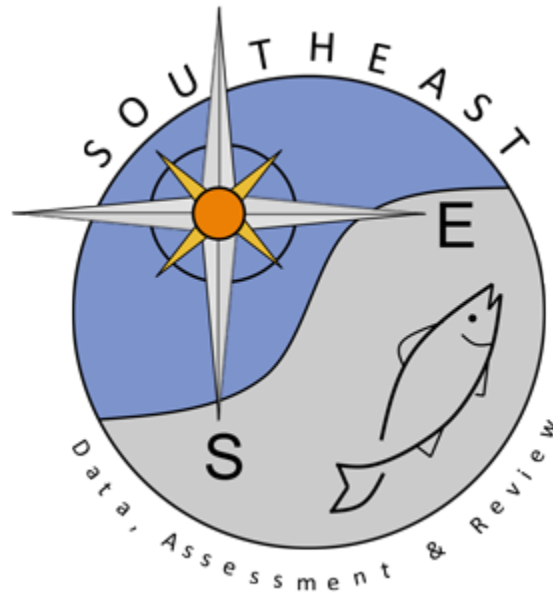


# Historical Commercial Fishery Landings of Mutton Snapper in the Southeastern U.S.

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SEDAR79-DW-19

August 2023



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Fishery-dependent commercial landings or harvest data from the Southeastern U.S. for mutton snapper are available from three primary sources: NOAA Fisheries Accumulated Landings System (ALS), Florida Marine Fisheries Trip Ticket (FL TTK), and NOAA Fisheries Coastal Logbook program (logbook). SEDAR 15A primarily compared ALS to FL TTK data for establishing commercial landings history. Similarly, this report will compare ALS, FL TTK, and logbook data as data sources for establishing appropriate commercial landings data by year, region, and gear to be included in the stock assessment model for mutton snapper.

## Materials and Methods

Trip level commercial harvest (trip ticket) data were extracted from the Florida Fish and Wildlife Conservation Commission's (FWC) Marine Resources Information System for available years 1985-2022 (1985 will be dropped as it was not a complete year of trip tickets). FL TTK data include trip level catch and effort data such as area fished, county landed, gear used, fisher, dealer and trip identifiers, and species and pounds landed. Although a data element since the beginning, area fished was not required until 1995, and gear was not required until late 1991. Additionally, NOAA Fisheries provided both ALS and logbook commercial landings data. ALS are summary data by year, state, county, waterbody, and gear from 1962-2022, and by state and gear from 1950-1961. Logbook data are trip level fisher logbook reports available from 1993-2022.

All three datasets were imported into SAS and data were formatted and summed by year, coast (South Atlantic or Gulf of Mexico), state, mutton snapper (MS) region, and gear. MS regions for this SEDAR were defined in a pdf provided by Shanae Allen (in 2021 and resent in 2023). Assessment staff also requested further proportioning the Keys region into fish caught in the Tortugas and fish caught in the remainder of the Florida Keys track. The creation of coast and MS region for each dataset was done by county landed to match recreational data. Each dataset was then exported to Microsoft Excel where direct comparisons of the summary data were made, and preliminary historical landings by year, MS region (based on county landed), MS region fished (based on area fished), and gear were established in pounds whole weight.

## Results and Discussion

Historical mutton snapper commercial landings by year and mutton snapper regions based on area fished show most of the harvest occurs overwhelmingly in southern Florida (Figure 1). Between 79 and 99 percent of that harvest has come from southern Florida landings. On average, mutton snapper caught in the Florida Keys have accounted for 55% of landings in Florida since 1981. Mutton snapper also have their highest landings, 21 to 46% of annual landings, during summer months (a time of spawning and high catches near full moons) this was corroborated by industry testimony at the SEDAR 79 commercial work group (Figure 2).

A comparison of Florida mutton snapper landings by data source (Figure 3) shows that while ALS, Logbook, and FL TTK are nearly identical landings from about 1993-2022, the ALS data are of a longer time series. The logbook data trend similarly to both ALS and FL TTK, but are not as complete and are of a shorter time series than ALS and FL TTK.

Preliminary effort in mutton snapper landings shown as number of trips indicates the majority of effort is taking place in the Florida Keys region as well. Combined with landings from Southeast Florida (primarily from waters off Broward, Palm-Beach, and Miami-Dade counties) and Southwest Florida (mostly Lee county), more than 79% of mutton snapper landings are coming from South Florida and the Florida Keys.

Statewide, the number of trips harvesting mutton snapper has been on the decline from a high of over 9,250 trips in 1987 to an average of 2,100 trips since 2010 (Table 1). More specifically, the number of trips has been declining in both the Florida Keys (since 1993) and SE Florida (since 1993) and relatively flat in SW Florida, these regions are where the majority of mutton snapper are harvested (Figure 4). Landings have increased in SW Florida from 2009 to 2018 and

landings have remained mostly flat from 2018 to 2021, there was a slight increase in 2022 for most of Southern Florida. The overall trend in decreasing landings seems to correspond with decreasing effort over the same period of time.

Catch per trip has gradually increased when aggregated across all regions. Analysis of landings data from FL TTK show that catch per trip in Southwest Florida increased gradually between 1995 and 2013 (Table 2, figure 5). Catch per trip in the Florida Keys was consistent throughout the time period, an average of 42 fish per trip across all years. Catch per trip for the Tortugas varied greatly but did have the two highest catch per trip for any year/region combination at 785 and 533 pounds per trip with the next highest value being 393 pounds per trip in Northwest Florida.

A start year of 1981 was selected by the commercial working group to match the start of recreational data and the start date for SEDAR 15A. Using more general regional definitions to mask any confidential data from the ALS, FL TTK landings and ACCSP data warehouse, Table 3 represents current commercial mutton snapper landings by year, region and gear in pounds whole weight from 1981-2022. ALS data will contribute to Florida landings before 1986 and for the entire time series for the West of Florida region. ACCSP data warehouse data will be used to add to Florida landings from north of the state.

Assessment staff requested that gears be broken into the following groups: Hook and Line (all hooked gears that are not longlines), Longline, Diving, Traps, Other, and Unknown. Unknown gears were assigned to regular gear categories by proportioning identified gears by year and using those proportions to assign unknown gears. After proportioning, 54% of landings on average came from hook and line gears and over 88% on average came from hooked gears (Figure 6).

Table 1. Florida commercial Mutton snapper landings (pounds and trips) by Florida region (West of Florida and North of Florida Regions were confidential).

Year	NE Florida Nassau-Brevard		SE Florida Indian River-Dade		Florida Keys		Tortugas		SW Florida Collier-Levy		Dixie- Escambia		Total Florida		Percent in FL Keys	
	Pounds	Trips	Pounds	Trips	Pounds	Trips	Pounds	Trips	Pounds	Trips	Pounds	Trips	Pounds	Trips	Pounds	Trips
1985	35,044	298	57,929	1,142	140,115	5,350	7,413	358	86,929	537	19,197	59	346,626	7,744	42.6%	73.7%
1986	93,412	813	62,840	937	181,976	5,016	4,845	154	64,013	611	1,412	29	408,498	7,560	45.7%	68.4%
1987	93,589	476	89,926	1,367	273,168	6,572	9,231	82	78,629	705	5,096	62	549,638	9,264	51.4%	71.8%
1988	80,795	378	93,256	1,280	184,535	5,576	5,060	91	87,031	575	1,019	27	451,696	7,927	42.0%	71.5%
1989	27,714	322	155,742	1,423	275,620	6,320	14,389	207	69,940	539	4,564	77	547,969	8,888	52.9%	73.4%
1990	22,405	393	120,050	1,413	219,349	5,211	19,968	448	63,470	531	9,219	98	454,461	8,094	52.7%	69.9%
1991	14,746	446	118,271	1,665	258,013	5,156	12,584	120	68,614	581	8,583	52	480,810	8,020	56.3%	65.8%
1992	18,993	541	55,524	1,288	250,264	6,293	11,972	94	59,800	639	1,444	33	397,998	8,888	65.9%	71.9%
1993	8,473	355	106,044	1,821	219,239	6,128	36,906	47	68,637	602	1,946	25	441,245	8,978	58.1%	68.8%
1994	11,879	307	56,668	1,285	212,578	5,361	23,571	251	47,710	511	1,969	45	354,375	7,760	66.6%	72.3%
1995	34,507	705	31,853	925	142,021	3,985	33,912	385	35,803	503	2,863	29	280,958	6,532	62.6%	66.9%
1996	11,098	341	58,120	1,466	123,050	2,978	33,361	277	52,105	471	10,931	279	288,664	5,812	54.2%	56.0%
1997	13,849	399	52,988	1,468	142,736	2,986	23,010	475	54,914	342	1,306	34	288,804	5,704	57.4%	60.7%
1998	14,636	246	59,876	1,519	147,268	2,740	67,646	286	60,335	347	1,296	18	351,057	5,156	61.2%	58.7%
1999	18,321	348	40,189	878	81,999	1,844	45,523	209	59,931	365	1,152	28	247,115	3,672	51.6%	55.9%
2000	12,704	310	25,677	893	56,851	1,563	42,266	321	61,422	344	1,344	17	200,263	3,448	49.5%	54.6%
2001	6,521	196	40,650	1,144	58,828	1,563	42,915	887	79,449	387	650	18	229,013	4,195	44.4%	58.4%
2002	10,407	301	37,202	1,184	76,515	2,204	38,935	519	64,518	279	1,293	40	228,870	4,527	50.4%	60.2%
2003	6,335	147	34,095	1,014	82,690	1,971	67,150	985	68,931	238	1,079	23	260,280	4,378	57.6%	67.5%
2004	6,474	125	22,779	849	76,629	1,769	128,266	845	104,653	396	1,939	16	340,740	4,000	60.1%	65.4%
2005	8,629	149	20,982	749	83,776	1,820	44,015	257	68,579	393	951	23	226,931	3,391	56.3%	61.3%
2006	4,363	124	13,656	469	38,425	1,258	115,587	587	106,189	404	1,071	35	279,291	2,877	55.1%	64.1%
2007	5,713	145	9,184	468	60,535	1,509	57,380	263	79,549	281	1,309	23	213,670	2,689	55.2%	65.9%
2008	2,050	109	10,418	476	71,177	1,665	18,587	58	49,410	232	1,869	15	153,511	2,555	58.5%	67.4%
2009	5,674	269	14,891	718	61,948	1,295	24,680	243	9,793	93	323	17	117,309	2,635	73.8%	58.4%
2010	4,966	111	21,007	758	48,613	1,074	14,241	292	36,162	167	76	5	125,066	2,407	50.3%	56.8%
2011	8,016	101	13,150	512	29,621	695	38,159	787	65,724	262	223	5	154,893	2,362	43.8%	62.7%
2012	15,359	163	13,270	445	63,262	1,328	3,002	36	64,926	212	2,616	7	162,435	2,191	40.8%	62.3%
2013	19,850	236	11,023	332	47,182	1,323	28,230	53	68,810	181	90	4	175,185	2,129	43.0%	64.6%
2014	21,166	275	9,264	440	52,379	1,182	91,180	467	49,711	206	785	6	224,486	2,576	63.9%	64.0%
2015	30,716	371	9,547	416	34,384	1,075	47,385	465	89,338	253	7,863	20	219,233	2,600	37.3%	59.2%
2016	16,644	304	10,478	435	47,471	1,252	31,965	145	39,775	263	1,759	11	148,093	2,410	53.6%	58.0%
2017	12,044	251	7,409	329	54,252	1,122	7,023	117	105,884	372	614	7	187,225	2,198	32.7%	56.4%
2018	16,653	267	5,679	248	57,754	1,102	15,250	113	119,917	421	2,212	9	217,465	2,160	33.6%	56.3%
2019	22,340	357	4,803	228	41,543	818	19,456	308	40,078	322	43	3	128,263	2,036	47.6%	55.3%
2020	16,781	314	4,589	146	39,691	922	9,195	192	54,463	348	405	5	125,124	1,927	39.1%	57.8%
2021	15,626	316	4,279	155	36,116	816	10,458	38	45,184	330	74	4	111,738	1,659	41.7%	51.5%
2022	16,966	247	4,884	161	21,363	481	27,103	365	50,489	335	78	5	120,884	1,594	40.1%	53.1%

Table 2. Mutton snapper catch per trip by region (West of Florida and North of Florida Regions were confidential) from Florida trip ticket data.

Year	NE Florida Nassau-Brevard	SE Florida Indian River-Dade	Florida Keys	Tortugas	SW Florida Collier-Levy	NW Florida Dixie-Escambia	Total Florida
1985	117.6	50.7	26.2	20.7	161.9	325.4	44.8
1986	114.9	67.1	36.3	31.5	104.8	48.7	54.0
1987	196.6	65.8	41.6	112.6	111.5	82.2	59.3
1988	213.7	72.9	33.1	55.6	151.4	37.7	57.0
1989	86.1	109.4	43.6	69.5	129.8	59.3	61.7
1990	57.0	85.0	42.1	44.6	119.5	94.1	56.1
1991	33.1	71.0	50.0	104.9	118.1	165.0	60.0
1992	35.1	43.1	39.8	127.4	93.6	43.8	44.8
1993	23.9	58.2	35.8	785.2	114.0	77.8	49.1
1994	38.7	44.1	39.7	93.9	93.4	43.8	45.7
1995	48.9	34.4	35.6	88.1	71.2	98.7	43.0
1996	32.5	39.6	41.3	120.4	110.6	39.2	49.7
1997	34.7	36.1	47.8	48.4	160.6	38.4	50.6
1998	59.5	39.4	53.7	236.5	173.9	72.0	68.1
1999	52.6	45.8	44.5	217.8	164.2	41.1	67.3
2000	41.0	28.8	36.4	131.7	178.6	79.0	58.1
2001	33.3	35.5	37.6	48.4	205.3	36.1	54.6
2002	34.6	31.4	34.7	75.0	231.2	32.3	50.6
2003	43.1	33.6	42.0	68.2	289.6	46.9	59.5
2004	51.8	26.8	43.3	151.8	264.3	121.2	85.2
2005	57.9	28.0	46.0	171.3	174.5	41.3	66.9
2006	35.2	29.1	30.5	196.9	262.8	30.6	97.1
2007	39.4	19.6	40.1	218.2	283.1	56.9	79.5
2008	18.8	21.9	42.7	320.5	213.0	124.6	60.1
2009	21.1	20.7	47.8	101.6	105.3	19.0	44.5
2010	44.7	27.7	45.3	48.8	216.5	15.3	52.0
2011	79.4	25.7	42.6	48.5	250.9	44.6	65.6
2012	94.2	29.8	47.6	83.4	306.3	373.7	74.1
2013	84.1	33.2	35.7	532.6	380.2	22.5	82.3
2014	77.0	21.1	44.3	195.2	241.3	130.9	87.1
2015	82.8	22.9	32.0	101.9	353.1	393.2	84.3
2016	54.8	24.1	37.9	220.5	151.2	159.9	61.4
2017	48.0	22.5	48.4	60.0	284.6	87.7	85.2
2018	62.4	22.9	52.4	135.0	284.8	245.8	100.7
2019	62.6	21.1	50.8	63.2	124.5	14.4	63.0
2020	53.4	31.4	43.0	47.9	156.5	80.9	64.9
2021	49.4	27.6	44.3	275.2	136.9	18.6	67.4
2022	68.7	30.3	44.4	74.3	150.7	15.6	75.8

Table 3. Commercial mutton snapper landings (whole pounds) by year, region, and gear. Data from NOAA Fisheries ALS (yellow), FL Trip Ticket (green) and ACCSP data Warehouse (blue).

Year	West of Florida			FL Gulf of Mexico			Keys			FL South Atlantic			North of Florida		
	H&L	LL	OTHER	H&L	LL	OTHER	H&L	LL	OTHER	H&L	LL	OTHER	H&L	LL	OTHER
1981	3,570			34,018	6,109	1,125	82,694	56,499	29,250	97,547		15,640			54
1982	956			35,092	5,252	1,556	126,190	89,926	32,671	63,667		5,839	82		
1983				38,677	26,458	105	122,853	63,094	27,676	39,618		9,655	99		
1984				17,631	19,227	727	122,272	32,002	15,030	60,808		6,557	397	348	
1985	77			16,310	24,856	1,416	112,129	30,949	13,336	64,316		3,409	1,508		
1986				18,512	37,754	9,182	80,835	52,609	43,290	114,721	29,398	22,220	2,348		12
1987	1,307			23,806	57,925	7,717	140,681	106,492	26,194	116,818	20,808	49,196	2,090	3,193	44
1988	146			24,814	56,797	8,637	109,101	45,544	30,166	89,455	12,109	75,072	1,672	3,297	
1989	431			24,105	44,513	6,375	145,805	102,949	27,117	69,857	22,057	105,192	1,822	512	
1990	241		150	25,066	41,676	10,419	148,302	64,789	13,259	62,459	24,877	63,614	1,033	562	10
1991				28,545	46,134	2,658	147,098	82,088	34,563	64,070	17,421	58,373	2,876	295	133
1992	300		19	29,487	30,349	1,409	179,747	40,436	41,474	65,816	3,035	6,246	2,640		7
1993	415		578	21,756	47,037	1,793	147,384	25,665	78,648	103,221	2,390	13,354	3,597		
1994				19,311	30,648	1,381	160,053	13,535	48,207	65,029	5,632	10,578	3,283	81	100
1995	124		33	12,765	28,679	1,260	118,393	13,630	29,624	58,267	3,366	14,975	3,727		
1996			3	13,490	40,821	514	115,631	9,292	39,085	64,985	623	4,224	2,673		330
1997	29		13	9,582	46,824	480	131,002	9,845	24,235	61,330	1,918	3,590	3,625		2
1998	59			12,242	58,984	164	124,411	14,815	63,310	65,804	5,602	5,741	4,768		
1999	128	112	44	10,186	53,050	570	63,803	19,260	40,603	53,368	1,407	5,018	5,712		
2000	60	41		8,266	52,916	1,605	60,253	18,710	24,025	30,009	2,032	2,469	4,270		9
2001	966			9,077	76,931	723	68,355	14,409	12,347	40,323	900	5,947	2,959		55
2002	49	262		7,891	64,210	778	74,006	14,551	19,825	41,664	492	5,453	3,996	206	295
2003	550	137		5,317	90,625	381	87,406	20,086	16,170	34,928	493	5,069	5,676		284
2004	76	16		9,770	122,040	652	94,035	74,523	10,467	26,190	422	2,641	6,172		48
2005	93			7,653	61,375	626	60,802	59,120	7,679	26,782	23	2,936	9,551		168
2006	9			11,887	107,897	247	49,926	85,593	5,427	15,788	549	1,977	7,683		65
2007	18			3,809	78,192	197	57,845	50,967	7,780	12,977	52	1,868	7,529		34
2008				2,395	46,845	251	59,512	27,083	4,411	12,352		663	3,915		
2009	89			3,370	22,040	363	56,152	10,370	4,449	18,158	10	2,398	3,406	5	9
2010				4,736	35,746	447	52,599	168	5,397	24,784	69	1,121	3,045		84
2011	1			18,131	54,578	336	41,683	68	18,510	19,708	11	1,869	4,050		55
2012				15,612	53,180	29	49,911	14	14,936	25,455	34	3,265	3,334		157
2013				10,793	85,007	940	36,615	475	10,482	27,908		2,965	5,700		229
2014				10,221	124,381	4,710	42,885		11,742	28,361		2,619	2,900		554
2015				18,840	111,610	1,901	35,052		11,567	40,371		2,627	4,772		924
2016	17			11,862	56,989	1,915	40,391	687	9,145	25,448		2,345	2,094		98
2017				13,420	92,164	915	44,439	3,441	13,395	18,483		2,603	3,616		948
2018	27			9,151	109,161	10,195	50,075	4,471	11,825	20,799		1,788	5,017		426
2019	5	34		5,370	44,581	2,175	33,132	1,289	14,181	25,329	114	2,092	7,847		708
2020		38		7,339	45,818	1,712	36,306	4,013	8,032	21,834		2,920	16,224		593
2021	111	53		4,483	46,032	2,353	29,809	2,302	6,611	17,333	75	2,739	12,247		521
2022		100		5,530	44,380	2,719	26,357	11,609	8,438	20,378		2,343	8,930		350



Figure 1. A comparison of Florida commercial mutton snapper landings by data source.

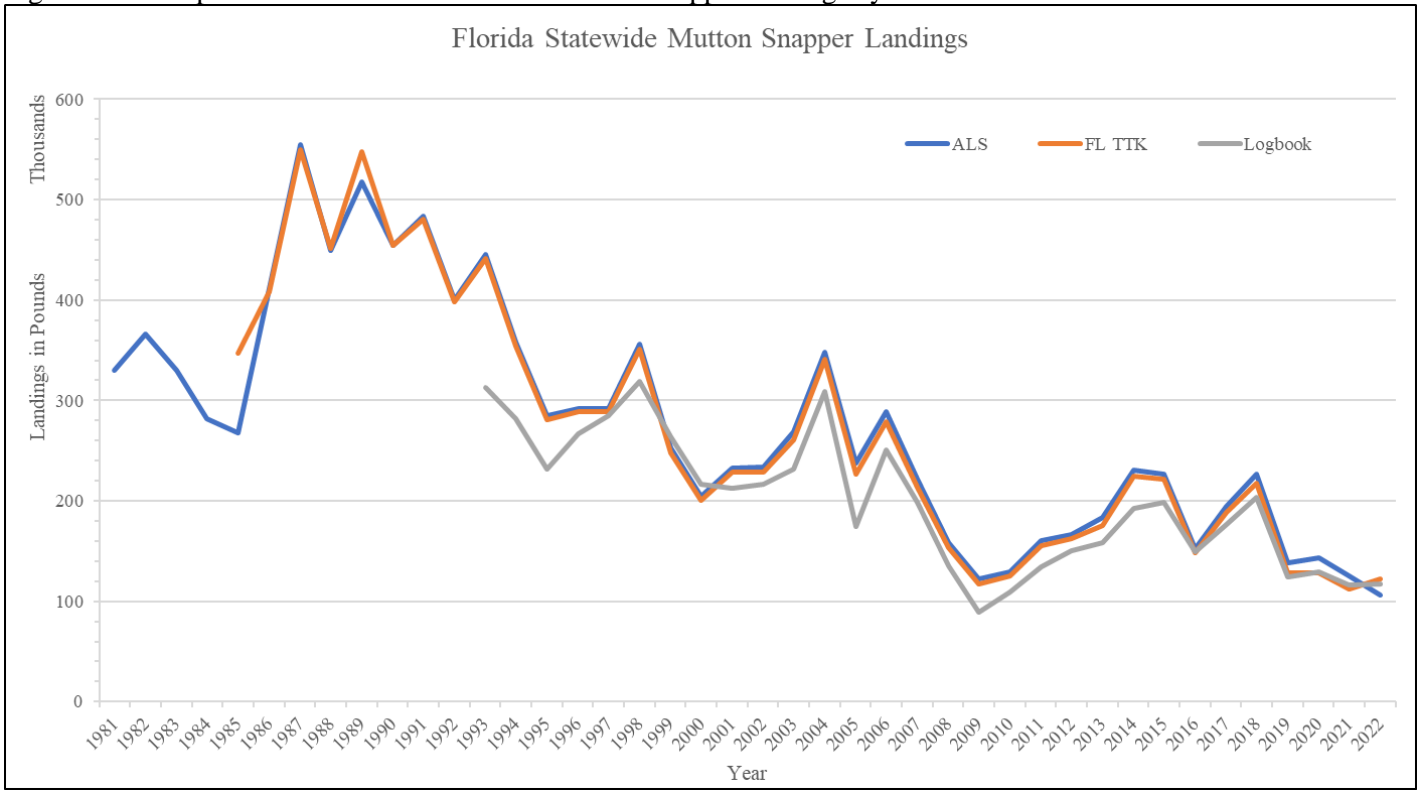


Figure 2. Florida Trip ticket landings by year and month for commercial mutton snapper.

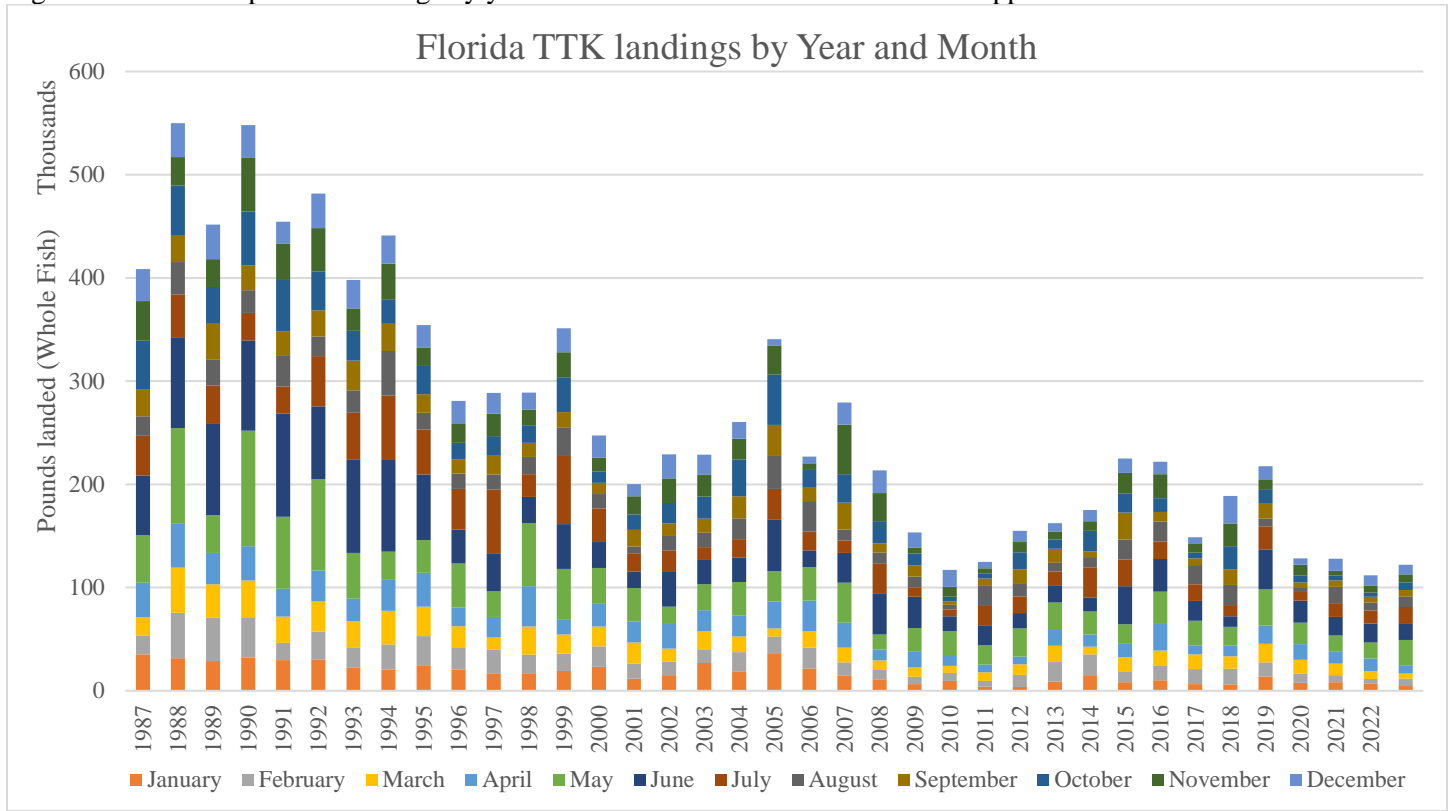


Figure 3. A comparison of Florida commercial mutton snapper landings by data source for the mutton snapper subregions.

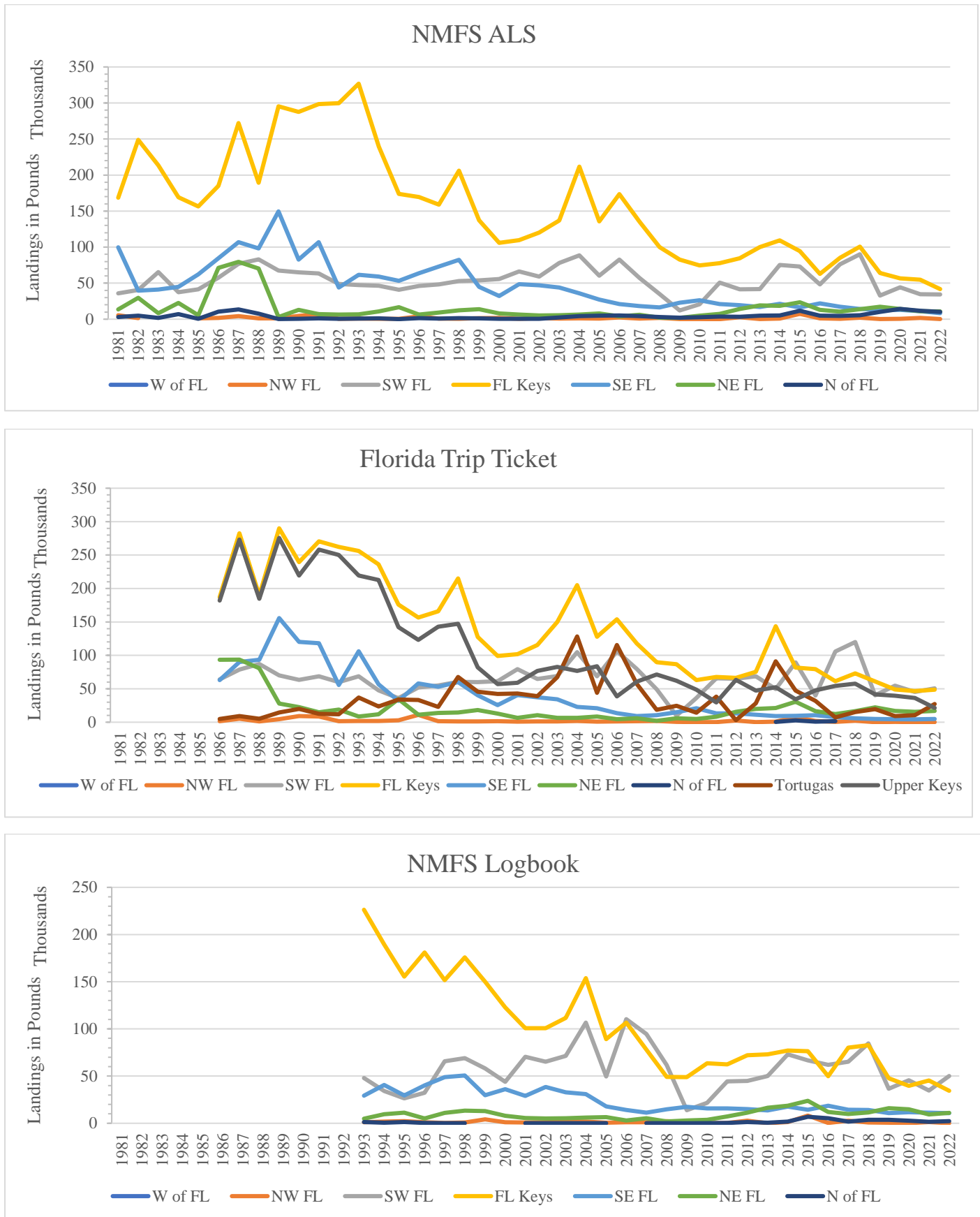


Figure 4. Number of commercial mutton snapper trips and landings by region in Florida.

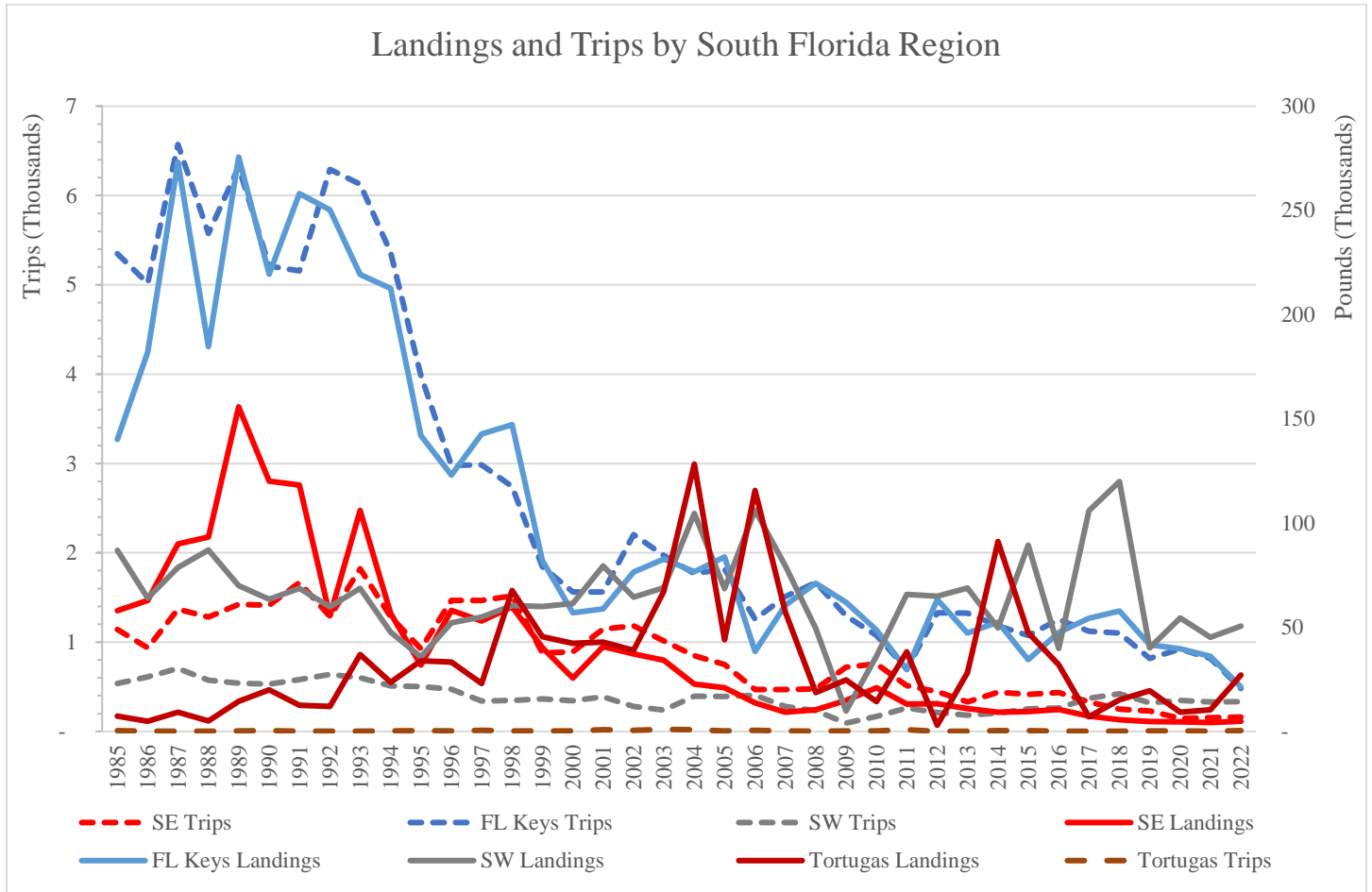


Figure 5. Mutton snapper catch per trip by region from Florida trip ticket data.

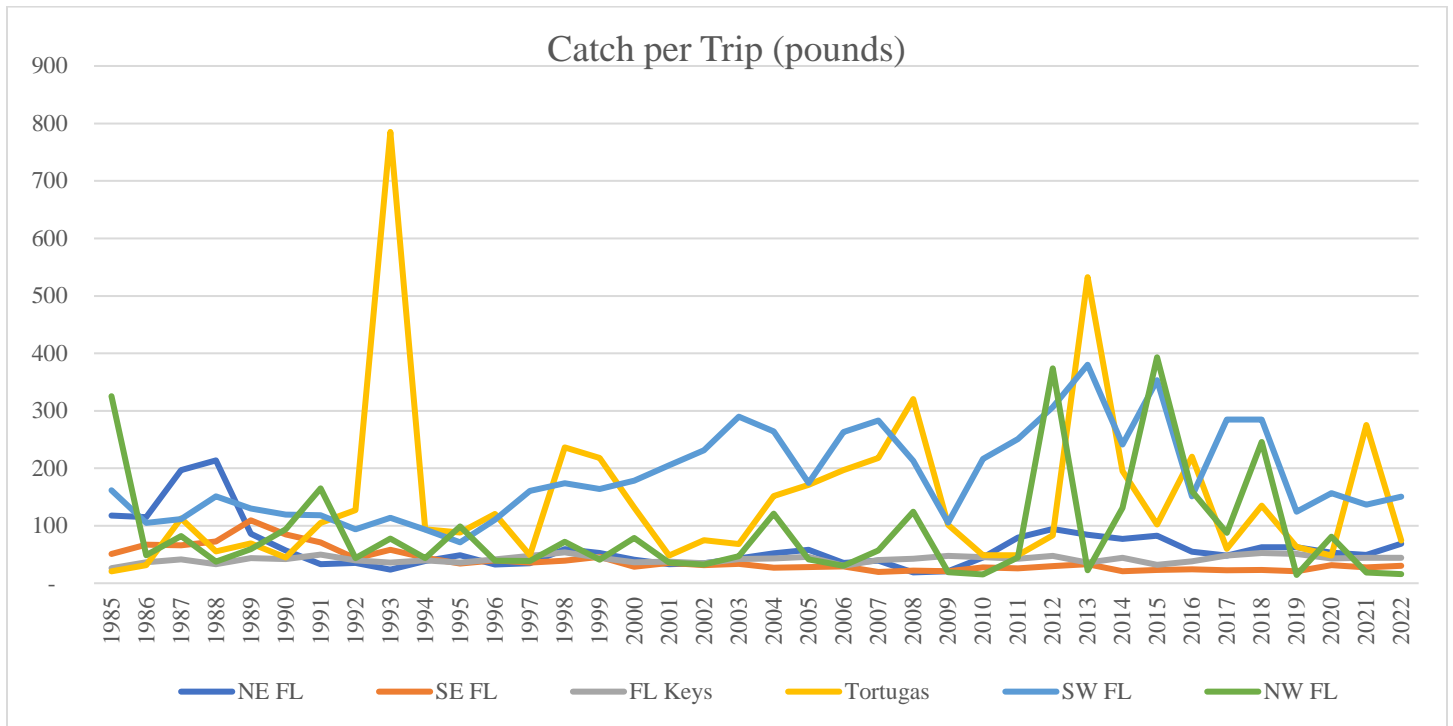


Figure 6. Mutton snapper catch per trip by gear and year from Florida trip ticket data.

