Commercial Landings of Gulf of America Gray Triggerfish (*Balistes capriscus*) from 1949 - 2024

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SEDAR100-DW-05

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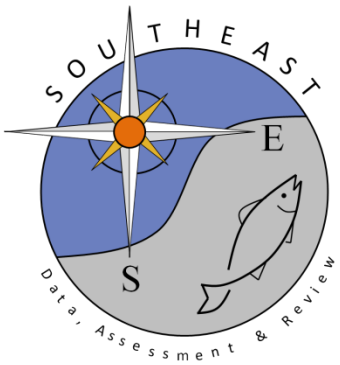

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Commercial Landings of Gulf of America Gray Triggerfish (*Balistes capriscus*) from 1949 - 2024

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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 Gray Triggerfish for the Gulf of America (formerly known as the Gulf of Mexico, and hereafter referred to as the Gulf) are provided in whole weight (in pounds) for the period 1949-2024. There are no reported landings from 1945 to 1948 while the start year of the SEDAR 43 stock assessment was 1945. This working paper presents only commercial landings as reported with no interpolation applied.

Methods

Commercial landings for Gulf Gray Triggerfish were compiled using several data sources. Most of the data were accessed from an Oracle database housed at the Southeast Fisheries Science Center (SEFSC) in Miami, Florida. All landings were converted to whole weight using the conversion factor 1.04.

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 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 Gray Triggerfish were compiled from Texas through West Florida. This boundary follows the Gulf Fisheries Management Council (Gulf FMC) boundary which is a line from Riley's Hump, the Tortugas and US 1, where the North of US 1 is assigned

to the Gulf FMC region and South of US 1 is considered outside of the Gulf FMC region and is assigned to the South Atlantic FMC region. For the assessment, Gulf of America waters were further divided into eastern and western subregions based on FIN area codes (Figure 1). The East includes fishing areas 1-12, 744.1, and 748.1 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 62), commercial landings were summarized into 3 main gears (Handline+, Longline, and Trap) for this working paper. However, for the assessment, Gulf Gray Triggerfish landings were provided by handline, longline, trap, and other. **Table 1** highlights the NMFS and FIN gear codes associated with each gear group as provided for this assessment.

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 1949-2013
- Trip ticket from 2014-2024

Louisiana

- ALS from 1949-1999
- Trip ticket from 2000-2024

Mississippi

- ALS from 1949-2014
- Trip ticket from 2015-2024

Alabama

- ALS from 1949-2001
- Trip ticket from 2002-2024

Florida

- ALS from 1949-1985
- Trip ticket from 1986-2024
- 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 America, South Atlantic, or foreign catch (Gloeckner, 2014). Therefore, area of capture is preferred when assigning catch to the appropriate region. However, when area information is missing, then the recorded county and/or state landed is used to assign landings to the Gulf of America to account for these removals from the stock biomass. Landings reported from Monroe County, Florida follow 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 until 2010 when dealer reported data from the Florida trip ticket system is considered reliable. From 1993-2009, the annual proportion of Monroe County landings fishing in Gulf of America waters was used to proportion trip ticket landings from Monroe. From 1949-1992, an average proportion using 1993-1997 data was used (Table 2). This decision was discussed and made during the SEDAR 90 South Atlantic Red Snapper Data Workshop and will be considered standard practice for most assessments across both regions. From 2010-2024, area of capture is used to attribute Gray Triggerfish landings to the Gulf of America stock. However, when area information is missing, Monroe County, Florida is considered as part of the Gulf of America landings.

In order to attribute all Gray Triggerfish landings to a gear group and fishing area, annual landings proportions were used to assign gear and area. 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 is trawl gear. These landings are assumed to be non-trawl, meaning an average from 1984-1988 was used to proportion 1980-1983 Texas landings by gear and area. This method is consistent with SEDAR 62.

Unclassified Triggerfishes

From 1949 to 1992 all triggerfish landings were reported as unclassified triggerfishes encompassing three species: Queen triggerfish, Ocean triggerfish, and Gray triggerfish. Starting in 1993, landings were reported by species. According to the SEDAR 9 stock assessment report, Gray Triggerfish accounted for nearly all of the landings once identified by species (SEDAR, 2006). Therefore, the decision was made to assume all unclassified triggerfishes landings were Gray Triggerfish. This decision was used in all following assessments including SEDAR 100.

Coastal Logbook Proportioning to Assign Gear and Area to the Landings

For landings reported during 1990 and after, gear and area information from the SEFSC Coastal Fisheries Logbook Program (CFLP) were used to assign gear and area to the 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, Longline, Trap, and Other) and fishing area. These proportions are applied to the annual landings by month and state.

Results

Annual calculated Gray Triggerfish landings totals are summarized by subregion in Figure 2 with most of the landings coming from the eastern Gulf region. Landings peaked in the early 1990's, and have remained relatively stable from 2015 to 2024. Figure 3 shows the annual landings totals summarized by gear group, with the majority of landings coming from the handline fishery. Other than the short period of eastern Gulf trap Gray Triggerfish landings from 1991 to 2007, the longline fishery which began around 1979 is the next largest contributor to the total landings (Table 3). A comparison between SEDAR 100 and SEDAR 62 annual total landings by subregion are shown in Figure 4. Visually, the differences in total landings between SEDAR 62 and SEDAR 100 appear minimal. However, SEDAR 100 is showing consistently less landings than SEDAR 62, particularly in the most recent years 2009-2017. Upon much investigation we were unable to determine the driver for this difference. Comparison of SEDAR 100 annual landings and totals designated for Annual Catch Limit (ACL) monitoring, revealed comparable results (Figure 5). Therefore, the landings presented here and provided for this assessment are the recommended landings for SEDAR 100.

Landings estimates of upper bound uncertainty are provided by data collection time period and state (Table 4). Annual weighted coefficient of variation (CV) values are input into the stock assessment model weighted by state landings.

Literature Cited

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Tables

Table 1. Gears observed in the Gray Triggerfish and Triggerfishes datasets, and their respective gear groupings used to aggregate the data.

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

FIN Gear Code	Gear Name	SEDAR Gear Group
660	SPEARS	OTHER
661	SPEARS, DIVING	OTHER
750	BY HAND, DIVING GEAR	OTHER

Table 2. The logbook proportion of Gray Triggerfish landings from Monroe county, Florida fished in Gulf of America waters. These proportions were calculated by gear group (spearfishing, handline, longline, pots and traps, and unknown). The average proportion using 1993-1997 data was used to apportion Monroe landings between 1949-1992. Given landings were restricted to a single county, there are more issues with confidentiality. The (*) cells indicate confidential data.

Year	Spearfishing	Handline	Longline	Unknown	Pots and Traps
1993 - 1997	0.6682	0.502	1	0.519	0.9976
1993	*	0.4434	*		0.9881
1994	*	0.7002	*	1	1
1995	*	0.6281	*		1
1996	0.45	0.307	*		1
1997	*	0.4311	*	*	*
1998	0.4333	0.4042	*		*
1999	*	0.0813	*	*	*
2000	0.481	0.2235			*
2001	0.9702	0.7341	*		*
2002	0.6551	0.3621			*
2003	1	0.0949	1		
2004	*	0.6118	*		
2005	*	0.1238	*		
2006	*	0.309	*		
2007	*	*	*		*
2008		0.2211	*		
2009		0.495			

Table 3. The annual calculated Gulf of America Gray Triggerfish landings by gear groupings for each Subregion from 1949 to 2024.

Year	East			West		
	Handline+	Longline	Trap	Handline+	Longline	Trap
1949	14,300					
1950	14,700					
1951	28,000					
1952	72,400					
1953	43,600					
1954	39,600					
1955	46,600					
1956	22,800					
1957	17,400					
1958	15,200					
1959	10,300					
1960	11,900					
1961	6,500					
1962	5,600					
1963	3,100			4,200		
1964	15,700			4,300		
1965	17,350			4,300		
1966	8,600			5,200		
1967	12,200			5,200		
1968	8,600			3,900		
1969	14,600			7,700		
1970	15,851			8,200		
1971	30,500			9,900		
1972	47,400			15,200		
1973	40,000			13,200		
1974	40,452			13,100		
1975	62,000			16,000		
1976	69,700			14,800		
1977	50,096			9,290		
1978	48,518		108	10,197		
1979	65,670			31,814	3,919	
1980	64,069	1,406		28,707	2,294	
1981	61,465	3,033		20,636	4,726	

Year	East			West		
	Handline+	Longline	Trap	Handline+	Longline	Trap
1982	55,317	7,642		26,316	7,398	
1983	40,486	9,102		19,350	4,481	
1984	29,058	8,348		29,396	3,335	*
1985	43,333	11,507		32,230	5,556	
1986	73,392			15,461	8,149	
1987	97,167			27,017	642	
1988	149,656			44,089	2,589	
1989	248,800			60,734	10,543	
1990	325,111	*		77,542	12,515	
1991	266,151	7,995	65,578	91,727	12,892	
1992	313,481	9,349	28,008	105,639	13,679	
1993	283,813	14,777	86,267	175,168	516	*
1994	203,379	18,940	29,645	152,829	484	
1995	179,632	6,442	18,924	130,001	523	
1996	108,475	6,447	21,887	124,244	375	
1997	77,995	10,028	15,807	75,791	993	
1998	86,837	5,531	13,301	70,510	*	
1999	100,374	10,055	14,025	102,446	222	
2000	48,291	5,486	9,320	94,881	284	
2001	87,249	5,991	14,593	67,531	52	
2002	128,461	3,019	17,633	85,800	*	
2003	145,116	7,269	14,034	85,336		
2004	115,943	14,230	12,550	72,801	*	
2005	91,920	6,402	6,627	41,711	*	
2006	49,654	7,539	3,675	31,359	*	
2007	42,162	8,250	*	44,767	*	
2008	34,268	15,331		26,941	*	
2009	52,256	8,636		16,994	*	
2010	43,778	2,749		8,586	*	
2011	89,850	979		13,243	*	
2012	63,497	756		7,784	*	
2013	57,368	1,035		4,638	*	
2014	33,536	4,446		2,703		
2015	38,034	6,751		2,711		
2016	44,509	11,450		3,157	*	

Year	East			West		
	Handline+	Longline	Trap	Handline+	Longline	Trap
2017	53,232	6,985		2,422	*	
2018	54,210	8,417		2,071		
2019	51,676	9,243		1,571		
2020	47,456	3,857		1,467		
2021	36,445	7,569		940	*	
2022	35,966	8,117		1,197		
2023	45,808	7,543		1,508		
2024	41,875	8,264		1,465		

Table 4. Uncertainty estimates by state and time block for the Gray Triggerfish commercial landings.

Year	TX	LA	MS	AL	FL	Comments
1926-1976	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

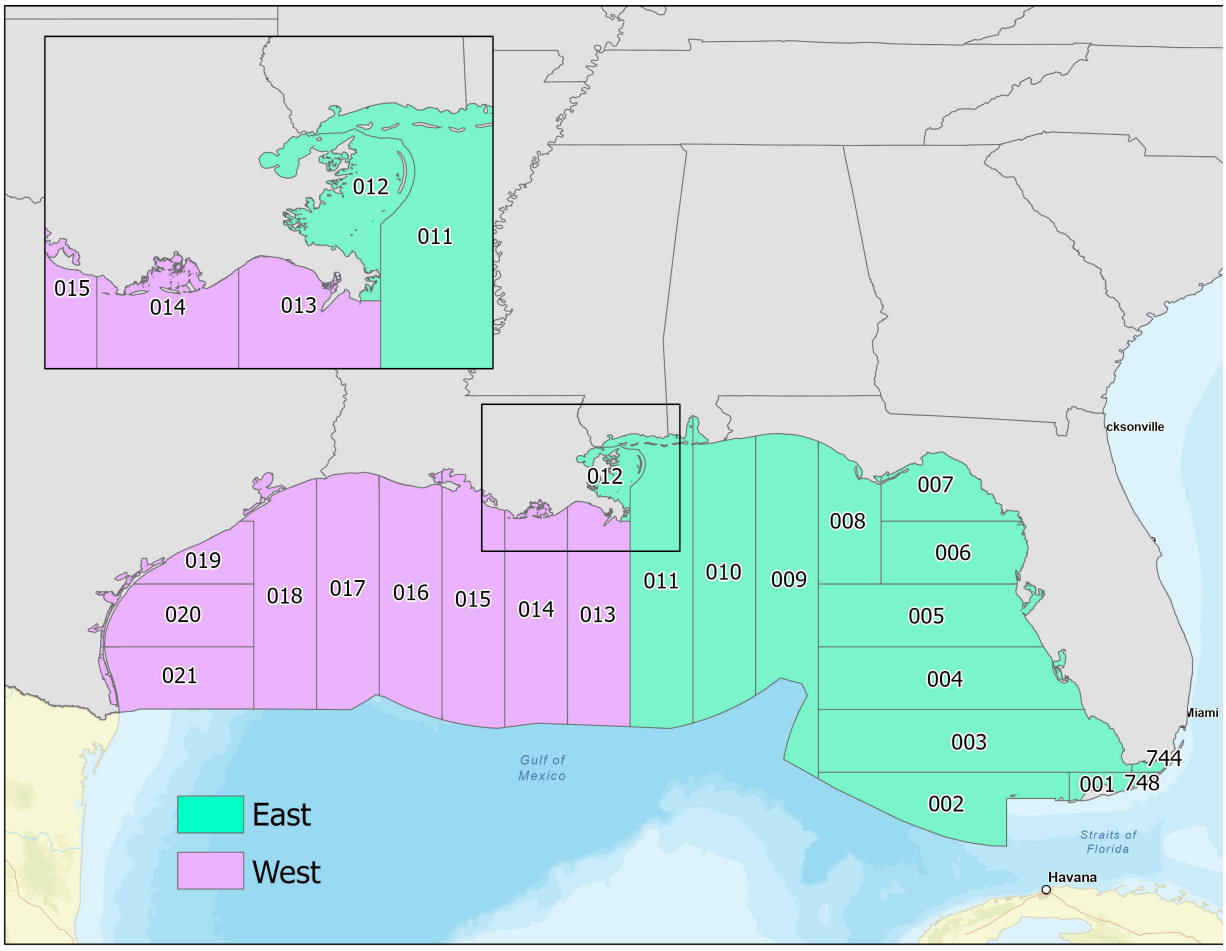

Figure 1: Gulf of America commercial fishing areas.

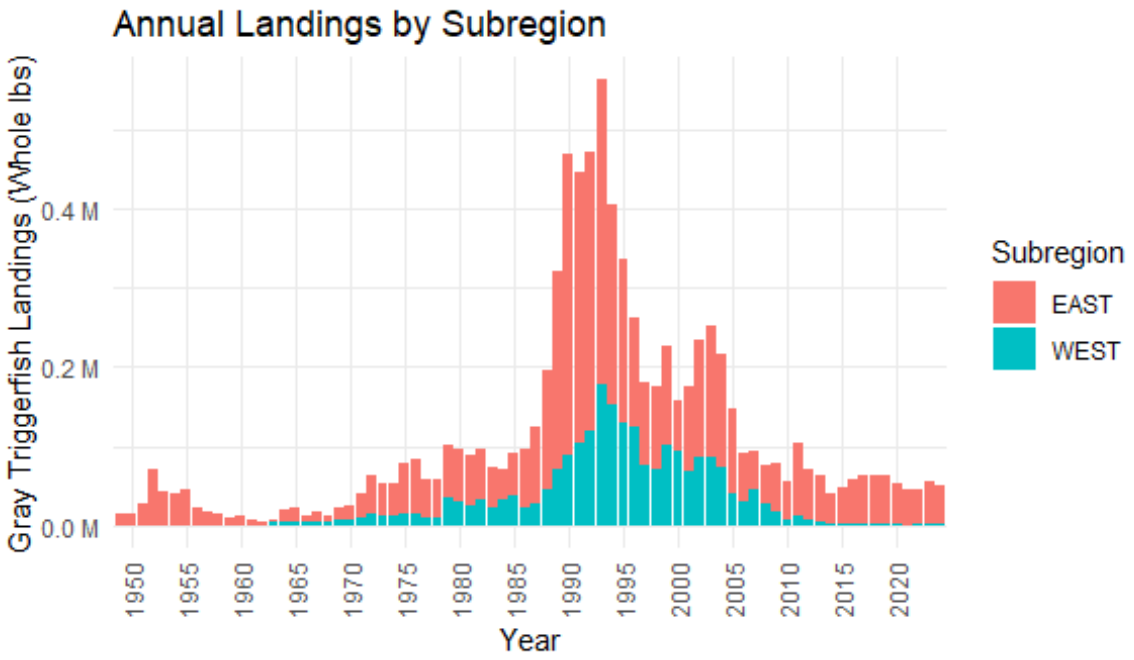

Figure 2: Annual calculated Gray Triggerfish commercial landings for the East and West subregions.

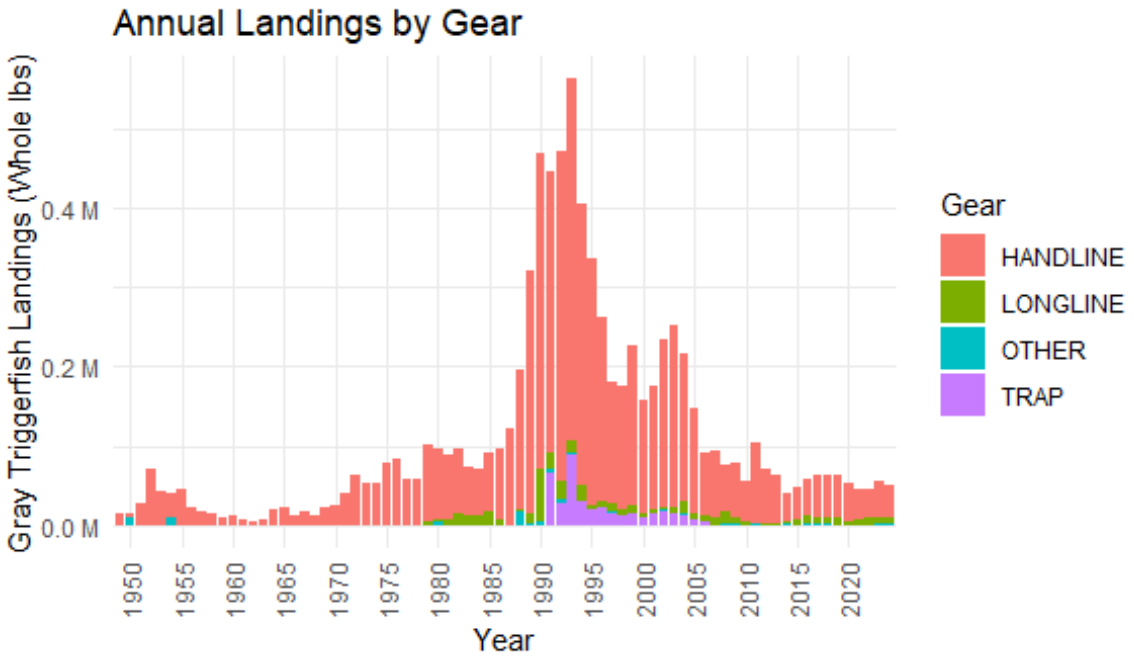

Figure 3: Annual calculated Gray Triggerfish commercial landings for Handline, Longline, Trap, and Other gears. Confidential landings have been excluded.

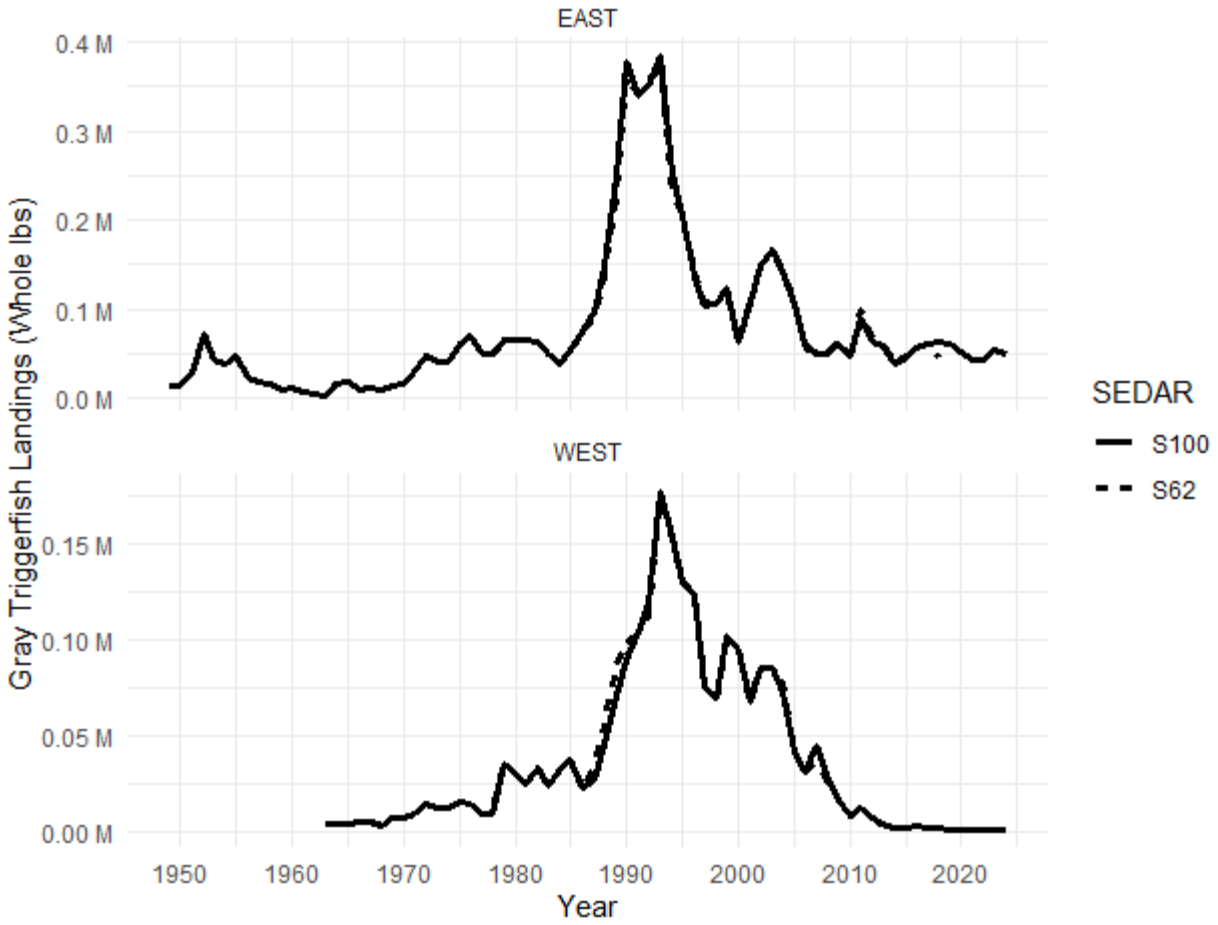

Figure 4: Annual calculated Gray Triggerfish commercial landings (in whole weight pounds) by subregion for the current SEDAR 100 compared to the previous assessment SEDAR 62 from 1949 - 2024. Confidential landings have been excluded.

Figure 5. Comparison of SEDAR 62 landings, SEDAR 100 landings, and those reported by Annual Catch Limit (ACL) monitoring. Only years overlapping ACL monitoring are shown.