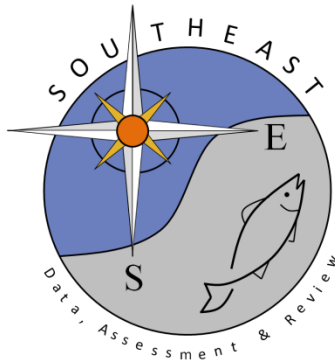


# **Additional Commercial Fishery Statistics: Landings in Weight and Number, Mean Weights, Update to Uncertainty, and Catch and Effort Maps**

SEDAR 50 Commercial Statistics Work Group  
(Co-Work Group Leads: Julie DeFilippi-Simpson & Kevin McCarthy)

SEDAR50-AW03

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**Additional Commercial Fishery Statistics:  
Landings in Weight and Number, Mean Weights,  
Update to Uncertainty, and Catch and Effort Maps**

## **1.0 Overview**

Commercial landings for the US Atlantic and Gulf of Mexico blueline tilefish stock were developed by gear (handlines, longlines, and other) in pounds whole weight for the period 1950–2015 based on federal and state databases. Corresponding landings in numbers were based on mean weights estimated from the Trip Interview Program (TIP) by year, state, and gear.

Sampling intensity for lengths and age by gear and year were considered, and length and age compositions were developed by gear and year for which sample size was deemed adequate.

## **2.0 Commercial Workgroup Participants**

Kevin McCarthy	Workgroup co-leader	SEFSC Miami
Julie DeFilippi-Simpson	Workgroup co-leader	ACCSP
Alan Bianchi	Rapporteur/Data provider	NC DMF
Steve Brown*	Data provider	FL FWC
Julie Califf*	Data provider	GA DNR
Wiley Coppersmith	Commercial	NC
Amy Dukes	Data provider	SC DNR
Dave Gloeckner	Data provider	SEFSC Miami
Rusty Hudson	Commercial	FL/SFA
Heather Konell	Data Provider	ACCSP
Refik Orhun*	Data provider	SEFSC Miami
Steve Shelley	Commercial	SC
Beth Wrege	Data provider	SEFSC Miami

\*Did not attend workshop

## **3.0 Commercial Landings**

Commercial landings of blueline tilefish were compiled from 1950 through 2015 for the entire U.S. Atlantic Coast. Sources for landings in the U.S. South Atlantic (Florida through North Carolina) included the Florida Trip Ticket program (FTT), South Carolina Department of Natural Resources (SCDNR), North Carolina Division of Marine Fisheries (NCDMF), and the Atlantic Coastal Cooperative Statistics Program (ACCSP). Landings from the Mid and North Atlantic (north of the NC-VA border) were from ACCSP and the NE Federal VTR (NEFSC). Landings from the Gulf of Mexico were provided by the Southeast Fisheries Science Center

(SEFSC). Full discussion of how landings were compiled from the above sources can be found in Section 3.3.4 of the Data Workshop Report.

### **3.1 Landings in Pounds**

Landings by gear category are presented in pounds whole weight (Table 1) and shown graphically in Figures 1 and 2. Longlines are the dominant gear and account for 56% of the total landings in the Atlantic and 83% of the total landings in the Gulf of Mexico for the period of 1950 to 2015. Handlines were used more frequently in the earlier part of the time series in the Atlantic and account for about 37% of the total landings in the Atlantic and 16% of the total landings in the Gulf of Mexico for the period.

#### Confidentiality Issues

Landings of blueline tilefish were pooled across states by gear to meet the rule of 3 and ensure confidential landings were not presented in this report. Confidential landings for other gear in 1996 have been masked in the Atlantic. Landings for all gears in 1983 and 1984 have been masked in the Gulf of Mexico. Landings by state and gear will be provided to the data compiler for use in the assessment.

### **3.2 Converting Landings in Weight to Landings in Numbers**

The weight in pounds for each length sample was calculated, as was the mean weight by state, gear and year. As is consistent with previous assessments, when the sample size was less than 30 fish, strata were combined until the sample size used to derive the mean was 30 or greater. Mean weights for this assessment were calculated by gear, region and year (Table 3). For landings prior to 1983, the average mean weight by region was applied. To convert northern, Virginia through Maine, landings to numbers the mean weights from Cape Canaveral to the NC/VA Border region were used. The landings in pounds whole weight (Table 1 and Figures 1 and 2) were then divided by the mean weight for each year to derive landings in numbers (Table 2 and Figures 3 and 4).

### **3.3 Uncertainty**

The commercial workgroup estimated uncertainty in commercial fishery landings, after consultation with assessment biologists, by modifying the uncertainty estimates used in SEDAR 41, while using the same methodology. These estimates of uncertainty are not coefficients of variation, but are estimates of possible reporting error; i.e., represent the range in actual commercial landings relative to the reported landings.

In making these uncertainty estimates, three assumptions were made:

1. Landings may be underreported during all years; however, underreporting was likely highest during early years of the time series and were more accurate in recent years. This assumption was based upon the following information and data workshop expert testimony: during the period 1958 (beginning of landings time series) to 1961 landings were summarized annually by state and likely did not include landings from small scale dealers. In the years 1962 to 1977 landings data were collected annually, but under a more all-inclusive program (General Canvass). Monthly landings summaries were collected during the period 1978 to the beginning of trip ticket data collection (starting dates vary among states). The most recent landings data, collected through state trip ticket programs, were assumed to be most reliable and inclusive of all commercial landings.
2. Exceptions to the first assumption are made during a period in the early 1980s. Landings are proportioned during this time and overall tilefish landings are high in certain states. The industry representatives believe that this increase is due to golden tilefish disproportionately. However; no other data sources are available to determine an alternative species proportion for these years. Thus the uncertainty is set as a lower bound only to reflect the overestimation.
3. Landings may be overestimated prior to comprehensive species specific reporting because unclassified tilefish are being proportioned to species.

The group agreed, based upon expert opinion, that both an upper and lower bound be used for the period during which unclassified tilefish were present in the landings. The workgroup recommended that an upper bound only be set to account for underreported landings during the period when no unclassified tilefish were reported. See Table 4 for state specific uncertainties.

#### **4.0 Commercial Effort**

The distribution of directed commercial effort in total hook hours and catch in total pounds by year was compiled from the Commercial Fisheries Logbook Program, for the South Atlantic and Gulf of Mexico, and Vessel Trip Reports, for the Mid and North Atlantic for 1990-2015 and supplied here for informational purposes. These data are presented in Figures 5 and 6, respectively.

#### **5.0 Biological Sampling**

Biological sample data were obtained from the TIP sample data at NMFS/SEFSC. Data were filtered to eliminate those records that included a size or effort bias, non-random collection of length data, were not from commercial trips, fish selected by quota sampling, or data not collected shore-side. These data were further limited to those that could be assigned a year, gear, and state. Data that had an unknown sampling year, gear, or sampling state were deleted from the file. TIP data must also be weighted spatially by the landings for the particular year, state, and gear stratum to correct for differences in sampling intensities across states. TIP data were joined with landings data by year, gear, and state. Landings data were also limited to only those

data that could be assigned a year, gear, and state. Landings and biological data were assigned a state based on landing location or sample location if there was no landing location assigned.

Length samples were available from the Northeast Biological Dockside Sampling program in 2015 and from the Virginia Marine Sportfish Sampling program in 2011 and 2012.

## **5.1 Sampling Intensity**

The number of trips sampled ranged from a high of 74 for long line gear in 2000 in the Gulf of Mexico to a low of zero for many strata (Table 5). The number of trips sampled was consistently greater than 10 trips for handline gear from 1984 to 2011 from Cape Canaveral to the NC/VA border, but was always less than 10 for other gears with no samples collected in many years.

The number of fish sampled had a high of 2,783 for long line gear in 1993 for Cape Canaveral to the NC/VA border to lows of zero for many of the strata (Table 6). The number of lengths sampled was consistently greater than 100 from handline gear during 1984 to 1996 and 1998 to 2011 in the region Cape Canaveral to the NC/VA border and for long line in the Gulf of Mexico during 1991 to 2006. For other gears, the numbers of length samples available were below 100 for all years and regions.

The Virginia Marine Sportfish Sampling program provided 53 commercial lengths in 2011 and an additional 5 in 2012. The Northeast Biological Dockside Sampling program provided 480 lengths. These samples were not included in the length compositions due to limited sample size.

## 6.0 Tables

**Table 1** Blueline tilefish landings by gear and region, in whole weight pounds, for all states (ME-TX) by gear. Cells with a ‘\*’ indicate confidential data and therefore were removed.

Year	Atlantic			Gulf of Mexico		
	Total HL	Total LL	Total O	Total HL	Total LL	Total O
1958	367			354	846	25
1959	183		92	159	381	11
1960				18	42	1
1961				106	254	8
1962	517	125	446	157	377	11
1963	517	125	263	140	335	10
1964	61	15	650	16	39	1
1965	3,945	970	605	1,069	2,560	77
1966	737	183	113	595	1,424	43
1967	1,729	439	263	708	1,694	51
1968	680	389	64	447	1,070	32
1969	426	357	20	104	249	7
1970	1,469	493	201	214	512	15
1971	3,043	808	456	602	1,440	43
1972	1,789	499	264	485	1,162	35
1973	8,694	685	1,595	738	1,765	53
1974	20,955	1,038	3,956	707	1,692	51
1975	36,230	1,790	6,816	1,593	3,813	114
1976	36,122	1,576	6,684	3,874	9,273	277
1977	26,352	1,914	2,646	6,989	16,727	500
1978	77,461	2,610	22,497	5,276	12,629	378
1979	57,900	3,225	7,434	5,187	12,414	371
1980	142,390	3,600	9,115	4,774	11,426	342
1981	371,861	18,688	44,911	37,149	88,913	2,660
1982	876,490	66,813	139,319	30,399	72,757	2,177
1983	394,130	115,944	61,190	*	*	*
1984	300,108	119,840	31,313	*	*	*
1985	254,188	45,689	36,984	17,043	40,792	1,220
1986	124,519	130,868	8,853	11,276	80,111	779
1987	91,243	47,943	2,417	20,248	143,848	1,399
1988	63,434	55,436	2,268	21,692	155,474	1,492
1989	64,918	56,451	3,800	8,693	61,794	601
1990	104,364	73,362	3,752	15,019	106,478	1,036
1991	120,463	97,064	26,255	15,707	111,598	2,244
1992	119,888	153,610	7,952	16,840	119,686	2,995

<b>1993</b>	56,291	149,678	10,478	26,336	68,525	3,701
<b>1994</b>	73,148	111,853	4,537	31,852	101,452	9,317
<b>1995</b>	66,099	102,200	2,765	15,243	65,790	19
<b>1996</b>	116,603	31,583	*	14,891	45,513	806
<b>1997</b>	142,377	74,182	3,239	15,187	146,183	5,243
<b>1998</b>	73,752	32,773	1,254	14,235	90,317	140
<b>1999</b>	78,998	36,030	1,107	12,949	64,959	50
<b>2000</b>	74,793	34,198	3,369	5,958	94,359	79
<b>2001</b>	89,254	36,773	1,730	14,391	72,705	305
<b>2002</b>	137,662	125,135	71	9,903	54,084	214
<b>2003</b>	78,358	33,913	5,240	9,009	87,576	72
<b>2004</b>	42,069	27,061	7,435	12,245	114,323	22
<b>2005</b>	57,611	19,920	6,384	13,217	78,372	71
<b>2006</b>	105,607	52,061	15,360	13,443	119,945	36
<b>2007</b>	57,722	7,132	8,582	12,692	117,661	68
<b>2008</b>	210,755	185,931	14,445	8,864	163,877	14
<b>2009</b>	259,815	200,170	14,590	11,377	96,108	7
<b>2010</b>	135,812	292,231	8,802	7,039	23,903	589
<b>2011</b>	19,681	114,999	6,848	4,603	37,640	
<b>2012</b>	32,971	311,239	19,602	24,711	64,389	
<b>2013</b>	56,661	217,831	14,537	13,389	39,685	2
<b>2014</b>	57,021	282,328	16,687	11,841	69,822	160
<b>2015</b>	17,795	119,260	7,107	12,887	42,335	20



**Table 2** Blueline tilefish landings by gear and region, in number, for all states (ME-TX) by gear. Cells with a ‘\*’ indicate confidential data and therefore were removed.

Year	Atlantic			Gulf of Mexico		
	Total HL	Total LL	Total O	Total HL	Total LL	Total O
1958	83			84	165	6
1959	42		22	38	74	3
1960				4	8	0
1961				25	49	2
1962	145	25	116	38	73	3
1963	145	25	71	33	65	2
1964	17	3	159	4	8	0
1965	1,104	196	202	255	499	18
1966	206	37	38	142	278	10
1967	483	89	88	169	330	12
1968	176	78	21	107	208	8
1969	103	72	6	25	49	2
1970	402	99	67	51	100	4
1971	847	163	153	144	281	10
1972	497	101	88	116	227	8
1973	2,525	140	535	176	344	12
1974	6,126	215	1,326	169	330	12
1975	10,584	371	2,284	380	743	27
1976	10,514	328	2,240	924	1,807	66
1977	6,849	389	875	1,667	3,260	118
1978	18,695	530	5,764	1,259	2,462	89
1979	14,718	656	2,228	1,237	2,420	88
1980	35,175	738	2,983	1,139	2,227	81
1981	97,184	3,818	14,327	8,863	17,331	629
1982	246,949	13,660	46,638	7,253	14,182	515
1983	104,698	23,402	20,472	*	*	*
1984	70,869	16,540	10,351	*	*	*
1985	63,773	7,330	12,386	4,206	7,945	289
1986	24,586	21,602	2,651	2,783	15,603	184
1987	21,257	9,774	801	4,997	28,017	331
1988	14,860	8,691	757	5,353	30,281	353
1989	15,442	10,314	1,095	2,145	12,036	142
1990	28,225	14,170	1,187	3,707	20,739	245
1991	31,426	19,703	6,600	3,435	23,866	531
1992	26,457	31,195	2,207	3,485	23,007	708
1993	12,482	34,599	3,390	6,500	11,620	875

<b>1994</b>	16,900	23,417	1,394	11,085	17,884	2,203
<b>1995</b>	17,110	25,494	859	3,850	10,775	5
<b>1996</b>	31,045	8,038	*	3,269	6,693	191
<b>1997</b>	40,545	19,341	787	2,556	25,556	1,240
<b>1998</b>	20,917	6,569	305	2,531	17,942	33
<b>1999</b>	18,853	8,719	269	3,280	13,786	12
<b>2000</b>	19,710	7,137	865	1,391	21,194	19
<b>2001</b>	22,784	7,966	437	3,755	15,049	72
<b>2002</b>	35,097	28,515	17	3,043	10,879	50
<b>2003</b>	22,075	9,582	1,272	2,223	19,593	17
<b>2004</b>	11,485	6,740	1,805	3,022	23,705	5
<b>2005</b>	15,152	5,753	1,555	3,262	14,752	17
<b>2006</b>	30,964	9,011	3,729	3,318	22,397	8
<b>2007</b>	14,557	1,341	2,089	3,132	24,672	16
<b>2008</b>	47,085	32,365	3,508	2,435	32,504	3
<b>2009</b>	52,529	36,373	3,552	2,808	21,823	2
<b>2010</b>	27,702	55,987	2,137	1,737	4,655	139
<b>2011</b>	3,769	22,766	1,677	1,136	7,918	0
<b>2012</b>	6,489	61,625	4,762	5,244	13,261	0
<b>2013</b>	12,847	45,550	3,546	3,304	7,949	1
<b>2014</b>	13,066	68,857	4,053	2,152	14,568	38
<b>2015</b>	4,252	22,600	1,731	3,349	7,771	5

**Table 3** Mean weights by gear, region and year

YEAR	Gulf of Mexico			Keys to Canaveral			Canaveral to NC/VA Border		
	HAND LINE	LONG LINE	OTHER	HAND LINE	LONG LINE	OTHER	HAND LINE	LONG LINE	OTHER
<b>Historical</b>	4.19	5.13	4.23	3.39	4.46	2.98	4.41	4.98	4.12
<b>1983</b>	4.05	5.13	4.23	3.61	4.46	2.98	4.48	4.98	4.12
<b>1984</b>	4.05	5.13	4.23	3.61	4.46	2.98	5.15	7.33	4.12
<b>1985</b>	4.05	5.13	4.23	3.61	5.76	2.98	5.70	6.27	4.12
<b>1986</b>	4.05	5.13	4.23	4.78	4.82	2.98	5.32	6.29	4.12
<b>1987</b>	4.05	5.13	4.23	3.61	4.46	2.98	4.59	4.99	4.12
<b>1988</b>	4.05	5.13	4.23	3.61	4.46	2.98	4.75	6.78	4.12
<b>1989</b>	4.05	5.13	4.23	3.61	4.46	2.98	4.51	5.61	4.12
<b>1990</b>	4.05	5.13	4.23	3.61	4.46	2.98	3.73	5.30	4.12
<b>1991</b>	4.57	4.68	4.23	3.61	4.47	2.98	3.89	4.97	4.12
<b>1992</b>	4.83	5.20	4.23	3.88	5.34	2.98	4.80	4.90	4.12
<b>1993</b>	4.05	5.90	4.23	4.58	4.36	2.98	4.46	4.32	4.12
<b>1994</b>	2.87	5.67	4.23	4.58	3.52	2.98	4.23	4.88	4.12
<b>1995</b>	3.96	6.11	4.23	3.61	3.52	2.98	3.98	4.12	4.12
<b>1996</b>	4.55	6.80	4.23	3.61	3.34	2.98	3.79	4.01	4.12
<b>1997</b>	5.94	5.72	4.23	2.62	4.46	2.98	4.48	3.81	4.12
<b>1998</b>	5.63	5.03	4.23	3.61	4.96	2.98	3.45	4.99	4.12
<b>1999</b>	3.95	4.71	4.23	4.30	4.46	2.98	4.17	4.11	4.12
<b>2000</b>	4.28	4.45	4.23	2.76	4.46	2.98	4.25	4.84	4.12
<b>2001</b>	3.83	4.83	4.23	2.93	5.41	2.98	4.23	4.47	4.12
<b>2002</b>	3.25	4.97	4.23	3.61	5.05	2.98	3.98	4.38	4.12
<b>2003</b>	4.05	4.47	4.23	3.61	5.68	2.98	3.54	3.52	4.12
<b>2004</b>	4.05	4.82	4.23	3.61	4.46	2.98	3.68	4.00	4.12
<b>2005</b>	4.05	5.31	4.23	3.61	4.46	2.98	3.93	3.45	4.12
<b>2006</b>	4.05	5.36	4.23	3.61	4.46	2.98	3.39	5.78	4.12
<b>2007</b>	4.05	4.77	4.23	3.61	4.46	2.98	4.02	5.38	4.12
<b>2008</b>	3.64	5.04	4.23	3.61	4.46	2.98	4.52	5.74	4.12
<b>2009</b>	4.05	4.40	4.23	3.61	5.21	2.98	4.99	5.50	4.12
<b>2010</b>	4.05	5.13	4.23	3.60	4.28	2.98	4.93	5.22	4.12
<b>2011</b>	4.05	4.75	4.23	3.61	4.46	2.98	5.32	5.05	4.12
<b>2012</b>	4.71	4.86	4.23	3.61	4.46	2.98	5.28	5.05	4.12
<b>2013</b>	4.05	4.99	4.23	3.61	4.46	2.98	4.67	4.78	4.12
<b>2014</b>	5.50	4.79	4.23	3.20	4.46	2.98	4.62	4.09	4.12
<b>2015</b>	3.85	5.45	4.23	3.61	4.46	2.98	4.76	5.29	4.12

**Table 4** Uncertainty in commercial landings by data state/region. Upper and lower bounds prior to dividing (red) line. Upper bound only post dividing line. Red cells prior to dividing are exceptions of lower bound only.

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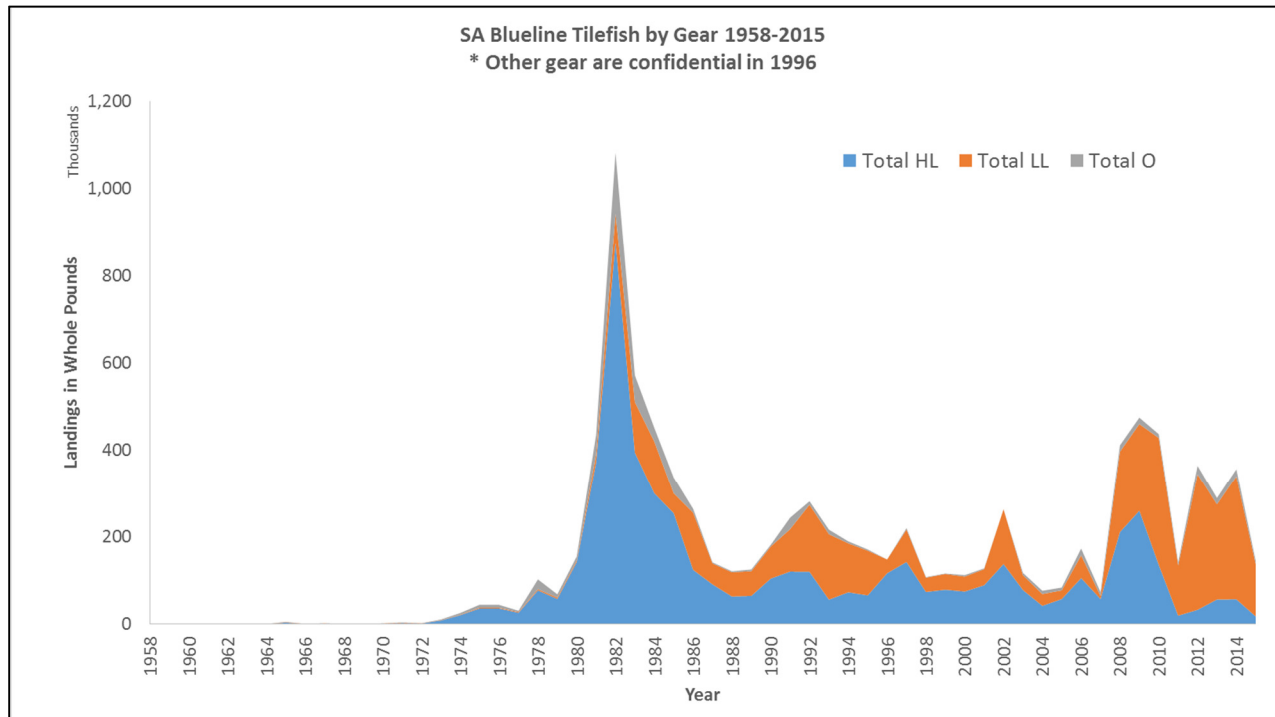
**Table 5** Number of trips without sampling biases sampled for blueline tilefish by year, region, and gear.

YEAR	Gulf of Mexico			Keys to Canaveral			Canaveral to NC/VA Border		
	HAND LINE	LONG LINE	OTHER	HAND LINE	LONG LINE	OTHER	HAND LINE	LONG LINE	OTHER
1983	0	0	0	0	0	0	5	0	0
1984	0	1	0	0	0	0	49	17	0
1985	1	1	1	1	6	0	73	14	0
1986	1	1	0	1	2	0	45	2	0
1987	2	1	0	0	0	0	33	5	0
1988	0	1	0	1	0	0	24	6	0
1989	0	0	0	0	0	0	31	6	0
1990	2	3	1	1	0	0	31	7	0
1991	10	12	4	2	2	0	36	12	0
1992	10	17	1	4	11	0	22	27	0
1993	5	15	1	12	30	0	29	43	0
1994	23	15	1	5	11	0	27	13	0
1995	11	11	3	7	4	0	39	13	0
1996	14	10	0	8	3	0	16	10	0
1997	10	27	2	10	1	0	10	5	0
1998	12	53	0	4	4	0	13	1	0
1999	15	39	0	6	5	0	28	4	0
2000	8	74	1	17	5	0	35	4	0
2001	7	52	0	14	9	0	34	8	0
2002	5	25	2	5	15	1	28	13	0
2003	1	42	3	1	8	0	42	11	0
2004	4	32	3	4	4	0	42	14	0
2005	3	29	0	4	2	0	41	5	0
2006	7	12	0	2	2	0	48	13	0
2007	3	19	0	10	0	0	57	5	0
2008	13	25	0	4	1	0	60	12	0
2009	5	27	1	8	3	3	68	54	0
2010	3	3	0	9	2	2	61	55	2
2011	1	7	3	2	0	0	39	38	0
2012	9	7	1	8	0	0	45	42	1
2013	8	12	0	13	0	4	45	32	0
2014	14	19	3	3	3	1	28	10	0
2015	11	18	0	1	2	0	12	5	1

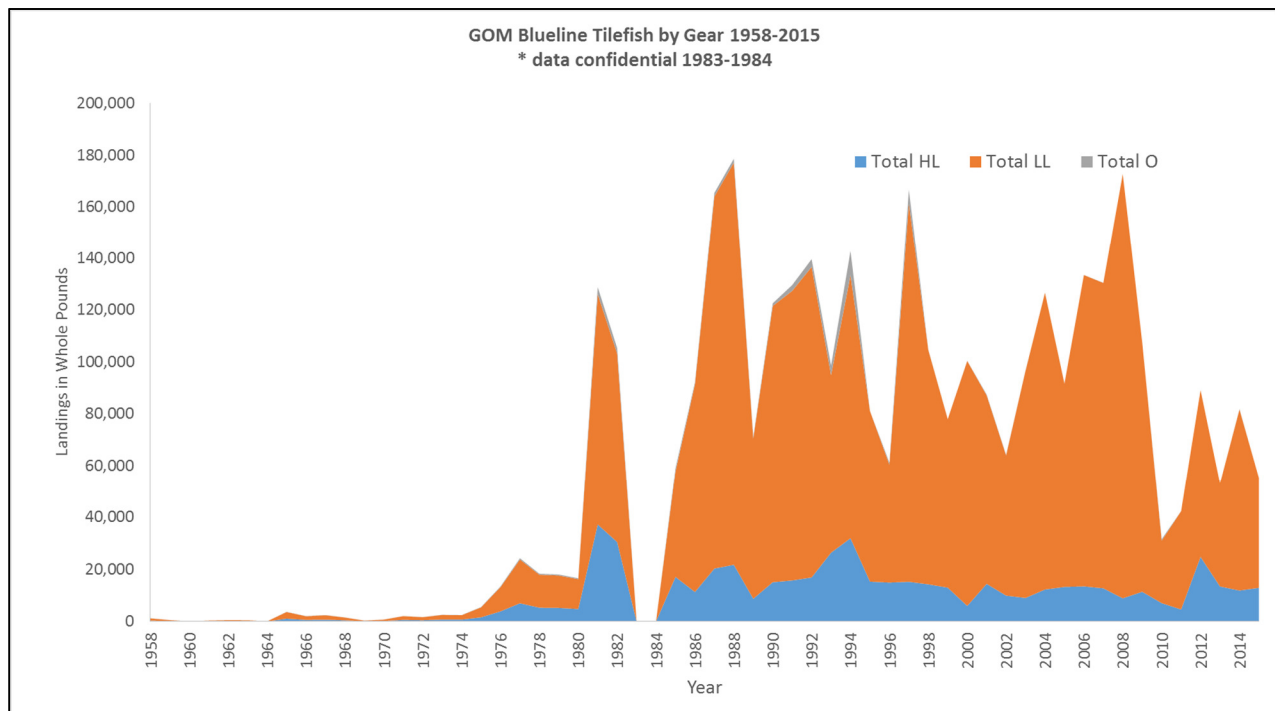
**Table 6** Number of fish sampled without sampling biases for blueline tilefish by year, region, and gear.

YEAR	Gulf of Mexico			Keys to Canaveral			Canaveral to NC/VA Border		
	HAND LINE	LONG LINE	OTHER	HAND LINE	LONG LINE	OTHER	HAND LINE	LONG LINE	OTHER
1983	0	0	0	0	0	0	22	0	0
1984	0	19	0	0	0	0	404	638	0
1985	1	1	2	5	170	0	553	408	0
1986	8	1	0	34	41	0	244	63	0
1987	3	1	0	0	0	0	200	24	0
1988	0	6	0	7	0	0	126	102	0
1989	0	0	0	0	0	0	136	73	0
1990	3	8	2	1	0	0	262	305	0
1991	47	543	12	6	28	0	157	326	0
1992	86	470	2	34	380	0	153	1113	0
1993	29	136	3	122	880	0	217	2783	0
1994	80	499	81	77	134	0	204	212	0
1995	31	264	88	29	34	0	346	250	0
1996	275	251	0	106	34	0	103	349	0
1997	60	488	16	37	24	0	25	113	0
1998	73	1346	0	14	115	0	142	8	0
1999	142	1192	0	113	16	0	229	56	0
2000	83	2448	2	82	28	0	380	90	0
2001	70	1107	0	126	57	0	208	343	0
2002	60	691	22	15	123	2	106	386	0
2003	26	931	6	8	60	0	329	188	0
2004	13	548	98	24	19	0	600	271	0
2005	7	334	0	32	29	0	431	58	0
2006	14	146	0	19	2	0	890	569	0
2007	13	79	0	24	0	0	305	35	0
2008	64	168	0	22	1	0	189	341	0
2009	8	77	1	28	47	14	333	843	0
2010	10	15	0	38	4	9	172	920	17
2011	1	36	8	8	0	0	128	596	0
2012	38	68	1	33	0	0	143	975	15
2013	25	31	0	92	0	28	172	637	0
2014	41	252	18	73	15	1	159	190	0
2015	31	98	0	27	24	0	43	116	10

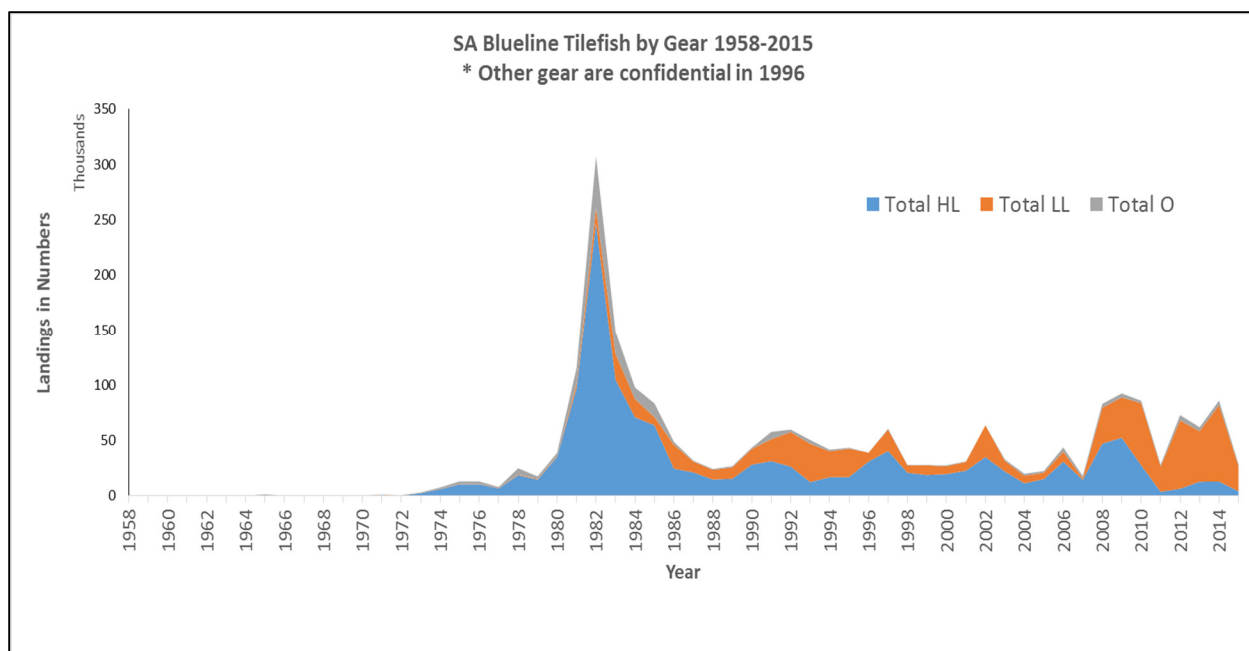
## 7.0 Figures



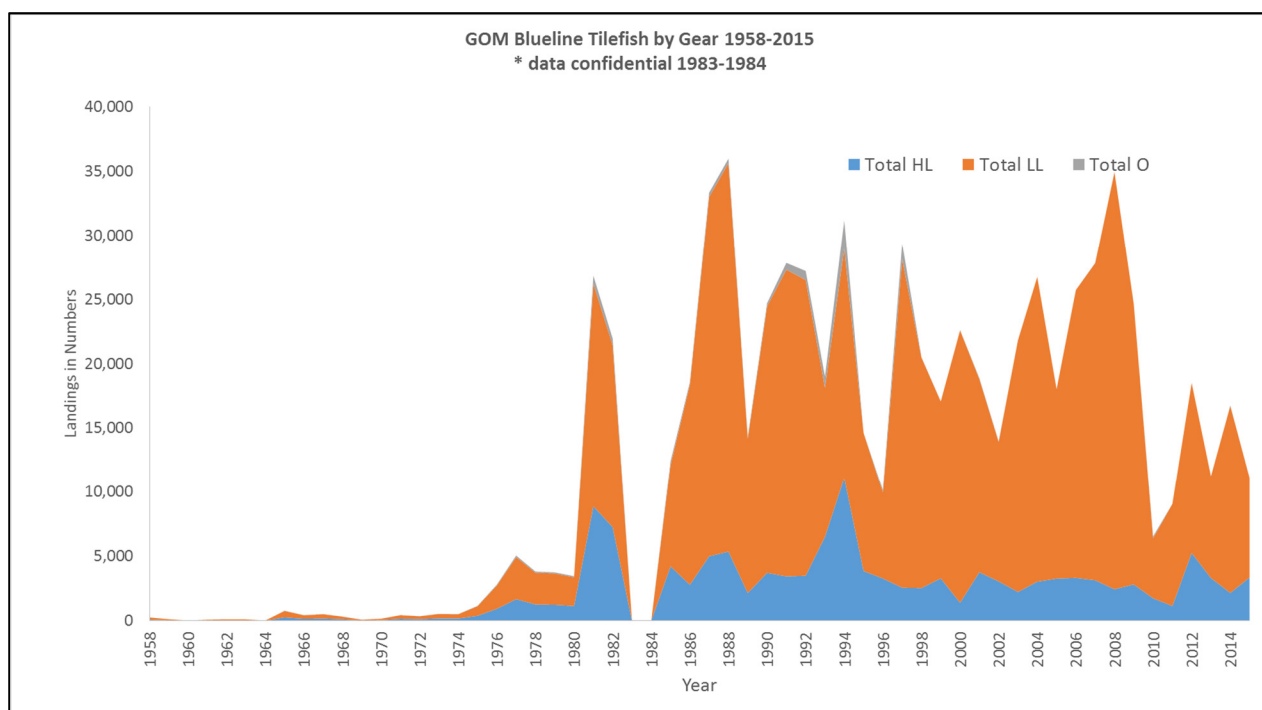
**Figure 1** Blueline tilefish landings, in whole weight pounds, for all states (FL-ME) by gear.



**Figure 2** Blueline tilefish landings, in whole weight pounds, for all states (FL-TX) by gear.

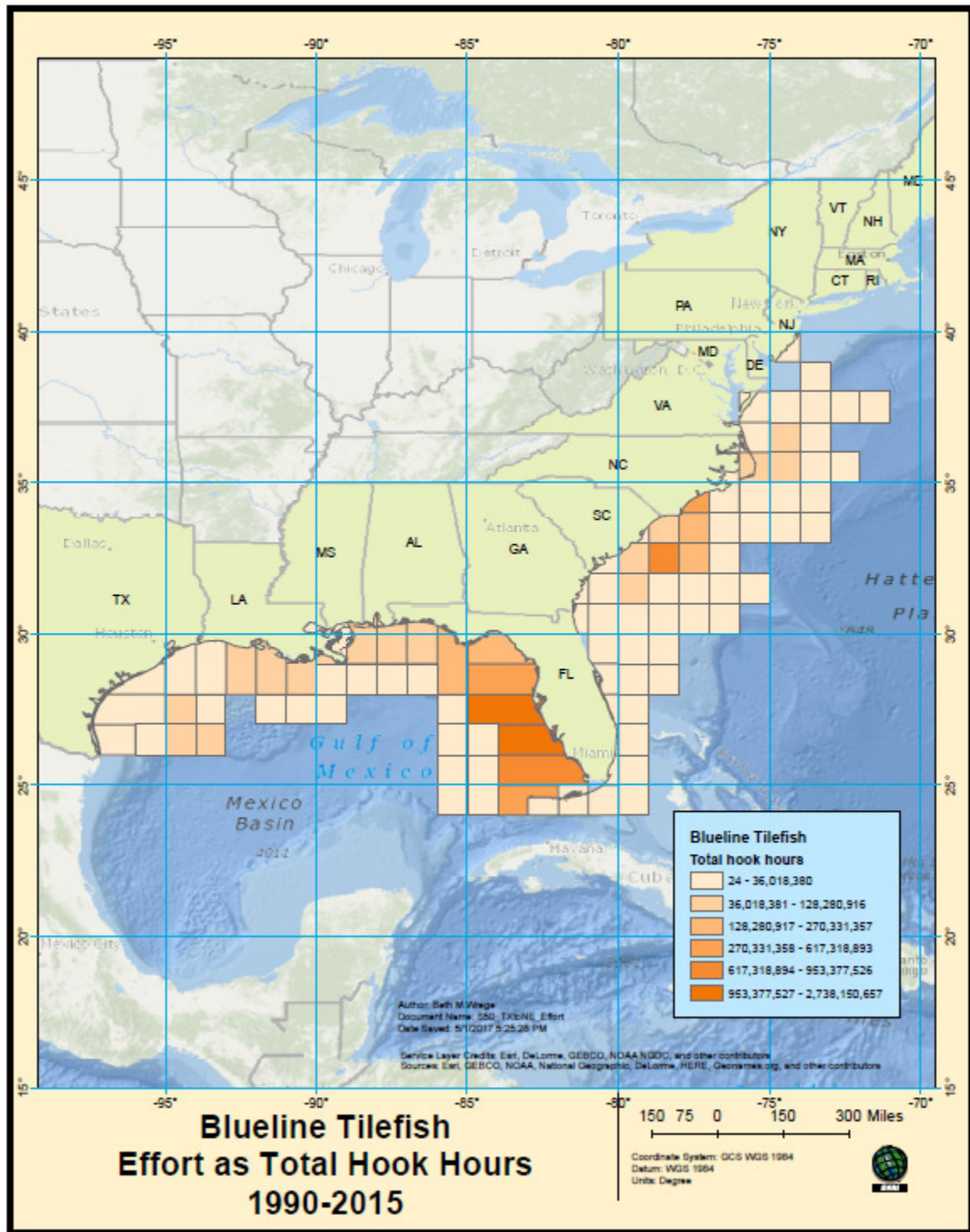


**Figure 3** Blueline tilefish landings, in number, for all states (FL-ME) by gear.

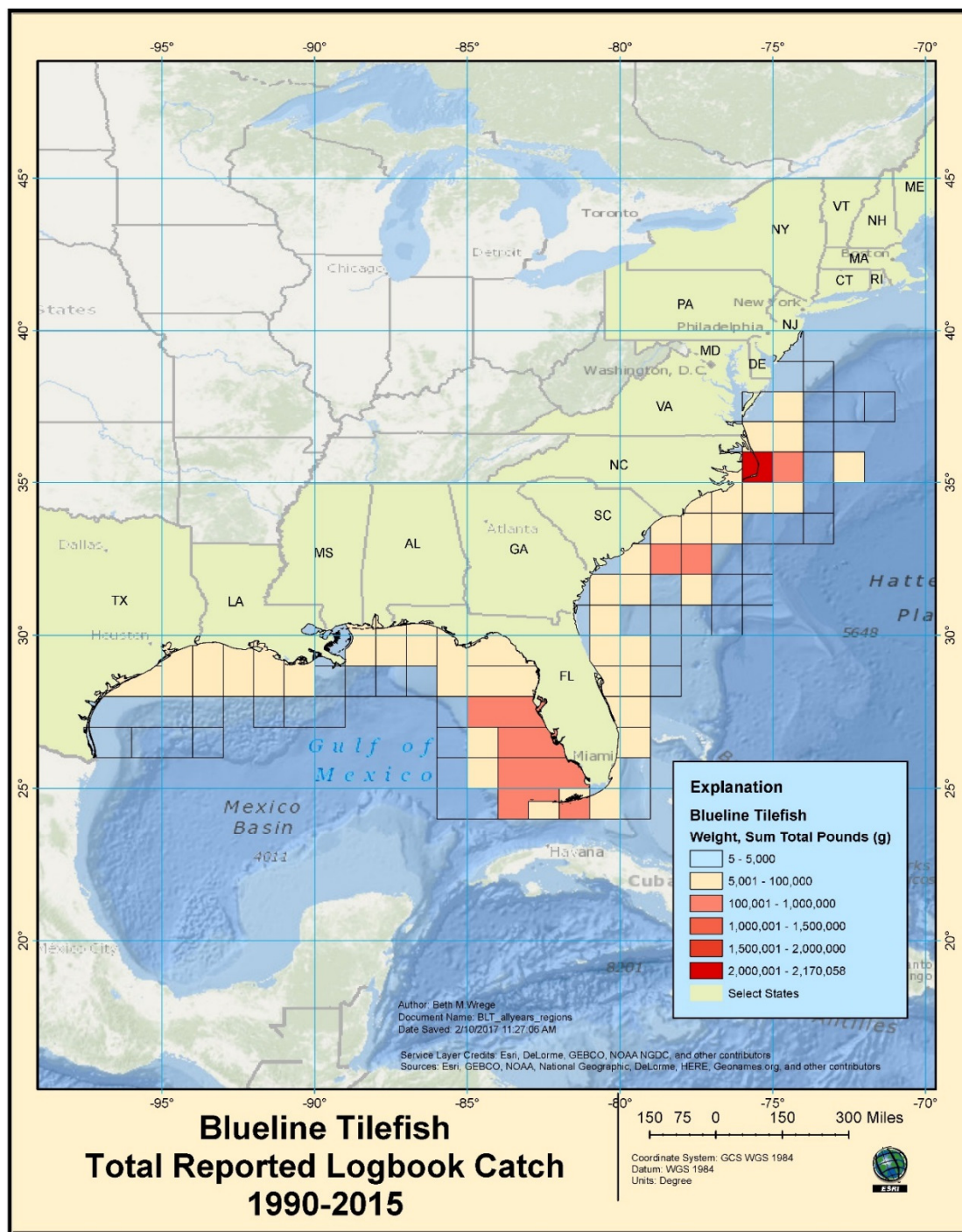


**Figure 4** Blueline tilefish landings, in number, for all states (FL-TX) by gear.





**Figure 5** The distribution of directed commercial effort in total hook hours by year from the Commercial Fisheries Logbook Program, for the South Atlantic and Gulf of Mexico, and Vessel Trip Reports, for the Mid and North Atlantic for 1990-2015



**Figure 6** The distribution of catch in total pounds by year from the Commercial Fisheries Logbook Program, for the South Atlantic and Gulf of Mexico, and Vessel Trip Reports, for the Mid and North Atlantic for 1990-2015