

Commercial King Mackerel Sampling Fractions for North Carolina by District

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Data

Length samples have been collected by the Trip Interview Program (TIP) and several state agencies since 1981. These samples are collected by port agents at docks where commercial catches are landed throughout the Atlantic and Gulf coasts. Trips are randomly sampled to obtain trip, effort, catch and length frequency information. Occasionally there has been quota sampling to obtain age structures on fish that are rare in the catch (extremely large and small fish). These non-random samples are identified in the data to allow removal from analyses were non-random samples are not appropriate.

Commercial catch data has been collected by state and federal personnel as a cooperative data collection effort since the early 1970s. The NMFS houses this data in the Accumulated Landings System (ALS), located on the Oracle server at the Southeast Fisheries Science Center in Miami. The ALS houses landings data for the Atlantic and Gulf States beginning in 1962.

Methods

Length sample data was obtained from the TIP sample database (NMFS/SEFSC), which is a data set of sampling data from commercial, recreational, and research programs. Age data was obtained from the ageing database at Panama City Laboratory. The data used where a subset of the length data, which contained commercial samples from NC that were identified as having no sampling bias. These data were further limited to those that could be assigned a year, gear and district. Those data that had unknown year sampled, gear used or district, were deleted from the file. Further, only gears belonging to hook and line or gill net gear were used.

Sample data was joined with landings data from ALS by year, gear and district (Figure 1, Table 1) for landings in NC. ALS data was also limited to those data that could be assigned a year, gear, and district (Northern, Central and Southern). Data in the ALS and sample data were assigned a district based on landing and sample location. Districts assigned to the data corresponded to the Northern District which is primarily North of Hatteras, the Central District which covers Bogue Banks to Ocracoke Inlet, and the Southern District from Onslow County to the SC border.

Results

Gill nets only had length samples for 1984, 1985 and 1991 in the Northern District and were dropped from the analysis. The mean length sampling fraction was 0.007 with a standard deviation of +/- 0.009 across all districts and years for hook and line. Length sampling fractions ranged from 0.000 to 0.072, with the largest length sampling fraction

(0.072) occurring in Central District in 2000 for hook and line gear. The Central District had the highest mean length sampling fraction across all years with a mean of 0.022 for hook and line (Table 2) (Figure 2). The number of lengths collected ranged from 0 to 1,283 for a single district (Table 3). Age samples were fewer (Table 4), with the mean number of ages obtained summed across all districts, at 39 with standard deviation of 55 between 1990 and 2006. The largest number of ages obtained in a year occurred in the Southern district in 1994 (123). As the length samples and age samples from NC are not linked (separate programs) there may be ages taken that were not random and do not appear in Table 2. NC has been fairly consistent in sampling in the Central District for recent years, however, the Southern and especially the Northern districts need work, which is reflected in the low length sampling fractions for 2001-2006 for the commercial fishery in these districts.

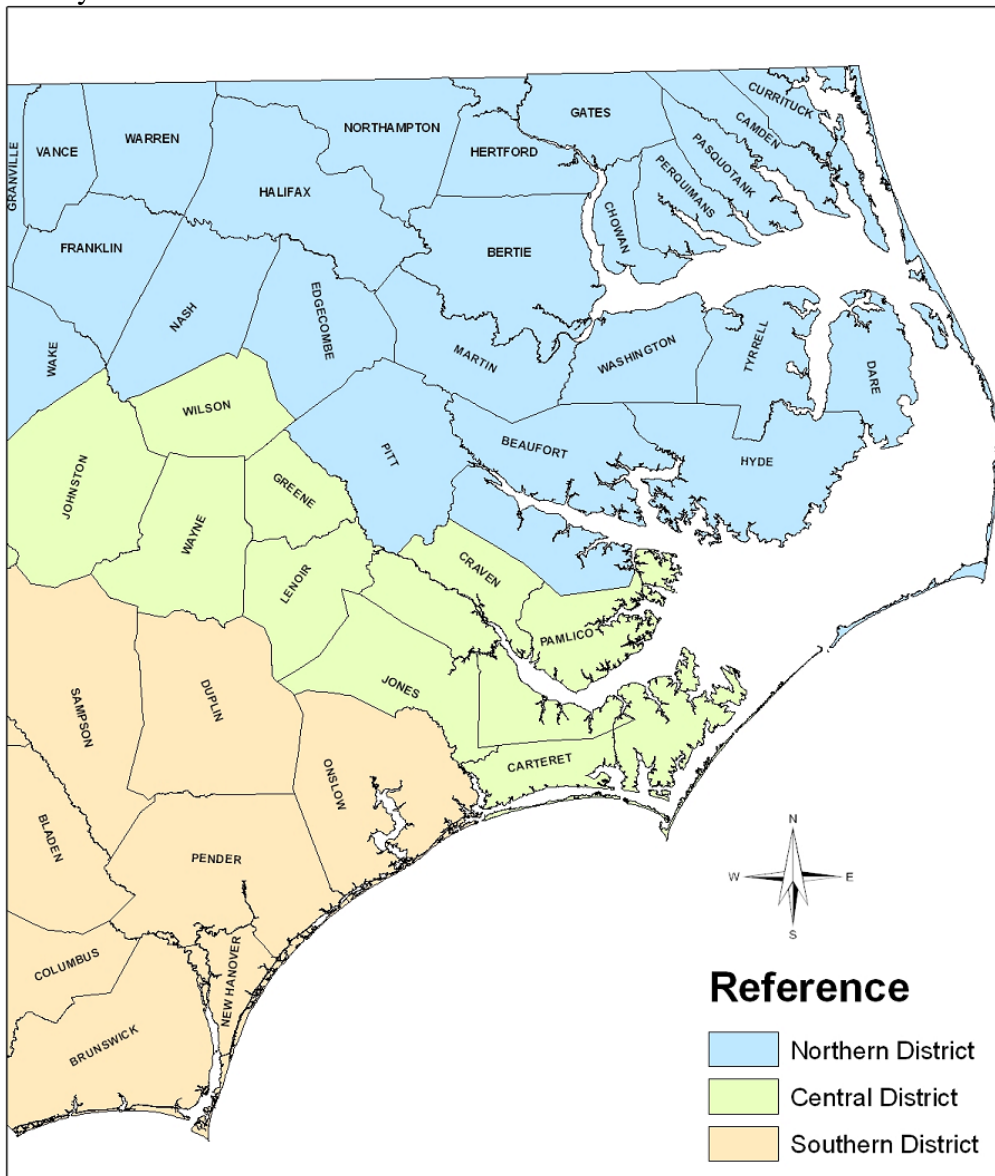


Figure 1. Map of NCDMF districts included in analysis.

Table 1. NC commercial landings (lbs. whole weight) of king mackerel by year and district attributed to hook and line gear.

Year	District		
	Northern	Central	Southern
1981	374,397	31,852	180,080
1982	521,560	105,242	201,985
1983	439,029	125,479	162,114
1984	315,747	126,639	279,946
1985	443,361	191,751	208,694
1986	562,031	108,967	313,491
1987	828,974	220,970	256,847
1988	389,025	127,153	295,246
1989	412,796	81,821	210,928
1990	805,310	110,235	162,456
1991	696,506	109,615	287,286
1992	670,985	31,857	324,441
1993	497,546	70,300	302,876
1994	362,198	66,506	352,407
1995	543,773	58,188	350,280
1996	383,815	35,859	317,968
1997	664,304	50,083	672,117
1998	682,322	75,521	317,927
1999	716,543	26,117	299,649
2000	581,962	40,981	315,673
2001	465,361	42,648	280,857
2002	276,533	35,421	381,156
2003	287,265	29,564	419,599
2004	518,641	44,239	266,169
2005	676,653	42,076	293,849
2006	575,274	39,350	395,827

Table 2. NC commercial length sampling fractions from king mackerel by year and district for hook and line gear.

Year	District		
	Northern	Central	Southern
1981	0.000	0.000	0.000
1982	0.000	0.000	0.000
1983	0.000	0.000	0.001
1984	0.007	0.009	0.004
1985	0.015	0.014	0.012
1986	0.016	0.044	0.003
1987	0.008	0.013	0.006
1988	0.013	0.005	0.007
1989	0.012	0.010	0.006
1990	0.012	0.008	0.010
1991	0.008	0.014	0.006
1992	0.007	0.021	0.003
1993	0.000	0.023	0.010
1994	0.000	0.026	0.003
1995	0.000	0.032	0.002
1996	0.000	0.006	0.009
1997	0.000	0.001	0.003
1998	0.000	0.001	0.006
1999	0.000	0.037	0.017
2000	0.000	0.072	0.020
2001	0.000	0.018	0.022
2002	0.000	0.006	0.003
2003	0.000	0.053	0.001
2004	0.000	0.043	0.008
2005	0.000	0.054	0.004
2006	0.000	0.060	0.001

Table 3. NC commercial lengths collected from king mackerel by year and district for hook and line gear.

Year	District		
	Northern	Central	Southern
1981	0	0	0
1982	0	0	0
1983	0	1	19
1984	246	78	111
1985	540	286	203
1986	904	477	89
1987	598	371	138
1988	540	75	208
1989	620	82	133
1990	1283	76	149
1991	685	155	214
1992	618	85	106
1993	0	153	317
1994	0	158	90
1995	0	184	46
1996	0	26	320
1997	0	3	313
1998	0	7	232
1999	0	107	607
2000	0	443	727
2001	0	93	648
2002	0	16	104
2003	0	232	46
2004	0	265	209
2005	0	342	152
2006	0	285	51

Table 4. NC commercial ages collected from king mackerel by year and district for all gears (may include non-random samples not included in Table 3).

Year	District		
	Northern	Central	Southern
1990	0	32	18
1991	11	39	19
1992	2	47	16
1993	22	55	96
1994	25	18	123
1995	0	20	33
1996	0	8	30
1997	0	0	0
1998	0	0	0
1999	0	1	8
2000	0	0	0
2001	0	0	0
2002	0	29	0
2003	0	0	0
2004	0	4	0
2005	0	0	0
2006	0	0	0

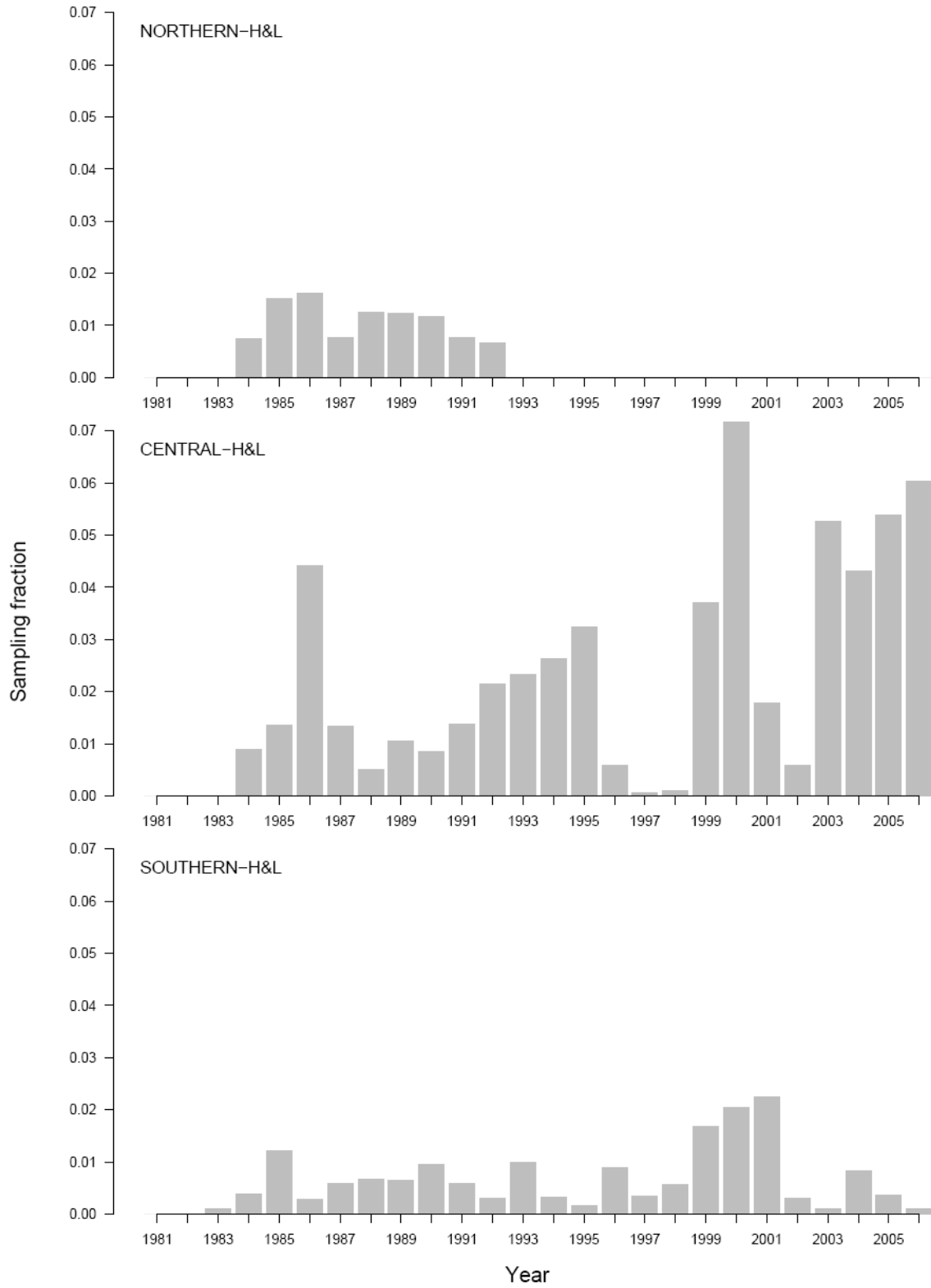


Figure 2. NC length sampling fractions by year and district for hook and line gear.

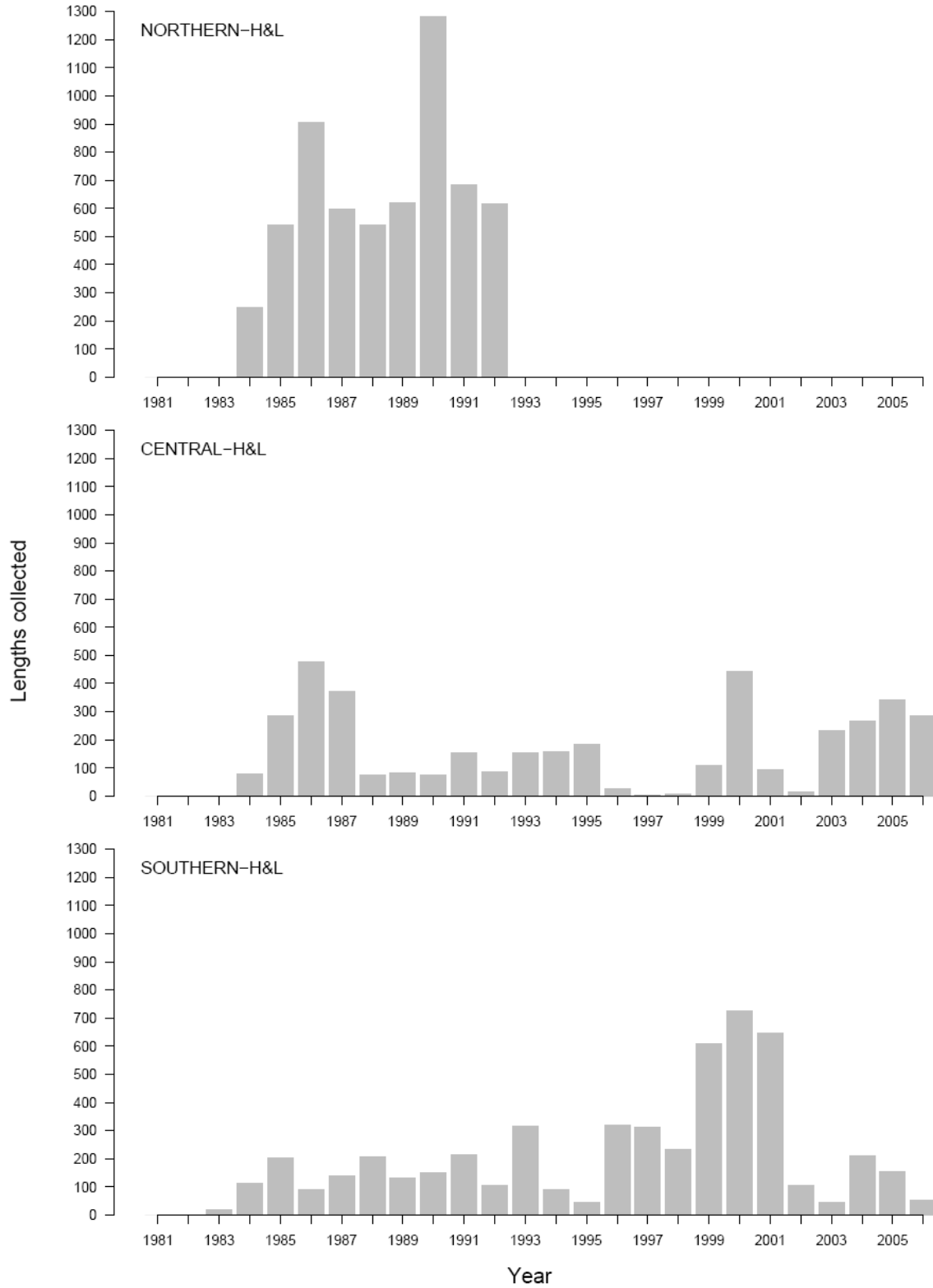


Figure 3. NC lengths collected by year and district for hook and line gear.