SILVER HAKE TABLES

Table A1. Silver hake landings (mt) by stock area during 1955-2004 for foreign and domestic fishing fleets.

Year	Northern stock area			Southern stock area			North plus south stock areas		
	Foreign	Domestic	Total	Foreign	Domestic	Total	Foreign	Domestic	Foreign + domestic
1955		53,361	53,361		13,842	13,842	0	67,203	67,203
1956		42,150	42,150		14,871	14,871	0	57,021	57,021
1957		62,750	62,750		17,153	17,153	0	79,903	79,903
1958		49,903	49,903		13,473	13,473	0	63,376	63,376
1959		50,608	50,608		17,112	17,112	0	67,720	67,720
1960		45,543	45,543		9,206	9,206	0	54,749	54,749
1961		39,688	39,688		13,209	13,209	0	52,897	52,897
1962	36,575	42,427	79,002	5,325	13,408	18,733	41,900	55,835	97,735
1963	37,525	36,399	73,924	74,023	19,359	93,382	111,548	55,758	167,306
1964	57,240	37,222	94,462	127,036	26,518	153,554	184,276	63,740	248,016
1965	15,793	29,449	45,242	283,366	23,765	307,131	299,159	53,214	352,373
1966	14,239	33,477	47,716	200,058	11,212	211,270	214,297	44,689	258,986
1967	6,882	26,489	33,371	81,749	9,500	91,249	88,631	35,989	124,620
1968	10,506	30,873	41,379	49,422	9,074	58,496	59,928	39,947	99,875
1969	8,047	15,917	23,964	67,396	8,165	75,561	75,443	24,082	99,525
1970	12,305	15,223	27,528	20,633	6,879	27,512	32,938	22,102	55,040
1971	25,243	11,158	36,401	66,344	5,546	71,890	91,587	16,704	108,291
1972	18,784	6,440	25,224	88,381	5,973	94,354	107,165	12,413	119,578
1973	18,086	13,997	32,083	97,989	6,604	104,593	116,075	20,601	136,676
1974	13,775	6,905	20,680	102,112	7,751	109,863	115,887	14,656	130,543
1975	27,308	12,566	39,874	65,812	8,441	74,253	93,120	21,007	114,127
1976	151	13,483	13,634	58,307	10,434	68,741	58,458	23,917	82,375
1977	2	12,455	12,457	47,850	11,458	59,308	47,852	23,913	71,765
1978		12,609	12,609	14,353	12,779	27,132	14,353	25,388	39,741
1979		3,415	3,415	4,877	13,498	18,375	4,877	16,913	21,790
1980		4,730	4,730	1,698	11,848	13,546	1,698	16,578	18,276
1981		4,416	4,416	3,043	11,783	14,826	3,043	16,199	19,242
1982		4,656	4,656	2,397	12,164	14,561	2,397	16,820	19,217
1983		5,310	5,310	620	11,520	12,140	620	16,830	17,450
1984		8,289	8,289	412	12,731	13,143	412	21,020	21,432
1985		8,297	8,297	1,321	11,843	13,164	1,321	20,140	21,461
1986		8,502	8,502	550	9,573	10,123	550	18,075	18,625
1987		5,658	5,658	2	10,121	10,123	2	15,779	15,781
1988		6,767	6,767		9,195	9,195	0	15,962	15,962
1989		4,646	4,646		13,169	13,169	0	17,815	17,815
1990		6,379	6,379		13,615	13,615	0	19,994	19,994
1991		6,053	6,053		10,093	10,093	0	16,146	16,146
1992		5,302	5,302		10,288	10,288	0	15,590	15,590
1993		4,360	4,360		12,912	12,912	0	17,272	17,272
1994		5,724	5,724		10,334	10,334	0	16,058	16,058
1995		3,033	3,033		11,694	11,694	0	14,727	14,727
1996		3,200	3,200		12,999	12,999	0	16,199	16,199
1997		2,591	2,591		12,994	12,994	0	15,585	15,585
1998		2,258	2,258		12,701	12,701	0	14,959	14,959
1999		4,042	4,042		9,970	9,970	0	14,012	14,012

2000		2,418	2,418		9,760	9,760	0	12,178	12,178
2001		3,446	3,446		8,694	8,694	0	12,140	12,140
2002		2,839	2,839		5,153	5,153	0	7,992	7,992
2003		1,727	1,727		6,916	6,916	0	8,643	8,643
2004		557	557		7,889	7,889	0	8,445	8,445

Table A1. (cont.)

Table A2. Proportion of total landings (mt) by market category and gear group during 1995-2004.

Market Category	Gillnets	Hook&Line	OtherGear	OtterTrawl	UnkGear	Grand Total
5090 (Round)	0.15%	0.04%	0.32%	65.84%	1.56%	67.91%
5091 (King round)	0.06%	0.00%	0.05%	6.36%	0.06%	6.54%
5092 (Small round)	0.18%	0.02%	0.04%	22.73%	0.10%	23.07%
5093 (Dressed)	0.01%	0.00%	0.95%	0.02%	0.00%	0.97%
5094 (Juvenile)	0.00%	0.00%	0.00%	1.09%	0.19%	1.28%
5095 (Large round)	0.00%	0.00%	0.09%	0.12%	0.02%	0.23%
Grand Total	0.39%	0.06%	1.45%	96.16%	1.93%	100.00%

Table A3. Sampling intensity (length measurements / mt landed) for commercial landings during 1995-2004.

Market Category	Landings (mt)	Gear Groups					
		Gillnets	Hook&Line	OtherGear	OtterTrawl	UnkGear	All
5090 (Round)	85,316	3.91	0	0.34	0.48	0	0.47
5091 (King round)	8,220	0.50	0	0	1.63	0	1.59
5092 (Small round)	28,981	0	9.26	0	0.48	0	0.48
5093 (Dressed)	1,219	0	0	0	0	0	0
5094 (Juvenile)	1,608	No landings	0	0	0.47	0	0.40
5095 (Large round)	289	No landings	0	0	0	0	0
All	125,633	1.54	2.61	0.07	0.55	0	0.54

Table A4. Names, database codes (NESPP3) and groups for species used to estimate discard for silver hake.

Species Group	Species Code (NESPP3)	Species Name	Species Group	Species Code (NESPP3)	Species Name
Monkfish	12	ANGLER	Crabs/Shrimps	711	CRAB
Squid/ButterFish	51	BUTTERFISH	Crabs/Shrimps	712	CRAB
Squid/ButterFish	801	SQUID (LOLIGO)	Crabs/Shrimps	713	CRAB
Squid/ButterFish	802	SQUID (ILLEX)	Crabs/Shrimps	714	CRAB
Squid/ButterFish	803	SQUIDS (NS)	Crabs/Shrimps	715	CRAB
Principal Grndfsh	81	COD	Crabs/Shrimps	718	CRAB
Principal Grndfsh	147	HADDOCK	Crabs/Shrimps	724	CRAB
Principal Grndfsh	153	HAKE	Crabs/Shrimps	727	LOBSTER
Principal Grndfsh	155	HAKE MIX RED & WHITE	Crabs/Shrimps	735	SHRIMP (NK)
Principal Grndfsh	240	REDFISH	Crabs/Shrimps	736	SHRIMP (PANDALID)
Principal Grndfsh	269	POLLOCK	Crabs/Shrimps	737	SHRIMP (MANTIS)
Herring/Shad/Other/Pelagics	112	HERRING	Crabs/Shrimps	738	SHRIMP (PENAEID)
Herring/Shad/Other/Pelagics	347	SHAD	Mollusks	748	QUAHOG
Flatfish	120	FLOUNDER	Mollusks	754	QUAHOG
Flatfish	122	FLOUNDER	Mollusks	764	CLAM NK
Flatfish	123	FLOUNDER	Mollusks	769	CLAM
Flatfish	124	FLOUNDER	Mollusks	775	CONCHS
Flatfish	125	FLOUNDER	Mollusks	776	WHELK
Flatfish	126	FLOUNDERS (NK)	Mollusks	777	WHELK
Flatfish	128	HOGCHOCKER	Mollusks	781	MUSSELS
Flatfish	158	HALIBUT	Mollusks	786	OCTOPUS
Flatfish	159	HALIBUT	Mollusks	799	SCALLOP
Fluke/Fourspot	121	FLOUNDER	Scallops	800	SCALLOP
Fluke/Fourspot	127	FLOUNDER	Urchins/Cumcumbers/Shellfish	805	SEA URCHINS
Hakes+OceanPout	152	HAKE	Urchins/Cumcumbers/Shellfish	806	SEA CUCUMBERS
Hakes+OceanPout	250	POUT	Urchins/Cumcumbers/Shellfish	828	STARFISH
Hakes+OceanPout	508	HAKE	Other Species	1	ALEWIFE
Hakes+OceanPout	509	HAKE	Other Species	23	BLUEFISH
Atlantic herring	167	HERRING (NK)	Other Species	24	SQUIRRELFISH
Atlantic herring	168	HERRING	Other Species	33	BONITO
Atllantic mackerel	212	MACKEREL	Other Species	87	CREVALLE
Menhaden	221	MENHADEN	Other Species	90	CROAKER
Scup/Seabass	329	SCUP	Other Species	93	CUNNER
Scup/Seabass	335	SEA BASS	Other Species	96	CUSK
Dogfishes	350	DOGFISH (NK)	Other Species	106	DRUM
Dogfishes	351	DOGFISH SMOOTH	Other Species	107	DRUM
Dogfishes	352	DOGFISH SPINY	Other Species	115	EEL
Other sharks	353	SHARK	Other Species	116	EEL
Other sharks	357	SHARK	Other Species	117	EEL
Other sharks	359	SHARK	Other Species	130	FLOUNDER
Other sharks	478	SHARK	Other Species	133	GARFISH
Other sharks	482	SHARK	Other Species	134	GIZZARD SHAD
Skates/Rays	365	SKATES	Other Species	150	HAGFISH
Skates/Rays	366	SKATE	Other Species	165	HARVEST FISH
Skates/Rays	367	SKATE	Other Species	173	SHAD
Skates/Rays	368	SKATE	Other Species	188	JOHN DORY
Skates/Rays	369	SKATE	Other Species	189	DORY
Skates/Rays	370	SKATE	Other Species	194	MACKEREL
Skates/Rays	372	SKATE	Other Species	197	WHITING
Striped Bass	418	BASS	Other Species	210	LUMPFISH
Large Pelagics	466	TUNA	Other Species	213	BLUE RUNNER
Large Pelagics	468	TUNA	Other Species	215	MACKEREL
Crabs/Shrimps	700	CRAB	Other Species	234	MULLETS
Crabs/Shrimps	710	CRAB	Other Species	235	STRIPED MULLET

Table A4 (cont.)

Species Group	Species Code (NESPP3)	Species Name
Other Species	242	ROSEFISH
Other Species	258	PIGFISH
Other Species	267	PINFISH
Other Species	268	LADYFISH
Other Species	272	POMPANO
Other Species	326	SCULPINS
Other Species	327	SEA RAVEN
Other Species	333	SEA BASS
Other Species	334	SEATROUT
Other Species	340	SEA ROBIN
Other Species	341	SEA ROBINS
Other Species	342	SEA ROBIN
Other Species	343	SEA ROBIN
Other Species	344	WEAKFISH
Other Species	345	WEAKFISH
Other Species	356	SHEEPSHEAD
Other Species	364	SKATE
Other Species	371	SMELT
Other Species	381	SPADEFISH
Other Species	384	MACKEREL
Other Species	406	SPOT
Other Species	429	PUFFER
Other Species	430	PUFFER
Other Species	438	TAUTOG
Other Species	444	TILEFISH
Other Species	446	TILEFISH
Other Species	447	TILEFISH (NK)
Other Species	456	TRIGGERFISH
Other Species	512	WOLFFISHES
Other Species	526	OTHER FISH
Other Species	660	OTHER FISH
Other Species	661	OTHER FISH
Other Species	662	OTHER FISH
Other Species	664	OTHER FISH
Other Species	667	OTHER FISH
Other Species	668	OTHER FISH
Other Species	678	OTHER FISH
Other Species	679	OTHER FISH
Other Species	681	OTHER FISH
Other Species	686	OTHER FISH
Other Species	687	OTHER FISH
Other Species	688	OTHER FISH
Other Species	733	SHRIMP ROYAL RED
Other Species	778	WHELK
Other Species	796	SCALLOPS NK
Other Species	804	MOLLUSKS NK

Table A5. Names, database codes (NEGEAR) and groups for fishing gear used to estimate discard for silver hake. "Total Hail Weight" is the total hail weight for landings by the gear group in observer data for 2001-2004 (a measure of potential importance for each gear group).

Gear Group	Gear Code (NEGEAR)	Gear Name	Total Hail Weight (mt)
Dredges	132	DREDGE, SCALLOP,SEA	8,172
Gill/set nets	100	GILL NET, FIXED OR ANCHORED,SINK, OTHER/NK SPECIES	2,999
Gill/set nets	105	GILL NET, ANCHORED-FLOATING, FISH	13
Gill/set nets	116	GILL NET, DRIFT-FLOATING, FISH	50
Hook & line	10	LONGLINE, BOTTOM	265
Shrimp trawls	58	TRAWL,OTTER,BOTTOM,SHRIMP	18
Trawls	50	TRAWL,OTTER,BOTTOM,FISH	14,823
Trawls	52	TRAWL,OTTER,BOTTOM,SCALLOP	39
Other/unknown gear	20	HANDLINE	0.21
Other/unknown gear	60	TROLL LINE, OTHER/NK SPECIES	0.01
Other/unknown gear	117	GILL NET, DRIFT-SINK, FISH	554
Other/unknown gear	120	PURSE SEINE, OTHER/NK SPECIES	217
Other/unknown gear	121	PURSE SEINE, HERRING	2,324
Other/unknown gear	170	TRAWL,OTTER,MIDWATER PAIRED	15,685
Other/unknown gear	181	POTS + TRAPS,FISH	2
Other/unknown gear	200	POT/TRAP, LOBSTER OFFSH NK	0.19
Other/unknown gear	360	SCOTTISH SEINE	25
Other/unknown gear	370	TRAWL,OTTER,MIDWATER	2,848

Table A6. Number of trips with observers during 2001-2004 used to estimate discard rates and discard for silver hake, by primary species group and gear group.

Species Group	Gear Groups								Total
	Dredges	Gill/set nets	Hook & line	Shrimp trawls	Bottom Trawls	Purse seines	Midwater trawls	Other/ unknown gear	
Atlantic herring	0	5	0	0	12	27	27	82	153
Atllantic mackerel	0	10	0	0	8	0	2	15	35
Bonito	0	3	0	0	0	0	0	1	4
Crabs/Shrimps	0	6	0	31	66	0	0	5	108
Dogfishes	0	242	2	0	16	0	0	0	260
Flatfish	0	229	0	0	722	0	0	13	964
Fluke/Fourspot	0	54	1	0	358	0	0	4	417
Hakes+OceanPout	0	2	0	0	93	0	3	6	104
Herring/Shad/Other	0	16	0	0	3	0	0	0	19
Large Pelagics	0	9	1	0	0	0	0	0	10
Menhaden	0	75	0	0	0	2	0	0	77
Mollusks	0	0	0	0	1	0	0	0	1
Monkfish	0	865	0	0	147	0	0	0	1012
Other Species	0	928	3	0	51	0	0	1	983
Principal Grndfs	0	1595	146	0	559	0	0	5	2305
Scallops	285	0	0	0	37	0	0	0	322
Scup/Seabass	0	1	0	0	67	0	0	9	77
Skates/Rays	0	218	0	0	102	0	0	0	320
Squid/ButterFish	0	5	0	0	233	0	12	0	250
Striped Bass	0	90	3	0	5	0	0	0	98
Total	285	4353	156	31	2480	29	44	141	7519

Table A7. Discard to kept (DK) ratios and mean annual discard (mt y^{-1}) for silver hake from ratio estimators, by primary species group and primary gear group, based on observer data for 2001-2004. Results are sorted in descending order by DK ratio. Primary species group and gear group combinations not shown had DK ratios < 0.00001. The CV for the DK ratio is the same as the CV for discard because landings were assumed measured without error. The "Assumed stock area" for cases with mean annual discard > 70 mt per year is the principle silver hake stock area for landings and discards based on the primary geographical location of the fishery. Landings for crabs/shrimps in shrimp trawls also include landings for crabs/shrimps in other/unknown gear.

Species Group	Gear Group	N trips	DK ratio	CV	Mean 2001 - 2004 landings (mt y^{-1})	Mean discard 2001-2004 (mt y^{-1})	Assumed stock area
Hakes+OceanPout	Other/unknown gear	6	0.24082	1.46	297	72	South
Hakes+OceanPout	Bottom trawls	93	0.12455	0.20	9,822	1,223	South
Squid/ButterFish	Bottom trawls	233	0.02423	0.24	24,673	598	South
Crabs/Shrimps	Shrimp trawls	31	0.02150	0.32	73,479	1,580	North
Dogfishes	Bottom trawls	16	0.00946	0.39	232	2.2	
Monkfish	Bottom trawls	147	0.00830	0.14	12,672	105	South
Principal Grndfsh	Other/unknown gear	5	0.00458	0.91	415	1.9	
Flatfish	Bottom trawls	722	0.00437	0.15	17,133	75	
Principal Grndfsh	Bottom trawls	559	0.00434	0.14	19,112	83	
Flatfish	Other/unknown gear	13	0.00406	0.84	651	2.6	
Atlantic herring	Bottom trawls	12	0.00371	1.04	7,678	28	
Scup/Seabass	Bottom trawls	67	0.00189	0.41	2,775	5.2	
Flatfish	Gill/set nets	229	0.00166	0.41	648	1.1	
Fluke/Fourspot	Bottom trawls	358	0.00085	0.28	5,831	5.0	
Squid/ButterFish	Midwater trawls	12	0.00080	0.90	176	0.1	
Principal Grndfsh	Gill/set nets	1595	0.00045	0.13	5,892	2.7	
Scallops	Bottom trawls	37	0.00028	0.73	14,540	4.1	
Atlantic herring	Other/unknown gear	82	0.00020	0.63	38,263	7.7	
Skates/Rays	Bottom trawls	102	0.00020	0.35	9,897	2.0	
Dogfishes	Gill/set nets	242	0.00011	0.27	1,156	0.1	
Other Species	Bottom trawls	51	0.00011	0.81	5,612	0.6	
Scallops	Dredges	285	0.00010	0.37	191,675	19.2	
Monkfish	Gill/set nets	865	0.00006	0.25	8,428	0.5	
Atlantic herring	Midwater trawls	27	0.00005	0.73	26,953	1.3	
Skates/Rays	Gill/set nets	218	0.00003	0.72	3,292	0.1	
Crabs/Shrimps	Bottom trawls	66	0.00002	0.60	1,057	0.0	
All	All	6073		0.17	482,358	3,820	na

Table A8. Number of successful random tows (SHG code <= 136) for offshore strata during fall NEFSC bottom trawl surveys during 1963-2004. Cells with zero tows are black. Strata are assigned to stock ("S" for southern and "N" for northern).

		Year of Survey																																							
Stratum	Stock	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04
1010	S	5	4	4	4	9	9	7	9	8	7	8	6	8	8	7	8	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
1020	S	5	4	4	4	8	7	10	7	7	7	7	7	7	8	7	7	7	7	7	7	7	7	6	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
1030	S	5	4	4	4	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2
1040	S	2	3	4	4	3	3	3	3	3	3	3	3	2	3	3	1	3	3	3	3	2	3	2	3	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1
1050	S	4	5	3	5	4	5	7	5	8	7	5	6	6	6	5	10	10	4	5	5	5	5	4	5	5	5	5	5	5	5	5	6	3	5	5	5	5	5	5	4	5	5
1060	S	7	5	5	5	9	7	11	8	11	11	8	8	9	8	7	17	16	8	8	8	8	6	8	8	8	7	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
1070	S	5	4	4	5	5	4	3	4	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
1080	S	2	3	4	3	3	3	3	3	3	3	3	3	2	3	2	3	3	2	2	3	2	3	2	3	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1
1090	S	4	5	5	5	6	7	5	7	8	5	5	5	5	5	5	10	15	5	5	5	5	5	4	4	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
1100	S	4	5	5	5	6	9	8	9	11	9	8	8	9	8	9	15	16	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
1110	S	2	4	4	4	5	3	3	3	3	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
1120	S		3	4	4	4	2	3	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1130	S	5	5	7	6	8	8	9	7	9	9	9	9	9	9	10	18	18	9	9	8	9	9	9	9	10	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
1140	S	6	5	5	4	4	4	4	4	4	4	4	4	4	4	4	4	4	5	4	3	5	4	4	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
1150	S	1	3	3	4	3	4	3	4	3	3	3	4	3	3	3	3	2	2	2	3	2	3	2	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1160	S	7	7	7	7	8	8	12	8	11	12	11	12	11	10	17	30	20	20	10	10	9	10	10	10	10	10	10	16	10	10	10	13	11	10	10	10	10	10	10	10	11	10
1170	S	5	6	4	5	3	4	4	4	4	4	4	4	4	4	7	8	4	8	4	3	3	4	4	4	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2	4
1180	S	1	2	4	3	3	3	3	3	3	3	3	3	3	3	1	5	3	3	3	1	3	3	4	3	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2
1190	S	4	6	5	6	9	9	9	9	9	9	9	9	9	9	11	18	18	9	9	9	9	9	8	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
1200	N	4	5	5	5	6	6	6	6	6	6	6	6	6	5	7	14	12	6	9	6	6	6	5	5	6	6	6	6	5	5	6	6	6	6	6	6	6	6	6	6	6	6
1210	N	6	4	5	5	4	4	4	4	4	4	4	4	4	3	8	8	8	7	4	4	4	4	4	4	4	4	4	4	4	4	3	4	4	4	4	4	4	4	4	4	4	4
1220	N	2	5	6	6	4	4	4	4	4	4	4	4	4	3	4	10	8	8	5	4	4	4	4	4	4	4	4	4	4	4	5	4	4	4	4	4	4	3	4	4	4	4
1230	N	3	6	6	6	6	5	5	6	5	5	5	5	5	5	10	11	14	5	4	5	5	4	5	5	5	5	5	5	5	5	5	5	5	5	6	5	5	5	5	5	5	5
1240	N	11	6	6	6	5	6	6	8	7	6	7	6	7	5	12	23	23	6	6	8	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
1250	N	2	4	3	4	4	4	4	3	4	4	4	4	4	4	7	4	11	4	2	4	4	3	4	3	3	4	3	4	3	3	2	4	3	3	4	4	4	3	4	4	4	4
1260	N	7	4	4	4	5	4	5	5	5	5	5	5	15	9	9	15	19	5	6	5	5	4	5	5	5	5	5	5	5	4	4	5	5	5	5	6	9	5	5	3	5	5
1270	N	2	4	4	4	4	4	4	4	4	4	4	4	4	4	9	7	8	4	4	4	4	4	4	4	4	4	4	4	4	5	4	3	4	4	4	5	8	4	4	4	4	4
1280	N	6	5	6	6	7	7	7	7	7	7	7	8	7	6	11	11	15	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
1290	N	15	8	7	5	8	8	8	8	8	9	8	8	8	8	8	16	23	7	8	8	9	8	5	8	8	8	8	8	8	8	8	8	9	7	8	8	7	8	8	8	8	8
1300	N	1	2	3	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3
1310	N	9	4	5	6	5	6	7	8	6	7	7	7	6	7	6	6	5	6	7	7	5	6	5	7																		
1320	N	6	5	5	5	4	5	5	5	5	5	6	5	5	4	5	4	4	5	5	5	5	6	5	5																		
1330	N	4	4	4	4	3	4	3	4	4	4	3	4	4	4	3	4	4	3	4	3	4	4	2	4	4	3	4	4	4	3	4	5	4	1	4	3	4	4	4	3	4	3
1340	N	5	6	5	5	5	5	5	5	6	6	5	6	7	6	4	6	6	6	6	6	5	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	5	6	5	6	6	6
1350	N		4	4	4	4	2	3	3	3	4	3	5	4	1	3	5		4	4	4		4	4	4																		
1351	S																									2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
1360	S	9	8	5	6	7	9	8	9	10	9	10	10	9	8	9	9	8	8	8	9	4	8	8	8	8	7	8	8	8	8	8	8	8	8	8	11	9	7	8	8	8	8
1370	S	5	5	5	5	4	5	5	5	6	5	5	6	6	6	7	15	14	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	6	5	5	5	10	5	5	5	5	5
1380	S	7	6	7	5	4	4	5	6	5	5	6	5	5	5	8	19	18	5	5	5	5	5	5	5	5	5	5	5	5	5	4	5	7	5	5	8	9	5	5	4	5	4
1390	S	2	3	3	4	2	3	3	3	5	5	3	5	5	4	4	14	11	4	5	5	3	4	5	5	3	5	3	5	5	4	5	4	5	5	4	8	5	5	6	4	4	3
1400	S	3	2	4	4	4	3	3	3	2	3	3	3	3	2	3	11	10	3	2	3	3	3	3	3	3	3	3	2	3	2	3	3	3	3	3	6	3	3	3	3	2	1
1410	S			4	4	6	6	6	15	17	18	15	18	16		18																											
1420	S			2	2	4	4	4	6	6	6	6	6	6		6																											
1490	S								3	3	3	3	3	3		3																											
1610	S					5	5	3	5	3	3	4	4	5	4	5	4	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
1620	S					2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	2	2	2	2	2	2	2	3	2	2	2	2	2	2	2	2	3	2	2	2
1630	S					2	2	2	2	2	2	2	2	2	2	2	2	1	1	2	2	2		2	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	1	2	2	2
1640	S					2	2	2	2	2	2	2	2	2	2	2	2	1		2	2	2	3	2	2	1	1	1	1	1	1		1	1	1	1	1	1	1		1		1
1650	S					7	10	9	9	7	7	7	8	8	10	10	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
1660	S					3	3	3	3	4	3	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
1670	S					3	2	2	2	3	2	2	2	2	2	1	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2
1680	S					2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	1	2	2		1	1	1	1		1	1	1	1	1	1	1	1	1	1	1	1
1690	S					8	9	6	8	7	6	6	5	7	10	10	6	6	7	6	6	6	5	7	6	6	6	6	6	6	6	6	6	5	6	6	6	6	6	6	6	6	6
1700	S					3	5	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	2	4	4	4	4	4	4	4	4	4	4	4	4	4	3	4
1710	S					3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	2	2	2	2	2	2	2	2	1	2	2	2	3	1
1720	S					3	2	2	2	3	2	2	1	2	2	2	1	2	2	2	1	2	2	2	2	1	1	1		1		1	1	1	1	1	1	1	1	1	1	1	1
1730	S					7	7	5	7	5	5	6	5	5	8	8	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	6	5	5	5	5	5	5	5	5	5	5
1740	S					5	5	4	5	4	4	4	4	5	5	5	4	4	4	4	5	4	4	4	3	4	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	5
1750	S					3	2	3	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2
1760	S					2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1990																																								2			1

Table A9. Number of successful random tows (SHG code <= 136) for inshore strata during fall NEFSC bottom trawl surveys during 1963-2004. Cells with zero tows are black. Strata are assigned to stock ("S" for southern and "N" for northern).

		Year of Survey																																							
Stratum	Stock	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04
3010	S										2	2		2	1	1	1	1		1	1	1	1	1	1	1	2																
3020	S										2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2
3030	S										2	2		2	1	1	1	1	1	1				1	1				1	1	1	1		1	1	1	1	1	1	1	1		1
3040	S										2	2	2	2	2	2	2	2	2	2	3	3	2	2	2	2	1	3	2	2	2	2	3	2	2	2	2	2	2	2	2	3	2
3050	S										2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
3060	S										2	2		1		1		1	1					1	1					1	1	1	1	1	1	1	1	1	1	1		1	1
3070	S										2	2	1	3	3	2	3	2	2	3	2	3	3	2	2	2	1	3	3	2	2	2	2	2	2	2	2	2	2	2	3	2	2
3080	S										2	2	4	2	2	2	2	2	2	2	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
3090	S										2	2		2	1	1	1	1	1	1	1		1	1	1				1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3100	S										2	4	2	2	2	2	2	1	2	2	2	3	2	2	2	2	2	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
3110	S										3	5	3	3	2	2	2	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
3120	S										5	6			1	1	1	1	1	1		1	1	1	1			1		1	1	1	1	1	1	1	1	1	1	1	1	1	1
3130	S										4	6	2	3	2	2	2	2	2	2	3	2	2	2	2	2	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2
3140	S										5	14	4	3	2	2	2	2	1	2	2	2	2	2	2	2	2	2	4	2	2	2	2	2	2	2	2	2	2	2	2	2	2
3150	S										3	2				1	1	1			1	1		1	1				1	1		1	1	1			1	1	1	1		1	
3160	S										3	2	2	3	3	2	2	2	2	3	2	2	3	2	2	2	2	3	2	2	3	2	2	2	2	2	2	2	2	2	2	2	3
3170	S										4	3	3	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	2	2
3180	S										2	3		2	1	1	1	1	1	1			1	1	1					1	1	1	1	1	1	1	1		1	1	1	2	1
3190	S										4	3	2	3	2	2	2	2	2	2	3	2	2	2	2	2	2	3	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2
3200	S										3	4	4	2	2	2	2	2	2	2	2	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
3210	S										3	2		2	1		1	1	1	1	1	1	1	1	1			1	1	1	1	1		1						1	1		1
3220	S										3	2	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
3230	S										3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
3240	S										3	2		2	1	1	1	1	1	1	1	1	1	1	1			2	2	2	1	2	2	2	2	2	2	1	2	2	2	2	2
3250	S										4	3	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2
3260	S										3	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
3270	S										1	2		2	1	1	1	1	1	1			1	1				1		1	1	1	1	1	1		1	1			1	1	
3280	S										3	3	3	2	2	2	2	2	2	2	3	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	3	2	2	2
3290	S										3	2	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
3300	S										4	2		2	1	1	1		1	1			1	1	1			1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
3310	S										3	4	3	3	2	2	2	2	2	2	3	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
3320	S										2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
3330	S										2	1		2	1	1	1	1	1	1		1	1	1	1			1	1	1	1	1	1	1		1	1	1		1	1	1	
3340	S										3	3	3	2	2	2	2	2	2	2	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	2	2	2	2
3350	S										2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
3360	S										3	2	2	1	1	1	1	1	1	1	1	1	1	1				1	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2
3370	S										4	4	4	3	2	2	2	2	2	2	2	2	2	2	2	2	2	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
3380	S										3	3	4	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
3390	S										2	2		2	1	1	1	1	1	1		1	1	1	2			1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
3400	S										3	3	2	2	2	2	2	2	2	2	3	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2
3410	S										4	4	4	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
3420	S										2	2		1	1	1	1	1	1	1	1	1	1	1	1				1	1	1	1	1	1	1	1	1	1	1	1	1		
3430	S										3	2		4	2	2	2	2	2	2	2	2	2	2	2	2	2	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
3440	S										2	4	4	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
3450	S										1			2		2	2	1	2	1	2	1	2	1	2	2	1	2	2	2	2	2	2	2	2	2	3	2	2	2	1	2	2
3460	S															2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	2	2	2	2	2	2	2	2
3520	S																							4																			
3550	S																	4	4	3	2	4	4	3	2	4	4	4	5	5	5	5	5	5	4	5	5	5	5	3	5	4	4
3560	N																	1	1				1		1	1	1		1	1	1	1		1	1	1	1	1			1		1
3580	N																	1	1		1	1	1	1		1	1			1	1	1	1		1	1	1	1	1	1	1		1
3590	N																	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1		1	1	1	1	1	1	1		1
3600	N																	2	2		2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	1	2	2
3610	N																	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	3	1	2	2	2	2	2	2	2	2	2
3630	N																									2					1		1		1		1	1					
3640	N																			1	1			1		1				1	1		1		1		1	1	1	1	1	2	
3650	N																	1	1	1	1	1		2	1	1	1		1	1	1	1	1		1	1	1	1	2	2			
3660	N																	2	3	3		2	1	2	2	2	2		2	1	2	2	1	1	2	2	2	2	2	2	3	1	2
3890	N																							1																			
3900	N																							2																			

Table A10. Number of successful random tows (SHG code <= 136) for offshore strata during spring NEFSC bottom trawl surveys during 1968-2005. Cells with zero tows are black. Strata are assigned to stock ("S" for southern and "N" for northern).

		Year of Survey																																										
Stratum	Stock	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05
1010	S						6	7	7	8	7	16	7	6	8	7	8	7	7	8	7	7	7	7	7	7	7	7	7	7	7	7	7	7	8	7	7	7	7	7	7	6	7	7
1020	S						5	7	9	7	8	14	6	8	7	7	8	7	7	7	7	7	7	5	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	7	7
1030	S						4	3	8	3	5	6	3	3	3	3	3	2	3	3	3	3	3	3	3	4	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
1040	S						4	3	3	3	4	3	3	3	2	3	1	3	2	1	3	3	3	2	3	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1050	S						4	5	5	5	5	10	4	6	5	5	7	10	17	3	5	4	4	5	5	5	6	5	5	5	4	4	5	5	4	5	5	5	5	5	5	5	5	5
1060	S						6	8	9	11	9	16	8	9	9	8	10	8	28	8	8	8	9	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
1070	S						4	3	4	3	4	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2
1080	S						3	3	3	3	3	3	3	2	3	2	4	3	3	2	3	3	3	3	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1090	S						4	5	5	6	5	5	4	5	5	6	5	15	18	5	5	5	5	6	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
1100	S						6	8	10	9	8	8	8	7	10	9	8	8	20	8	8	8	7	7	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
1110	S						4	3	4	3	4	3	3	3	3	3	3	3	3	3	3	3	3	4	3	3	2	2	2	2	2	2	3	2	2	2	2	2	2	3	2	2	2	2
1120	S						3	3	3	3	4	3	3	3	3	3	2	3	2	3	3	3	2	2	3	3	1	1	1	1				1	1		1	1	1	1	1	1	1	1
1130	S						7	9	9	13	9	9	8	9	9	9	9	18	8	9	9	9	9	9	8	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
1140	S						4	4	4	4	4	4	3	4	4	5	5	4	4	4	4	4	4	5	4	4	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
1150	S						4	3	3	3	3	3	3	3	3	3	3	3	3	2	3	3	3	2	3	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1160	S						9	14	10	20	13	10	10	10	10	9	12	20	10	10	10	10	11	10	10	10	10	10	10	10	10	10	10	9	10	10	10	10	10	10	10	10	10	10
1170	S						4	4	4	7	4	4	3	4	3	4	4	4	5	4	4	4	4	4	4	4	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
1180	S						3	3	3	2	3	3	3	3	2	2	3	3	2		3	2	3	2	3	3	1	1		1	1	1	1	1	1	2	1	1	1	1	1	1	1	1
1190	S						8	8	8	14	9	9	9	9	9	8	9	18	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
1200	N						6	6	5	9	6	6	6	6	6	6	6	12	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	4	6	6
1210	N						4	4	4	9	4	4	5	4	4	4	4	8	4	4	4	4	4	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	3	4	4	4
1220	N						4	4	4	6	5	4	2	4	4	4	5	8	4	4	4	4	4	5	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
1230	N						6	5	5	7	5	5	5	5	6	6	6	10	5	4	5	5	5	4	5	5	4	4	5	5	4	6	4	4	4	5	5	5	5	5	5	5	5	5
1240	N						6	6	6	10	7	6	6	6	6	7	9	12	6	6	6	6	6	5	6	6	6	6	6	6	6	6	6	6	4	6	9	6	6	6	6	6	6	6
1250	N						4	4	4	4	4	4	3	4	3	3	4	7	2	4	5	3	4	2	4	4	4	2	4	3	4	3	3	3	2	3	4	4	4	4	4	3	4	3
1260	N						3	5	5	5	5	5	5	15	14	14	5	9	5	6	7	5	4	5	5	3	5	5	5	4	5	5	5	5	5	5	8	5	5	5	5	5	5	5
1270	N						4	4	4	5	4	2	4	3	3	4	5	8	4	4	4	4	4	4	4	3	4	4	4	4	4	4	5	4	4	4	6	4	4	4	4	4	4	5
1280	N						7	7	7	7	7	7	6	7	8	9	8	7	7	7	7	7	7	6	7	7	7	7	7	7	7	7	6	7	7	7	11	7	7	7	7	7	7	7
1290	N						8	8	9	8	9	7	5	6	8	8	10	8	8	8	8	8	8	7	8	8	9	8	8	8	8	8	8	8	8	8	9	8	7	8	8	8	8	8
1300	N						3	3	3	3	3	4	2	3	3	3	4	3	3	2	3	3	3	3	3	3	3	2	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3
1310	N						6	7	11	10	7	7	6	7	7	7	8	6	7	5	6	7	5	6	4	6																		
1320	N						5	5	5	7	5	4	4	5	5	5	5	5	5	4	3	3	5	3	5	5																		
1330	N						4	2	5	4	4	4	4		4	4	5	4	4	3	4	3	3	3	3	4	3		4	3		3	3	4	2	4	4		3	4	3	4	3	4
1340	N						5	5	6	7	6	5	5	6	4	6	8	6	6	5	5	6	6	6	6	5	6	6	6	6	3	6	6	6	4	6	6	6	6	6	6	6	6	6
1350	N						3	3	4	2	4	5	4		2	4	5	4	2	2	4	3	1	3	3																			
1351	S																									2	2	2	2	2		2	2	2	2	2	2		2	2	2	2	3	2
1360	S						8	8	8	9	9	8	8	7	9	9	10	8	8	7	8	8	7	6	8	8	8	8	8	8	8	8	8	8	8	8	11	8	8	8	8	8	8	8
1370	S						5	5	5	5	5	4	5	4	5	5	5	5	5	5	5	5	5	5	5	5	5	4	5	5	5	5	5	5	5	5	8	5	5	5	5	5	5	5
1380	S						6	5	5	6	6	5	5	5	7	7	10	9	5	6	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	7	5	5	5	5	5	4	5
1390	S						2	2	3	5	5	4	5		4	5	5	9	3	4	3	5	4	3	5	2	5	5	5	3	4	3	5	5	4	5	7	5	5	4	5	4	3	3
1400	S						2	3	3	4	2	2	2	2	3	3	4	6	2	3	3	3	3	3	2	3	3	3	2	3	3	3	3	3	3	3	5	2	3	3	5	3	3	2
1410	S						6	6	8	15	17	16	13		14		19																											
1420	S						4	4	4	6	6	6	6		6		6																											
1490	S									3	3	3	3		3		3																											
1610	S						3	3	3	4	4	3	1		5	5	4	3	3	3	3	3	3	3	3	4	3	3	3	3	3	3	3	3	4	3	3	3	3	3	3	3	3	3
1620	S						2	2	2	2	2	2	1		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	2	2	2	2	2	2	2	3	2
1630	S						2	2	2	2	2	2	1		2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	2	2	2	2	2	1	2	1	2
1640	S						2	2	2	2	2	2	1		2	1	2	1	2	3	2	1	2	2	2	2	1	1	1	1			1	1	2	1	1	1	1	1	2	1	1	1
1650	S						8	8	6	8	8	7	3	1	9	9	7	6	7	7	7	7	7	7	7	6	7	7	7	7	7	7	7	7	8	7	7	7	7	7	7	6	7	7
1660	S						4	3	4	3	3	3	3	3	3	3	4	4	3	3	3	3	3	4	4	3	3	3	3	3	3	3	3	3	4	3	3	3	3	3	3	3	3	3
1670	S						2	2	1	2	2	2	1	2	2	2	2	2	2	1	2	2	2	1	1	2	2	2	2	2	2	2	2	1	3	2	2	2	2	2	2	2	2	2
1680	S						2	2	2	2	2	2	1	2	2	2	2	1	2	2	2	2	2	2	2	2	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1690	S						7	7	7	6	7	6	5	4	9	10	7	6	6	6	6	6	6	7	6	6	6	6	6	6	6	6	6	6	7	6	6	6	6	6	6	5	6	6
1700	S						4	4	5	4	4	4	4	4	4	4	4	6	4	4	4	4	4	4	4	4	4	2	2	4	4	4	4	4	5	4	4	4	4	4	4	4	4	4
1710	S						3	2	3	2	2	2	2	2	3	2	2	2	2	3	2	2	2	2	2	2	3	2	2	2	2	2	2	2	3	2	2	2	2	2	2	2	2	2
1720	S						3	2	2	2	2	1	2	2	2	2	2	3	2	1	2	2	2	2	2	2		1	1	1	1	1	1	1	2		1	1	1	1	1	1	1	1
1730	S						6	5	6	6	6	9	5	6	7	8	6	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	6	5	5	5	5	5	5	4	5	5
1740	S						4	4	5	5	4	6	4	4	5	5	4	5	4	4	4	4	4	4	4	5	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	3	4	4
1750	S						3	2	3	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	2	2	2	2	2	2	2
1760	S						3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1		1	1	1	1	1	1	1
1990																																												1

Table A11. Number of successful random tows (SHG code <= 136) for inshore strata during spring NEFSC bottom trawl surveys during 1973-2005. Cells with zero tows are black. Strata are assigned to stock ("S" for southern and "N" for northern).

		Year of Survey																																								
Stratum	Stock	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05
3010	S											2	2		1	1	1		2	1	1	1	1	1	1																			
3020	S											2	2	1	1	2	1	2	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
3030	S											2	2	1	1		1	1	2	1		2	1								1	1	1	1		1	1	1		1		1	1	1
3040	S											2	2		2	2	2	2	4	2	3	2	1	3	2	2	2	2	2	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2
3050	S											2	2		2	3	2	2	4	2	2	1	3	2	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
3060	S											2		1	1		1			1		1			1					1	1		1	1	1	1	1	1	1	1	1	1		1
3070	S											2	4	1	2	2	2	3	3	2	3	2	3	3	1	2	2	2	2	2	2	3	2	2	2	2	2	2	2	2	3	2	2	2
3080	S											2	2	3	2	2	2	2	2	2	2	2	2	2	3	2	2	2	2	2	2	2	2	2	3	2	2	2	2	2	2	2	2	2
3090	S											3	2		1		1	1	1	1	1	1	1	1	1	1				1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3100	S											3	3	3	2	2	3	2	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2
3110	S											3	9	4	2	2	3	2	1	2	2	2	2	2	3	2	2	2	2	2	2	2	2	2	3	2	2	2	2	2	2	2	2	2
3120	S											5	1	1	1	1	1	1	1	1	1									1		1	1	1		1	1	1	1	1	1	1	1	1
3130	S											9	4	1	2	2	1	1	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
3140	S											23	6	3	2	2	1	2	2	2	2	2	3	3	3	2	2	2	2	2	2	2	2	2	3	2	2	1	2	2	2	2	2	2
3150	S											3	2	1	1			1	1	1	1	1	1								1	1	1	1			1	1		1	1		1	1
3160	S											3	3	1	2	3	2	2	2	2	1	2	2	3	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	2	2
3170	S											4	4	6	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	3	2	2	2	2	2	2	2	2	2
3180	S											3	2	2	1	1		1	1	1	1	1	1		1					1	1	1	1	1	1	1	1	1		1	1	1		1
3190	S											4	3	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	2	2	2	2	2	2	2	2	2
3200	S											6	3	4	3	2	2	2	2	2	2	2	2	3	2	2	2	2	2	2	2	2	2	2	3	2	2	2	2	2	2	2	2	2
3210	S											3			1	1		1		1	1	1	1	1	1					1	1	1	1	1	1	1	1		1		1	1	1	1
3220	S											2	2		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	2	2	2	2	2	2	2	2	2
3230	S											2	2		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
3240	S											2	2			1	1	1		1	1	1	1	1	1					2	1	2	2	2	1	2	2	2	2	2	2	1	2	2
3250	S											3	3		2	2	2	2	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	2	2	2	2	2	2	2	2	2
3260	S											2	2		2	2	2	2	2	2	2	2	2	3	2	2	2	2	2	2	2	2	2	2	3	2	2	2	2	2	2	2	2	2
3270	S											3	2		1	1	1	1	1		1	1	1		1					1	1		1	1		1	1		1	1	1	1	1	1
3280	S											4	2		2	2	2	2	2	3	2	2	2	2	2	2	2	2	2	2	2	3	2	2	3	2	2	3	2	2	2	2	2	2
3290	S											4	2		2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	3	2	2	2	2	2	2	2	2	2
3300	S											3	2		1	1		1		1	1	1	1		1					1	1	1	1	1	2	1	1	1	1	1	1	1	1	1
3310	S											6	2		2	2	2	2	2	2	2	2	2	3	2	2	2	2	2	2	2	2	2	2	3	2	2	2	2	2	2	2	2	2
3320	S											3	2		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	2	2
3330	S											3	2		1	1		1	1	1	1	1	1		1					1	1	1	1	1	2	1	1	1	1		1	1	1	1
3340	S											4	2		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	2	2	2	2	3	2	2	2	2
3350	S											2	2		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
3360	S											2	2		1	1	1	1	1	1	1	1			1					2	2	2	2	2	3	2	2	2	2	2	2	2	2	2
3370	S											5	2		2	2	3	2	2	2	2	2	2	4	2	2	2	2	2	2	2	2	2	2	3	2	2	2	2	2	2	2	2	2
3380	S											4	2		2	2	2	2	2	2	2	2	3	2	2	2	2	2	2	2	2	2	2	2	3	2	2	2	2	2	2	2	2	2
3390	S											3	2		1	1		1	1	1	1	1	1		1					1	1	1		1	1	1	1	1	1	1	1	1	1	1
3400	S											4	3		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	2	3	2	2	2	2	2	2	2	2	2
3410	S											7	4		3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	2	2	2	2	2	2	2	2	2
3420	S											2	2		1	1	1	1	1	1	1	1	1		1					1	1	1		1	1	1	1	1	1	1	1	1	1	1
3430	S											3	2		2	2	2	2	2	2	2	2	2	5	2	2	2	2	2	2	2	2	2	2	3	2	2	2	2	2	2	2	2	2
3440	S											5	2		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	2	2	2	2	2	2	2	2	2
3450	S											2					2	4	4	2	2	2	1	1	2	2		2	2	2	2	2	2	1	2	2	2	2	2	2	1	2	2	2
3460	S												7		2		2	3	4	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	1	2	2	2
3520	S																	4	4	3	4	4	4	3	5	4	5	5	5	5	1	4	5	4	4	5	5	5	5	5	5	5	5	4
3550	S																					1	1	1			1		1		1	1	1	1					1		1	1		1
3560	N																	1	1	1	1	1	1	1	1				1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1
3580	N																	1	1	1	1	1	1	1	1	1	1		1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1
3590	N																	1	2	2	2	2	2	2	2	2	2		2	2	2	2	2	2	2	2	3	2	2	2	2	2	2	2
3600	N																	2	2	2	2	2	2	2	2	2	2		1	2	1	2	2	2	2	2	3	2	1	2	2	2	2	2
3610	N																			1		1	1							1	1	1	1		1	1		1	1		1	1	1	1
3630	N																	1	1	1	2	1				1	1						1	1	1	1	2	1	1	2		1	1	1
3640	N																		1	1	1	1	1	2	1	1	1			1		1	1	1	1	1	1	1		1	1		1	1
3650	N																	1	3	1		2	2	2	2	2	2		2	1	2	3	1	2	1	2	2	2	1	2	2	3	2	2
3660	N																																											

Table A12. Number of successful random tows (SHG code <= 136) for offshore strata covered by winter NEFSC bottom trawl surveys during 1992-2005. Cells with zero tows are black. Strata are assigned to stock ("S" for southern and "N" for northern). Inshore strata and the northern stock area are not sampled in the winter survey.

		Year of Survey													
STRATUM	Stock	92	93	94	95	96	97	98	99	00	01	02	03	04	05
1010	S	9	8	6	8	8	7	8	8	8	8	8	4	6	5
1020	S	7	7	5	7	8	7	7	7	8	8	8	4	7	5
1030	S	3	2	2	2	3	2	3	3	4	4	4	2	4	3
1040	S				1		1		1	1	2	2	2	1	1
1050	S	7	4	3	5	5	5	4	5	5	7	7	4	4	3
1060	S	9	9	5	9	10	9	9	8	10	12	11	5	11	7
1070	S	2	3	1	2	2	2	3	3	4	4	4	2	4	3
1080	S				1		1	1	1		2	2	1	2	1
1090	S	5	3	4	5	4	6	5	5	3	7	5	3	5	4
1100	S	6	8	8	8	10	8	8	9	7	12	12	6	10	7
1110	S	2	2	2	2	3	2	3	3	4	4	4	2	4	3
1120	S						1	1	1		2	2	2	1	1
1130	S	7	9	7	9	7	9	9	9	4	9	8		4	2
1140	S	1	3	2	3	4	3	4	4	2	4	4		4	
1150	S						1	1	1		2			1	
1160	S	5		1	9	2	5	10	8		6				
1170	S				1	2	1	3	3		2				
1180	S										1				
1190	S	5		4	5				4						
1610	S	4	5	3	4	4	4	4	4	5	6	7	7	7	6
1620	S	1	2	1	2	2	2	2	2	3	2	5	3	3	1
1630	S	1		2	1	2	2	3	3	3	2	3	3	4	2
1640	S							1	1	1	2		2	1	
1650	S	7	9	5	8	9	8	9	9	10	12	12	10	10	8
1660	S	2	3	1	4	4	3	3	3	4	4	4	3	4	3
1670	S	2	1	2	2	3	3	3	3	4	4	4	4	4	3
1680	S							1	1	1	2	2	2	2	1
1690	S	8	10	5	8	9	8	8	8	9	9	9	6	6	7
1700	S	4	5	4	4	5	4	4	4	5	5	5	4	5	4
1710	S	2	2	1	2	3	2	3	3	4	4	4	4	4	3
1720	S						1	1	1	1	3	1	2	2	2
1730	S	5	6	3	5	6	5	5	5	3	5	5	3	4	4
1740	S	4	5	4	4	5	4	4	4	5	5	5	3	5	5
1750	S	2	2	1	2	3	2	3	3	4	5	5	4	4	3
1760	S		1				1	1	1	1	1	1	2	2	2

Table A13. Strata for silver hake survey data used for environmental and trend analyses. Offshore and inshore bottom trawl survey strata in the table were consistently sampled (at least one during each year) in the fall survey during 1979-2004, spring survey during 1979-2005 and winter survey during 1992-2005, by stock area for silver hake. The winter survey does not sample inshore strata or the northern stock area.

Survey	Stock	Offshore	Inshore	N offshore	N inshore	N total
Winter	Southern	1010-1030, 1050-1070, 1090-1110, 1610-1620, 1650-1670, 1690-1710, 1730-1750	NA	20	NA	20
Spring	Northern	1020-1300,1340	None	12	0	12
Spring	Southern	1010-1110, 1130-1170, 1190, 1360-1400	3020, 3040-3050, 3070-3080, 3100-3110, 3130-3140, 3160-3170, 3190-3200, 3220-3230, 3250-3260, 3280-3290, 3310-3320, 3340-3350, 3370-3380, 3400-3410, 3430-3440, 3460, 3520	17	31	48
Fall	Northern	1200-1300,1330-1340, 1360-1400	3610	18	1	19
Fall	Southern	1010-1190, 1610-1620, 1650-1670, 1690-1710, 0173-0176	3020, 3040-3050, 3070-3080, 3100-3110, 3130-3140, 3160-3170, 3190-3200, 3220-3230, 3250-3260, 3280-3290, 3310-3320, 3340-3350, 3370-3380, 3400-3410, 3430-3460, 3550	31	32	63

Table A14. Final generalized additive models (GAMs) for probability of occurrence of silver hake in winter, spring and fall surveys. Final models were selected by a step-wise procedure based on the AIC statistic. Variables included in final models were either loess, quadratic or linear terms. Blank cells indicate variables that were not statistically significant based on AIC. Temperatures, depths and time at highest probability of a positive tow (PPT) were identified subjectively by looking at fitted lines in logit-scale partial residual plots. Time at highest PPT is labeled "noon" for predicted curves that were concave down and "midnight" for curves that were concave up.

Survey	Stock	Lengths	Length Group Label in Plots	Bottom Temperature (*T*)	Depth (*D*)	Time of Day (*L*)	Temperature range highest PPT (°C)	Depth range highest PPT (m)	Time at highest PPT
Fall	Northern	1.0 - 5.9	2.5	loess	loess	quadratic	> 15	< 150	noon
		6.0 - 10.9	7.5	loess		quadratic	> 15		noon
		11.0 - 15.9	12.5	quadratic		loess	8		noon
		16.0 - 20.9	17.5	quadratic	loess		8	< 150	
		21.0 - 25.9	22.5	loess	loess		11	190	
		26+	27.5	loess	loess		< 15	> 200	
	Southern	1.0 - 5.9	2.5	loess	loess	loess	10 -17	< 150	midnight
		6.0 - 10.9	7.5	loess	loess	loess	> 15	< 150	midnight
		11.0 - 15.9	12.5	loess	loess	loess	> 15	not clear	not clear
		16.0 - 20.9	17.5	quadratic	loess	linear	10	< 150	not clear
		21.0 - 25.9	22.5	loess	loess	loess	< 15	< 150	not clear
		26+	27.5	quadratic	loess		14	> 90	not clear
	Both	1.0 - 5.9	2.5	loess	loess	loess	15	< 100	midnight
		6.0 - 10.9	7.5	loess	loess	loess	> 15	< 100	midnight
		11.0 - 15.9	12.5	loess	loess	quadratic	< 10	> 100	noon
		16.0 - 20.9	17.5	loess	quadratic		< 10	150	
		21.0 - 25.9	22.5	loess	loess	loess	< 10	200	not clear
		26+	27.5	loess	loess		< 15	> 100	not clear
Spring	Northern	1.0 - 5.9	2.5	NA	NA	NA	NA	NA	NA
		6.0 - 10.9	7.5		loess	loess		100 - 250	midnight
		11.0 - 15.9	12.5	loess	loess	loess	< 9	200	midnight
		16.0 - 20.9	17.5	quadratic	loess	quadratic	6	200	midnight
		21.0 - 25.9	22.5	loess	quadratic		< 10	250	
		26+	27.5	quadratic	quadratic		< 6	300	
	Southern	1.0 - 5.9	2.5		loess	loess		< 200	midnight
		6.0 - 10.9	7.5	quadratic	loess	loess	9	< 100	midnight
		11.0 - 15.9	12.5		loess	quadratic		< 100	midnight
		16.0 - 20.9	17.5	loess	loess	loess	6	< 250	midnight
		21.0 - 25.9	22.5	loess	loess		7	> 100	
		26+	27.5	quadratic	loess		not clear	not clear	
	Both	1.0 - 5.9	2.5	NA	NA	NA	NA	NA	NA
		6.0 - 10.9	7.5	quadratic	loess	loess	< 6	not clear	midnight
		11.0 - 15.9	12.5	loess	loess	loess	< 6	220	midnight
		16.0 - 20.9	17.5	loess	loess	quadratic	5	200	midnight
		21.0 - 25.9	22.5	quadratic	loess	loess	8	> 100	not clear
		26+	27.5	loess	loess	loess	> 8	>80	not clear
Winter	Southern	1.0 - 5.9	2.5	loess	loess	quadratic	> 8	< 150	midnight
		6.0 - 10.9	7.5	loess	quadratic		< 8	150	
		11.0 - 15.9	12.5	loess	loess		< 8	> 150	
		16.0 - 20.9	17.5	loess	loess		5	> 100	
		21.0 - 25.9	22.5	loess	loess		6	> 100	
		26+	27.5	loess	loess		7	> 75	

Table A15. Final generalized additive models (GAMs) for catches of silver hake in winter, spring and fall survey tows where at least one silver hake was taken. Final models were selected by a step-wise procedure based on the AIC statistic. Variables included in final models were either loess, quadratic or linear terms. Blank cells indicate variables that were not statistically significant based on AIC. Temperatures, depths and time at highest density were identified subjectively by looking at fitted lines in log-scale partial residual plots. Time at highest density is labeled "noon" for predicted curves that were concave down and "midnight" for curves that were concave up.

Survey	Stock	Lengths	Length Group Label in Plots	Bottom Temperature (*T*)	Depth (*D*)	Time of Day (*L*)	Temperature range highest PPT (°C)	Depth range highest PPT (m)	Time at highest PPT
Fall	Northern	1.0 - 5.9	2.5	loess	loess	loess	10 - 17	< 100	midnight
		6.0 - 10.9	7.5	loess	loess	loess	10 - 17	< 100	midnight?
		11.0 - 15.9	12.5	quadratic	quadratic		12	100 - 200	
		16.0 - 20.9	17.5	loess	loess		10	100	
		21.0 - 25.9	22.5	loess	loess	loess	8	125 - 225	midnight
		26+	27.5	loess	loess	loess	8	200	midnight
	Southern	1.0 - 5.9	2.5	loess	loess	loess	10 - 16	< 100	midnight
		6.0 - 10.9	7.5	loess	loess	loess	10 - 18	< 100	midnight
		11.0 - 15.9	12.5	quadratic	quadratic		12	100 - 200	
		16.0 - 20.9	17.5	loess	loess		8 - 10	100 - 150	
		21.0 - 25.9	22.5	loess	loess	loess	9	150 - 250	midnight
		26+	27.5	loess	loess	loess	< 10	200	midnight
	Both	1.0 - 5.9	2.5	loess	loess	loess	8 - 17	< 100	midnight
		6.0 - 10.9	7.5	loess	loess	loess	10 - 17	< 100	midnight?
		11.0 - 15.9	12.5	quadratic	quadratic		12	125	
		16.0 - 20.9	17.5	loess	loess		7 - 10	100	
		21.0 - 25.9	22.5	loess	loess	loess	9	150 - 220	midnight
		26+	27.5	loess	loess	loess	< 10	> 200	midnight
Spring	Northern	1.0 - 5.9	2.5	NA	NA	NA	NA	NA	NA
		6.0 - 10.9	7.5	loess	loess	loess	< 8	< 100	midnight
		11.0 - 15.9	12.5	loess	loess	quadratic	< 8	200 - 250	midnight
		16.0 - 20.9	17.5	loess	loess	quadratic	8	> 150	midnight
		21.0 - 25.9	22.5	loess	loess		< 12	> 150	
		26+	27.5	loess	loess	quadratic	12	> 250	midnight
	Southern	1.0 - 5.9	2.5	NA	NA	NA	NA	NA	NA
		6.0 - 10.9	7.5	loess	loess	loess	< 10	< 100	midnight
		11.0 - 15.9	12.5	loess	loess	quadratic	< 10	200 - 250	midnight
		16.0 - 20.9	17.5	loess	loess	quadratic	6 - 8	> 150	midnight
		21.0 - 25.9	22.5	loess	loess		< 12	> 150	
		26+	27.5	loess	loess	quadratic	> 9	> 250	midnight
	Both	1.0 - 5.9	2.5	NA	NA	NA	NA	NA	NA
		6.0 - 10.9	7.5	loess	loess	loess	< 10	< 100	midnight
		11.0 - 15.9	12.5	loess	loess	quadratic	< 10	200 - 250	midnight
		16.0 - 20.9	17.5	loess	loess	quadratic	6 - 9	> 150	midnight
		21.0 - 25.9	22.5	loess	loess		< 12	> 150	
		26+	27.5	loess	loess	quadratic	> 9	> 250	midnight
Winter	Southern	1.0 - 5.9	2.5		linear	quadratic		< 100	midnight
		6.0 - 10.9	7.5	loess	loess	quadratic	< 6	< 100	midnight
		11.0 - 15.9	12.5	loess	loess	loess	< 6	70	not clear
		16.0 - 20.9	17.5	linear	quadratic		< 6	150 - 200	
		21.0 - 25.9	22.5	loess	loess		6- 8	> 150	
		26+	27.5	loess	loess		8	> 150	

Table A16. Direction and statistical significance of estimated trends (linear regression models) in abundance weighted mean bottom temperatures, depths, latitudes and longitudes for silver hake taken during fall (1979-2004), spring (1978-2005) and winter (1992-2005) bottom trawl surveys. Symbols are "+" for increasing trends and "-" for decreasing trends. Variables with statistically significant regressions on time are identified by single ("*" for 0.1≥ p-values > 0.05) or double ("**" for 0.05 ≥ p-value) asterisks.

Lengths	Length Group Label in Plots	Fall				Spring				Winter
		North	South	Both		North	South	Both		South
Mean Bottom Temperature										
1.0 - 5.9	2.5					NA		NA		
6.0 - 10.9	7.5									
11.0 - 15.9	12.5			- * *						
16.0 - 20.9	17.5									
21.0 - 25.9	22.5									
26+	27.5			- *						
Mean Depth										
1.0 - 5.9	2.5									
6.0 - 10.9	7.5	+ *		+ * *						
11.0 - 15.9	12.5			+ *			+ *			
16.0 - 20.9	17.5	+ *								
21.0 - 25.9	22.5	+ *		+ *			+ * *			+ *
26+	27.5			+ * *				+ * *		+ *
Mean Latitude										
1.0 - 5.9	2.5		+ *	+ *				NA		+ * *
6.0 - 10.9	7.5	+ *		+ * *						
11.0 - 15.9	12.5	+ *		+ * *			+ * *			
16.0 - 20.9	17.5					+ * *	+ *	+ *		
21.0 - 25.9	22.5		+ * *							
26+	27.5		+ * *	+ * *			+ * *	+ * *		
Mean Longitude										
1.0 - 5.9	2.5					NA		NA		- * *
6.0 - 10.9	7.5			- *						
11.0 - 15.9	12.5					+ * *				
16.0 - 20.9	17.5					+ *				
21.0 - 25.9	22.5		- * *	- *						
26+	27.5		- * *	- *			- * *	- * *		

Table A17. Number of relatively old individual fish in provisional survey age data for silver hake, by season and year. Duplicate records were removed manually.

Count of AGE		AGE							
Season	year	8	9	10	11	12	13	14	Grand Total
Fall	1973			3	2		1		6
	1975	2	1	1					4
	1976	1		1					2
	1977	3	2	1					6
	1978	14		1					15
	1979	6	4			1			11
	1980	21	3	2	1				27
	1981	23	2	1					26
	1982	6	3						9
	1983	1	2						3
	1984		1						1
	1985	1							1
	1989					1			1
Fall Total		78	18	10	3	2	1		112
Spring	1973	1	2	1		1		1	6
	1974	1	5		1			1	8
	1975		1						1
	1976	11	2	1					14
	1977	10	3	1					14
	1978	12		3	1			1	17
	1979	4	1						5
	1980	22	7	4		1			34
	1981	33	21		1				55
	1982	6	7	5		2			20
	1983	1	2	4					7
	1985	1	1						2
	1986	2							2
	1987	1	2						3
Spring Total		105	54	19	3	4		3	188
Grand Total		183	72	29	6	6	1	3	300

Table A18. Age reader precision experiment using 99 silver hake ototliths collected during the NEFSC spring 2004 bottom trawl survey. The sample of otoliths were aged a second time by the original technician without knowledge of the original ages.

Production Age	N	N agreed	% Agreement	Mean Age	SD
0					
1	9	9	100%	1.00	0.00
2	41	38	93%	2.07	0.26
3	23	21	91%	3.09	0.29
4	23	20	87%	3.96	0.37
5	3	3	100%	5.00	0.00
Total	99	91	92%		

First age \ Second age->	0	1	2	3	4	5
0						
1		9				
2			38	3		
3				21	2	
4				2	20	1
5						3
					Total	99

Table A19. Age reader precision experiment using 99 silver hake ototliths collected during the NEFSC spring 2004 bottom trawl survey. The sample of otoliths were aged a second technician without knowledge of the ages estimated by the original technician.

Secondary reader reages a sample from 200402 cruise.

Production Age	N	N agreed	% Agreement	Mean Age	SD
0					
1	9	8	89%	1.11	0.33
2	41	39	95%	2.00	0.22
3	23	21	91%	2.95	0.21
4	23	7	30%	3.38	0.58
5	3	1	33%	5.67	0.58
Total	99	76	77%		

Second age ->

First age	0	1	2	3	4	5	6
0							
1		8	1				
2		1	39	1			
3			1	21			
4				16	7	1	
						1	2
5							
						Total	99

Table A20. Otoliths from a sample of 15 fish taken in NEFSC surveys during 1973-1982 and originally estimated to be at least age 7 y by several technicians were reaged by the current technician. New ages were all from sectioned otoliths. In some cases, original ages were from "baked" otoliths. All of the original age estimates were made prior to 1983.

ID	Cruise	Station	Length	Preparation for original age	Original age	Preparation for new age	New age
1	73-3	112	46	Section	7	Section	6
2	73-3	112	59	Section	7	Section	6
3	73-3	197	54	Section	10	Section	9
4	73-8	179	51	Section	10	Section	9
5	73-8	196	50	Section	10	Section	10
6	74-4	64	53	Section	9	Section	7
7	74-4	98	59	Section	9	Section	7
8	74-4	223	60	Section	9	Section	7
9	74-4	226	61	Section	14	Section	12
10	75-12	275	50	Baked	8	Section	5
11	75-12	321	63	Baked	6	Section	5
12	75-12	321	61	Baked	8	Section	6
13	79-12	616	68	Section	12	Section	11
14	82-02	348	64	Section	12	Section	11
15	82-02	420	66	Section	12	Section	9

Count of Cruise	New age									
Original age	5	6	7	9	10	11	12	13	14	Grand Total
5										
6	1									1
7		2								2
8	1	1								2
9			3							3
10				2	1					3
12				1		2				3
13										0
14							1			1
Grand Total	2	3	3	3	1	2	1	0	0	15

Table A21. Number of tows, mean catch per tow and mean densities of silver hake by stratum and transect canyon area for the NEFSC spring and Supplemental surveys during March, 2004-2005.

				NEFSC Survey (averages for all tows)						Supplemental Survey (averages for all tows)						
Year	Season	Canyon Area	NEFSC Stratum	N Random Stations	Bottom Temp. (°C)	Depth (m)	Catch (kg)	Swept Area (km^2)	Density (kg/km^2)	N Fixed Stations	Bottom Temp. (°C)	Depth (m)	Catch (kg)	Swept Area (km^2)	Density (kg/km^2)	Ratio NEFSC / Supplemental Density
2004	Spring	Hudson	1020	7	3.5	69	0.274	0.041	6.7	3	5.5	89	202.4	0.269	739.7	0.0090
2005	Spring	Hudson	1020	7	8.0	79	0.764	0.041	18.6	2	8.7	81	109.1	0.145	770.3	0.0242
2004	Spring	Hudson	1030	2	7.7	16	2.268	0.041	55.3	1	10.7	144	691.6	0.293	2358.1	0.0235
2005	Spring	Hudson	1030	2	10.6	81	0.286	0.041	7.0	2	11.5	127	141.0	0.130	1074.2	0.0065
2004	Spring	Hudson	1040	1	11.3	216	0.553	0.041	13.5	3	10.6	224	394.2	0.294	1366.5	0.0099
2005	Spring	Hudson	1040	1	6.5	289	26.142	0.041	637.8	3	10.6	227	1283.2	0.130	10078.4	0.0633
2004	Spring	Baltimore	1700	4	6.7	73	0.057	0.041	1.4	3	2.3	91	18.5	0.246	77.1	0.0181
2005	Spring	Baltimore	1700	4	7.8	67	0.112	0.041	2.7	2	9.9	82	35.0	0.144	238.2	0.0114
2004	Spring	Baltimore	1710	4	6.7	73	0.057	0.041	1.4	2	5.7	162	36.6	0.270	132.0	0.0106
2005	Spring	Baltimore	1710	4	7.8	67	0.112	0.041	2.7	3	10.9	149	143.7	0.149	950.7	0.0029
2004	Spring	Baltimore	1720	1	5.8	375	0.000	0.041	0.0	2	10.1	244	257.1	0.265	968.1	0.0000
2005	Spring	Baltimore	1720	1	6.8	355	1.042	0.041	25.4	2	8.3	256	2000.1	0.142	13932.3	0.0018
				38						28						

Average Hudson Canyon	0.0227
Median Hudson Canyon	0.0167
Average Baltimore Canyon	0.0075
Median Baltimore Canyon	0.0067
Average 2004	0.0118
Median 2004	0.0102
Average 2005	0.0184
Median 2005	0.0090

Table A22. NEFSC fall survey biomass index (delta mean kg/tow, all size groups), landings data, and exploitation index (landings / survey biomass index) for silver hake in the nothern stock area. Survey data are for traditional NEFSC survey strata that have been consistently occupied since 1964. Three year averages show trends and are used in overfishing definitions.

Year	Fall Survey (delta mean kg/tow, all sizes)	CV	3-Year Average	Landings (L_t, 1000 mt)	Landings / Survey (all sizes)	3-Year Average
1964	4.42	0.20		94.46	21.40	
1965	6.48	0.28		45.24	6.99	
1966	4.12	0.19	5.00	47.72	11.57	13.32
1967	2.16	0.27	4.25	33.37	15.46	11.34
1968	2.05	0.27	2.78	41.38	20.20	15.75
1969	2.64	0.22	2.28	23.96	9.09	14.92
1970	3.03	0.26	2.57	27.53	9.07	12.79
1971	2.47	0.20	2.71	36.40	14.76	10.98
1972	6.09	0.16	3.86	25.22	4.15	9.33
1973	4.15	0.14	4.23	32.08	7.73	8.88
1974	3.76	0.28	4.67	20.68	5.49	5.79
1975	8.23	0.14	5.38	39.87	4.84	6.02
1976	12.63	0.22	8.21	13.63	1.08	3.81
1977	7.59	0.33	9.49	12.46	1.64	2.52
1978	7.07	0.14	9.10	12.61	1.78	1.50
1979	6.65	0.15	7.11	3.42	0.51	1.31
1980	6.66	0.18	6.79	4.73	0.71	1.00
1981	4.06	0.25	5.79	4.42	1.09	0.77
1982	5.45	0.56	5.39	4.66	0.85	0.88
1983	9.21	0.21	6.24	5.31	0.58	0.84
1984	3.62	0.22	6.09	8.29	2.29	1.24
1985	8.58	0.16	7.14	8.30	0.97	1.28
1986	14.19	0.16	8.80	8.50	0.60	1.28
1987	9.84	0.14	10.87	5.66	0.58	0.71
1988	6.31	0.20	10.11	6.77	1.07	0.75
1989	12.55	0.26	9.57	4.65	0.37	0.67
1990	15.25	0.25	11.37	6.38	0.42	0.62
1991	11.89	0.29	13.23	6.05	0.51	0.43
1992	14.25	0.38	13.79	5.30	0.37	0.43
1993	8.12	0.19	11.42	4.36	0.54	0.47
1994	6.93	0.14	9.76	5.72	0.83	0.58
1995	13.16	0.15	9.40	3.03	0.23	0.53
1996	7.89	0.16	9.32	3.20	0.41	0.49
1997	5.64	0.20	8.90	2.59	0.46	0.37
1998	21.97	0.31	11.83	2.26	0.10	0.32
1999	11.64	0.10	13.08	4.04	0.35	0.30
2000	13.79	0.13	15.80	2.42	0.18	0.21
2001	9.53	0.20	11.65	3.45	0.36	0.29
2002	8.00	0.11	10.44	2.84	0.35	0.30
2003	8.77	0.18	8.77	1.73	0.20	0.30
2004	3.40	0.22	6.72	0.56	0.16	0.24

Table A23. NEFSC fall survey biomass index (delta mean kg/tow, all size groups), landings data, and exploitation index (landings / survey biomass index) for silver hake in the southern stock area. Survey data are for traditional NEFSC survey strata that have been consistently occupied since 1964. Three year averages show trends and are used in overfishing definitions.

Year	Fall Survey (delta mean kg/tow, all sizes)	CV	3-Year Average	Landings (L_t, 1000 mt)	Landings / Survey (all sizes)	3-Year Average
1967	2.19	0.14	2.19	91.25	41.74	41.74
1968	2.69	0.13	2.44	58.50	21.72	31.73
1969	1.26	0.14	2.05	75.56	60.16	41.21
1970	1.33	0.13	1.76	27.51	20.65	34.18
1971	2.21	0.16	1.60	71.89	32.53	37.78
1972	2.00	0.22	1.85	94.35	47.18	33.45
1973	1.70	0.18	1.97	104.59	61.56	47.09
1974	0.86	0.21	1.52	109.86	127.45	78.73
1975	1.84	0.16	1.47	74.25	40.35	76.46
1976	2.06	0.14	1.59	68.74	33.34	67.05
1977	1.77	0.24	1.89	59.31	33.45	35.71
1978	2.93	0.24	2.26	27.13	9.26	25.35
1979	1.74	0.12	2.15	18.38	10.55	17.75
1980	2.12	0.35	2.26	13.55	6.38	8.73
1981	1.17	0.14	1.68	14.83	12.72	9.88
1982	1.65	0.20	1.65	14.56	8.82	9.31
1983	3.20	0.35	2.01	12.14	3.79	8.44
1984	1.56	0.30	2.14	13.14	8.44	7.02
1985	3.91	0.49	2.89	13.16	3.37	5.20
1986	1.39	0.17	2.28	10.12	7.29	6.37
1987	1.62	0.24	2.30	10.12	6.25	5.64
1988	1.83	0.23	1.61	9.20	5.02	6.19
1989	2.12	0.26	1.86	13.17	6.21	5.83
1990	1.65	0.17	1.87	13.62	8.28	6.50
1991	0.91	0.22	1.56	10.09	11.13	8.54
1992	0.98	0.14	1.18	10.29	10.52	9.97
1993	1.33	0.19	1.07	12.91	9.72	10.45
1994	0.80	0.16	1.04	10.33	12.93	11.06
1995	1.64	0.34	1.26	11.69	7.13	9.92
1996	0.43	0.16	0.96	13.00	30.16	16.74
1997	0.84	0.19	0.97	12.99	15.43	17.57
1998	0.62	0.18	0.63	12.70	20.49	22.03
1999	0.87	0.40	0.78	9.97	11.46	15.79
2000	0.72	0.22	0.74	9.76	13.50	15.15
2001	2.23	0.28	1.27	8.69	3.90	9.62
2002	1.18	0.22	1.38	5.15	4.35	7.25
2003	1.56	0.22	1.66	6.92	4.44	4.23
2004	1.37	0.21	1.37	7.89	5.76	4.85

Table A24. Lower bound estimates for silver hake (southern stock) fishable biomass and upper bound estimates for fishing mortality based on relative efficiency of NEFSC and Supplemental survey bottom trawls and NEFSC fall survey data.

(EDITOR'S NOTE: THIS PART OF THE WORKING GROUP REPORT HAS BEEN OMITTED. IT WAS NOT ACCEPTED BY THE REVIEW PANEL.)

Table A25. Lower bounds for fishable biomass and upper bounds for fishing mortality in the northern silver hake during 1964-2004 based on historical landings and fall survey data.

(EDITOR'S NOTE: THIS PART OF THE WORKING GROUP REPORT HAS BEEN OMITTED. IT WAS NOT ACCEPTED BY THE REVIEW PANEL.)

Table A26. Lower bounds for fishable biomass and upper bounds for fishing mortality in the southern silver hake during 1964-2004 based on historical landings and fall survey data.

(EDITOR'S NOTE: THIS TABLE FROM THE WORKING GROUP REPORT HAS BEEN OMITTED. IT WAS NOT ACCEPTED BY THE REVIEW PANEL.)

Table A27. Total allowable landings (TAL, thousand mt) for silver hake during 2005 based on exploitation index (landings / fall survey biomass index) reference points and average fall survey biomass index during 2002-2004. For comparison, landings averaged 1.71 thousand mt in the north and 6.65 thousand mt in the south during 2002-2004. The CV is for the 2002-2004 mean biomass index and measures uncertainty in the TAL calculation assuming that the reference points are exact.

Stock Area	Exploitation Index Reference Points Type	Value	2002-2004 Mean Biomass Index	TAL (1000 mt)	CV
Northern	Both	2.57	6.72	17.27	0.10
Southern	Target	20.63	1.37	28.26	0.13
Southern	Threshold	34.39		47.11	0.13