

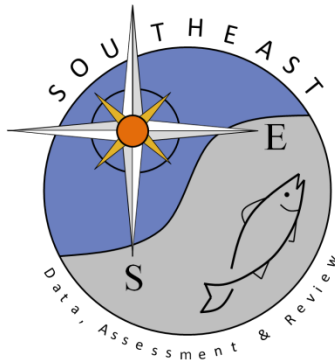
SEDAR 84 Commercial fishery landings of Stoplight Parrotfish
(*Sparisoma viride*) in St. Croix, US Caribbean, 2012-2022

Stephanie Martínez Rivera, Kim Johnson, and M. Refik Orhun

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SEDAR 84 Commercial fishery landings of Stoplight Parrotfish (*Sparisoma viride*) in St. Croix, US Caribbean, 2012-2022

Stephanie Martínez Rivera¹ *, Kimberley Johnson², and M. Refik Orhun¹

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¹*National Marine Fisheries Service, Southeast Fisheries Science Center Sustainable Fisheries Division, 75 Virginia Beach Drive, Miami, FL 33149*

²*National Marine Fisheries Service, Fisheries Statistics Division, 4700 Ave. U, Galveston, TX 77551*

*Corresponding author: stephanie.martinez@noaa.gov

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1. Introduction

Commercial fishery landings in St. Croix (STX) were obtained from self-reported fisher logbook data (Caribbean Commercial Logbook, CCL). Logbook reporting began in the calendar year 1974, however, landings were initially reported by gear type (e.g., net fish, hook fish, pot fish, and spear fish) and as either snapper/grouper or as other fin fish group during the period 1974-1995 (Valle-Esquivel and Díaz 2004). Beginning in 1996 (STX) and 1997 (St. Thomas and St. John) part of commercial landings were reported by species group (e.g., snappers, groupers, parrotfishes, surgeonfishes, etc.), and by gear (hook and line, gill net, SCUBA, trap, etc.). All commercial fishery data reports included species groups beginning in 1998 (STX) and 2000 (St. Thomas and St. John). Reporting of Stoplight Parrotfish by species did not begin until July of 2011 in the U.S. Virgin Islands therefore the first complete year of data is 2012 (changes to reporting forms are usually implemented in July). Commercial fishery landings data for Stoplight Parrotfish in STX were available for the calendar years 2012-2022.

The Data-Limited Caribbean SEDAR 46 assessed the status of Stoplight Parrotfish in 2016 and landings prior to 2012 were not estimated for that assessment. Changes in species reporting requirements and other regulations made estimation of parrotfish landings by species extremely difficult and highly uncertain for years prior to 2012.

2. Methods

Commercial landings of Stoplight Parrotfish were compiled from 2012 to 2022 for STX. The commercial landings were produced in pounds and number of trips by year and fishing gear group.

2.1 Gear groups

The individual fishing gears were classified based on gear selectivity by analyzing length composition data from the Trip Interview Program (TIP) using generalized linear models (GLMs). Reported pounds of commercial landings provided additional information to guide the definition of gear groups. The statistical analysis conducted by Godwin et al. (2024) showed which gears had significantly different length distributions.

Based on the result of the GLMs and reported commercial landings, two gear groups were identified for Stoplight Parrotfish: SCUBA and Other (Table 1).

Table 1: The classification of the commercial logbook gears into gear groups.

GEAR NM	GEAR GROUP
BY HAND	SCUBA
BY HAND WHILE SKIN DIVING	SCUBA
BY HAND WITH SCUBA	SCUBA
BY SNARE WITH SCUBA	SCUBA
SKIN DIVING AND SCUBA	SCUBA
SPEAR OR BY HAND-UNKNOWN TYPE	SCUBA
SPEARFISHING WHILE SKIN DIVING	SCUBA
SPEARFISHING WITH SCUBA	SCUBA

SPEARGUN WHILE SKIN DIVING	SCUBA
SPEARGUN WITH SCUBA	SCUBA
BEACH SEINE	OTHER
CAST NET	OTHER
FISH TRAP	OTHER
GILL NET	OTHER
GILL NET, FISHED USING SCUBA	OTHER
GILL NET, SURFACE	OTHER
HANDLINE	OTHER
LOBSTER TRAP	OTHER
NET-UNKNOWN TYPE	OTHER
ROD AND REEL	OTHER
SEINE NET	OTHER
TRAP-UNKNOWN TYPE	OTHER

2.2 Outliers

Outlier removal was conducted by using a mean and standard deviation method. If the landings of Yellowtail Snapper reported on a trip were greater than three standard deviations from the mean (i.e., 99.73% quantile), they were removed from the dataset. In Results 3.2, we calculate the values to define outliers by gear group (Table 2). And in Results 3.3, we calculated the values to define outliers by year and gear group. Due to the outlier removal, the yearly commercial landings for Stoplight Parrotfish compiled in SEDAR84 may not match landings provided for previous SEDARs.

Table 2: Commercial landings of Stoplight Parrotfish in pounds equal to three standard deviations from the mean (i.e., 99.73% quantile) by gear group used for the outlier analysis. Trips with pounds landed greater than the indicated value were removed from the dataset.

GEAR GROUP	quant99
OTHER	200
SCUBA	186

2.3 Confidentiality

Confidential data were determined based on the number of fishers that reported commercial landings by year and gear group. If the number of fishers was less than three, then any data reported by those fishers were considered confidential.

2.4 Discards

Species-specific commercial discard reporting started in 2016 in STX for Stoplight Parrotfish.

3. Results

3.1 Commercial landings no outlier analysis

Commercial landings of Stoplight Parrotfish from 2012 to 2022, were approximately 7,262-41,869 pounds per year (Table 3, Figure 1). Trips reporting Stoplight Parrotfish per year varied between approximately 179-1,662 in St. Croix (Table 3, Figure 2). The commercial landings by year and gear group are shown in Table 4 and Figure 3, and the number of trips in Figure 4.

Table 3: Commercial landings of Stoplight Parrotfish in pounds and the number of trips that reported Stoplight Parrotfish landings in St. Croix.

Year	Landings (lbs)	Trips (n)
2012	41,869	1,662
2013	33,773	1,300
2014	21,774	806
2015	24,808	719
2016	24,481	601
2017	23,533	533
2018	7,262	213
2019	7,540	179
2020	21,883	352
2021	24,412	598
2022	16,398	377
Total	247,733	7,340

Table 4: Commercial landings of Stoplight Parrotfish in pounds by gear group in St. Croix.

TRIP YEAR	OTHER	SCUBA
2012	1,101	40,768
2013	643	33,130
2014	2,795	18,979
2015	7,926	16,882
2016	10,193	14,288
2017	7,514	16,019
2018	746	6,516
2019	1,537	6,003
2020	6,297	15,586
2021	2,412	22,000
2022	4,240	12,158
Total	45,404	202,329

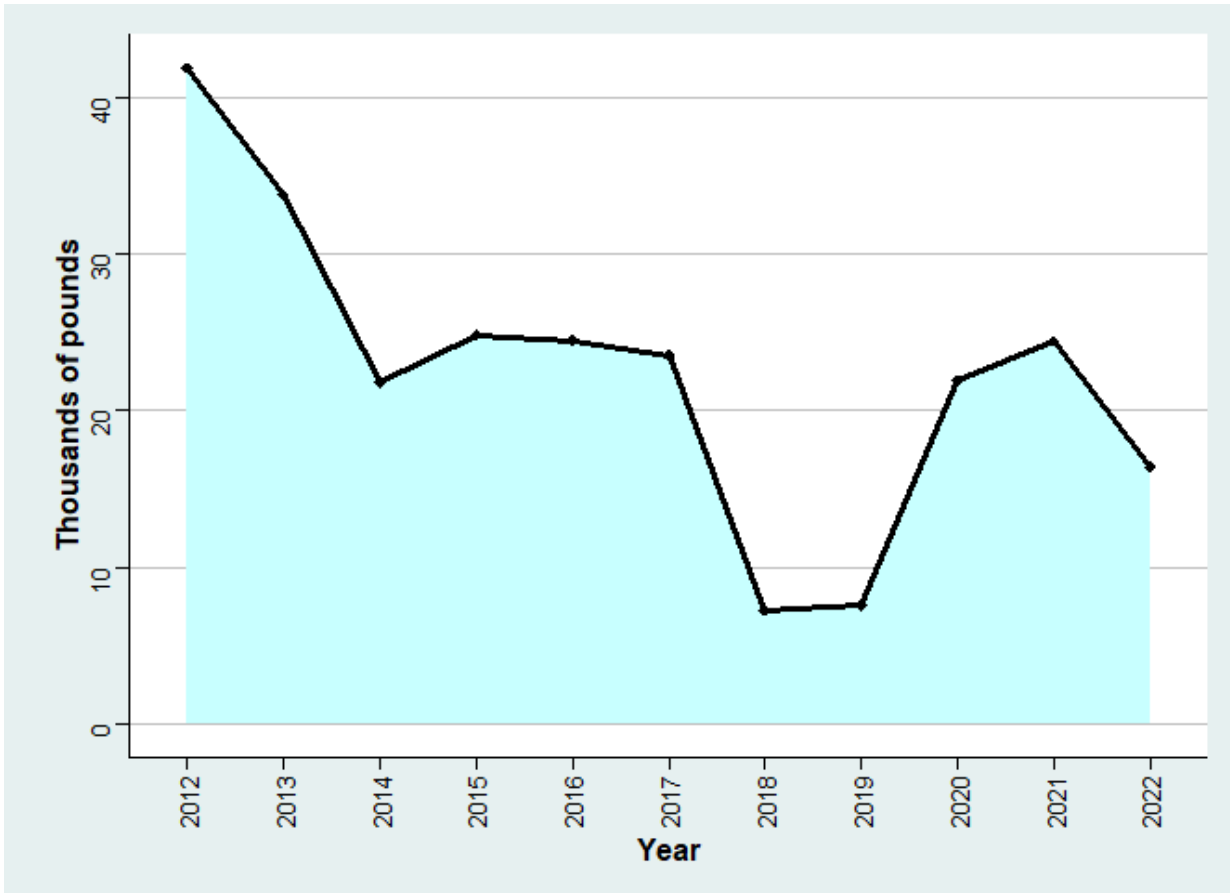


Figure 1: The time series of commercial landings in pounds of Stoplight Parrotfish in St. Croix.

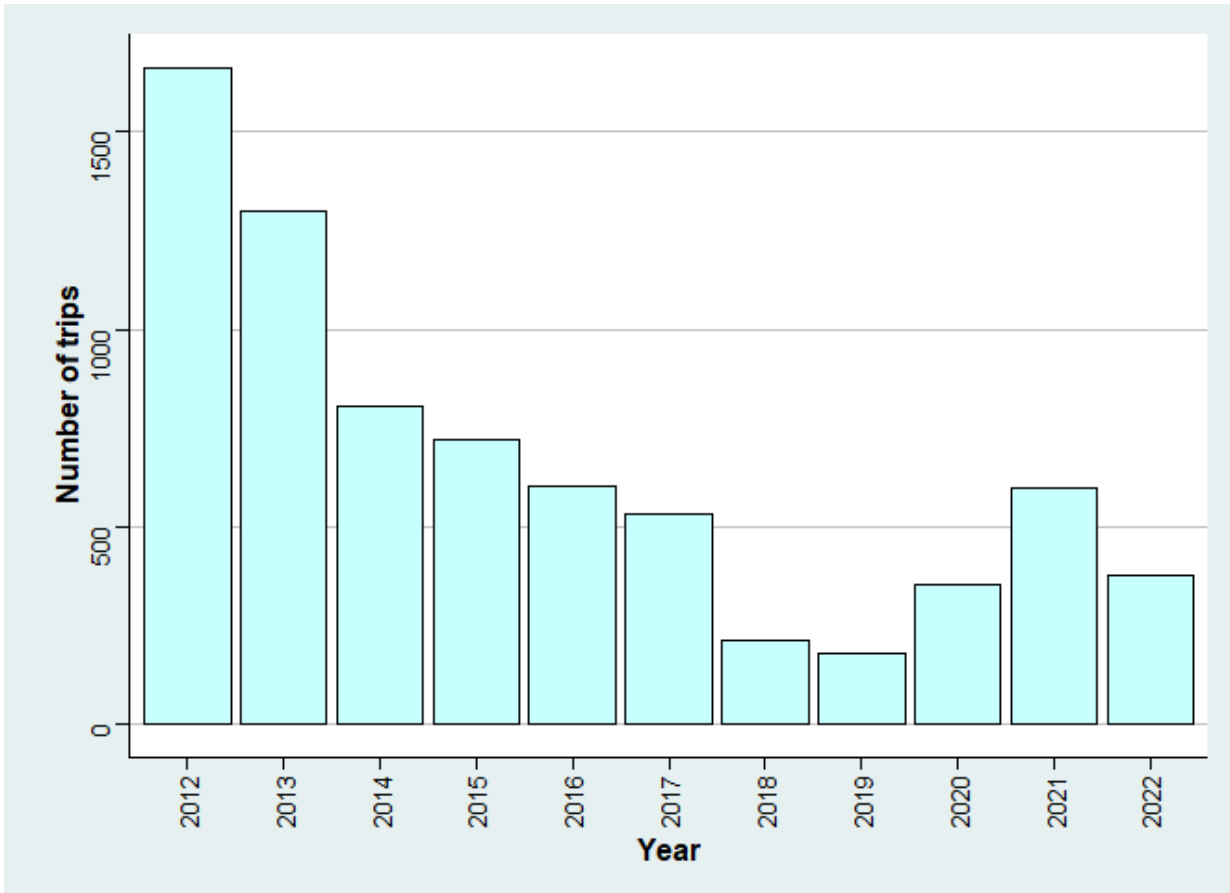


Figure 2: The time series of number of trips with reported landings of Stoplight Parrotfish in St. Croix.



Figure 3: Commercial landings in pounds of Stoplight Parrotfish by calendar year and gear group in St. Croix.



Figure 4: Number of trips with reported landings of Stoplight Parrotfish by calendar year and gear group in St. Croix.

3.2 Commercial landings after outlier removal by gear group

Commercial landings of Stoplight Parrotfish from 2012 to 2022, were approximately 7,262-41,869 pounds per year (Table 5, Figure 5). Trips reporting Stoplight Parrotfish per year varied between approximately 179-1,662 in St. Croix (Table 5, Figure 6). The commercial landings by year and gear group are shown in Table 6 and Figure 7, and the number of trips in Figure 8.

Table 5: Commercial landings of Stoplight Parrotfish in pounds and the number of trips that reported Stoplight Parrotfish landings in St. Croix.

Year	Landings (lbs)	Trips (n)
2012	41,869	1,662
2013	33,073	1,299
2014	21,774	806
2015	24,328	717
2016	24,481	601
2017	22,011	525

2018	7,262	213
2019	7,540	179
2020	21,883	352
2021	24,412	598
2022	14,804	371
Total	243,437	7,323

Table 6: Commercial landings of Stoplight Parrotfish in pounds by gear group in St. Croix.

TRIP YEAR	OTHER	SCUBA
2012	1,101	40,768
2013	643	32,430
2014	2,795	18,979
2015	7,926	16,402
2016	10,193	14,288
2017	7,514	14,497
2018	746	6,516
2019	1,537	6,003
2020	6,297	15,586
2021	2,412	22,000
2022	4,240	10,564
Total	45,404	198,033

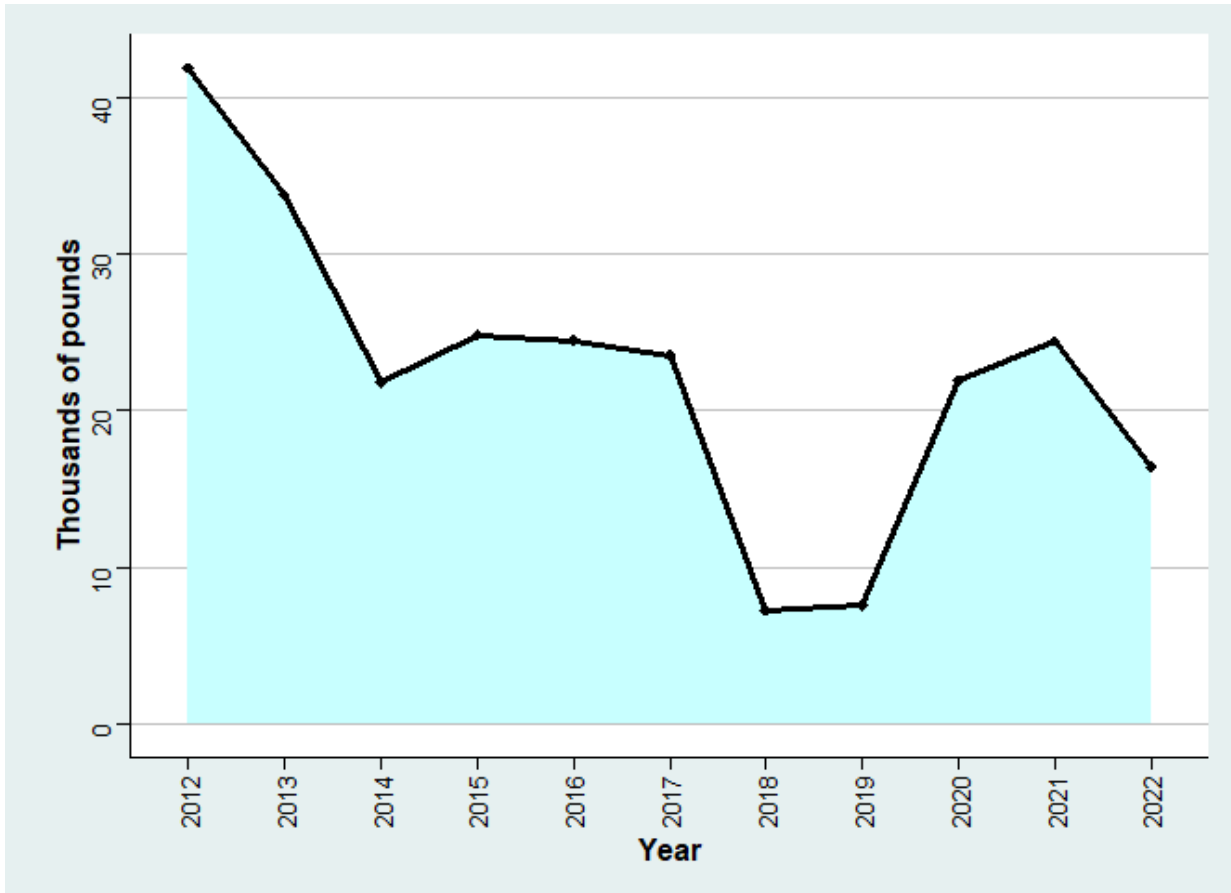


Figure 5: The time series of commercial landings in pounds of Stoplight Parrotfish in St. Croix.

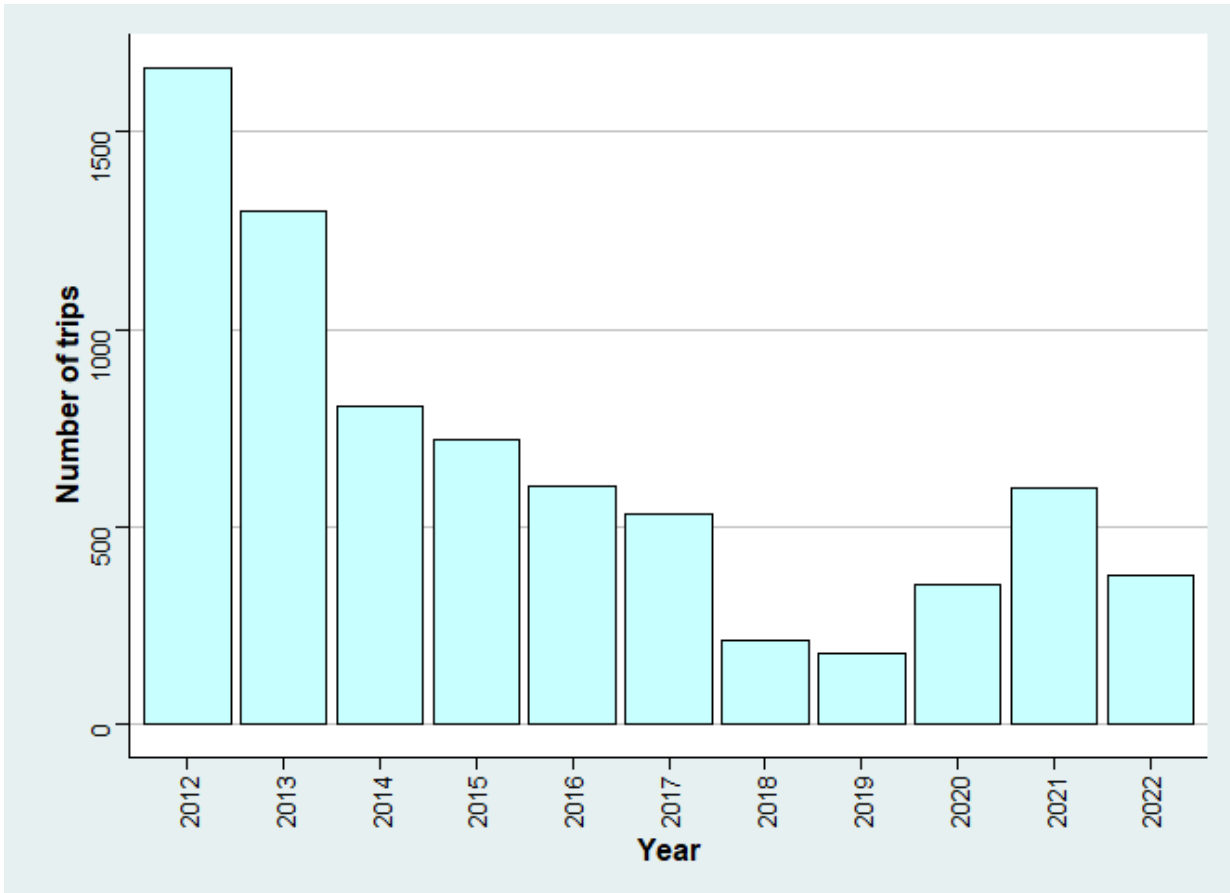


Figure 6: The time series of number of trips with reported landings of Stoplight Parrotfish in St. Croix.



Figure 7: Commercial landings in pounds of Stoplight Parrotfish by calendar year and gear group in St. Croix.



Figure 8: Number of trips with reported landings of Stoplight Parrotfish by calendar year and gear group in St. Croix.

3.3 Commercial landings after outlier removal by year and gear group

Commercial landings of Stoplight Parrotfish from 2012 to 2022, were approximately 7,124-41,169 pounds per year (Table 7, Figure 9). Trips with reported Stoplight Parrotfish landings per year varied between approximately 177-1,656 in St. Croix (Table 7, Figure 10). The commercial landings by year and gear group are shown in Table 8 and Figure 11, and the number of trips in Figure 12.

Table 7: Commercial landings of Stoplight Parrotfish in pounds and the number of trips that reported Stoplight Parrotfish landings in St. Croix.

Year	Landings (lbs)	Trips (n)
2012	41,169	1,656
2013	32,929	1,297
2014	21,604	805
2015	24,328	717
2016	23,981	598
2017	23,338	532

2018	7,124	212
2019	7,181	177
2020	21,515	350
2021	24,412	598
2022	15,986	376
Total	243,567	7,318

Table 8: Commercial landings of Stoplight Parrotfish in pounds by gear group in St. Croix.

TRIP YEAR	OTHER	SCUBA
2012	1,041	40,128
2013	621	32,308
2014	2,625	18,979
2015	7,926	16,402
2016	9,993	13,988
2017	7,514	15,824
2018	746	6,378
2019	1,337	5,844
2020	6,097	15,418
2021	2,412	22,000
2022	4,240	11,746
Total	44,552	199,015

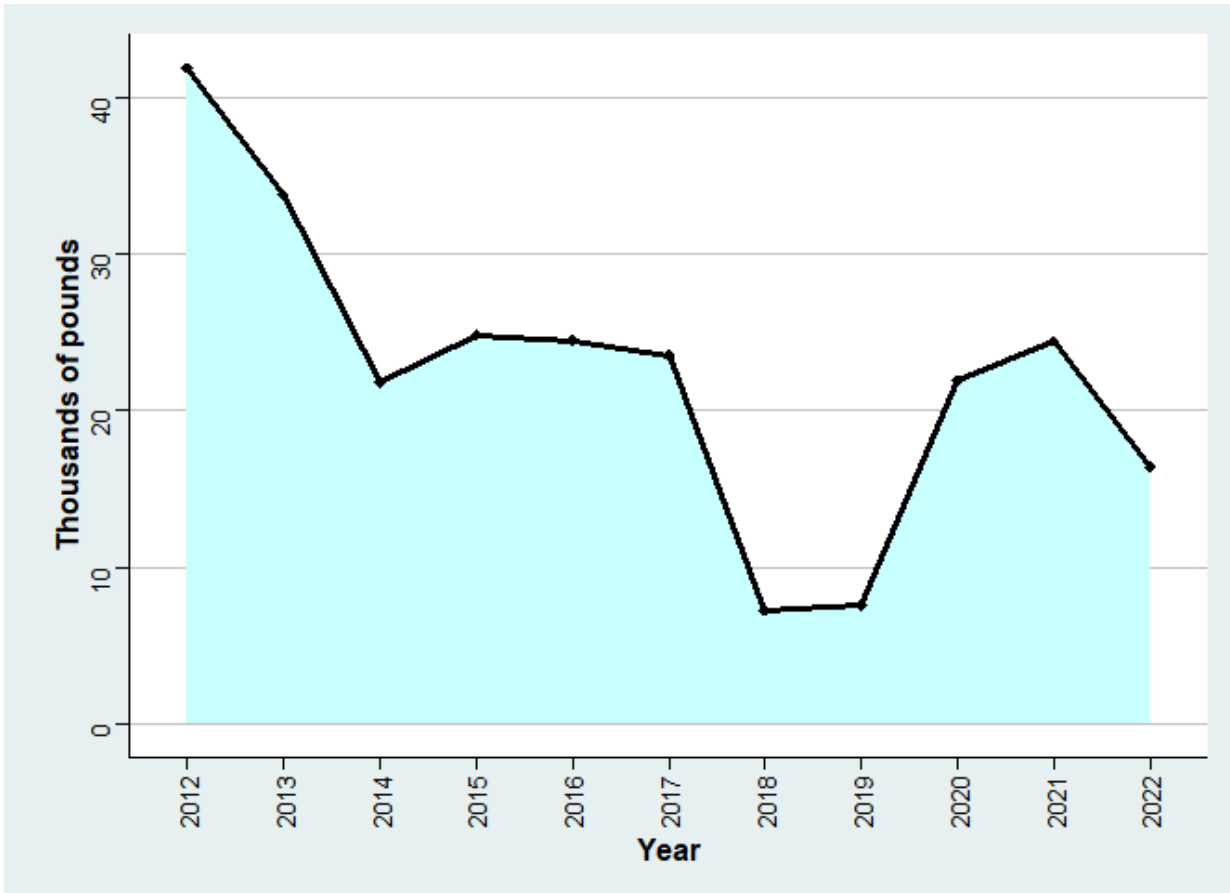


Figure 9: The time series of commercial landings in pounds of Stoplight Parrotfish in St. Croix.

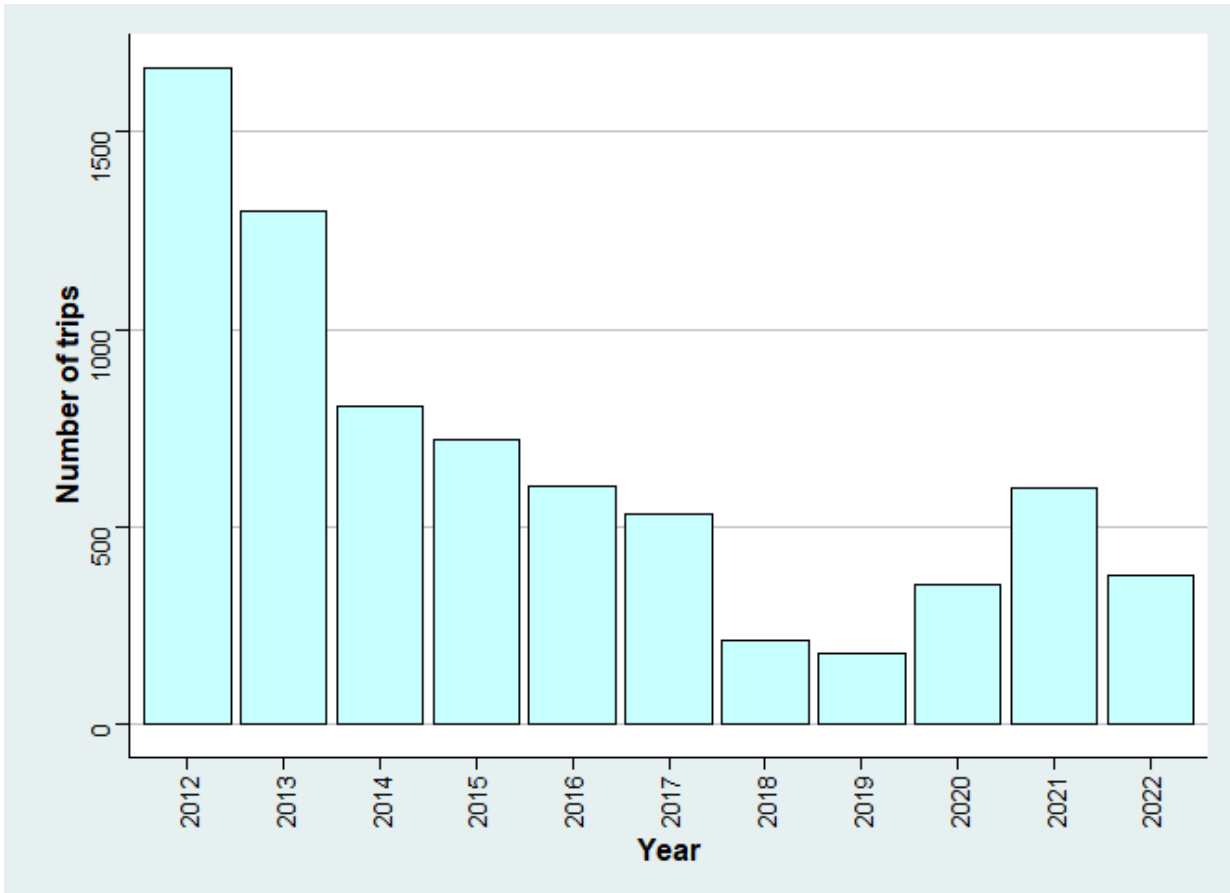


Figure 10: The time series of number of trips with reported landings of Stoplight Parrotfish in St. Croix.

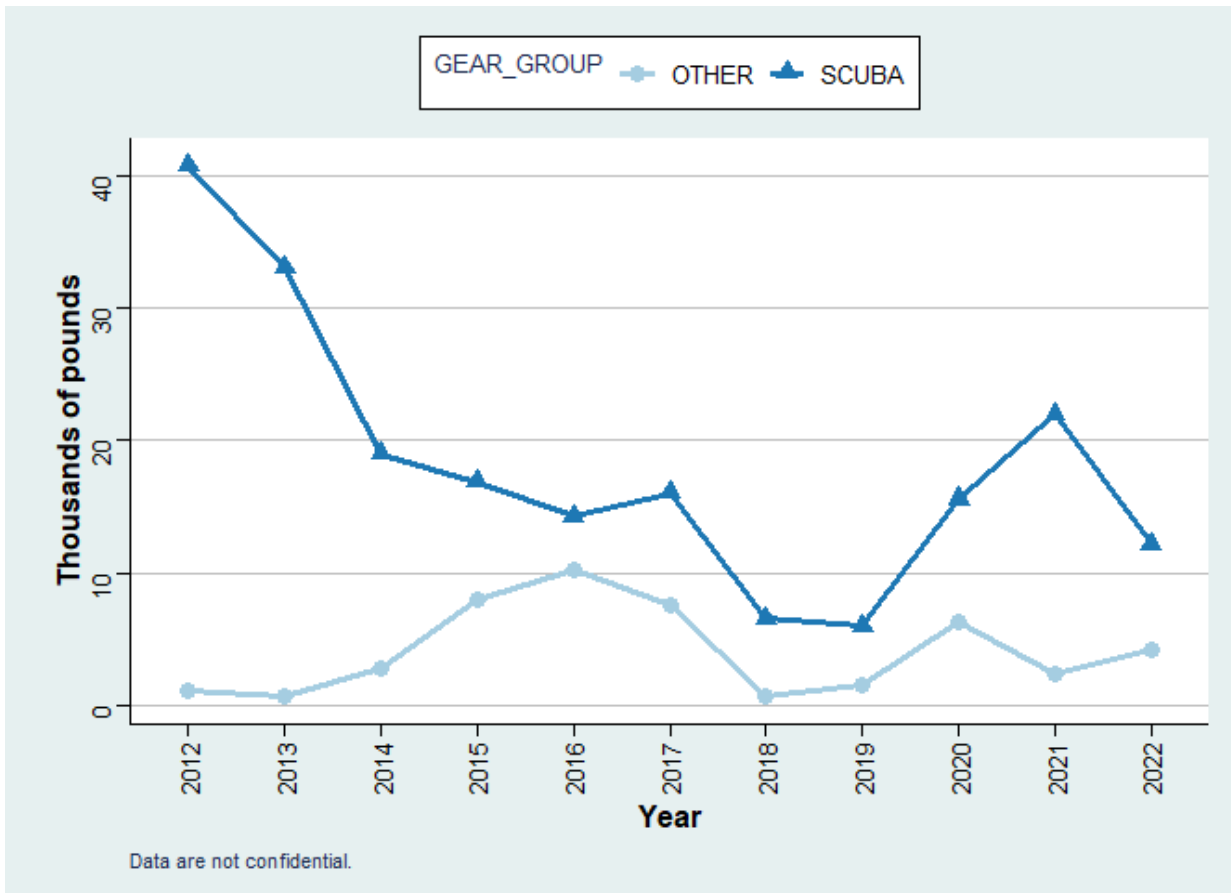


Figure 11: Commercial landings in pounds of Stoplight Parrotfish by calendar year and gear group in St. Croix.

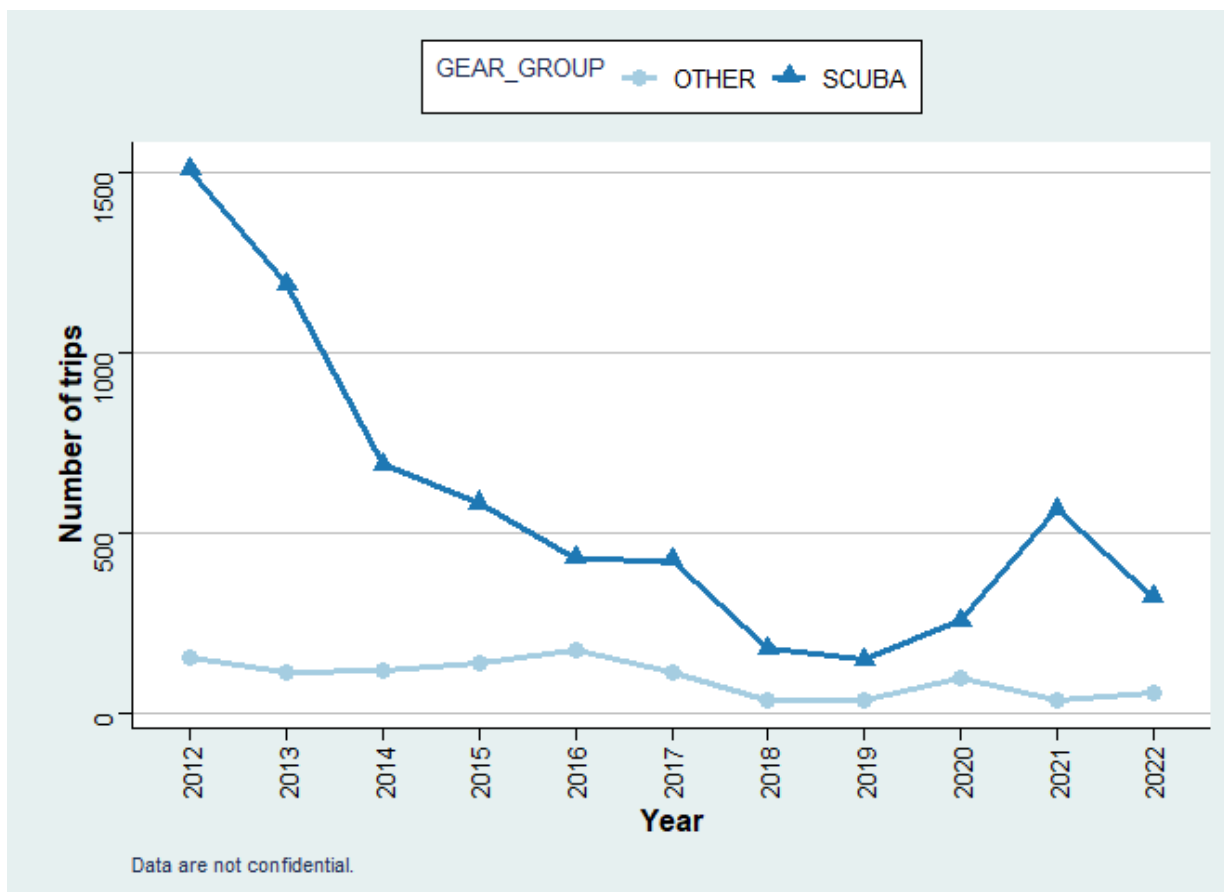


Figure 12: Number of trips with reported landings of Stoplight Parrotfish by calendar year and gear group in St. Croix.

3.4 Commercial discards

Commercial discards reported by calendar year were not significant (Table 9).

Table 9: Commercial discards of Stoplight Parrotfish in St. Croix.

Year	Discards (n)	Discards Trips	Total landings (lbs)	Total trips
2021	15	1	24,412	598
2022	18	3	16,398	377

4. Literature Cited

Godwin, K., Rios, A. and K. Dettloff. 2024. SEDAR 84 Trip Interview Program (TIP) Size Composition Analysis of Stoplight Parrotfish (*Sparisoma viride*) in St. Croix, US Caribbean, 1983-2022. SEDAR-84-DW-XX. 7pp.

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