

DOGFISH TABLES

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

Year	US Recreational						Total
	Canada	US	USSR	Other Foreign	Landed	Discards	
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	2777	9257		402	5	604	13044
2001	2820	2294		677	28	2090	7908
2002	3589	2199		474	225	1698	8185
2003	1304	1170		643	40	2987	6144
2004	2339	981		330	109	3368	7127
2005	1500	1150		330	36	3083	6098

red = from NAFO STATLANT21A including unclassified dogfishes
blue = from DFO website

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

Year	Gear Type					Total
	Line Trawl	Otter Trawl	Sink Gill Net	Drift Gill Net	Other Gear	
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	17.7	3517.6	1198.3	1.5	17.6	4752.7
1980	12.1	3370.1	634.2	4.0	64.7	4085.1
1981	1.0	6287.1	560.8	7.3	8.7	6865.0
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	3056.1	15097.7	27.1	134.1	18797.5
1995	1494.3	2817.8	17654.2	340.9	270.7	22577.8
1996	1313.0	3398.0	21061.8	1263.8	99.0	27135.6
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	251.7	896.0	0.5	6.5	2198.9
2003	652.3	38.0	409.8	0.4	69.5	1170.0
2004	18.0	133.7	744.0	0.0	85.4	981.1
2005	26.5	211.7	713.8	0.0	197.9	1150.0

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

Year	Month												Total		
	Unk	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov		Dec	
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	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	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	277.5
1968	157.6	-	-	-	-	0.1	-	-	0.2	-	-	-	-	158.0	158.0
1969	113.4	-	-	-	-	-	-	-	-	-	-	-	-	113.4	113.4
1970	102.8	-	-	-	-	-	-	-	-	-	-	-	-	105.6	105.6
1971	72.9	<0.1	-	-	-	0.4	-	0.3	1.0	0.2	0.9	0.4	<0.1	73.3	73.3
1972	60.2	-	-	-	0.1	0.4	0.3	-	-	-	1.8	4.7	1.7	69.2	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	89.3
1974	122.6	0.1	-	0.9	-	0.8	0.3	1.1	0.2	0.6	0.6	0.2	0.1	127.3	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	146.9
1976	116.2	0.1	0.5	-	-	24.1	126.2	70.9	119.7	119.7	91.8	0.1	0.1	549.7	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	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	828.5
1979	344.3	-	3.3	81.5	-	16.7	292.4	637.0	502.3	1043.1	1137.5	389.8	389.5	4752.7	4752.7
1980	406.7	26.9	3.3	-	0.4	112.3	803.0	540.5	818.9	1087.4	52.2	91.4	60.7	4085.1	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	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	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	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	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	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	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	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	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	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	14730.6
1991	213.7	1609.9	1105.1	661.4	1298.9	1136.8	624.5	1421.6	962.8	840.1	353.7	965.7	1982.6	13176.7	13176.7
1992	320.8	2117.3	1620.3	1402.6	703.7	787.5	1083.4	2327.4	1549.7	808.9	1362.7	1887.9	885.8	16858.0	16858.0
1993	281.7	1867.2	1641.7	860.9	279.5	559.1	2004.8	3423.6	3227.9	2587.4	1983.8	1127.3	1371.0	21215.8	21215.8
1994	77.1	1276.5	1438.2	1234.9	628.9	653.1	1975.1	3391.2	4202.8	1508.1	878.2	409.5	1123.9	18797.5	18797.5
1995	28.7	1692.5	1432.8	1140.9	871.8	926.4	3381.4	4148.8	2200.8	1831.7	1887.1	1492.2	1542.8	22577.8	22577.8
1996	0.2	2596.0	2329.8	2532.1	1693.6	534.5	2218.9	3615.8	2460.8	2141.6	2473.0	2055.8	2483.5	27135.6	27135.6
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	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	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	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	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	2293.6
2002	0.0	0.2	0.1	1.2	40.7	490.1	892.1	3.2	3.1	1.0	0.5	726.4	40.3	2198.9	2198.9
2003	0.0	6.3	0.1	0.0	3.1	94.9	10.8	1.0	233.4	375.6	384.1	13.9	46.9	1170.0	1170.0
2004	0.0	165.4	57.2	40.6	42.0	16.1	63.2	95.6	92.1	126.9	103.9	98.6	77.9	979.6	979.6
2005	0.0	20.3	0.6	0.5	1.3	39.9	130.5	189.0	195.1	188.0	196.3	105.0	83.4	1150.0	1150.0

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

Year	State													Total
	Connecticut	Delaware	Maine	Maryland	Massachu sets	New Hampshire	New Jersey	New York	North Carolina	Rhode Island	Virginia			
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	30.3			847.7
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	895.4	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	3.0	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			13176.7
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	620.7			21215.9
1994	77.1	0.0	822.5	648.0	10527.9	1178.4	512.5	107.5	4480.5	240.1	203.0			18797.5
1995	133.2	28.5	754.6	1414.1	12989.5	955.4	1079.6	423.5	4244.3	259.9	295.3			22577.8
1996	320.2	0.0	413.2	3243.7	12161.9	489.7	2101.1	565.1	6202.4	511.9	1126.3			27135.6
1997	157.6	0.0	203.5	1917.6	9827.0	457.6	1791.7	221.7	1376.6	460.6	1939.1			18352.9
1998	121.2	0.9	124.2	1088.2	11299.7	858.9	2860.1	660.7	1364.3	802.4	1447.1			20627.6
1999	39.9	0.2	15.8	968.0	6765.5	561.8	1780.2	659.0	186.9	606.7	2276.1			14860.1
2000	13.7	0.1	3.5	204.0	2613.5	1058.9	2368.8	864.6	1290.4	138.7	700.7			9256.7
2001	3.4	0.0	0.1	1.1	1774.7	243.1	7.8	28.4	0.0	178.7	57.3			2293.6
2002	2.6	0.0	0.3	1.1	1723.1	158.2	0.4	22.6	1.2	200.3	89.1			2198.9
2003	0.3	0.0	0.0	0.2	909.8	79.3	0.0	17.4	0.0	55.8	107.2			1170.0
2004	22.8	0.0	1.5	2.5	549.3	0.1	3.2	23.9	191.7	67.7	118.4			981.1
2005	37.0	0.1	17.0	2.4	915.2	69.4	0.4	21.5	0.4	66.7	19.7			1150.0

Table B4.5. Proportion of Spiny Dogfish landings by statistical area from Vessel Trip Reports.

Year	Statistical Area																					
	464	465	500	510	511	512	513	514	515	520	521	522	524	525	526	530	533	534	537	538	539	541
1994	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.38	0.00	0.00	0.23	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.07	0.00	0.01	0.00
1995	0.00	0.00	0.00	0.00	0.00	0.01	0.11	0.35	0.01	0.00	0.24	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.01	0.00
1996	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.35	0.01	0.00	0.20	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.04	0.01	0.00	0.00
1997	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.45	0.02	0.00	0.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.02	0.00
1998	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.42	0.01	0.00	0.20	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.03	0.00	0.03	0.00
1999	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.36	0.01	0.00	0.25	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.03	0.00	0.03	0.00
2000	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.10	0.00	0.00	0.24	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.01	0.01	0.00
2001	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.17	0.00	0.00	0.63	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.06	0.00
2002	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.09	0.32	0.00	0.33	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.02	0.16	0.00
2003	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.14	0.00	0.00	0.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.16	0.00
2004	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.34	0.00	0.00	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.05	0.00
2005	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.46	0.00	0.00	0.23	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.04	0.01

Year	Statistical Area																					
	542	551	561	562	600	610	611	612	613	614	615	616	620	621	622	623	624	625	626	627	628	629
1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1995	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.01	0.01	0.01	0.00	0.00	0.11	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
1996	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.02	0.00	0.02	0.00	0.00	0.11	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00
1997	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.03	0.01	0.00	0.04	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00
1998	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.03	0.00	0.05	0.00	0.00	0.04	0.00	0.00	0.00	0.01	0.02	0.00	0.00	0.00
1999	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.04	0.00	0.03	0.00	0.00	0.02	0.00	0.00	0.00	0.03	0.04	0.00	0.00	0.00
2000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.08	0.01	0.06	0.05	0.00	0.02	0.00	0.00	0.00	0.03	0.03	0.00	0.00	0.00
2001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2002	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2003	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.03	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2004	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.03	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.09	0.00	0.00	0.00	0.00
2005	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Year	Statistical Area													
	630	631	632	633	635	636	637	638	639	700	701	702	703	704
1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1995	0.00	0.01	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1996	0.00	0.01	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1997	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1998	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1999	0.00	0.02	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2000	0.00	0.02	0.01	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2001	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2002	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2004	0.00	0.00	0.04	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table B4.6 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, 1982-2005.

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		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	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
1995	# of Samples					1	2	7	4						14	0	3	11	0	14
	U														0	0	0	0	0	0
	M						5	3	4	13					25	0	8	17	0	25
	F						158	373	1124	611					2266	0	531	1735	0	2266
1996	# of Samples						1	5	3		1	1	2		13	0	1	8	4	13
	U														0	0	0	0	0	0
	M						1	96	30		157	127	158		569	0	1	126	442	569
	F						142	784	504		96	118	18		1662	0	142	1288	232	1662

Table B4.6 cont. 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, 1982-2005.

Year	Sex	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	Q1	Q2	Q3	Q4	Total
1997	# of Samples						4					1		5	0	4	0	1	5
	U						234							234	0	234	0	0	234
	M						278					25		303	0	278	0	25	303
	F						288					94		382	0	288	0	94	382
1998	# of Samples					1		1		1	2		1	6	0	1	2	3	6
	U													0	0	0	0	0	0
	M						24		18	14			12	68	0	0	42	26	68
	F					101		230		86	195		71	683	0	101	316	266	683
1999	# of Samples	2		1				1						4	3	0	1	0	4
	U													0	0	0	0	0	0
	M	47		46										93	93	0	0	0	93
	F	152		55				104						311	207	0	104	0	311
2000	# of Samples	4	5		1	1	3	8	1						9	5	9	0	23
	U	100	151			83	100	99							251	183	99	0	533
	M	108	107				69	58	3						215	69	61	0	345
	F	254	180		125		281	879	202						434	406	1081	0	1921
2001	# of Samples					2	2					2		6	0	4	0	2	6
	U					142	103				177			422	0	245	0	177	422
	M						12							12	0	12	0	0	12
	F						215							215	0	215	0	0	215
2002	# of Samples					2	1					2		5	0	3	0	2	5
	U										119			119	0	0	0	119	119
	M						1	65						66	0	1	65	0	66
	F					213								213	0	213	0	0	213
2003	# of Samples								5	6	1			12	0	0	11	1	12
	U								102	210				312	0	0	312	0	312
	M								11	10	13			34	0	0	21	13	34
	F								482	396	88			966	0	0	878	88	966
2004	# of Samples					1	5		1			5	7	19	0	6	1	12	19
	U										68			68	0	0	0	68	68
	M						8		5				2	15	0	8	5	2	15
	F					108	357		113			209	393	1180	0	465	113	602	1180
2005	# of Samples						8	4	4	3	4	3	7	33	0	8	11	14	33
	U						87							87	0	87	0	0	87
	M							324	280	48	72	11	10	745	0	0	652	93	745
	F						548	184	175	261	273	250	374	2065	0	548	620	897	2065

Table B4.7. Summary of estimated landings of US and Canada commercial fisheries by sex. Port samples from NMFS and MADMF were pooled. Estimated total weights based on 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.

year	Composite (NMFS and MADMF) Biological Samples from Ports										Commercial Landings					Prorated Landings By Sex				
	Total Samples Males	Est Tot Wt (kg) Males	Ave Wt (kg) Males	Total Samples (females)	Est Tot Wt (kg) females	Est Avg Wt (kg) females	Fraction Females by weight	Commercial Landings (mt)	Canada Landings (mt)	Total Comm Landings (mt)	Est Landings (mt) of Males	Est. Landings (mt) of females	Number of Males Landed (000)	Number of Females Landed (000)	Total Numbers Landed (000)					
1982	24	52.0	2.167	680	3016.0	4.435	0.9830	5410.565	1317	6727.565	114.1	6613.5	52.6	1491.1	1543.7					
1983	0	0.0		610	2514.2	4.122	1.0000	4896.51	464	5360.51	0.0	5360.5		1300.6	1300.6					
1984	9	15.8	1.760	1499	6626.6	4.421	0.9976	4450.39	395	4845.39	11.6	4833.8	6.6	1093.5	1100.0					
1985	21	35.2	1.678	1657	6799.9	4.104	0.9948	4028.017	1025	5053.017	26.1	5027.0	15.5	1225.0	1240.5					
1986	64	104.1	1.626	1165	4669.4	4.008	0.9782	2747.61	389	3136.61	68.4	3068.2	42.1	765.5	807.6					
1987	31	52.7	1.700	2000	7550.9	3.775	0.9931	2703.35	419	3122.35	21.6	3100.7	12.7	821.3	834.0					
1988	7	14.8	2.114	1764	7561.4	4.287	0.9980	3105	647	3752	7.3	3744.7	3.5	873.6	877.1					
1989	35	67.5	1.927	1375	5528.6	4.021	0.9879	4492	422	4914	59.2	4854.8	30.7	1207.4	1238.2					
1990	19	33.7	1.772	2230	8917.5	3.999	0.9962	14731	1709	16440	61.9	16378.1	34.9	4095.7	4130.6					
1991	161	379.2	2.356	1518	5924.5	3.903	0.9398	13177	526	13703	824.4	12878.6	350.0	3299.8	3649.8					
1992	12	22.3	1.861	3187	12181.9	3.822	0.9982	16858	896	17754	32.5	17721.5	17.5	4636.3	4653.7					
1993	42	78.4	1.866	2772	9923.1	3.580	0.9922	20643	1438	22081	173.0	21908.0	92.7	6119.9	6212.7					
1994	47	86.6	1.843	2091	6619.5	3.166	0.9871	18800	1821	20621	266.3	20354.7	144.5	6429.8	6574.3					
1995	25	38.9	1.555	2266	6677.3	2.947	0.9942	22711	962	23673	137.0	23536.0	88.1	7987.2	8075.3					
1996	569	886.7	1.558	1662	4398.0	2.646	0.8322	27241	652	27893	4679.8	23213.2	3003.2	8772.2	11775.4					
1997	303	449.1	1.482	382	780.9	2.044	0.6349	18352	660	19012	6941.6	12070.4	4683.2	5904.2	10587.5					
1998	68	85.4	1.257	683	1434.6	2.100	0.9438	20628	1686	22314	1254.4	21059.6	998.2	10026.1	11024.3					
1999	93	130.3	1.401	311	625.6	2.011	0.8276	14860	3021	17881	3082.3	14798.7	2200.0	7357.1	9557.1					
2000	405	561.2	1.386	5144	12168.5	2.366	0.9559	9257	3079	12336	543.8	11792.2	392.5	4984.9	5377.4					
2001	12	17.1	1.422	215	456.5	2.123	0.9640	2294	4432	6726	242.3	6483.7	170.4	3053.5	3223.9					
2002	65	97.6	1.501	1893	5065.8	2.676	0.9811	2195	3874	6069	114.7	5954.3	76.4	2225.0	2301.4					
2003	34	48.3	1.421	966	2338.6	2.421	0.9798	1170	1947	3117	63.1	3053.9	44.4	1261.4	1305.8					
2004	15	23.9	1.593	1180	3297.2	2.794	0.9928	981	2669	3650	26.3	3623.7	16.5	1296.8	1313.3					
2005	745	1018.7	1.367	2065	5196.5	2.516	0.8361	1150	1830	2980	488.4	2491.6	357.2	990.1	1347.3					

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 O=M+N

Table B4.8. Summary of total observed trips, observer day, total discards and coefficient of variation for otter trawl and gill net fisheries, 1989-2005.

year	Gear Name	Number of Observed Trips	Total Observer Days	Total Discard (lb)	Variance of Total Discards	CV of total Discard	Total Discard (mt)
1989	Trawl and Gill Net	280	772	74,176,356	3.728E+14	0.260	33,646
1990	Trawl and Gill Net	270	676	88,856,064	3.71273E+14	0.217	40,304
1991	Trawl and Gill Net	1203	2028	66,913,746	7.76355E+13	0.132	30,352
1992	Trawl and Gill Net	1357	2161	85,032,889	3.81572E+14	0.230	38,570
1993	Trawl and Gill Net	870	1397	59,741,372	1.1307E+14	0.178	27,098
1994	Trawl and Gill Net	465	956	37,027,860	6.41411E+13	0.216	16,796
1995	Trawl and Gill Net	592	1280	52,309,703	7.75735E+13	0.168	23,727
1996	Trawl and Gill Net	609	1101	29,302,659	3.97162E+13	0.215	13,291
1997	Trawl and Gill Net	490	874	19,908,326	2.54107E+13	0.253	9,030
1998	Trawl and Gill Net	473	754	15,945,518	1.69785E+13	0.258	7,233
1999	Trawl and Gill Net	321	677	21,362,521	3.59401E+13	0.281	9,690
2000	Trawl and Gill Net	477	1036	16,339,852	1.12486E+13	0.205	7,412
2001	Trawl and Gill Net	487	1061	26,726,550	2.60376E+13	0.191	12,123
2002	Trawl and Gill Net	521	1238	23,230,426	2.06506E+13	0.196	10,537
2003	Trawl and Gill Net	1010	2618	20,429,293	5.14154E+12	0.111	9,267
2004	Trawl and Gill Net	1963	4385	27,183,459	9.2326E+12	0.112	12,330
2005	Trawl and Gill Net	2633	8703	23,926,709	4.33002E+12	0.087	10,853

year	Gear Name	Number of Observed Trips	Total Observer Days	Total Discard (lb)	Variance of Total Discards	CV of total Discard	Total Discard (mt)
1989	otter trawl	176	638	62,359,933	3.66447E+14	0.307	28,286
1990	otter trawl	126	453	75,491,469	3.59712E+14	0.251	34,242
1991	otter trawl	245	818	42,596,724	6.95288E+13	0.196	19,322
1992	otter trawl	173	718	71,908,104	3.79989E+14	0.271	32,617
1993	otter trawl	101	477	38,105,353	9.63872E+13	0.258	17,284
1994	otter trawl	84	523	30,662,599	6.0461E+13	0.254	13,908
1995	otter trawl	228	835	37,471,035	5.37199E+13	0.196	16,997
1996	otter trawl	202	640	20,727,372	3.29486E+13	0.277	9,402
1997	otter trawl	108	462	14,780,801	2.38154E+13	0.330	6,704
1998	otter trawl	68	261	11,614,289	1.53784E+13	0.338	5,268
1999	otter trawl	115	388	16,942,573	3.45467E+13	0.347	7,685
2000	otter trawl	242	766	6,014,125	2.13144E+12	0.243	2,728
2001	otter trawl	319	880	10,844,410	3.03332E+12	0.161	4,919
2002	otter trawl	385	1091	12,214,536	1.49713E+13	0.317	5,540
2003	otter trawl	554	2113	8,495,095	2.71363E+12	0.194	3,853
2004	otter trawl	1084	3360	18,295,848	8.54019E+12	0.160	8,299
2005	otter trawl	1829	7712	16,567,239	3.46821E+12	0.112	7,515

year	Gear Name	Number of Observed Trips	Total Observer Days	Total Discard (lb)	Variance of Total Discards	CV of total Discard	Total Discard (mt)
1989	gill net	104	134	11,816,422	6.35354E+12	0.213	5,360
1990	gill net	144	223	13,364,595	1.15603E+13	0.254	6,062
1991	gill net	958	1210	24,317,022	8.10668E+12	0.117	11,030
1992	gill net	1184	1443	13,124,785	1.58266E+12	0.096	5,953
1993	gill net	769	920	21,636,019	1.66827E+13	0.189	9,814
1994	gill net	381	433	6,365,261	3.68017E+12	0.301	2,887
1995	gill net	364	445	14,838,667	2.38536E+13	0.329	6,731
1996	gill net	407	461	8,575,287	6.76758E+12	0.303	3,890
1997	gill net	382	412	5,127,525	1.59526E+12	0.246	2,326
1998	gill net	405	493	4,331,228	1.60012E+12	0.292	1,965
1999	gill net	206	289	4,419,948	1.39339E+12	0.267	2,005
2000	gill net	235	270	10,325,727	9.11719E+12	0.292	4,684
2001	gill net	168	181	15,882,139	2.30043E+13	0.302	7,204
2002	gill net	136	147	11,015,890	5.67928E+12	0.216	4,997
2003	gill net	456	505	11,934,198	2.42791E+12	0.131	5,413
2004	gill net	879	1025	8,887,611	6.9241E+11	0.094	4,031
2005	gill net	804	991	7,359,470	8.61812E+11	0.126	3,338

Table B4.9. Total Discard estimates (mt) by gear type, 1989-2005 using expansion based on discard to kept. Zero values mean that no trips were observed.

Year	gill net	line trawl	longline	midwater trawl	otter trawl	pair trawl	purse seine	scallop dredge	scallop trawl	shrimp trawl	Grand Total
1989	5,360	-	-	-	28,286	-	-	-	-	6	33,652
1990	6,062	-	-	-	34,243	-	-	-	-	-	40,305
1991	11,030	97	-	1	19,322	-	-	32	-	2	30,484
1992	5,953	650	-	-	32,618	-	-	827	-	0	40,048
1993	9,814	-	44	-	17,285	235	-	209	-	-	27,587
1994	2,887	-	-	-	13,909	-	-	723	-	-	17,519
1995	6,731	-	-	6	16,997	-	-	378	-	-	24,112
1996	3,890	-	-	-	9,402	-	-	121	-	-	13,413
1997	2,326	-	-	-	6,705	-	-	198	-	-	9,228
1998	1,965	-	-	-	5,268	-	-	120	-	-	7,353
1999	2,005	-	-	-	7,685	-	-	41	-	-	9,731
2000	4,684	-	-	155	2,728	-	-	14	-	-	7,580
2001	7,204	-	-	-	4,919	-	-	30	-	-	12,153
2002	4,997	4,015	-	147	5,541	-	-	58	-	-	14,757
2003	5,413	2	-	150	3,853	-	0	103	-	0	9,521
2004	4,031	497	-	481	8,299	-	65	53	32	0	13,457
2005	3,338	1,175	-	217	7,515	-	3	15	3	-	12,266

Table B4.10. Total discard mortality estimates (mt), 1989-2005, given constant gear specific mortality rates.

Original "estimates" per SARC 37	0.75	0.25	0.25	0.50	0.50	0.50	0.50	0.75	0.50	0.50
Discard Mort. f	0.30	0.10	0.25	0.50	0.50	0.50	0.50	0.75	0.50	0.50
Value per SARC 43 discussions	gill net	line trawl	longline	midwater trawl	otter trawl	pair trawl	purse seine	scallop dredge	scallop trawl	shrimp trawl

Year	gill net	line trawl	longline	midwater trawl	otter trawl	pair trawl	purse seine	scallop dredge	scallop trawl	shrimp trawl	Grand Total
1989	1,608	-	-	-	14,143	-	-	-	-	3	15,754
1990	1,819	-	-	-	17,121	-	-	-	-	-	18,940
1991	3,309	10	-	0	9,661	-	-	24	-	1	13,005
1992	1,786	65	-	-	16,309	-	-	620	-	0	18,780
1993	2,944	-	11	-	8,642	118	-	157	-	-	11,872
1994	866	-	-	-	6,954	-	-	542	-	-	8,363
1995	2,019	-	-	3	8,498	-	-	283	-	-	10,804
1996	1,167	1,701	-	-	4,701	-	-	91	-	-	5,959
1997	698	-	-	-	3,352	-	-	149	-	-	4,199
1998	589	-	-	-	2,634	-	-	90	-	-	3,313
1999	601	-	-	-	3,843	-	-	31	-	-	4,475
2000	1,405	-	-	77	1,364	-	-	10	-	-	2,857
2001	2,161	-	-	-	2,460	-	-	22	-	-	4,643
2002	1,499	402	-	73	2,770	-	-	43	-	-	4,788
2003	1,624	0	-	75	1,927	-	0	77	-	0	3,703
2004	1,209	50	-	240	4,149	-	32	40	16	0	5,737
2005	1,001	117	-	108	3,757	-	1	11	2	-	4,999

Table B4.11. Female total discard mortality estimates by numbers(000's) and weight, 1989-2005,given constant gear specific mortality rates. Based on all size classes

Year	gill net		otter trawl		Female total (gillnet)	
	Numbers (000)	Weight (mt)	Numbers (000)	Weight (mt)	Numbers (000)	Weight (mt)
1989	476	1,397	7,084	7,913	7,560	9,310
1990	538	1,580	8,576	9,579	9,114	11,159
1991	979	2,875	4,839	5,405	5,818	8,280
1992	934	1,406	4,025	9,145	4,958	10,551
1993	804	2,561	2,151	4,769	2,955	7,330
1994	413	764	1,948	2,934	2,360	3,697
1995	855	1,062	4,345	6,224	5,200	7,286
1996	327	568	3,351	3,018	3,678	3,587
1997	276	478	1,461	1,637	1,737	2,115
1998	262	351	1,250	1,558	1,513	1,908
1999	213	485	5,797	2,860	6,010	3,345
2000	523	1,256	760	720	1,283	1,976
2001	787	1,977	953	2,031	1,740	4,008
2002	562	1,392	988	2,237	1,549	3,629
2003	636	1,452	796	1,402	1,431	2,855
2004	455	1,083	1,422	2,888	1,878	3,971
2005	319	809	1,365	2,763	1,684	3,572

Table B4.12 Male Total discard mortality estimates by numbers(000's) and weight, 1989-2005,given constant gear specific mortality rates. Based on all size classes

Year	gill net		otter trawl		Male total (gillnet)	
	Numbers (000)	Weight (mt)	Numbers (000)	Weight (mt)	Numbers (000)	Weight (mt)
1989	156	211	6,152	6,231	6,308	6,441
1990	177	238	7,448	7,543	7,624	7,781
1991	322	434	4,202	4,256	4,524	4,690
1992	376	380	5,970	7,164	6,346	7,544
1993	353	384	3,304	3,873	3,657	4,257
1994	102	103	4,313	4,021	4,415	4,123
1995	861	957	2,775	2,275	3,636	3,232
1996	464	599	2,955	1,683	3,419	2,281
1997	178	220	1,897	1,716	2,075	1,935
1998	235	239	965	1,077	1,200	1,315
1999	101	117	4,882	982	4,983	1,099
2000	100	149	551	644	651	793
2001	124	185	382	428	506	613
2002	67	107	402	533	469	641
2003	157	172	467	524	624	696
2004	93	127	989	1,261	1,082	1,388
2005	138	193	840	994	978	1,187

Table B4.13 Imputed discards of spiny dogfish in otter trawl and gill net fisheries, 1981-1988 based on observed ratio of dogfish discard to total landings in 1989. Discard mortality rates are assumed to 0.50 for otter trawls and 0.30 for gill nets.

Year	Otter Trawl Fishery				Gill Net Fishery			
	Total Landings (mt)	Discard:Kept Ratio	Imputed Dogfish Discards (mt)	Imputed Dead Dogfish Discards (mt)	Total Landings (mt)	Discard:Kept Ratio	Imputed Dogfish Discards (mt)	Imputed Dead Dogfish Discards (mt)
1981	175,220	0.2075	36,360	18,180	19,028	0.2817	5,360	1,608
1982	206,785	0.2075	42,910	21,455	15,814	0.2817	4,454	1,336
1983	203,307	0.2075	42,188	21,094	14,349	0.2817	4,042	1,213
1984	190,954	0.2075	39,625	19,813	17,460	0.2817	4,918	1,475
1985	160,733	0.2075	33,354	16,677	16,115	0.2817	4,539	1,362
1986	152,978	0.2075	31,745	15,872	17,336	0.2817	4,883	1,465
1987	139,995	0.2075	29,050	14,525	17,267	0.2817	4,864	1,459
1988	139,517	0.2075	28,951	14,476	18,220	0.2817	5,132	1,540

Table B4.14 Imputed dogfish discards in otter trawl and gill net fisheries, 1981-1988.
 Estimated fractions by sex and average weights are
 based on 1991-1994 observer sampling

Fraction Female		Fraction Male	
Otter Trawl	Gill Net	Otter Trawl	Gill Net
0.55946	0.868781	0.44054	0.131219

year	Total (mt)		Female (mt)		Male (mt)	
	Otter Trawl	Gill Net	Otter Trawl	Gill Net	Otter Trawl	Gill Net
1981	18,180	1,608	10,171	1,397	8,009	211
1982	21,455	1,336	12,003	1,161	9,452	175
1983	21,094	1,213	11,801	1,053	9,293	159
1984	19,813	1,475	11,084	1,282	8,728	194
1985	16,677	1,362	9,330	1,183	7,347	179
1986	15,872	1,465	8,880	1,273	6,992	192
1987	14,525	1,459	8,126	1,268	6,399	191
1988	14,476	1,540	8,099	1,338	6,377	202

Female Ave Wt (kg)		Male Ave Wt (kg)	
Otter Trawl	Gill Net	Otter Trawl	Gill Net
2.355	2.256	1.529	1.143

Dogfish discard mortality (NUMBERS) (000)

year	Total (000)		Female (000)		Male (000)	
	Otter Trawl	Gill Net	Otter Trawl	Gill Net	Otter Trawl	Gill Net
1981	9,555.1	804.0	4,318	619	5,237	185
1982	11,276.4	668.2	5,096	515	6,180	153
1983	11,086.8	606.3	5,011	467	6,076	139
1984	10,413.2	737.7	4,706	568	5,707	169
1985	8,765.1	680.9	3,961	525	4,804	156
1986	8,342.3	732.5	3,770	564	4,572	168
1987	7,634.2	729.6	3,450	562	4,184	168
1988	7,608.2	769.8	3,438	593	4,170	177

Table B5.1. Stratified mean number per tow indices for spiny dogfish from NEFSC spring (1968-2006) and autumn (1967-2005) 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		5.2	6.5	11.7
2004		18.3	10.0	28.3		16.1	11.8	27.9
2005		38.0	10.3	48.3		24.8	7.6	32.4
2006		50.3	28.5	78.8				

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)

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 (1968-2006) and autumn (1967-2005) 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		7.4	13.1	20.5
2004		23.2	14.4	37.5		20.7	18.4	39.0
2005		50.1	17.8	67.9		36.8	13.2	49.9
2006		70.4	60.0	130.4				

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

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

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

D. 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).

E. 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 the earlier years were still appropriate. Therefore no conversion factor was applied.

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
2004	87.7	33.5	121.2	121.8	53.4	175.2
2005	84.3	35.4	119.7	133.8	60.2	194.0
2006	77.0	37.8	114.9	108.2	77.3	185.5

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	10.5		10.5
1979	1.9		1.9	12.6		12.6
1980	1.7		1.7	0.0	0.1	4.7
1981	0.5	1.0	1.6	11.2	0.1	0.3
1982		0.0	2.0		8.2	45.9
1983		0.0	0.8		3.1	11.5
1984		1.4	5.5		14.0	11.9
1985		0.1	0.8		12.5	116.6
1986		0.1	2.2		30.7	36.7
1987		0.0	0.2		13.9	28.6
1988		1.5	11.5		6.8	168.3
1989		9.2	16.4		256.7	764.6
1990		0.0	2.3		16.3	41.5
1991		0.0	0.9		2.8	25.6
1992		0.0	2.2		51.4	67.6
1993		9.4	10.5		15.8	93.9
1994		0.0	0.2		18.7	1.3
1995		7.5	21.2		40.0	33.1
1996		0.0	0.0		14.2	21.1
1997		2.1	11.1		9.5	46.4
1998		0.8	3.0		3.4	19.4
1999		0.3	4.1		8.4	55.8
2000		0.1	1.0		7.7	361.4
2001		1.5	4.1		26.6	87.2
2002		0.0	4.4		68.1	243.7
2003		0.7	14.8		162.5	51.8
2004		0.3	5.3		258.0	178.9
2005		0.1	3.0		376.8	107.7

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	22.6		22.6
1979	6.4		6.4	40.2		40.2
1980	6.1		6.1	0.1	0.1	17.8
1981	2.6	4.3	6.9	44.9	0.2	1.3
1982		0.1	9.2		14.2	166.2
1983		0.0	3.2		5.0	35.6
1984		1.6	10.8		21.8	35.8
1985		0.1	3.4		18.0	297.5
1986		0.1	9.9		47.0	93.1
1987		0.0	0.9		20.8	76.8
1988		1.9	39.3		8.6	537.7
1989		4.8	14.0		328.9	1546.2
1990		0.0	9.4		22.6	95.0
1991		0.0	4.5		3.4	80.7
1992		0.0	8.5		68.6	107.0
1993		10.4	19.5		23.3	211.7
1994		0.0	0.8		30.8	2.8
1995		9.5	34.1		59.6	63.6
1996		0.0	0.1		20.8	44.4
1997		2.4	20.5		13.5	87.2
1998		1.0	5.8		4.5	41.9
1999		0.4	8.5		12.9	116.0
2000		0.1	2.7		11.1	738.2
2001		2.4	9.3		36.7	180.8
2002		0.0	11.5		105.6	448.0
2003		1.0	29.5		254.0	96.8
2004		0.4	11.5		400.3	376.8
2005		0.1	6.9		542.9	225.5

Table B5.6. Summary of positive tows and fraction exceeding 1000 kg/tow for spiny dogfish in NMFS fall trawl survey

Survey	Year	Total Tows	Fraction Positive Tows females	Fraction Positive Tows males	Fraction Positive Tows both	Fraction >Threshold	Total Catch for tows exceeding threshold	Fraction of total survey catch
Fall	1967	252	0.000	0.000	0.472	0.000	0	0.000
Fall	1968	254	0.441	0.496	0.555	0.000	0	0.000
Fall	1969	254	0.358	0.429	0.484	0.008	6584	0.588
Fall	1970	257	0.370	0.440	0.510	0.000	0	0.000
Fall	1971	266	0.286	0.338	0.444	0.000	0	0.000
Fall	1972	256	0.000	0.000	0.457	0.000	0	0.000
Fall	1973	249	0.000	0.000	0.402	0.000	0	0.000
Fall	1974	254	0.000	0.000	0.362	0.000	0	0.000
Fall	1975	361	0.000	0.000	0.429	0.000	0	0.000
Fall	1976	328	0.000	0.000	0.293	0.000	0	0.000
Fall	1977	375	0.000	0.000	0.371	0.000	0	0.000
Fall	1978	500	0.000	0.000	0.366	0.000	0	0.000
Fall	1979	508	0.000	0.000	0.406	0.000	0	0.000
Fall	1980	348	0.155	0.129	0.195	0.003	2760	0.568
Fall	1981	328	0.277	0.229	0.317	0.009	7560	0.570
Fall	1982	328	0.201	0.216	0.317	0.006	2702	0.472
Fall	1983	320	0.238	0.272	0.378	0.009	6396	0.541
Fall	1984	324	0.235	0.265	0.367	0.009	8621	0.585
Fall	1985	321	0.299	0.327	0.427	0.016	6178	0.624
Fall	1986	326	0.261	0.245	0.301	0.006	4447	0.431
Fall	1987	302	0.315	0.301	0.364	0.007	3061	0.300
Fall	1988	294	0.401	0.361	0.469	0.010	5524	0.408
Fall	1989	307	0.293	0.264	0.332	0.000	0	0.000
Fall	1990	320	0.263	0.269	0.334	0.019	19535	0.837
Fall	1991	316	0.190	0.215	0.247	0.019	16389	0.754
Fall	1992	311	0.244	0.264	0.312	0.016	14670	0.803
Fall	1993	313	0.227	0.224	0.268	0.006	4369	0.542
Fall	1994	320	0.266	0.238	0.306	0.006	2653	0.285
Fall	1995	314	0.242	0.258	0.290	0.010	8822	0.620
Fall	1996	311	0.322	0.302	0.389	0.010	8387	0.591
Fall	1997	315	0.397	0.343	0.425	0.010	6603	0.499
Fall	1998	332	0.395	0.346	0.440	0.018	15581	0.689
Fall	1999	332	0.419	0.398	0.476	0.009	4874	0.317
Fall	2000	316	0.320	0.282	0.351	0.013	6931	0.478
Fall	2001	316	0.326	0.342	0.386	0.019	11737	0.561
Fall	2002	311	0.373	0.347	0.405	0.010	5387	0.358
Fall	2003	310	0.290	0.297	0.368	0.010	7838	0.544
Fall	2004	307	0.309	0.300	0.355	0.026	13810	0.538
Fall	2005	313	0.348	0.361	0.409	0.029	23307	0.701
Total	0	12369	0.225	0.225	0.376	0.008	224724	0.467

Table B5.7. Summary of positive tows and fraction exceeding 1000 kg/tow for spiny dogfish in NMFS spring trawl survey

Survey	Year	Total Tows	Fraction Positive Tows females	Fraction Positive Tows males	Fraction Positive Tows both	Fraction >Threshold	Total Catch for tows exceeding threshold	Fraction of total survey catch
Spring	1968	240	0.308	0.267	0.413	0.013	3672	0.416
Spring	1969	244	0.467	0.389	0.586	0.000	0	0.000
Spring	1970	261	0.410	0.268	0.487	0.004	1504	0.353
Spring	1971	260	0.477	0.346	0.558	0.008	5697	0.523
Spring	1972	265	0.174	0.091	0.611	0.008	3266	0.199
Spring	1973	278	0.000	0.000	0.712	0.000	0	0.000
Spring	1974	219	0.000	0.000	0.667	0.000	0	0.000
Spring	1975	221	0.000	0.000	0.679	0.000	0	0.000
Spring	1976	339	0.000	0.000	0.611	0.000	0	0.000
Spring	1977	341	0.000	0.000	0.560	0.000	0	0.000
Spring	1978	349	0.000	0.000	0.501	0.000	0	0.000
Spring	1979	426	0.000	0.000	0.413	0.000	0	0.000
Spring	1980	391	0.391	0.292	0.512	0.008	3525	0.187
Spring	1981	320	0.506	0.388	0.581	0.013	6432	0.317
Spring	1982	334	0.440	0.281	0.473	0.018	20803	0.702
Spring	1983	331	0.372	0.284	0.408	0.009	6273	0.415
Spring	1984	327	0.330	0.217	0.367	0.003	1944	0.172
Spring	1985	319	0.408	0.276	0.433	0.022	23629	0.645
Spring	1986	332	0.530	0.307	0.536	0.006	2299	0.174
Spring	1987	312	0.571	0.353	0.583	0.022	22848	0.652
Spring	1988	300	0.470	0.230	0.503	0.013	16375	0.606
Spring	1989	281	0.520	0.320	0.530	0.011	12673	0.533
Spring	1990	296	0.551	0.358	0.564	0.014	22979	0.642
Spring	1991	312	0.542	0.337	0.571	0.010	6362	0.308
Spring	1992	297	0.495	0.279	0.512	0.020	12877	0.463
Spring	1993	312	0.474	0.304	0.484	0.006	6995	0.333
Spring	1994	315	0.451	0.330	0.470	0.013	6797	0.295
Spring	1995	313	0.518	0.479	0.581	0.006	2550	0.155
Spring	1996	335	0.481	0.355	0.513	0.024	15369	0.526
Spring	1997	315	0.578	0.394	0.606	0.006	2340	0.125
Spring	1998	348	0.471	0.431	0.566	0.006	4240	0.302
Spring	1999	310	0.526	0.423	0.590	0.010	3700	0.224
Spring	2000	312	0.506	0.343	0.561	0.006	3421	0.300
Spring	2001	317	0.410	0.382	0.492	0.009	5022	0.421
Spring	2002	317	0.593	0.451	0.669	0.009	7926	0.353
Spring	2003	310	0.471	0.390	0.516	0.013	11473	0.552
Spring	2004	314	0.379	0.347	0.455	0.006	3843	0.266
Spring	2005	316	0.402	0.291	0.437	0.009	10851	0.556
Spring	2006	327	0.532	0.462	0.612	0.024	15060	0.498
Total	0	12056	0.379	0.275	0.533	0.009	272744	0.390

Table B5.8. Swept area biomass estimates (thousands of metric tons) from NEFSC spring and autumn surveys for offshore areas (Offshore strata 1-30, 33-40, 61-76) and inshore areas (inshore strata 1-66).
Note inshore strata 46-66 not sampled until 1979.

year	Spring Survey				Autumn Survey				
	offshore	inshore	total	Fraction Inshore	offshore	inshore	total	Fraction Inshore	
1975					134.6	35.8	170.4	0.210187	
1976	239.8	2.4	242.2	0.009752	127.7	0.0	127.7	0	
1977	156.0	3.4	159.4	0.021244	104.1	2.1	106.2	0.01982	
1978	235.3	4.8	240.0	0.019832	125.6	3.8	129.4	0.029223	
1979	86.2	1.2	87.4	0.013923	169.4	36.1	205.5	0.17557	
1980	318.0	2.8	320.9	0.008807	123.3	9.4	132.7	0.070893	
1981	446.8	9.4	456.2	0.020542	308.0	5.5	313.5	0.017388	
1982	758.0	8.6	766.6	0.011155	96.7	11.5	108.1	0.105914	
1983	251.7	7.3	259.0	0.02814	227.9	48.9	276.8	0.176537	
1984	274.3	11.7	286.0	0.040755	145.6	115.5	261.0	0.442401	
1985	1082.2	8.7	1090.9	0.008008	247.9	47.4	295.3	0.160527	
1986	284.9	21.1	306.1	0.069003	236.6	19.9	256.5	0.077643	
1987	656.5	3.3	659.8	0.004944	139.8	53.7	193.5	0.277597	
1988	668.9	28.3	697.3	0.040631	225.9	55.8	281.6	0.198024	
1989	493.0	12.8	505.8	0.025383	73.7	23.9	97.6	0.24504	
1990	959.2	16.2	975.4	0.016655	191.1	82.1	273.2	0.300499	
1991	574.8	22.0	596.8	0.03692	321.8	72.1	393.9	0.183033	
1992	719.0	18.0	737.1	0.024487	355.5	33.4	388.9	0.08582	
1993	562.3	6.5	568.8	0.011496	46.0	70.9	116.9	0.606506	
1994	545.1	6.0	551.0	0.01086	178.5	14.7	193.2	0.075927	
1995	472.3	14.1	486.4	0.028939	179.7	57.9	237.7	0.243791	
1996	765.8	0.9	766.7	0.001215	262.8	57.0	319.8	0.178307	
1997	526.8	9.4	536.2	0.017483	188.7	57.3	246.0	0.232826	
1998	377.7	7.7	385.4	0.020078	205.4	158.7	364.1	0.43594	
1999	494.7	2.7	497.5	0.005521	150.4	64.0	214.4	0.298458	
2000	381.2	4.4	385.6	0.011395	222.2	51.8	274.0	0.189175	
2001	316.3	2.7	319.0	0.008373	259.4	119.9	379.3	0.316138	
2002	482.7	39.9	522.6	0.07641	299.9	43.6	343.5	0.126885	
2003	482.7	18.4	501.1	0.036773	130.5	108.5	239.0	0.453853	
2004	241.0	16.5	257.6	0.064163	248.4	123.2	371.6	0.331592	
2005	436.1	12.4	448.4	0.027583	315.0	175.0	490.0	0.35712	
2006	837.0	24.0	861.0	0.02787					

Table B6.1. Biomass estimates for spiny dogfish (thousands of metric tons) based on area swept by NEFSC trawl during spring surveys, 1968-2006.

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
2004	40.4	10.0	50.3	46.9	126.2	173.1	0.66	0.91	1.56	225.0
2005	55.8	30.8	86.6	59.8	294.7	354.5	0.28	0.42	0.69	441.9
2006	253.2	49.9	303.1	141.5	405.1	546.6	0.10	0.18	0.28	849.9

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

Table B6.2 Biomass estimates for spiny dogfish (thousands of metric tons) based on area swept by NEFSC trawl during spring surveys, 1968-2006, adjusted for 0.012 nm sq footprint.

Year	Lengths >= 80 cm		Lengths 36 to 79 cm		Length <= 35 cm		All Lengths
	Females	Males	Females	Males	Females	Males	
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	14.0	60.2	0.27	0.33	243.7
1981	222.1	20.3	21.2	62.6	1.78	2.33	332.9
1982	378.3	28.8	51.3	119.4	0.40	0.57	578.8
1983	64.8	25.1	30.6	82.1	2.57	3.29	208.4
1984	96.3	22.9	27.9	73.3	0.11	0.18	220.7
1985	264.2	104.6	85.4	418.8	3.34	4.25	880.6
1986	159.4	3.0	43.2	24.6	0.70	0.93	231.8
1987	182.6	75.4	51.2	143.0	2.05	3.97	458.3
1988	361.0	21.8	77.8	128.0	0.74	0.91	590.4
1989	135.1	33.7	83.7	131.9	0.95	1.28	386.6
1990	333.6	58.9	136.2	252.6	0.57	0.86	782.7
1991	183.6	25.0	90.4	155.2	0.81	1.19	456.2
1992	233.8	34.9	149.9	193.2	0.61	0.83	613.2
1993	195.5	23.2	86.8	165.4	0.46	0.54	471.9
1994	87.8	30.9	90.2	211.9	3.57	4.62	429.0
1995	85.4	24.5	128.3	145.4	0.21	0.29	384.1
1996	163.7	27.8	168.1	279.0	0.82	0.95	640.4
1997	69.7	14.6	171.0	174.2	0.04	0.04	429.6
1998	22.3	19.1	57.5	197.0	0.04	0.06	296.0
1999	52.2	17.0	117.4	213.6	0.01	0.03	400.3
2000	71.5	9.7	76.2	138.5	0.06	0.07	300.9
2001	47.2	14.0	59.5	133.7	0.04	0.03	254.5
2002	62.6	15.8	109.5	205.3	0.05	0.05	393.4
2003	53.8	18.8	104.6	213.6	0.11	0.12	390.9
2004	33.6	8.3	39.1	105.1	0.55	0.75	187.5
2005	46.5	25.7	49.8	245.6	0.23	0.35	368.2
2006	211.0	41.6	117.9	337.6	0.08	0.15	708.3

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

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	22.40	2.00E+03	6.49E+07	2.11E+14	5.615	14.415				
Females	1981	22.993	2.24E+01	4.74E+00	20.60	1.81E+04	1.49E+08	9.36E+14	13.71	32.275				
Females	1982	27.845	8.65E+01	9.30E+00	33.40	2.83E+04	1.80E+08	3.63E+15	9.617	46.074	20.28	3.80E+01	6.163497	30.39
Females	1983	18.075	1.70E+01	4.13E+00	22.80	1.34E+04	1.17E+08	7.15E+14	9.986	26.164	22.97	4.20E+01	6.479686	28.21
Females	1984	9.155	3.13E+00	1.77E+00	19.30	1.19E+03	5.93E+07	1.31E+14	5.689	12.62	18.36	3.56E+01	5.962519	32.48
Females	1985	37.114	1.21E+02	1.10E+01	29.60	3.37E+04	2.40E+08	5.08E+15	15.552	58.675	21.45	4.71E+01	6.860002	31.98
Females	1986	19.256	9.12E+00	3.02E+00	15.70	5.16E+03	1.25E+08	3.83E+14	13.335	25.176	21.84	4.44E+01	6.665103	30.52
Females	1987	25.824	4.15E+01	6.44E+00	24.90	1.27E+04	1.66E+08	1.71E+15	13.203	38.444	27.40	5.72E+01	7.563198	27.60
Females	1988	35.095	1.06E+02	1.03E+01	29.40	3.01E+04	2.25E+08	4.36E+15	14.905	55.286	26.73	5.22E+01	7.227399	27.04
Females	1989	27.115	2.77E+01	5.26E+00	19.40	2.36E+04	1.72E+08	1.11E+15	16.801	37.429	29.34	5.84E+01	7.643559	26.05
Females	1990	44.008	1.93E+02	1.39E+01	31.60	6.94E+04	2.82E+08	7.91E+15	16.781	71.234	35.41	1.09E+02	10.43665	29.48
Females	1991	29.994	3.07E+01	5.54E+00	18.50	1.05E+04	1.93E+08	1.26E+15	19.141	40.848	33.71	8.38E+01	9.152686	27.15
Females	1992	41.305	1.01E+02	1.01E+01	24.40	2.44E+04	2.58E+08	3.96E+15	21.583	61.027	38.44	1.08E+02	10.40631	27.07
Females	1993	28.33	2.22E+01	4.72E+00	16.60	7.01E+03	1.81E+08	9.10E+14	19.087	37.573	33.21	5.14E+01	7.168263	21.58
Females	1994	38.115	4.39E+01	6.63E+00	17.40	3.54E+04	2.44E+08	1.80E+15	25.124	51.105	35.92	5.58E+01	7.470252	20.80
Females	1995	25.032	3.29E+01	5.73E+00	22.90	7.88E+03	1.61E+08	1.36E+15	13.794	36.27	30.49	3.30E+01	5.745723	18.84
Females	1996	44.625	2.86E+02	1.69E+01	37.90	9.13E+04	2.87E+08	1.18E+16	11.466	77.785	35.92	1.21E+02	11.00033	30.62
Females	1997	29.058	2.22E+01	4.72E+00	16.20	6.06E+03	1.86E+08	9.09E+14	19.815	38.3	32.91	1.14E+02	10.66666	32.42
Females	1998	11.143	5.45E+00	2.33E+00	20.90	1.41E+03	7.15E+07	2.24E+14	6.569	15.717	28.28	1.05E+02	10.22909	36.18
Females	1999	21.351	1.10E+01	3.32E+00	15.60	3.37E+03	1.34E+08	4.35E+14	14.839	27.862	20.52	1.29E+01	3.592585	17.51
Females	2000	15.421	2.42E+01	4.92E+00	31.90	5.20E+03	9.90E+07	9.99E+14	5.771	25.07	15.97	1.36E+01	3.684291	23.07
Females	2001	10.884	1.39E+01	3.73E+00	34.20	3.18E+03	6.99E+07	5.73E+14	3.578	18.19	15.89	1.64E+01	4.048456	25.49
Females	2002	18.769	1.54E+01	3.92E+00	20.90	9.28E+03	1.21E+08	6.34E+14	11.084	26.454	15.02	1.78E+01	4.223269	28.11
Females	2003	17.474	5.86E+00	2.42E+00	13.90	9.30E+03	1.12E+08	2.42E+14	12.73	22.218	15.71	1.17E+01	3.421905	21.78
Females	2004	10.0074	7.92028	2.8143	28.12	2803.61	64254400	3.27E+14	4.49	15.52343	15.42	9.72E+00	3.117402	20.22
Females	2005	10.348	1.03E+01	3.20E+00	31.00	3114.2	66440000	4.23E+14	4.067	16.629	12.61	8.02E+00	2.831288	22.45
Females	2006	28.51	3.89E+01	6.23E+00	21.87	1.22E+04	1.83E+08	1.60E+15	16.289	40.72	16.29	1.90E+01	4.360668	26.77

Table B7.1 (cont.)

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	22.0	1.37E+04	1.18E+08	6.71E+14	10.391	26.108	18.27	2.28E+01	4.775971	26.14
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	21.86	2.56E+01	5.055525	23.13
Males	1983	23.622	1.81E+01	4.26E+00	18.0	7.94E+03	1.53E+08	7.60E+14	15.279	31.965	20.22	2.80E+01	5.292542	26.17
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	39.05	2.59E+02	16.07877	41.18
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	34.32	2.55E+02	15.96656	46.52
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	42.98	3.20E+02	17.89516	41.64
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	26.07	1.18E+02	10.87153	41.69
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	32.78	1.41E+02	11.87541	36.23
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	35.61	2.79E+02	16.69088	46.87
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	36.55	2.64E+02	16.25431	44.47
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	39.44	2.60E+02	16.1372	40.92
Males	1992	38.223	6.45E+01	8.03E+00	21.0	2.76E+04	2.39E+08	2.52E+15	22.487	53.958	34.36	1.24E+02	11.13954	32.42
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	41.39	1.22E+02	11.05459	26.71
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	37.24	1.09E+02	10.43676	28.03
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	43.93	9.91E+01	9.954865	22.66
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	35.99	8.24E+01	9.075057	25.21
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	38.19	9.65E+01	9.824951	25.72
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	32.47	4.56E+01	6.755559	20.81
Males	1999	35.452	4.09E+01	6.40E+00	18.0	1.38E+04	2.23E+08	1.61E+15	22.915	47.989	30.02	4.77E+01	6.903767	23.00
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	26.01	3.56E+01	5.970036	22.95
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	24.92	3.45E+01	5.875656	23.58
Males	2002	32.174	3.76E+01	6.13E+00	19.0	1.83E+04	2.07E+08	1.55E+15	20.162	44.186	28.32	3.12E+01	5.588798	19.73
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	27.65	29.0726	5.391901	19.50
Males	2004	18.3176	24.5928	4.95911	27.1	9720.55	1.18E+08	1.01E+15	8.597744	28.03746	29.58	131.9323	11.48618	38.83
Males	2005	37.973	346.14	18.605	49.0	103580	2.44E+08	1.43E+16	1.507	74.439	35.52	194.9639	13.96295	39.31
Males	2006	50.2729	214.159	14.6342	29.1	46653.2	3.23E+08	8.83E+15	21.58987	78.95593				

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

Year	Survey Data				Survey Data Scaled to Nominal Footprint (0.01 nm ²)	
	Raw Data		2-Pt Moving Average		2 -yr moving average	
	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
2004	4.346	6.29	2.585	8.17	16,599	52,458
2005	1.951	8.70	3.148	7.493	20,213	48,112
2006	0.644	39.44	1.297	24.067	8,330	154,529

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

Years Included	Data	Units	Parameter	Estimate	Asymptotic SE	95% Confidence Interval	
						Lower Bound	Upper Bound
1968-96	Swept Area 2-yr avg.	thousands mt	A	0.541578	0.109155	0.31761	0.765546
			B	-0.000005	0.000001	-0.000007	-0.000003
			RMAX (000')	42,839	3,517	35,622	50,055
			SSBMAX (mt)	215,014	43,749	125,249	304,780
			R-sqr	0.172			
			MSE	7.925 E+9			
	Raw (2-yr avg.)	num/tow kg/tow	A	0.543445	0.108853	0.320097	0.766793
			B	-0.030141	0.006055	-0.042565	-0.017717
			RMAX	6.632914	0.542621	5.519549	7.74628
SSBMAX			33.177455	6.665081	19.501838	46.853071	
R-sqr			0.178				
MSE			190.97				
Raw	num/tow kg/tow	A	0.521389	0.16949	0.174204	0.868574	
		B	-0.027862	0.009425	-0.047169	-0.008555	
		RMAX	6.884334	1.118478	4.593236	9.175431	
		SSBMAX	35.891764	12.141952	11.020103	60.763425	
		R-sqr	0.055				
		MSE	625.76				
1968-2006	Swept Area 2-yr avg.	thousands mt	A	0.373678	0.080375	4.64919	0.21067
			B	-0.00003	0.000001	-0.000005	-0.000001
			RMAX	41,812	5,565	30,524	53,100
			SSBMAX	304,158	90,354	120,912	487,405
			R-sqr	3.06E-01			
			MSE	7.34E+07			
	Raw (2-yr avg.)	num/tow kg/tow	A	0.37464	0.080409	0.211564	0.537716
			B	-0.021384	0.006276	-0.034112	-0.008657
			RMAX	6.445057	0.844803	4.731716	8.158398
SSBMAX			46.763476	13.723467	18.930994	74.595957	
R-sqr			0.327				
MSE			339.75				
Raw	num/tow kg/tow	A	0.414183	0.128034	0.154762	0.673605	
		B	-0.024286	0.008786	-0.042088	-0.006483	
		RMAX	6.274074	1.109566	4.02588	8.522269	
		SSBMAX	41.176671	14.896883	10.992719	71.360623	
		R-sqr	0.098455				
		MSE	771.27				

Table B10.1. Projections of spiny dogfish spawning stock biomass (mt) under three scenarios.

Scenario	F	Year	SSB (mean)	P(SSB>thresh)	P(SSB>Target)
Status Quo	0.128	2006	106,385	0.72	0.00
		2007	138,758	0.93	0.09
		2008	155,394	0.96	0.24
		2018	124,652	0.87	0.02
		2028	184,104	1.00	0.51
Rebuild F	0.030	2006	106,385	0.72	0.00
		2007	144,560	0.94	0.14
		2008	168,616	0.98	0.37
		2018	195,685	1.00	0.60
		2028	383,756	1.00	1.00
Zero F	0.0	2006	106,385	0.72	0.00
		2007	146,391	0.95	0.16
		2008	172,918	0.99	0.41
		2018	229,182	1.00	0.79
		2028	490,464	1.00	1.00