

Table A1. Summer Flounder Commercial Landings by State (thousands of lb) and coastwide (thousands of pounds ('000 lbs), metric tons (mt)).

Year	ME	NH	MA	RI	CT	NY	NJ	DE	MD+	VA+	NC+	Total	
												'000 lbs	mt
1940	0	0	2847	258	149	1814	3554	3	444	1247	498	10814	4905
1941	na	na	na	na	na	na	na	na	183	764	na	947	430
1942	0	0	193	235	126	1286	987	2	143	475	498	3945	1789
1943	0	0	122	202	220	1607	2224	11	143	475	498	5502	2496
1944	0	0	719	414	437	2151	3159	8	197	2629	498	10212	4632
1945	0	0	1730	467	270	3182	3102	2	460	1652	1204	12297	5578
1946	0	0	1579	625	478	3494	3310	22	704	2889	1204	14305	6489
1947	0	0	1467	333	813	2695	2302	46	532	1754	1204	11146	5056
1948	0	0	2370	406	518	2308	3044	15	472	1882	1204	12219	5542
1949	0	0	1787	470	372	3560	3025	8	783	2361	1204	13570	6155
1950	0	0	3614	1036	270	3838	2515	25	543	1761	1840	15442	7004
1951	0	0	4506	1189	441	2636	2865	20	327	2006	1479	15469	7017
1952	0	0	4898	1336	627	3680	4721	69	467	1671	2156	19625	8902
1953	0	0	3836	1043	396	2910	7117	53	1176	1838	1844	20213	9168
1954	0	0	3363	2374	213	3683	6577	21	1090	2257	1645	21223	9627
1955	0	0	5407	2152	385	2608	5208	26	1108	1706	1126	19726	8948
1956	0	0	5469	1604	322	4260	6357	60	1049	2168	1002	22291	10111
1957	0	0	5991	1486	677	3488	5059	48	1171	1692	1236	20848	9456
1958	0	0	4172	950	360	2341	8109	209	1452	2039	892	20524	9310
1959	0	0	4524	1070	320	2809	6294	95	1334	3255	1529	21230	9630
1960	0	0	5583	1278	321	2512	6355	44	1028	2730	1236	21087	9565
1961	0	0	5240	948	155	2324	6031	76	539	2193	1897	19403	8801
1962	0	0	3795	676	124	1590	4749	24	715	1914	1876	15463	7014
1963	0	0	2296	512	98	1306	4444	17	550	1720	2674	13617	6177
1964	0	0	1384	678	136	1854	3670	16	557	1492	2450	12237	5551
1965	0	0	431	499	106	2451	3620	25	734	1977	272	10115	4588
1966	0	0	264	456	90	2466	3830	13	630	2343	4017	14109	6400
1967	0	0	447	706	48	1964	3035	0	439	1900	4391	12930	5865
1968	0	0	163	384	35	1216	2139	0	350	2164	2602	9053	4106
1969	0	0	78	267	23	574	1276	0	203	1508	2766	6695	3037

* = less than 500 lb; na = not available; + = NMFS did not identify flounders to species prior to 1978 for NC and 1957 for both MD and VA and thus the numbers represent all unclassified flounders.
Sources: 1940-1977 USDC 1984; 1978-1979 unpublished NMFS General Canvas data

Table A1 continued.

Year	ME	NH	MA	RI	CT	NY	NJ	DE	MD+	VA+	NC+	Total	
												'000 lb	mt
1970	0	0	41	259	23	900	1958	0	371	2146	3163	8861	4019
1971	0	0	89	275	34	1090	1850	0	296	1707	4011	9352	4242
1972	0	0	93	275	7	1101	1852	0	277	1857	3761	9223	4183
1973	0	0	506	640	52	1826	3091	*	495	3232	6314	16156	7328
1974	*	0	1689	2552	26	2487	3499	0	709	3111	10028	22581	10243
1975	0	0	1768	3093	39	3233	4314	5	893	3428	9539	26311	11934
1976	*	0	4019	6790	79	3203	5647	3	697	3303	9627	33368	15135
1977	0	0	1477	4058	64	2147	6566	5	739	4540	10332	29927	13575
1978	0	0	1439	2238	111	1948	5414	1	676	5940	10820	28586	12966
1979	5	0	1175	2825	30	1427	6279	6	1712	10019	16084	39561	17945
1980	4	0	367	1277	48	1246	4805	1	1324	8504	13643	31216	14159
1981	3	0	598	2861	81	1985	4008	7	403	3652	7459	21056	9551
1982	18	*	1665	3983	64	1865	4318	8	360	4332	6315	22928	10400
1983	84	0	2341	4599	129	1435	4826	5	937	8134	7057	29548	13403
1984	2	*	1488	4479	131	2295	6364	9	813	9673	12510	37765	17130
1985	3	*	2249	7533	183	2517	5634	4	577	5037	8614	32352	14675
1986	0	*	2954	7042	160	2738	4017	4	316	3712	5924	26866	12186
1987	8	*	3327	4774	609	2641	4451	4	319	5791	5128	27052	12271
1988	5	0	2421	4719	741	3439	6006	7	514	7756	6770	32377	14686
1989	9	0	1878	3083	513	1464	2865	3	204	3689	4206	17913	8125
1990	3	0	628	1408	343	405	1458	2	138	2144	2728	9257	4199
1991	0	0	1124	1672	399	719	2341	4	232	3715	3516	13722	6224
1992	*	*	1383	2532	495	1239	2871	12	319	5172	2576	16599	7529
1993	6	0	903	1942	225	849	2466	6	254	3052	2894	12599	5715
1994	4	0	1031	2649	371	1269	2356	4	179	3091	3571	14525	6588
1995	5	0	1128	2325	319	1248	2319	4	174	3304	4555	15381	6977
1996	8	0	780	1664	266	928	2345	7	225	2280	4218	12721	5770
1997	3	0	745	1566	257	823	1321	5	215	2370	1501	8806	3994
1998	6	0	709	1716	263	823	1863	11	224	2616	2967	11199	5080
1999	6	0	813	1637	245	804	1918	8	201	2196	2801	10627	4820
2000	7	0	789	1703	240	800	1848	12	252	2206	3354	11211	5085
2001	22	0	694	1800	205	751	1745	7	223	2660	2730	10838	4916

* = less than 500 lb; na = not available; Sources: 1980-2001 State and Federal reporting systems, 1995-98 NC DMF Trip Ticket System

Table A2. Distribution of Northeast Region (ME-VA) commercial fishery landings by statistical area.

Area	1992	1993	1994	1995	1996	1997	1998	1999
511	0	0	0	0	1	0	0	0
512	0	0	0	0	1	1	0	0
513	0	3	0	0	2	0	0	2
514	9	11	10	12	3	15	17	11
515	0	0	0	0	0	0	0	0
521	8	3	14	4	16	2	9	2
522	8	8	7	6	13	6	2	3
561	2	1	0	0	1	1	3	2
562	6	4	5	10	1	1	0	3
525	22	35	26	85	137	16	27	28
526	294	242	193	128	44	22	33	17
533	0	0	0	0	6	2	3	5
537	916	557	707	770	539	449	418	354
538	228	255	341	332	267	270	229	275
539	217	157	223	258	242	284	374	418
611	117	35	181	283	166	141	204	230
612	404	393	169	221	344	297	317	403
613	237	167	280	242	184	194	128	171
614	81	97	141	129	18	41	41	13
615	61	15	49	99	20	37	41	44
616	532	476	743	730	462	245	280	122
621	1028	526	258	279	318	266	286	304
622	299	363	323	522	258	53	141	301
623	0	6	0	14	28	0	1	0
625	289	227	122	118	276	227	142	91
626	743	601	821	347	385	94	503	415
631	655	98	219	220	21	174	258	140
632	160	77	60	43	73	30	41	79
635	45	45	77	55	29	418	228	97
636	0	0	0	4	2	27	8	20
Total	6361	4402	4969	4911	3857	3313	3734	3550

Table A2 continued.

Area	2000	2001
511	1	0
512	1	0
513	0	1
514	2	1
515	0	0
521	4	15
522	6	5
561	4	7
562	8	3
525	41	29
526	16	23
533	10	2
537	326	337
538	260	214
539	455	437
611	142	157
612	308	379
613	170	162
614	3	11
615	70	115
616	384	281
621	208	274
622	101	234
623	8	18
625	60	129
626	697	442
631	185	142
632	39	41
635	54	212
636	1	7
Total	3564	3678

Table A3. Summary of NEFSC sampling of commercial fishery for summer flounder, ME-VA¹.

Year	Lengths	Ages	NER Landings (MT)	Sampling Intensity (mt/100 lengths)
1982	8,194	2,288	7,536	92
1983	6,893	1,347	10,202	148
1984	5,340	1,794	11,455	215
1985	6,473	1,611	10,767	166
1986	7,840	1,967	9,499	121
1987	6,605	1,788	9,945	151
1988	9,048	2,302	11,615	128
1989	8,411	1,325	6,217	74
1990	3,419	853	2,962	87
1991	4,627	1,089	4,626	100
1992	3,385	899	6,361	188
1993	3,638	844	4,402	121
1994	3,950	956	4,969	126
1995	2,982	682	4,911	165
1996	4,580	1,235	3,857	84
1997	8,855	2,332	3,313	37
1998	10,055	2,641	3,734	37
1999	10,460	3,244	3,550	34
2000	10,956	3,307	3,564	33
2001	9,521	2,838	3,678	39

¹ Does not include unclassified market category landings for 1982-93.

Table A4. Commercial landings at age of summer flounder ('000), ME-VA. Does not include discards, assumes catch not sampled by NEFSC has same biological characteristics as port sampled catch.

Year	AGE										Total
	0	1	2	3	4	5	6	7	8	9+	
1982	1,441	6,879	5,630	232	61	97	57	22	2	0	14,421
1983	1,956	12,119	4,352	554	30	62	13	17	4	2	19,109
1984	1,403	10,706	6,734	1,618	575	72	3	5	1	4	21,121
1985	840	6,441	10,068	956	263	169	25	4	2	1	18,769
1986	407	7,041	6,374	2,215	158	93	29	7	2	0	16,326
1987	332	8,908	7,456	935	337	23	24	27	11	0	18,053
1988	305	11,116	8,992	1,280	327	79	18	9	5	0	22,131
1989	96	2,491	4,829	841	152	16	3	1	1	0	8,430
1990	0	2,670	861	459	81	18	6	1	1	0	4,096
1991	0	3,755	3,256	142	61	11	1	1	0	0	7,227
1992	114	5,760	3,575	338	19	22	0	1	0	0	9,829
1993	151	4,308	2,340	174	29	43	19	2	1	0	7,067
1994	119	3,698	3,692	272	64	12	6	0	5	0	7,868
1995	46	2,566	4,280	241	40	8	0	1	0	0	7,182
1996	0	1,401	3,187	798	156	15	3	0	1	0	5,559
1997	0	380	2,442	1,214	261	69	10	4	0	0	4,381
1998	0	196	1,719	2,022	437	72	15	1	0	0	4,462
1999	0	123	1,570	1,522	585	160	26	8	0	0	3,994
2000	0	212	1,934	1,083	449	119	47	15	6	2	3,867
2001	0	713	1,402	980	324	155	59	16	4	3	3,656

Table A5. Mean weight (kg) at age of summer flounder landed in the commercial fishery, ME-VA.

Year	AGE										ALL	
	0	1	2	3	4	5	6	7	8	9+		
1982	0.26	0.42	0.62	1.84	2.33	2.94	2.71	4.04	5.99			0.55
1983	0.31	0.46	0.80	1.40	2.35	1.85	2.76	3.30	4.17	4.37		0.56
1984	0.28	0.39	0.60	0.11	1.43	2.16	3.21	3.62	4.64	4.03		0.54
1985	0.33	0.44	0.59	1.08	1.73	2.22	2.59	4.71	4.78	4.80		0.59
1986	0.30	0.44	0.63	1.11	1.76	1.89	3.14	2.96	4.81			0.63
1987	0.27	0.45	0.62	1.06	2.00	2.85	3.08	3.02	4.14			0.59
1988	0.36	0.46	0.60	1.21	2.07	2.88	3.98	3.91	4.50			0.60
1989	0.36	0.55	0.74	1.06	1.83	2.47	3.57	3.59	2.25			0.74
1990		0.52	0.86	1.37	1.84	2.13	3.21	3.92	5.03			0.72
1991		0.48	0.75	1.54	2.26	3.01	3.91	3.87				0.64
1992	0.34	0.50	0.82	1.88	2.68	3.09		4.59				0.67
1993	0.35	0.49	0.75	1.63	2.10	1.79	2.81	4.14	5.20			0.62
1994	0.39	0.55	0.62	1.43	2.27	3.08	3.32		3.70			0.63
1995	0.33	0.54	0.70	1.54	2.37	2.92		4.09				0.68
1996		0.54	0.58	1.14	1.88	2.85	3.78		4.76			0.69
1997		0.54	0.63	0.84	1.31	2.10	2.56	3.43				0.76
1998		0.55	0.64	0.85	1.39	2.31	2.52	3.98				0.84
1999		0.52	0.62	0.86	1.36	1.93	2.84	3.62				0.89
2000		0.57	0.68	0.97	1.46	2.13	2.51	2.60	3.30	3.53		0.92
2001		0.59	0.76	1.03	1.73	2.39	2.86	3.57	3.90	4.94		1.01

Table A6. Summary of North Carolina Division of Marine Fisheries (NCDMF) sampling of the commercial winter trawl fishery for summer flounder.

Year	Lengths	Ages	Total Landings (MT)	Total MT per 100 lengths
1982	5,403	0	2,864	53
1983	8,491	0	3,201	38
1984	14,920	0	5,674	38
1985	13,787	0	3,907	28
1986	15,754	0	2,687	17
1987	12,126	0	2,326	19
1988	13,377	189	3,071	23
1989	15,785	106	1,908	12
1990	15,787	191	1,238	8
1991	24,590	534	1,582	6
1992	14,321	364	1,168	8
1993	18,019	442	1,313	7
1994	21,858	548	1,620	7
1995	18,410	548	2,066	11
1996	17,745	477	1,913	11
1997	12,802	388	681	5
1998	21,477	476	1,346	6
1999	11,703	412	1,271	11
2000	24,177	568	1,521	6
2001	19,655	499	1,263	6

Table A7. Number ('000) of summer flounder at age landed in the North Carolina commercial winter trawl fishery. The 1982-1987 NCDMF length samples were aged using NEFSC age-lengths keys for comparable times and areas (i.e., same quarter and statistical areas). Since 1987, the NCDMF length samples have been aged using NCDMF age-lengths keys.

Year	AGE									Total
	0	1	2	3	4	5	6	7	8+	
1982	981	3,463	1,021	142	52	19	6	4	2	5,691
1983	492	3,778	1,581	287	135	41	3	3	<1	6,321
1984	907	5,658	3,889	550	107	18	<1	0	0	11,130
1985	196	2,974	3,529	338	85	24	5	<1	0	7,152
1986	216	2,478	1,897	479	29	32	1	1	<1	5,134
1987	233	2,420	1,299	265	28	1	0	0	0	4,243
1988	0	2,917	2,225	471	227	39	1	6	<1	5,887
1989	2	49	1,437	716	185	37	1	2	0	2,429
1990	2	142	730	418	117	12	1	<1	0	1,424
1991	0	382	1,641	521	116	20	2	<1	0	2,682
1992	0	36	795	697	131	21	2	<1	0	1,682
1993	0	515	1,101	252	44	1	<1	0	0	1,913
1994	6	258	1,262	503	115	14	3	<1	0	2,161
1995	<1	181	1,391	859	331	53	2	<1	0	2,817
1996	0	580	2,187	554	132	56	13	<1	2	3,526
1997	0	17	625	378	18	3	<1	0	0	1,041
1998	18	548	694	230	28	3	<1	0	0	1,520
1999	1	70	504	579	152	88	6	3	<1	1,403
2000	0	50	398	906	345	55	18	1	2	1,775
2001	0	79	408	556	334	63	18	5	<1	1,463

Table A8. Mean weight (kg) at age of summer flounder landed in the North Carolina commercial winter trawl fishery.

Year	AGE									
	0	1	2	3	4	5	6	7	8+	ALL
1982	0.34	0.46	0.76	1.28	1.66	2.05	2.12	2.23	2.58	0.53
1983	0.32	0.45	0.75	1.14	1.26	1.49	1.73	2.43	2.70	0.57
1984	0.33	0.48	0.70	1.06	1.50	2.17	3.48			0.59
1985	0.38	0.46	0.66	1.20	1.66	2.49	3.07	4.57		0.62
1986	0.36	0.51	0.67	1.09	1.62	1.96	3.40	3.23	3.63	0.64
1987	0.33	0.51	0.66	1.09	1.88	2.94				0.59
1988		0.41	0.60	0.93	1.19	1.70	2.24	2.98	3.41	0.57
1989	0.12	0.38	0.60	0.99	1.16	2.10	3.09	2.50		0.78
1990	0.08	0.48	0.66	0.87	1.31	2.10	1.90	3.97		0.77
1991		0.45	0.66	1.07	1.73	2.25	2.51	3.13	4.10	0.77
1992		0.36	0.50	0.85	1.20	1.46	2.30			0.71
1993		0.49	0.61	1.13	1.37	2.95	3.41			0.66
1994	0.27	0.45	0.62	1.27	2.04	2.44	2.89	5.78		0.84
1995	0.04	0.21	0.46	0.85	1.47	2.49	3.79	3.82		0.72
1996		0.42	0.47	0.73	1.35	1.72	2.29	3.20	2.86	0.56
1997		0.41	0.62	0.76	1.32	2.07	3.25			0.68
1998	0.41	0.71	0.89	1.24	1.49	2.80	3.38			0.89
1999	0.14	0.58	0.73	0.92	1.40	1.68	2.61	3.06	3.90	0.95
2000		0.56	0.66	0.80	1.20	1.96	2.59	3.31	3.52	0.90
2001		0.59	0.67	0.76	1.07	1.72	2.39	3.07	4.24	0.87

Table A9. Summary NER fishery observer data for trips catching summer flounder. Total trips (trips are not split for multiple areas), observed tows, total summer flounder catch (lb), total summer flounder kept (lb), and total summer flounder discard (lb), and percentage of summer flounder discard (lb) to summer flounder catch (lb).

Year	Gear	Trips	Obs Tows	Total Catch	Total Kept	Total Discard	Discard: Total (%)
1989	All	57	413	53,714	48,406	5,308	9.9
1990	All	61	463	47,954	35,972	11,982	25.0
1991	All	82	635	61,650	50,410	11,240	18.2
1992	Trawl	66	643	136,632	118,026	18,606	13.6
	Scallop	8	178	1,477	767	710	48.1
	All	74	821	138,109	118,793	19,316	14.0
1993	Trawl	37	410	74,982	67,603	7,379	9.8
	Scallop	15	671	2,967	1,158	1,809	61.0
	All	52	1,081	77,949	68,761	9,188	11.8
1994	Trawl	51	574	174,347	163,734	10,612	6.1
	Scallop	14	651	5,811	435	5,376	92.5
	All	65	1,225	180,158	164,169	15,988	8.9
1995	Trawl	134	1,004	242,784	235,011	7,773	3.2
	Scallop	19	1,051	10,044	2,247	7,778	77.4
	All	153	2,055	252,828	237,258	15,551	6.2
1996	Trawl	111	653	101,389	90,789	10,600	10.5
	Scallop	24	1,083	9,575	1,345	8,230	86.0
	All	135	1,736	110,964	92,134	18,830	17.0
1997	Trawl	59	334	31,707	26,475	5,232	16.5
	Scallop	23	835	5,721	583	5,138	89.8
	All	82	1,169	37,428	27,058	10,370	27.7

Table A9 continued.

Year	Gear	Trips	Obs Tows	Total Catch	Total Kept	Total Discard	Discard: Total (%)
1998	Trawl	53	329	72,396	65,507	6,889	9.5
	Scallop	22	359	1,962	652	1,310	66.8
	All	75	688	74,358	66,159	8,199	11.0
1999	Trawl	56	374	60,733	45,987	14,746	24.3
	Scallop	10	247	3,199	458	2,741	85.7
	All	66	621	63,932	46,445	17,487	27.4
2000	Trawl	115	688	162,015	144,752	17,263	10.7
	Scallop	23	608	8,457	501	7,956	94.1
	All	138	1,296	170,472	145,253	25,219	14.8
2001	Trawl	132	581	109,285	61,497	47,789	53.9
	Scallop	4	176	1,835	6	1,830	99.7
	All	136	757	111,120	61,503	49,619	44.7

Table A10. Summary NER Vessel Trip Report (VTR) data for trips reporting discard of any species and catching summer flounder. Total trips, total summer flounder catch (lb), total summer flounder kept (lb), total summer flounder discard (lb), and percentage of summer flounder discard (lb) to summer flounder catch (lb).

Year	Gear	Trips	Total Catch	Total Kept	Total Discard	Discard: Total (%)
1994	Trawl	4,267	2,149,332	2,015,296	134,036	6.2
	Scallop	85	70,353	22,877	47,476	67.5
	All	4,352	2,219,685	2,038,173	181,512	8.2
1995	Trawl	3,733	2,444,231	2,332,516	111,715	4.6
	Scallop	113	78,758	25,084	53,674	68.2
	All	3,846	2,522,989	2,357,600	165,389	6.6
1996	Trawl	2,990	1,662,313	1,459,155	203,158	12.2
	Scallop	79	69,557	16,657	52,900	76.1
	All	3,069	1,731,870	1,475,812	256,058	14.8
1997	Trawl	3,044	988,599	851,090	137,509	13.9
	Scallop	51	21,553	4,665	16,888	78.4
	All	3,095	1,010,152	855,755	154,397	15.3
1998	Trawl	3,004	1,128,578	868,706	259,872	23.0
	Scallop	62	23,538	10,323	13,215	56.1
	All	3,066	1,152,116	879,029	273,087	23.7
1999	Trawl	2,884	959,275	772,924	186,351	19.4
	Scallop	41	26,334	14,324	12,010	45.6
	All	2,925	985,609	787,248	198,361	20.1
2000	Trawl	3,140	1,048,791	786,576	262,215	25.0
	Scallop	41	12,183	3,798	8,385	68.8
	All	3,181	1,060,974	790,374	270,600	25.5
2001	Trawl	3,035	1,086,331	783,900	307,156	28.3
	Scallop	69	14,592	1,349	13,243	90.8
	All	3,104	1,100,923	785,249	320,399	29.1

Table A11. Summary of Northeast Region fishery observer data to estimate summer flounder discard at age in the commercial fishery. Estimates developed using fishery observer length samples, age-length data, and estimates of total discard in mt. An 80% discard mortality rate is assumed. 1995-2001 lengths converted to age using 1995-2001 NEFSC trawl survey ages; n/a = not available.

Year	Gear	Lengths	Ages	Fishery Observer Discard Estimate (mt)	Sampling Intensity (mt per 100 lengths)	Raised Discard Estimate (mt)	Raised Estimate with 80% mortality rate (mt)
1989	All	2,337	54	642	27	886	709
1990	All	3,891	453	1,121	29	1,517	1,214
1991	All	5,326	190	993	19	1,315	1,052
1992	All	9,626	331	755	8	862	690
1993	All	3,410	406	817	24	1,057	846
1994	Trawl	2,338	---	429	18	542	434
	Scallop	660	---	590	89	590	472
	All	2,998	354	1,019	34	1,132	906
1995	Trawl	1,822	---	130	7	173	138
	Scallop	731	---	212	29	212	170
	All	2,553	n/a	342	13	385	308
1996	Trawl	1,873	---	319	17	444	355
	Scallop	854	---	135	16	135	108
	All	2,727	n/a	454	17	579	463
1997	Trawl	839		299	36	299	239
	Scallop	556		108	19	108	86
	All	1,395	n/a	407	29	407	326

Table A11 continued.

Year	Gear	Lengths	Ages	Fishery Observer Discard Estimate (mt)	Sampling Intensity (mt per 100 lengths)	Raised Discard Estimate (mt)	Raised Estimate with 80% mortality rate (mt)
1998	Trawl	721		318	44	318	254
	Scallop	150		169	113	169	135
	All	871	n/a	487	56	487	389
1999	Trawl	1,145		1,476	129	1,476	1,181
	Scallop	216		459	213	459	367
	All	1,361	n/a	1,935	142	1,935	1,548
2000	Trawl	1,470		740	50	740	592
	Scallop	2,611		167	6	167	134
	All	4,081	n/a	907	22	907	726
2001	Trawl	1,394		284	20	284	227
	Scallop	11		515	4,682	515	412
	All	1,405	n/a	799	57	799	639

Table A12. Estimated summer flounder discard at age in the in the commercial fishery. 1995-2001 lengths converted to age using 1995-2001 NEFSC trawl survey ages. Includes an assumed 80% discard mortality rate.

<u>Discard numbers at age (000s)</u>						
<u>Year</u>	<u>Gear</u>	<u>0</u>	<u>1</u>	<u>2</u>	<u>3+</u>	<u>Total</u>
1989	All	775	1,628	94	0	2,497
1990	All	1,441	2,755	67	0	4,263
1991	All	891	3,424	<1	0	4,315
1992	All	1,155	1,544	36	3	2,738
1993	All	1,041	1,532	179	1	2,753
1994	Trawl	571	1,014	95	0	1,680
	Scallop	0	663	398	36	1,098
	All	571	1,677	493	36	2,778
1995	Trawl	141	294	58	2	495
	Scallop	0	114	148	20	282
	All	141	408	206	22	777
1996	Trawl	23	417	167	56	663
	Scallop	<1	221	72	5	298
	All	23	638	239	61	961
1997	Trawl	8	215	203	50	476
	Scallop	0	34	98	22	154
	All	8	249	301	72	630
1998	Trawl	26	132	146	95	399
	Scallop	1	42	73	52	168
	All	27	174	219	157	567
1999	Trawl	95	1,159	1,012	255	2,521
	Scallop	1	64	239	176	479
	All	96	1,223	1,251	431	3,001
2000	Trawl	20	118	378	303	819
	Scallop	2	46	82	49	179
	All	22	164	460	352	998
2001	All	51	176	198	363	788

Table A13. Estimated summer flounder discard mean length at age in the commercial fishery. 1995-2001 lengths converted to age using 1995-2001 NEFSC trawl survey ages.

<u>Discard mean length (cm) at age</u>						
<u>Year</u>	<u>Gear</u>	<u>0</u>	<u>1</u>	<u>2</u>	<u>3+</u>	<u>All</u>
1989	All	25.9	31.5	44.2		30.2
1990	All	29.0	31.7	38.9		30.9
1991	All	24.0	30.9	37.0		29.5
1992	All	29.3	30.0	36.6	51.2	29.8
1993	All	30.0	32.5	34.8	55.0	31.7
1994	Trawl	26.0	31.3	34.5		29.7
	Scallop		30.8	38.2	52.1	34.2
	All	26.0	31.1	37.5	52.1	31.5
1995	Trawl	29.6	29.4	37.0	50.9	30.4
	Scallop		30.7	40.6	52.4	37.4
	All	29.6	29.8	39.6	52.5	33.0
1996	Trawl	28.9	32.0	38.1	55.8	35.5
	Scallop	31.4	30.7	38.2	48.5	32.8
	All	29.0	31.6	38.1	55.2	34.7
1997	Trawl	26.9	32.1	37.8	46.6	36.0
	Scallop		32.5	37.2	45.9	37.5
	All	26.9	32.2	37.6	46.3	36.4
1998	Trawl	26.0	32.5	37.5	48.3	37.7
	Scallop	30.0	35.0	39.7	48.9	41.3
	All	26.1	33.1	38.2	48.5	38.8
1999	Trawl	25.8	32.0	35.9	48.5	34.9
	Scallop	31.0	33.2	36.3	48.8	40.5
	All	25.9	32.1	36.0	48.6	35.9
2000	Trawl	17.2	32.6	37.7	46.3	39.5
	Scallop	26.8	34.4	39.5	47.6	40.3
	All	18.1	33.2	38.0	46.5	39.6
2001	All	21.1	32.9	39.2	47.7	40.3

Table A14. Estimated summer flounder discard mean weight at age in the in the commercial fishery. 1995- 2001 lengths converted to age using 1995-2001 NEFSC trawl survey ages.

Discard mean weight (kg) at age						
<u>Year</u>	<u>Gear</u>	<u>0</u>	<u>1</u>	<u>2</u>	<u>3+</u>	<u>All</u>
1989	All	0.182	0.296	0.909		0.284
1990	All	0.235	0.304	0.559		0.285
1991	All	0.124	0.275	0.491		0.244
1992	All	0.238	0.256	0.498	1.450	0.252
1993	All	0.253	0.332	0.413		0.307
1994	Trawl	0.177	0.291	0.392		0.258
	Scallop		0.287	0.565	1.565	0.430
	All	0.177	0.289	0.532	1.565	0.326
1995	Trawl	0.244	0.242	0.522	1.505	0.280
	Scallop		0.281	0.702	1.604	0.595
	All	0.244	0.253	0.651	1.597	0.395
1996	Trawl	0.226	0.312	0.586	2.004	0.521
	Scallop	0.305	0.274	0.572	1.254	0.363
	All	0.227	0.299	0.582	1.937	0.472
1997	Trawl	0.178	0.327	0.560	1.088	0.504
	Scallop		0.331	0.553	1.044	0.558
	All	0.178	0.328	0.558	1.075	0.517
1998	Trawl	0.158	0.332	0.533	1.346	0.637
	Scallop	0.247	0.421	0.651	1.357	0.808
	All	0.161	0.353	0.572	1.350	0.688
1999	Trawl	0.156	0.317	0.462	1.300	0.468
	Scallop	0.275	0.355	0.478	1.310	0.767
	All	0.157	0.319	0.465	1.304	0.516
2000	Trawl	0.055	0.355	0.555	1.114	0.722
	Scallop	0.174	0.412	0.643	1.023	0.741
	All	0.066	0.371	0.571	1.138	0.725
2001	All	0.084	0.356	0.622	1.207	0.797

Table A15. Estimated total landings (catch types A + B1, [000s]) of summer flounder by recreational fishermen. SHORE mode includes fish taken from beach/bank and man-made structures. P/C indicates catch taken from party/charter boats, while P/R indicates fish taken from private/rental boats.

	YEAR										
	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
North											
Shore	167	144	62	10	70	39	42	4	16	9	26
P/C Boat	138	201	5	3	48	7	1	1	1	8	1
P/R Boat	1,293	747	568	382	2,562	648	379	137	99	173	211
TOTAL	1,598	1,092	635	395	2,680	694	422	142	116	190	238
Mid											
Shore	682	3,296	977	272	478	251	594	84	96	505	200
P/C Boat	5,745	3,321	2,381	1,068	1,541	1,143	1,164	141	412	589	374
P/R Boat	5,731	12,345	11,764	8,454	5,924	5,499	7,271	1,141	2,658	4,573	3,983
TOTAL	12,158	18,962	15,122	9,794	7,943	6,893	9,029	1,366	3,166	5,667	4,557
South											
Shore	272	523	316	504	689	115	306	91	150	51	50
P/C Boat	53	52	110	81	20	1	1	1	1	1	1
P/R Boat	1,392	367	1,292	292	289	162	355	117	361	159	156
TOTAL	1,717	942	1,718	877	998	278	662	209	512	211	207
All											
Shore	1,121	3,963	1,355	786	1,237	405	942	179	262	565	276
P/C Boat	5,936	3,574	2,496	1,152	1,609	1,151	1,166	143	414	598	376
P/R Boat	8,416	13,459	13,624	9,128	8,775	6,309	8,005	1,395	3,118	4,905	4,350
TOTAL	15,473	20,996	17,475	11,066	11,621	7,865	10,113	1,717	3,794	6,068	5,002

Table A15 continued.

	YEAR								
	1993	1994	1995	1996	1997	1998	1999	2000	2001
North									
Shore	36	49	19	22	27	44	34	57	4
P/C Boat	10	24	6	7	22	26	19	45	13
P/R Boat	250	596	449	717	669	970	769	1,355	539
TOTAL	296	669	474	746	718	1,040	822	1,457	556
Mid									
Shore	176	195	175	137	195	243	157	445	195
P/C Boat	872	773	267	1,167	907	333	281	557	311
P/R Boat	3,969	4,372	2,312	4,999	5,059	4,972	2,610	4,565	3,849
TOTAL	5,017	5,340	2,754	6,303	6,161	5,548	3,048	5,567	4,355
South									
Shore	113	180	48	46	32	30	23	38	23
P/C Boat	1	2	1	5	2	2	<1	1	<1
P/R Boat	236	197	100	274	247	360	214	312	302
TOTAL	350	379	149	325	281	391	237	351	325
All									
Shore	325	424	242	205	254	317	214	540	222
P/C Boat	883	799	274	1,179	931	361	301	603	325
P/R Boat	4,455	5,165	2,861	5,990	5,975	6,302	3,593	6,232	4,690
TOTAL	5,663	6,388	3,377	7,374	7,160	6,979	4,107	7,375	5,236

Table A16. Estimated total landings (catch types A + B1, [mt]) of summer flounder by recreational fishermen. SHORE mode includes fish taken from beach/bank and man-made structures. P/C indicates catch taken from party/charter boats, while P/R indicates fish taken from private/rental boats.

	YEAR										
	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
North											
Shore	87	59	17	7	25	21	32	2	16	6	20
P/C Boat	85	87	4	2	45	4	<1	<1	<1	6	<1
P/R Boat	875	454	388	328	2,597	582	289	141	89	150	175
TOTAL	1,047	600	409	337	2,667	607	322	144	106	162	196
Mid											
Shore	295	1,254	399	140	293	129	329	52	56	306	126
P/C Boat	3,112	2,196	1,426	609	1,093	1,098	799	125	264	364	267
P/R Boat	3,085	8,389	5,686	4,187	3,521	3,596	5,003	985	1,665	2,673	2,536
TOTAL	6,492	11,839	7,511	4,936	4,907	4,823	6,131	1,162	1,985	3,343	2,929
South											
Shore	87	134	98	230	425	34	113	57	76	25	25
P/C Boat	12	12	23	20	7	1	<1	<1	<1	<1	<1
P/R Boat	629	102	471	142	96	54	166	71	161	80	91
TOTAL	728	248	592	392	528	89	280	129	238	106	117
All											
Shore	469	1,447	514	377	743	184	474	111	148	337	171
P/C Boat	3,209	2,295	1,453	631	1,145	1,103	801	127	266	371	269
P/R Boat	4,589	8,945	6,545	4,657	6,214	4,232	5,458	1,197	1,915	2,903	2,802
TOTAL	8,267	12,687	8,512	5,665	8,102	5,519	6,733	1,435	2,329	3,611	3,242

Table A16 continued.

	YEAR								
	1993	1994	1995	1996	1997	1998	1999	2000	2001
North									
Shore	25	30	14	15	17	56	27	69	6
P/C Boat	7	14	5	13	17	22	18	40	16
P/R Boat	181	424	371	531	445	833	738	1,454	698
TOTAL	213	468	390	559	479	911	783	1,563	720
Mid									
Shore	88	112	108	80	127	160	136	346	182
P/C Boat	534	478	185	746	712	274	286	611	344
P/R Boat	2,453	2,849	1,699	3,155	3,898	4,096	2,461	4,373	3,822
TOTAL	3,075	3,439	1,992	3,981	4,737	4,530	2,883	5,330	4,348
South									
Shore	59	100	29	24	18	18	13	22	15
P/C Boat	<1	1	<1	2	1	1	<1	<1	<1
P/R Boat	136	103	84	138	143	199	115	174	167
TOTAL	196	204	114	164	162	218	129	197	182
All									
Shore	172	242	151	119	162	234	176	437	203
P/C Boat	542	493	191	761	730	297	305	652	361
P/R Boat	2,770	3,376	2,154	3,824	4,486	5,128	3,314	6,001	4,687
TOTAL	3,484	4,111	2,496	4,704	5,378	5,659	3,795	7,090	5,250

Table A17. Recreational fishery sampling intensity for summer flounder by subregion.

Year	Subregion	Landings (A+B1; mt)	Number of Summer Flounder Measured	mt/100 Lengths
1982	North	1,047	231	453
	Mid	6,492	2,896	224
	South	728	576	126
	TOTAL	8,267	3,703	223
1983	North	600	311	192
	Mid	11,839	4,712	251
	South	248	170	146
	TOTAL	12,687	5,193	244
1984	North	409	168	243
	Mid	7,511	2,195	342
	South	592	283	209
	TOTAL	8,512	2,646	322
1985	North	337	78	432
	Mid	4,936	1,934	255
	South	392	274	143
	TOTAL	5,665	2,286	248
1986	North	2,667	266	1,003
	Mid	4,907	1,808	271
	South	528	288	183
	TOTAL	8,102	2,362	343
1987	North	607	217	280
	Mid	4,823	1,897	254
	South	89	445	20
	TOTAL	5,519	2,559	216

Table A17 continued.

Year	Subregion	Landings (A+B1; mt)	Number of Summer Flounder Measured	mt/100 Lengths
1988	North	322	310	104
	Mid	6,131	2,865	214
	South	280	743	38
	TOTAL	6,733	3,918	172
1989	North	144	107	135
	Mid	1,162	1,582	73
	South	129	358	36
	TOTAL	1,435	2,047	70
1990	North	106	110	96
	Mid	1,985	2,667	74
	South	238	1,293	18
	TOTAL	2,329	4,070	57
1991	North	162	189	86
	Mid	3,343	4,648	72
	South	106	820	13
	TOTAL	3,611	5,657	64
1992	North	196	425	46
	Mid	2,929	4,504	65
	South	117	566	21
	TOTAL	3,242	5,495	59
1993	North	213	338	63
	Mid	3,075	4,174	74
	South	196	995	20
	TOTAL	3,484	5,507	63
1994	North	468	621	75
	Mid	3,439	3,834	90
	South	204	1,467	14
	TOTAL	4,111	5,922	69

Table A17 continued.

Year	Subregion	Landings (A+B1; mt)	Number of Summer Flounder Measured	mt/100 Lengths
1995	North	390	501	78
	Mid	1,992	1,470	136
	South	114	485	24
	TOTAL	2,496	2,456	102
1996	North	559	919	61
	Mid	3,981	3,373	118
	South	164	1,188	14
	TOTAL	4,704	5,480	86
1997	North	480	786	61
	Mid	4,736	2,988	159
	South	162	1,026	16
	TOTAL	5,378	4,800	112
1998	North	911	857	106
	Mid	4,530	3,205	141
	South	218	1,259	17
	TOTAL	5,659	5,321	106
1999	North	783	442	177
	Mid	2,883	1,584	182
	South	129	564	23
	TOTAL	3,795	2,590	147
2000	North	1,563	707	221
	Mid	5,330	1,892	282
	South	197	722	27
	TOTAL	7,090	3,321	213
2001	North	720	351	205
	Mid	4,348	2,965	147
	South	182	953	19
	TOTAL	5,250	4,269	123

Table A18. Estimated recreational landings at age of summer flounder (000s), (catch type A + B1).

Year	AGE									Total
	0	1	2	3	4	5	6	7	8+	
1982	2,750	8,445	3,498	561	215	<1	4	0	0	15,473
1983	2,302	11,612	4,978	1,340	528	220	0	16	0	20,996
1984	2,282	9,198	4,831	1,012	147	5	<1	0	0	17,745
1985	1,002	5,002	4,382	473	148	59	0	0	0	11,066
1986	1,169	6,404	2,784	1,088	129	15	28	0	0	11,621
1987	466	4,674	2,083	448	182	1	5	0	0	7,865
1988	434	5,855	3,345	386	90	3	0	0	0	10,113
1989	74	539	946	135	16	2	5	0	0	1,717
1990	353	2,770	529	118	23	<1	1	0	0	3,794
1991	86	3,611	2,251	79	40	1	0	0	0	6,068
1992	82	3,183	1,620	90	<1	27	0	0	0	5,002
1993	71	3,470	1,981	139	<1	2	0	0	0	5,663
1994	765	3,872	1,549	171	26	<1	5	0	0	6,388
1995	235	1,557	1,426	117	26	16	<1	0	0	3,377
1996	115	3,093	3,664	372	129	1	0	0	0	7,374
1997	4	1,147	4,183	1,464	274	88	0	0	0	7,160
1998	0	768	2,915	2,714	515	63	3	0	0	6,979
1999	0	201	1,982	1,520	325	60	19	0	0	4,107
2000	0	544	3,897	2,161	609	160	4	0	0	7,375
2001	0	838	1,960	1,751	529	119	35	4	0	5,236

Table A19. Estimated summer flounder landings (catch types A + B1), live discard (catch type B2), and total catch (catch types A + B1 + B2) in numbers (000s), and live discard (catch type B2) as a proportion of total catch.

Year	A+B1	B2	A+B1+B2	B2 / (A+B1+B2)
1982	15,473	8,089	23,562	0.343
1983	20,996	11,066	32,062	0.345
1984	17,475	12,310	29,785	0.413
1985	11,066	2,460	13,526	0.182
1986	11,621	13,672	25,293	0.541
1987	7,865	13,159	21,024	0.626
1988	10,113	7,249	17,362	0.418
1989	1,717	960	2,677	0.359
1990	3,794	5,307	9,101	0.583
1991	6,068	10,007	16,075	0.623
1992	5,002	6,907	11,909	0.580
1993	5,663	14,321	19,984	0.717
1994	6,388	10,345	16,733	0.618
1995	3,377	12,860	16,237	0.792
1996	7,374	12,368	19,742	0.626
1997	7,160	12,860	20,020	0.642
1998	6,979	15,107	22,086	0.684
1999	4,107	17,271	21,378	0.808
2000	7,375	16,712	24,087	0.694
2001	5,236	22,561	27,797	0.812

Table A20. Estimated recreational fishery discard at age of summer flounder (catch type B2). Discards during 1982-1996 allocated to age groups in same relative proportions as ages 0 and 1 in the subregional catch. Discards during 1997-2000 allocated to age groups in same relative proportions as fish less than the annual EEZ minimum size in the subregional catch. Discards in 2001 allocated to age groups in the same relative proportion as fish less than the minimum size in the respective state catch. All years assume 10% release mortality.

Year	Numbers at age					Metric Tons at age				
	0	1	2	3+	Total	0	1	2	3+	Total
1982	172	636	0	0	808	39	257	0	0	296
1983	175	932	0	0	1,107	31	345	0	0	376
1984	210	1,020	0	0	1,230	43	372	0	0	415
1985	40	206	0	0	246	10	82	0	0	92
1986	150	1,217	0	0	1,367	34	544	0	0	578
1987	106	1,210	0	0	1,316	24	498	0	0	522
1988	56	669	0	0	725	16	326	0	0	342
1989	13	83	0	0	96	3	42	0	0	45
1990	60	470	0	0	530	18	216	0	0	234
1991	24	977	0	0	1,001	6	423	0	0	429
1992	17	674	0	0	691	4	340	0	0	344
1993	22	1,410	0	0	1,432	6	730	0	0	736
1994	177	857	0	0	1,034	77	500	0	0	577
1995	170	1,116	0	0	1,286	72	642	0	0	714
1996	24	1,213	0	0	1,237	8	645	0	0	653
1997	18	752	495	21	1,286	4	296	206	9	515
1998	0	548	833	130	1,511	0	129	330	58	517
1999	84	569	954	122	1,729	11	215	407	55	688
2000	0	510	1,001	161	1,672	0	244	524	87	855
2001	0	1,171	864	221	2,256	0	553	483	148	1,184

Table A21. Estimated recreational catch at age of summer flounder ('000; catch type A + B1 + B2).
Includes catch type B2 (fish released alive) with 10% release mortality.

Year	AGE									Total
	0	1	2	3	4	5	6	7	8+	
1982	2,922	9,081	3,498	561	215	<1	4	0	0	16,281
1983	2,477	12,544	4,978	1,340	528	220	0	16	0	22,103
1984	2,492	10,218	4,831	1,012	147	5	<1	0	0	18,705
1985	1,042	5,208	4,382	473	148	59	0	0	0	11,312
1986	1,319	7,621	2,784	1,088	129	15	28	4	0	12,988
1987	572	5,884	2,083	448	182	1	5	6	0	9,181
1988	490	6,524	3,345	386	90	3	0	0	0	10,838
1989	87	622	946	135	16	2	5	0	0	1,813
1990	413	3,240	529	118	23	<1	1	0	0	4,324
1991	110	4,588	2,251	79	40	1	0	0	0	7,069
1992	99	3,857	1,620	90	<1	27	0	0	0	5,693
1993	93	4,880	1,981	139	<1	2	0	0	0	7,095
1994	942	4,729	1,549	171	26	<1	5	0	0	7,422
1995	405	2,673	1,426	117	26	16	<1	0	0	4,664
1996	139	4,306	3,664	372	129	1	0	0	0	8,611
1997	22	1,899	4,678	1,485	274	88	0	0	0	8,446
1998	0	1,316	3,748	2,844	515	63	4	0	0	8,490
1999	84	769	2,935	1,642	325	60	19	0	0	5,834
2000	0	1,054	4,898	2,322	609	160	4	0	0	9,047
2001	0	2,009	2,824	1,963	538	119	35	4	0	7,492

Table A22. Mean weight (kg) at age of summer flounder catch in the recreational fishery.

Year	AGE									ALL
	0	1	2	3	4	5	6	7	8+	
1982	0.22	0.40	0.57	1.33	1.84	1.89	2.98			0.46
1983	0.18	0.37	0.63	0.93	1.19	1.40				0.47
1984	0.21	0.36	0.62	0.97	1.77	2.20	4.17			0.45
1985	0.24	0.40	0.63	1.10	1.75	2.44				0.53
1986	0.23	0.45	0.75	1.29	1.74	2.72	3.48	5.96		0.58
1987	0.23	0.41	0.76	1.34	1.84	3.05	4.81	4.64		0.56
1988	0.29	0.49	0.71	1.11	1.92	2.32				0.58
1989	0.26	0.51	0.81	1.23	1.78	3.33	1.58			0.73
1990	0.30	0.46	0.97	1.44	1.68	2.90	6.46			0.54
1991	0.27	0.43	0.67	1.31	1.37	2.45				0.52
1992	0.23	0.50	0.72	1.62	2.28	3.34				0.59
1993	0.25	0.52	0.72	1.87	2.44	3.03				0.60
1994	0.44	0.58	0.69	1.44	1.92	2.83	3.90			0.61
1995	0.43	0.58	0.82	1.46	2.60	2.93	3.54			0.68
1996	0.34	0.53	0.62	1.34	1.34	2.36				0.61
1997	0.23	0.45	0.65	0.90	1.15	2.38				0.68
1998		0.41	0.61	0.81	1.26	2.51	2.79			0.70
1999	0.13	0.41	0.62	0.91	1.55	2.33	2.60			0.74
2000		0.52	0.71	0.95	1.31	2.39	3.48			0.83
2001		0.53	0.78	1.00	1.53	2.09	2.30	3.75		0.86

Table A23. Total catch at age of summer flounder (000s), ME-NC.

Year	AGE										Total
	0	1	2	3	4	5	6	7	8	9+	
1982	5,344	19,423	10,149	935	328	116	67	26	4	0	36,392
1983	4,925	28,441	10,911	2,181	693	323	16	36	5	2	47,533
1984	4,802	26,582	15,454	3,180	829	95	4	5	1	4	50,956
1985	2,078	14,623	17,979	1,767	496	252	30	5	2	1	37,233
1986	1,942	17,140	11,055	3,782	316	140	58	12	3	0	34,448
1987	1,137	17,212	10,838	1,648	544	25	29	33	11	0	31,477
1988	795	20,557	14,562	2,137	644	121	19	15	6	0	38,856
1989	960	4,790	7,306	1,692	353	55	9	3	1	0	15,169
1990	1,856	8,808	2,187	995	221	30	8	2	1	0	14,108
1991	1,001	12,149	7,148	742	217	32	3	1	0	0	21,293
1992	1,368	11,197	6,026	1,125	151	70	2	1	0	0	19,940
1993	1,285	11,235	5,601	566	73	45	20	2	1	0	18,828
1994	1,638	10,362	6,996	982	205	26	14	0	5	0	20,227
1995	592	5,828	7,303	1,239	397	77	2	1	0	0	15,440
1996	162	6,925	9,278	1,785	417	71	16	1	3	0	18,658
1997	30	2,545	8,046	3,149	553	160	11	4	0	0	14,498
1998	45	2,233	6,380	5,243	980	138	19	1	0	0	15,039
1999	181	2,185	6,260	4,018	1,161	358	55	14	0	0	14,232
2000	22	1,480	7,690	4,538	1,495	360	73	19	8	2	15,687
2001	51	2,977	4,832	3,736	1,282	365	121	28	4	3	13,399

Table A24. Mean length (cm) at age of summer flounder catch, ME-NC.

Year	AGE										ALL
	0	1	2	3	4	5	6	7	8	9+	
1982	29.4	34.5	38.8	50.7	55.3	61.0	60.7	68.0	71.2		35.7
1983	28.8	34.5	40.9	46.5	48.8	51.6	60.7	60.9	69.3	72.0	36.3
1984	29.4	33.8	39.1	45.9	51.3	57.9	66.8	68.4	74.0	70.7	36.1
1985	30.6	34.8	38.8	46.8	53.9	58.6	61.5	74.5	73.3	75.0	37.5
1986	29.7	35.6	39.9	47.5	54.0	56.2	65.8	66.4	72.8		38.2
1987	29.9	35.3	39.7	46.9	55.8	63.3	65.9	63.2	73.5		37.7
1988	32.4	35.8	39.1	46.6	53.1	60.2	69.6	68.5	72.7		37.9
1989	27.1	35.7	40.8	45.5	50.6	58.5	59.1	63.1	59.0		39.1
1990	29.6	35.1	41.9	46.8	51.4	57.4	66.4	71.7	75.2		36.6
1991	24.8	34.5	40.4	47.1	54.3	61.0	61.7	68.1			36.7
1992	29.6	36.0	41.2	46.9	49.7	61.0	58.8	72.2			37.9
1993	30.3	36.5	40.6	50.4	52.9	54.7	62.6	70.6	75.5		37.9
1994	32.2	37.1	39.3	49.6	57.3	63.4	66.3		68.5		38.3
1995	33.7	37.1	39.9	44.9	52.4	62.2	70.5	71.9			39.4
1996	32.6	36.9	38.3	45.7	51.3	54.4	58.5	63.0	66.0		38.8
1997	28.5	36.2	39.8	43.4	48.3	58.1	60.8	66.3			40.4
1998	28.7	37.2	40.0	43.4	49.5	59.3	60.9	71.1			41.6
1999	25.3	33.6	38.8	43.9	50.7	55.5	62.2	67.1	67.0		40.8
2000	18.1	37.2	40.9	44.2	49.3	58.0	60.8	60.3	66.1	67.7	42.8
2001	21.1	37.7	41.8	45.0	50.4	57.3	60.5	66.1	68.9	71.8	43.2

Table A25. Mean weight (kg) at age of summer flounder catch, ME-NC.

Year	AGE										ALL
	0	1	2	3	4	5	6	7	8	9+	
1982	0.255	0.419	0.616	1.447	1.907	2.795	2.673	3.758	4.408	4.370	0.504
1983	0.243	0.419	0.716	1.075	1.257	1.495	2.572	2.594	3.849	4.030	0.521
1984	0.251	0.398	0.632	1.046	1.500	2.163	3.302	3.620	4.640	4.800	0.518
1985	0.290	0.429	0.613	1.109	1.726	2.297	2.671	4.682	4.780		0.575
1986	0.256	0.453	0.668	1.160	1.739	1.994	3.311	4.000	4.432		0.613
1987	0.263	0.446	0.651	1.140	1.941	2.855	3.326	3.314	4.140		0.581
1988	0.319	0.462	0.624	1.130	1.739	2.485	3.888	3.545	4.316		0.588
1989	0.207	0.459	0.723	1.044	1.479	2.249	2.399	2.861	2.251		0.668
1990	0.250	0.429	0.810	1.169	1.538	2.121	3.461	3.951	5.029		0.540
1991	0.140	0.404	0.702	1.186	1.811	2.527	2.837	3.586			0.537
1992	0.246	0.467	0.749	1.222	1.390	2.696	2.302	4.479			0.595
1993	0.264	0.480	0.699	1.461	1.659	1.859	2.816	4.136	5.199		0.571
1994	0.342	0.521	0.628	1.353	2.096	2.736	3.437		3.703		0.605
1995	0.375	0.527	0.678	1.056	1.639	2.628	3.750	4.047			0.675
1996	0.327	0.504	0.570	1.080	1.545	1.957	2.546	3.200	3.164		0.621
1997	0.212	0.452	0.639	0.866	1.233	2.252	2.572	3.429			0.697
1998	0.259	0.490	0.648	0.859	1.321	2.410	2.577	3.983			0.759
1999	0.143	0.371	0.594	0.896	1.439	1.998	2.716	3.496	3.904		0.755
2000	0.066	0.509	0.692	0.924	1.331	2.214	2.586	2.728	3.359	3.532	0.850
2001	0.084	0.538	0.760	0.968	1.451	2.154	2.586	3.418	3.914	4.532	0.894

Table A26. NEFSC research trawl survey indices of abundance. Indices are stratified mean numbers (n) and weight (kg) per tow. Spring indices are for offshore strata 1-12 61-76; autumn indices are for offshore strata 1-2, 5-6, 9-10, 61, 65, 69, and 73. Winter indices (1992 and later) are for NEFSC offshore strata 1-3, 5-7, 9-11, 13-14, 16-17, 61-63, 65-67, 69-71, and 73-75. n/a = not available due to incomplete coverage. **Note that 2002 indices are from preliminary, unaudited data.**

Year	Spring (n)	Spring (kg)	Autumn (n)	Autumn (kg)
1967	n/a	n/a	1.35	1.25
1968	0.15	0.16	1.10	1.00
1969	0.19	0.16	0.59	0.61
1970	0.09	0.09	0.15	0.13
1971	0.22	0.28	0.42	0.27
1972	0.47	0.21	0.39	0.27
1973	0.76	0.54	0.87	0.63
1974	1.37	1.26	1.70	1.86
1975	1.97	1.61	3.00	2.48
1976	2.83	2.00	1.14	0.85
1977	2.84	1.74	2.17	1.75
1978	2.62	1.43	0.32	0.40
1979	0.40	0.35	1.17	0.94
1980	1.30	0.78	0.94	0.57
1981	1.50	0.80	0.91	0.72
1982	2.27	1.11	1.57	0.90
1983	0.95	0.53	0.90	0.47
1984	0.66	0.38	0.99	0.65
1985	2.38	1.20	1.24	0.87
1986	2.14	0.82	0.68	0.45
1987	0.93	0.38	0.26	0.28
1988	1.47	0.68	0.11	0.11
1989	0.32	0.24	0.20	0.08
1990	0.72	0.27	0.27	0.19
1991	1.08	0.35	0.51	0.17

Table A26 continued.

Year	Winter (n)	Winter (kg)	Spring (n)	Spring (kg)	Autumn (n)	Autumn (kg)
1992	12.30	4.90	1.20	0.46	0.85	0.49
1993	13.60	5.50	1.27	0.48	0.11	0.04
1994	12.05	6.03	0.93	0.46	0.60	0.35
1995	10.93	4.81	1.09	0.46	1.13	0.83
1996	31.25	12.35	1.76	0.67	0.71	0.45
1997	10.28	5.54	1.06	0.61	1.32	0.92
1998	7.76	5.13	1.19	0.76	2.32	1.58
1999	11.06	7.99	1.60	1.01	2.42	1.66
2000	16.01	12.74	2.14	1.70	1.90	1.82
2001	18.59	15.68	2.69	2.16	1.60	1.61
2002	22.55	18.71	2.47	2.29		

Table A27. NEFSC spring trawl survey (offshore strata 1-12, 61-76) stratified mean number of summer flounder per tow at age. **Note that 2002 indices are from preliminary, unaudited data.**

Year	AGE										ALL	
	1	2	3	4	5	6	7	8	9	10+		
1976	0.03	1.77	0.71	0.29	0.01	0.01	0.01					2.83
1977	0.61	1.31	0.71	0.10	0.09	0.01		0.01				2.84
1978	0.68	0.93	0.64	0.19	0.04	0.03	0.03			0.01		2.55
1979	0.06	0.18	0.08	0.04	0.03			0.01				0.40
1980	0.01	0.70	0.31	0.14	0.02	0.06	0.03	0.02		0.01		1.30
1981	0.60	0.54	0.17	0.08	0.05	0.03	0.02	0.01				1.50
1982	0.70	1.43	0.12	0.02								2.27
1983	0.32	0.39	0.19	0.03	0.01				0.01			0.95
1984	0.17	0.33	0.09	0.05		0.01	0.01					0.66
1985	0.55	1.56	0.21	0.04	0.02							2.38
1986	1.48	0.43	0.20	0.02	0.01							2.14
1987	0.47	0.43	0.02	0.01								0.93
1988	0.60	0.81	0.07	0.02								1.50
1989	0.06	0.23	0.02	0.01								0.32
1990	0.63	0.03	0.06									0.72
1991	0.79	0.27		0.02								1.08
1992	0.77	0.41	0.01		0.01							1.20
1993	0.73	0.50	0.04									1.27
1994	0.35	0.53	0.04	0.01								0.93
1995	0.79	0.27	0.02				0.01					1.09
1996	1.08	0.56	0.12									1.76
1997	0.29	0.67	0.09	0.01								1.06
1998	0.27	0.52	0.32	0.06	0.01	0.01						1.19
1999	0.22	0.74	0.48	0.13	0.02	0.01						1.60
2000	0.19	1.03	0.63	0.12	0.15	0.02						2.14
2001	0.48	0.89	1.02	0.20	0.05	0.04	0.01					2.69
2002	0.35	0.87	0.75	0.31	0.09	0.05	0.02	0.01	0.01	0.01		2.47
Mean	0.49	0.68	0.27	0.09	0.04	0.03	0.02	0.01	0.01	0.01		1.55

Table A28. NEFSC spring trawl survey (offshore strata 1-12, 61-76) summer flounder mean length (cm) at age. **Note that 2002 indices are from preliminary, unaudited data.**

Year	AGE												
	1	2	3	4	5	6	7	8	9	10	11	12	
1976	25.9	36.0	43.1	53.5	60.8	70.0	72.0						
1977	25.2	35.0	43.4	51.7	59.6	63.0		74.0					
1978	27.3	34.8	40.9	46.9	53.3	59.5	64.0				65.0	75.0	
1979	25.1	37.0	43.2	51.5	54.8			77.0					
1980	29.0	28.8	38.1	44.2	51.1	53.0	67.7	77.0		81.0			
1981	25.3	32.2	39.8	48.9	55.7	62.9	67.8	74.0					
1982	28.6	36.2	47.3	46.7									
1983	25.5	37.7	43.4	53.3	61.4				77.0				
1984	27.1	33.9	41.8	56.7		63.0	56.0						
1985	26.8	36.1	42.8	57.2	54.5								
1986	28.6	36.3	46.0	56.0	63.0								
1987	27.8	37.7	47.3	58.0									
1988	27.7	36.3	47.8	45.0									
1989	30.4	39.2	51.5	60.0									
1990	28.3	47.7	48.6										
1991	27.0	38.8		42.1									
1992	27.9	37.7	57.0		72.0								
1993	27.5	37.9	51.9										
1994	33.0	36.8	48.0	53.1									
1995	29.4	40.0	46.4				72.0						
1996	29.8	36.2	47.2										
1997	29.4	38.3	49.4	54.1									
1998	27.6	39.1	42.7	50.5	50.0	60.0							
1999	28.5	35.8	42.9	49.1	57.7	64.0							
2000	29.5	37.9	44.3	49.4	55.4	60.5							
2001	29.6	39.1	44.9	53.4	60.5	63.8	55.0						
2002	29.7	39.3	45.8	52.7	58.1	63.5	62.1	66.0	54.0	68.0			
Mean	28.1	37.1	45.6	51.5	57.9	62.1	64.6	73.6	65.5	74.5	65.0	75.0	

Table A29. NEFSC autumn trawl survey (inshore strata 1-61, offshore strata <= 55 m (1,5,9,61,65,69,73)) mean number of summer flounder per tow at age.

Year	AGE								ALL
	0	1	2	3	4	5	6	7	
1982	0.55	1.52	0.40	0.03					2.50
1983	0.96	1.46	0.34	0.12	0.01	0.01			2.90
1984	0.18	1.39	0.43	0.07	0.01	0.01	<0.01		2.09
1985	0.59	0.80	0.46	0.05		0.02			1.92
1986	0.39	0.83	0.11	0.11		<0.01			1.44
1987	0.07	0.58	0.20	0.03	0.02				0.90
1988	0.06	0.62	0.18	0.03					0.89
1989	0.31	0.21	0.05						0.57
1990	0.44	0.38	0.03	0.04		<0.01			0.89
1991	0.76	0.84	0.09		0.01	<0.01	<0.01		1.70
1992	0.99	1.04	0.25	0.03	0.01	<0.01			2.32
1993	0.23	0.80	0.03	0.01			<0.01		1.07
1994	0.75	0.67	0.09	0.01	0.01				1.53
1995	0.93	1.16	0.28	0.02	0.01				2.40
1996	0.11	1.24	0.57	0.04					1.96
1997	0.17	1.29	1.14	0.29	0.02	0.01	0.01	<0.01	2.93
1998	0.38	2.13	1.63	0.33	0.04	0.01			4.52
1999	0.21	1.73	1.49	0.31	0.04	0.01			3.79
2000	0.22	1.20	1.22	0.40	0.15	0.06	0.03	0.04	3.32
2001	0.08	1.36	0.93	0.39	0.11	0.11	0.01	0.01	3.00
Mean	0.42	1.06	0.50	0.13	0.04	0.02	0.01	0.02	2.13

Table A30. NEFSC autumn trawl survey (inshore strata 1-61, offshore strata <= 55 m (1,5,9,61,65,69,73)) summer flounder mean length (cm) at age.

Year	AGE							
	0	1	2	3	4	5	6	7
1982	28.2	35.1	43.3	47.1				
1983	24.5	33.5	42.7	52.3	60.0	58.0		
1984	23.5	33.6	41.1	46.5	62.6	65.0	70.0	
1985	25.5	35.4	43.1	53.0		63.0		
1986	23.1	35.7	40.8	53.5		57.0		
1987	27.4	34.4	46.0	53.6	47.7			
1988	30.1	35.9	43.4	61.7				
1989	25.8	35.8	48.2	60.0				
1990	24.8	36.0	45.2	54.9	60.0	68.0		
1991	23.2	34.7	43.7	59.0	61.2	67.0	69.0	
1992	25.3	34.4	42.7	51.3	58.8	68.0		
1993	29.9	35.1	44.0	58.1	59.0		70.0	
1994	27.5	38.0	44.3	61.5	57.0			
1995	26.5	36.7	47.4	59.0	65.0			
1996	26.6	35.4	41.6	56.1				
1997	28.4	35.1	40.3	46.5	51.7	59.3	56.0	63.0
1998	24.0	34.7	42.6	50.2	58.2	68.6		
1999	24.1	34.7	40.0	48.5	55.6	56.8		
2000	25.2	35.7	42.1	48.6	53.5	59.9	68.0	66.5
2001	22.9	36.3	42.5	50.0	54.1	62.1	56.0	67.0
Mean	25.8	35.3	43.3	53.6	57.5	62.7	64.8	65.5

Table A31. NEFSC Winter trawl survey (offshore strata from 27-185 meters (15-100 fathoms): 1-3, 5-7, 9-11, 13-14, 16-17, 61-63, 65-67, 69-71, 73-75; Southern Georges Bank to Cape Hatteras): mean number and mean weight (kg) per tow. **Note that 2002 indices are from preliminary, unaudited data.**

Year	Stratified mean number per tow	Coefficient of variation	Stratified mean weight (kg) per tow	Coefficient of variation
1992	12.295	15.6	4.898	15.4
1993	13.604	15.2	5.497	11.9
1994	12.051	17.8	6.033	16.1
1995	10.930	12.0	4.808	11.6
1996	31.246	24.2	12.351	22.0
1997	10.283	24.0	5.544	16.6
1998	7.756	20.7	5.131	16.6
1999	11.055	13.3	7.987	11.4
2000	15.759	13.0	12.593	12.8
2001	18.589	11.4	15.682	13.2
2002	22.550	15.6	18.705	15.7

Table A32. NEFSC Winter trawl survey (offshore strata from 27-185 meters (15-100 fathoms): 1-3, 5-7, 9-11, 13-14, 16-17, 61-63, 65-67, 69-71, 73-75; Southern Georges Bank to Cape Hatteras) : mean number at age per tow. **Note that 2002 indices are from preliminary, unaudited data.**

Year	AGE												Total	
	1	2	3	4	5	6	7	8	9	10	11	12+		
1992	7.15	4.74	0.33	0.04	0.01	0.03								12.29
1993	6.50	6.70	0.31	0.05	0.02	0.02								13.60
1994	3.76	7.20	0.82	0.26			0.01							12.05
1995	6.07	4.59	0.25	0.02										10.93
1996	22.17	8.33	0.60	0.12	0.03									31.25
1997	3.86	4.80	1.04	0.43	0.11	0.04								10.28
1998	1.68	3.25	2.29	0.42	0.10	0.01				0.01				7.76
1999	2.11	4.80	2.90	0.84	0.28	0.06	0.04	0.02		0.01				11.06
2000	0.70	6.52	4.96	2.51	0.78	0.17	0.08	0.04	0.01					15.76
2001	3.06	5.36	6.40	2.44	0.80	0.37	0.09	0.05	0.01		0.01	0.01		18.57
2002	2.77	10.65	5.57	2.25	0.84	0.33	0.12	0.02	0.02					22.55
Mean	5.41	6.06	2.35	0.85	0.33	0.13	0.07	0.03	0.01	0.01	0.01	0.01		15.09

Table A33. NEFSC Winter trawl survey (offshore strata from 27-185 meters (15-100 fathoms): 1-3, 5-7, 9-11, 13-14, 16-17, 61-63, 65-67, 69-71, 73-75; Southern Georges Bank to Cape Hatteras): summer flounder mean length (cm) at age. **Note that 2002 indices are from preliminary, unaudited data.**

Year	AGE											
	1	2	3	4	5	6	7	8	9	10	11	12+
1992	28.0	38.4	48.8	60.0	70.0	69.0						
1993	27.9	37.3	49.4	58.7	58.5	65.0						
1994	28.0	37.5	46.1	56.4			69.0					
1995	27.4	40.2	50.8	59.6								
1996	30.9	38.2	51.4	61.2	63.6							
1997	29.2	37.8	44.5	50.0	57.3	62.5						
1998	28.4	38.0	43.3	52.2	59.7	66.3				64.0		
1999	28.4	36.9	44.5	51.6	59.2	64.1	70.2	68.8		78.0		
2000	28.2	35.9	41.4	49.0	56.3	62.2	68.2	67.1	77.0			
2001	28.3	37.3	43.6	50.2	56.3	61.0	65.3	69.4	58.6		70.0	74.0
2002	30.0	38.5	44.5	51.4	58.1	62.2	66.4	62.7	75.0			
Mean	28.6	37.8	46.2	54.6	59.9	64.0	67.8	67.0	70.2	71.0	70.0	74.0

Table A34. MADMF Spring survey cruises: stratified mean number per tow at age.

Year	Age									Total
	0	1	2	3	4	5	6	7	8+	
1978		0.097	0.520	0.274	0.221		0.042			1.154
1979			0.084	0.087	0.147	0.048	0.011			0.377
1980		0.055	0.061	0.052	0.075	0.053	0.055	0.011		0.362
1981		0.405	0.558	0.074	0.031	0.043	0.060		0.031	1.202
1982		0.376	1.424	0.118	0.084	0.020		0.010		2.032
1983		0.241	1.304	0.544	0.021	0.009	0.003			2.122
1984		0.042	0.073	0.063	0.111	0.010				0.299
1985		0.142	1.191	0.034	0.042					1.409
1986		0.966	0.528	0.140	0.008					1.642
1987		0.615	0.583	0.012			0.011			1.221
1988		0.153	0.966	0.109	0.012					1.240
1989			0.338	0.079			0.010			0.427
1990		0.247	0.021	0.079	0.012					0.359
1991		0.029	0.048	0.010						0.087
1992		0.274	0.320	0.080		0.011	0.011			0.696
1993		0.120	0.470	0.060	0.010		0.020			0.680
1994		1.770	1.160	0.050	0.020		0.020			3.020
1995		0.089	1.245	0.050						1.384
1996		0.072	0.641	0.110	0.012					0.835
1997		0.512	1.212	0.169	0.109		0.005			2.007
1998		0.137	1.144	0.630	0.041	0.047				1.999
1999		0.073	0.814	1.042	0.286	0.028		0.015		2.258
2000		0.224	1.566	1.137	0.296	0.202	0.049		0.012	3.486
2001		0.172	0.963	0.687	0.216	0.054				2.092
Mean		0.310	0.718	0.237	0.092	0.048	0.025	0.012	0.022	1.350

Table A35. MADMF Autumn survey cruises: stratified mean number per tow at age.

Year	Age									Total
	0	1	2	3	4	5	6	7	8+	
1978		0.011	0.124	0.024		0.007				0.166
1979			0.047	0.101		0.019				0.167
1980		0.114	0.326	0.020	0.020	0.010				0.490
1981	0.009	0.362	0.367	0.011						0.749
1982		0.255	1.741	0.016						2.012
1983		0.026	0.583	0.140	0.004					0.753
1984	0.033	0.453	0.249	0.120	0.008					0.863
1985	0.051	0.108	1.662	0.033						1.854
1986	0.128	2.149	0.488	0.128						2.893
1987		1.159	0.598	0.010	0.004					1.771
1988		0.441	0.414	0.018						0.873
1989			0.286	0.024						0.310
1990		0.108		0.012						0.120
1991	0.021	0.493	0.262	0.010						0.786
1992		1.110	0.170							1.280
1993	0.010	0.300	0.430	0.020	0.020					0.780
1994	0.050	2.130	0.070							2.250
1995	0.032	0.401	0.323	0.013						0.769
1996	0.020	0.709	1.165	0.082	0.039	0.004				2.019
1997		0.462	1.399	0.323	0.018	0.030				2.232
1998		0.011	0.553	0.248	0.016	0.011				0.839
1999	0.058	0.325	0.878	0.359	0.035					1.655
2000	0.071	1.300	2.129	0.443	0.085	0.084	0.012	0.015		4.139
2001	0.011	1.166	1.000	0.271	0.025	0.000	0.010	0.012		2.494
Mean	0.041	0.618	0.664	0.110	0.025	0.021	0.011	0.013		1.344

Table A36. MADMF seine survey: total catch of age-0 summer flounder.

Year	Total catch
1982	3
1983	3
1984	1
1985	19
1986	5
1987	5
1988	2
1989	3
1990	11
1991	4
1992	0
1993	2
1994	1
1995	13
1996	7
1997	0
1998	12
1999	13
2000	10
2001	1
Mean	6

Table A37. CTDEP spring trawl survey: summer flounder index of abundance, geometric mean number per tow at age.

Year	Age								Total
	0	1	2	3	4	5	6	7	
1984	0.000	0.314	0.271	0.044	0.000	0.000	0.000	0.000	0.629
1985	0.000	0.015	0.325	0.040	0.058	0.003	0.000	0.000	0.441
1986	0.000	0.753	0.100	0.082	0.008	0.006	0.000	0.000	0.949
1987	0.000	0.951	0.086	0.014	0.004	0.001	0.000	0.001	1.057
1988	0.000	0.232	0.223	0.035	0.009	0.001	0.000	0.000	0.500
1989	0.000	0.013	0.049	0.024	0.016	0.000	0.000	0.000	0.102
1990	0.000	0.304	0.022	0.013	0.006	0.001	0.000	0.001	0.347
1991	0.000	0.392	0.189	0.029	0.028	0.001	0.000	0.000	0.639
1992	0.000	0.319	0.188	0.021	0.004	0.023	0.000	0.000	0.555
1993	0.000	0.320	0.151	0.015	0.018	0.003	0.000	0.001	0.508
1994	0.000	0.496	0.314	0.025	0.018	0.005	0.000	0.002	0.860
1995	0.000	0.199	0.051	0.020	0.005	0.000	0.000	0.006	0.281
1996	0.000	0.578	0.266	0.086	0.023	0.004	0.000	0.004	0.961
1997	0.000	0.391	0.507	0.057	0.036	0.004	0.002	0.002	0.999
1998	0.000	0.064	0.594	0.503	0.116	0.006	0.025	0.002	1.310
1999	0.000	0.245	0.593	0.385	0.139	0.053	0.025	0.000	1.440
2000	0.000	0.321	0.726	0.524	0.074	0.111	0.034	0.000	1.790
2001	0.000	0.841	0.340	0.365	0.120	0.043	0.032	0.007	1.748
Mean	0.000	0.347	0.274	0.113	0.033	0.013	0.005	0.001	0.786

Table A38. CTDEP autumn trawl survey: summer flounder index of abundance, geometric mean number per tow at age.

Year	Age								Total
	0	1	2	3	4	5	6	7	
1984	0.000	0.571	0.331	0.072	0.014	0.004	0.004	0.003	0.999
1985	0.240	0.339	0.528	0.075	0.001	0.008	0.000	0.000	1.191
1986	0.172	1.170	0.298	0.072	0.006	0.001	0.000	0.000	1.719
1987	0.075	1.067	0.223	0.033	0.003	0.000	0.000	0.000	1.401
1988	0.015	0.884	0.481	0.037	0.002	0.001	0.000	0.000	1.420
1989	0.000	0.029	0.095	0.015	0.001	0.000	0.000	0.000	0.140
1990	0.032	0.674	0.110	0.042	0.007	0.005	0.000	0.000	0.870
1991	0.036	0.826	0.340	0.036	0.013	0.005	0.004	0.000	1.260
1992	0.013	0.570	0.366	0.046	0.016	0.009	0.000	0.000	1.020
1993	0.084	0.827	0.152	0.039	0.003	0.001	0.002	0.001	1.109
1994	0.132	0.300	0.085	0.024	0.009	0.000	0.000	0.000	0.550
1995	0.023	0.384	0.117	0.012	0.002	0.001	0.000	0.002	0.541
1996	0.069	0.887	1.188	0.042	0.005	0.000	0.000	0.000	2.191
1997	0.033	0.681	1.373	0.373	0.021	0.014	0.004	0.001	2.500
1998	0.000	0.269	1.054	0.321	0.054	0.021	0.000	0.000	1.719
1999	0.044	0.679	1.484	0.346	0.114	0.011	0.002	0.000	2.680
2000	0.112	0.395	0.871	0.341	0.124	0.043	0.011	0.013	1.910
2001	0.021	2.689	1.137	0.436	0.110	0.018	0.005	0.001	4.417
Mean	0.064	0.621	0.535	0.113	0.023	0.007	0.002	0.001	1.366

Table A39. RIDFW autumn trawl survey summer flounder index of abundance. RIDFW lengths aged with NEFSC autumn trawl survey age-length keys.

Year	Age										Total
	0	1	2	3	4	5	6	7	8	9	
1980	0.131	0.203	0.392	0.074	0.013	0.000	0.000	0.000	0.000	0.000	0.813
1981	0.304	0.971	1.740	0.199	0.013	0.003	0.002	0.002	0.001	0.001	3.236
1982	0.024	0.209	0.516	0.071	0.005	0.000	0.000	0.000	0.000	0.001	0.826
1983	0.030	0.135	0.420	0.110	0.014	0.001	0.000	0.001	0.000	0.001	0.712
1984	0.122	0.424	0.701	0.092	0.013	0.003	0.000	0.000	0.000	0.000	1.355
1985	0.342	0.218	0.338	0.048	0.004	0.001	0.000	0.001	0.000	0.000	0.952
1986	0.547	1.183	1.518	0.179	0.012	0.000	0.002	0.001	0.001	0.001	3.444
1987	0.135	0.503	0.579	0.121	0.014	0.001	0.003	0.003	0.001	0.000	1.360
1988	0.014	0.167	0.351	0.036	0.003	0.000	0.000	0.000	0.000	0.000	0.571
1989	0.000	0.001	0.037	0.030	0.003	0.000	0.000	0.000	0.000	0.000	0.071
1990	0.051	0.262	0.475	0.042	0.003	0.000	0.000	0.000	0.000	0.000	0.833
1991	0.002	0.060	0.128	0.034	0.007	0.000	0.000	0.000	0.000	0.000	0.231
1992	0.065	0.394	0.685	0.185	0.033	0.003	0.004	0.001	0.001	0.000	1.371
1993	0.024	0.152	0.396	0.139	0.021	0.002	0.000	0.001	0.000	0.000	0.735
1994	0.005	0.045	0.126	0.013	0.001	0.000	0.000	0.000	0.000	0.000	0.190
1995	0.031	0.175	0.393	0.140	0.013	0.005	0.000	0.004	0.000	0.001	0.762
1996	0.193	0.704	1.346	0.171	0.012	0.001	0.000	0.001	0.000	0.001	2.429
1997	0.080	0.557	1.053	0.174	0.012	0.003	0.000	0.002	0.000	0.000	1.881
1998	0.008	0.087	0.359	0.087	0.004	0.001	0.000	0.001	0.000	0.001	0.548
1999	0.241	0.931	1.888	0.254	0.020	0.005	0.000	0.002	0.000	0.000	3.341
2000	0.365	0.506	1.305	0.654	0.054	0.035	0.000	0.000	0.000	0.000	2.919
2001											
Mean	0.129	0.376	0.702	0.136	0.013	0.003	0.001	0.001	0.000	0.000	1.361

Table A40. RIDFW monthly fixed station trawl survey summer flounder index of abundance.

Year	Mean number/tow	Mean kg/tow	Mean age 0 number/tow	Mean age 1 number/tow	Mean age 2+ number/tow
1990	0.655	0.630	0.000	0.328	0.328
1991	0.111	0.100	0.000	0.037	0.074
1992	0.692	0.680	0.019	0.269	0.404
1993	0.419	0.580	0.016	0.065	0.339
1994	0.317	0.270	0.016	0.143	0.159
1995	0.891	0.810	0.000	0.359	0.531
1996	2.353	1.790	0.137	1.059	1.157
1997	1.633	1.390	0.033	0.700	0.900
1998	0.952	0.890	0.000	0.270	0.683
1999	2.038	1.600	0.135	0.962	0.942
2000	5.420	4.350	0.260	2.140	3.020
2001					
Mean	1.407	1.190	0.056	0.576	0.776

Age 0: Proportion of catch < 30 cm

Age 1: Proportion of 30 cm ≤ catch ≤ 39 cm

Age 2+: Proportion of fish > 39 cm

Table A41. NJBMF trawl survey, April - October: index of summer flounder abundance.

Year	Age					Total
	0	1	2	3	4+	
1988	0.29	4.22	1.19	0.01	0.00	5.71
1989	1.25	0.54	0.40	0.01	0.01	2.21
1990	1.88	1.89	0.15	0.05	0.00	3.97
1991	1.50	3.11	0.32	0.02	0.01	4.96
1992	1.34	3.76	0.76	0.08	0.05	5.99
1993	3.52	6.95	0.27	0.04	0.02	10.80
1994	2.22	1.46	0.13	0.01	0.03	3.85
1995	4.95	2.93	0.28	0.05	0.16	8.37
1996	1.65	5.16	2.71	0.18	0.05	9.75
1997	1.64	8.25	5.25	1.02	0.18	16.34
1998	0.67	5.80	2.67	0.29	0.03	9.46
1999	1.03	6.12	3.46	0.65	0.18	11.44
2000	0.95	3.91	1.82	0.45	0.22	7.35
2001	0.62	3.32	1.18	0.41	0.14	5.67
Mean	1.68	4.10	1.47	0.23	0.08	7.56

Table A42. DEDFW 16 foot trawl survey: index of summer flounder recruitment at age-0 in the Delaware Estuary.

Year	Geometric Mean number per tow
1980	0.12
1981	0.06
1982	0.11
1983	0.03
1984	0.08
1985	0.06
1986	0.10
1987	0.14
1988	0.01
1989	0.12
1990	0.23
1991	0.07
1992	0.31
1993	0.02
1994	0.29
1995	0.17
1996	0.03
1997	0.02
1998	0.03
1999	0.05
2000	0.18
2001	0.07
Mean	0.10

Table A43. DEDFW 16 foot trawl survey: index of summer flounder recruitment at age-0 in the Delaware Inland Bays.

Year	Geometric Mean number per tow
1986	0.01
1987	0.00
1988	0.00
1989	0.15
1990	0.02
1991	0.94
1992	0.06
1993	0.04
1994	0.70
1995	0.23
1996	0.05
1997	0.33
1998	0.99
1999	0.62
2000	0.70
2001	0.05
Mean	0.31

Table A44. DEDFW Delaware Bay 30 foot trawl survey: index of summer flounder abundance.

Year	Age					Total
	0	1	2	3	4+	
1991	1.44	1.13	0.18	0.04	0.00	2.79
1992	0.47	0.28	0.08	0.00	0.00	0.83
1993	0.04	1.56	0.73	0.07	0.00	2.40
1994	2.28	0.14	0.22	0.08	0.00	2.72
1995	0.94	1.00	0.28	0.10	0.09	2.41
1996	0.46	0.73	0.48	0.10	0.02	1.79
1997	0.03	0.12	0.49	0.47	0.16	1.27
1998	0.11	0.31	0.83	0.29	0.12	1.66
1999	0.20	0.06	0.77	0.47	0.19	1.69
2000	0.79	0.24	0.30	0.28	0.23	1.84
2001	0.34	1.55	0.49	0.26	0.13	2.77
Mean	0.65	0.65	0.44	0.20	0.09	2.02

Table A45. MD DNR Coastal Bays trawl survey: index of summer flounder recruitment at age-0.

Year	Geometric mean	Lower 95% CI	Upper 95% CI
1972	12.3	6.5	21.8
1973	4.2	3.0	5.7
1974	5.1	3.9	6.6
1975	2.1	1.6	2.6
1976	1.9	1.4	2.6
1977	2.4	1.8	3.2
1978	3.2	2.4	4.1
1979	2.9	2.0	4.1
1980	4.2	2.6	6.2
1981	3.9	2.6	5.4
1982	2.0	0.8	3.7
1983	10.6	6.0	17.9
1984	5.4	3.1	8.7
1985	5.6	3.6	8.1
1986	16.2	10.1	25.2
1987	4.6	2.4	7.8
1988	0.5	0.3	0.8
1989	1.3	0.9	1.9
1990	2.1	1.6	2.7
1991	3.1	2.4	3.9
1992	3.5	2.5	4.7
1993	1.6	1.2	2.1
1994	8.2	6.5	10.3
1995	5.0	4.0	6.2
1996	2.6	2.0	3.2
1997	3.3	2.5	4.3
1998	5.2	4.2	6.6
1999	3.4	2.6	4.2
2000	4.1	3.1	5.2
2001	5.3	4.1	6.9
Mean	4.5		

Table A46. VIMS juvenile fish trawl survey, VA rivers: index of summer flounder recruitment at age-0.

Year	Geometric mean catch per trawl	Lower 95% confidence limit	Upper 95% confidence limit	Number of samples
1979	1.0	0.6	1.6	48
1980	7.6	5.0	11.3	58
1981	5.1	3.5	7.3	61
1982	4.3	2.8	6.4	60
1983	5.2	3.7	7.1	62
1984	1.9	1.2	2.9	45
1985	1.1	0.6	1.9	27
1986	1.3	0.8	1.8	53
1987	0.4	0.2	0.8	52
1988	0.5	0.2	1.0	36
1989	1.0	0.6	1.4	36
1990	2.6	1.7	3.8	36
1991	1.4	0.9	2.1	36
1992	0.5	0.2	0.8	36
1993	0.5	0.3	0.8	36
1994	1.1	0.5	1.9	36
1995	0.7	0.4	1.2	36
1996	0.6	0.3	1.0	36
1997	0.7	0.4	1.1	36
1998	0.2	0.0	0.3	36
1999	0.4	0.2	0.6	36
2000	0.5	0.2	0.9	36
2001	0.5	0.2	0.9	36
Mean	1.7			

Table A47. North Carolina Division of Marine Fisheries (NCDMF) Pamlico Sound trawl survey:
June index of summer flounder recruitment at age-0.

Year	Mean number per tow
1987	19.86
1988	2.61
1989	6.63
1990	4.27
1991	5.85
1992	9.14
1993	5.13
1994	8.17
1995	5.59
1996	30.67
1997	14.14
1998	9.96
1999	n/a
2000	3.94
2001	22.03
Mean	10.57

Table A48. Summary of age-0 summer flounder recruitment indices from NEFSC and state surveys, Massachusetts to North Carolina.

Survey	YEAR CLASS																							
	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001		
CT					0.00	0.24	0.17	0.08	0.02	0.00	0.03	0.04	0.01	0.08	0.13	0.02	0.07	0.03	0.00	0.04	0.11	0.02		
RI Autumn	0.13	0.31	0.02	0.03	0.12	0.34	0.55	0.14	0.01	0.00	0.05	0.01	0.07	0.02	0.01	0.03	0.17	0.08	0.01	0.24	0.37			
RI											0.00	0.00	0.02	0.02	0.02	0.00	0.14	0.03	0.00	0.14	0.26			
MA Seine			3	3	1	19	5	5	2	3	11	4	0	2	1	13	7	0	12	13	10	1		
NJ Trawl									0.29	1.25	1.88	1.50	1.34	3.52	2.22	4.95	1.65	1.64	0.67	1.03	0.95	0.62		
DE: 16 ft	0.12	0.06	0.11	0.03	0.08	0.06	0.10	0.14	0.01	0.12	0.23	0.07	0.31	0.02	0.29	0.17	0.03	0.02	0.03	0.05	0.18	0.07		
DE: 16 ft									0.01	0.00	0.00	0.15	0.02	0.94	0.06	0.04	0.70	0.23	0.05	0.33	0.99	0.62	0.70	0.05
DE: 30ft												1.44	0.47	0.04	2.28	0.94	0.46	0.03	0.11	0.20	0.79	0.34		
MD	4.2	3.9	2.0	10.6	5.4	5.6	16.2	4.6	0.5	1.3	2.1	3.1	3.5	1.6	8.2	5.0	2.6	3.3	5.2	3.4	4.1	5.3		
VIMS	7.6	5.1	4.3	5.2	1.9	1.1	1.3	0.4	0.5	1.0	2.6	1.4	0.5	0.5	1.1	0.7	0.6	0.7	0.2	0.4	0.5	0.5		
NC								19.86	2.61	6.63	4.27	5.85	9.14	5.13	8.17	5.59	30.67	14.14	9.96	n/a	3.94	22.03		
NEFSC			0.55	0.96	0.18	0.59	0.39	0.07	0.06	0.31	0.44	0.76	0.99	0.23	0.75	0.93	0.11	0.17	0.38	0.21	0.22	0.08		

Table A49. Commercial and recreational fishery landings, estimated discard, and total catch statistics (metric tons) as used in the assessment of summer flounder, Maine to North Carolina, compared with VPA estimates of total catch biomass.

Year	Commercial			Recreational			Total			VPA Catch	VPA:Catch ratio
	Landings	Discard	Catch	Landings	Discard	Catch	Landings	Discard	Catch		
1982	10,400	n/a	10,400	8,267	296	8,563	18,667	296	18,963	18,602	0.981
1983	13,403	n/a	13,403	12,687	376	13,063	26,090	376	26,466	25,142	0.950
1984	17,130	n/a	17,130	8,512	415	8,927	25,642	415	26,057	26,874	1.031
1985	14,675	n/a	14,675	5,665	92	5,757	20,340	92	20,432	21,828	1.068
1986	12,186	n/a	12,186	8,102	578	8,680	20,288	578	20,866	21,561	1.033
1987	12,271	n/a	12,271	5,519	522	6,041	17,790	522	18,312	18,551	1.013
1988	14,686	n/a	14,686	6,733	342	7,075	21,419	342	21,761	23,442	1.077
1989	8,125	709	8,834	1,435	45	1,480	9,560	754	10,314	10,388	1.007
1990	4,199	1,214	5,413	2,329	234	2,563	6,528	1,448	7,976	7,759	0.973
1991	6,224	1,052	7,276	3,611	429	4,040	9,835	1,481	11,316	11,730	1.037
1992	7,529	690	8,219	3,242	344	3,586	10,771	1,034	11,805	12,167	1.031
1993	5,715	846	6,561	3,484	736	4,220	9,199	1,582	10,781	10,992	1.020
1994	6,588	906	7,494	4,111	577	4,688	10,699	1,483	12,182	12,542	1.030
1995	6,977	308	7,285	2,496	714	3,210	9,473	1,022	10,495	10,648	1.015
1996	5,770	463	6,233	4,704	615	5,319	10,474	1,078	11,552	11,794	1.021
1997	3,994	326	4,320	5,378	627	6,005	9,372	953	10,325	10,240	0.992
1998	5,080	389	5,469	5,659	517	6,176	10,739	906	11,645	11,575	0.994
1999	4,820	1,548	6,368	3,795	688	4,483	8,615	2,236	10,851	10,847	1.000
2000	5,085	726	5,811	7,090	855	7,945	12,175	1,581	13,756	13,446	0.977
2001	4,916	639	5,555	5,250	1,184	6,434	10,166	1,823	11,989	12,058	1.006
Mean	8,489	755	8,979	5,403	509	5,913	13,892	1,000	14,892	15,109	1.013

Table A50. Virtual Population Analysis (VPA) for summer flounder, 1982-2001.

Fisheries Assessment Toolbox Summer flounder: 2002 Run Number F35-2
 5/20/2002 6:46:32 PM
 FACT Version 1.5.0
 Summer flounder 2002: 1982 - 2001
 Input Parameters and Options Selected

Natural mortality is 0.2 for all ages and years; Oldest age (not in the plus group) is 6; For all years prior to the terminal year (19), back calculated stock sizes for the following ages used to estimate total mortality (Z) for age 6 : 3 4 5 6. Stock size of the 7 + group is then calculated using the following method: CATCH EQUATION

Partial recruitment estimate for 2002

0	0.01
1	0.2
2	0.8
3	1
4	1
5	1
6	1

The Indices that will be used in this run are:

1	NEC_W1
2	NEC_W2
3	NEC_W3
4	NEC_W4
5	NEC_W5:7
6	NEC_S1
7	NEC_S2
8	NEC_S3
9	NEC_S4
10	NEC_S5:7
11	NEC_F2
12	NEC_F3
13	NEC_F4
14	MA_S2
15	MA_S3
16	MA_F3
17	MA_F4
18	CT_S2
19	CT_S3
20	CT_S4
21	CT_F2
22	CT_F3
23	CT_F4
24	CT_F5:7
25	RI_F3
26	RI_F4
27	RI_X2
28	NJ1
29	NJ2
30	DE2
31	DE3
32	CT_Y0
33	VA_RY0
34	NC_Y0
35	MD_Y0
36	NJ_Y0
37	NEC_Y0
38	MA_Y0
39	RI_Y0
40	DE_EY0
41	RI_XY0

Table A50 continued.

STOCK NUMBERS (Jan 1) in thousands							
	1982	1983	1984	1985	1986	1987	1988
0	74269	80323	48380	48579	53444	43921	13033
1	42907	55970	61306	35265	37893	41999	34931
2	16205	17555	20090	26141	15641	15515	18812
3	2203	4085	4500	2465	5134	2803	2896
4	807	957	1371	807	419	782	804
5	161	364	157	372	212	57	148
6	152	27	06	42	77	47	24
7	67	70	14	11	19	69	26
0+	136771	159350	135824	113683	112840	105194	70674
	1989	1990	1991	1992	1993	1994	1995
0	27270	30353	28687	32322	33258	35480	39619
1	9951	21458	23172	22581	25225	26067	27566
2	9998	3813	9599	7979	8357	10487	11966
3	2226	1575	1143	1391	1080	1774	2256
4	438	291	389	264	121	372	564
5	75	39	38	122	80	33	119
6	11	12	05	03	37	25	03
7	05	04	02	01	05	09	02
0+	49974	57546	63035	64664	68163	74245	82095
	1996	1997	1998	1999	2000	2001	2002
0	32864	35613	39817	30766	39455	26594	n/a
1	31902	26760	29130	32559	25026	32283	21727
2	17296	19853	19607	21829	24680	19150	23737
3	3189	5766	8974	10280	12208	13248	11307
4	726	996	1871	2603	4781	5889	7466
5	102	217	315	645	1081	2561	3662
6	28	20	33	133	204	559	1767
7	05	07	02	33	80	161	448
0+	86111	89231	99748	98849	107514	100445	n/a

Table A50 continued.

FISHING MORTALITY							
	1982	1983	1984	1985	1986	1987	1988
0	0.08	0.07	0.12	0.05	0.04	0.03	0.07
1	0.69	0.82	0.65	0.61	0.69	0.60	1.05
2	1.18	1.16	1.90	1.43	1.52	1.48	1.93
3	0.63	0.89	1.52	1.57	1.68	1.05	1.69
4	0.60	1.61	1.10	1.14	1.79	1.47	2.17
5	1.60	3.95	1.11	1.38	1.31	0.65	2.36
6	0.67	1.10	1.47	1.52	1.80	1.16	1.96
7	0.67	1.10	1.47	1.52	1.80	1.16	1.96
	1989	1990	1991	1992	1993	1994	1995
0	0.04	0.07	0.04	0.05	0.04	0.05	0.02
1	0.76	0.60	0.87	0.79	0.68	0.58	0.27
2	1.65	1.00	1.73	1.80	1.35	1.34	1.12
3	1.83	1.20	1.26	2.24	0.87	0.95	0.93
4	2.22	1.82	0.96	1.00	1.10	0.94	1.51
5	1.64	1.92	2.51	1.00	0.97	2.08	1.26
6	2.07	1.34	1.24	1.98	0.92	0.98	1.07
7	2.07	1.34	1.24	1.98	0.92	0.98	1.07
	1996	1997	1998	1999	2000	2001	
0	0.01	0.00	0.00	0.01	0.00	0.00	
1	0.27	0.11	0.09	0.08	0.07	0.11	
2	0.90	0.59	0.45	0.38	0.42	0.33	
3	0.96	0.93	1.04	0.57	0.53	0.37	
4	1.01	0.95	0.86	0.68	0.42	0.28	
5	1.46	1.69	0.66	0.95	0.46	0.17	
6	1.01	0.97	1.03	0.61	0.50	0.27	
7	1.01	0.97	1.03	0.61	0.50	0.27	
Average F for 3,5							
	1982	1983	1984	1985	1986	1987	1988
3,5	0.94	2.15	1.24	1.36	1.59	1.06	2.07
	1989	1990	1991	1992	1993	1994	1995
3,5	1.90	1.65	1.58	1.41	0.98	1.32	1.23
	1996	1997	1998	1999	2000	2001	
3,5	1.14	1.19	0.86	0.73	0.47	0.27	

Table A50 continued.

BACK CALCULATED PARTIAL RECRUITMENT							
	1982	1983	1984	1985	1986	1987	1988
0	0.05	0.02	0.06	0.03	0.02	0.02	0.03
1	0.43	0.21	0.34	0.39	0.38	0.41	0.44
2	0.74	0.29	1.00	0.91	0.84	1.00	0.82
3	0.40	0.23	0.80	1.00	0.93	0.71	0.72
4	0.37	0.41	0.58	0.72	0.99	0.99	0.92
5	1.00	1.00	0.58	0.88	0.73	0.44	1.00
6	0.42	0.28	0.78	0.97	1.00	0.78	0.83
7	0.42	0.28	0.78	0.97	1.00	0.78	0.83
	1989	1990	1991	1992	1993	1994	1995
0	0.02	0.04	0.02	0.02	0.03	0.03	0.01
1	0.34	0.31	0.35	0.35	0.50	0.28	0.18
2	0.74	0.52	0.69	0.80	1.00	0.64	0.75
3	0.83	0.62	0.50	1.00	0.64	0.46	0.62
4	1.00	0.95	0.38	0.44	0.82	0.45	1.00
5	0.74	1.00	1.00	0.45	0.72	1.00	0.83
6	0.93	0.70	0.50	0.88	0.68	0.47	0.71
7	0.93	0.70	0.50	0.88	0.68	0.47	0.71
	1996	1997	1998	1999	2000	2001	
0	0.00	0.00	0.00	0.01	0.00	0.01	
1	0.19	0.07	0.09	0.08	0.13	0.29	
2	0.62	0.35	0.43	0.40	0.80	0.88	
3	0.66	0.55	1.00	0.60	1.00	1.00	
4	0.69	0.56	0.83	0.71	0.80	0.74	
5	1.00	1.00	0.64	1.00	0.87	0.46	
6	0.70	0.58	0.99	0.64	0.95	0.73	
7	0.70	0.58	0.99	0.64	0.95	0.73	
Catch BIOMASS (using catch mean weights)							
	1982	1983	1984	1985	1986	1987	1988
0	1362	1185	1195	602	493	295	252
1	8226	12042	10658	6333	7867	7697	9698
2	6383	7974	10077	11295	7578	7236	9380
3	1369	2383	3413	2013	4513	1914	2484
4	633	895	1268	874	566	1083	1160
5	333	510	210	593	286	72	312
6	181	42	14	82	198	99	76
7	116	112	39	38	61	155	79
0+	18602	25142	26874	21828	21561	18551	23442
	1989	1990	1991	1992	1993	1994	1995
0	200	469	146	336	340	583	231
1	2235	3841	5024	5341	5531	5533	3149
2	5431	1804	5165	4651	4008	4496	5051
3	1821	1188	900	1425	840	1352	1331
4	541	350	400	214	124	437	668
5	127	66	84	192	85	74	207
6	22	28	09	05	57	49	08
7	11	13	04	05	07	19	04
0+	10388	7759	11730	12167	10992	12542	10648
	1996	1997	1998	1999	2000	2001	
0	54	06	12	26	02	04	
1	3554	1154	1098	813	755	1607	
2	5376	5201	4172	3748	5368	3699	
3	1962	2773	4588	3640	4237	3645	
4	656	694	1315	1692	2007	1872	
5	143	371	337	728	805	790	
6	42	29	50	151	191	315	
7	09	12	04	49	82	126	
0+	11794	10240	11575	10847	13446	12058	

Table A50 continued.

Jan 1 BIOMASS (using Jan 1 mean weights)

	1982	1983	1984	1985	1986	1987	1988
0	14705	15020	9144	11222	10208	8521	3415
1	13687	18190	18882	11497	13717	14028	12086
2	7552	9602	10306	12888	8368	8425	9876
3	3421	3325	3892	2063	4328	2447	2485
4	1738	1292	1741	1084	583	1173	1132
5	468	614	259	691	393	128	324
6	416	71	13	102	212	121	82
7	259	182	55	52	79	244	98
0+	42246	48297	44292	39598	37887	35086	29498
	1989	1990	1991	1992	1993	1994	1995
0	3927	6010	2324	5624	6219	10254	13510
1	3791	6416	7415	5894	8703	9723	12046
2	5789	2326	5279	4404	4788	5789	7156
3	1796	1448	1120	1288	1130	1724	1836
4	566	369	566	340	172	651	839
5	149	69	76	270	128	70	279
6	28	33	11	06	102	63	11
7	13	19	05	06	14	32	07
0+	16059	16690	16797	17832	21255	28305	35684
	1996	1997	1998	1999	2000	2001	
0	9268	4950	8601	2338	908	984	
1	14228	10330	9380	10093	6757	6069	
2	9565	11336	10607	11766	12513	11911	
3	2730	4053	6650	7833	9046	10837	
4	927	1149	2002	2895	5221	6820	
5	183	404	543	1048	1929	4336	
6	72	44	79	340	464	1338	
7	15	21	07	117	227	579	
0+	36987	32287	37868	36431	37064	42875	

Table A50 continued.

SSB AT THE START OF THE SPAWNING SEASON -MALES AND FEMALES (MT) (using SSB mean weights)

	1982	1983	1984	1985	1986	1987	1988
0	5668	5854	3507	4341	4207	3574	1251
1	6150	7180	8615	5534	5890	6863	4123
2	2862	3655	2003	3735	2257	2257	1797
3	1596	1774	1130	629	1248	1133	682
4	795	268	697	459	140	380	196
5	101	17	115	230	120	81	44
6	198	23	05	27	48	50	16
7	126	62	14	12	15	79	16
0+	17497	18833	16086	14968	13926	14418	8124
	1989	1990	1991	1992	1993	1994	1995
0	1767	2323	1296	2450	2726	3882	4905
1	1487	3415	2803	3349	4260	5193	7239
2	1403	1023	1220	1023	1452	1655	2436
3	430	577	402	224	651	927	929
4	87	84	270	136	68	303	224
5	37	14	10	122	56	14	93
6	04	11	04	01	41	32	04
7	02	05	02	01	05	12	02
0+	5216	7453	6007	7304	9260	12017	15834
	1996	1997	1998	1999	2000	2001	
0	3475	2428	3316	1408	1777	872	
1	7902	6727	8089	6910	7345	9688	
2	3565	5907	6691	7204	9171	8458	
3	1311	1962	2760	4879	6159	7967	
4	411	472	1021	1806	3791	5760	
5	51	102	371	496	1385	4054	
6	26	19	31	184	295	976	
7	06	08	02	60	127	391	
0+	16746	17625	22280	22948	30050	38166	

Table A51. VPA Bootstrap results: precision of estimates.

The number of bootstraps: 500

Bootstrap Output Variable: N hat

	NLLS ESTIMATE	BOOTSTRAP MEAN	BOOTSTRAP Std Error	C.V. FOR NLLS SOLN			
N 1	21727	22185	4399	0.20			
N 2	23737	24038	4018	0.17			
N 3	11307	11396	1904	0.17			
N 4	7466	7510	1213	0.16			
N 5	3662	3681	798	0.22			
N 6	1767	1804	471	0.27			
	BIAS ESTIMATE	BIAS STD ERROR	PERCENT BIAS	NLLS EST CORRECTED FOR BIAS	C.V. FOR CORRECTED ESTIMATE	LOWER 80%CI	UPPER 80%CI
N 1	458	197	2.11	21270	0.206828	16216	27505
N 2	300	180	1.27	23437	0.171459	19087	29100
N 3	90	85	0.79	11217	0.169766	9103	13864
N 4	44	54	0.59	7422	0.163492	5895	9064
N 5	20	36	0.54	3642	0.219021	2868	4959
N 6	37	21	2.10	1730	0.272477	1148	2305

Table A51 continued.

Bootstrap Output Variable: F t

	NLLS ESTIMATE	BOOTSTRAP MEAN	BOOTSTRAP StdError	C.V. FOR NLLS SOLN
Age 0	0.0021	0.0022	0.0004	0.21
Age 1	0.1075	0.1090	0.0177	0.17
Age 2	0.3269	0.3316	0.0487	0.15
Age 3	0.3735	0.3786	0.0519	0.14
Age 4	0.2752	0.2839	0.0544	0.20
Age 5	0.1714	0.1788	0.0475	0.28
Age 6	0.2734	0.2804	0.0315	0.12
Age 7	0.2734	0.2804	0.0315	0.12

	BIAS ESTIMATE	BIAS STD ERROR	PERCENT BIAS	NLLS EST CORRECTED FOR BIAS	C.V. FOR CORRECTED ESTIMATE	LOWER 80%CI	UPPER 80%CI
Age 0	0.0000396	0.0000197	1.865	0.0020821	0.21	0.0017	0.0028
Age 1	0.0014651	0.0007932	1.363	0.1060253	0.17	0.0884	0.1316
Age 2	0.0046466	0.0021784	1.421	0.3222752	0.15	0.2726	0.3892
Age 3	0.0051271	0.0023231	1.373	0.3683516	0.14	0.3160	0.4516
Age 4	0.0086827	0.0024324	3.155	0.2665285	0.20	0.2095	0.3390
Age 5	0.0074158	0.0021235	4.327	0.1639547	0.29	0.1335	0.2521
Age 6	0.0070752	0.0014103	2.588	0.2662783	0.12	0.2370	0.3162
Age 7	0.0070752	0.0014103	2.588	0.2662783	0.12	0.2370	0.3162

Bootstrap Output Variable: F full t

	NLLS ESTIMATE	BOOTSTRAP MEAN	BOOTSTRAP StdError	C.V. FOR NLLS SOLN
	0.2734	0.2804	0.0315	0.12

	BIAS ESTIMATE	BIAS STD ERROR	PERCENT BIAS	NLLS EST CORRECTED FOR BIAS	C.V. FOR CORRECTED ESTIMATE	LOWER 80%CI	UPPER 80%CI
	0.00708	0.00141	2.59	0.26628	0.12	0.2370	0.3162

Table A51 continued.

Bootstrap Output Variable: SSB spawn t

NLLS ESTIMATE	BOOTSTRAP MEAN	BOOTSTRAP StdError	C.V. FOR NLLS SOLN				
38166.3196	38502.5412	3309.9183	0.09				
BIAS ESTIMATE	BIAS STD ERROR	PERCENT BIAS	NLLS EST CORRECTED FOR BIAS	C.V. FOR CORRECTED ESTIMATE	LOWER 80%CI	UPPER 80%CI	
336.22	148.02	0.88	37830.10	0.09	34164.5520	42579.9361	

Bootstrap Output Variable: Jan 1 biomass

NLLS ESTIMATE	BOOTSTRAP MEAN	BOOTSTRAP StdError	C.V. FOR NLLS SOLN				
42874.5306	43159.7457	2973.0448	0.07				
BIAS ESTIMATE	BIAS STD ERROR	PERCENT BIAS	NLLS EST CORRECTED FOR BIAS	C.V. FOR CORRECTED ESTIMATE	LOWER 80%CI	UPPER 80%CI	
285.22	132.96	0.67	42589.32	0.07	39279.15	46922.42	

Table A52. VPA Retrospective analysis for summer flounder.

Fishing Mortality (F)																				
Terminal	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Year																				
1996	0.94	2.15	1.24	1.36	1.59	1.06	2.07	1.90	1.65	1.58	1.42	0.99	1.37	1.41	1.99					
1997	0.94	2.15	1.24	1.36	1.59	1.06	2.07	1.90	1.65	1.58	1.41	0.98	1.33	1.25	1.26	5.99				
1998	0.94	2.15	1.24	1.36	1.59	1.06	2.07	1.90	1.65	1.58	1.41	0.98	1.32	1.22	1.09	1.02	0.59			
1999	0.94	2.15	1.24	1.36	1.59	1.06	2.07	1.90	1.65	1.58	1.41	0.98	1.32	1.21	1.08	1.03	0.60	0.40		
2000	0.94	2.15	1.24	1.36	1.59	1.06	2.07	1.90	1.65	1.58	1.41	0.98	1.32	1.23	1.12	1.12	0.72	0.57	0.36	
2001	0.94	2.15	1.24	1.36	1.59	1.06	2.07	1.90	1.65	1.58	1.41	0.98	1.32	1.23	1.14	1.19	0.86	0.73	0.47	0.27
Spawning Stock Biomass (SSB)																				
Terminal	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Year																				
1996	17497	18833	16086	14968	13926	14418	8124	5215	7449	5997	7254	9101	12187	17674	19516					
1997	17497	18833	16086	14968	13926	14418	8124	5216	7453	6007	7293	9289	12754	18770	20969	21782				
1998	17497	18833	16086	14968	13926	14418	8124	5216	7453	6008	7311	9277	12251	17226	19430	20710	23482			
1999	17497	18833	16086	14968	13926	14418	8124	5216	7453	6008	7310	9287	12271	16844	18640	20262	24795	25243		
2000	17497	18833	16086	14968	13926	14418	8124	5216	7453	6007	7307	9271	12066	16372	17793	19111	24456	25644	32657	
2001	17497	18833	16086	14968	13926	14418	8124	5216	7453	6007	7304	9260	12017	15834	16746	17625	22280	22948	30050	38166
Population numbers: Age-0																				
Terminal	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Year																				
1996	74269	80323	48380	48579	53444	43920	13031	27269	30329	28630	32028	32749	39614	48642	30368					
1997	74269	80323	48380	48579	53444	43922	13033	27270	30361	28663	32213	33965	40689	50289	29383	21451				
1998	74269	80323	48380	48579	53444	43921	13033	27270	30354	28697	32370	33269	37292	46534	35898	25251	26377			
1999	74269	80323	48380	48579	53444	43921	13033	27270	30356	28697	32351	33429	37139	43414	35712	34444	30853	26064		
2000	74269	80323	48380	48579	53444	43921	13033	27270	30354	28689	32343	33318	35689	43181	33101	37245	40276	27233	35822	
2001	74269	80323	48380	48579	53444	43921	13033	27270	30353	28687	32322	33258	35480	39619	32864	35613	39817	30766	39455	26594

Table A53. Input parameters and short term stochastic projection results for summer flounder. Starting stock sizes on January 1, 2002 are as estimated by VPA bootstrap procedure. Age-0 recruitment levels in 2002-2004 are estimated as the median of 500 random estimates selected from VPA estimated numbers at age 0 (000s) during 1982-2001. Fishing mortality was apportioned among landings and discard based on the proportion of F associated with landings and discards at age during 1999-2001. Mean weights at age (landings and discards) are weighted (by fishery) geometric means of 1999-2001 values. Total stock biomass is the product of January 1 numbers at age and January 1 mean weights at age estimated from total catch (landings plus discards) weights. Proportion of F and M before spawning = 0.83 (spawning peak at 1 November).

Age	Median Stock Size in 2002	Fishing Mortality Pattern	Proportion Landed	Proportion Mature	Mean Weights January 1 Total Biomass	Mean Weights Landings	Mean Weights Discards
0	35613	0.01	0.00	0.38	0.040	0.144	0.093
1	23156	0.18	0.43	0.72	0.251	0.536	0.425
2	26637	0.78	0.75	0.90	0.554	0.709	0.586
3	12957	1.00	0.90	1.00	0.773	0.933	0.890
4	6741	1.00	0.97	1.00	1.120	1.403	1.386
5	2861	1.00	0.97	1.00	1.700	2.103	2.099
6	2083	1.00	0.97	1.00	2.405	2.655	2.410
7+	395	1.00	0.97	1.00	3.291	3.135	2.972

2002 Landings = 10,991 mt; 2002-2004 median recruitment from 1982-2001 VPA estimates (35.6 million)											
Forecast medians (50% probability level) (landings, discards, and total stock biomass (B) in '000 mt)											
2002				2003				2004			
F	Land.	Disc.	B	F	Land.	Disc.	B	F	Land.	Disc.	B
0.32	11.0	1.7	51.4	0.26	10.6	1.5	57.6	0.26	12.2	1.7	65.6