

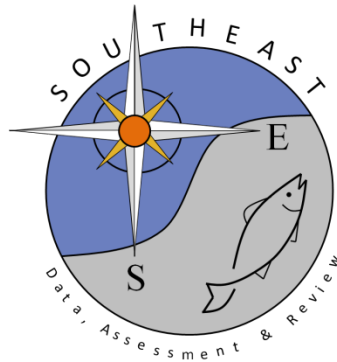
# SEDAR 84 Commercial fishery landings of Yellowtail Snapper (*Ocyurus chrysurus*) in St. Thomas and St. John, US Caribbean, 2012-2022

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

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# SEDAR 84 Commercial fishery landings of Yellowtail Snapper (*Ocyurus chrysurus*) in St. Thomas and St. John, US Caribbean, 2012-2022

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## **1. Introduction**

Commercial fishery landings in St. Thomas and St. John (STTJ) were obtained from self-reported fisher logbook data (Caribbean Commercial Logbook, CCL). Logbook reporting began in 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). Valle-Esquivel and Díaz (2004) has a detailed description of the early years of the U.S. Virgin Islands fishery part of which are copied below:

“Catch records from 1974-1986 reported the landings (in pounds) per trip by category (snappers/groupers, bait fish, fin fish, lobsters, and ‘other kinds’, that included conch, whelk, octopus, squid, clam and oysters); gear type (hook and line, net, pot, speargun and dive), and area fished (Old Form 1 in Table 1 [see Valle-Esquivel and Díaz, 2004]).

From 1986 to 1994-1996 similar [logbook gear] categories were used, but snappers/groupers were combined with most other species and landings were reported by gear category; conch, whelk and offshore (pelagic) fishes were each reported in separate fields; and the distance from shore was introduced (Old Form 2 in Table 1 [see Valle-Esquivel and Díaz, 2004]). Many changes were incorporated to this form.

Between 1986 and 1999 a “short” version was used to create the electronic database, which contained one field for the fish code, another for the gear type and a third for the total catch (Old Form 3 in Table 1 [see Valle-Esquivel and Díaz, 2004]). In 1993 fields for tuna, dorado, and wahoo landings were added. This form was used from 1993 to 1996 (Old Form 4 in Table 1 [see Valle-Esquivel and Díaz, 2004]).”

Beginning in 1996 (St. Croix) and 1997 (STTJ) 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 group beginning in 1998 (St. Croix) and 2000 (STTJ). Reporting of Yellowtail Snapper by species did not begin until July of 2011 in the U.S. Virgin Islands therefore the first complete year of data is 2012. Commercial fishery landings data for Yellowtail Snapper in STTJ were available for the calendar years 2012-2022.

## **2. Methods**

Commercial landings of Yellowtail Snapper were compiled from the calendar years of 2012 to 2022 for STTJ. The commercial landings were produced in pounds and number of trips by year and fishing gear group.

### *2.1 Gear groups*

Individual fishing gear names used by Yellowtail Snapper fishers in STTJ logbooks (2012-2022) are shown in a column titled “GEAR NAME” in Table 1. In order to classify the landings into gear groups by the individual gears (or GEAR NAMES) with similar size selectivity, length composition data of Yellowtail Snapper from the Fishery Dependent (FD) Trip Interview

Program (TIP) database were analyzed using generalized linear models (GLMs). 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, gear specific commercial landings of Yellowtail Snapper were classified into 4 gear groups (Table 1).

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

<b>GEAR NM</b>	<b>GEAR GROUP</b>
DRIFT LONGLINE	HANDLINE
HANDLINE	HANDLINE
HOOK AND LINE-UNKNOWN TYPE	HANDLINE
BEACH SEINE	OTHER
BY HAND	OTHER
BY HAND WITH SCUBA	OTHER
CAST NET	OTHER
GILL NET, SURFACE	OTHER
HAWAIIAN SLING WHILE SKIN DIVING	OTHER
HAWAIIAN SLING WITH SCUBA	OTHER
NET-UNKNOWN TYPE	OTHER
SEINE NET	OTHER
SKIN DIVING AND SCUBA	OTHER
SPEAR OR BY HAND-UNKNOWN TYPE	OTHER
SPEARFISHING	OTHER
SPEARFISHING WHILE SKIN DIVING	OTHER
SPEARFISHING WITH SCUBA	OTHER
SPEARGUN WHILE SKIN DIVING	OTHER
BOTTOM FISHING HOOK AND LINE	ROD_REEL
HOOK AND LINE WITH POWER WINCH	ROD_REEL
ROD AND REEL	ROD_REEL
TROLLED HOOK AND LINE	ROD_REEL
FISH TRAP	TRAP
LOBSTER TRAP	TRAP
TRAP-UNKNOWN TYPE	TRAP

## 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 Yellowtail Snapper compiled in SEDAR84 may not match landings provided for previous SEDARs.

Table 2: Commercial landings of Yellowtail Snapper 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.

<b>GEAR GROUP</b>	<b>gear quant99</b>
HANDLINE	383.7
OTHER	882.8
ROD REEL	142.2
TRAP	50.0

### *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. The analysis found no confidential data for Yellowtail Snapper commercial landings in STTJ.

### *2.4 Discards*

Species-specific commercial discard reporting started in 2016 in STTJ for Yellowtail Snapper.

## **3. Results**

### *3.1 Commercial landings no outlier analysis*

Commercial landings of Yellowtail Snapper from the calendar years of 2012 to 2022, were approximately 16,477-33,251 pounds per year (Table 3, Figure 1). Trips reporting Yellowtail Snapper landings per year varied between approximately 627-870 in St. Thomas and St. John (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 Yellowtail Snapper in pounds and the number of trips that reported Yellowtail Snapper landings in St. Thomas and St. John.

<b>Year</b>	<b>Landings (lbs)</b>	<b>Trips (n)</b>
2012	33,251	847
2013	23,685	651
2014	31,261	671
2015	24,273	627
2016	28,034	870
2017	22,772	845
2018	21,377	826
2019	24,881	804
2020	26,456	837
2021	16,477	696
2022	17,984	703
Total	270,451	8,377

Table 4: Commercial landings of Yellowtail Snapper in pounds by gear group in St. Thomas and St. John.

<b>TRIP YEAR</b>	<b>HANDLINE</b>	<b>OTHER</b>	<b>ROD REEL</b>	<b>TRAP</b>
2012	22,813	7,392	192	2,854
2013	15,782	5,036	335	2,532
2014	20,982	5,872	668	3,739
2015	19,462	1,863	379	2,569
2016	20,835	2,564	900	3,735
2017	16,134	2,017	969	3,652
2018	15,521	1,023	468	4,365
2019	18,818	1,015	627	4,421
2020	21,246	376	844	3,990
2021	11,756	10	1,441	3,270
2022	12,565	27	1,953	3,439
Total	195,914	27,195	8,776	38,566



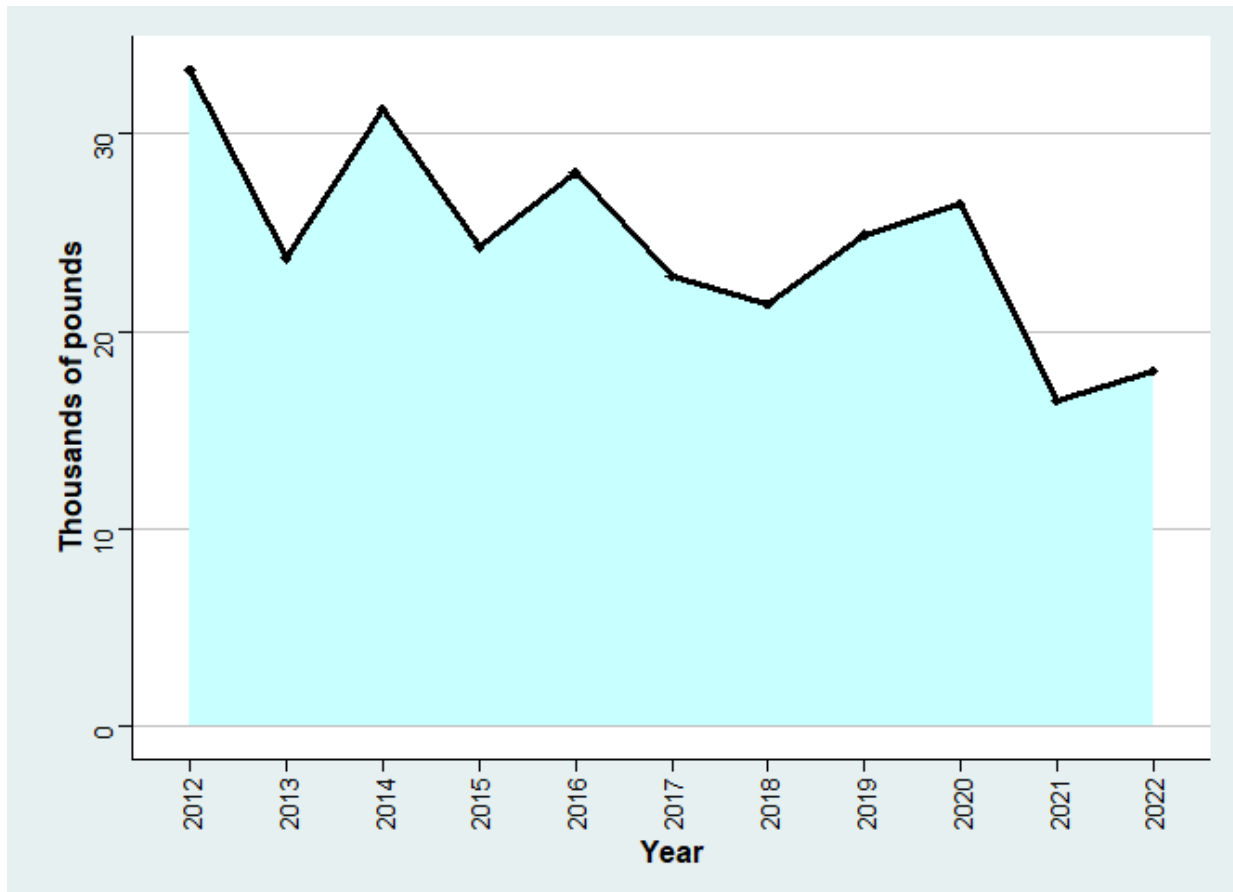


Figure 1: The time series of commercial landings in pounds of Yellowtail Snapper in St. Thomas and St. John.

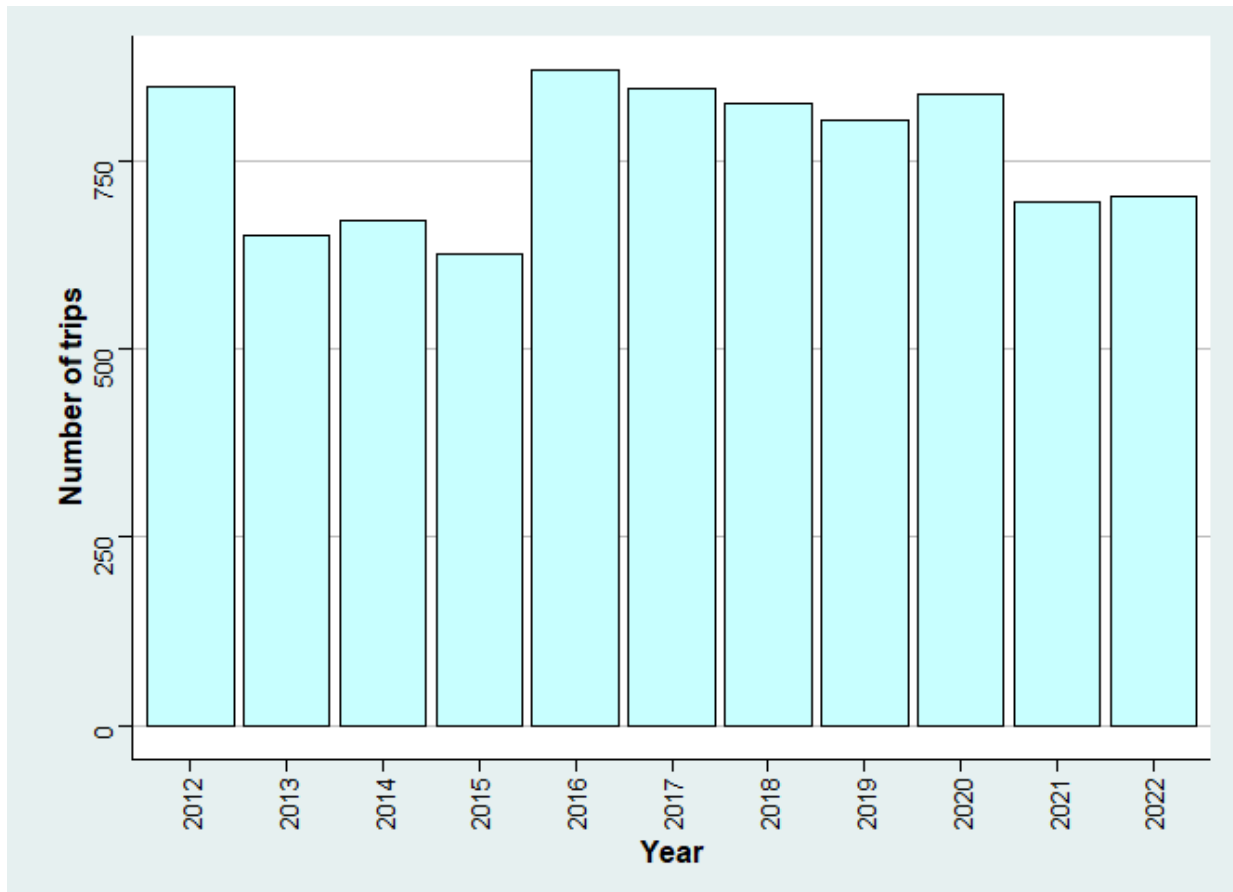


Figure 2: The time series of number of trips with reported landings of Yellowtail Snapper in St. Thomas and St. John.

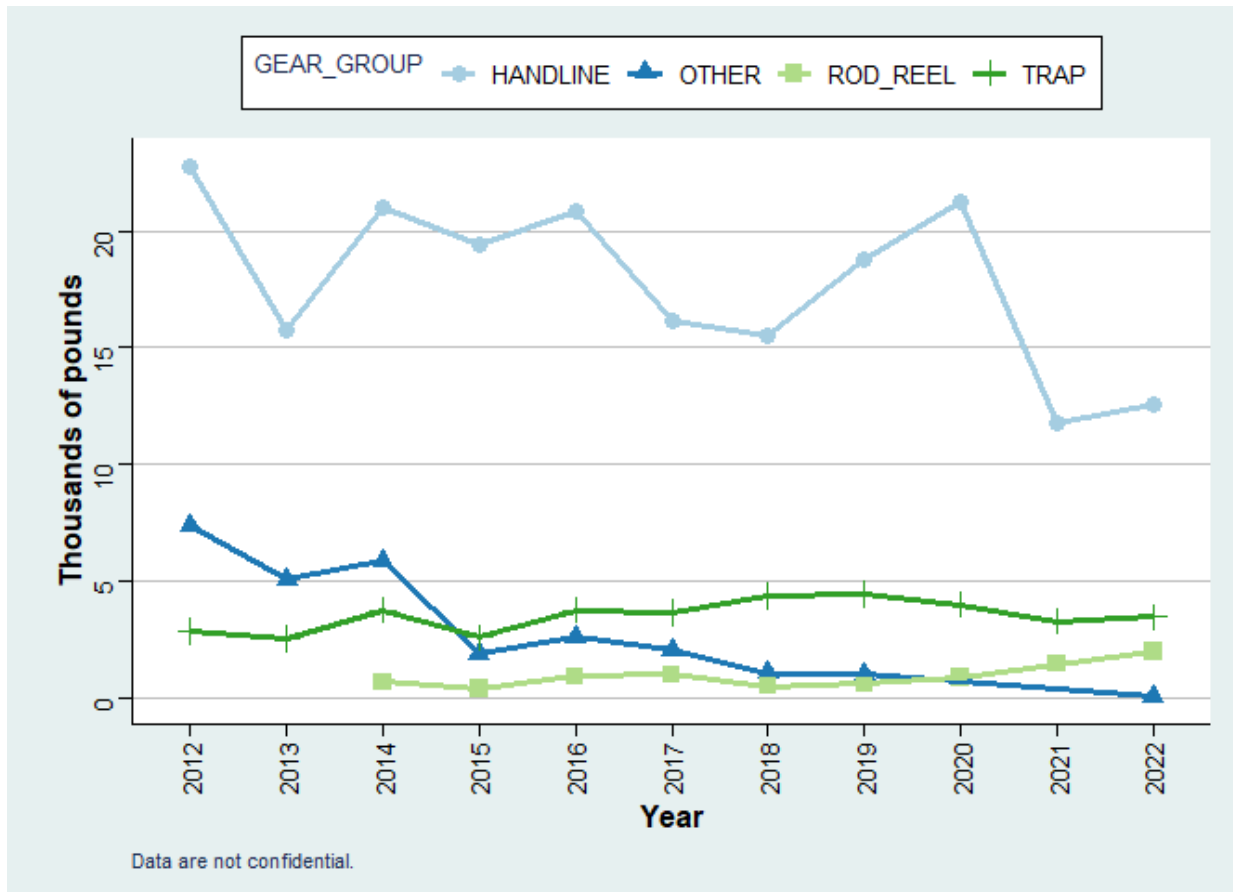


Figure 3: Commercial landings in pounds of Yellowtail Snapper by calendar year and gear group in St. Thomas and St. John.

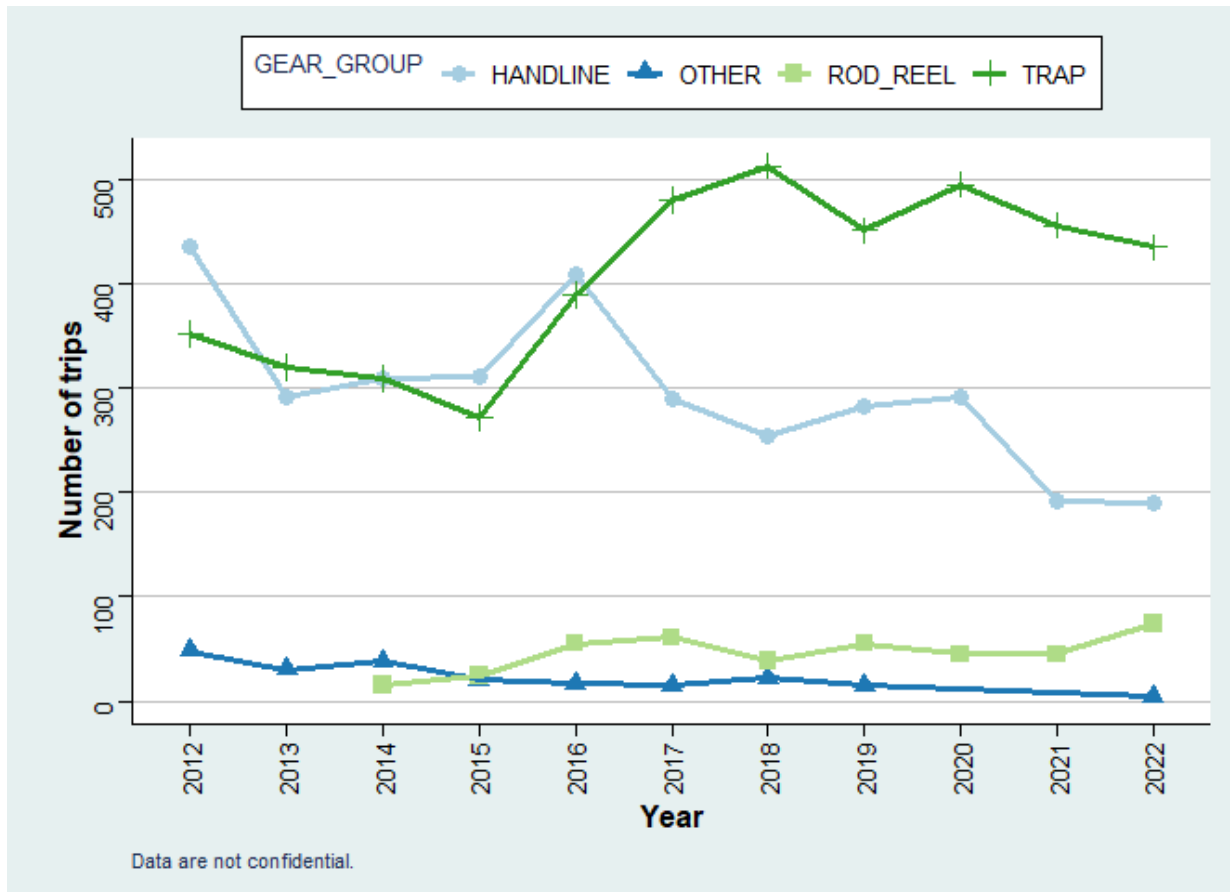


Figure 4: Number of trips with reported landings of Yellowtail Snapper by calendar year and gear group in St. Thomas and St. John.

### 3.2 Commercial landings after outlier removal by gear group

Commercial landings of Yellowtail Snapper from calendar years 2012 to 2022, were approximately 16,477-33,191 pounds per year (Table 5, Figure 5). Trips reporting Yellowtail Snapper per year varied between approximately 623-865 in St. Thomas and St. John (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 Yellowtail Snapper in pounds and the number of trips that reported Yellowtail Snapper landings in St. Thomas and St. John.

Year	Landings (lbs)	Trips (n)
2012	33,191	846
2013	22,260	649
2014	30,811	670
2015	22,356	623
2016	27,634	865
2017	22,315	843

2018	20,977	825
2019	24,401	802
2020	26,216	835
2021	16,477	696
2022	17,834	702
Total	264,472	8,356

Table 6: Commercial landings of Yellowtail Snapper in pounds by gear group in St. Thomas and St. John.

<b>TRIP YEAR</b>	<b>HANDLINE</b>	<b>OTHER</b>	<b>ROD REEL</b>	<b>TRAP</b>
2012	22,813	7,392	192	2,794
2013	15,357	4,036	335	2,532
2014	20,532	5,872	668	3,739
2015	17,545	1,863	379	2,569
2016	20,835	2,564	900	3,335
2017	15,737	2,017	969	3,592
2018	15,121	1,023	468	4,365
2019	18,418	1,015	627	4,341
2020	21,246	376	664	3,930
2021	11,756	10	1,441	3,270
2022	12,565	27	1,803	3,439
Total	191,925	26,195	8,446	37,906

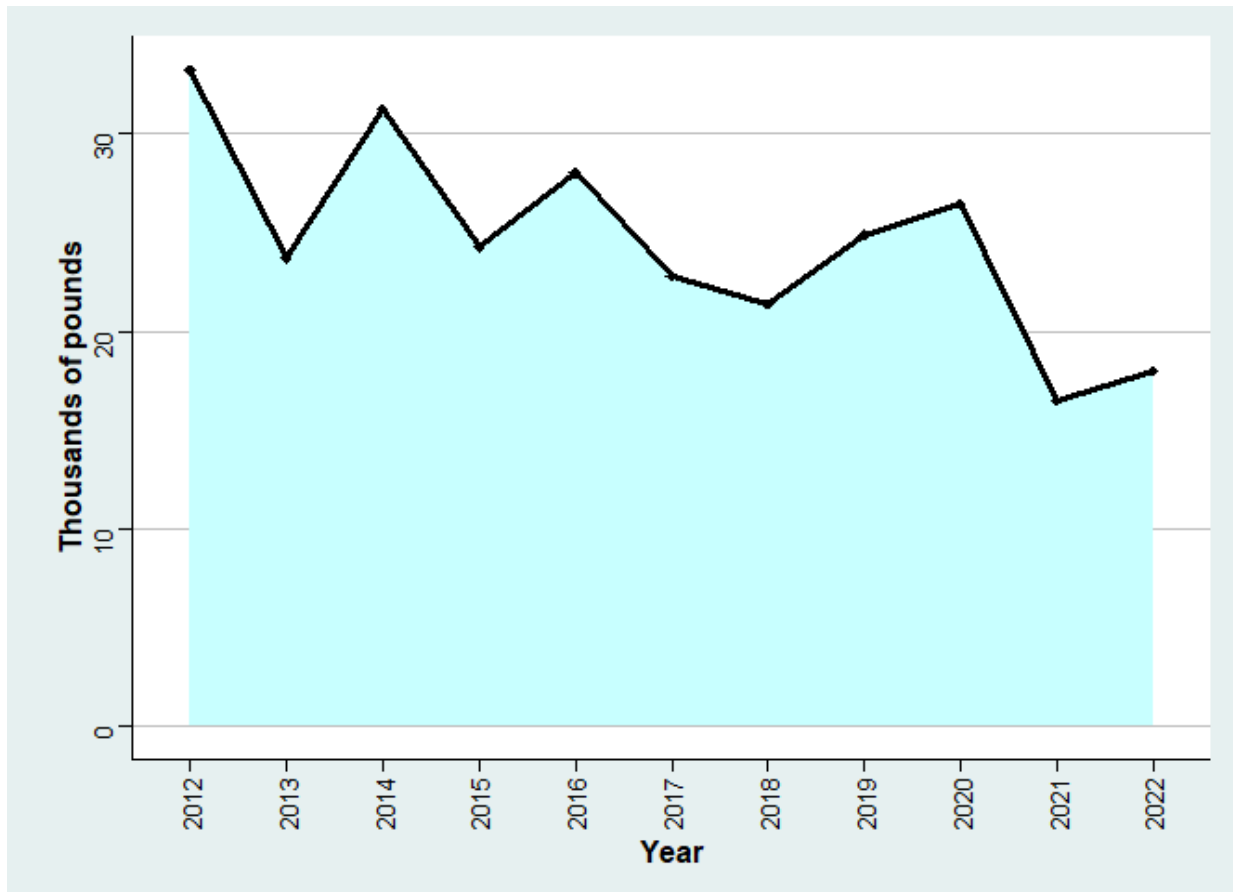


Figure 5: The time series of commercial landings in pounds of Yellowtail Snapper in St. Thomas and St. John.

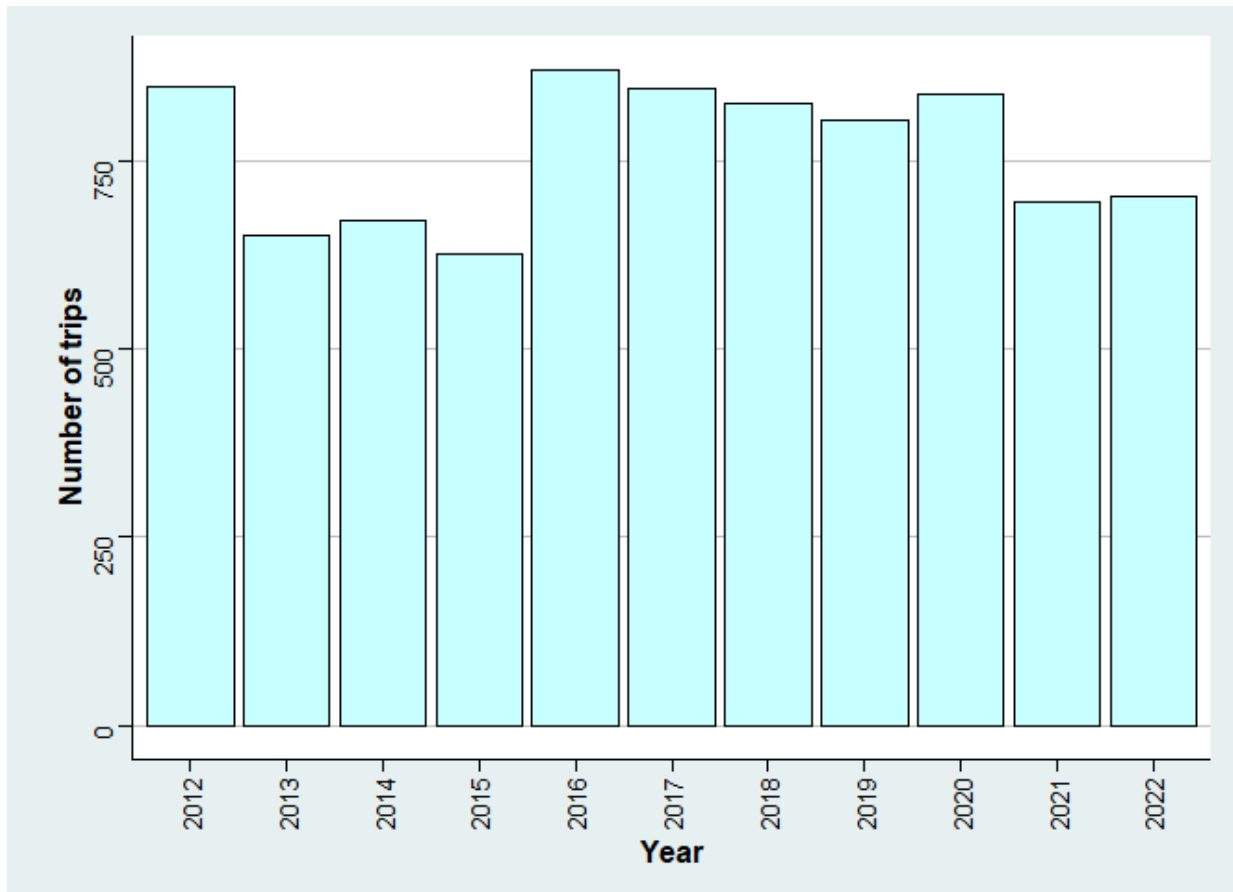


Figure 6: The time series of number of trips with reported landings of Yellowtail Snapper in St. Thomas and St. John.

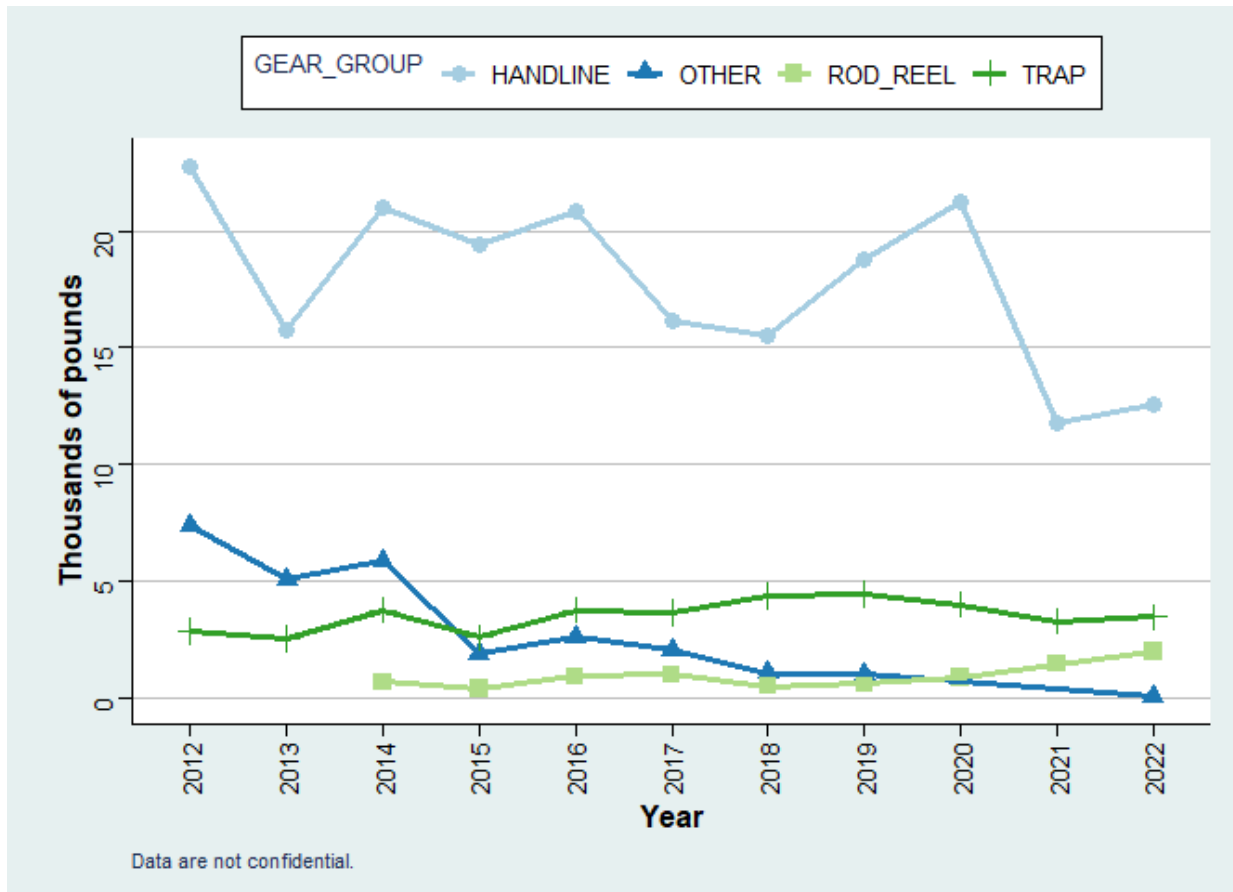


Figure 7: Commercial landings in pounds of Yellowtail Snapper by calendar year and gear group in St. Thomas and St. John.



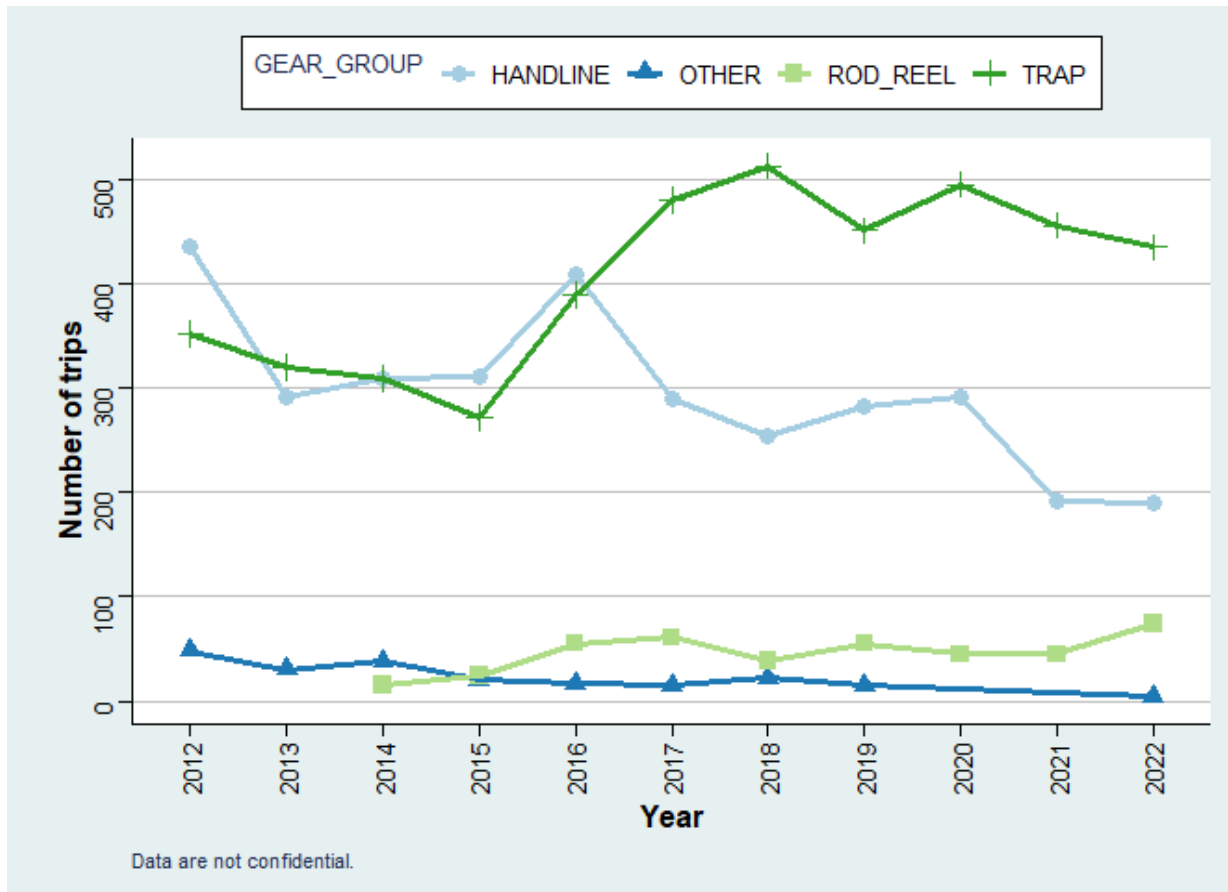


Figure 8: Number of trips with reported landings of Yellowtail Snapper by calendar year and gear group in St. Thomas and St. John.

### 3.3 Commercial landings after outlier removal by year and gear group

Commercial landings of Yellowtail Snapper from calendar years 2012 to 2022, were approximately 16,078-31,660 pounds per year (Table 7, Figure 9). Trips with reported Yellowtail Snapper landings per year varied between approximately 625-865 in St. Thomas and St. John (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 Yellowtail Snapper in pounds and the number of trips that reported Yellowtail Snapper landings in St. Thomas and St. John.

Year	Landings (lbs)	Trips (n)
2012	31,660	842
2013	22,215	648
2014	30,811	670
2015	23,588	625
2016	26,734	865
2017	21,707	840

2018	20,847	822
2019	24,109	800
2020	25,566	832
2021	16,078	693
2022	17,489	700
Total	260,804	8,337

Table 8: Commercial landings of Yellowtail Snapper in pounds by gear group in St. Thomas and St. John.

<b>TRIP YEAR</b>	<b>HANDLINE</b>	<b>OTHER</b>	<b>ROD REEL</b>	<b>TRAP</b>
2012	22,128	6,592	146	2,794
2013	15,357	4,036	335	2,487
2014	20,532	5,872	668	3,739
2015	18,842	1,863	314	2,569
2016	20,215	2,064	900	3,555
2017	15,737	1,517	907	3,546
2018	15,121	1,023	418	4,285
2019	18,418	765	585	4,341
2020	20,886	136	664	3,880
2021	11,466	5	1,337	3,270
2022	12,235	12	1,803	3,439
Total	190,937	23,885	8,077	37,905

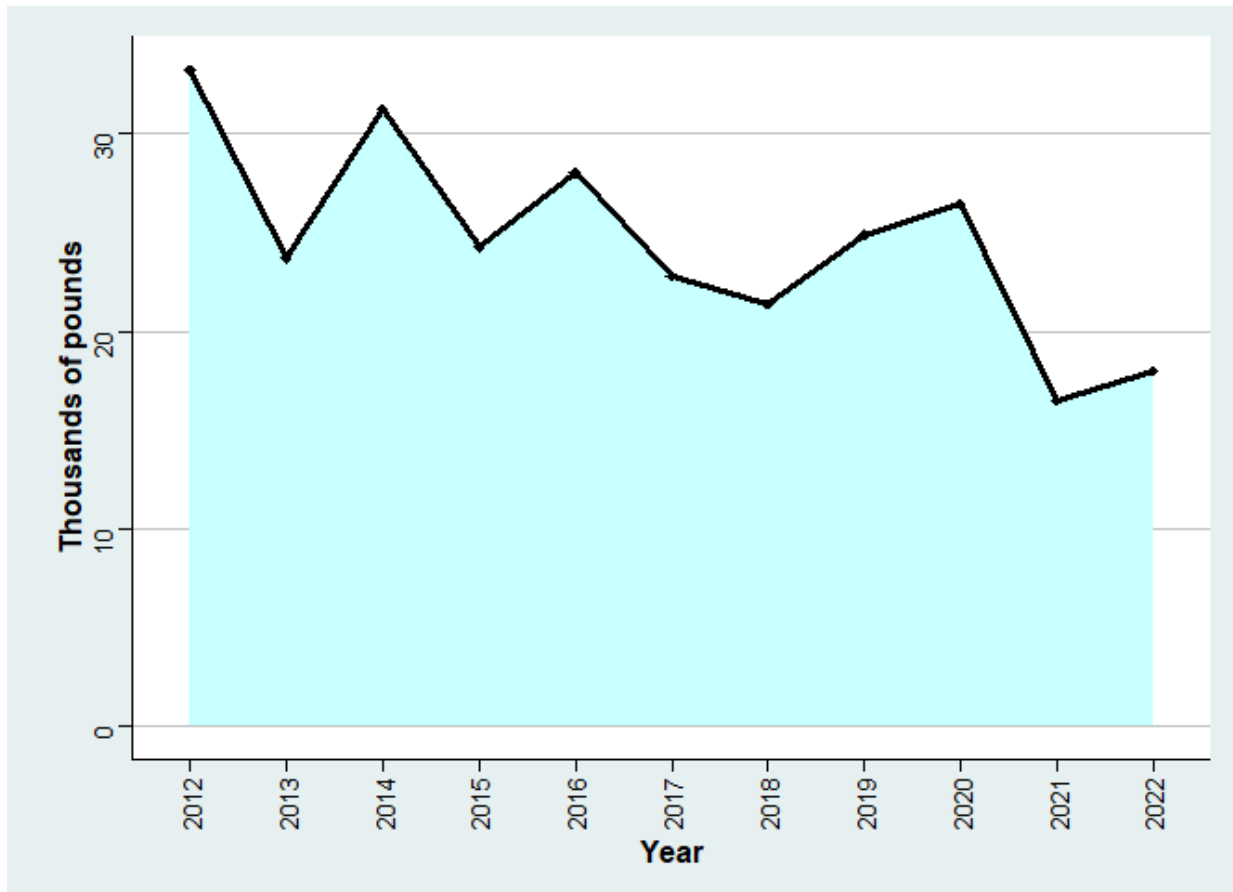


Figure 9: The time series of commercial landings in pounds of Yellowtail Snapper in St. Thomas and St. John.

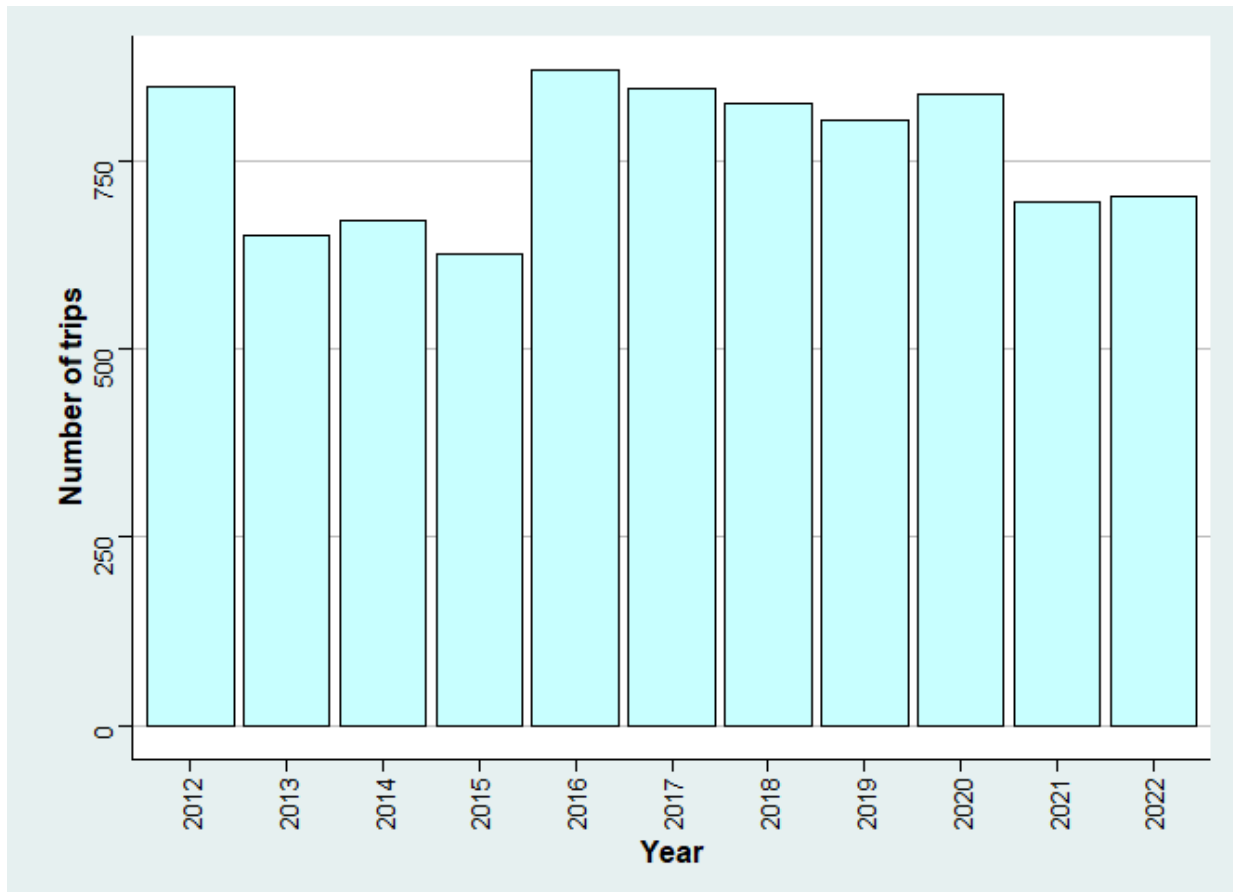


Figure 10: The time series of number of trips with reported landings of Yellowtail Snapper in St. Thomas and St. John.

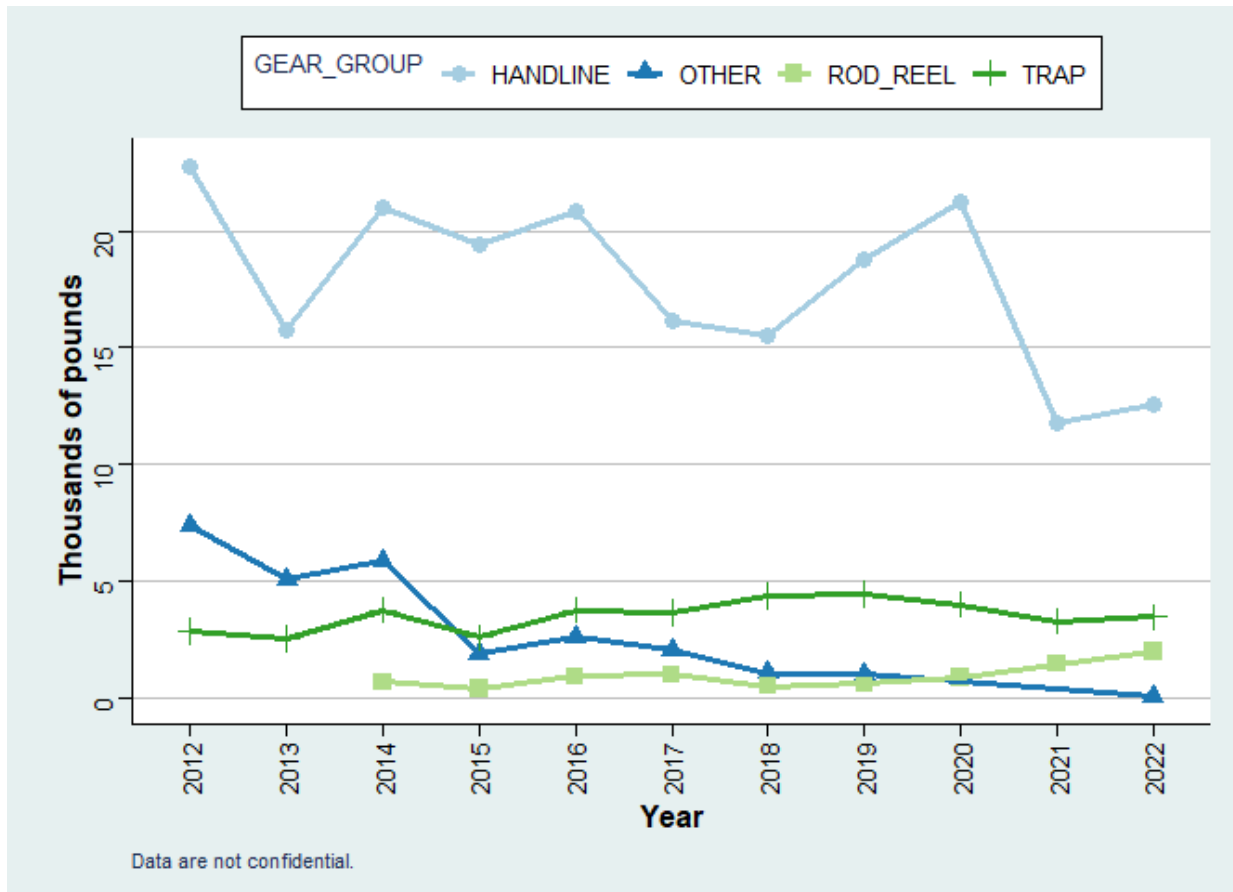


Figure 11: Commercial landings in pounds of Yellowtail Snapper by calendar year and gear group in St. Thomas and St. John.

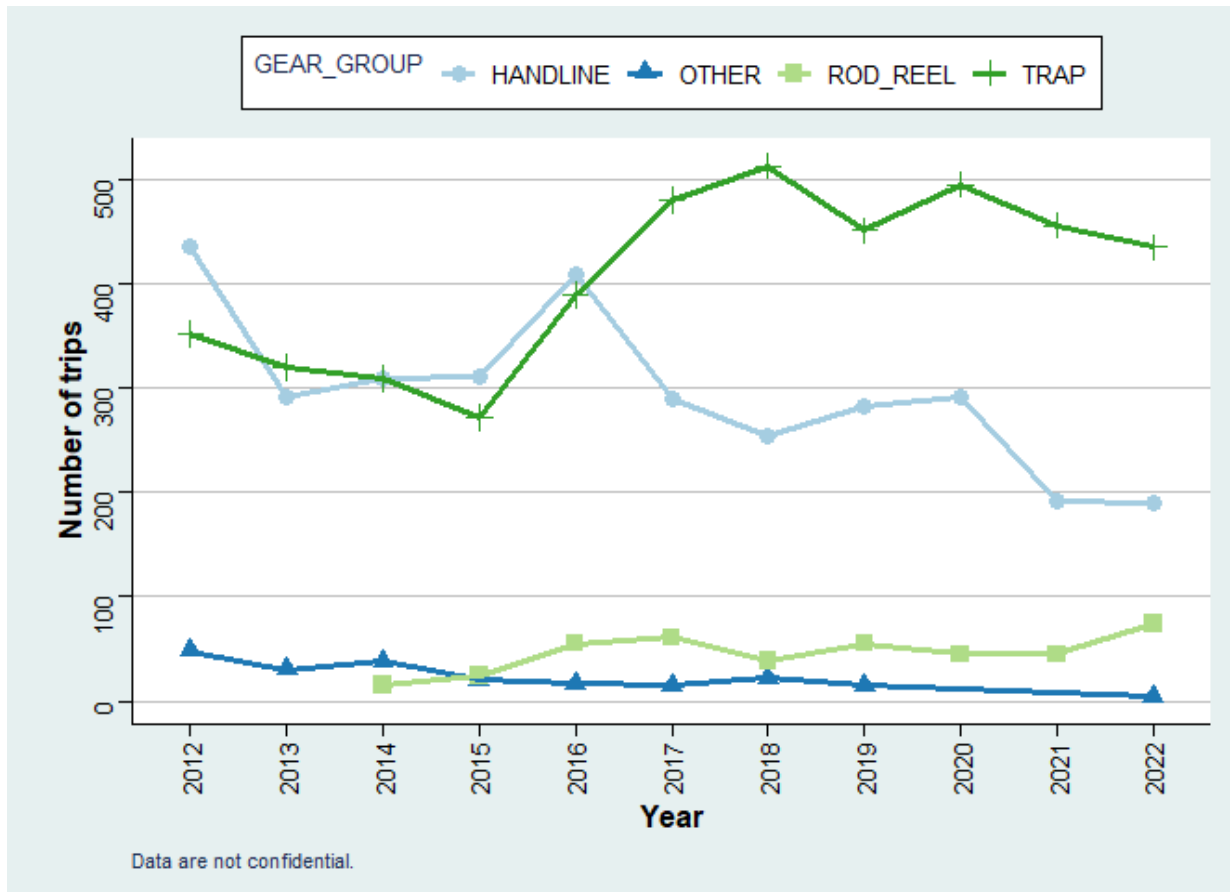


Figure 12: Number of trips with reported landings of Yellowtail Snapper by calendar year and gear group in St. Thomas and St. John.

### 3.4 Commercial discards

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

Table 9: Commercial discards of Yellowtail Snapper in St. Thomas and St. John.

Year	Discards (n)	Discards Trips	Total landings (lbs)	Total trips
2016	6	1	28,034	870
2017	27	5	22,772	845
2018	39	4	21,377	826
2019	16	5	24,881	804
2020	20	2	26,456	837
2021	34	3	16,477	696
2022	43	11	17,984	703

#### **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.

Valle-Esquivel, M., Díaz, G. 2004. An Update on the Reported Landings, Expansion Factors and Expanded Landings for the Commercial Fisheries of the United States Virgin Islands (with Emphasis on Spiny Lobster and the Snapper Complex). NOAA/NMFS/SEFSC Miami Laboratory SFD-2004/051 (SEDAR-8-DW-09). 48p.