the total Florida Gulf red grouper landings in 2011. And the largest difference between SEDAR 42 and SEDAR 61 in adjusted landings by year, area, and gear was 1.3% in the Tortugas in 2012 by hook and line. All other differences by year, area, and gear in the Tortugas from 2008-2013 were 0.12% or less between SEDAR 42 and SEDAR 61. 2013 also included some late reported data after SEDAR 42.

Table 2. 2008-2013 Red Grouper Landings affected by Tortugas (SA-Gulf) Area Corrections

Year	Difference	% of SEDAR 42 landings
2008	-73	0.00%
2009	502.4	0.01%
2010	-2100	-0.07%
2011	15094.4	0.32%
2012	-690	-0.01%
2013	5097.5	0.11%

Regional Maps

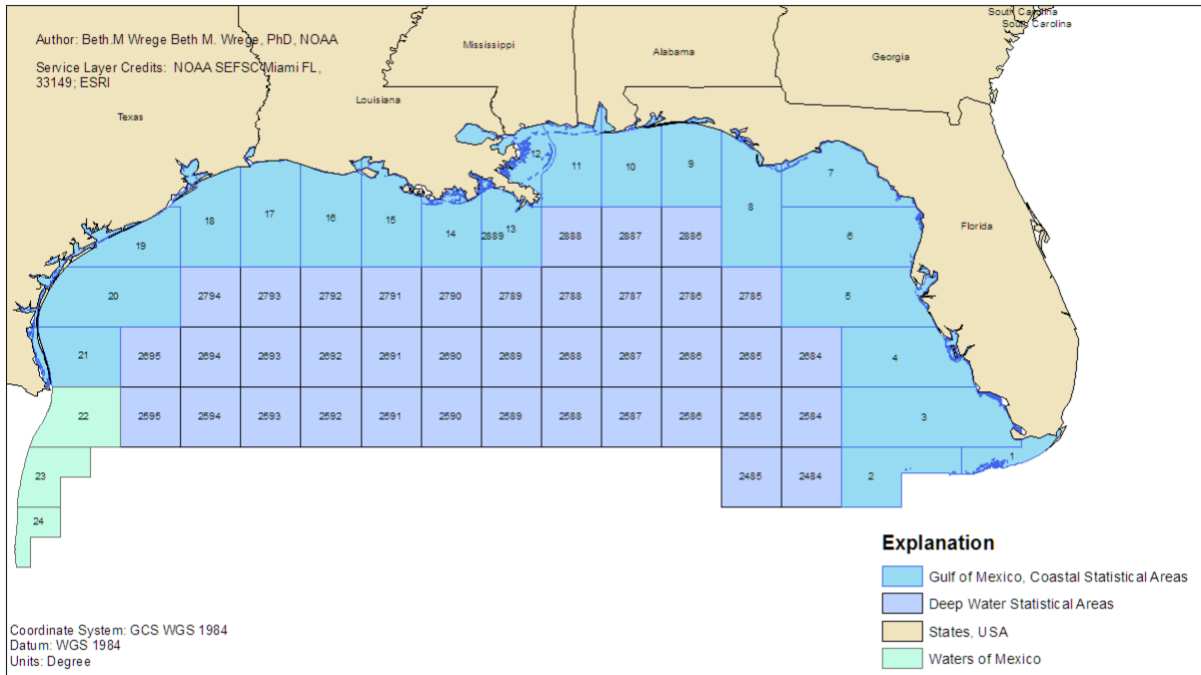


Figure 1a. Gulf of Mexico Fisheries Management Region and its NMFS designated statistical areas 1-21.

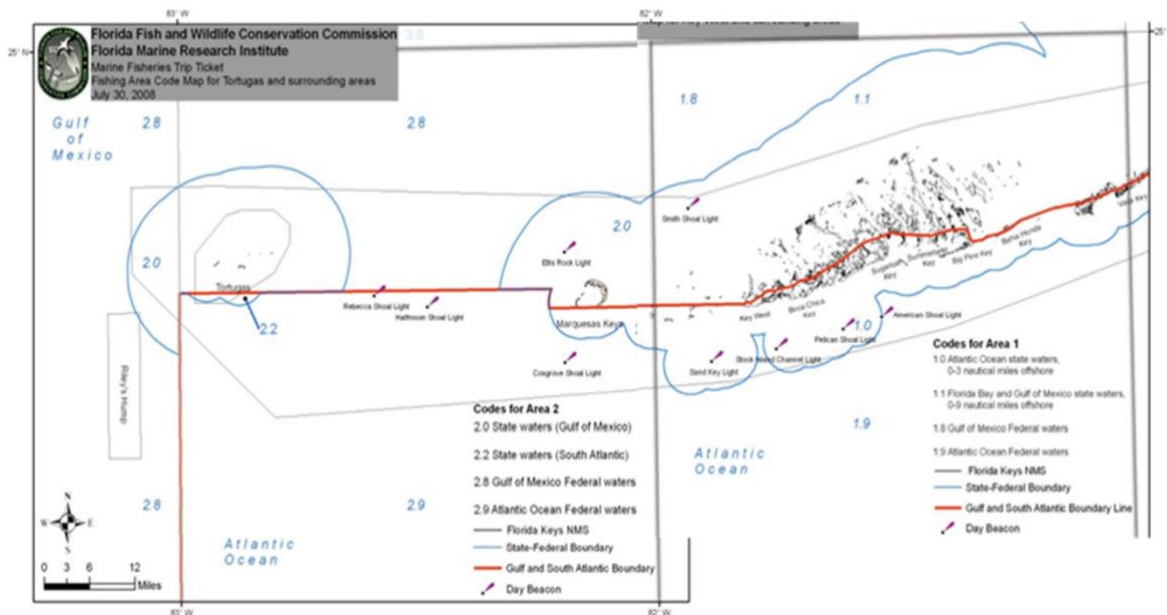


Figure 1b. Close-up of the southern boundary as defined by the Gulf of Mexico/South Atlantic Council boundary.

Table 3. Commercial landings of Red Grouper in the Gulf of Mexico 1963 to 2017

YEAR	HANDLINE	LOGLINE	OTHER	TRAP	GRAND TOTAL
1963	3,564,592		2,884		3,567,476
1964	4,140,338		13,769	4,628	4,158,735
1965	4,616,945			5,053	4,621,998
1966	4,433,396		1,093	6,553	4,441,042
1967	3,583,388		15,447	7,404	3,606,239
1968	3,942,688		3,205	13,511	3,959,403
1969	4,587,309		2,056	7,804	4,597,170
1970	4,469,105			12,160	4,481,264
1971	3,812,225			12,149	3,824,374
1972	3,963,622		*	2,277	3,965,908
1973	3,059,028		*		3,059,558
1974	3,568,782		*		3,569,609
1975	4,312,414		*	12,426	4,325,003
1976	3,727,297			11,404	3,738,701
1977	2,977,567		4,514	41,873	3,023,954
1978	2,731,138		5,628	88,893	2,825,658
1979	3,778,962			70,135	3,849,096
1980	3,847,616		10,672	44,773	3,903,060
1981	3,324,172	3	9,827	66,685	3,400,688
1982	3,074,037	815,663	12,994	50,020	3,952,714
1983	2,907,533	3,064,216	12,650	1,109	5,985,509
1984	2,947,579	2,487,094	3,349	311,570	5,749,592
1985	3,647,830	2,073,122	7,282	640,413	6,368,646
1986	3,134,859	2,505,832	11,217	721,461	6,373,369
1987	2,542,122	3,774,849	11,082	448,081	6,776,135
1988	2,049,120	2,192,793	5,228	540,228	4,787,369
1989	3,814,892	3,118,201	11,051	592,772	7,536,916
1990	2,460,952	2,025,693	5,346	340,896	4,832,887
1991	2,093,837	2,583,586	33,887	373,747	5,085,058
1992	1,444,966	2,409,550	8,636	602,185	4,465,337
1993	1,300,324	4,274,356	43,275	711,086	6,329,042
1994	1,241,427	2,699,085	37,682	913,825	4,892,020
1995	1,171,250	2,429,416	16,044	1,056,993	4,673,703
1996	865,153	2,907,190	10,161	539,359	4,321,863
1997	948,379	3,024,185	6,839	685,831	4,665,234
1998	741,606	2,662,278	5,128	297,548	3,706,560
1999	1,212,757	3,815,403	17,430	751,819	5,797,410
2000	1,720,988	2,909,341	30,399	1,024,809	5,685,537
2001	1,555,714	3,399,634	21,255	743,289	5,719,892
2002	1,628,178	3,130,561	18,484	980,293	5,757,516
2003	1,118,263	2,964,737	12,313	701,668	4,796,981
2004	1,376,656	3,383,468	14,130	745,209	5,519,462

2005	1,404,240	3,211,570	12,402	612,717	5,240,929
2006	1,375,688	3,012,663	8,956	586,847	4,984,154
2007	1,561,080	1,984,386	13,097	24,476	3,583,039
2008	1,888,195	2,804,101	24,772		4,717,069
2009	2,445,472	1,124,980	121,738		3,692,190
2010	1,352,746	1,313,484	275,399		2,941,629
2011	1,683,963	3,049,498	50,192	15	4,783,668
2012	2,228,739	2,940,844	49,550		5,219,133
2013	1,532,418	3,025,903	40,680		4,599,001
2014	1,910,749	3,532,923	157,472		5,601,144
2015	1,854,306	2,837,057	105,796		4,797,159
2016	1,212,438	3,166,180	118,964		4,497,582
2017	990,340	2,297,303	40,628		3,328,271

Commercial Landings of Red Grouper from 1963 to 2017 by Statistical Grid

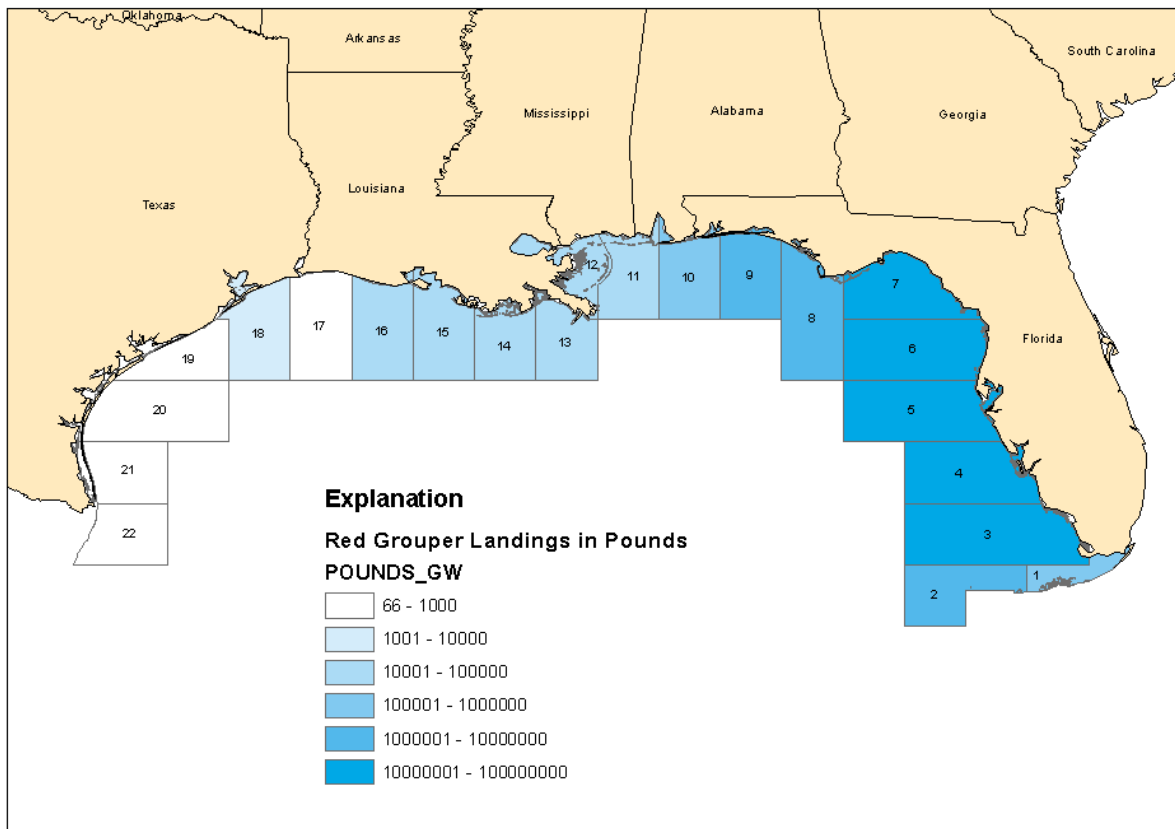


Figure 2. Commercial Gulf of Mexico Landings of Red Grouper 1963 to 2017

Literature Cited:

Saul, S. 2006. Quantitative Historical Analysis of the United States and Cuban Gulf of Mexico Red Grouper Commercial Fishery. SEDAR12-DW-11. SEDAR, North Charleston, SC. 27 pp.