

Table A1.

**Monkfish FMP Timeline**

	FMP implemented: multi-level limited access program two management areas target TACs effort limitations (DAS) – Year 3 default measures (0 DAS) trip limits
<b>Nov. 1999</b>	bycatch allowances minimum fish sizes and minimum mesh size gear restrictions spawning season closures a framework adjustment process permitting and reporting requirements other measures for administration and enforcement.
<b>Nov. 1999</b>	Amendment 1 effective – EFH Omnibus Amendment
<b>May. 2000</b>	DAS implemented
<b>Jul. 2000</b>	SAW 31
<b>Spring 2001</b>	Cooperative Survey
<b>Fall 2001</b>	Hall v. Evans decision - trip limit on gillnet vessels set equal to trawls, based on permit category.
<b>Jan. 2002</b>	SAW 34
<b>Spring 2002</b>	Councils submit Framework 1 – one-year postponement of default measures while the Councils prepared Amendment 2.
<b>May. 2002</b>	Emergency Rule – Framework 1 disapproved for non-compliance with F threshold in the original plan (which had been invalidated by SAW 31 and SAW 34). Implemented a revision to the OFD based on SAW 34 recommendations, and management measures in FW 1
<b>May. 2003</b>	Framework 2 - modified the OFD reference points recommended by SAW 34, established an index- and landings-based method for setting TACs to achieve annual rebuilding goals, and for calculating DAS and trip limits. Also eliminated the default measures.

FY MAY	Trip Limits (lbs. tail wt./DAS) SFMA only	
<b>2000</b>	A&C: 1,500 trawls, 300 gillnets B&D: 1,000 trawls, 300 gillnets	
<b>2001</b>	Gillnet trip limits set equal to trawl/permit category (11/01)	
<b>2002</b>	A&C: 550 B&D: 450	
<b>2003</b>	A&C: 1,250 B&D: 1,000	
<b>2004</b>	A&C: 550 (with 28 DAS in the SFMA) B&D: 450 (with 28 DAS in the SFMA)	

Table A2. Landings (calculated live weight, mt) of goosefish as reported in NEFSC weighout data base (1964-1993) and vessel trip reports (1994-2003) (North = SA 511-523, 561; South = SA 524-639 excluding 551-561 plus landings from North Carolina for years 1977-1995); General Canvas database (1964-1989, North = ME, NH, northern weigh out proportion of MA; South = Southern weigh out proportion of MA, RI-VA); Foreign landings from NAFO database areas 5 and 6. Shaded cells denote suggested source for landings which are used in the total column at the far right (see text for details).

Year	Weigh Out Plus NC			General Canvas			Foreign	Total
	US North	US South	US Total	US North	US South	US Total		
1964	45	19	64	45	61	106	0	106
1965	37	17	54	37	79	115	0	115
1966	299	13	312	299	69	368	2,397	2,765
1967	539	8	547	540	59	598	11	609
1968	451	2	453	449	36	485	2,231	2,716
1969	258	4	262	240	43	283	2,249	2,532
1970	199	12	211	199	53	251	477	728
1971	213	10	223	213	53	266	3,659	3,925
1972	437	24	461	437	65	502	4,102	4,604
1973	710	139	848	708	240	948	6,818	7,766
1974	1,197	101	1,297	1,200	183	1,383	727	2,110
1975	1,853	282	2,134	1,877	417	2,294	2,548	4,842
1976	2,236	428	2,663	2,256	608	2,865	341	3,206
1977	3,137	830	3,967	3,167	1,314	4,481	275	4,756
1978	3,889	1,384	5,273	3,976	2,073	6,049	38	6,087
1979	4,014	3,534	7,548	4,068	4,697	8,765	70	8,835
1980	3,695	4,232	7,927	3,623	6,035	9,658	132	9,790
1981	3,217	2,380	5,597	3,171	4,142	7,313	381	7,694
1982	3,860	3,722	7,582	3,757	4,492	8,249	310	7,892
1983	3,849	4,115	7,964	3,918	4,707	8,624	80	8,044
1984	4,202	3,699	7,901	4,220	4,171	8,391	395	8,296
1985	4,616	4,262	8,878	4,452	4,806	9,258	1,333	10,211
1986	4,327	4,037	8,364	4,322	4,264	8,586	341	8,705
1987	4,960	3,762	8,722	4,995	3,933	8,926	748	9,470
1988	5,066	4,595	9,661	5,033	4,775	9,809	909	10,570
1989	6,391	8,353	14,744	6,263	8,678	14,910	1,178	15,922
1990	5,802	7,204	13,006				1,557	14,563
1991	5,693	9,865	15,558				1,020	16,578
1992	6,923	13,942	20,865				473	21,338
1993	10,645	15,098	25,743				354	26,097
1994	10,950	12,126	23,076				543	23,619
1995	12,032	14,625	26,657				418	27,075
1996	10,762	16,032	26,794				184	26,978
1997	9,794	18,534	28,328				189	28,517
1998	7,367	19,309	26,676				190	26,866
1999	9,260	15,953	25,213				151	25,364
2000	10,685	10,191	20,876				176	21,052
2001	13,500	9,801	23,301				149	23,450
2002	14,029	8,866	22,895				294	23,189
2003	15,103	10,963	26,066				309	26,375

Table A3. U.S. landings of goosefish (calculated live weight) by gear type.

Year	North				South				Regions Combined				
	Trawl	Gill Net	Scallop Dredge	Other	Trawl	Gill Net	Scallop Dredge	Other	Trawl	Gill Net	Scallop Dredge	Other	Total
1964	44.93	0.02			18.99				63.92	0.02			63.94
1965	36.41	0.20			16.61				53.23	0.20			53.43
1966	298.80	0.17		0.05	12.63			0.08	311.43	0.17		0.14	311.74
1967	531.85		7.61		7.58				539.64		7.61		547.25
1968	447.19		4.11		2.07				449.26		4.11		453.37
1969	253.14	1.35	3.98		4.02				257.16	1.35	3.98		262.49
1970	198.25	0.32		0.06	12.16				210.41	0.32		0.06	210.79
1971	212.57		0.17		10.11				222.68		0.17		222.85
1972	426.45	7.74	1.30	1.57	24.43				450.87	7.74	1.30	1.57	461.48
1973	660.85	28.68	12.24	7.96	131.51		4.88		793.54	28.68	17.11	8.96	848.29
1974	1059.61	104.95	7.27	24.73	98.03			1.00	1160.09	104.95	7.27	24.82	1297.13
1975	1711.64	122.83	9.51	8.57	265.48	0.24		0.10	1989.84	123.07	11.67	10.13	2134.71
1976	2031.30	142.96	46.73	14.62	333.09			1.56	2458.97	142.96	53.70	14.86	2670.49
1977	2736.74	230.22	142.08	27.56	508.08			25.54	3487.32	230.22	202.46	53.11	3973.11
1978	3254.89	367.96	212.00	54.17	604.78			25.50	4016.02	368.10	774.35	79.66	5238.13
1979	2966.80	393.04	583.69	70.63	943.68	6.13		16.33	3988.97	399.18	2069.76	86.96	6544.87
1980	2525.97	518.24	595.68	55.66	1138.82	10.04		6.81	3723.11	528.28	2275.51	62.47	6589.37
1981	2266.33	460.64	443.42	46.77	1100.10	16.03		105.45	3483.30	477.28	1399.19	152.22	5511.99
1982	3039.51	420.92	367.07	32.41	1805.81	11.88		27.27	4998.08	432.80	2060.73	59.68	7551.29
1983	3233.10	313.69	265.70	36.96	1818.58	11.38		17.16	5165.97	325.07	2430.74	55.54	7977.32
1984	3647.80	314.93	196.37	42.84	1714.49	15.46		17.97	5512.58	330.39	1967.53	60.81	7871.31
1985	3982.26	314.52	263.58	55.33	1739.05	17.33		2.88	5756.74	331.85	2610.80	58.21	8757.60
1986	3412.10	326.21	552.69	35.64	1841.10	32.11		12.15	5317.97	358.32	2620.90	47.79	8344.98
1987	3853.06	373.99	695.43	37.57	1679.88	26.25		3.42	5560.79	400.24	2692.39	40.99	8694.41
1988	3553.90	304.08	1171.59	36.23	1828.37	58.22		3.02	5399.48	362.50	3765.42	39.26	9566.66
1989	3428.68	348.65	2584.13	29.72	3240.35	16.89		3.47	6679.05	366.02	7619.92	33.20	14698.19
1990	3297.60	338.43	2140.73	25.20	2361.40	32.11		4.75	5697.44	371.82	6884.97	29.96	12984.19
1991	3298.76	337.64	2033.44	23.73	5515.03	362.60		15.72	8847.11	700.47	5940.50	39.45	15527.53
1992	4329.96	358.97	2210.53	23.89	6527.85	977.16		10.80	10859.54	1336.14	8619.48	34.69	20849.85
1993	5889.87	695.02	4034.08	26.26	5986.62	1722.40		192.14	11878.65	2417.42	11192.09	218.40	25706.56
1994	7573.88	1571.26	1807.84	86.42	5233.06	2342.47		555.96	12707.47	3883.88	5758.86	637.57	22987.78
1995	9257.30	1528.60	1188.90	56.80	5725.40	3804.60		742.80	14982.76	5333.24	5298.25	799.62	26413.87
1996	8436.50	1391.00	889.30	45.00	7173.20	4220.40		32.70	15609.69	5611.39	5251.52	77.67	26550.27
1997	7399.90	1004.00	1344.60	45.20	8234.10	5201.80		203.50	15633.97	6205.74	6239.05	248.67	28327.43
1998	5443.70	905.50	990.40	26.90	7366.50	6195.70		133.70	13275.58	7101.15	6138.46	160.65	26675.84
1999	7002.20	1492.30	739.50	25.80	6398.70	6163.90		51.80	13400.93	7656.17	4078.59	77.58	25213.27
2000	8160.55	2097.49	347.72	79.33	4091.38	4009.91		146.52	12251.93	6107.40	2290.51	225.85	20875.69
2001	10059.02	2975.60	454.22	10.66	3022.36	5102.62		30.32	13081.38	8078.22	2100.16	40.98	23300.74
2002	10870.24	2969.91	176.00	13.06	1552.76	5418.79		42.80	14243.00	8388.70	2027.90	55.86	22895.46
2003	12057.68	2553.44	237.76	253.62	1995.97	7182.90		82.80	14053.65	9736.34	1939.16	336.42	26065.57

Table A4. Landed weight (mt) of goosfish by market category for 1964-2003 for combined assessment areas (SA 511-636), NEFSC weightout database and vessel trip reports (1994-2003).

Year	Belly Flaps	Cheeks	Livers	Gutted	Round	Tails Unc.	Tails Large	Tails Small	Tails Peewee	All Tails
1964	0.0	0.0	0.0	0.0	0.0	19.3	0.0	0.0	0.0	19.3
1965	0.0	0.0	0.0	0.0	0.0	16.1	0.0	0.0	0.0	16.1
1966	0.0	0.0	0.0	0.0	0.0	93.9	0.0	0.0	0.0	93.0
1967	0.0	0.0	0.0	0.0	0.0	164.8	0.0	0.0	0.0	164.8
1968	0.0	0.0	0.0	0.0	0.0	136.6	0.0	0.0	0.0	136.6
1969	0.0	0.0	0.0	0.0	0.0	79.1	0.0	0.0	0.0	79.1
1970	0.0	0.0	0.0	0.0	0.0	63.5	0.0	0.0	0.0	63.5
1971	0.0	0.0	0.0	0.0	0.0	67.1	0.0	0.0	0.0	67.1
1972	0.0	0.0	0.0	0.0	0.0	139.0	0.0	0.0	0.0	139.0
1973	0.0	0.0	0.0	0.0	0.0	255.5	0.0	0.0	0.0	255.5
1974	0.0	0.0	0.0	0.0	0.0	390.7	0.0	0.0	0.0	390.7
1975	0.0	0.0	0.0	0.0	0.0	642.8	0.0	0.0	0.0	642.8
1976	0.0	0.0	0.0	0.0	0.0	802.2	0.0	0.0	0.0	802.2
1977	0.0	0.0	0.0	0.0	0.0	1194.4	0.0	0.0	0.0	1194.4
1978	0.0	0.0	0.0	0.0	0.0	1574.5	0.0	0.0	0.0	1574.5
1979	0.0	0.0	0.0	0.0	0.0	2224.7	0.0	0.0	0.0	2224.7
1980	0.0	0.0	0.0	0.0	0.0	2302.4	0.0	0.0	0.0	2302.4
1981	0.0	0.0	0.0	0.0	0.0	1654.2	0.0	0.0	0.0	1654.2
1982	0.0	0.0	10.2	0.0	0.0	2059.8	153.1	53.3	0.0	2266.2
1983	0.0	0.0	11.6	0.0	0.0	2009.9	241.4	138.6	0.0	2390.0
1984	0.0	0.0	25.0	0.0	0.0	2121.6	186.8	44.5	0.0	2352.9
1985	0.0	0.0	28.0	0.0	0.0	2467.0	86.7	73.4	0.0	2627.1
1986	0.0	0.0	36.3	0.0	0.0	2365.4	76.4	52.2	0.0	2494.0
1987	0.0	0.0	54.2	0.0	0.0	2463.7	139.9	6.7	0.0	2610.3
1988	0.0	0.0	112.8	0.0	0.0	2646.3	195.1	34.8	0.0	2876.2
1989	0.0	0.0	146.3	0.0	15.6	3501.8	557.4	360.0	0.0	4419.2
1990	0.0	0.0	179.7	0.0	217.7	2601.8	854.1	377.4	0.0	3833.3
1991	0.0	8.6	270.3	0.0	415.4	2229.1	1661.9	614.1	36.6	4541.6
1992	0.2	3.7	321.5	0.0	386.0	2778.7	1908.1	1293.0	183.3	6163.1
1993	0.0	1.7	459.9	98.2	528.7	3503.2	1933.0	1851.1	262.4	7549.8
1994	0.0	5.3	458.1	1453.6	2044.8	1256.9	2230.7	2063.3	258.0	5808.9
1995	2.3	1.0	500.1	2763.2	2652.6	895.6	2524.6	2424.4	363.5	6208.1
1996	0.4	0.6	571.6	3475.9	1064.3	1086.9	2094.1	3032.1	269.8	6482.9
1997	0.1	0.1	630.7	3210.0	795.2	675.5	3067.7	3295.7	151.6	7190.6
1998	0.0	0.5	607.4	3592.1	581.8	862.3	3013.6	2654.8	95.5	6626.2
1999	0.1	0.2	597.4	5748.1	1131.4	537.2	2388.3	2200.8	153.4	5279.8
2000	0.0	3.7	624.0	6914.1	1091.0	293.6	1580.0	1707.3	4.3	3585.1
2001	0.5	0.0	559.0	7028.2	531.4	245.3	1958.9	2140.3	0.4	4344.9
2002	0.2	0.1	507.8	7748.4	566.8	243.0	1669.0	2108.1	0.2	4020.3
2003	0.0	1.0	486.0	7271.8	665.3	329.0	2345.6	2430.5	0.7	5105.8

Table A5. Landed weight (mt) of goosfish by market category for 1964-2003 for northern assessment area (SA 511-523 and 561), NEFSC weightout database and vessel trip reports (1994-2003).

Year	Belly Flaps	Cheeks	Livers	Gutted	Round	Tails Unc.	Tails Large	Tails Small	Tails Peewee	All Tails
1964	0.0	0.0	0.0	0.0	0.0	13.5	0.0	0.0	0.0	13.5
1965	0.0	0.0	0.0	0.0	0.0	11.0	0.0	0.0	0.0	11.0
1966	0.0	0.0	0.0	0.0	0.0	90.1	0.0	0.0	0.0	90.1
1967	0.0	0.0	0.0	0.0	0.0	162.5	0.0	0.0	0.0	162.5
1968	0.0	0.0	0.0	0.0	0.0	135.9	0.0	0.0	0.0	135.9
1969	0.0	0.0	0.0	0.0	0.0	77.8	0.0	0.0	0.0	77.8
1970	0.0	0.0	0.0	0.0	0.0	59.8	0.0	0.0	0.0	59.8
1971	0.0	0.0	0.0	0.0	0.0	64.1	0.0	0.0	0.0	64.1
1972	0.0	0.0	0.0	0.0	0.0	131.6	0.0	0.0	0.0	131.6
1973	0.0	0.0	0.0	0.0	0.0	213.8	0.0	0.0	0.0	213.8
1974	0.0	0.0	0.0	0.0	0.0	360.4	0.0	0.0	0.0	360.4
1975	0.0	0.0	0.0	0.0	0.0	558.0	0.0	0.0	0.0	558.0
1976	0.0	0.0	0.0	0.0	0.0	673.4	0.0	0.0	0.0	673.4
1977	0.0	0.0	0.0	0.0	0.0	944.7	0.0	0.0	0.0	944.7
1978	0.0	0.0	0.0	0.0	0.0	1171.4	0.0	0.0	0.0	1171.4
1979	0.0	0.0	0.0	0.0	0.0	1209.1	0.0	0.0	0.0	1209.1
1980	0.0	0.0	0.0	0.0	0.0	1113.1	0.0	0.0	0.0	1113.1
1981	0.0	0.0	0.0	0.0	0.0	969.0	0.0	0.0	0.0	969.0
1982	0.0	0.0	10.0	0.0	0.0	1145.6	15.0	2.0	0.0	1162.6
1983	0.0	0.0	9.3	0.0	0.0	1152.3	4.8	2.4	0.0	1159.4
1984	0.0	0.0	14.7	0.0	0.0	1261.9	3.7	0.0	0.0	1265.6
1985	0.0	0.0	11.4	0.0	0.0	1385.9	1.6	2.6	0.0	1390.2
1986	0.0	0.0	13.7	0.0	0.0	1302.7	0.3	0.2	0.0	1303.2
1987	0.0	0.0	24.0	0.0	0.0	1491.5	1.7	0.7	0.0	1493.9
1988	0.0	0.0	47.4	0.0	0.0	1516.9	5.6	3.3	0.0	1525.8
1989	0.0	0.0	58.7	0.0	11.2	1464.5	327.0	130.2	0.0	1921.6
1990	0.0	0.0	77.9	0.0	30.3	1173.7	410.7	154.0	0.0	1738.4
1991	0.0	3.3	70.0	0.0	0.3	1013.9	538.6	153.2	9.1	1714.8
1992	0.0	0.7	83.0	0.0	0.1	910.5	589.9	505.4	79.4	2085.3
1993	0.0	0.6	208.3	98.2	350.6	1034.3	867.9	1061.8	102.9	3067.0
1994	0.0	1.4	207.6	532.7	981.3	403.0	1205.7	1074.8	136.2	2819.7
1995	0.0	0.7	176.1	1213.4	1122.0	369.7	1178.6	1015.5	305.6	2869.3
1996	0.3	0.4	196.2	1114.2	756.3	92.5	933.0	1381.5	224.1	2631.0
1997	0.0	0.1	154.6	628.5	247.0	29.0	1142.6	1368.9	119.2	2659.6
1998	0.0	0.1	129.4	558.5	145.5	18.2	1067.2	818.7	79.2	1983.3
1999	0.0	0.1	173.2	1670.7	510.1	28.9	1021.8	871.7	139.4	2061.7
2000	0.0	0.1	286.6	3202.7	907.6	17.3	780.6	1044.6	2.7	1845.3
2001	0.0	0.0	270.2	3111.2	233.6	127.9	1136.1	1663.4	0.0	2927.4
2002	0.0	0.1	259.6	3789.6	24.1	79.7	1055.0	1782.4	0.0	2917.1
2003	0.0	0.4	221.5	2413.7	13.7	94.7	1582.4	2038.9	0.0	3716.0

Table A6. Landed weight (mt) of goosefish by market category for 1964-2003 for southern assessment area (SA 524-636 excluding 561), NEFSC weightout database and vessel trip reports (1994-2003).

Year	Belly Flaps	Cheeks	Livers	Gutted	Round	Tails Unc.	Tails Large	Tails Small	Tails Peewee	All Tails
1964	0.0	0.0	0.0	0.0	0.0	5.7	0.0	0.0	0.0	5.7
1965	0.0	0.0	0.0	0.0	0.0	5.0	0.0	0.0	0.0	5.0
1966	0.0	0.0	0.0	0.0	0.0	3.9	0.0	0.0	0.0	3.8
1967	0.0	0.0	0.0	0.0	0.0	2.3	0.0	0.0	0.0	2.3
1968	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.6
1969	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.0	0.0	1.2
1970	0.0	0.0	0.0	0.0	0.0	3.7	0.0	0.0	0.0	3.7
1971	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0
1972	0.0	0.0	0.0	0.0	0.0	7.4	0.0	0.0	0.0	7.4
1973	0.0	0.0	0.0	0.0	0.0	41.7	0.0	0.0	0.0	41.7
1974	0.0	0.0	0.0	0.0	0.0	30.3	0.0	0.0	0.0	30.3
1975	0.0	0.0	0.0	0.0	0.0	84.8	0.0	0.0	0.0	84.8
1976	0.0	0.0	0.0	0.0	0.0	128.8	0.0	0.0	0.0	128.8
1977	0.0	0.0	0.0	0.0	0.0	249.6	0.0	0.0	0.0	249.6
1978	0.0	0.0	0.0	0.0	0.0	403.1	0.0	0.0	0.0	403.1
1979	0.0	0.0	0.0	0.0	0.0	1015.6	0.0	0.0	0.0	1015.6
1980	0.0	0.0	0.0	0.0	0.0	1189.3	0.0	0.0	0.0	1189.3
1981	0.0	0.0	0.0	0.0	0.0	685.0	0.0	0.0	0.0	685.0
1982	0.0	0.0	0.2	0.0	0.0	912.4	138.1	51.3	0.0	1101.8
1983	0.0	0.0	2.3	0.0	0.0	857.7	236.6	136.2	0.0	1230.5
1984	0.0	0.0	10.3	0.0	0.0	859.7	183.1	44.5	0.0	1087.3
1985	0.0	0.0	16.7	0.0	0.0	1081.1	85.1	70.8	0.0	1236.9
1986	0.0	0.0	22.6	0.0	0.0	1062.6	76.1	52.0	0.0	1190.8
1987	0.0	0.0	330.2	0.0	0.0	972.2	138.2	6.0	0.0	1116.4
1988	0.0	0.0	65.4	0.0	0.0	1129.3	189.5	31.5	0.0	1350.4
1989	0.0	0.0	87.6	0.0	4.5	2037.4	230.4	229.8	0.0	2497.5
1990	0.0	0.0	101.8	0.0	187.3	1428.1	443.4	223.4	0.0	2094.9
1991	0.0	5.2	200.2	0.0	415.1	1215.2	1123.3	460.9	27.5	2826.8
1992	0.2	3.0	238.5	0.0	385.9	1868.2	1318.3	787.6	103.9	4077.9
1993	0.0	1.1	251.5	0.0	178.1	2468.9	1065.1	789.3	159.4	4482.8
1994	0.0	3.8	250.5	921.0	1063.5	853.9	1025.0	988.5	121.8	2989.2
1995	2.3	0.3	324.0	1549.8	1530.6	526.0	1346.0	1409.0	57.8	3338.8
1996	0.1	0.3	375.4	2361.7	308.0	994.4	1161.2	1650.6	45.7	3851.9
1997	0.1	0.0	476.1	2581.5	548.1	646.6	1925.2	1926.8	32.4	4531.0
1998	0.0	0.4	478.0	3033.6	436.3	844.1	1946.4	1836.1	16.3	4642.9
1999	0.1	0.1	424.2	4077.4	621.3	508.4	1366.5	1329.1	14.1	3218.0
2000	0.0	3.5	337.4	3711.3	183.4	276.3	799.3	662.6	1.6	1739.9
2001	0.5	0.0	289.1	3917.0	297.9	217.4	822.8	476.9	0.4	1517.5
2002	0.2	0.0	249.1	4012.1	551.3	166.9	628.9	330.9	0.2	1126.9
2003	0.0	0.6	264.7	4906.2	666.6	242.0	775.5	398.4	0.7	1416.5

Table A7. Number of commercial samples and length measurements taken by year, market category, and stock area. Live metric tons are also shown.

Year	Market Category	NORTH				SOUTH				TOTAL				
		Samples	Lengths	live mt	mt/sample	Samples	Lengths	live mt	mt/sample	Samples	Lengths	mt	mt/sample	
1996	tails only	1	109	306	306	1	123	3,302	3,302	2	232	3,608	1,804	
	tails large	13	1,383	3,097	238	6	618	3,856	643	19	2,001	6,953	366	
	tails small	10	1,438	4,588	459	6	609	5,479	913	16	2,047	10,067	629	
	tails peewee	9	1,258	744	83	4	415	152	38	13	1,673	896	69	
	unclass round	2	252	752	376	-	-	313	-	2	252	1,065	533	
	head on, gutted	3	478	1,284	428	7	1,287	2,679	383	10	1,765	3,963	396	
	annual total	38	4,918	10,771	-	24	3,052	15,781	-	62	7,970	26,552	428	
	1997	tails only	-	-	104	-	-	-	2,139	-	-	-	2,243	-
1997	tails large	12	1,324	3,831	319	12	1,220	6,354	530	24	2,544	10,185	424	
	tails small	12	1,262	4,529	377	14	1,451	6,413	458	26	2,713	10,942	421	
	tails peewee	9	863	396	44	3	300	108	36	12	1,163	504	42	
	unclass round	10	936	243	24	1	98	552	552	11	1,034	795	72	
	head on, gutted	1	53	718	718	4	551	2,942	736	5	604	3,660	732	
	annual total	44	4,438	9,821	-	34	3,620	18,508	-	78	8,058	28,329	363	
	1998	tails only	-	-	72	-	-	-	2,789	-	-	-	2,861	-
		tails large	6	713	3,548	591	5	487	6,457	1,291	11	1,200	10,005	910
tails small		8	877	2,728	341	4	444	6,086	1,522	12	1,321	8,814	735	
tails peewee		1	136	263	263	-	-	54	-	1	136	317	317	
unclass round		-	-	142	-	-	-	440	-	-	-	582	-	
head on, gutted		-	-	659	-	-	-	3,436	-	-	-	4,095	-	
annual total		15	1,726	7,412	-	9	931	19,262	-	24	2,657	26,674	1,111	
1999		tails only	-	-	158	-	-	-	1,224	-	-	-	1,382	-
1999	tails large	6	634	3,436	573	5	480	4,652	930	11	1,114	8,088	735	
	tails small	19	1,997	2,926	154	8	814	4,533	567	27	2,811	7,459	276	
	tails peewee	-	-	463	-	-	-	48	-	-	-	511	-	
	unclass round	-	-	499	-	-	-	633	-	-	-	1,132	-	
	head on, gutted	1	115	1,872	1,872	4	254	4,581	1,145	5	369	6,453	1,291	
	annual total	26	2,746	9,354	-	17	1,548	15,671	-	43	4,294	25,025	582	
	2000	tails only	-	-	58	-	1	102	917	910	1	102	967	967
		tails large	6	567	2,592	431	7	667	2,654	380	13	1,234	5,243	403
tails small		50	5,175	3,468	69	7	748	2,200	314	57	5,923	5,668	99	
tails peewee		-	-	9	-	-	-	5	-	-	-	14	-	
unclass round		16	1,839	908	57	-	-	183	-	16	1,839	1,091	68	
head on, gutted		21	2,095	3,651	174	14	1,175	4,231	302	35	3,270	7,881	225	
annual total		93	9,676	10,686	-	29	2,692	10,191	-	122	12,368	20,865	171	
2001		tails only	-	-	425	-	-	-	722	-	-	-	1,147	-
2001	tails large	47	5070	3772	80	6	612	2732	455	53	5682	6504	123	
	tails small	54	5684	5523	102	8	741	1583	198	62	6425	7106	115	
	tails peewee	-	-	0	-	-	-	1	-	-	-	1	-	
	unclass round	-	-	234	-	1	113	298	298	1	113	532	532	
	head on, gutted	31	3241	3547	114	39	4043	4465	114	70	7284	8012	114	
	annual total	132	13995	13501	-	24	5509	9801	-	156	19504	23302	-	
	2002	tails only	1	51	265	265	-	-	554	-	1	51	819	-
		tails large	55	6081	3503	64	14	1012	2088	149	69	7093	5591	81
tails small		59	7038	5918	100	7	580	1099	157	66	7618	7017	106	
tails peewee		-	-	0	-	-	-	1	-	-	-	1	-	
unclass round		-	-	24	-	1	91	551	551	1	91	575	575	
head on, gutted		23	2347	4320	188	29	2988	4574	158	52	5335	8894	171	
annual total		138	15517	14030	-	51	4706	8866	-	189	20223	22896	-	
2003		tails only	-	-	314	-	-	-	803	-	-	-	1,118	-
2003	tails large	54	5093	5254	97	9	706	2575	286	63	5799	7828	124	
	tails small	63	5431	6769	107	7	566	1323	189	70	5997	8092	116	
	tails peewee	-	-	0	-	-	-	2	-	-	-	2	-	
	unclass round	1	100	14	14	2	162	667	333	3	262	680	227	
	head on, gutted	59	3549	2752	47	21	1837	5593	266	80	5386	8345	104	
	annual total	177	14173	15103	-	39	3271	10963	-	216	17444	26065	-	

Table A8. Discard ratios (mt discarded / mt kept) of goosefish by gear and half year from fishery observer and VTR databases, northern area.

North			Observer Data				VTR Data			
GEAR	YEAR	HALF	No. Tows	Kept (mt)	Discard	Disc	No. Trips	Kept (mt)	Discard	Disc
					(mt)	Ratio			(mt)	Ratio
Dredge	1996	1	150	0.680	0.324	0.476	10	2.074	0.696	0.336
		2	309	3.779	1.102	0.292	48	43.741	5.144	0.118
		Total	459	4.460	1.426	0.320	58	45.815	5.841	0.127
	1997	1	139	0.216	0.303	1.405	21	7.664	0.959	0.125
		2	437	9.421	1.210	0.128	31	39.441	3.562	0.090
		Total	576	9.637	1.514	0.157	52	47.105	4.521	0.096
	1998	1	79	0.470	0.061	0.131	21	3.540	1.511	0.427
		2	169	5.929	0.301	0.051	21	21.514	2.028	0.094
		Total	248	6.399	0.362	0.057	42	25.054	3.538	0.141
	1999	1	79	0.469	0.070	0.149	10	1.848	0.739	0.400
		2	28	0.164	0.000	0.000	23	11.530	0.742	0.064
		Total	107	0.633	0.070	0.110	33	13.378	1.481	0.111
	2000	1	2	0.044	0.006	0.140	13	3.180	0.356	0.112
		2	12	0.144	0.022	0.155	18	9.920	2.248	0.227
		Total	14	0.188	0.028	0.152	31	13.100	2.604	0.199
	2001	1	5	0.026	0.030	1.142	10	1.436	0.653	0.455
		2	0	-	-	-	31	13.559	3.124	0.230
		Total	5	0.026	0.030	1.142	41	14.995	3.777	0.252
	2002	1	0	-	-	-	67	2.123	0.606	0.285
		2	248	3.150	2.360	0.749	17	1.529	0.821	0.537
Total		248	3.150	2.360	0.749	84	3.652	1.427	0.391	
2003	1	24	0.000	0.059	-	25	0.151	0.278	1.841	
	2	392	4.988	3.993	0.801	11	3.502	0.324	0.093	
	Total	416	4.988	3.993	0.801	36	3.653	0.602	0.165	
Gillnet	1996	1	70	1.818	0.248	0.136	178	35.861	0.866	0.024
		2	102	2.240	0.305	0.136	335	120.794	2.814	0.023
		Total	172	4.058	0.553	0.136	513	156.655	3.680	0.023
	1997	1	55	1.770	0.068	0.038	109	3.747	0.196	0.052
		2	76	1.430	0.278	0.194	193	16.664	0.519	0.031
		Total	131	3.200	0.345	0.108	302	20.411	0.715	0.035
	1998	1	83	1.098	0.032	0.029	110	10.678	0.613	0.057
		2	160	4.808	0.209	0.044	135	10.422	0.382	0.037
		Total	243	5.906	0.242	0.041	245	21.100	0.995	0.047
	1999	1	80	1.236	0.084	0.068	118	21.803	0.923	0.042
		2	136	5.828	0.072	0.012	274	99.446	6.441	0.065
		Total	216	7.064	0.156	0.022	392	121.249	7.364	0.061
	2000	1	117	3.091	0.106	0.034	141	39.352	2.357	0.060
		2	226	15.921	1.244	0.078	550	283.340	19.810	0.070
		Total	343	19.011	1.350	0.071	691	322.692	22.167	0.069
	2001	1	470	9.398	0.217	0.023	170	70.505	2.329	0.033
		2	591	30.079	4.235	0.141	398	180.104	14.325	0.080
		Total	1061	39.477	4.452	0.113	568	250.609	16.654	0.066
	2002	1	394	13.322	0.321	0.024	95	25.543	0.970	0.038
		2	722	39.405	1.066	0.027	241	76.966	4.124	0.054
Total		1116	52.727	1.388	0.026	336	102.509	5.094	0.050	
2003	1	332	13.424	0.831	0.062	65	48.492	1.746	0.036	
	2	848	50.012	3.333	0.067	438	292.670	15.824	0.054	
	Total	1180	<u>63.436</u>	4.164	0.066	503	341.162	17.570	0.052	

Trawl	1996	1	388	38.342	7.550	0.197	750	352.498	26.965	0.076
		2	159	3.540	0.467	0.132	1339	348.205	23.180	0.067
		Total	547	41.883	8.017	0.191	2089	700.703	50.146	0.072
	1997	1	212	20.731	2.169	0.105	733	238.566	17.178	0.072
		2	169	14.472	1.112	0.077	1066	228.037	13.476	0.059
		Total	381	35.203	3.281	0.093	1799	466.603	30.654	0.066
	1998	1	86	5.498	0.666	0.121	588	156.483	8.120	0.052
		2	25	1.313	0.115	0.087	913	149.004	7.561	0.051
		Total	111	6.811	0.780	0.115	1501	305.487	15.681	0.051
	1999	1	47	4.042	0.398	0.098	609	268.948	12.686	0.047
		2	205	12.692	0.781	0.062	1207	246.484	21.044	0.085
		Total	252	16.734	1.179	0.070	1816	515.432	33.730	0.065
	2000	1	433	52.684	3.691	0.070	723	320.608	37.027	0.115
		2	479	61.414	5.436	0.089	1502	410.703	59.302	0.144
		Total	912	114.098	9.127	0.080	2225	731.311	96.329	0.132
	2001	1	831	34.753	13.861	0.399	890	499.266	60.278	0.121
		2	1172	48.370	13.656	0.282	1321	487.115	77.198	0.158
		Total	2003	83.123	27.516	0.331	2211	986.381	137.476	0.139
	2002	1	527	30.883	7.372	0.239	767	814.873	120.403	0.148
		2	2971	201.081	46.944	0.233	1515	527.205	99.363	0.188
		Total	3498	231.964	54.316	0.234	2282	1342.078	219.766	0.164
	2003	1	2164	278.848	66.410	0.238	523	730.155	78.438	0.107
		2	2059	165.082	24.174	0.146	1436	494.041	48.036	0.097
		Total	4223	443.930	90.583	0.204	1959	1224.196	126.474	0.103

Table A9. Discard ratios (mt discarded / mt kept) of goosfish by gear and half year from fishery observer and VTR databases, southern area.

South			Observer Data				VTR Data			
GEAR	YEAR	HALF	No. Tows	Kept (mt)	Discard	Disc	No. Trips	Kept (mt)	Discard	Disc
					(mt)	Ratio			(mt)	Ratio
Dredge	1996	1	1284	12.781	4.117	0.322	107	73.882	10.078	0.136
		2	1270	23.726	4.387	0.185	96	120.084	12.570	0.105
		Total	2554	36.506	8.504	0.233	203	193.966	22.649	0.117
	1997	1	1268	21.852	4.735	0.217	68	49.945	4.450	0.089
		2	709	11.072	3.774	0.341	78	71.017	5.885	0.083
		Total	1977	32.924	8.509	0.258	146	120.962	10.335	0.085
	1998	1	574	11.001	0.525	0.048	64	52.556	5.127	0.098
		2	651	15.453	0.927	0.060	44	38.554	5.596	0.145
		Total	1225	26.454	1.451	0.055	108	91.110	10.723	0.118
	1999	1	373	3.304	1.553	0.470	38	19.313	19.493	1.009
		2	478	6.939	1.148	0.165	51	25.051	4.980	0.199
		Total	851	10.243	2.701	0.264	89	44.364	24.473	0.552
	2000	1	564	12.897	2.706	0.210	40	14.964	3.463	0.231
		2	533	5.331	1.778	0.333	59	37.653	6.109	0.162
		Total	1097	18.228	4.484	0.246	99	52.617	9.572	0.182
	2001	1	296	3.419	1.578	0.462	55	25.999	3.334	0.128
		2	-	-	-	-	83	32.462	14.111	0.435
		Total	296	3.419	1.578	0.462	138	58.461	17.445	0.298
	2002	1	-	-	-	-	72	32.438	10.782	0.332
		2	672	7.786	5.842	0.750	93	20.072	20.020	0.997
Total		672	7.786	5.842	0.750	165	52.510	30.802	0.587	
2003	1	2022	18.712	18.659	0.997	90	16.633	9.571	0.575	
	2	1513	10.226	11.338	1.109	65	24.001	11.085	0.462	
	Total	3535	28.938	29.997	1.037	155	40.634	20.656	0.508	
Gillnet	1996	1	403	37.871	2.720	0.072	309	204.625	7.884	0.039
		2	45	8.111	0.426	0.053	178	119.753	4.376	0.037
		Total	448	45.981	3.147	0.068	487	324.378	12.260	0.038
	1997	1	508	85.563	6.014	0.070	236	176.233	7.126	0.040
		2	141	25.777	0.381	0.015	93	77.095	1.940	0.025
		Total	649	111.341	6.395	0.057	329	253.328	9.066	0.036
	1998	1	386	77.076	6.185	0.080	149	154.552	3.627	0.023
		2	46	5.930	0.373	0.063	149	161.675	7.605	0.047
		Total	432	83.006	6.558	0.079	298	316.227	11.231	0.036
	1999	1	90	12.193	0.643	0.053	236	273.963	21.121	0.077
		2	28	2.495	0.128	0.051	161	231.345	14.164	0.061
		Total	118	14.688	0.772	0.053	397	505.308	35.285	0.070
	2000	1	97	13.471	1.278	0.095	299	234.134	56.230	0.240
		2	37	6.228	0.322	0.052	111	63.333	5.744	0.091
		Total	134	19.699	1.600	0.081	410	297.467	61.974	0.208
	2001	1	747	136.838	0.628	0.005	218	159.163	13.981	0.088
		2	173	28.758	0.284	0.010	174	194.088	9.144	0.047
		Total	920	165.596	0.912	0.006	392	353.251	23.125	0.065
	2002	1	326	64.125	0.212	0.003	279	314.151	27.816	0.089
		2	109	17.589	0.381	0.022	191	158.101	18.852	0.119
Total		435	81.714	0.593	0.007	470	472.252	46.668	0.099	
2003	1	264	67.122	1.237	0.018	256	339.554	20.544	0.061	
	2	422	65.390	3.278	0.050	163	186.278	7.597	0.041	
	Total	686	132.512	4.515	0.034	419	525.832	28.141	0.054	

Trawl	1996	1	276	6.422	1.084	0.169	268	139.753	8.706	0.062
		2	156	8.332	0.788	0.095	250	280.312	10.455	0.037
		Total	432	14.754	1.872	0.127	518	420.065	19.161	0.046
	1997	1	380	55.611	1.365	0.025	250	265.586	10.640	0.040
		2	152	24.789	2.153	0.087	177	125.820	4.496	0.036
		Total	532	80.399	3.518	0.044	427	391.406	15.136	0.039
	1998	1	209	4.439	0.480	0.108	194	149.583	3.439	0.023
		2	86	2.809	0.077	0.027	144	74.854	1.786	0.024
		Total	295	7.247	0.556	0.077	338	224.437	5.225	0.023
	1999	1	249	6.237	0.276	0.044	211	108.530	6.824	0.063
		2	77	12.318	1.460	0.119	118	54.879	2.036	0.037
		Total	326	18.556	1.736	0.094	329	163.409	8.859	0.054
	2000	1	344	3.536	2.547	0.720	182	54.788	8.693	0.159
		2	166	10.871	1.213	0.112	157	198.283	13.898	0.070
		Total	510	14.407	3.760	0.261	339	253.071	22.592	0.089
	2001	1	277	2.691	12.458	4.630	293	97.702	9.222	0.094
		2	90	1.050	0.433	0.412	186	35.619	7.349	0.206
		Total	367	3.741	12.891	3.446	479	133.321	16.571	0.124
	2002	1	199	2.539	1.145	0.451	198	20.233	6.580	0.325
		2	154	3.148	1.726	0.548	114	25.861	5.492	0.212
		Total	353	5.687	2.872	0.505	312	46.094	12.072	0.262
2003	1	638	10.487	6.300	0.601	204	33.398	15.903	0.476	
	2	330	4.462	3.493	0.783	102	21.238	4.026	0.190	
	Total	968	14.949	9.792	0.655	306	54.636	19.929	0.365	

Table A10. Calculation of total catch by stock area, gear, and half year using observer discard ratios.

North	Discard Ratio		Landings		Estimated		Estimated Catch (mt)		Total
	Jan-June	July-Dec	Live weight (mt)		Discards (mt)		Jan-June	July-Dec	
			Jan-June	July-Dec	Jan-June	July-Dec	Jan-June	July-Dec	
<b>Trawls</b>									
1996	0.197	0.132	4411.5	4025.1	868.7	530.9	5280.2	4556.0	9836.2
1997	0.105	0.077	4087.1	3312.9	427.7	254.5	4514.7	3567.4	8082.1
1998	0.121	0.087	3173.5	2270.2	384.1	198.4	3557.6	2468.6	6026.2
1999	0.098	0.062	3958.3	3043.9	389.5	187.4	4347.9	3231.3	7579.2
2000	0.070	0.089	4011.6	4160.6	281.1	368.2	4292.7	4528.9	8821.5
2001	0.399	0.282	5229.3	4829.7	2086.5	1362.0	7315.8	6191.7	13507.5
2002	0.239	0.233	6026.5	4843.8	1440.3	1128.6	7466.8	5972.4	13439.2
2003	0.238	0.146	6991.1	5066.6	1663.9	739.7	8655.0	5806.3	14461.3
<b>Scallop Dredges</b>									
1996	0.476	0.292	38.9	850.3	18.5	247.9	57.5	1098.2	1155.7
1997	1.405	0.128	210.9	1133.7	296.3	145.7	507.1	1279.4	1786.5
1998	0.131	0.051	263.2	727.2	34.4	36.9	297.6	764.1	1061.7
1999	0.149	0.000	261.7	477.8	39.0	0.0	300.7	477.8	778.5
2000	0.140	0.155	97.9	248.0	13.7	38.5	111.7	286.5	398.1
2001	1.142	1.142	84.3	369.9	96.2	422.5	180.5	792.4	972.9
2002	0.749	0.749	61.8	114.3	46.3	85.6	108.0	199.8	307.8
2003	0.801	0.801	24.0	213.8	19.2	171.2	43.2	385.0	428.2
<b>Gillnets</b>									
1996	0.136	0.136	380.8	1010.2	51.9	137.7	432.6	1147.9	1580.5
1997	0.038	0.194	303.2	700.8	11.6	136.1	314.7	836.9	1151.6
1998	0.029	0.044	262.3	643.2	7.7	28.0	270.0	671.2	941.2
1999	0.068	0.012	349.2	1143.1	23.8	14.1	373.0	1157.2	1530.2
2000	0.034	0.078	383.6	1708.2	13.2	133.5	396.8	1841.7	2238.5
2001	0.023	0.141	879.0	2096.7	20.2	295.6	899.2	2392.3	3291.4
2002	0.024	0.027	751.5	2218.4	18.0	59.9	769.6	2278.3	3047.9
2003	0.062	0.067	774.0	1779.4	48.0	119.2	822.0	1898.6	2720.7
<b>Other</b>									
1996	0.199	0.196	34.2	10.8	6.8	2.1	41.0	12.9	53.9
1997	0.112	0.103	29.7	15.4	3.3	1.6	33.1	17.0	50.1
1998	0.107	0.052	14.3	12.7	1.5	0.7	15.8	13.3	29.1
1999	0.096	0.047	5.2	20.6	0.5	1.0	5.7	21.6	27.3
2000	0.068	0.087	20.9	58.3	1.4	5.0	22.3	63.3	85.6
2001	0.312	0.217	1.2	9.5	0.4	2.1	1.6	11.5	13.1
2002	0.174	0.207	1.4	11.7	0.2	2.4	1.7	14.1	15.7
2003	0.228	0.142	0.7	253.0	0.2	35.9	0.8	288.9	289.7

**South**

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## Trawls

1996	0.169	0.095	3088.6	4084.6	521.4	386.2	3610.0	4470.7	8080.7
1997	0.025	0.087	3951.7	4282.4	97.0	371.9	4048.7	4654.3	8703.0
1998	0.108	0.027	3977.5	3854.4	429.8	105.2	4407.3	3959.6	8366.9
1999	0.044	0.119	4071.0	2327.7	180.0	275.9	4250.9	2603.6	6854.6
2000	0.720	0.112	2391.5	1677.1	1722.6	187.1	4114.1	1864.2	5978.3
2001	4.630	0.412	1803.2	1219.2	8348.9	502.3	10152.1	1721.5	11873.6
2002	0.451	0.548	1044.9	507.9	471.2	278.3	1516.1	786.2	2302.3
2003	0.601	0.783	980.7	1015.3	589.4	795.0	1570.1	1810.3	3380.3

## Scallop Dredges

1996	0.322	0.185	1790.9	2571.4	576.8	475.5	2367.7	3046.9	5414.6
1997	0.217	0.341	2226.9	2667.6	482.5	909.2	2709.5	3576.7	6286.2
1998	0.048	0.060	2492.7	2655.3	118.9	159.2	2611.6	2814.6	5426.1
1999	0.470	0.165	1831.9	1507.2	861.2	249.3	2693.2	1756.5	4449.6
2000	0.210	0.333	1074.4	870.2	225.5	290.2	1299.8	1160.4	2460.2
2001	0.462	0.462	713.2	932.8	329.5	430.9	1042.7	1363.7	2406.4
2002	0.750	0.750	1226.8	625.1	920.1	468.9	2146.8	1094.0	3240.8
2003	0.997	1.109	752.2	948.8	750.0	1052.2	1502.2	2001.0	3503.2

## Gillnets

1996	0.072	0.053	2770.6	1449.9	199.0	76.2	2969.6	1526.1	4495.7
1997	0.070	0.015	3712.6	1489.2	261.0	22.0	3973.6	1511.2	5484.7
1998	0.080	0.063	4133.3	2062.3	331.7	129.7	4465.0	2192.0	6657.0
1999	0.053	0.051	4375.3	1788.6	230.9	92.0	4606.2	1880.6	6486.8
2000	0.095	0.052	2810.5	1204.8	266.7	62.2	3077.2	1267.0	4344.2
2001	0.005	0.010	2214.7	2887.9	11.1	28.9	2225.8	2916.8	5142.6
2002	0.003	0.022	3576.7	1842.1	10.7	40.5	3587.4	1882.6	5470.0
2003	0.018	0.050	4462.5	2720.5	80.3	136.0	4542.8	2856.5	7399.3

## Other

1996	0.139	0.139	24.8	7.9	3.4	1.1	28.2	9.0	37.2
1997	0.074	0.102	151.3	52.2	11.2	5.3	162.6	57.5	220.1
1998	0.078	0.057	74.4	59.4	5.8	3.4	80.2	62.7	142.9
1999	0.114	0.126	6.8	44.9	0.8	5.7	7.6	50.6	58.2
2000	0.218	0.148	122.4	24.3	26.7	3.6	149.1	27.9	177.1
2001	0.100	0.024	12.7	17.6	1.3	0.4	13.9	18.1	32.0
2002	0.021	0.279	34.7	8.2	0.7	2.3	35.4	10.5	45.9
2003	0.277	0.226	19.0	63.7	5.3	14.4	24.2	78.1	102.3

Table A11. Annual landings, discards and total catch summarized from table A10.

	Reported Landings (live wt mt)	Estimated Discards (mt)	Overall Discard Ratio	Percent of Catch Discarded	Estimated Catch (mt)
North					
1996	10762	1865	0.173	14.8	12626
1997	9794	1277	0.130	11.5	11070
1998	7367	692	0.094	8.6	8058
1999	9260	655	0.071	6.6	9915
2000	10689	855	0.080	7.4	11544
2001	13500	4285	0.317	24.1	17785
2002	14029	2781	0.198	16.5	16811
2003	15103	2797	0.185	15.6	17900
South					
1996	15789	2240	0.142	12.4	18028
1997	18534	2160	0.117	10.4	20694
1998	19309	1284	0.066	6.2	20593
1999	15953	1896	0.119	10.6	17849
2000	10175	2785	0.274	21.5	12960
2001	9801	9653	0.985	49.6	19455
2002	8866	2193	0.247	19.8	11059
2003	10963	3423	0.312	23.8	14385
Total					
1996	26550	4104	0.155	13.4	30655
1997	28327	3437	0.121	10.8	31764
1998	26676	1975	0.074	6.9	28651
1999	25213	2551	0.101	9.2	27764
2000	20864	3639	0.174	14.9	24504
2001	23301	13939	0.598	37.4	37239
2002	22896	4974	0.217	17.8	27870
2003	26065	6220	0.239	19.3	32285

Table A12. Sample size, median CPUE and GLM-estimated CPUE at depth by gear and area: 1995-2003. Zones are 20 fathom depth increments starting with 0-20 fa (zone 1) and ending with >180 fa (zone 10).

		Depth Zone									
		1	2	3	4	5	6	7	8	9	10
<b>Dredge</b>											
All Areas	N	812	9161	818	15	3					
	Median	1.97	2.20	2.34	2.55	1.87					
	LSMEAN	1.79	1.99	2.11	2.14	1.58					
North	N	144	1647	319	3	2					
	Median	1.68	2.22	2.38	2.55	1.94					
	LSMEAN	1.60	1.84	1.98	2.08	1.25					
South	N	668	7514	499	12	1					
	Median	2.01	2.19	2.37	2.37	1.87					
	LSMEAN	1.78	1.97	2.10	2.04	1.66					
<b>Small Mesh Gill Net</b>											
All Areas	N	6678	14515	3947	1717	1497	359	47	50	20	28
	Median	1.54	1.48	1.48	1.65	2.00	2.04	1.29	1.32	1.37	1.77
	LSMEAN	1.92	1.81	1.78	1.95	2.21	2.31	1.82	1.65	1.60	2.18
North	N	4441	13692	3914	1701	1448	328	39	44	18	6
	Median	1.48	1.46	1.48	1.65	2.00	2.09	1.27	1.18	1.32	1.07
	LSMEAN	1.83	1.77	1.78	1.96	2.21	2.37	1.78	1.59	1.48	1.80
South	N	2237	823	33	16	49	31	8	6	2	22
	Median	1.75	1.91	1.77	1.43	2.12	1.48	1.56	1.74	2.23	1.95
	LSMEAN	1.73	1.86	2.03	1.63	2.13	1.54	1.54	1.81	2.16	1.88
<b>Large Mesh Gill Net</b>											
All Areas	N	10101	6678	1157	441	521	183	239	83	5	15
	Median	2.78	2.88	2.83	2.70	3.27	3.03	2.58	2.81	2.81	2.83
	LSMEAN	3.14	3.25	3.25	3.13	3.43	3.26	3.08	3.11	3.28	3.11
North	N	518	1447	688	126	119	15	7			7.00
	Median	2.76	2.66	2.70	2.72	3.31	2.76	3.29			2.83
	LSMEAN	2.93	2.74	2.80	2.91	3.26	2.98	3.39			2.77
South	N	9583	5231	469	315	402	168	232	83	5	8
	Median	2.78	2.97	3.05	2.69	3.25	3.08	2.54	2.81	2.81	2.73
	LSMEAN	3.20	3.37	3.38	3.12	3.41	3.30	3.11	3.16	3.32	3.05
<b>Trawl</b>											
All Areas	N	12860	25137	13807	5791	9474	3575	1167	300	115	321
	Median	1.81	2.03	2.10	2.43	2.60	2.78	2.97	3.12	3.20	3.31
	LSMEAN	1.91	2.05	2.23	2.47	2.63	2.79	2.86	3.00	2.96	3.19
North	N	4088	14247	12418	5369	9306	3532	1029	135	27	26
	Median	1.84	1.90	2.08	2.44	2.60	2.78	2.92	2.89	2.73	2.94
	LSMEAN	1.92	1.94	2.18	2.48	2.66	2.83	2.88	2.94	2.75	3.01
South	N	8772	10890	1389	422	168	43	138	165	88	295
	Median	1.79	2.21	2.47	2.33	2.55	3.08	3.31	3.27	3.28	3.34
	LSMEAN	1.90	2.17	2.42	2.29	2.44	2.85	3.13	3.03	2.98	3.11

Table A13. Sample size, median CPUE, and GLM-estimated CPUE at depth for directed trawl trips (directed trip defined by goosefish catch at least half of total catch in weight): 1995-2003.  
 Zones are 20 fathom depth increments starting with 0-20 fa (zone 1) and ending with > 180 fa (zone 10).

		Depth Zone									
		1	2	3	4	5	6	7	8	9	10
Directed Trawl											
All Areas	N	124	899	1134	643	738	414	307	165	78	265
	Median	3.26	3.19	3.01	3.09	3.32	3.39	3.39	3.32	3.33	3.39
	LSMEAN	3.28	3.18	3.17	3.26	3.27	3.31	3.29	3.32	3.29	3.34
North	N	59	290	893	593	709	389	201	28	3	9
	Median	3.30	3.04	2.94	3.08	3.31	3.40	3.41	3.38	3.32	3.49
	LSMEAN	3.25	3.16	3.18	3.27	3.27	3.32	3.28	3.28	3.35	3.44
South	N	65	609	241	50	29	25	106	137	75	256
	Median	3.21	3.24	3.20	3.24	3.41	3.22	3.35	3.32	3.34	3.39
	LSMEAN	3.34	3.25	3.23	3.21	3.25	3.27	3.36	3.39	3.36	3.39

Table A14. Sample size and associated reported catch for all trips and only “directed” trips (denoted subset) from VTR database for three gears. A “directed” trip is defined as one in which the catch of goosefish comprises at least half of the total catch for the trip. Data is summed over years 1995-2003.

<b>Trawl</b>							
Area	N (all data)	N (subset)	subset/all	kept mt (all data)	kept mt (subset)	subset/all	subset/all
All	72,700	4,767	7%	32,719	13,564	41%	
North	50,309	3,174	6%	24,101	7,204	30%	
South	22,391	1,593	7%	8,618	6,360	74%	
<b>Large Mesh Gill Net</b>							
Area	N (all data)	N (subset)	subset/all	kept mt (all data)	kept mt (subset)	subset/all	subset/all
All	19,117	16,856	88%	18,338	17,668	96%	
North	2,795	2,477	89%	2,812	2,674	95%	
South	16,322	14,379	88%	15,526	14,994	97%	
<b>Small Mesh Gill Net</b>							
Area	N (all data)	N (subset)	subset/all	kept mt (all data)	kept mt (subset)	subset/all	subset/all
All	29,266	784	3%	2,096	549	26%	
North	25,865	557	2%	1,711	422	25%	
South	3,401	227	7%	385	127	33%	

Table A.15. Stratified mean weight (kg), number, individual fish weight, and length (cm) per tow for goosefish from NEFSC offshore autumn research vessel bottom trawl surveys in the northern management region (strata 20-30, 34-40); confidence limits for both the raw index and the indices smoothed using an integrated moving average (theta = 0.45); minimum and maximum lengths; number of fish caught, number of positive tows, and total number of tows completed in each year.

	Raw Index			Smoothed			Raw Index			Smoothed			Abundance			Length			Number of Tows			
	Mean	L95%	U95%	Mean	L95%	U95%	Mean	L95%	U95%	Mean	L95%	U95%	Ind wt	Min	5%	50%	Mean	95%	Max	Fish	Nonzero	Number of Tows
1963	3.757	2.161	5.353	2.843	0.801	0.508	1.094	0.568	4.661	11	14	59	58.3	103	111	86	39	90				
1964	1.712	0.896	2.528	2.357	0.392	0.219	0.564	0.451	4.354	21	21	58	59.4	92	102	32	23	87				
1965	2.509	1.350	3.667	2.422	0.347	0.230	0.463	0.394	7.137	28	36	70	71.6	96	110	40	30	88				
1966	3.266	2.102	4.431	2.432	0.492	0.331	0.653	0.375	6.532	37	48	73	73.1	90	96	55	33	86				
1967	1.283	0.441	2.125	2.002	0.189	0.090	0.288	0.297	6.799	48	48	69	70.3	91	92	18	14	86				
1968	2.036	0.521	3.552	2.223	0.286	0.115	0.457	0.319	7.121	11	26	72	71.4	105	106	32	16	86				
1969	3.705	1.781	5.628	2.618	0.418	0.277	0.559	0.368	8.718	13	41	78	78.8	101	110	39	30	88				
1970	2.237	0.947	3.527	2.442	0.395	0.222	0.569	0.391	5.754	22	36	67	67.2	90	98	41	21	92				
1971	2.914	1.436	4.391	2.416	0.491	0.312	0.670	0.411	5.864	15	22	69	67.0	97	101	44	27	94				
1972	1.404	0.651	2.157	2.106	0.318	0.195	0.442	0.384	4.354	21	21	61	56.9	97	99	29	22	94				
1973	3.114	1.782	4.446	2.412	0.514	0.320	0.709	0.406	5.992	16	16	58	65.2	109	112	63	29	92				
1974	2.063	1.114	3.011	2.327	0.313	0.189	0.436	0.367	6.362	13	13	69	64.9	109	111	37	23	97				
1975	1.711	1.003	2.418	2.434	0.298	0.178	0.418	0.369	5.721	11	11	60	62.9	97	102	40	27	106				
1976	3.387	1.555	5.219	3.227	0.422	0.244	0.601	0.429	7.620	29	30	71	72.1	106	121	32	24	87				
1977	5.568	3.489	7.646	4.140	0.626	0.458	0.794	0.504	8.635	21	35	73	71.1	107	119	112	56	126				
1978	5.101	3.487	6.714	4.353	0.579	0.429	0.729	0.511	8.106	10	24	70	67.6	104	116	146	78	201				
1979	5.133	3.566	6.700	4.114	0.474	0.364	0.584	0.477	10.233	15	19	77	73.5	103	115	125	78	211				
1980	4.458	2.234	6.682	3.350	0.535	0.366	0.703	0.448	7.549	6	16	66	63.9	101	111	65	39	97				
1981	1.984	1.183	2.786	2.252	0.406	0.288	0.523	0.373	4.892	9	13	55	57.5	93	101	46	30	93				
1982	0.936	0.379	1.492	1.648	0.142	0.070	0.213	0.293	6.606	29	29	71	68.9	97	100	17	14	95				
1983	1.617	0.927	2.308	1.764	0.470	0.284	0.656	0.375	3.415	13	17	54	53.0	88	96	38	27	82				
1984	3.010	1.413	4.607	2.003	0.483	0.353	0.613	0.412	5.803	11	26	63	62.7	102	106	36	29	88				
1985	1.441	0.419	2.463	1.729	0.369	0.190	0.548	0.408	3.985	12	15	55	53.1	101	102	32	23	88				
1986	2.353	1.099	3.608	1.687	0.604	0.379	0.829	0.431	3.703	19	23	52	53.8	82	100	46	26	90				
1987	0.873	0.256	1.491	1.317	0.264	0.116	0.411	0.363	3.324	15	15	53	52.2	92	96	22	15	87				
1988	1.525	0.484	2.565	1.355	0.313	0.130	0.496	0.379	4.870	11	11	53	57.1	92	93	26	17	89				
1989	1.384	0.478	2.290	1.287	0.428	0.266	0.590	0.449	3.096	9	9	39	40.8	93	96	39	25	87				
1990	1.001	0.439	1.562	1.165	0.593	0.383	0.804	0.551	1.705	9	10	25	32.3	72	89	55	35	89				
1991	1.235	0.568	1.903	1.167	0.576	0.383	0.768	0.643	2.067	9	10	31	38.3	83	95	62	33	88				
1992	1.104	0.557	1.651	1.125	0.938	0.602	1.274	0.808	1.183	9	9	26	33.0	79	86	78	37	86				
1993	1.044	0.343	1.746	1.097	0.989	0.691	1.287	0.917	1.077	6	9	20	27.1	71	94	103	45	86				
1994	0.973	0.378	1.569	1.108	0.752	0.632	1.351	0.991	0.668	9	9	19	24.9	55	98	110	51	87				
1995	1.711	0.663	2.759	1.219	0.922	0.688	1.155	0.869	1.724	10	12	34	39.6	84	91	87	40	93				
1996	1.071	0.498	1.645	1.069	0.630	0.407	0.853	0.732	1.688	8	11	38	40.3	63	95	51	30	88				
1997	0.669	0.321	1.017	0.937	0.498	0.304	0.693	0.683	1.335	8	9	35	35.4	70	86	39	27	90				
1998	0.974	0.522	1.425	1.028	0.609	0.397	0.820	0.787	1.531	10	10	30	35.5	68	77	56	38	104				
1999	0.825	0.303	1.348	1.171	0.795	0.726	1.431	1.078	0.716	8	8	22	25.7	58	81	111	44	106				
2000	2.495	1.284	3.707	1.689	1.145	2.490	3.232	1.470	1.724	9	11	25	30.3	70	88	165	43	87				
2001	2.048	1.148	2.949	1.872	1.620	1.212	2.027	1.443	1.145	8	12	31	34.7	65	93	145	50	90				
2002	2.103	1.068	3.138	1.955	1.283	0.922	1.645	1.310	1.425	9	9	34	35.1	65	93	114	45	86				
2003	1.925	1.086	2.764	1.943	1.067	0.778	1.357	1.206	1.695	8	8	40	37.8	73	88	90	39	88				

Table A16. Stratified mean weight (kg), number, individual fish weight, and length (cm) per tow for goosefish from NEFSC offshore spring research vessel bottom trawl surveys in the northern management region (strata 20-30, 34-40); confidence limits for both the raw index and the indices smoothed using an integrated moving average ( $\theta = 0.45$ ); minimum and maximum lengths; number of fish caught, number of positive tows, and total number of tows completed in each year.

	Biomass				Abundance				Length				Number of Fish		Number of Tows				
	Raw Index		Smoothed		Raw Index		Smoothed		50%		95%		Fish	Nonzero Tows					
	Mean	L95%CI	U95%CI	Mean	L95%CI	U95%CI	Mean	L95%CI	U95%CI	Mean	Max								
1968	0.973	0.260	1.686	1.187	0.178	0.074	0.283	0.201	5.427	50	51	68	70.4	89	90	13	11	86	
1969	1.309	0.141	2.476	1.357	0.186	0.046	0.325	0.219	7.044	33	33	71	71.5	99	100	15	10	87	
1970	1.967	0.712	3.221	1.590	0.344	0.216	0.472	0.265	5.709	30	30	62	65.4	98	99	32	22	90	
1971	1.021	0.414	1.629	1.614	0.158	0.072	0.245	0.269	6.366	45	53	69	72.6	99	100	20	15	96	
1972	4.644	3.021	6.266	2.230	2.478	2.478	1.052	1.453	3.424	0.832	0.391	0.177	0.409	100	105	105	59	38	96
1973	1.908	0.956	2.860	1.882	1.226	2.889	0.435	0.886	4.031	0.391	0.268	0.619	4.313	17	26	68	65.7	99	106
1974	1.476	0.863	2.090	1.573	1.025	2.415	0.438	0.315	0.561	0.406	0.267	0.616	3.391	20	23	58	58.3	97	111
1975	0.934	0.593	1.275	1.373	0.894	2.108	0.339	0.228	0.450	0.384	0.253	0.583	2.760	16	19	53	54.0	87	109
1976	2.826	1.691	3.962	1.552	1.011	2.383	0.673	0.469	0.877	0.394	0.260	0.599	3.759	14	20	60	61.5	95	106
1977	1.012	0.563	1.462	1.173	0.764	1.801	0.259	0.159	0.360	0.283	0.186	0.430	3.594	10	31	66	63.4	93	106
1978	0.626	0.340	0.913	0.979	0.638	1.503	0.141	0.095	0.186	0.216	0.142	0.328	4.014	15	19	73	65.5	89	92
1979	0.893	0.274	1.513	1.104	0.719	1.694	0.144	0.102	0.185	0.219	0.144	0.332	4.652	12	14	67	62.5	100	118
1980	1.622	0.787	2.458	1.434	0.934	2.201	0.379	0.270	0.488	0.294	0.194	0.447	3.748	17	22	43	53.3	98	107
1981	1.744	0.913	2.576	1.715	1.118	2.633	0.376	0.282	0.470	0.333	0.219	0.506	4.444	11	21	52	57.7	95	120
1982	3.015	1.273	4.758	2.029	1.322	3.115	0.346	0.155	0.536	0.348	0.229	0.529	8.594	25	36	61	68.8	105	108
1983	1.587	0.530	2.643	1.840	1.199	2.824	0.418	0.191	0.645	0.365	0.240	0.554	3.663	12	13	49	49.9	96	112
1984	1.696	0.596	2.796	1.842	1.200	2.828	0.328	0.181	0.474	0.349	0.230	0.530	4.732	17	19	62	60.8	93	100
1985	2.113	1.094	3.133	1.951	1.271	2.994	0.346	0.199	0.492	0.347	0.229	0.528	6.122	13	13	68	66.9	104	108
1986	2.165	0.951	3.378	1.957	1.275	3.004	0.340	0.200	0.481	0.347	0.229	0.527	6.244	11	14	63	65.4	109	121
1987	1.728	0.726	2.730	1.834	1.195	2.816	0.245	0.138	0.352	0.352	0.232	0.534	7.052	16	16	66	64.2	99	100
1988	2.111	0.906	3.315	1.790	1.166	2.748	0.610	0.398	0.822	0.454	0.299	0.690	3.343	10	20	49	49.8	89	110
1989	1.631	0.611	2.650	1.563	1.018	2.400	0.625	0.321	0.929	0.481	0.317	0.731	2.590	10	11	40	43.2	80	94
1990	1.005	0.366	1.643	1.327	0.878	2.005	0.282	0.157	0.406	0.427	0.283	0.646	3.587	15	18	47	49.1	106	107
1991	1.827	0.478	3.175	1.358	0.899	2.052	0.592	0.374	0.811	0.502	0.332	0.758	2.723	12	15	35	42.3	78	100
1992	0.890	-0.217	1.997	1.138	0.754	1.720	0.492	0.158	0.825	0.528	0.350	0.798	1.793	16	17	35	40.6	82	101
1993	1.162	0.693	1.630	1.126	0.745	1.701	0.684	0.475	0.893	0.582	0.386	0.880	1.695	10	11	44	41.0	71	90
1994	0.948	0.376	1.520	1.091	0.722	1.648	0.452	0.275	0.629	0.576	0.382	0.871	2.159	10	13	40	41.0	83	89
1995	1.713	0.789	2.638	1.161	0.768	1.754	0.984	0.662	1.305	0.672	0.445	1.015	1.817	15	16	33	39.9	73	97
1996	1.006	0.449	1.563	0.951	0.629	1.437	0.668	0.344	0.992	0.606	0.401	0.915	1.466	15	17	41	43.0	60	70
1997	0.532	0.146	0.918	0.750	0.497	1.133	0.339	0.158	0.520	0.512	0.339	0.773	1.595	9	9	36	39.4	75	89
1998	0.444	0.187	0.701	0.746	0.493	1.126	0.414	0.288	0.540	0.570	0.377	0.861	1.065	11	11	19	31.3	67	78
1999	1.202	0.625	1.780	1.050	0.695	1.586	0.824	0.547	1.102	0.787	0.521	1.189	1.389	9	14	31	35.5	71	97
2000	1.430	0.837	2.023	1.349	0.893	2.038	1.128	0.843	1.413	1.053	0.697	1.591	1.236	15	17	29	34.5	75	87
2001	1.969	0.681	3.257	1.667	1.102	2.520	1.686	1.221	1.511	1.347	0.891	2.036	1.113	9	11	24	31.4	75	86
2002	1.997	1.335	2.659	1.841	1.214	2.792	1.756	1.334	2.178	1.480	0.976	2.244	1.102	12	15	34	36.6	60	73
2003	1.859	1.058	2.661	1.926	1.252	2.964	1.859	1.058	2.661	1.450	0.943	2.231	1.911	10	13	42	44.2	69	95
2004	2.285	0.914	3.656	2.063	1.255	3.390	0.910	0.577	1.243	1.203	0.732	1.976	2.495	9	11	48	46.7	81	85

Table A17. Indices of abundance (number per tow) for goosefish at lengths corresponding approximately to ages 1 and 2.

Year	Northern Area		Southern Area				
	Autumn (11 - 19cm) ~age 1	Spring (13 - 20cm) ~age 2	Scallop (10 - 18cm) ~age 1	Autumn (11 - 19cm) ~age 1	Winter (12 - 19cm) ~age 2	Spring (13 - 20cm) ~age 2	Scallop (19 - 28cm) ~age 2
1963	0.12			0.12			
1964	0.00			0.06			
1965	0.00			0.04			
1966	0.00			0.19			
1967	0.00			0.02			
1968	0.01	0.00		0.02		0.00	
1969	0.01	0.00		0.04		0.00	
1970	0.00	0.00		0.03		0.00	
1971	0.02	0.00		0.03		0.01	
1972	0.00	0.02		0.68		0.01	
1973	0.03	0.00		0.17		0.05	
1974	0.03	0.01		0.01		0.02	
1975	0.02	0.02		0.05		0.01	
1976	0.00	0.03		0.02		0.01	
1977	0.00	0.00		0.03		0.01	
1978	0.02	0.01		0.03		0.04	
1979	0.01	0.01		0.11		0.04	
1980	0.02	0.01		0.02		0.01	
1981	0.02	0.01		0.06		0.02	
1982	0.00	0.00	0.08	0.06		0.08	0.08
1983	0.03	0.04	0.83	0.08		0.00	0.19
1984	0.02	0.03	0.29	0.05		0.00	0.21
1985	0.03	0.02	0.25	0.05		0.00	0.21
1986	0.02	0.01	0.54	0.05		0.01	0.19
1987	0.03	0.01	1.90	0.17		0.01	0.08
1988	0.02	0.01	0.06	0.00		0.03	0.52
1989	0.07	0.06	0.21	0.04		0.01	0.21
1990	0.17	0.03	0.60	0.09		0.01	0.37
1991	0.06	0.09	1.25	0.17		0.02	0.26
1992	0.09	0.06	0.60	0.07	0.08	0.02	0.46
1993	0.32	0.10	1.59	0.08	0.12	0.02	0.31
1994	0.58	0.08	1.65	0.17	0.12	0.02	0.55
1995	0.02	0.16	0.45	0.12	0.03	0.01	0.49
1996	0.04	0.04	0.74	0.01	0.02	0.01	0.19
1997	0.09	0.00	0.07	0.01	0.10	0.01	0.21
1998	0.10	0.18	0.38	0.08	0.04	0.06	0.13
1999	0.38	0.18	1.19	0.10	0.14	0.02	0.43
2000	0.70	0.18	0.94	0.05	0.05	0.03	0.29
2001	0.11	0.48	0.15	0.02	0.18	0.04	0.29
2002	0.28	0.15	0.53	0.12	0.01	0.00	0.11
2003	0.20	0.07	1.30	0.44	0.07	0.01	0.40
2004		0.10			0.06	0.00	

Table A18. Delta distribution stratified mean number per tow at age, NEFSC autumn and spring offshore surveys.

Autumn Surveys											
North											
Age	0	1	2	3	4	5	6	7	8	9	Total
1993	0.149	0.308	0.176	0.104	0.094	0.102	0.000	0.031	0.013	0.012	0.989
1994	0.065	0.560	0.287	0.208	0.086	0.089	0.019	0.024	0.011	0.000	1.351
1995	0.000	0.059	0.163	0.285	0.234	0.092	0.021	0.014	0.054	0.000	0.922
1996	0.012	0.048	0.062	0.152	0.206	0.093	0.034	0.011	0.012	0.000	0.630
1997	0.039	0.094	0.016	0.122	0.136	0.052	0.031	0.000	0.007	0.000	0.498
1998	0.000	0.116	0.150	0.090	0.048	0.052	0.135	0.018	0.000	0.000	0.609
1999	0.192	0.310	0.292	0.179	0.015	0.033	0.020	0.040	0.003	0.000	1.084
2000	0.080	0.703	0.626	0.448	0.271	0.105	0.059	0.062	0.044	0.000	2.398
2001	0.000	0.166	0.482	0.365	0.369	0.149	0.049	0.023	0.000	0.016	1.620
2002	0.027	0.322	0.118	0.300	0.175	0.029	0.050	0.027	0.029	0.004	1.283
2003	0.100	0.159	0.147	0.074	0.244	0.206	0.074	0.036	0.027	0.000	1.067
South											
Age	0	1	2	3	4	5	6	7	8	9	Total
1993	0.007	0.060	0.064	0.076	0.062	0.014	0.000	0.007	0.000	0.000	0.290
1994	0.015	0.095	0.295	0.056	0.066	0.036	0.021	0.007	0.008	0.000	0.598
1995	0.000	0.102	0.151	0.120	0.053	0.049	0.017	0.000	0.000	0.000	0.493
1996	0.000	0.007	0.030	0.054	0.059	0.060	0.026	0.000	0.000	0.000	0.235
1997	0.017	0.008	0.041	0.055	0.035	0.105	0.031	0.016	0.000	0.000	0.308
1998	0.000	0.070	0.072	0.037	0.059	0.044	0.034	0.008	0.008	0.000	0.332
1999	0.005	0.101	0.172	0.118	0.040	0.014	0.000	0.000	0.000	0.000	0.450
2000	0.007	0.061	0.118	0.106	0.067	0.023	0.041	0.000	0.000	0.000	0.422
2001	0.018	0.018	0.036	0.119	0.079	0.048	0.045	0.015	0.000	0.000	0.378
2002	0.016	0.099	0.163	0.069	0.233	0.184	0.058	0.000	0.007	0.000	0.829
2003	0.060	0.354	0.178	0.105	0.058	0.156	0.041	0.000	0.000	0.000	0.951
Spring Surveys											
Age	0	1	2	3	4	5	6	7	8	9	Total
1995	0.000	0.000	0.153	0.174	0.247	0.110	0.076	0.163	0.053	0.008	0.984
1996	0.000	0.000	0.036	0.014	0.231	0.263	0.059	0.065	0.000	0.000	0.668
1997	0.028	0.000	0.000	0.074	0.197	0.004	0.000	0.024	0.012	0.000	0.339
1998	0.000	0.040	0.162	0.045	0.044	0.045	0.025	0.046	0.008	0.000	0.414
1999	0.000	0.012	0.182	0.194	0.229	0.066	0.000	0.079	0.057	0.004	0.824
2000	0.000	0.000	0.238	0.386	0.254	0.121	0.033	0.012	0.060	0.024	1.128
2001	0.000	0.058	0.505	0.371	0.290	0.207	0.087	0.060	0.071	0.036	1.686
2002	0.000	0.000	0.153	0.434	0.486	0.405	0.183	0.095	0.000	0.000	1.756
2003	0.000	0.056	0.176	0.087	0.334	0.623	0.321	0.188	0.037	0.038	1.859
2004	0.000	0.016	0.162	0.060	0.055	0.135	0.148	0.200	0.086	0.047	0.910
South											
Age	0	1	2	3	4	5	6	7	8	9	Total
1995	0.000	0.000	0.000	0.058	0.043	0.014	0.031	0.018	0.032	0.000	0.196
1996	0.000	0.009	0.010	0.013	0.028	0.016	0.036	0.012	0.012	0.000	0.135
1997	0.000	0.000	0.008	0.031	0.052	0.025	0.005	0.003	0.003	0.000	0.124
1998	0.000	0.001	0.041	0.054	0.087	0.042	0.011	0.013	0.005	0.000	0.254
1999	0.000	0.000	0.018	0.073	0.061	0.104	0.024	0.020	0.034	0.001	0.335
2000	0.000	0.000	0.025	0.056	0.077	0.051	0.025	0.006	0.001	0.000	0.242
2001	0.000	0.007	0.018	0.056	0.070	0.039	0.041	0.003	0.000	0.000	0.234
2002	0.000	0.000	0.000	0.028	0.161	0.089	0.035	0.006	0.000	0.000	0.318
2003	0.000	0.000	0.007	0.011	0.021	0.078	0.083	0.108	0.049	0.013	0.371
2004	0.000	0.000	0.000	0.049	0.009	0.018	0.029	0.012	0.000	0.000	0.116

Table A19. Mean length (cm) at age for goosefish caught in NEFSC surveys

NEFSC Spring Survey North	Age										
	0	1	2	3	4	5	6	7	8	9	10
1995		16.96	25.77	32.91	43.48	53.59	62.84	76.14	89.00		
1996		15.00	28.48	34.80	46.09	57.34	64.56				
1997			27.36	32.00				89.00			
1998		12.12	16.76	25.10	36.07	45.84	53.74	65.99	78.00		
1999		9.00	17.04	26.63	35.50	47.98	63.58	73.81	97.00		
2000			19.08	25.77	36.51	48.65	56.15	67.00	75.37	86.03	
2001		10.69	15.69	23.47	33.88	44.04	51.79	62.78	76.94	83.28	
2002			15.29	25.14	33.19	46.05	55.54	65.33			
2003		10.70	15.26	26.61	36.13	43.91	56.33	66.95	73.00	89.00	95.00
2004		9.00	13.92	24.16	34.27	42.41	52.38	64.01	74.37	83.40	
mean		<b>10.30</b>	<b>16.11</b>	<b>25.85</b>	<b>34.53</b>	<b>45.38</b>	<b>54.61</b>	<b>64.78</b>	<b>77.08</b>	<b>89.29</b>	<b>95.00</b>

NEFSC Spring Survey South	Age										
	0	1	2	3	4	5	6	7	8	9	10
1995		9.00	16.14	22.88	38.07	46.24	52.57	61.85	79.85		
1996			18.00	24.25	35.89	45.00	59.00				
1997		12.00	17.78	25.31	35.95	48.52	57.01	64.84	77.00		
1998			17.80	24.62	33.71	47.56	53.39	64.54	74.60	94.00	
1999			15.59	26.35	37.93	46.68	57.74	71.00	78.00		
2000		11.00	16.51	22.67	35.07	44.75	55.02	63.71			
2001			27.00	35.45	44.22	52.72	62.00				
2002			15.00	28.79	32.40	46.92	55.12	63.38	75.18	85.11	
2003			24.25	32.00	42.42	57.03	61.23				
2004											
mean		<b>10.67</b>	<b>16.69</b>	<b>25.13</b>	<b>35.22</b>	<b>45.87</b>	<b>55.53</b>	<b>64.03</b>	<b>76.74</b>	<b>89.56</b>	

NEFSC Fall Offshore Survey North	Age										
	0	1	2	3	4	5	6	7	8	9	10
1993		9.49	13.02	23.38	31.73	43.50	52.93	73.59	83.50	94.00	
1994		9.45	14.20	21.79	30.87	42.82	53.36	64.00	68.85	98.00	
1995			11.01	24.85	32.89	41.54	54.78	65.36	73.86	85.50	91.00
1996		8.00	12.88	23.85	35.16	42.15	54.19	60.35	82.00	95.00	
1997		9.02	12.44	28.00	34.73	43.26	54.38	67.43	86.00		
1998			13.00	25.58	33.18	43.38	51.38	63.39	76.61		
1999		10.37	15.06	26.92	35.98	40.55	56.50	60.08	73.32	79.00	
2000		10.33	14.90	24.82	34.03	45.28	56.79	66.24	78.47	85.60	
2001			15.49	24.38	32.66	43.06	52.32	66.59	71.36	93.00	
2002		9.41	12.25	26.32	33.36	43.96	54.29	63.61	74.51	86.29	93.00
2003		9.36	11.94	23.08	36.76	43.49	53.90	63.49	74.46	86.29	
2004											
mean		<b>9.43</b>	<b>13.29</b>	<b>24.82</b>	<b>33.76</b>	<b>43.00</b>	<b>54.07</b>	<b>64.05</b>	<b>74.70</b>	<b>87.24</b>	<b>92.75</b>

NEFSC Fall Offshore Survey South	Age										
	0	1	2	3	4	5	6	7	8	9	10
1993		16.21	19.85	34.27	43.31	51.54		68.00			
1994		8.19	14.89	21.13	34.48	44.47	51.97	60.29	68.00	83.00	
1995			14.51	21.09	34.00	40.84	52.15	65.00			
1996			18.00	22.58	33.08	44.53	51.84	64.67			
1997		9.53	11.00	24.83	35.36	47.82	54.37	64.38	71.00		
1998			14.02	21.92	32.26	45.09	53.96	62.73	72.00	87.00	
1999			17.08	25.11	36.09	46.61	55.00				
2000		5.00	17.66	22.45	36.00	45.42	55.74	64.07			
2001		8.00	14.76	25.96	33.66	45.30	56.61	66.08	78.12		
2002		6.58	16.07	23.19	33.92	44.76	53.69	63.94		81.00	
2003		7.67	15.69	19.96	34.27	45.38	54.27	63.31			
2004											
mean		<b>7.50</b>	<b>15.44</b>	<b>22.55</b>	<b>34.31</b>	<b>44.87</b>	<b>53.74</b>	<b>63.83</b>	<b>71.42</b>	<b>83.67</b>	

NEFSC Winter Survey South	Age										
	0	1	2	3	4	5	6	7	8	9	10
1997		10.81	16.42	25.16	34.28	45.54	54.30	63.66	76.03	91.00	
1998		10.32	17.36	24.86	35.72	43.17	53.62	64.42	71.98	84.00	
1999		10.67	16.73	24.91	32.82	43.92	53.60	64.04	76.65	87.00	
2000			14.37	24.97	34.62	43.53	53.36	63.95	74.29		96.00
2001		9.66	16.77	26.41	34.43	45.18	53.88	64.92	76.49	82.73	
2002			15.51	26.77	33.73	43.43	52.85	63.77	74.78	85.34	86.00
2003			14.93	25.82	32.99	45.72	54.75	64.30	73.96	83.72	
2004			15.05	24.81	33.11	43.40	54.65	63.41	74.40	87.19	
mean		<b>10.37</b>	<b>15.89</b>	<b>25.46</b>	<b>33.96</b>	<b>44.24</b>	<b>53.88</b>	<b>64.06</b>	<b>74.82</b>	<b>85.85</b>	<b>91.00</b>

Table A20. Stratified mean weight (kg), number, individual fish weight, and length (cm) per tow for goosfish from NEFSC offshore autumn research vessel bottom trawl surveys in the southern management region (strata 1-19, 61-76); confidence limits for both the raw index and the indices smoothed using an integrated moving average (theta = 0.45); minimum and maximum lengths; number of fish caught, number of positive tows, and total number of tows completed in each year.

	Biomass						Abundance						Number of Fish		Number of Tows			
	Raw Index		Smoothed		Raw Index		Smoothed		Ind wt	Length			Fish	Nonzero Tows				
	Mean	L95%	U95%	Mean	L95%	U95%	Mean	L95%		U95%	Min	50%				Max		
1963	3.724	1.786	5.663	4.168	1.257	0.745	1.769	1.304	2.926	7	17	53	50.4	91	97	36	73	
1964	5.486	3.391	7.581	4.496	1.636	0.907	2.366	1.337	3.467	14	21	53	52.0	86	101	132	34	
1965	5.163	2.731	7.594	4.242	1.148	0.778	1.519	1.197	4.199	10	15	59	56.3	91	104	83	39	
1966	6.986	4.936	9.037	3.507	1.926	1.364	2.488	1.102	3.563	7	7	51	49.6	87	98	101	56	
1967	1.122	0.588	1.655	1.825	0.519	0.324	1.715	0.697	2.131	14	19	31	40.6	83	100	98	42	
1968	0.850	0.413	1.287	1.317	0.399	0.206	0.591	0.537	2.131	12	17	45	46.3	75	86	77	39	
1969	1.138	0.483	1.793	1.275	0.497	0.281	0.714	0.505	2.273	10	14	41	45.4	88	96	101	43	
1970	1.357	0.512	2.203	1.332	0.350	0.235	0.466	0.481	2.273	4	13	55	53.3	84	104	58	35	
1971	0.786	0.196	1.377	1.374	0.282	0.150	0.414	0.567	2.813	5	8	39	42.3	95	98	55	28	
1972	4.918	3.295	6.541	2.062	1.113	0.781	1.352	1.067	1.298	12	16	23	31.8	74	99	604	85	
1973	1.986	0.994	2.978	1.725	1.176	0.857	1.411	0.812	1.568	13	14	32	37.7	77	93	280	70	
1974	0.710	0.322	1.098	1.314	0.218	0.116	0.320	0.482	3.277	14	16	54	52.9	81	101	56	26	
1975	2.043	1.326	2.759	1.512	0.653	0.434	0.871	0.486	3.030	8	17	45	46.3	87	105	127	51	
1976	1.084	0.539	1.630	1.422	0.314	0.189	0.438	0.403	3.166	11	11	51	50.7	77	95	60	34	
1977	1.873	1.192	2.554	1.605	0.372	0.265	0.479	0.395	5.024	5	16	55	53.1	95	106	94	50	
1978	1.395	0.693	1.906	1.633	0.259	0.178	0.340	0.403	5.384	13	17	61	56.5	87	101	68	39	
1979	2.275	1.278	3.272	1.847	0.694	0.483	0.905	0.553	2.779	7	16	34	40.5	84	109	182	70	
1980	1.868	1.166	2.570	1.816	0.726	0.427	1.025	0.652	2.664	3	16	34	41.6	85	104	113	42	
1981	2.858	0.883	4.834	1.752	0.965	0.578	1.352	0.714	2.363	6	17	38	40.7	71	99	176	59	
1982	0.646	0.350	0.941	1.217	0.610	0.373	0.847	0.638	1.060	13	15	26	32.5	66	73	98	42	
1983	2.150	0.693	3.608	1.294	0.776	0.470	1.080	0.589	2.304	7	16	45	44.4	72	100	109	49	
1984	0.740	0.148	1.332	0.977	0.311	0.114	0.508	0.451	2.445	5	13	47	45.7	68	93	42	25	
1985	1.318	0.752	1.884	0.890	0.524	0.356	0.692	0.443	2.444	17	17	40	42.0	72	96	100	46	
1986	0.552	0.237	0.867	0.622	0.325	0.169	0.481	0.389	1.681	7	14	34	37.6	68	78	60	33	
1987	0.274	0.117	0.432	0.472	0.482	0.307	0.657	0.385	2.575	12	13	20	25.0	56	61	67	27	
1988	0.554	0.210	0.899	0.515	0.230	0.097	0.364	0.328	2.391	19	27	36	45.1	87	91	27	19	
1989	0.625	0.278	0.972	0.535	0.382	0.181	0.583	0.356	1.646	7	7	42	38.0	57	77	57	23	
1990	0.426	0.017	0.834	0.500	0.294	0.113	0.474	0.367	1.265	9	13	24	33.1	61	81	47	22	
1991	0.783	0.206	1.360	0.520	0.690	0.245	1.136	0.440	1.085	14	15	23	30.8	57	81	106	27	
1992	0.312	0.170	0.454	0.412	0.342	0.220	0.463	0.390	0.919	8	11	30	32.2	54	74	46	21	
1993	0.294	0.055	0.532	0.392	0.290	0.135	0.445	0.377	0.944	10	13	32	30.4	52	68	46	24	
1994	0.611	0.175	1.047	0.454	0.598	0.344	0.852	0.434	0.906	8	12	25	29.2	59	83	85	31	
1995	0.386	0.160	0.612	0.430	0.493	0.258	0.728	0.404	0.777	11	13	25	29.4	54	66	72	29	
1996	0.387	0.214	0.560	0.439	0.235	0.131	0.338	0.329	1.638	18	19	42	42.3	62	68	31	21	
1997	0.592	0.325	0.858	0.486	0.308	0.186	0.430	0.335	1.914	9	9	49	44.6	70	71	43	24	
1998	0.500	0.226	0.774	0.472	0.472	0.279	0.799	0.361	1.525	11	11	36	37.0	68	87	45	20	
1999	0.304	0.167	0.441	0.442	0.450	0.289	0.612	0.413	0.672	12	14	27	29.2	52	55	109	44	
2000	0.477	0.261	0.694	0.531	0.422	0.270	0.575	0.445	1.102	5	15	33	34.3	63	70	64	30	
2001	0.709	0.366	1.052	0.685	0.378	0.236	0.521	0.496	1.722	4	11	39	41.69	70	80	51	30	
2002	1.253	0.749	1.757	0.864	0.829	0.560	1.097	0.665	1.512	6	14	41	39.12	61	81	110	47	
2003	0.828	0.524	1.131	0.850	0.951	0.620	1.282	0.768	0.868	6	7	18	28.25	59	70	128	41	
2004																		

Table A21. Stratified mean weight (kg), number, individual fish weight, and length (cm) per tow for goosefish from NEFSC offshore spring research vessel bottom trawl surveys in the southern management region (strata 1-19, 61-76); confidence limits for both the raw index and the indices smoothed using an integrated moving average ( $\theta = 0.45$ ); minimum and maximum lengths; number of fish caught, number of positive tows, and total number of tows completed in each year.

	Biomass			Abundance			Length			Number of Fish		Number of Tows						
	Raw Index		Smoothed	Raw Index		Smoothed	50% Mean		95% Max	Fish	Nonzero	Tows						
	Mean	L95%	U95%	Mean	L95%	U95%	Min	5%	50%	95%	Max	95%	Max					
1968	1.142	0.552	1.731	1.067	0.211	0.126	0.297	0.216	5.344	21	23	63	62.5	94	95	65	31	150
1969	0.938	0.427	1.448	1.020	0.221	0.138	0.305	0.220	4.064	7	25	47	54.3	91	111	41	31	155
1970	1.005	0.460	1.549	1.031	0.175	0.103	0.247	0.223	5.699	22	22	65	63.9	102	108	40	31	166
1971	0.762	0.313	1.211	1.061	0.204	0.104	0.304	0.265	3.675	13	16	50	53.3	101	115	42	24	160
1972	1.883	1.161	2.604	1.364	0.873	2.131	0.371	0.469	5.071	14	22	59	59.1	103	123	79	48	165
1973	1.857	1.494	2.220	1.412	0.903	2.205	1.051	0.854	1.744	11	19	32	41.1	80	110	589	128	187
1974	1.129	0.728	1.530	1.215	0.778	1.898	0.486	0.368	2.367	14	21	44	49.1	93	117	201	70	132
1975	0.936	0.562	1.310	1.098	0.703	1.716	0.447	0.326	2.044	10	22	44	47.6	87	107	169	61	134
1976	1.209	0.833	1.585	1.105	0.707	1.727	0.403	0.307	2.777	13	22	48	51.5	91	110	259	78	162
1977	1.205	0.754	1.657	1.047	0.670	1.637	0.302	0.232	3.803	16	21	51	56.8	95	116	173	75	160
1978	0.735	0.512	0.959	0.903	0.578	1.411	0.335	0.265	2.184	11	17	39	45.9	90	104	196	66	161
1979	0.733	0.441	1.026	0.895	0.573	1.398	0.281	0.164	2.589	10	14	37	44.4	98	124	125	50	194
1980	0.799	0.494	1.104	1.013	0.649	1.583	0.451	0.354	1.636	18	21	34	40.8	83	106	346	99	204
1981	1.816	1.145	2.486	1.347	0.862	2.104	0.784	0.540	2.259	12	22	40	44.6	89	113	345	74	141
1982	2.803	1.584	4.021	1.463	0.937	2.286	0.942	0.657	2.800	11	14	38	42.4	89	104	251	68	150
1983	0.955	0.421	1.489	1.027	0.658	1.605	0.270	0.176	3.514	24	24	47	51.8	97	112	55	36	147
1984	0.747	0.223	1.272	0.758	0.485	1.184	0.182	0.090	4.067	21	21	47	50.9	96	97	35	22	149
1985	0.327	0.089	0.565	0.564	0.361	0.881	0.159	0.072	2.052	22	22	39	42.3	85	90	31	21	147
1986	0.823	0.342	1.303	0.606	0.388	0.946	0.283	0.125	2.917	15	24	43	48.7	90	102	65	36	149
1987	0.496	-0.014	1.007	0.529	0.339	0.827	0.108	0.054	4.612	15	15	59	52.7	102	103	30	21	150
1988	0.427	0.264	0.590	0.483	0.309	0.755	0.440	0.280	0.971	17	18	30	34.0	61	82	67	33	132
1989	0.365	0.122	0.608	0.480	0.307	0.749	0.202	0.097	1.807	15	24	41	41.4	69	79	36	18	129
1990	1.005	0.431	1.579	0.572	0.344	0.949	0.205	0.099	4.861	16	21	53	56.5	86	93	39	23	128
1991	0.582	0.236	0.927	0.466	0.281	0.774	0.319	0.142	1.819	15	23	33	37.6	69	101	61	31	132
1992	0.210	0.067	0.353	0.328	0.197	0.544	0.177	0.089	1.235	14	19	28	35.0	69	85	28	17	128
1993	0.264	0.097	0.431	0.311	0.187	0.516	0.195	0.096	1.319	17	19	38	38.6	56	72	29	18	128
1994	0.321	0.117	0.525	0.328	0.198	0.545	0.114	0.057	2.866	13	13	41	43.8	91	93	24	18	131
1995	0.526	0.031	1.021	0.352	0.212	0.585	0.196	0.100	2.637	18	19	38	45.7	80	81	32	20	129
1996	0.284	0.112	0.457	0.289	0.174	0.479	0.135	0.070	2.083	9	9	44	43.7	80	81	27	20	143
1997	0.132	0.035	0.228	0.239	0.144	0.397	0.124	0.050	1.064	18	18	37	35.9	58	75	38	14	130
1998	0.282	0.157	0.407	0.295	0.178	0.490	0.254	0.164	1.110	12	16	35	35.9	64	77	40	30	131
1999	0.629	0.342	0.916	0.376	0.226	0.623	0.335	0.217	1.899	16	19	41	42.8	74	94	63	32	131
2000	0.293	0.163	0.424	0.338	0.204	0.561	0.242	0.153	1.222	14	14	38	37.9	61	78	32	25	131
2001	0.244	0.089	0.399	0.335	0.201	0.556	0.234	0.131	1.098	11	15	34	35.8	57	68	44	50	89
2002	0.376	0.132	0.619	0.409	0.246	0.683	0.318	0.095	1.183	22	23	37	39.3	53	62	50	30	91
2003	1.425	0.688	2.162	0.531	0.313	0.901	0.371	0.218	3.726	15	29	57	56.7	80	87	65	30	86
2004	0.194	0.047	0.341	0.354	0.192	0.652	0.116	0.050	1.565	22	21	37	39.7	61	62	24	36	88

Table A22. Stratified mean weight (kg), number, individual fish weight, and length (cm) per tow for goosefish from NEFSC winter flatfish surveys in the southern management region (strata 1-19, 61-76); confidence limits for indices; minimum and maximum lengths; number of fish caught, number of positive tows, and total number of tows completed.

	Biomass			Abundance			Ind wt	Length			Number of Fish		Number of Tows			
	Raw Index			Raw Index				Mean	50%	95%	Max	Fish		Nonzero Tows		
	Mean	L95%	U95%	Mean	L95%	U95%										
1992	5.395	3.515	7.275	5.176	3.665	6.687	0.986	11	22	34	36.0	52	95	583	66	110
1993	6.317	4.565	8.070	5.002	3.941	6.062	1.188	9	21	36	37.7	53	98	585	77	109
1994	2.787	1.958	3.617	2.534	1.855	3.212	1.078	8	16	31	35.1	61	78	278	56	82
1995	3.398	2.249	4.457	2.738	1.859	3.617	1.245	19	21	36	37.9	57	101	390	76	123
1996	5.701	4.683	6.720	3.779	3.035	4.523	1.498	10	24	39	41.1	61	100	554	87	123
1997	5.390	3.781	6.998	3.172	2.445	3.900	1.667	10	20	43	42.0	62	91	455	89	119
1998	2.851	2.061	3.641	1.416	1.105	1.726	1.983	10	20	42	44.9	69	103	240	77	134
1999	3.792	2.869	4.715	2.803	2.183	3.423	1.340	10	18	35	38.3	61	87	459	83	138
2000	5.786	4.135	7.438	4.516	3.263	5.769	1.261	11	22	37	39.1	57	96	664	93	123
2001	7.324	4.892	9.755	4.346	3.126	5.565	1.451	8	19	37	40.0	60	84	1042	115	167
2002	7.435	5.592	9.279	3.978	3.126	4.830	1.824	15	28	43	45.2	66	96	737	113	153
2003	7.103	4.657	9.548	3.458	2.484	4.432	2.050	12	23	47	46.5	67	92	698	72	99
2004	8.068	5.201	10.935	4.673	3.142	6.204	1.675	13	22	40	42.5	66	88	896	103	135

Table A23. NEFSC winter offshore survey, delta distribution stratified mean number per tow at age.

South	Age										Total		
	0	1	2	3	4	5	6	7	8	9		10	
1997	0.000	0.052	0.111	0.672	0.459	0.800	0.830	0.188	0.043	0.017	0.000	0.000	3.172
1998	0.000	0.015	0.049	0.063	0.341	0.492	0.267	0.110	0.059	0.010	0.010	0.010	1.416
1999	0.000	0.026	0.143	0.654	0.730	0.534	0.532	0.133	0.044	0.008	0.000	0.000	2.803
2000	0.000	0.000	0.045	0.833	1.484	1.489	0.464	0.130	0.050	0.000	0.020	0.000	4.516
2001	0.000	0.019	0.195	0.743	1.379	0.982	0.803	0.151	0.060	0.014	0.000	0.000	4.346
2002	0.000	0.000	0.029	0.094	1.082	1.307	1.045	0.322	0.069	0.023	0.005	0.005	3.978
2003	0.000	0.000	0.089	0.436	0.445	0.924	1.175	0.255	0.105	0.030	0.000	0.000	3.458
2004	0.000	0.000	0.058	0.835	1.129	1.023	1.106	0.393	0.110	0.019	0.000	0.000	4.673

Table A24. Stratified mean number and length (cm) per tow for goosefish from NEFSC summer scallop surveys in the southern management region (shellfish strata 1-48,55-64,69-70,73-74); confidence limits for both the raw index and the indices smoothed using an integrated moving average ( $\theta = 0.45$ ); minimum and maximum lengths; number of fish caught, number of positive tows, and the total number of tows completed in each year.

	Abundance										Number of Fish		Number of Nonzero Tows		Number of Tows
	Raw Index					Smoothed					Fish	Nonzero Tows			
	Mean	L95%	U95%	Mean	L95%	U95%	Min	5%	50%	Mean			95%	Max	
1984	1.068	0.911	1.225	1.111			6	12	28	30.6	60	82	523	232	389
1985	1.073	0.921	1.226	1.141			7	10	30	32.8	64	113	594	234	404
1986	0.934	0.714	1.155	1.221			8	10	16	22.1	53	95	465	203	371
1987	2.418	1.927	2.909	1.564	1.102	2.219	8	9	13	18.7	51	90	1429	313	433
1988	1.444	1.182	1.705	1.494	1.053	2.120	7	12	29	30.3	49	97	725	234	435
1989	1.241	1.078	1.405	1.461	1.029	2.073	6	10	34	33.7	54	101	373	175	352
1990	1.401	1.222	1.580	1.594	1.147	2.215	6	10	18	25.6	57	94	579	211	342
1991	2.216	1.935	2.496	1.897	1.365	2.636	7	9	14	21.0	45	94	809	242	323
1992	1.877	1.608	2.146	2.033	1.463	2.825	5	9	25	27.3	52	97	644	235	324
1993	2.639	2.387	2.892	2.299	1.654	3.194	8	10	15	22.4	49	79	1012	270	325
1994	3.095	2.738	3.452	2.369	1.704	3.292	8	10	15	22.5	51	87	1151	271	338
1995	2.093	1.826	2.361	2.039	1.467	2.834	7	9	28	30.0	58	92	776	252	338
1996	1.814	1.580	2.048	1.725	1.242	2.398	7	9	24	29.9	59	81	639	227	307
1997	1.046	0.904	1.188	1.411	1.016	1.961	7	13	33	37.2	65	76	398	204	336
1998	0.958	0.827	1.089	1.412	1.016	1.962	6	11	22	31.5	63	79	380	188	339
1999	2.441	2.047	2.835	1.834	1.319	2.549	6	9	17	24.6	60	84	859	250	311
2000	2.321	2.043	2.599	1.965	1.413	2.732	8	9	19	28.2	57	99	844	237	320
2001	1.680	1.458	1.902	1.882	1.350	2.623	7	8	36	36.9	64	99	570	227	358
2002	1.653	1.441	1.864	1.946	1.380	2.744	7	11	35	35.1	62	99	620	202	331
2003	2.775	2.396	3.153	2.244	1.510	3.335	6	9	16	25.0	58	87	840	213	311
2004	2.443	2.125	2.760				9	11	26	29.9	60	86	873	282	369

Table A25. Net measurements for the 2004 cooperative survey flat net.

<b>2004 Survey flat net</b>	
Backstraps	14' + 15' extension = 29'
Belly	182 x 60 x 100 deep
Codend	6" 50 deep x 25 across, double 5mm
Corners	5' each side from center sq hung in 10'
Droppers	2 links with shackles
Floats	48 - orange - 8" center hole
Footrope	148'
Headrope	128'
Legs	64' 1/2" wire top, 64' 1/2" trawlex chain
Square	226 x 182 - 29 1/2 deep
Sweep	148' 6" cookies in center - 5" cookies on wings
Tickler	one
Twine	green ployethylene (4mm)
Up and Down line	7'
Wing Extensions	none

Table A26. Net measurements for the 2004 cooperative survey rockhopper net.

**2004 Survey rockhopper**

Backstraps	14' + 15' extension = 29'
Belly	186 x 60 x meshes 100 deep
Codend	50 x 25 across 6" double 5mm
Corners	sq hung in 10' 5' each side from center headrope
Droppers	1 5/8" shackle
Floats	74 - 8" orange center hole
Footrope	178.6'
Headrope	151'
Legs	10 fathom (60') top 1/2" wire, bottom leg 60' 1/2" trawlex chain
Square	226 x 184 x 29 1/2 deep
Sweep	178.6'
Tickler	none
Twine	5mm 4 rows lower wings (poly) 4mm poly
Up and Down line	13'
Wing Extensions	none

Table A28. 2004 cooperative survey swept area biomass and population number estimates.										
A. Minimum biomass/numbers										
			<b>mt</b>					<b>Thousands</b>		
		Using Inclinometer Distance	Using nominal distance	nominal minus inclinom	% difference nom-inc		Using Inclinometer Distance	Using nominal distance	nominal minus inclinom	% difference nom-inc
	North		28,536					14,441		
	South		65,877					36,579		
	Combined		94,413					51,020		
B. Under High Efficiency Assumptions										
			<b>mt</b>					<b>Thousands</b>		
		Using Inclinometer Distance	Using nominal distance	nominal minus inclinom	% difference nom-inc		Using Inclinometer Distance	Using nominal distance	nominal minus inclinom	% difference nom-inc
	North									
	South									
	Combined									
C. Under Intermediate Efficiency Assumptions										
			<b>mt</b>					<b>Thousands</b>		
		Using Inclinometer Distance	Using nominal distance	nominal minus inclinom	% difference nom-inc		Using Inclinometer Distance	Using nominal distance	nominal minus inclinom	% difference nom-inc
	North		51,766					25,698		
	South		109,807					60,972		
	Combined		161,573					86,670		
D. Under Low Efficiency Assumptions										
			<b>mt</b>					<b>Thousands</b>		
		Using Inclinometer Distance	Using nominal distance	nominal minus inclinom	% difference nom-inc		Using Inclinometer Distance	Using nominal distance	nominal minus inclinom	% difference nom-inc
	North									
	South									
	Combined									

Table A29. Indices of egg production by goosefish 1967-2004 by region. Egg production index is a function of numbers at length, proportion mature at length, and fecundity at length, pooled over a 5-year interval. Proportion <math>L\_{99}</math> is proportion of egg production generated by fish smaller than the length at 99% maturity. Maturity rates derived from Hartley (1995).

Year	North		North		North		South		South		South	
	Spring EPI	P <math>L_{99}</math>	Spring EPI	P <math>L_{99}</math>	Autumn EPI	P <math>L_{99}</math>	Spring EPI	P <math>L_{99}</math>	Spring EPI	P <math>L_{99}</math>	Autumn EPI	P <math>L_{99}</math>
1967	-	-	1.46	0.01	1.46	0.01	-	-	2.18	0.03	2.18	0.03
1968	-	-	1.23	0.00	1.23	0.00	-	-	1.86	0.03	1.86	0.03
1969	-	-	1.46	0.00	1.46	0.00	-	-	1.48	0.03	1.48	0.03
1970	-	-	1.41	0.00	1.41	0.00	-	-	1.11	0.03	1.11	0.03
1971	-	-	1.37	0.00	1.37	0.00	-	-	0.53	0.05	0.53	0.05
1972	1.15	0.01	1.39	0.01	1.39	0.01	0.63	0.02	0.86	0.04	0.86	0.04
1973	1.31	0.01	1.54	0.01	1.54	0.01	0.72	0.03	0.94	0.04	0.94	0.04
1974	1.40	0.01	1.33	0.01	1.33	0.01	0.77	0.04	0.89	0.04	0.89	0.04
1975	1.28	0.01	1.27	0.01	1.27	0.01	0.76	0.05	0.93	0.05	0.93	0.05
1976	1.54	0.01	1.32	0.01	1.32	0.01	0.81	0.05	0.93	0.04	0.93	0.04
1977	1.13	0.01	1.69	0.01	1.69	0.01	0.74	0.05	0.66	0.04	0.66	0.04
1978	0.94	0.02	1.75	0.01	1.75	0.01	0.64	0.05	0.61	0.03	0.61	0.03
1979	0.83	0.01	1.97	0.01	1.97	0.01	0.58	0.04	0.68	0.03	0.68	0.03
1980	0.88	0.01	2.19	0.01	2.19	0.01	0.54	0.04	0.64	0.03	0.64	0.03
1981	0.71	0.02	1.99	0.01	1.99	0.01	0.58	0.07	0.70	0.05	0.70	0.05
1982	0.86	0.01	1.58	0.01	1.58	0.01	0.63	0.08	0.57	0.07	0.57	0.07
1983	0.93	0.01	1.28	0.01	1.28	0.01	0.63	0.08	0.61	0.08	0.61	0.08
1984	1.00	0.02	1.11	0.01	1.11	0.01	0.62	0.07	0.53	0.09	0.53	0.09
1985	1.05	0.01	0.87	0.01	0.87	0.01	0.57	0.08	0.48	0.10	0.48	0.10
1986	1.12	0.01	0.92	0.02	0.92	0.02	0.48	0.06	0.38	0.09	0.38	0.09
1987	1.00	0.01	0.91	0.02	0.91	0.02	0.33	0.05	0.36	0.08	0.36	0.08
1988	1.05	0.01	0.90	0.02	0.90	0.02	0.26	0.07	0.26	0.07	0.26	0.07
1989	1.01	0.02	0.73	0.03	0.73	0.03	0.20	0.13	0.23	0.12	0.23	0.12
1990	0.88	0.02	0.64	0.04	0.64	0.04	0.26	0.09	0.17	0.15	0.17	0.15
1991	0.74	0.03	0.51	0.05	0.51	0.05	0.22	0.10	0.17	0.16	0.17	0.16
1992	0.67	0.05	0.52	0.07	0.52	0.07	0.18	0.13	0.17	0.17	0.17	0.17
1993	0.56	0.08	0.46	0.08	0.46	0.08	0.17	0.13	0.13	0.23	0.13	0.23
1994	0.50	0.08	0.41	0.09	0.41	0.09	0.18	0.09	0.13	0.19	0.13	0.19
1995	0.55	0.09	0.47	0.10	0.47	0.10	0.14	0.12	0.13	0.19	0.13	0.19
1996	0.49	0.12	0.46	0.12	0.46	0.12	0.12	0.10	0.11	0.18	0.11	0.18
1997	0.44	0.13	0.41	0.12	0.41	0.12	0.12	0.12	0.14	0.14	0.14	0.14
1998	0.38	0.13	0.40	0.12	0.40	0.12	0.12	0.10	0.17	0.11	0.17	0.11
1999	0.40	0.12	0.38	0.12	0.38	0.12	0.15	0.10	0.15	0.13	0.15	0.13
2000	0.36	0.12	0.44	0.13	0.44	0.13	0.13	0.14	0.17	0.13	0.17	0.13
2001	0.43	0.10	0.48	0.14	0.48	0.14	0.12	0.17	0.19	0.13	0.19	0.13
2002	0.52	0.12	0.58	0.14	0.58	0.14	0.13	0.21	0.23	0.15	0.23	0.15
2003	0.65	0.13	0.66	0.14	0.66	0.14	0.23	0.12	0.25	0.14	0.25	0.14
2004	0.79	0.11					0.19	0.12				

Table A30. Z estimate from catch curve analysis based on NEFSC survey indices. Catch curve estimates with  $r^2 < 0.20$  are not included (-). N/A indicated insufficient data.

<u>NORTH</u>	90	91	92	93	94	95	96	97	98	99
Fall	0.33	0.84	0.43	0.37	0.25	---	0.49	0.62	0.29	N/A
Fall Smoot	0.24	0.76	0.49	0.53	0.34	---	0.41	0.42	0.17	N/A
Spring	N/A	N/A	---	0.33	---	0.33	0.22	0.14	0.60	N/A
Mean	0.29	0.80	0.46	0.41	0.30	0.33	0.37	0.39	0.35	N/A
<u>SOUTH</u>										
Fall	0.47	0.44	0.32	0.10	0.37	---	0.25	---	0.14	N/A
Fall Smoot	0.45	0.33	0.26	0.23	0.40	---	0.26	0.33	0.11	N/A
Spring	N/A	N/A	0.65	0.75	0.54	---	---	0.53	0.86	0.23
Winter	---	---	---	0.83	0.76	1.07	0.80	0.62	N/A	N/A
Mean	0.46	0.39	0.41	0.48	0.52	1.07	0.44	0.49	0.37	0.23

Table A31. Estimates of total mortality from NEFSC offshore surveys.

North	NEFSC Fall Survey					NEFSC Spring Survey					NEFSC Winter Survey																		
	Numbers at Age					Total Mortality (Z)					Numbers at Age					Total Mortality (Z)													
	Age 3+	Age 4+	Age 5+	Age 6+	Age 6+	3+/4+	4+/5+	5+/6+			Age 3+	Age 4+	Age 5+	Age 6+	Age 6+	3+/4+	4+/5+	5+/6+			Age 3+	Age 4+	Age 5+	Age 6+	Age 6+	3+/4+	4+/5+	5+/6+	
1993	0.36	0.25	0.16	0.06	0.06	0.44	0.57	1.07			0.83	0.66	0.41	0.30	0.30	0.30	0.53	1.20			3.01	2.34	1.88	1.08	1.08	0.85	0.90	1.42	
1994	0.44	0.23	0.14	0.05	0.05	0.05	0.23	0.47			0.63	0.62	0.39	0.12	0.30	0.98	2.73	2.37			1.35	1.29	0.95	0.46	0.46	-0.38	0.03	0.28	
1995	0.70	0.42	0.18	0.09	0.09	0.67	1.01	1.16			0.83	0.62	0.41	0.12	0.30	0.98	2.73	2.37			2.63	1.98	1.25	0.72	0.72	-0.23	0.01	0.73	
1996	0.51	0.36	0.15	0.06	0.06	0.81	1.37	1.37			0.31	0.24	0.04	0.04	0.04	0.62	0.65	-0.67			4.47	3.64	2.15	0.66	0.66	0.28	0.59	0.74	
1997	0.35	0.23	0.09	0.04	0.04	0.32	0.10	-0.53			0.21	0.17	0.12	0.08	0.08	-0.72	-0.21	-0.13			4.13	3.39	2.01	1.03	1.03	0.07	0.20	0.32	
1998	0.34	0.25	0.20	0.15	0.15	1.12	0.97	1.17			0.63	0.44	0.21	0.14	0.14	0.22	0.55	0.47			3.95	3.85	2.77	1.47	1.47	0.30	0.44	0.57	
1999	0.29	0.11	0.10	0.06	0.06	-0.62	-0.88	-0.54			0.89	0.50	0.25	0.13	0.13	0.17	0.09	-0.02			4.62	3.78	2.65	1.56	1.56	-0.12	0.10	0.42	
2000	0.99	0.54	0.27	0.16	0.16	0.49	0.82	1.12			1.12	0.75	0.46	0.25	0.25	-0.04	0.09	0.50											
2001	0.97	0.61	0.24	0.09	0.09	0.63	0.75	0.76			1.60	1.17	0.68	0.28	0.28	0.04	-0.03	0.16											
2002	0.82	0.51	0.29	0.11	0.11	0.33	0.41	0.73			1.63	1.54	1.21	0.58	0.58	0.89	0.92	0.92											
2003	0.66	0.59	0.34	0.14	0.14						0.73	0.67	0.62	0.48	0.48														
2004																													
Mean						0.43	0.54	0.68								0.27	0.59	0.53								0.11	0.32	0.64	
South																													
1993	0.16	0.08	0.02	0.01	0.01	0.15	0.15	-0.52			0.20	0.14	0.10	0.08	0.08	0.64	0.60	0.46											
1994	0.19	0.14	0.07	0.04	0.04	0.49	0.73	1.45			0.12	0.10	0.08	0.06	0.06	0.31	1.14	2.26											
1995	0.24	0.12	0.07	0.02	0.02	0.51	0.33	0.95			0.12	0.09	0.03	0.01	0.01	-0.31	0.18	0.16											
1996	0.20	0.14	0.09	0.03	0.03	0.06	-0.05	0.60			0.21	0.16	0.07	0.03	0.03	-0.14	-0.15	-0.11											
1997	0.24	0.19	0.15	0.05	0.05	0.46	0.69	1.11			0.32	0.24	0.18	0.08	0.08	0.68	1.08	1.74											
1998	0.19	0.15	0.09	0.05	0.05	1.26	2.37				0.22	0.16	0.08	0.03	0.03	0.34	0.66	0.64											
1999	0.17	0.05	0.01	0.00	0.00	0.28	-0.16	-1.05			0.32	0.24	0.18	0.08	0.08	0.68	1.08	1.74											
2000	0.24	0.13	0.06	0.04	0.04	0.23	0.19	0.06			0.22	0.16	0.08	0.03	0.03	0.34	0.66	0.64											
2001	0.31	0.19	0.11	0.06	0.06	-0.46	-0.29	0.50			0.21	0.15	0.08	0.04	0.04	-0.33	0.17	0.72											
2002	0.55	0.48	0.25	0.07	0.07	0.77	0.90	1.81			0.32	0.29	0.13	0.04	0.04	-0.10	-0.13	-0.67											
2003	0.36	0.25	0.20	0.04	0.04						0.36	0.35	0.33	0.25	0.25	1.68	1.79	2.08											
2004											0.12	0.07	0.06	0.04	0.04														
Mean						0.37	0.49	0.54								0.31	0.59	0.81											

Table A33. Additional exploitation ratios numbers for the 2004 cooperative survey, using the fishing year landings.

Nominal distances		100% efficiency		Intermediate Efficiency			
A. Using landings and exploitable biomass	Fishing year 2003 landings (mt)	2004 Survey Exploitable Biomass	Ldgs+2004 Survey B	2004 Survey Exploitable Biomass	Ldgs+2004 Survey B	Exploit. ratio	Exploit. ratio
North	14349	24494	38843	45237	59586	0.2408116	0.2408116
South	11764	47226	58990	78720	90484	0.130011936	0.130011936
Combined	26113	71720	97833	123957	150070	0.174005464	0.174005464
Nominal distances		100% efficiency		Intermediate Efficiency			
B. Using catch and total biomass	Fishing year 2003 catch (mt)	2004 Survey Biomass	Ldgs+2004 Survey B	2004 Survey Biomass	Ldgs+2004 Survey B	Exploit. ratio	Exploit. ratio
North	17899.84931	28536	46435.84931	51766	69665.84931	0.256938651	0.256938651
South	14385.17574	66877	80282.17574	109807	124192.1757	0.115829968	0.115829968
Combined	32285.02505	94413	126698.0251	161573	193858.0251	0.166539533	0.166539533

Table A34. Monkfish surplus production results using cooperative survey biomass estimates from 2001 and 2004 and assuming a beta function prior for the distribution of  $r$ , for northern and southern monkfish stock units.

B[40] is stock biomass at the start of 2003 (000 mt), B2004 is stock biomass at the start of 2004 (000 mt), BMSP is biomass that would maximize surplus production (000 mt), BMSPRATIO is the ratio of B2004 to BMSP, H[40] is the exploitation rate in 2003, HMSP is the exploitation rate that would maximize surplus production, K is carrying capacity (000 mt), M is the shape parameter of the production curve, MSP is maximum surplus production (000 mt), qFALL is autumn survey catchability,  $r$  is the intrinsic growth rate, sigma2 is process error variance parameter, and tau2FALL is the survey error variance parameter.

**Northern monkfish**

node	mean	stdev	0.1	0.25	median	0.75	0.9
B[40]	76.37	25.77	0.3435	38.53	47.77	72.13	109.6
B2004	68.69	25.51	0.3287	30.65	40.24	64.73	101.8
BMSP	62.22	15.06	0.2496	39.38	45.06	60.06	81.91
BMSPRATIO	1.22	0.2457	0.003301	0.7991	0.9287	1.203	1.519
H[40]	0.2607	0.08665	0.001156	0.1289	0.1631	0.2483	0.3751
HMSP	0.192	0.06754	0.001413	0.07879	0.1118	0.1846	0.2817
HRATIO	1.49	0.6796	0.01103	0.6593	0.8549	1.359	2.232
K	139.1	41.52	0.7601	76.98	91.52	133.1	193.8
M	1.624	0.3729	0.00754	1.171	1.263	1.537	2.088
MSP	11.27	3.004	0.05185	6.164	7.903	10.98	14.89
qFALL	0.01766	0.005069	0.00008139	0.009626	0.01173	0.01704	0.02454
$r$	0.5423	0.08911	0.0005017	0.3714	0.427	0.5415	0.6583
sigma2	0.00825	0.01219	0.0002869	0.001363	0.001891	0.004413	0.01772
tau2FALL	0.2004	0.06097	0.000999	0.09353	0.1282	0.1954	0.278

**Southern monkfish**

node	mean	stdev	0.1	0.25	median	0.75	0.9
B[40]	113.4	35.24	0.8673	62.71	75.04	107.3	159.1
B2004	112.7	35.77	0.9038	62.04	74.21	106.3	158.9
BMSP	98.08	50.28	2.24	49.55	57.61	82.34	158.2
BMSPRATIO	1.268	0.3409	0.01356	0.5413	0.7782	1.327	0.8727
H[40]	0.1383	0.04029	0.0009495	0.07234	0.09038	0.1341	0.1918
HMSP	0.2204	0.11	0.00486	0.0519	0.08748	0.2035	0.379
HRATIO	0.8203	0.7	0.01995	0.2924	0.3751	0.6525	1.42
K	218.9	137.3	6.223	85.59	105.6	176.6	385.1
M	1.865	0.7239	0.02968	1.108	1.198	1.624	2.897
MSP	18.05	6.19	0.169	8.128	11.03	17.47	25.62
qFALL	0.007852	0.002442	0.00007322	0.004075	0.005047	0.007507	0.01114
$r$	0.5498	0.09102	0.001276	0.3736	0.4311	0.5497	0.6686
sigma2	0.02588	0.03351	0.001292	0.001358	0.001982	0.01096	0.06897

Table A35. Stratified mean catch per tow in weight (kg), and 3-year moving averages, NEFSC offshore autumn research vessel bottom trawl in northern region (survey strata 20-30, 34-40); and southern region (survey strata 1-19, 61-76).  $B_{TARGET}$  is the median of the 3-year moving average (1965-1981 north, 1967-1981 south).  $B_{THRESHOLD}$  equals half of  $B_{TARGET}$ .

Northern Management/ Assessment Area					Southern Management/ Assessment Area			
	Mean Weight/Tow	$B_{THRESHOLD}$	Three-year Moving Average	$B_{TARGET}$	Mean Weight/Tow	$B_{THRESHOLD}$	Three-Year Moving Average	$B_{TARGET}$
1963	3.757				3.724			
1964	1.712				5.486			
1965	2.509	1.250	2.659	2.496	5.163	0.930	4.791	1.848
1966	3.266		2.496		6.986		5.878	
1967	1.283		2.353		1.122		4.423	
1968	2.036		2.195		0.895		3.001	
1969	3.705		2.341		1.138		1.051	
1970	2.237		2.659		1.357		1.130	
1971	2.914		2.952		0.786		1.094	
1972	1.404		2.185		4.918		2.354	
1973	3.114		2.477		1.986		2.564	
1974	2.063		2.193		0.710		2.538	
1975	1.711		2.296		2.043		1.580	
1976	3.387		2.387		1.084		1.279	
1977	5.568		3.555		1.873		1.667	
1978	5.101		4.685		1.395		1.451	
1979	5.133		5.267		2.275		1.848	
1980	4.458		4.897		1.868		1.846	
1981	1.984		3.859		2.858		2.334	
1982	0.936		2.459		0.646		1.791	
1983	1.617		1.513		2.150		1.885	
1984	3.010		1.855		0.740		1.179	
1985	1.441		2.023		1.318		1.403	
1986	2.353		2.268		0.552		0.870	
1987	0.873		1.556		0.274		0.715	
1988	1.525		1.584		0.554		0.460	
1989	1.384		1.261		0.625		0.485	
1990	1.001		1.303		0.426		0.535	
1991	1.235		1.207		0.783		0.611	
1992	1.102		1.113		0.312		0.507	
1993	1.044		1.127		0.294		0.463	
1994	0.973		1.040		0.611		0.406	
1995	1.711		1.243		0.386		0.430	
1996	1.07		1.252		0.387		0.461	
1997	0.669		1.150		0.592		0.455	
1998	0.974		0.904		0.500		0.493	
1999	0.825		0.823		0.304		0.465	
2000	2.495		1.431		0.477		0.427	
2001	2.048		1.789		0.709		0.496	
2002	2.103		2.215		1.253		0.813	
2003	1.925		2.025		0.828		0.930	