Table B4.1. Total spiny dogfish landings (mt, live).

					US Recreational		
Year	Canada	US	USSR	Other Foreign	Landed	Discards	Total
1962	0	235	0	0		NA	235
1963	0	610	0	1		NA	611
1964	0	730	0	16		NA	746
1965	9	488	188	10		NA	695
1966	39	578	9389	0		NA	10006
1967	0	278	2436	0		NA	2714
1968	0	158	4404	0		NA	4562
1969	0	113	8827	363		NA	9303
1970	19	106	4924	716		NA	5765
1971	4	73	10802	764		NA	11643
1972	3	69	23302	689		NA	24063
1973	20	89	14219	4574		NA	18902
1974	36	127	20444	4069		NA	24676
1975	1	147	22331	192		NA	22671
1976	3	550	16681	107		NA	17341
1977	1	931	6942	257		NA	8131
1978	84	828	577	45		NA	1534
1979	1331	4753	105	82		NA	6271
1980	670	4085	351	248		NA	5354
1981	564	6865	516	458	1493	296	10192
1982	953	5411	27	337	70	349	7147
1983		4897	359	105	67	540	5968
1984	4	4450	291	100	91	424	5361
1985	13	4028	694	318	89	964	6107
1986	21	2748	214	154	182	1187	4506
1987	280	2703	116	23	306	1056	4484
1988		3105	574	73	359	876	4987
1989	166	4492	169	87	418	1344	6676
1990	1316	14731	383	10	179	1170	17788
1991	292	13177	218	16	131	1350	15183
1992	829	16858	26	41	215	1019	18987
1993	1411	20643	0	27	120	1110	23311
1994	1819	18800	0	2	154	969	21744
1995	948	22711	0	14	64	628	24365
1996	416	27241	0	236	34	353	28279
1997	446	18352		214	64	749	19825
1998	1079	20628		607	39	610	22962
1999	2467	14860		554	53	532	18466
2000	2677	9257		494	5	604	13036
2001	3755	2294		302	28	2090	8468
2002	3400	2195			225	1698	7518

A. The increase in foreign landings from 1996 on may be other species of squalid sharks.

13016.53
28279.14
1534.45

Table B4.2. Spiny dogfish landings (mt, live) by gear type.

	Gear Type					
Year	Line Trawl	Otter Trawl	Sink Gill Net	Drift Gill Net	Other Gear	Total
1962	18.7	78.3	0.0	129.4	8.4	234.9
1963	49.8	85.5	297.2	138.3	38.8	609.6
1964	12.5	75.4	89.5	529.5	23.4	730.4
1965	55.1	52.3	129.8	228.6	22.2	488.0
1966	84.7	95.2	173.2	184.8	40.1	578.1
1967	23.9	110.8	54.9	43.1	44.9	277.5
1968	2.5	78.0	0.0	54.3	23.2	158.0
1969	1.9	88.4	0.5	5.9	16.7	113.4
1970	1.8	80.5	9.6	2.8	11.0	105.7
1971	0.0	53.0	0.6	3.5	16.2	73.3
1972	0.6	53.5	0.6	0.1	14.4	69.2
1973	0.5	76.7	1.3	5.0	5.8	89.4
1974	1.9	79.2	1.1	10.2	34.9	127.3
1975	0.3	89.4	4.1	10.3	42.8	146.9
1976	5.2	71.6	432.9	5.4	34.5	549.6
1977	2.8	102.6	796.1	2.8	27.2	931.4
1978	3.4	121.4	680.8	6.3	16.6	828.4
1979	17.8	3518.0	1251.8	1.5	17.6	4806.5
1980	21.3	3370.1	635.3	4.0	64.7	4095.4
1981	1.0	6287.1	628.2	7.3	8.7	6932.4
1982	2.9	5065.6	310.7	9.4	22.0	5410.6
1983	0.2	3367.5	1517.1	6.6	5.1	4896.5
1984	0.9	2486.0	1949.5	6.1	7.9	4450.4
1985	158.7	2844.4	1007.6	9.8	7.6	4028.0
1986	2.6	1258.1	1467.2	3.1	16.7	2747.6
1987	7.8	1848.1	811.7	2.9	32.8	2703.4
1988	4.7	1589.5	1489.5	12.6	9.0	3105.2
1989	138.2	486.5	3839.0	7.5	20.8	4492.0
1990	16.8	7010.8	7685.2	14.7	3.1	14730.6
1991	31.1	5208.7	7805.8	107.6	23.6	13176.7
1992	9.8	4785.5	11639.7	171.5	251.4	16857.9
1993	250.8	5100.2	15764.9	77.3	22.7	21215.9
1994	482.4	3056.3	14798.2	27.1	134.1	18498.2
1995	1494.3	2818.0	17657.4	340.9	272.1	22582.6
1996	1313.0	3408.2	21088.7	1265.3	99.0	27174.1
1997	1084.6	1800.6	14357.1	1026.4	84.1	18352.9
1998	1410.0	2709.2	15071.4	1315.4	121.6	20627.6
1999	1610.8	2212.5	10462.8	325.4	248.5	14860.0
2000	1776.1	3146.8	4297.6	15.9	20.3	9256.7
2001	1276.3	254.4	749.0	0.7	13.1	2293.6
2002	1044.1	247.7	896.0	0.5	6.5	2194.8

Table B4.3. Spiny dogfish landings (mt, live) by month,1964-2002.

Year	Month													
	Unk	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1964	627.9	7.3	1.4	1.2	-	12.9	31.7	-	4.8	35.9	-	-	7.4	730.3
1965	308.5	0.1	4.1	-	14.9	4.9	34.4	23.1	27.2	30.8	11.9	22.6	5.6	488.1
1966	318.4	1.5	1.8	7.8	7.1	2.1	68.7	82.0	48.9	26.6	5.5	7.6	-	578.1
1967	188.3	-	3.9	-	4.3	6.0	15.9	42.7	5.3	7.2	0.9	2.5	0.8	277.5
1968	157.6	-	-	-	-	0.1	-	-	0.2	-	-	-	-	158.0
1969	113.4	-	-	-	-	-	-	-	-	-	-	-	-	113.4
1970	102.8	-	-	-	-	-	-	0.3	1.0	0.2	0.9	0.4	<0.1	105.6
1971	72.9	<0.1	-	-	-	0.4	-	-	-	-	-	-	-	73.3
1972	60.2	-	-	-	0.1	0.4	0.3	-	-	-	1.8	4.7	1.7	69.2
1973	73.7	2.7	<0.1	-	0.7	2.4	4.3	2.4	0.3	-	1.6	0.8	0.4	89.3
1974	122.6	0.1	-	0.9	-	0.8	0.3	1.1	0.2	0.6	0.4	0.2	0.1	127.3
1975	136.0	0.2	0.1	0.4	2.6	0.3	0.2	0.2	0.1	-	0.1	3.6	2.9	146.9
1976	116.2	0.1	0.5	-	-	-	24.1	126.2	70.9	119.7	91.8	0.1	0.1	549.7
1977	95.4	0.0	-	-	-	30.0	259.9	120.4	169.4	136.7	98.3	4.1	17.3	931.4
1978	140.8	0.1	0.8	5.9	0.1	0.5	85.0	294.5	102.2	54.2	133.0	9.1	2.3	828.5
1979	344.3	-	-	-	-	16.7	292.4	637.0	502.3	1043.1	1137.5	389.8	389.5	4752.7
1980	406.7	26.9	3.3	81.5	0.4	112.3	803.0	540.5	818.9	1087.4	52.2	91.4	60.7	4085.1
1981	1729.4	1.2	0.4	-	0.8	107.6	945.4	1121.0	1156.8	1005.2	698.6	98.0	0.7	6865.0
1982	65.8	143.1	369.6	1287.8	219.4	134.1	830.4	819.7	411.6	517.6	256.4	235.7	119.4	5410.6
1983	45.9	3.7	3.6	-	0.3	55.8	140.8	710.0	963.2	744.5	402.5	169.2	1656.9	4896.5
1984	46.8	-	-	-	0.3	1.4	559.5	2077.1	1111.6	357.8	168.2	103.1	24.5	4450.4
1985	71.1	-	-	0.8	1.9	275.5	690.6	753.2	785.6	588.1	642.6	175.4	43.0	4027.9
1986	13.1	1.0	5.8	2.5	11.8	145.5	483.1	468.0	473.7	622.8	376.9	93.8	49.9	2747.6
1987	6.0	4.8	1.5	4.0	8.6	17.6	397.1	555.8	384.6	440.5	703.6	175.5	3.9	2703.4
1988	49.8	0.6	116.0	27.5	4.4	384.8	566.3	532.4	502.6	508.8	401.1	9.9	0.9	3105.1
1989	15.5	0.2	-	2.0	21.2	296.9	1134.1	713.5	961.4	924.5	374.2	41.7	6.8	4492.0
1990	49.5	290.0	207.8	283.2	318.6	494.2	1137.9	2881.6	2819.3	2079.5	1166.8	959.8	2042.6	14730.6
1991	213.7	1609.9	1105.2	661.4	1298.9	1136.8	624.5	1421.6	962.8	840.1	353.7	965.7	1982.6	13176.6
1992	320.8	2117.3	1620.4	1402.6	703.7	787.5	1083.4	2327.4	1549.7	808.9	1362.7	1887.9	885.8	16857.9
1993	281.7	1516.3	1631.6	834.9	260.7	517.8	2001.0	3423.3	3227.4	2587.2	1983.3	1075.8	1301.8	20642.9
1994	77.1	1277.0	1438.2	1234.9	628.9	653.1	1975.3	3391.2	4204.7	1508.1	878.2	409.5	1123.9	18800.2
1995	28.7	1703.4	1432.8	1150.9	880.3	928.8	3386.9	4181.5	2208.8	1843.9	1887.2	1499.9	1577.6	22710.6
1996	0.2	2628.1	2336.8	2532.1	1695.1	534.5	2221.9	3630.6	2466.7	2143.6	2511.0	2056.9	2483.5	27241.0
1997	0.0	2304.0	1543.4	1468.0	724.0	1419.6	2122.0	2684.4	1917.8	1055.3	1129.3	1070.9	914.2	18352.9
1998	0.0	1652.6	1304.4	1113.9	571.6	572.2	1415.7	2272.8	2983.1	2620.1	2922.1	1965.8	1233.2	20627.6
1999	0.0	1732.1	1701.1	1478.7	869.4	850.5	1761.3	1209.4	995.7	1085.5	1372.3	829.1	974.9	14860.0
2000	0.0	1215.6	1885.1	1771.1	698.1	61.6	595.7	1326.1	1029.7	267.3	222.0	110.1	74.1	9256.7
2001	0.0	5.4	0.0	0.2	17.0	144.6	1048.2	2.2	3.3	1.5	1.0	1070.1	0.1	2293.6
2002	0.0	0.2	0.1	1.2	40.7	489.9	889.0	3.2	3.1	1.0	0.5	725.6	40.3	2194.8

Table B4.4. Landings of spiny dogfish (mt, live) by state (Includes 100% unclassified dogfish).

	State											
Year	Connecticut	Delaware	Maine	Maryland	Massachusetts	New Hampshire	New Jersey	New York	North Carolina	Rhode Island	Virginia	Total
1962	2.6	0.0	21.6	17.4	0.0	0.0	1.6	25.2	0.0	0.1	166.3	234.9
1963	0.1	0.0	343.5	16.5	0.0	0.0	1.9	35.4	0.0	0.1	212.2	609.6
1964	4.7	0.0	102.1	12.4	0.0	0.0	0.2	33.1	0.0	0.4	577.5	730.3
1965	6.9	0.0	171.3	7.2	7.6	0.0	0.7	43.9	0.0	0.7	249.7	488.1
1966	4.9	0.2	259.6	6.7	0.0	0.0	1.5	81.7	0.0	0.1	223.4	578.1
1967	1.6	0.0	82.1	6.5	6.6	0.0	0.1	89.0	0.0	0.5	91.1	277.5
1968	22.8	0.0	0.0	7.2	0.3	0.0	3.3	61.8	0.0	0.1	62.5	158.0
1969	2.2	0.0	0.0	7.9	0.0	0.0	6.1	65.6	0.0	0.1	31.6	113.4
1970	8.0	0.0	0.0	6.1	2.4	0.0	0.6	54.1	0.0	0.7	33.8	105.7
1971	4.1	0.0	0.0	1.5	0.4	0.0	5.6	50.5	0.0	0.1	11.1	73.3
1972	0.0	0.0	0.0	2.4	0.7	0.0	0.1	51.4	0.0	8.3	6.4	69.2
1973	0.1	0.0	0.0	4.5	5.4	0.0	2.5	44.4	0.0	10.4	22.2	89.3
1974	0.0	0.6	0.0	6.5	3.2	0.0	0.3	79.8	0.0	2.2	34.6	127.3
1975	0.0	1.8	0.0	2.6	1.8	0.0	0.9	101.1	0.0	9.1	29.5	146.9
1976	1.1	0.0	428.3	3.1	3.1	0.0	1.7	93.4	0.0	1.7	17.2	549.7
1977	1.0	0.1	792.8	3.6	17.4	0.0	4.7	78.1	0.0	26.4	7.4	931.4
1978	2.2	0.4	647.0	7.5	31.5	31.6	6.4	88.1	0.0	2.8	11.1	828.5
1979	4.1	0.1	1049.6	5.4	2964.9	140.6	392.4	96.7	0.0	1.6	97.6	4752.7
1980	0.1	0.1	619.1	5.0	2794.4	6.7	263.0	104.1	1.3	0.6	290.6	4085.1
1981	2.0	3.8	516.2	695.4	4523.3	0.0	92.5	50.1	2.0	1.7	978.1	6865.0
1982	1.2	1.2	282.6	895.2	2885.3	0.0	2.5	47.4	2.9	1.3	1291.0	5410.6
1983	4.3	2.0	225.0	96.5	4529.9	0.3	0.3	25.8	0.0	0.0	12.4	4896.5
1984	2.4	2.7	565.4	117.6	3703.2	0.1	4.1	35.0	0.0	11.1	8.8	4450.4
1985	4.5	0.0	409.8	76.9	3463.7	0.0	3.8	61.9	0.5	0.7	6.3	4028.0
1986	8.7	0.0	349.1	58.6	2165.6	0.0	24.0	133.9	0.0	2.2	5.5	2747.6
1987	2.9	0.0	271.0	3.5	2335.2	0.0	1.7	70.6	0.0	13.9	4.6	2703.4
1988	42.8	0.0	218.4	10.7	2643.6	0.2	4.6	39.2	136.9	0.3	8.6	3105.1
1989	0.4	0.0	2213.4	1.6	2233.8	0.0	10.3	21.9	0.0	2.0	8.7	4492.0
1990	11.0	0.0	2887.6	989.7	8077.0	84.0	2061.2	8.2	18.8	590.1	3.0	14730.6
1991	4.0	2.6	914.5	2240.4	6572.2	0.0	1231.8	35.0	663.7	1433.5	78.9	13176.6
1992	10.1	0.0	779.9	1389.5	8335.2	182.4	1149.7	70.6	3916.8	919.7	103.9	16857.9
1993	6.8	0.0	1598.9	814.6	12170.4	744.6	349.3	43.3	3994.4	872.9	47.7	20642.9
1994	77.1	0.0	822.5	648.0	10530.0	1178.4	512.5	107.7	4480.5	240.6	203.0	18800.2
1995	133.2	28.5	754.6	1414.1	13045.6	955.4	1083.4	423.9	4244.3	260.3	367.3	22710.6
1996	320.2	0.0	413.3	3243.7	12228.7	489.7	2102.6	602.2	6202.4	511.9	1126.3	27241.0
1997	157.6	0.0	203.5	1917.6	9827.0	746.9	1721.2	16.8	1365.5	629.7	1766.7	18352.4
1998	121.2	0.9	124.2	1088.2	11299.7	960.2	3416.7	3.0	1367.9	843.3	1402.2	20627.6
1999	39.9	0.2	15.8	968.0	6765.5	562.6	1812.3	678.3	1134.7	695.1	2187.8	14860.1
2000	13.7	0.1	3.5	204.0	2613.5	1058.9	2369.9	863.6	1319.9	154.4	655.2	9256.7
2001	3.4	0.0	0.1	0.1	1774.7	243.1	9.1	27.0	4.0	231.1	1.1	2293.6
2002	0.0	0.0	0.3	1.1	1723.1	158.2	0.6	23.6	0.7	284.9	2.2	2194.8

Table B4.5 Number of samples collected and number of individual spiny dogfish measured for length, by sex (U= unspecified; M-male; F=female), from USA commercial landings, by month, year and quarter, 1982-2002.

Year		Sex	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	Q1	Q2	Q3	Q4	Total
1982	# of Samples		2	1	2									1	6	5	0	0	1	6
		U													0	0	0	0	0	0
		M	2		22										24	24	0	0	0	24
		F	198	101	281									100	680	580	0	0	100	680
1983	# of Samples							1		1	1	1	1		5	0	1	2	2	5
		U													0	0	0	0	0	0
		M													0	0	0	0	0	0
		F						104		118	121	133	134		610	0	104	239	267	610
1984	# of Samples							3	6	3	1				13	0	3	10	0	13
		U													0	0	0	0	0	0
		M						1	3	4	1				9	0	1	8	0	9
		F						286	745	351	117				1499	0	286	1213	0	1499
1985	# of Samples							2	1	3	3	2	2		13	0	2	7	4	13
		U													0	0	0	0	0	0
		M							1	1	14	1	4		21	0	0	16	5	21
		F						267	135	389	368	252	246		1657	0	267	892	498	1657
1986	# of Samples							3	1	4	3	2			13	0	3	8	2	13
		U						232							232	0	232	0	0	232
		M							45	1	10	8			64	0	0	56	8	64
		F						130	129	521	168	217			1165	0	130	818	217	1165
1987	# of Samples							3	6	2	1	2	1		15	0	3	9	3	15
		U													0	0	0	0	0	0
		M						16	4		1	1	9		31	0	16	5	10	31
		F						457	800	257	128	243	115		2000	0	457	1185	358	2000
1988	# of Samples						3	3	2	1	2	4			15	0	6	5	4	15
		U													0	0	0	0	0	0
		M							1	1		5			7	0	0	2	5	7
		F					371	364	238	128	230	433			1764	0	735	596	433	1764
1989	# of Samples							3	1	1	3	3			11	0	3	5	3	11
		U													0	0	0	0	0	0
		M								6	6	23			35	0	0	12	23	35
		F						352	127	137	390	369			1375	0	352	654	369	1375
1990	# of Samples							5	6	3	1	1	1	1	18	0	5	10	3	18
		U													0	0	0	0	0	0
		M							4			1	14		19	0	0	4	15	19
		F						593	775	358	135	111	123	135	2230	0	593	1268	369	2230
1991	# of Samples				1	1		2	4	2		1	1	2	14	1	3	6	4	14
		U							108			109			217	0	0	108	109	217
		M						11	127	12			8	3	161	0	11	139	11	161
		F			101	125		226	396	272			116	282	1518	101	351	668	398	1518
1992	# of Samples					1	2	4	6	4	1	2	4	1	25	0	7	11	7	25
		U						123							123	0	123	0	0	123
		M						2	1				8	1	12	0	2	1	9	12
		F				109	219	409	829	503	124	296	556	142	3187	0	737	1456	994	3187
1993	# of Samples						1	3	5	5	3	4			21	0	4	13	4	21
		U					133								133	0	133	0	0	133
		M								4	19	19			42	0	0	23	19	42
		F						400	683	776	369	545			2773	0	400	1828	545	2773
1994	# of Samples							3	6	4	2				15	0	3	12	0	15
		U							134						134	0	0	134	0	134
		M						2	31	14					47	0	2	45	0	47
		F						423	758	649	262				2092	0	423	1669	0	2092

Table B4.6. Summary of estimated landings of US and Canada commercial fisheries by sex. Port samples from NMFS and MADMF were pooled. Estimated total weights b summation of estimated weights from sampled length frequency distributions. Estimated weights computed from length-weight regressions. Females W =exp(-15.025)*L ^3.606935, Males W=exp(-13.002)*L^3.097787 with weight in kg, length in cm. "Samples"= number of measured dogfish.

	Composite (NMFS and MADMF) Biological Samples from Ports							Commercial Landings			Prorated Landings By Sex			
year	Total Samples Males	Est Tot Wt (kg) Males	Ave Wt (kg) Males	Total Samples (females)	EstTot Wt (kg) females	Est Avg Wt (kg) females	Fraction Females by weight	US Commercial Landings (mt)	Canada Landings (mt)	Tota Comm Landings (mt)	Est Landings (mt) of Males	Est. Landings (mt) of females	Number of Males Landed (000)	Number of Females Landed (000)
1988	7	14.8	2.114	1764	7561.4	4.287	0.9980	3105	0	3105	6.1	3098.9	2.9	722.9
1989	35	67.5	1.927	1375	5528.6	4.021	0.9879	4492	166	4658	56.1	4601.9	29.1	1144.5
1990	19	33.7	1.772	2230	8917.5	3.999	0.9962	14731	1316	16047	60.4	15986.6	34.1	3997.8
1991	23	37.8	1.643	1518	5924.5	3.903	0.9937	13177	292	13469	85.4	13383.6	52.0	3429.2
1992	12	22.3	1.861	3187	12181.9	3.822	0.9982	16858	829	17687	32.4	17654.6	17.4	4618.8
1993	42	78.4	1.866	2772	9923.1	3.580	0.9922	20643	1411	22054	172.8	21881.2	92.6	6112.5
1994	47	86.6	1.843	2091	6619.5	3.166	0.9871	18800	1819	20619	266.3	20352.7	144.5	6429.1
1995	25	38.9	1.555	2266	6677.3	2.947	0.9942	22711	948	23659	136.9	23522.1	88.1	7982.4
1996	569	886.7	1.558	1644	4398.0	2.675	0.8322	27241	416	27657	4640.3	23016.7	2977.8	8603.8
1997	303	449.1	1.482	382	780.9	2.044	0.6349	18352	446	18798	6863.4	11934.6	4630.5	5837.8
1998	68	85.4	1.257	683	1434.6	2.100	0.9438	20628	1079	21707	1220.2	20486.8	971.1	9753.4
1999	93	130.3	1.401	311	625.6	2.011	0.8276	14860	2467	17327	2986.8	14340.2	2131.9	7129.2
2000	405	561.2	1.386	5139	12157.9	2.366	0.9559	9257	2677	11934	526.5	11407.5	380.0	4821.8
2001	12	17.1	1.422	215	456.5	2.123	0.9640	2294	3755	6049	217.9	5831.1	153.3	2746.2
2002	65	97.6	1.501	1893	5065.8	2.676	0.9811	2195	3400	5595	105.7	5489.3	70.4	2051.2
formula	A	B	C=B/A	D	E	F=E/D	G=E/(E+B)	H	I	J=H+I	K=(1-G)*J	L=G*J	M=K/C	N=L/F

Table B4.7 Summary of species group assignments applied to landings records.

Lookup Table: Species_Code

Sp_Code	Group	Species Name
0	otherFish	UNKNOWN
1	otherFish	ALEWIFE
3	otherFish	AMBER_JACK
6	otherFish	BAY_ANCHOVY
12	monk	ANGLER
18	otherFish	BARRACUDA
19	otherFish	NEEDLEFISH_Atlantic
23	otherFish	BLUEFISH
24	otherFish	SQUIRRELFISH
25	otherFish	SQUIRRELFISH
27	otherFish	BARRELFISH
33	otherFish	BONITO
45	otherFish	BULLHEADS
51	squidbutterfish	BUTTERFISH
57	otherFish	COBIA
63	otherFish	CARP
66	otherFish	CATFISH
81	prin ground	COD
84	otherFish	CRAPPIE
87	otherFish	CREVALLE
90	otherFish	CROAKER_ATLANTIC
93	otherFish	CUNNER
96	otherFish	CUSK
98	otherFish	RIBBONFISH
104	otherFish	DRUM_NK
105	otherFish	DOLPHIN_FISH
106	otherFish	DRUM_BLACK
107	otherFish	DRUM_RED
112	pelagics	HERRING_BLUE_BACK
114	pelagics	HERRING_BLUE_BACK
115	otherFish	EEL_AMERICAN
116	otherFish	EEL_CONGER
117	otherFish	EEL_CONGER
120	flatfish	FLOUNDER_WINTER
121	fluke_4spot	FLOUNDER_SUMMER
122	flatfish	FLOUNDER_WITCH
123	flatfish	FLOUNDER_YELLOWTAIL
124	flatfish	FLOUNDER_AM_PLAICE
125	flatfish	FLOUNDER_SAND-DAB
126	flatfish	FLOUNDERS_(NK)
127	fluke_4spot	FLOUNDER_FOURSPOT
128	flatfish	HOGCHOCKER
130	flatfish	FLOUNDER_SOUTHERN
132	otherFish	MACKEREL_FRIGATE
133	otherFish	GARFISH
134	otherFish	GIZZARD_SHAD
138	otherFish	RN_GRENADIER
141	otherFish	GROUPER_SNOWY
142	otherFish	GROUPER_SNOWY
144	otherFish	GRUNTS
145	otherFish	GRUNTS
146	otherFish	GRUNTS
147	prin ground	HADDOCK
150	otherFish	HAGFISH
152	smallmeshground	HAKE_RED
153	prin ground	HAKE_WHITE
155	prin ground	HAKE_MIX_RED_&_WHITE
158	flatfish	HALIBUT_GREENLAND
159	flatfish	HALIBUT_ATLANTIC
165	otherFish	HARVEST_FISH
167	AtlHerring	HERRING_(NK)_
168	AtlHerring	HERRING_ATLANTIC_
171	otherFish	ARGENTINE__
173	otherFish	SHAD_HICKORY_
179	otherFish	HOGFISH__
188	otherFish	JOHN_DORY__
268	otherFish	LADYFISH__
269	prin ground	POLLOCK__
272	otherFish	POMPANO_COMMON_
305	otherFish	SALMON_ATLANTIC_
309	otherFish	SALMON_UNCL_
311	otherFish	PERCH_SAND__
326	otherFish	SCULPINS__
327	otherFish	SEA_RAVEN__
329	scupSeaBass	SCUP__
330	otherFish	PORGY_RED__
331	otherFish	SCAD_ROUGH__
332	otherFish	SCAD_ROUGH__
333	otherFish	SCAD_ROUGH__
335	scupSeaBass	SEA_BASS_BLACK_
336	otherFish	SNAPPER__
340	otherFish	SNAPPER__
341	otherFish	SEA_ROBINS__
342	otherFish	SEA_ROBINS__
343	otherFish	SEA_ROBINS__
344	otherFish	WEAKFISH_SQUETEAGUE_
345	otherFish	WEAKFISH_SPOTTED_
346	OtherSharks	DOGFISH_CHAIN_
347	otherFish	SHAD_AMERICAN_
348	OtherSharks	SHARK_NURSE_
349	OtherSharks	SHARK_SAND_TIGER_
350	dogfish	DOGFISH_(NK)_
351	OtherSharks	DOGFISH_SMOOTH_
352	dogfish	DOGFISH_SPINY_
353	OtherSharks	SHARK_THRESHER_
354	OtherSharks	SHARK_THRESHR_BGEYE_
355	OtherSharks	SHARK_MAKO_SHORTFIN_
356	otherFish	SHEEPSHEAD__
357	OtherSharks	SHARK_MAKO__
358	OtherSharks	SHARK_MAKO_LONGFIN_
359	OtherSharks	SHARK_NK__
362	otherFish	SILVERSIDE_ATLANTIC_
365	skates	SKATES__
366	skates	SKATE_LITTLE_
367	skates	SKATE_BIG__
368	skates	SKATE_BARNDOOR_
369	skates	SKATE_BARNDOOR_
371	otherFish	SMELT__
374	otherFish	SNAPPER_VERMILLION_
375	otherFish	SNAPPER_DOG_
376	otherFish	SNAPPER_RED_
381	otherFish	SPADEFISH__
384	otherFish	MACKEREL_SPAN_
385	otherFish	ESCOLAR__
406	otherFish	SPOT__
415	otherFish	TROUT_STEELHEAD_
418	stripedbass	BASS_STRIPED_
420	sturgeon	STURGEON_ATLANTIC_
421	sturgeon	STURGEONS__
422	sturgeon	STURGEON_SHORT-NOSE_
423	otherFish	SUCKERS__
426	otherFish	SUNFISHES__
429	otherFish	PUFFER_NORTHERN_
432	LargePelagic	SWORDFISH__
435	otherFish	TARPON__
438	otherFish	TAUTOG__
444	otherFish	TILEFISH_BLUELINS_
445	otherFish	TILEFISH_SAND_
446	otherFish	TILEFISH_GOLDEN_
447	otherFish	TILEFISH__
451	otherFish	TOADFISH_OYSTER_
453	otherFish	TOM_COD__
486	OtherSharks	SHARK_NIGHT_
487	OtherSharks	SHARK_BLACK_TIP_
488	OtherSharks	SHARK_SPINNER_
489	OtherSharks	SHARK_BULL__
490	OtherSharks	SHARK_WHITETIP_OC_
491	OtherSharks	SHARK_TIGER_
492	OtherSharks	SHARK_LEMON_
493	OtherSharks	SHARK_BLUE__
494	OtherSharks	SHARK_ATL_SHARPNOSE_
495	OtherSharks	SHARK_HAMMERHEAD_
496	OtherSharks	SHARK_BASKING_
497	OtherSharks	SHARK_LARGE_COASTAL_
498	OtherSharks	SHARKS_PELAGIC_
499	OtherSharks	SHARK_FINETOOTH_
501	OtherSharks	SHARK_SMALL_COASTAL_
502	OtherSharks	SHARK_RIDGEBACK_LG_
506	OtherFish	PERCH_WHITE_
507	smallmeshground	BLK_WHTNG&SLHAKE_MIX_
508	smallmeshground	WHITING_BLACK_
509	smallmeshground	HAKE_SILVER_
512	OtherFish	WOLFFISHES__
513	OtherFish	WRECKFISH__
517	OtherFish	PERCH_YELLOW_
524	OtherFish	OTHER_GRNDFISH
525	mollusk	OTHER_PELAGICS_
526	mollusk	OTHER_FISH__
529	mollusk	OTHER_FISH__
700	crustacean	CRAB_BLUE__
701	crustacean	CRAB_LADY__
702	crustacean	CRAB_HERMIT_
708	crustacean	CRAB_GREEN__
710	crustacean	CRAB_RED__
711	crustacean	CRAB_JONAH__
712	crustacean	CRAB_ROCK__
713	crustacean	713_CRAB_NK__
714	crustacean	CRAB_CANCER_
716	crustacean	CRAB_CANCER_
718	crustacean	CRAB_QUEEN_SNOW_
724	crustacean	CRAB_HORSESHOE_
727	crustacean	LOBSTER__
733	crustacean	SHRIMP_ROYAL_RED_
735	crustacean	SHRIMP_(NK)__
736	crustacean	SHRIMP_(PANDALID)_
737	crustacean	SHRIMP_(MANTIS)_
738	crustacean	SHRIMP_(PENAEID)_
743	mollusk	743_CLAM_BLOODARC_
748	mollusk	QUAHOG__
754	mollusk	QUAHOG_OCEAN_
760	mollusk	CLAM_RAZOR__
763	mollusk	763_CLAM_SOFT__
764	mollusk	CLAM_NK__
765	mollusk	CLAM_SURF_ARTIC_
769	mollusk	CLAM_SURF__
775	mollusk	CONCHS__
776	mollusk	WHELK_CHANNELED_
777	mollusk	WHELK_KNOBBED_
778	mollusk	WHELK_LIGHTNING_
781	mollusk	MUSSELS__
786	mollusk	OCTOPUS__
789	mollusk	OYSTERS__
792	mollusk	OYSTER_EUROPEAN_FLT_
795	mollusk	SCALLOP_ICELANDIC_
796	mollusk	SCALLOPS_NK__
798	mollusk	PERIWINKLES__
799	mollusk	SCALLOP_BAY_
800	scallops	SCALLOP_SEA_

Table B4.8. Summary of gear codes group assignments.

Gear code	Gear Name
0	other
10	hook
20	other
21	hook
30	other
31	other
34	other
40	hook
41	other
50	trawl
51	trawl
52	trawl
55	trawl
56	trawl
58	shrimptrawl
59	trawl
60	other
61	other
62	other
64	other
65	other
66	other
70	other
71	other
80	other
90	other
91	other
100	gillnet
101	gillnet
102	gillnet
103	gillnet
105	gillnet
110	gillnet
112	gillnet
115	gillnet
116	gillnet
119	gillnet

Gear code	Gear Name
120	other
121	other
122	other
123	other
124	other
131	dredge
132	dredge
140	other
141	other
142	other
143	other
160	other
170	other
180	other
181	other
182	other
183	other
184	other
185	other
186	other
190	other
200	other
201	other
202	other
203	other
204	other
205	other
206	other
210	other
211	other
212	other
220	other
221	other
222	other
223	other
230	other
231	other

Gear code	Gear Name
240	other
250	other
251	other
252	other
253	other
254	other
260	other
270	other
281	other
282	other
290	other
300	other
301	other
310	other
320	other
322	other
323	other
330	other
331	other
332	other
340	other
350	other
351	other
360	other
370	other
380	other
381	dredge
382	dredge
383	dredge
384	other
385	other
386	other
387	other
400	dredge
410	other
411	other
412	other

Gear code	Gear Name
413	other
414	other
420	other
430	other
500	other
510	other
520	other
525	other
530	other
563	other
999	other

Table B4.9. Master table of catch ratio based estimates of spiny dogfish discards by target species group and gear types for fishing years 1988-2002 Table updated 5/21/03

		gear Data														
		gillnet			hook			trawl			Total Sum of Ntrips	Total Sum of Total Discards in mt	Total Sum of Var Total Discards (mt^2)			
Fishing Year	target_sp	Sum of Ntrips	Sum of Total Discards in mt	Sum of Var Total Discards (mt^2)	Sum of Ntrips	Sum of Total Discards in mt	Sum of Var Total Discards (mt^2)	Sum of Ntrips	Sum of Total Discards in mt	Sum of Var Total Discards (mt^2)				SE (mt)	CV
1988	AtlHerring	0	0	0				0	0	0	0	0	0	0	
	crustacean	0	0	0				1	0	0	1	0	0	0	
	dogfish	0	0	0				0	0	0	0	0	0	0	
	flatfish	0	0	0	0	0	0	6	2910	1234508	6	2910	1234508	1111	0.382
	fluke 4spo	0	0	0				4	4076	4415033	4	4076	4415033	2101	0.515
	mackerel	0	0	0				1	55616	0	1	55616	0	0	0.000
	menhaden	0	0	0				0	0	0	0	0	0	0	
	monk	0	0	0	0	0	0	0	0	0	0	0	0	0	
	prin ground	0	0	0	0	0	0	9	289	35641	9	289	35641	189	0.654
	scupSeaBa	0	0	0				1	0	0	1	0	0	0	
	skates	0	0	0	0	0	0	0	0	0	0	0	0	0	
	smallmesh	0	0	0	0	0	0	6	3043	9848315	6	3043	9848315	3138	1.031
	squidbutter	0	0	0				6	564	73754	6	564	73754	272	0.481
1988 Total		0	0	0	0	0	0	34	66498	15607251	34	66498	15607251	3951	0.059
1989	AtlHerring	0	0	0	0	0	0	6	41	302	6	41	302	17	0.426
	crustacean	0	0	0				3	0	1	3	0	1	1	1.811
	dogfish	5	855	671303	0	0	0	6	234	659	11	1089	671962	820	0.753
	flatfish	20	0	0	0	0	0	47	17103	21574755	67	17103	21574755	4645	0.272
	fluke 4spo	0	0	0	0	0	0	5	56	977	5	56	977	31	0.560
	mackerel	2	2	0	0	0	0	2	2516	9305255	4	2518	9305255	3050	1.212
	menhaden	0	0	0				0	0	0	0	0	0	0	
	monk	4	1476	730852	0	0	0	5	6789	51652808	9	8265	52383660	7238	0.876
	prin ground	110	4394	1166154	0	0	0	33	4277	1761540	143	8671	2927694	1711	0.197
	scupSeaBa	0	0	0	0	0	0	4	3540	2224566	4	3540	2224566	1491	0.421
	skates	0	0	0	0	0	0	5	370	313141	5	370	313141	560	1.514
	smallmesh	0	0	0	0	0	0	41	4585	9146276	41	4585	9146276	3024	0.660
	squidbutter	0	0	0				25	4000	9246438	25	4000	9246438	3041	0.760
1989 Total		141	6727	2568309	0	0	0	182	43509	105226718	323	50236	107795027	10382	0.207
1990	AtlHerring	0	0	0				1	0	0	1	0	0	0	
	crustacean	0	0	0	0	0	0	4	2	5	4	2	5	2	1.230
	dogfish	10	1344	237682	0	0	0	3	8977	731969	13	10321	969651	985	0.095
	flatfish	22	10	85	0	0	0	30	10420	19482803	52	10430	19482888	4414	0.423
	fluke 4spo	0	0	0	0	0	0	6	3748	3755259	6	3748	3755259	1938	0.517
	mackerel	1	0	0	0	0	0	6	1204	1034466	7	1204	1034466	1017	0.845
	menhaden	0	0	0				0	0	0	0	0	0	0	
	monk	1	0	0	0	0	0	1	215	0	2	215	0	0	0.000
	pelagics							0	0	0	0	0	0	0	
	prin ground	84	4612	2697424	1	0	0	30	16808	70395658	115	21420	73093082	8549	0.399
	scupSeaBa	0	0	0	0	0	0	8	4792	4705811	8	4792	4705811	2169	0.453
	skates	0	0	0	0	0	0	10	134	8492	10	134	8492	92	0.687
	smallmesh	0	0	0	0	0	0	29	1286	258634	29	1286	258634	509	0.396
	squidbutter	0	0	0	0	0	0	15	36016	1666581822	15	36016	1666581822	40824	1.134
1990 Total		118	5967	2935191	1	0	0	143	83600	1766954920	262	89567	1769890111	42070	0.470

1991	AtlHerring	3	32	1229				2	294	0	5	326	1229	35	0.108
	crustacean	0	0	0	0	0	0	6	0	0	6	0	0	0	0.798
	dogfish	163	1589	515108	0	0	0	7	14367	71710917	170	15956	72226025	8499	0.533
	flatfish	87	592	41738	0	0	0	52	9211	26972910	139	9803	27014648	5198	0.530
	fluke 4spo	0	0	0	0	0	0	24	4564	2206170	24	4564	2206170	1485	0.325
	mackerel	2	0	0	0	0	0	2	3342	29134132	4	3342	29134132	5398	1.615
	menhaden	3	15	278				0	0	0	3	15	278	17	1.112
	monk	51	469	4399	0	0	0	13	1192	883693	64	1661	888092	942	0.567
	pelagics							1	0	0	1	0	0	0	
	prin ground	777	8334	1153238	35	1367	528324	45	10178	9644328	857	19879	11325889	3365	0.169
	scupSeaBa	0	0	0	0	0	0	4	29532	503848575	4	29532	503848575	22447	0.760
	skates	2	94	0	0	0	0	12	622	70781	14	716	70781	266	0.371
	smallmesh	0	0	0	2	0	0	54	946	106723	56	946	106723	327	0.345
	squidbutter	0	0	0				42	2944	2510440	42	2944	2510440	1584	0.538
1991 Total		1088	11125	1715989	37	1367	528324	264	77193	647088669	1389	89685	649332981	25482	0.284
1992	AtlHerring	0	0	0				1	0	0	1	0	0	0	
	crustacean	3	0	0				10	0	0	13	0	0	0	0.061
	dogfish	162	3492	6365059	0	0	0	2	1857	323261	164	5349	6688320	2586	0.483
	flatfish	104	73	3089	0	0	0	11	743	444048	115	816	447138	669	0.820
	fluke 4spo	0	0	0	0	0	0	14	2154	224194	14	2154	224194	473	0.220
	mackerel	13	2	2	0	0	0	3	594	99914	16	596	99916	316	0.530
	menhaden	0	0	0				0	0	0	0	0	0	0	
	monk	52	96	606	0	0	0	5	1	1	57	96	607	25	0.256
	pelagics							0	0	0	0	0	0	0	
	prin ground	773	4002	192509	0	0	0	27	6398	14188876	800	10400	14381385	3792	0.365
	scupSeaBa	1	2	0	0	0	0	0	0	0	1	2	0	0	0.000
	skates	3	24	0	0	0	0	7	11230	25018475	10	11253	25018475	5002	0.444
	smallmesh	1	0	0	0	0	0	46	1506	549887	47	1506	549887	742	0.493
	squidbutter	0	0	0	0	0	0	16	4571	3501286	16	4571	3501286	1871	0.409
1992 Total		1112	7691	6561265	0	0	0	142	29053	44349944	1254	36744	50911208	7135	0.194
1993	AtlHerring	0	0	0	0	0	0	4	0	0	4	0	0	0	
	crustacean	7	0	0				5	233	90907	12	234	90907	302	1.290
	dogfish	118	1962	257956	0	0	0	4	383	3010	122	2345	260966	511	0.218
	flatfish	91	18	48	0	0	0	14	1302	790364	105	1320	790413	889	0.674
	fluke 4spo	0	0	0	0	0	0	15	1201	253507	15	1201	253507	503	0.419
	mackerel	7	1	0	0	0	0	2	66	2154	9	67	2154	46	0.693
	menhaden	2	47	4159				0	0	0	2	47	4159	64	1.368
	monk	54	626	326733	0	0	0	5	616	12	59	1242	326745	572	0.460
	pelagics	1	0	0							1	0	0	0	
	prin ground	459	2902	282835	0	0	0	25	2754	1310655	484	5657	1593490	1262	0.223
	scupSeaBa	0	0	0	0	0	0	4	8851	78590488	4	8851	78590488	8865	1.002
	skates	7	14	26	0	0	0	7	42	120	14	56	146	12	0.216
	smallmesh	0	0	0	0	0	0	31	914	138157	31	914	138157	372	0.406
	squidbutter	0	0	0	0	0	0	16	2254	1058246	16	2254	1058246	1029	0.456
1993 Total		746	5571	871758	0	0	0	132	18618	82237620	878	24188	83109378	9116	0.377
1994	AtlHerring	2	10	12	0	0	0	0	0	0	2	10	12	3	0.333
	crustacean	10	0	0	0	0	0	7	2	1	17	2	1	1	0.666
	dogfish	317	754	8923	0	0	0	5	2010	506037	322	2764	514960	718	0.260
	flatfish	164	0	0	0	0	0	13	785	656711	177	785	656711	810	1.033
	fluke 4spo	0	0	0	0	0	0	22	1219	365002	22	1219	365002	604	0.496
	mackerel	5	57	683	0	0	0	0	0	0	5	57	683	26	0.459
	menhaden	6	0	0				0	0	0	6	0	0	0	
	monk	151	254	27179	0	0	0	11	24	176	162	278	27354	165	0.595
	pelagics	10	0	0				0	0	0	10	0	0	0	
	prin ground	647	74	573	3	204	4604	20	1490	373392	670	1767	378569	615	0.348
	scupSeaBa	0	0	0	0	0	0	1	1632	0	1	1632	0	0	0.000
	skates	18	86	4984	0	0	0	3	2357	7527849	21	2443	7532833	2745	1.123
	smallmesh	1	0	0	0	0	0	1	50	0	2	50	0	0	0.000
	squidbutter	0	0	0	0	0	0	12	6384	7269159	12	6384	7269159	2696	0.422
1994 Total		1331	1235	42353	3	204	4604	95	15952	16698326	1429	17390	16745284	4092	0.235

1995	AtlHerring	2	0	0				9	162	7154	11	162	7154	85	0.522
	crustacean	6	2	0				20	0	0	26	2	0	0	0.004
	dogfish	344	1366	90874	1	646	0	10	2879	480116	355	4891	570990	756	0.154
	flatfish	135	1	1	0	0	0	18	869	171599	153	871	171600	414	0.476
	fluke 4spo	0	0	0	0	0	0	36	1412	774916	36	1412	774916	880	0.623
	mackerel	3	5	0	0	0	0	4	177	51375	7	182	51375	227	1.246
	menhaden	8	0	0				0	0	0	8	0	0	0	
	monk	135	59	298	0	0	0	5	78	380	140	137	678	26	0.190
	pelagics	8	0	0				1	0	0	9	0	0	0	0.010
	prin ground	400	778	169578	0	0	0	15	3190	1271917	415	3968	1441495	1201	0.303
	scupSeaBa	0	0	0	0	0	0	3	1286	338140	3	1286	338140	581	0.452
	skates	17	37	485	0	0	0	14	725	453343	31	762	453828	674	0.884
	smallmesh	0	0	0	0	0	0	31	1400	1465986	31	1400	1465986	1211	0.865
	squidbutter	0	0	0	0	0	0	39	5298	9808040	39	5298	9808040	3132	0.591
1995 Total		1058	2248	261235	1	646	0	205	17477	14822966	1264	20371	15084202	3884	0.191
1996	AtlHerring	2	0	0				4	0	0	6	0	0	0	
	crustacean	4	23	2092	0	0	0	11	2	1	15	25	2093	46	1.826
	dogfish	276	1024	84441	0	0	0	8	1372	702466	284	2396	786907	887	0.370
	flatfish	171	0	0	0	0	0	24	266	10049	195	266	10049	100	0.377
	fluke 4spo	0	0	0	0	0	0	20	377	123123	20	377	123123	351	0.930
	mackerel	11	6	14	0	0	0	4	120	5908	15	126	5921	77	0.609
	menhaden	9	1	1				0	0	0	9	1	1	1	0.677
	monk	136	43	192	0	0	0	4	10210	3957	140	10253	4149	64	0.006
	pelagics	2	0	0				1	144	0	3	144	0	0	0.000
	prin ground	368	210	5621	1	0	0	13	4049	3221429	382	4259	3227050	1796	0.422
	scupSeaBa	0	0	0	0	0	0	4	8	41	4	8	41	6	0.818
	skates	19	20	132	0	0	0	11	6513	2952982	30	6534	2953114	1718	0.263
	smallmesh	0	0	0	0	0	0	59	2414	2306379	59	2414	2306379	1519	0.629
	squidbutter	0	0	0	0	0	0	48	742	258365	48	742	258365	508	0.685
1996 Total		998	1327	92493	1	0	0	211	26218	9584699	1210	27545	9677192	3111	0.113
1997	AtlHerring	0	0	0	0	0	0	0	0	0	0	0	0	0	
	crustacean	2	0	0	0	0	0	0	0	0	2	0	0	0	
	dogfish	319	296	2881	0	0	0	0	0	0	319	296	2881	54	0.181
	flatfish	118	1	0	0	0	0	7	8298	66397466	125	8298	66397466	8148	0.982
	fluke 4spo	6	0	0	0	0	0	10	609	66045	16	609	66045	257	0.422
	mackerel	14	4	2	0	0	0	0	0	0	14	4	2	1	0.335
	menhaden	11	0	0				0	0	0	11	0	0	0	0.592
	monk	161	78	307	0	0	0	2	435	0	163	513	307	18	0.034
	pelagics	6	0	0				0	0	0	6	0	0	0	1.242
	prin ground	276	43	178	0	0	0	7	549	21842	283	592	22019	148	0.251
	scupSeaBa	0	0	0	0	0	0	0	0	0	0	0	0	0	
	skates	24	3	4	0	0	0	0	0	0	24	3	4	2	0.606
	smallmesh	0	0	0	0	0	0	2	1057	1081436	2	1057	1081436	1040	0.984
	squidbutter	2	0	0	0	0	0	52	1000	761812	54	1000	761812	873	0.873
1997 Total		939	425	3371	0	0	0	80	11947	68328600	1019	12371	68331971	8266	0.668
1998	AtlHerring	0	0	0				0	0	0	0	0	0	0	
	crustacean	2	0	0	0	0	0	0	0	0	2	0	0	0	
	dogfish	405	222	5588	0	0	0	7	1393	294616	412	1615	300204	548	0.339
	flatfish	42	15	200	0	0	0	5	2833	80	47	2848	280	17	0.006
	fluke 4spo	2	0	0	0	0	0	11	644	103367	13	644	103367	322	0.499
	mackerel	11	1	1	0	0	0	2	0	0	13	1	1	1	0.842
	menhaden	30	15	178				0	0	0	30	15	178	13	0.900
	monk	158	22	42	0	0	0	0	0	0	158	22	42	7	0.291
	pelagics	12	0	0				0	0	0	12	0	0	0	
	prin ground	198	128	3486	0	0	0	1	241	0	199	369	3486	59	0.160
	scupSeaBa	0	0	0	0	0	0	0	0	0	0	0	0	0	
	skates	19	18	179	0	0	0	3	0	0	22	18	179	13	0.743
	smallmesh	0	0	0	0	0	0	10	2618	4421416	10	2618	4421416	2103	0.803
	squidbutter	0	0	0	0	0	0	19	261	17507	19	261	17507	132	0.506
1998 Total		879	421	9675	0	0	0	58	7990	4836985	937	8411	4846660	2202	0.262

	crustacean	3	0	0	0	0	0	0	0	0	3	0	0	0	
	dogfish	258	103	644	0	0	0	3	0	0	261	103	644	25	0.246
	flatfish	84	2	1	0	0	0	45	3165	1643228	129	3167	1643230	1282	0.405
	fluke 4spo	7	0	0	0	0	0	22	422	38244	29	422	38244	196	0.463
	mackerel	7	0	0	0	0	0	6	18	148	13	18	148	12	0.674
	menhaden	18	0	0				0	0	0	18	0	0	0	
	monk	103	24	107	0	0	0	6	613	136899	109	638	137006	370	0.581
	pelagics	16	0	0				0	0	0	16	0	0	0	
	prin ground	220	304	14894	0	0	0	14	707	79116	234	1011	94010	307	0.303
	scupSeaBa	0	0	0	0	0	0	2	67	306	2	67	306	17	0.259
	skates	26	11	58	0	0	0	1	0	0	27	11	58	8	0.668
	smallmesh	0	0	0	0	0	0	20	1207	330960	20	1207	330960	575	0.477
	squidbutter	1	0	0	0	0	0	47	558	55659	48	558	55659	236	0.423
1999 Total		747	444	15704	0	0	0	166	6758	2284560	913	7203	2300264	1517	0.211
2000	AtlHerring	0	0	0				3	0	0	3	0	0	0	1.142
	crustacean	4	0	0				1	45	0	5	45	0	0	0.000
	dogfish	79	42	453	4	171	2366	1	0	0	84	214	2820	53	0.249
	flatfish	78	1	0	0	0	0	85	493	32433	163	494	32433	180	0.365
	fluke 4spo	1	0	0	0	0	0	21	552	96014	22	552	96014	310	0.562
	mackerel	11	2	2	0	0	0	6	1	1	17	3	3	2	0.472
	menhaden	24	3	4				0	0	0	24	3	4	2	0.752
	monk	234	59	608	0	0	0	3	140	5856	237	199	6464	80	0.404
	pelagics	16	0	0				0	0	0	16	0	0	0	
	prin ground	373	913	97966	0	0	0	48	1128	251967	421	2041	349933	592	0.290
	scupSeaBa	0	0	0	0	0	0	4	2	1	4	2	1	1	0.480
	skates	25	61	3660	0	0	0	20	100	3171	45	161	6831	83	0.513
	smallmesh	1	147	0	0	0	0	19	2123	650697	20	2270	650697	807	0.355
	squidbutter	3	0	0				45	934	151382	48	934	151382	389	0.417
2000 Total		849	1228	102694	4	171	2366	256	5518	1191521	1109	6917	1296582	1139	0.165
2001	AtlHerring	0	0	0				0	0	0	0	0	0	0	
	crustacean	0	0	0				29	0	0	29	0	0	0	
	dogfish	52	22	213	0	0	0	0	0	0	52	22	213	15	0.668
	flatfish	46	0	0	0	0	0	69	1681	103480	115	1681	103480	322	0.191
	fluke 4spo	17	0	0	0	0	0	27	336	21242	44	336	21242	146	0.433
	mackerel	2	0	0	0	0	0	1	3	0	3	3	0	0	0.000
	menhaden	16	1	0				0	0	0	16	1	0	0	0.766
	monk	151	87	1848	0	0	0	4	2023	857256	155	2110	859104	927	0.439
	pelagics	3	0	0				0	0	0	3	0	0	0	0.736
	prin ground	249	852	83232	0	0	0	71	2291	313742	320	3144	396975	630	0.200
	scupSeaBa	0	0	0	0	0	0	5	67	4205	5	67	4205	65	0.975
	skates	39	32	367	0	0	0	3	752	20	42	784	387	20	0.025
	smallmesh	1	12	0	0	0	0	20	3388	7307464	21	3400	7307464	2703	0.795
	squidbutter	2	0	0	0	0	0	38	1924	217778	40	1924	217778	467	0.243
2001 Total		578	1005	85661	0	0	0	267	12465	8825188	845	13471	8910849	2985	0.222
2002	AtlHerring	0	0	0				0	0	0	0	0	0	0	
	crustacean	0	0	0	0	0	0	29	0	0	29	0	0	0	
	dogfish	24	30	624	0	0	0	0	0	0	24	30	624	25	0.819
	flatfish	20	56	656	0	0	0	145	564	13249	165	620	13905	118	0.190
	fluke 4spo	17	0	0	0	0	0	23	321	220452	40	321	220452	470	1.462
	mackerel	0	0	0	0	0	0	0	0	0	0	0	0	0	
	menhaden	3	0	0				0	0	0	3	0	0	0	
	monk	87	138	3956	0	0	0	19	440	44352	106	578	48308	220	0.380
	pelagics	0	0	0				1	0	0	1	0	0	0	
	prin ground	203	899	58180	9	1789	1710096	101	1160	174950	313	3848	1943226	1394	0.362
	scupSeaBa	0	0	0	0	0	0	1	207	0	1	207	0	0	0.000
	skates	26	606	124973	0	0	0	15	1500	1082050	41	2106	1207023	1099	0.522
	smallmesh	0	0	0	0	0	0	20	422	11632	20	422	11632	108	0.256
	squidbutter	0	0	0				28	1858	737921	28	1858	737921	859	0.462
2002 Total		380	1730	188390	9	1789	1710096	382	6471	2284606	771	9990	4183092	2045	0.205
Grand Total		10964	47143	15454089	56	4177	2245390	2617	429268	2790322573	13637	480588	2808022052	52991	0.110

Table B4.10. Summary of catch-based ratio estimates of dogfish discards by gear group and fishing year. All species groups included.

	gillnet			hook			trawl			Gill net + Hook + Trawl				
Fishing Year	Sum of Ntrips	Sum of Total Discards in mt gillnet	SE of Total Discards	Sum of Ntrips	Sum of Total Discards in mt Hook	SE of Total Discards	Sum of Ntrips	Sum of Total Discards in mt Trawl	SE of Total Discards	Total Sum of Ntrips	Total Sum of Total Discards in mt	SE of Total Discards	CV total	USA+ Canada+ Recreational Landings
1988	0	0	0	0	0	0	34	66498	3951	34	66498	3951	0.059	4987
1989	141	6727	1603	0	0	0	182	43509	10258	323	50236	10382	0.207	6676
1990	118	5967	1713	1	0	0	143	83600	42035	262	89567	42070	0.470	17788
1991	1088	11125	1310	37	1367	727	264	77193	25438	1389	89685	25482	0.284	15183
1992	1112	7691	2561	0	0	0	142	29053	6660	1254	36744	7135	0.194	18987
1993	746	5571	934	0	0	0	132	18618	9068	878	24188	9116	0.377	23311
1994	1331	1235	206	3	204	68	95	15952	4086	1429	17390	4092	0.235	21744
1995	1058	2248	511	1	646	0	205	17477	3850	1264	20371	3884	0.191	24365
1996	998	1327	304	1	0	0	211	26218	3096	1210	27545	3111	0.113	28279
1997	939	425	58	0	0	0	80	11947	8266	1019	12371	8266	0.668	19825
1998	879	421	98	0	0	0	58	7990	2199	937	8411	2202	0.262	22962
1999	747	444	125	0	0	0	166	6758	1511	913	7203	1517	0.211	18466
2000	849	1228	320	4	171	49	256	5518	1092	1109	6917	1139	0.165	13036
2001	578	1005	293	0	0	0	267	12465	2971	845	13471	2985	0.222	8468
2002	380	1730	434	9	1789	1308	382	6471	1511	771	9990	2045	0.205	7518
Grand Tota	10964	47143	3931	56	4177	1498	2617	429268	52824	13637	480588	52991	0.110	

Table B4.11. Projected dead discards of spiny dogfish by fishing year. Fraction dead by gear type= 0.75 gill nets, 0.50 trawls, 0.25 Hook gear. Standard error computation assumes that coefficient of variation remains constant.

	Gill Net			Hook			Trawl			Gill net + Hook + Trawl			
Fishing Year	Sum of Trips	Dead Discards (mt)	SE (mt)	Sum of Trips	Dead Discards (mt)	SE (mt)	Sum of Trips	Dead Discards (mt)	SE (mt)	Sum of Trips	Dead Discards (mt)	SE (mt)	CV
1988	0	0	0	0	0	0	34	33249	1975	34	33249	1975	0.059
1989	141	5045	1202	0	0	0	182	21755	5129	323	26800	5268	0.197
1990	118	4475	1285	1	0	0	143	41800	21018	262	46275	21057	0.455
1991	1088	8344	982	37	342	182	264	38596	12719	1389	47282	12758	0.270
1992	1112	5768	1921	0	0	0	142	14527	3330	1254	20294	3844	0.189
1993	746	4178	700	0	0	0	132	9309	4534	878	13487	4588	0.340
1994	1331	926	154	3	51	17	95	7976	2043	1429	8953	2049	0.229
1995	1058	1686	383	1	162	0	205	8738	1925	1264	10586	1963	0.185
1996	998	995	228	1	0	0	211	13109	1548	1210	14104	1565	0.111
1997	939	318	44	0	0	0	80	5973	4133	1019	6292	4133	0.657
1998	879	316	74	0	0	0	58	3995	1100	937	4311	1102	0.256
1999	747	333	94	0	0	0	166	3379	756	913	3713	762	0.205
2000	849	921	240	4	43	12	256	2759	546	1109	3723	596	0.160
2001	578	754	220	0	0	0	267	6233	1485	845	6987	1501	0.215
2002	380	1298	326	9	447	327	382	3236	756	771	4981	885	0.178
Grand Tota	10964	35358		56	1044		2617	214634		13637	251036	64047	

mean	16736
min	3713
max	47282

Table B4.12. Sum of discard estimates (mt) based on trip ratio method.

Year	Dredge	Other	Shrimp Trawls	Hook Gear	Gill Nets	Trawls	Gill Net + Trawl	All Gear	USA Comm Landings (mt)	USA+ Canada+ Recreatio nal
1989	0	0	19	0	6557	27283	33840	33859	4491	6676
1990	0	0	0	0	3495	43181	46676	46676	14742	17788
1991	728	26	3	1580	11984	35497	47481	49818	13154	15183
1992	2310	6763	0	1651	4278	53037	57315	68039	16874	18987
1993	1452	21	0	7	5443	31465	36907	38388	21228	23311
1994	3283	4	23	59	905	66885	67790	71159	18779	21744
1995	1553	135	6	699	1642	28816	30458	32851	21591	24365
1996	605	0	0	0	1464	15859	17324	17929	26944	28279
1997	1177	116	0	0	1489	28072	29561	30854	20412	19825
1998	497	27	0	0	889	23777	24666	25189	21500	22962
1999	107	497	0	0	545	8942	9487	10091	15377	18466
2000	770	19599	0	1249	1305	8563	9869	31487	9571	13036
2001	801	9001	0	0	1051	10494	11544	21347	2294	8468
2002	158	21783	0	5344	1639	10146	11785	39071	2136	7518

Table B4.13. Summary of total number of trips by commercial fishing vessels by year.

Sum of NTRIPS	GearName						
YEAR2	dredge	gillnet	hook	other	shrimptrawl	trawl	Grand Total
1989	23,463	16,081	3,674	23,880	9,113	35,987	112,198
1990	26,266	17,483	4,410	28,955	8,971	35,540	121,624
1991	28,710	18,549	6,340	31,006	7,227	36,997	128,829
1992	28,353	18,833	6,031	30,063	7,119	36,857	127,256
1993	27,908	25,209	5,493	40,432	5,864	37,473	142,379
1994	19,740	30,088	5,486	53,211	7,222	41,803	157,550
1995	14,905	29,196	6,921	53,920	10,309	45,885	161,136
1996	17,808	36,404	4,466	58,235	12,345	47,048	176,306
1997	20,915	50,321	5,236	91,492	13,127	47,274	228,366
1998	21,767	41,248	5,773	89,748	8,330	51,409	218,276
1999	14,051	30,263	3,463	67,436	4,970	33,524	153,707
2000	70,813	34,795	3,687	82,465	6,909	46,906	245,575
2001	78,528	31,104	3,922	79,769	3,617	47,940	244,880
2002	11,125	34,771	3,389	85,605	2,444	45,989	183,323
Grand Total	404,352	414,345	68,291	816,217	107,568	590,632	2,401,405

Table B5.1. Stratified mean number per tow indices for spiny dogfish from NEFSC spring (1968-2000) and autumn (1967-1999) bottom trawl surveys (offshore strata 1-30, 33-40, 61-76; Footnotes A-D).

	Spring				Autumn			
	Unsexed	Male	Female	Total	Unsexed	Male	Female	Total
1967					34.0			34.0
1968	24.3			24.3	19.7			19.7
1969	13.3			13.3	27.7			27.7
1970	15.3			15.3	16.6			16.6
1971	15.9			15.9	12.9			12.9
1972	27.6			27.6	10.5			10.5
1973	35.6			35.6	15.0			15.0
1974	39.1			39.1	4.7			4.7
1975	35.4			35.4	17.7			17.7
1976	23.1			23.1	14.9			14.9
1977	13.1			13.1	6.8			6.8
1978	22.5			22.5	26.0			26.0
1979	10.1			10.1	22.0			22.0
1980	6.1	12.9	10.0	29.0	0.0	1.4	3.8	5.1
1981	0.5	18.2	23.0	41.7	0.0	36.0	39.7	75.7
1982		23.7	27.8	51.6		6.9	6.8	13.7
1983	0.0	23.6	18.1	41.7	0.0	14.3	18.0	32.4
1984		13.3	9.2	22.5		10.6	11.9	22.5
1985	0.0	80.2	37.1	117.3	0.0	19.0	19.7	38.7
1986		9.5	19.3	28.7		12.3	15.2	27.4
1987		39.3	25.8	65.1		16.5	16.3	32.8
1988	0.0	29.5	35.1	64.6		15.5	19.9	35.3
1989		29.6	27.1	56.7		6.7	6.0	12.8
1990		47.8	44.0	91.8		14.7	11.5	26.1
1991		32.3	30.0	62.3		20.9	17.4	38.4
1992		38.2	41.3	79.5		12.9	26.2	39.1
1993		32.6	28.3	60.9		4.5	2.4	6.9
1994		53.4	38.1	91.5		16.6	14.2	30.9
1995		25.8	25.0	50.8		16.9	13.7	30.6
1996		52.6	44.6	97.3		12.8	20.1	32.8
1997		29.6	29.1	58.7		17.6	10.4	27.9
1998		32.4	11.1	43.5		8.8	13.2	22.0
1999		35.4	21.4	56.8		9.2	8.7	17.9
2000	0.3	22.2	15.4	37.9		17.1	5.7	22.8
2001		20.3	10.9	31.2		16.5	18.5	35.0
2002		32.2	18.7	50.9		15.8	15.4	31.2
2003		32.5	17.5	49.9				

A. During 1963-1984, BMV oval doors were used in the spring and autumn surveys; since 1985, Portuguese polyvalent doors have been used in both surveys. No adjustments have been made because no significant difference was found between the two types of doors for spiny dogfish (NEFSC 1991)

B. Spring surveys from 1973-1981 were accomplished with a '41 Yankee' trawl; in all other years, spring surveys were accomplished with a '36 Yankee' trawl. A factor of 0.71 was applied to all tows in these years (Sissenwine and Bowman, 1978).

C. During the fall of 1970, 1975, 1978, 1979, 1980, 1981, 1985, 1986, 1988, 1989 1990, 1991, and 1993 and the springs of 1973, 1976, 1977, 1979, 1980, 1981, 1982, 1987, 1989, 1990, 1991, and 1994 the Delaware II was used entirely or in part to conduct the survey. All other years, the Albatross IV was the only vessel used for the survey. A factor of 0.79 was applied to all Delaware II tows (NEFSC 1991).

D. During the spring of 2003, the Delaware II was used to conduct the survey. Since the vessel was remodeled in 1995, it was unclear whether the conversion factors applied in earlier years were still appropriate. Therefore no conversion factor was applied.

Table B5.2. Stratified mean weight per tow (kg) indices for spiny dogfish from NEFSC spring (1968-2002) and autumn (1967-2002) bottom trawl surveys (offshore strata 1-30, 33-40, 61-76; Footnotes A-E).

	Spring				Autumn			
	Unsexed	Male	Female	Total	Unsexed	Male	Female	Total
1967					34.9			34.9
1968	25.8			25.8	22.4			22.4
1969	16.1			16.1	55.3			55.3
1970	13.3			13.3	23.8			23.8
1971	24.0			24.0	15.5			15.5
1972	49.0			49.0	16.1			16.1
1973	57.1			57.1	21.7			21.7
1974	67.0			67.0	8.1			8.1
1975	45.6			45.6	20.9			20.9
1976	37.0			37.0	19.8			19.8
1977	24.1			24.1	16.1			16.1
1978	36.3			36.3	19.3			19.3
1979	13.4			13.4	26.6			26.6
1980	13.4	34.2	1.6	49.1	0.0	4.0	15.1	19.1
1981	0.6	20.4	48.2	69.2	0.0	12.7	34.9	47.6
1982		31.1	86.0	117.0		5.2	9.7	14.9
1983	0.0	21.1	17.7	38.9	0.0	13.7	22.1	35.8
1984		19.3	23.0	42.4		8.7	13.9	22.5
1985	0.0	100.4	66.7	167.1	0.0	14.6	25.0	39.7
1986		5.8	39.0	44.9		13.4	23.7	37.1
1987		40.6	61.7	102.3		10.6	11.2	21.8
1988	0.0	26.9	77.4	104.4		15.3	24.3	39.6
1989		34.8	43.1	77.8		6.1	5.5	11.5
1990		60.6	89.2	149.8		14.9	14.9	29.8
1991		36.5	53.0	89.5		24.6	26.7	51.3
1992		44.8	70.1	114.9		14.1	41.6	55.7
1993		35.7	52.2	87.9		5.1	2.1	7.2
1994		49.9	35.3	85.1		18.5	14.2	32.8
1995		34.8	40.0	74.8		16.7	11.4	28.0
1996		59.0	60.5	119.5		14.4	26.7	41.1
1997		37.5	44.9	82.4		19.9	10.0	29.9
1998		43.4	15.5	58.9		10.7	21.6	32.3
1999		46.3	32.5	78.8		12.3	12.7	25.1
2000	0.4	29.7	29.2	59.4		25.5	9.2	34.7
2001		29.5	19.8	49.3		20.8	27.0	47.8
2002		42.9	32.2	75.0		22.2	25.2	47.4
2003		45.2	29.7	74.8				

A. During 1963-1984, BMV oval doors were used in the spring and autumn surveys; since 1985, Portuguese polyvalent doors have been used in both surveys. No adjustments have been made because no significant difference was found between the two types of doors for spiny dogfish (NEFSC 1991)

min fem sp	15.5
max fem sp	89.2
mean fem s	46.4

B. Spring surveys from 1973-1981 were accomplished with a '41 Yankee' trawl; in all other years, spring surveys were accomplished with a '36 Yankee' trawl. A factor of 0.69 was applied to all tows in these years (Sissenwine and Bowman, 1978).

C. During the fall of 1970, 1975, 1978, 1979, 1980, 1981, 1985, 1986, 1988, 1989 1990, 1991, and 1993 and the springs of 1973, 1976, 1977, 1979, 1980, 1981, 1982, 1987, 1989, 1990, 1991, and 1994 the Delaware II was used entirely or in part to conduct the survey. All other years, the Albatross IV was the only vessel used for the survey. A factor of 0.81 was applied to all Delaware II tows (NEFSC 1991).

D. During the spring of 2003, the Delaware II was used to conduct the survey. Since the vessel was remodeled in 1995, it was unclear whether the conversion factors applied in earlier years were still appropriate. Therefore no conversion factor was applied.

E. In 1980, dogfish were often measured and counted by sex but only one weight recorded. This weight was always recorded under males.

Table B5.3. Indices for spiny dogfish from NEFSC winter (1992-2002)
(offshore strata 1-3, 5-7, 9-11, 13-14, 16, 61-63, 65-67, 69-71,73-75).

	Number/Tow			Weight/Tow		
	Male	Female	Total	Male	Female	Total
1992	123.9	74.7	198.7	168.3	172.6	340.9
1993	225.2	103.1	328.2	274.8	145.1	419.9
1994	154.9	153.1	308.1	169.8	219.7	389.5
1995	198.3	124.6	322.8	195.9	103.2	299.1
1996	87.6	48.3	135.9	116.2	76.1	192.2
1997	75.3	69.1	144.3	91.9	107.7	199.6
1998	76.1	43.5	119.6	101.6	62.8	164.4
1999	193.0	110.8	303.8	203.0	120.6	323.5
2000	102.1	39.6	141.7	129.8	53.6	183.4
2001	76.4	47.2	123.5	102.1	66.4	168.5
2002	144.3	65.4	209.7	192.7	115.3	308.1
2003	87.8	56.6	144.4	122.8	112.6	235.4

Table B5.4. Number per tow indices for spiny dogfish from the state of Massachusetts spring and autumn inshore bottom trawl surveys.

	Spring				Autumn			
	Unsexed	Male	Female	Total	Unsexed	Male	Female	Total
1978	10.9			10.9	149.1			149.1
1979	1.9			1.9	12.6			12.6
1980	1.7			1.7	0.0	0.1	4.7	4.8
1981	0.5		1.0	1.6	11.2	0.1	0.3	11.6
1982		0.0	2.0	2.0		8.2	45.9	54.1
1983		0.0	0.8	0.8		3.1	11.5	14.7
1984		1.4	5.5	6.9		51.1	17.4	68.5
1985		0.1	0.8	0.8		12.5	116.6	129.1
1986		0.1	2.2	2.2		45.2	77.9	123.1
1987		0.0	0.2	0.2		14.1	36.8	50.9
1988		1.5	11.5	12.9		34.0	181.9	215.9
1989		9.2	16.4	25.6		256.7	764.6	1021.3
1990			2.3	2.3		16.3	41.5	57.8
1991		0.0	0.9	0.9		2.8	25.6	28.4
1992			2.2	2.2		51.4	67.6	119.1
1993		9.4	10.5	19.8		15.8	93.9	109.7
1994			0.2	0.2		18.7	1.3	20.0
1995		7.5	21.2	28.6		40.0	33.1	73.1
1996		0.0	0.0	0.0		14.2	21.1	35.3
1997		2.1	11.1	13.2		9.5	46.4	55.9
1998		0.8	3.0	3.8		3.4	19.4	22.9
1999		0.3	4.1	4.3		8.4	55.8	64.2
2000		0.1	1.0	1.1		1.3	13.9	15.2
2001		1.5	4.1	5.6		22.8	77.7	100.5
2002		0.0	4.4	4.5		9.6	49.0	58.6

Table B5.5. Weight per tow (kg) indices for spiny dogfish from the state of Massachusetts spring and autumn inshore bottom trawl surveys.

	Spring				Autumn			
	Unsexed	Male	Female	Total	Unsexed	Male	Female	Total
1978	22.9			22.9	225.7			225.7
1979	6.4			6.4	40.2			40.2
1980	6.1			6.1	0.1	0.1	17.8	18.1
1981	2.6		4.3	6.9	44.9	0.2	1.3	46.4
1982		0.1	9.2	9.3		14.2	166.2	180.4
1983		0.0	3.2	3.3		5.0	35.6	40.6
1984		1.6	10.8	12.4		80.6	43.7	124.2
1985		0.1	3.4	3.5		18.0	297.5	315.5
1986		0.1	9.7	9.7		70.4	224.1	294.6
1987		0.0	0.9	0.9		20.9	105.3	126.2
1988		1.9	39.3	41.2		47.2	560.4	607.6
1989		4.8	14.0	18.9		328.9	1546.2	1875.1
1990			9.4	9.4		22.6	95.0	117.6
1991		0.0	4.5	4.5		3.4	80.7	84.1
1992			8.5	8.5		68.6	107.0	175.6
1993		10.4	19.5	29.9		23.3	211.7	235.0
1994			0.8	0.8		30.8	2.8	33.6
1995		9.5	34.1	43.7		59.6	63.6	123.2
1996		0.0	0.1	0.1		20.8	44.4	65.2
1997		2.4	20.5	22.9		13.5	87.2	100.7
1998		1.0	5.8	6.8		4.5	41.9	46.4
1999		0.4	8.5	8.8		12.9	116.0	128.9
2000		0.1	2.7	2.9		2.2	29.0	31.2
2001		2.4	9.3	11.7		31.2	157.8	189.0
2002		0.0	11.5	11.6		15.3	109.7	125.0

Table B6.1. Biomass estimates for spiny dogfish (thousands of metric tons) based on area swept by NEFSC trawl during spring surveys, 1968-2003.

Year	Lengths >= 80 cm			Lengths 36 to 79 cm			Length <= 35 cm			All Lengths
	Females	Males	Total	Females	Males	Total	Females	Males	Total	
1968			41.4			110.4			1.52	153.3
1969			27.4			69.3			0.66	97.3
1970			36.7			33.0			3.19	72.9
1971			103.8			27.6			2.76	134.2
1972			126.6			145.9			1.55	274.1
1973			178.7			165.3			2.58	346.5
1974			221.9			179.6			2.66	404.1
1975			105.1			125.0			3.97	234.0
1976			96.3			120.8			1.20	218.3
1977			77.3			68.0			0.53	145.9
1978			87.4			131.2			1.24	219.8
1979			52.3			18.6			1.82	72.7
1980	104.7	15.3	168.1	16.8	72.2	123.5	0.32	0.39	0.84	292.4
1981	266.5	24.4	293.8	25.5	75.1	100.6	2.14	2.80	5.06	399.5
1982	454.0	34.6	488.6	61.6	143.3	204.9	0.48	0.69	1.17	694.6
1983	77.7	30.1	107.8	36.7	98.5	135.3	3.09	3.95	7.03	250.1
1984	115.6	27.5	143.1	33.4	88.0	121.4	0.14	0.21	0.35	264.9
1985	317.0	125.5	442.6	102.5	502.5	605.0	4.01	5.10	9.10	1056.7
1986	191.3	3.5	194.8	51.9	29.6	81.5	0.84	1.11	1.96	278.2
1987	219.1	90.5	309.6	61.5	171.7	233.1	2.46	4.76	7.22	550.0
1988	433.1	26.2	459.4	93.3	153.6	247.0	0.89	1.09	1.98	708.4
1989	162.1	40.5	202.6	100.4	158.2	258.6	1.14	1.54	2.68	463.9
1990	400.3	70.7	471.0	163.5	303.1	466.6	0.68	1.03	1.71	939.3
1991	220.4	30.0	250.3	108.4	186.3	294.7	0.98	1.43	2.41	547.4
1992	280.5	41.9	322.4	179.9	231.9	411.8	0.73	1.00	1.73	735.9
1993	234.6	27.8	262.5	104.1	198.5	302.6	0.55	0.65	1.21	566.3
1994	105.3	37.1	142.4	108.3	254.2	362.5	4.28	5.54	9.82	514.8
1995	102.4	29.5	131.9	154.0	174.5	328.5	0.25	0.35	0.59	460.9
1996	196.5	33.4	229.9	201.7	334.8	536.4	0.98	1.14	2.12	768.5
1997	83.7	17.5	101.2	205.2	209.1	414.3	0.05	0.05	0.10	515.5
1998	26.7	22.9	49.7	69.0	236.4	305.4	0.05	0.08	0.13	355.2
1999	62.7	20.4	83.1	140.8	256.4	397.2	0.02	0.03	0.05	480.4
2000	85.8	11.7	97.5	91.5	166.2	257.7	0.07	0.09	0.16	355.4
2001	56.7	16.7	73.4	71.4	160.5	231.9	0.04	0.03	0.07	305.4
2002	75.2	19.0	94.2	131.5	246.3	377.8	0.06	0.06	0.12	472.1
2003	64.5	22.5	87.1	125.5	256.3	381.8	0.13	0.14	0.27	469.1

Notes: Total equals sum of males and females plus unsexed dogfish. Data for dogfish prior to 1980 are currently not available by sex.

Table B6.2. Biomass estimates for spiny dogfish (thousands of metric tons) based on area swept by NEFSC trawl during spring surveys, 1968-2003, adjusted for 0.012 nm sqr footprint.

Year	Lengths >= 80 cm			Lengths 36 to 79 cm			Length <= 35 cm			All Lengths
	Females	Males	Total	Females	Males	Total	Females	Males	Total	
1968			34.5			92.0			1.26	127.8
1969			22.8			57.8			0.55	81.1
1970			30.6			27.5			2.66	60.8
1971			86.5			23.0			2.30	111.8
1972			105.5			121.6			1.29	228.4
1973			148.9			137.7			2.15	288.8
1974			184.9			149.7			2.22	336.8
1975			87.6			104.1			3.31	195.0
1976			80.3			100.7			1.00	181.9
1977			64.4			56.7			0.44	121.6
1978			72.8			109.3			1.04	183.2
1979			43.6			15.5			1.52	60.6
1980	87.2	12.7	140.1	14.0	60.2	102.9	0.27	0.33	0.70	243.7
1981	222.1	20.3	244.8	21.2	62.6	83.9	1.78	2.33	4.21	332.9
1982	378.3	28.8	407.1	51.3	119.4	170.7	0.40	0.57	0.97	578.8
1983	64.8	25.1	89.8	30.6	82.1	112.7	2.57	3.29	5.86	208.4
1984	96.3	22.9	119.3	27.9	73.3	101.2	0.11	0.18	0.29	220.7
1985	264.2	104.6	368.8	85.4	418.8	504.2	3.34	4.25	7.58	880.6
1986	159.4	3.0	162.3	43.2	24.6	67.9	0.70	0.93	1.63	231.8
1987	182.6	75.4	258.0	51.2	143.0	194.3	2.05	3.97	6.02	458.3
1988	361.0	21.8	382.9	77.8	128.0	205.8	0.74	0.91	1.65	590.4
1989	135.1	33.7	168.8	83.7	131.9	215.5	0.95	1.28	2.24	386.6
1990	333.6	58.9	392.5	136.2	252.6	388.8	0.57	0.86	1.43	782.7
1991	183.6	25.0	208.6	90.4	155.2	245.6	0.81	1.19	2.00	456.2
1992	233.8	34.9	268.6	149.9	193.2	343.2	0.61	0.83	1.44	613.2
1993	195.5	23.2	218.7	86.8	165.4	252.2	0.46	0.54	1.00	471.9
1994	87.8	30.9	118.7	90.2	211.9	302.1	3.57	4.62	8.19	429.0
1995	85.4	24.5	109.9	128.3	145.4	273.7	0.21	0.29	0.49	384.1
1996	163.7	27.8	191.6	168.1	279.0	447.0	0.82	0.95	1.77	640.4
1997	69.7	14.6	84.3	171.0	174.2	345.2	0.04	0.04	0.08	429.6
1998	22.3	19.1	41.4	57.5	197.0	254.5	0.04	0.06	0.11	296.0
1999	52.2	17.0	69.3	117.4	213.6	331.0	0.01	0.03	0.04	400.3
2000	71.5	9.7	85.9	76.2	138.5	214.8	0.06	0.07	0.13	300.9
2001	47.2	14.0	61.2	59.5	133.7	193.3	0.04	0.03	0.06	254.5
2002	62.6	15.8	78.5	109.5	205.3	314.8	0.05	0.05	0.10	393.4
2003	53.8	18.8	72.5	104.6	213.6	318.1	0.11	0.12	0.23	390.9

Notes: Total equals sum of males and females plus unsexed dogfish. Data for dogfish prior to 1980 are currently not available by sex.

Table B6.3. Number of female spiny dogfish examined by year and season (T = total number examined, FE = Number with free embryos).

		1998	1999	2000	2001	2002	Total
Winter	T	246	552	497	726	301	2322
	FE	59	132	84	110	42	427
Spring	T	283	926	786	582	557	3134
	FE	60	167	96	69	70	462
Autumn	T	391	505	416	713		2025
	FE	115	162	51	73		401
Total	T	920	1983	1699	2021	858	7481
	FE	234	461	231	252	112	1291

Table B7.1 Summary of 3yr moving average survey mean numbers per tow and SE for female and male dogfish caught in the NEFSC spring survey. All offshore strata included.

<<<<<FEMALES>>>>>

Spring data All offshore strata

Sex	year	mean	variance	SE	CV	Pop Var	Pop	Var(pop)	Low CI	High CI	3-yrMean	3-yrVar	3-yr SE	3-yrCV
Females	1980	10.015	5.04E+00	2.25E+00	22.4	2.00E+03	6.49E+07	2.11E+14	5.615	14.415				
Females	1981	22.993	2.24E+01	4.74E+00	20.6	1.81E+04	1.49E+08	9.36E+14	13.71	32.275				
Females	1982	27.845	8.65E+01	9.30E+00	33.4	2.83E+04	1.80E+08	3.63E+15	9.617	46.074	20.28433	3.80E+01	6.163497	30.38551
Females	1983	18.075	1.70E+01	4.13E+00	22.8	1.34E+04	1.17E+08	7.15E+14	9.986	26.164	22.971	4.20E+01	6.479686	28.20812
Females	1984	9.155	3.13E+00	1.77E+00	19.3	1.19E+03	5.93E+07	1.31E+14	5.689	12.62	18.35833	3.56E+01	5.962519	32.47854
Females	1985	37.114	1.21E+02	1.10E+01	29.6	3.37E+04	2.40E+08	5.08E+15	15.552	58.675	21.448	4.71E+01	6.860002	31.98435
Females	1986	19.256	9.12E+00	3.02E+00	15.7	5.16E+03	1.25E+08	3.83E+14	13.335	25.176	21.84167	4.44E+01	6.665103	30.51554
Females	1987	25.824	4.15E+01	6.44E+00	24.9	1.27E+04	1.66E+08	1.71E+15	13.203	38.444	27.398	5.72E+01	7.563198	27.60493
Females	1988	35.095	1.06E+02	1.03E+01	29.4	3.01E+04	2.25E+08	4.36E+15	14.905	55.286	26.725	5.22E+01	7.227399	27.04359
Females	1989	27.115	2.77E+01	5.26E+00	19.4	2.36E+04	1.72E+08	1.11E+15	16.801	37.429	29.34467	5.84E+01	7.643559	26.04752
Females	1990	44.008	1.93E+02	1.39E+01	31.6	6.94E+04	2.82E+08	7.91E+15	16.781	71.234	35.406	1.09E+02	10.43665	29.47707
Females	1991	29.994	3.07E+01	5.54E+00	18.5	1.05E+04	1.93E+08	1.26E+15	19.141	40.848	33.70567	8.38E+01	9.152686	27.15474
Females	1992	41.305	1.01E+02	1.01E+01	24.4	2.44E+04	2.58E+08	3.96E+15	21.583	61.027	38.43567	1.08E+02	10.40631	27.07462
Females	1993	28.33	2.22E+01	4.72E+00	16.6	7.01E+03	1.81E+08	9.10E+14	19.087	37.573	33.20967	5.14E+01	7.168263	21.58487
Females	1994	38.115	4.39E+01	6.63E+00	17.4	3.54E+04	2.44E+08	1.80E+15	25.124	51.105	35.91667	5.58E+01	7.470252	20.79885
Females	1995	25.032	3.29E+01	5.73E+00	22.9	7.88E+03	1.61E+08	1.36E+15	13.794	36.27	30.49233	3.30E+01	5.745723	18.84317
Females	1996	44.625	2.86E+02	1.69E+01	37.9	9.13E+04	2.87E+08	1.18E+16	11.466	77.785	35.924	1.21E+02	11.00033	30.62113
Females	1997	29.058	2.22E+01	4.72E+00	16.2	6.06E+03	1.86E+08	9.09E+14	19.815	38.3	32.905	1.14E+02	10.66666	32.41654
Females	1998	11.143	5.45E+00	2.33E+00	20.9	1.41E+03	7.15E+07	2.24E+14	6.569	15.717	28.27533	1.05E+02	10.22909	36.17674
Females	1999	21.351	1.10E+01	3.32E+00	15.6	3.37E+03	1.34E+08	4.35E+14	14.839	27.862	20.51733	1.29E+01	3.592585	17.51
Females	2000	15.421	2.42E+01	4.92E+00	31.9	5.20E+03	9.90E+07	9.99E+14	5.771	25.07	15.97167	1.36E+01	3.684291	23.06767
Females	2001	10.884	1.39E+01	3.73E+00	34.2	3.18E+03	6.99E+07	5.73E+14	3.578	18.19	15.88533	1.64E+01	4.048456	25.4855
Females	2002	18.769	1.54E+01	3.92E+00	20.9	9.28E+03	1.21E+08	6.34E+14	11.084	26.454	15.02467	1.78E+01	4.223269	28.1089
Females	2003	17.474	5.86E+00	2.42E+00	13.9	9.30E+03	1.12E+08	2.42E+14	12.73	22.218	15.709	1.17E+01	3.421905	21.78309

Sex	year	mean	variance	SE	CV	Pop Var	Pop	Var(pop)	Low CI	High CI	3-yrMean	3-yrVar	3-yr SE	3-yrCV
Males	1980	12.859	9.87E+00	3.14E+00	24.4	4.05E+03	8.33E+07	4.14E+14	6.7	19.017				
Males	1981	18.249	1.61E+01	4.01E+00	22	1.37E+04	1.18E+08	6.71E+14	10.391	26.108				
Males	1982	23.705	4.25E+01	6.52E+00	27.5	1.67E+04	1.54E+08	1.78E+15	10.93	36.48	18.271	2.28E+01	4.775971	26.13963
Males	1983	23.622	1.81E+01	4.26E+00	18	7.94E+03	1.53E+08	7.60E+14	15.279	31.965	21.85867	2.56E+01	5.055525	23.12824
Males	1984	13.338	2.34E+01	4.84E+00	36.3	8.51E+03	8.64E+07	9.83E+14	3.85	22.826	20.22167	2.80E+01	5.292542	26.17263
Males	1985	80.175	7.34E+02	2.71E+01	33.8	1.82E+05	5.19E+08	3.08E+16	27.073	133.277	39.045	2.59E+02	16.07877	41.18011
Males	1986	9.457	7.33E+00	2.71E+00	28.6	3.52E+03	6.13E+07	3.08E+14	4.151	14.764	34.32333	2.55E+02	15.96656	46.5181
Males	1987	39.298	2.19E+02	1.48E+01	37.7	5.66E+04	2.52E+08	9.04E+15	10.269	68.326	42.97667	3.20E+02	17.89516	41.63925
Males	1988	29.467	1.28E+02	1.13E+01	38.4	7.16E+04	1.89E+08	5.25E+15	7.302	51.632	26.074	1.18E+02	10.87153	41.6949
Males	1989	29.574	7.58E+01	8.71E+00	29.4	2.05E+04	1.87E+08	3.04E+15	12.505	46.642	32.77967	1.41E+02	11.87541	36.22797
Males	1990	47.791	6.32E+02	2.51E+01	52.6	2.38E+05	3.06E+08	2.59E+16	-1.484	97.066	35.61067	2.79E+02	16.69088	46.87044
Males	1991	32.294	8.47E+01	9.21E+00	28.5	2.70E+04	2.07E+08	3.49E+15	14.251	50.337	36.553	2.64E+02	16.25431	44.46779
Males	1992	38.223	6.45E+01	8.03E+00	21	2.76E+04	2.39E+08	2.52E+15	22.487	53.958	39.436	2.60E+02	16.1372	40.91998
Males	1993	32.57	2.23E+02	1.49E+01	45.9	6.04E+04	2.08E+08	9.13E+15	3.297	61.843	34.36233	1.24E+02	11.13954	32.41788
Males	1994	53.391	7.91E+01	8.89E+00	16.7	4.23E+04	3.42E+08	3.24E+15	35.961	70.821	41.39467	1.22E+02	11.05459	26.70535
Males	1995	25.754	2.46E+01	4.96E+00	19.3	5.68E+03	1.65E+08	1.02E+15	16.029	35.48	37.23833	1.09E+02	10.43676	28.02693
Males	1996	52.633	1.94E+02	1.39E+01	26.4	6.09E+04	3.38E+08	7.98E+15	25.362	79.904	43.926	9.91E+01	9.954865	22.66281
Males	1997	29.594	2.89E+01	5.37E+00	18.2	6.69E+03	1.89E+08	1.18E+15	19.065	40.123	35.99367	8.24E+01	9.075057	25.21293
Males	1998	32.353	6.71E+01	8.19E+00	25.3	2.13E+04	2.08E+08	2.76E+15	16.293	48.413	38.19333	9.65E+01	9.824951	25.72426
Males	1999	35.452	4.09E+01	6.40E+00	18	1.38E+04	2.23E+08	1.61E+15	22.915	47.989	32.46633	4.56E+01	6.75559	20.80799
Males	2000	22.24	3.49E+01	5.91E+00	26.6	7.24E+03	1.43E+08	1.44E+15	10.657	33.824	30.015	4.77E+01	6.903767	23.00106
Males	2001	20.345	3.11E+01	5.57E+00	27.4	1.02E+04	1.31E+08	1.28E+15	9.418	31.272	26.01233	3.56E+01	5.970036	22.95079
Males	2002	32.174	3.76E+01	6.13E+00	19	1.83E+04	2.07E+08	1.55E+15	20.162	44.186	24.91967	3.45E+01	5.875656	23.57839
Males	2003	32.45	2.51E+01	5.01E+00	15.4	7.09E+04	2.08E+08	1.03E+15	22.637	42.262	28.323	3.12E+01	5.588798	19.73237

Table B7.2 Summary of input values for swept area scenarios.

(These estimates of wing spread, door spread, and tow length are provisional and subject to change per further analysis)

(The data are incorporated as part of this assessment complements of Henry Milliken, NEFSC)

	door spread(m)	***wing spread (m)***	***mid range (m)***
ave Albatross	22.98	11.07	17.02
sd Albatross	1.34	0.64	0.99
CV Albatross	0.06	0.06	0.06

Distance per tow	***nautical mile***
mean	1.874
std dev	0.112
CV	0.060

Conversion Factor	1m =	0.000539957	nautical miles

Estimated area swept per tow

Area per tow (nm^2)	***Max (based on Door)***	***Min(based on wing spread)***	***Midrange***	***Max/min***
mean	0.02325	0.01120	0.01722	2.076455081
std dev= (CV*mean)	0.00140	0.00067	0.00103	
CV(fixed at 0.06 per above)	0.06	0.06	0.06	

Table B7.3. Summary of stochastic biomass estimates (mt) based on minimum footprint assumption

	Total Exploitable Biomass				Exploitable Biomass Females				Exploitable Biomass Males			
year	mean	0.25	0.5	0.75	mean	0.25	0.5	0.75	mean	0.25	0.5	0.75
1990	158675	128000	157000	187000	142228	116000	141000	166000	15947	10000	15000	20000
1991	154569	123000	153000	183000	122742	100000	121000	143000	31327	22000	30000	39000
1992	151735	127000	150000	174000	116977	99000	116000	132000	34259	26000	33000	40000
1993	126194	107000	125000	143000	110008	94000	109000	124000	15686	12000	15000	17000
1994	92274	79000	91000	103000	80084	69000	79000	89000	11690	8000	11000	13000
1995	100649	80000	99000	119000	88312	70000	87000	105000	11837	9000	11000	13000
1996	234061	190000	232000	276000	104655	82000	103000	125000	128906	107000	128000	149000
1997	215815	173000	214000	256000	80225	60000	79000	98000	135090	111000	134000	156000
1998	143733	124000	142000	161000	64280	56000	63000	71000	78954	67000	78000	89000
1999	134714	113000	133000	154000	61030	51000	60000	69000	73184	61000	72000	83000
2000	131675	110000	130000	151000	64707	53000	64000	74000	66468	55000	65000	75000
2001	143773	118000	142000	167000	77513	62000	76000	90000	65761	54000	65000	75000
2002	139833	120000	138000	158000	59769	50000	59000	67000	79564	68000	78000	89000
	148285											

	Total biomass (both sexes)				SSB (females >80 cm)			
Year	mean	0.25	0.5	0.75	mean	0.25	0.5	0.75
1990	582274	453000	579000	708000	234229	192000	232000	274000
1991	664850	524000	662000	801000	269624	221000	268000	315000
1992	553731	459000	551000	644000	220002	188000	218000	250000
1993	544415	460000	542000	625000	186132	159000	185000	210000
1994	460932	390000	459000	529000	133264	115000	132000	149000
1995	519920	428000	517000	608000	120664	96000	119000	143000
1996	520782	421000	518000	617000	114091	89000	113000	137000
1997	489233	391000	487000	584000	91458	69000	90000	112000
1998	406287	353000	404000	456000	51821	45000	51000	57000
1999	358185	303000	356000	410000	52562	44000	51000	59000
2000	343602	288000	342000	396000	61552	50000	60000	71000
2001	337686	280000	336000	392000	64844	52000	64000	76000
2002	371200	319000	369000	420000	58376	49000	57000	66000

min	337686	51821
max	664850	269624
average	473315	127586

Table B7.4. Summary of stochastic biomass estimates (mt) based on maximum footprint assumption

	Total Exploitable Biomass				Exploitable Biomass Females				Exploitable Biomass Males			
year	mean	0.25	0.5	0.75	mean	0.25	0.5	0.75	mean	0.25	0.5	0.75
1990	76157	61000	75000	89000	68236	55000	67000	79000	7422	4000	6000	9000
1991	74180	59000	73000	87000	58852	47000	58000	68000	14828	10000	14000	18000
1992	72815	60000	72000	83000	56076	47000	55000	63000	16239	12000	15000	19000
1993	60514	51000	59000	68000	52719	44000	52000	59000	7295	5000	6000	8000
1994	44179	37000	43000	49000	38309	32000	37000	42000	5370	3000	4000	5000
1995	48212	38000	47000	56000	42271	33000	41000	50000	5441	4000	4000	5000
1996	112462	91000	111000	132000	50142	39000	49000	60000	61821	51000	61000	71000
1997	103675	83000	102000	122000	38376	28000	37000	46000	64799	53000	64000	75000
1998	68961	59000	68000	77000	30697	26000	30000	33000	37764	31000	37000	42000
1999	64618	54000	63000	73000	29133	24000	28000	33000	34985	29000	34000	39000
2000	63154	52000	62000	72000	30903	25000	30000	35000	31751	26000	31000	36000
2001	68981	56000	68000	80000	37070	29000	36000	43000	31411	25000	30000	35000
2002	67083	57000	66000	75000	28525	23000	27000	32000	38058	32000	37000	42000

	Total biomass (both sexes)				SSB (females >80 cm)			
Year	mean	0.25	0.5	0.75	mean	0.25	0.5	0.75
1990	280158	217000	278000	340000	112543	92000	111000	131000
1991	319926	252000	318000	385000	129589	106000	128000	151000
1992	266412	220000	265000	309000	105692	90000	104000	119000
1993	261926	221000	260000	300000	89380	76000	88000	100000
1994	221721	187000	220000	254000	63920	55000	63000	71000
1995	250129	206000	248000	292000	57851	45000	57000	68000
1996	250544	202000	249000	296000	54686	42000	54000	65000
1997	235351	187000	234000	280000	43786	32000	43000	53000
1998	195405	169000	194000	219000	24697	21000	24000	27000
1999	172239	145000	171000	197000	25054	20000	24000	28000
2000	165216	138000	164000	190000	29383	23000	28000	33000
2001	162367	134000	161000	188000	30969	24000	30000	36000
2002	178507	153000	177000	201000	27854	23000	27000	31000

Table B7.5. Summary of Stochastic F estimates based on assumed minimum footprint

	F1: F on Exploitable Biomass				F2: Discard F on Total Biomass				Biomass Weighted F (F1,F2)			
year	average	0.25	0.5	0.75	average	0.25	0.5	0.75	average	0.25	0.5	0.75
1990	0.108	0.084	0.100	0.123	0.091	0.055	0.080	0.113	0.122	0.080	0.108	0.146
1991	0.094	0.071	0.086	0.106	0.080	0.056	0.072	0.095	0.103	0.073	0.092	0.120
1992	0.122	0.099	0.115	0.136	0.041	0.031	0.037	0.046	0.075	0.059	0.069	0.084
1993	0.181	0.151	0.173	0.201	0.028	0.019	0.026	0.033	0.070	0.056	0.066	0.079
1994	0.230	0.195	0.221	0.255	0.022	0.017	0.020	0.025	0.069	0.056	0.065	0.077
1995	0.253	0.195	0.233	0.288	0.023	0.016	0.020	0.025	0.071	0.056	0.066	0.080
1996	0.126	0.098	0.117	0.143	0.030	0.022	0.026	0.033	0.087	0.067	0.080	0.098
1997	0.094	0.072	0.086	0.106	0.015	0.007	0.013	0.020	0.057	0.042	0.052	0.066
1998	0.155	0.132	0.149	0.171	0.012	0.009	0.011	0.013	0.067	0.057	0.064	0.074
1999	0.134	0.110	0.127	0.150	0.012	0.009	0.011	0.013	0.063	0.051	0.059	0.070
2000	0.095	0.077	0.089	0.106	0.013	0.009	0.011	0.014	0.049	0.039	0.046	0.055
2001	0.044	0.034	0.041	0.049	0.028	0.021	0.026	0.032	0.047	0.037	0.043	0.053
2002	0.041	0.034	0.038	0.045	0.019	0.015	0.017	0.020	0.034	0.028	0.032	0.038

	F3: (Fem .Landings)/Female Expl. Biomass				F4: (Male Landings)/Male Expl. Biomass			
year	average	0.25	0.5	0.75	average	0.25	0.5	0.75
1990	0.119	0.094	0.111	0.135	0.004	0.001	0.002	0.004
1991	0.115	0.091	0.107	0.130	0.003	0.001	0.001	0.002
1992	0.156	0.130	0.149	0.174	0.000	#N/A	#N/A	0.000
1993	0.205	0.173	0.197	0.228	0.011	0.008	0.009	0.011
1994	0.260	0.224	0.252	0.287	0.023	0.017	0.020	0.025
1995	0.288	0.220	0.264	0.329	0.011	0.008	0.010	0.012
1996	0.241	0.180	0.218	0.276	0.037	0.029	0.034	0.041
1997	0.167	0.119	0.147	0.191	0.053	0.042	0.049	0.059
1998	0.324	0.282	0.316	0.357	0.015	0.012	0.014	0.016
1999	0.244	0.201	0.232	0.273	0.042	0.034	0.039	0.046
2000	0.185	0.149	0.174	0.208	0.008	0.005	0.006	0.008
2001	0.080	0.062	0.073	0.090	0.003	0.001	0.002	0.002
2002	0.094	0.078	0.090	0.105	0.001	0.000	0.000	0.000

average 0.191

Table B7.6. Summary of Stochastic F estimates based on assumed maximum footprint

	F1: F on Exploitable Biomass				F2: Discard F on Total Biomass				Biomass Weighted F (F1,F2)			
year	average	0.25	0.5	0.75	average	0.25	0.5	0.75	average	0.25	0.5	0.75
1990	0.225	0.175	0.208	0.256	0.189	0.116	0.169	0.237	0.251	0.168	0.226	0.306
1991	0.195	0.15	0.179	0.222	0.167	0.117	0.151	0.198	0.214	0.154	0.193	0.25
1992	0.253	0.208	0.241	0.285	0.085	0.065	0.079	0.098	0.155	0.123	0.146	0.177
1993	0.376	0.316	0.361	0.42	0.058	0.042	0.055	0.07	0.147	0.118	0.139	0.166
1994	0.471	0.407	0.461	0.531	0.047	0.036	0.044	0.054	0.144	0.118	0.137	0.162
1995	0.487	0.407	0.486	0.598	0.047	0.036	0.044	0.054	0.148	0.117	0.138	0.168
1996	0.263	0.206	0.244	0.299	0.062	0.047	0.056	0.07	0.181	0.14	0.167	0.206
1997	0.195	0.15	0.18	0.222	0.033	0.017	0.029	0.042	0.119	0.088	0.109	0.138
1998	0.322	0.276	0.312	0.357	0.026	0.02	0.024	0.029	0.140	0.119	0.135	0.155
1999	0.278	0.23	0.265	0.312	0.026	0.019	0.023	0.029	0.131	0.107	0.124	0.146
2000	0.197	0.161	0.187	0.221	0.027	0.021	0.025	0.03	0.103	0.083	0.097	0.115
2001	0.092	0.073	0.086	0.103	0.059	0.045	0.055	0.067	0.098	0.078	0.092	0.111
2002	0.085	0.072	0.082	0.094	0.040	0.032	0.037	0.044	0.072	0.06	0.069	0.08

	F3: (Fem .Landings)/Female Expl. Biomass				F4: (Male Landings)/Male Expl. Biomass			
year	average	0.25	0.5	0.75	average	0.25	0.5	0.75
1990	0.248	0.197	0.232	0.281	0.009	0.004	0.006	0.009
1991	0.240	0.191	0.225	0.272	0.006	0.003	0.004	0.006
1992	0.324	0.272	0.312	0.362	0.002	0	0	0.001
1993	0.424	0.361	0.411	0.475	0.023	0.017	0.021	0.025
1994	0.521	0.466	0.525	0.598	0.048	0.037	0.044	0.054
1995	0.525	0.459	0.55	0.598	0.024	0.019	0.022	0.026
1996	0.463	0.375	0.454	0.574	0.078	0.063	0.073	0.088
1997	0.338	0.248	0.307	0.399	0.111	0.089	0.104	0.125
1998	0.585	0.588	0.598	0.598	0.033	0.027	0.03	0.035
1999	0.489	0.42	0.484	0.569	0.088	0.072	0.083	0.098
2000	0.382	0.311	0.363	0.434	0.017	0.013	0.015	0.018
2001	0.166	0.13	0.154	0.188	0.007	0.004	0.005	0.007
2002	0.197	0.164	0.188	0.219	0.002	0.001	0.001	0.002

Table B8.1 Summary of input data for stock recruitment analyses of spiny dogfish.

	Survey Data				Survey Data Scaled to Nomimal Footprint (0.01 nm^2)	
	Raw Data		2-Pt Moving Average		2 -yr moving average	
Year	*Recruits (Num/Tow)*	*SSB (kg/tow)*	*Recruits (Num/tow)*	*SSB (kg/tow)*	*Recruits (000's)*	*SSB (mt)*
1968	2.881	5.37	.	.	.	.
1969	1.248	3.55	2.065	4.46	13,374	28,884
1970	8.250	4.76	4.749	4.16	30,760	26,916
1971	5.905	13.47	7.077	9.11	45,841	59,034
1972	3.909	16.43	4.907	14.95	31,785	96,814
1973	5.183	23.18	4.546	19.81	29,445	128,278
1974	5.948	28.78	5.565	25.98	36,046	168,294
1975	7.851	13.63	6.899	21.21	44,686	137,366
1976	2.718	12.49	5.285	13.06	34,229	84,616
1977	1.110	10.03	1.914	11.26	12,399	72,952
1978	2.759	11.34	1.934	10.69	12,530	69,205
1979	3.883	6.79	3.321	9.06	21,510	58,688
1980	1.356	16.16	2.620	11.47	18,069	78,154
1981	8.853	41.25	5.104	28.71	35,110	189,423
1982	2.459	70.09	5.656	55.67	37,580	360,246
1983	12.990	12.00	7.725	41.05	50,033	265,861
1984	0.744	17.84	6.867	14.92	44,478	96,647
1985	19.799	48.95	10.272	33.40	66,530	216,304
1986	3.982	29.53	11.891	39.24	77,017	254,141
1987	12.942	34.13	8.462	31.83	54,443	205,196
1988	3.671	67.57	8.306	50.85	53,313	326,141
1989	5.482	25.59	4.576	46.58	29,128	297,611
1990	3.841	62.51	4.661	44.05	29,661	281,184
1991	4.548	34.32	4.195	48.42	26,899	310,322
1992	3.663	44.41	4.105	39.36	26,170	250,438
1993	3.060	36.68	3.362	40.54	21,357	257,578
1994	15.840	16.45	9.450	26.56	60,501	169,975
1995	1.151	15.95	8.496	16.20	54,408	103,872
1996	5.276	30.60	3.214	23.28	20,634	149,461
1997	0.281	13.09	2.778	21.85	17,835	140,080
1998	0.454	4.16	0.367	8.63	2,353	55,188
1999	0.143	9.98	0.299	7.07	1,907	44,692
2000	0.479	13.36	0.311	11.67	1,990	74,239
2001	0.208	8.83	0.344	11.10	2,207	71,235
2002	0.297	11.71	0.253	10.27	1,622	65,921
2003	0.825	10.05	0.561	10.88	3,602	69,860

Table B8.2. Summary of parameter estimates for Ricker stock-recruitment model

						95% Confidence Interval	
Years Included	*Data*	*Units*	*Parameter*	*Estimate*	*Asymptotic SE*	*Lower Bound*	*Upper Bound*
1968-96	Swept Area 2-yr avg.		A	0.541578	0.109155	0.31761	0.765546
			B	-0.000005	0.000001	-0.000007	-0.000003
		thousands	RMAX (000')	42,839	3,517	35,622	50,055
		mt	SSBMAX (mt)	215,014	43,749	125,249	304,780
			R-sqr	0.172			
			MSE	7.925 E+9			
	Raw (2-yr avg.)		A	0.543445	0.108853	0.320097	0.766793
			B	-0.030141	0.006055	-0.042565	-0.017717
		num/tow	RMAX	6.632914	0.542621	5.519549	7.74628
		kg/tow	SSBMAX	33.177455	6.665081	19.501838	46.853071
			R-sqr	0.178			
			MSE	190.97			
	Raw		A	0.521389	0.16949	0.174204	0.868574
			B	-0.027862	0.009425	-0.047169	-0.008555
		num/tow	RMAX	6.884334	1.118478	4.593236	9.175431
		kg/tow	SSBMAX	35.891764	12.141952	11.020103	60.763425
			R-sqr	0.055			
			MSE	625.76			
1968-2003	Swept Area 2-yr avg.		A	0.391858	0.085433	0.218043	0.565672
			B	-0.000003	0.000001	-0.000005	-0.000001
		thousands	RMAX	42,388	5,296	31,614	53,162
		mt	SSBMAX	294,040	84,867	121,377	466,702
			R-sqr	3.28E-01			
			MSE	1.349 E+10			
	Raw (2-yr avg.)		A	0.392663	0.085433	0.218849	0.566477
			B	-0.022092	0.006306	-0.034922	-0.009263
		num/tow	RMAX	6.538571	0.806394	4.897951	8.179192
		kg/tow	SSBMAX	45.264321	12.920044	18.978295	71.550348
			R-sqr	0.327			
			MSE	323.48			
	Raw		A	0.415334	0.128512	0.154166	0.676502
			B	-0.023003	0.008578	-0.040436	-0.00557
		num/tow	RMAX	6.642318	1.218106	4.16683	9.117807
		kg/tow	SSBMAX	43.472882	16.211689	10.526764	76.418999
			R-sqr	0.125			
			MSE	750.306			

Table B9.1. Summary of Projection model comparisons, assuming the minimum footprint

		Average over Decade								
Scenario	decade	Average of F	SSB (mt)	Probability of exceeding Target Biomass	Probability of exceeding Threshold biomass	Yield (mt)	Exploitable Biomass of Females (mt)	Exploitable Biomass of Males (mt)	Total Biomass of Females (mt)	Total Biomass (mt)
Rebuild_F	2003-2012	0.03	122,102	0.0426	0.8042	3,873		24,684	167,868	414,500
	2013-2022	0.03	148,872	0.2118	0.9452	4,387	137,585	17,292	233,454	424,223
	2023-2033	0.03	214,573	0.7416	1	6,109	199,706	16,079	326,661	537,313
SQ_F	2003-2012	0.094	98,163	0	0.5724	9,851	89,310	23,929	141,334	380,065
	2013-2022	0.094	89,465	0	0.4576	8,367	81,282	15,077	149,051	304,816
	2023-2033	0.094	97,861	0	0.6394	8,773	90,040	11,228	158,649	291,472
ZeroF	2003-2012	0	136,277	0.1362	0.8436	-	125,382	25,051	183,419	434,000
	2013-2022	0	193,121	0.519	0.9946	-	179,924	18,497	294,071	505,973
	2023-2033	0	318,682	0.9852	1	-	298,226	19,343	471,684	739,736
alt_Q	2003-2012	0.0676	107,748	0.014	0.672	7,253	98,422	24,210	151,641	393,120
	2013-2022	0.0731	110,660	0.050	0.665	7,253	101,382	15,900	180,284	349,506
	2023-2033	0.0647	143,451	0.247	0.813	7,253	132,896	13,103	223,107	385,362
Base_Q	2003-2012	0.0446	116,003	0.031	0.746	5,116	106,211	24,478	160,846	405,147
	2013-2022	0.0417	134,540	0.146	0.844	5,116	124,020	16,755	213,223	395,519
	2023-2033	0.0306	194,681	0.557	0.971	5,116	181,175	15,036	295,750	489,638
NoComm	2003-2012	0.0276	122,984	0.055	0.793	3,336	112,806	24,687	168,624	415,178
	2013-2022	0.0235	154,741	0.264	0.935	3,336	143,252	17,401	241,092	433,903
	2023-2033	0.0174	225,626	0.757	0.975	3,337	210,594	16,292	342,758	559,116

Tabel B9.2. Comparison of projection model results at decadal waypoints.

		Average value in the year specified								
Scenario	Year	Average of F	SSB (mt)	Probability of exceeding Target Biomass	Probability of exceeding Threshold biomass	Yield (mt)	Exploitable Biomass of Females (mt)	Exploitable Biomass of Males (mt)	Total Biomass of Females (mt)	Total Biomass (mt)
Rebuild_F	2003	0.03	57,608	0	0	2,290	58,132	22,346	153,665	453,134
	2012	0.03	113,641	0	0.842	3,892	114,842	22,618	184,792	391,624
	2022	0.03	189,434	0.566	1	5,365	174,013	15,484	270,538	458,263
	2032	0.03	250,959	0.914	1	7,038	231,452	17,137	381,388	616,705
SQ_F	2003	0.094	57,608	0	0	7,070	58,132	22,346	153,665	453,134
	2012	0.094	71,971	0	0.1	8,212	73,562	21,136	133,638	322,779
	2022	0.094	103,262	0	0.726	9,207	93,922	12,378	152,158	289,445
	2032	0.094	104,320	0	0.742	9,106	94,460	10,627	165,940	297,200
ZeroF	2003	0	57,608	0	0	-	58,132	22,346	153,665	453,134
	2012	0	141,174	0.066	0.974	-	142,109	23,352	217,512	433,562
	2022	0	256,575	0.928	1	-	237,067	17,309	361,259	582,012
	2032	0	392,134	1	1	-	364,623	21,883	581,444	899,398
alt_Q	2003	0.0984	57,608	0.000	0.000	7,252	58,132	22,346	153,665	453,134
	2012	0.0723	90,693	0.000	0.496	7,253	92,056	21,773	155,487	351,691
	2022	0.0641	135,518	0.162	0.828	7,253	123,487	13,558	196,257	352,643
	2032	0.0624	161,989	0.384	0.838	7,254	148,540	13,130	250,646	421,805
Base_Q	2003	0.0689	57,608	0.000	0.000	5,116	58,132	22,346	153,665	453,134
	2012	0.0442	105,191	0.000	0.702	5,116	106,428	22,292	173,358	375,750
	2022	0.0342	170,904	0.402	0.964	5,116	156,599	14,761	244,281	420,105
	2032	0.0266	229,430	0.728	0.986	5,116	211,747	15,802	347,569	562,445
NoComm	2003	0.0447	57,608	0.000	0.000	3,336	58,132	22,346	153,665	453,134
	2012	0.0259	117,536	0.000	0.836	3,337	118,667	22,687	188,530	395,837
	2022	0.0186	200,603	0.634	1.000	3,335	184,461	15,688	284,733	476,376
	2032	0.0198	234,721	0.777	0.890	3,337	217,311	16,891	371,947	610,667