

Table C1. Nominal redfish catches (metric tons), actual and standardized catch per unit effort, and calculated standardized USA and total effort for the Gulf of Maine-Georges Bank redfish fishery.

Year	Nominal Catch (Metric tons)			USA Catch per Unit Effort (tons/day)		Calculated Standard Effort (days fished)	
	USA	Others	Total	Actual	Standard	USA	Total
1934	519		519				
1935	7549		7549				
1936	23162		23162				
1937	14823		14823				
1938	20640		20640				
1939	25406		25406				
1940	26762		26762				
1941	50796		50796				
1942	55892		55892	6.9	6.9	8100	8100
1943	48348		48348	6.7	6.7	7216	7216
1944	50439		50439	5.4	5.4	9341	9341
1945	37912		37912	4.5	4.5	8425	8425
1946	42423		42423	4.7	4.7	9026	9026
1947	40160		40160	4.9	4.9	8196	8196
1948	43631		43631	5.4	5.4	8080	8080
1949	30743		30743	3.3	3.3	9316	9316
1950	34307		34307	4.1	4.1	8368	8368
1951	30077		30077	4.1	4.1	7336	7336
1952	21377		21377	3.5	3.4	6287	6287
1953	16791		16791	3.8	3.6	4664	4664
1954	12988		12988	3.4	3.1	4190	4190
1955	13914		13914	4.5	4.0	3479	3479
1956	14388		14388	4.4	3.8	3786	3786
1957	18490		18490	4.3	3.6	5136	5136
1958	16043	4	16047	4.4	3.6	4456	4458
1959	15521		15521	4.3	3.5	4435	4435
1960	11373	2	11375	3.8	3.0	3791	3792
1961	14040	61	14101	4.6	3.5	4011	4029
1962	12541	1593	14134	5.4	4.0	3135	3534
1963	8871	1175	10046	4.1	3.0	2957	3349
1964	7812	501	8313	4.3	2.9	2694	2867
1965	6986	1071	8057	7.0	4.4	1588	1831
1966	7204	1365	8569	11.7	6.4	1126	1339
1967	10442	422	10864	12.4	5.6	1865	1940
1968	6578	199	6777	14.7	6.1	1078	1111
1969	12041	414	12455	11.4	4.9	2457	2542
1970	15534	1207	16741	9.0	4.0	3884	4185
1971	16267	3767	20034	7.0	3.2	5083	6261
1972	13157	5938	19095	5.7	2.9	4537	6584
1973	11954	5406	17360	5.3	2.9	4122	5986
1974	8677	1794	10471	5.0	2.6	3337	4027
1975	9075	1497	10572	4.0	2.2	4125	4805
1976	10131	565	10696	4.6	2.3	4405	4650
1977	13012	211	13223	4.9	2.5	5205	5289
1978	13991	92	14083	4.8	2.4	5830	5868
1979	14722	33	14755	3.6	1.9	7748	7766
1980	10085	98	10183	3.2	1.6	6303	6364
1981	7896	19	7915	2.7	1.4	5640	5654
1982	6735	168	6903	2.7	1.5	4490	4602
1983	5215	113	5328	2.1	1.2	4346	4440
1984	4722	71	4793	1.9	1.1	4293	4357
1985	4164	118	4282	1.4	0.9	4627	4758
1986	2790	139	2929	1.0	0.6	4650	4882
1987	1859	35	1894	1.1	0.7	2656	2706
1988	1076	101	1177	0.9	0.5	2152	2354
1989	628	9	637	1.1	0.6	1047	1062
1990	588	13	601	**	**		
1991	525		525	**	**		
1992	849		849		**		
1993	800		800		**		
1994*	440		440		**		
1995*	440		440		**		
1996*	322		322		**		
1997*	251		251		**		
1998*	320		320		**		
1999*	353		353	**	**		
2000*	319		319	**	**		

* Preliminary
 CPUE and effort not calculated due to sharp reduction in directed redfish trips

Table C2. Commercial length and age sampling summary for Gulf of Maine - Georges Bank Redfish, 1969-2000.

Year	Landings (tons)	Number of Samples	Number of tons/sample	Number of Length Measurements	Number of Ages Collected	Number of Ages Available
1969	12455	14	890	3,200	?	616
1970	16741	18	930	2,300	600	461
1971	20034	34	589	7,796	963	963
1972	19095	16	1193	5,085	?	1,066
1973	17360	23	755	6,246	1,120	1,027
1974	10471	34	308	7,945	2,170	1,011
1975	10572	27	392	6,761	2,912	1,147
1976	10696	24	446	8,094	3,700	1,028
1977	13223	31	427	8,495	3,688	863
1978	14083	30	469	5,493	2,352	1,012
1979	14755	35	422	8,975	3,866	1,122
1980	10183	21	485	4,858	2,210	1,110
1981	7915	21	377	3,718	1,718	851
1982	6903	27	256	4,216	1,734	849
1983	5328	31	172	5,100	2,416	995
1984	4793	26	184	4,603	2,275	1,018
1985	4282	37	116	5,775	2,962	1,464
1986	2929	38	77	6,063	3,102	N/A
1987	1894	29	65	4,633	2,290	N/A
1988	1177	21	56	2,487	1,258	N/A
1989	637	17	37	1,921	958	N/A
1990	601	12	51	1,338	692	N/A
1991	525	10	52	1,136	?225	N/A
1992	849	11	77	1,354	?	N/A
1993	800	5	160	528	?	N/A
1994	440	2	220	226	?	N/A
1995	440	3	147	303	?	N/A
1996	322	1	322	113	?	N/A
1997	251	3	84	343	?	N/A
1998	320	0	-	0	?	N/A
1999	353	1	353	111	?	N/A
2000	319	1	319	110	?	N/A

Table C3. Total catch at age and mean weights at age for Gulf of Maine - Georges Bank redfish, 1969-1985.

Year	Age																									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26+
	<u>Number Landed (000s)</u>																									
1969	-	-	-	22	421	439	1008	6065	2513	6717	2660	3975	3287	2221	2820	1348	751	526	606	426	451	345	469	38	100	847
1970	-	-	-	-	146	4055	4048	1060	9692	3221	8351	2734	4702	2672	2302	3489	1778	1640	393	662	368	529	572	488	64	1743
1971	-	-	-	-	-	72	1941	4430	1536	7907	2767	6504	3088	4267	3680	2895	2206	2765	1347	1163	560	1048	559	282	138	2439
1972	-	-	-	-	-	-	933	3296	7401	1712	7580	2782	2884	1994	3531	2449	1205	1276	2245	734	1011	1172	718	538	1280	2874
1973	-	-	-	-	-	-	235	2463	7938	8391	2201	7337	2078	3100	2376	2024	1799	1380	864	933	411	590	426	295	289	1977
1974	-	-	308	105	-	17	8	174	1886	4724	2945	2435	1709	1115	1302	935	1454	910	640	661	589	730	271	285	250	1755
1975	-	-	4	695	72	11	-	30	124	1944	4360	2154	1932	1442	1009	1344	1360	1235	945	1116	608	887	492	294	298	1282
1976	-	-	-	196	8961	439	-	-	21	48	467	2706	3375	1702	1725	1388	1233	1166	1424	608	769	681	323	672	94	2011
1977	-	-	-	-	234	16747	311	-	-	81	2127	1262	4012	1823	2747	1466	1190	1064	461	706	541	117	571	1013	2157	
1978	-	-	-	-	-	271	24569	215	-	34	33	182	1689	1484	2948	1748	1310	866	899	1283	895	734	500	192	530	2220
1979	-	-	-	-	25	205	849	23729	152	117	48	168	541	1228	1972	1299	1580	983	845	1008	798	594	532	538	427	2506
1980	-	-	-	-	-	132	175	1110	16900	208	44	46	217	491	830	1221	860	664	564	452	473	370	349	294	265	1308
1981	-	-	23	-	77	40	57	47	223	12380	84	22	-	44	317	364	1274	506	534	396	318	381	306	326	350	1540
1982	-	-	3	271	123	60	92	30	-	15	7268	56	32	21	128	185	582	452	840	324	501	484	301	134	104	2270
1983	-	-	-	11	1687	159	46	43	86	49	141	4959	58	106	64	42	85	319	270	551	169	224	314	195	131	1817
1984	-	-	46	11	51	6674	-	20	40	-	35	15	3571	-	44	49	34	92	210	166	324	215	144	157	162	1807
1985	-	-	27	146	33	31	3818	-	28	11	13	40	12	3202	-	25	11	101	116	260	230	187	197	142	107	1489
	<u>Mean weight (kg)</u>																									
1969	.010	.020	.052	.113	.115	.142	.169	.195	.219	.260	.320	.339	.366	.404	.425	.473	.495	.457	.589	.497	.515	.594	.589	.705	.708	.591
1970	.010	.020	.052	.092	.172	.168	.170	.189	.221	.236	.290	.339	.356	.367	.340	.418	.427	.438	.523	.579	.505	.450	.464	.476	.345	.541
1971	.010	.020	.052	.092	.135	.172	.242	.244	.265	.304	.333	.369	.399	.437	.445	.468	.435	.449	.541	.553	.514	.544	.581	.481	.473	.540
1972	.010	.020	.052	.092	.135	.171	.197	.240	.257	.289	.334	.367	.399	.427	.451	.472	.490	.515	.509	.562	.581	.565	.604	.489	.560	.668
1973	.010	.020	.052	.092	.135	.171	.162	.213	.257	.281	.343	.341	.384	.402	.482	.454	.500	.492	.523	.525	.529	.641	.633	.568	.653	.620
1974	.010	.020	.064	.080	.135	.195	.150	.233	.270	.326	.331	.378	.399	.427	.449	.442	.503	.527	.540	.565	.525	.578	.585	.641	.633	.642
1975	.010	.020	.039	.098	.161	.221	.195	.383	.349	.317	.342	.394	.399	.420	.460	.469	.533	.527	.522	.550	.600	.547	.595	.607	.663	.662
1976	.010	.020	.052	.076	.135	.199	.195	.245	.345	.278	.296	.347	.395	.389	.405	.427	.511	.469	.542	.517	.518	.552	.645	.577	.628	.630
1977	.010	.020	.052	.092	.090	.173	.288	.245	.277	.297	.350	.413	.412	.408	.433	.454	.462	.534	.537	.610	.466	.595	.611	.544	.552	.605
1978	.010	.020	.052	.092	.135	.135	.209	.300	.277	.311	.383	.468	.402	.433	.423	.458	.551	.504	.526	.547	.523	.537	.633	.551	.606	.641
1979	.010	.020	.052	.092	.135	.200	.191	.251	.304	.295	.248	.402	.508	.472	.474	.564	.526	.543	.551	.617	.664	.597	.567	.605	.567	.647
1980	.010	.020	.052	.092	.135	.108	.175	.188	.283	.371	.421	.362	.424	.454	.506	.478	.499	.518	.554	.595	.647	.664	.629	.599	.681	.695
1981	.010	.020	.080	.092	.117	.150	.143	.195	.247	.318	.374	.466	.404	.532	.592	.543	.528	.499	.537	.550	.594	.617	.560	.633	.552	.650
1982	.010	.020	.052	.142	.203	.256	.242	.252	.277	.383	.395	.491	.563	.383	.544	.475	.540	.504	.564	.583	.592	.563	.621	.499	.535	.699
1983	.010	.020	.052	.107	.172	.198	.249	.329	.252	.368	.396	.425	.381	.471	.504	.595	.494	.579	.639	.580	.614	.647	.622	.630	.589	.682
1984	.010	.020	.110	.092	.206	.197	.195	.311	.252	.297	.333	.377	.403	.420	.497	.630	.569	.529	.519	.499	.610	.547	.568	.600	.517	.619
1985	.010	.020	.092	.146	.154	.177	.239	.245	.279	.345	.421	.362	.595	.443	.441	.591	.494	.545	.599	.552	.603	.635	.605	.699	.624	.692

Table C4. Spring NEFSC bottom trawl survey stratified mean catch per tow indices, average weights and average lengths of redfish in the Gulf of Maine - Georges Bank region.

Year	INSHORE 1				OFFSHORE 2				COMBINED 3	
	Stratified Mean Catch per Tow		Avg. Wt.	Avg. Length	Stratified Mean Catch per Tow		Avg. Wt.	Avg. Length	Stratified Mean Catch per Tow	
	Number	kg	kg	cm	Number	kg	kg	cm	Number	kg
1968	7.9	1.2	0.152	17.9	51.7	19.8	0.383	26.4	45.2	17.0
1969	59.0	8.3	0.141	20.3	44.2	21.7	0.491	30.6	46.4	19.7
1970	29.7	9.3	0.313	24.4	59.1	20.6	0.349	26.4	54.7	18.9
1971	49.9	13.3	0.267	24.9	176.0	81.7	0.464	29.8	157.2	71.6
1972	23.8	4.6	0.193	18.6	114.7	51.3	0.447	28.9	101.2	44.4
1973	14.4	4.6	0.319	22.0	49.6	28.9	0.583	31.4	44.4	25.3
1974	25.7	6.1	0.237	19.7	35.8	21.0	0.587	31.5	34.3	18.8
1975	50.9	18.9	0.371	25.5	37.4	17.4	0.465	28.5	38.9	17.6
1976	45.9	6.4	0.139	19.8	65.1	29.6	0.455	29.2	62.2	26.2
1977	79.1	24.0	0.303	25.3	15.6	9.4	0.603	32.1	25.1	11.6
1978	33.7	10.4	0.309	25.0	22.3	12.5	0.561	30.2	24.0	12.2
1979	27.5	8.5	0.309	25.4	67.5	36.4	0.539	30.0	61.6	32.3
1980	8.5	2.2	0.259	25.3	33.5	23.5	0.701	32.4	29.8	20.3
1981	3.0	1.0	0.333	22.5	38.9	21.7	0.558	30.5	33.6	18.6
1982	5.0	1.4	0.280	24.7	19.0	10.8	0.568	30.1	16.9	9.4
1983	4.8	0.9	0.188	21.6	10.7	7.0	0.654	31.0	9.9	6.1
1984	5.4	1.6	0.296	25.1	4.9	2.9	0.592	30.2	5.0	2.7
1985	1.2	0.4	0.333	24.8	13.6	7.7	0.566	30.1	11.7	6.6
1986	9.5	5.4	0.568	29.9	4.5	2.8	0.622	31.4	5.3	3.2
1987	5.5	1.4	0.255	23.9	27.8	14.9	0.536	30.5	24.5	12.9
1988	11.7	2.6	0.222	23.0	7.5	3.4	0.453	28.4	8.1	3.3
1989	17.6	2.7	0.153	17.6	6.5	3.0	0.462	27.8	7.6	2.9
1990	0.8	0.2	0.250	23.1	14.4	8.0	0.556	30.2	12.3	6.8
1991	5.5	0.8	0.145	19.4	10.2	4.9	0.480	28.0	9.5	4.3
1992	77.0	15.8	0.205	23.4	31.0	9.8	0.316	26.1	37.9	10.7
1993	12.4	2.2	0.182	22.6	39.5	20.2	0.510	29.7	35.5	7.5
1994	16.6	2.5	0.152	19.6	16.1	4.2	0.259	24.2	16.1	3.9
1995	11.8	2.1	0.176	20.7	6.4	1.9	0.293	23.6	7.2	1.9
1996	16.4	2.2	0.137	20.0	30.9	13.6	0.439	27.8	28.7	11.9
1997	1235.2	175.8	0.142	20.7	33.3	9.3	0.278	24.6	212.0	34.0
1998	13.6	2.0	0.145	20.4	38.4	8.9	0.231	23.6	4.7	7.8
1999	50.8	6.3	0.125	19.9	80.5	21.2	0.264	24.4	76.0	19.0
2000	12.0	2.9	0.238	23.8	209.4	65.3	0.312	25.9	180.1	56.0

Table C5. Autumn NEFSC bottom trawl survey stratified mean catch per tow indices, average weights and average lengths of redfish in the Gulf of Maine - Georges Bank region.

Year	INSHORE 1				OFFSHORE 2				COMBINED 3	
	Stratified Mean Catch per Tow		Avg. Wt.	Avg. Length	Stratified Mean Catch per Tow		Avg. Wt.	Avg. Length	Stratified Mean Catch per Tow	
	Number	kg	kg	cm	Number	kg	kg	cm	Number	kg
1963	86.3	7.6	0.088	17.4	87.5	27.0	0.309	26.4	87.3	24.1
1964	81.3	13.5	0.166	20.2	122.3	61.8	0.505	30.8	116.3	54.6
1965	189.5	22.3	0.118	17.7	33.9	11.5	0.339	25.3	57.0	13.1
1966	172.8	17.0	0.098	16.2	77.8	31.2	0.401	27.4	91.9	29.1
1967	62.9	5.3	0.084	17.7	107.1	27.6	0.258	23.6	100.5	24.3
1968	41.1	4.7	0.114	18.3	161.3	46.6	0.289	25.1	143.4	40.4
1969	105.9	16.0	0.151	20.7	65.2	24.8	0.380	27.4	71.2	23.5
1970	18.2	2.8	0.154	20.3	107.2	38.2	0.356	26.3	94.0	32.9
1971	20.7	4.7	0.227	21.8	52.8	26.7	0.506	29.7	48.0	23.4
1972	36.4	6.6	0.181	20.8	58.9	27.8	0.472	29.2	55.6	24.6
1973	26.2	2.1	0.080	15.6	41.4	19.7	0.476	29.7	39.2	17.0
1974	44.4	4.7	0.106	18.0	49.0	27.6	0.563	30.1	48.3	24.2
1975	45.7	6.0	0.131	19.6	79.9	45.9	0.574	30.6	74.8	39.9
1976	11.6	2.5	0.216	22.6	31.9	17.5	0.549	30.2	28.9	15.3
1977	54.6	12.3	0.225	23.4	37.9	18.1	0.478	28.5	40.4	17.3
1978	20.4	5.5	0.270	24.6	49.5	23.4	0.473	29.0	45.2	20.7
1979	6.2	2.1	0.339	26.5	32.8	18.4	0.561	30.5	28.9	16.0
1980	20.6	6.2	0.301	24.6	20.6	13.8	0.670	31.8	20.6	12.6
1981	6.8	1.9	0.279	24.9	22.7	14.0	0.617	31.8	20.4	12.2
1982	28.2	4.6	0.163	21.2	5.6	3.2	0.571	31.5	9.0	3.4
1983	30.2	8.7	0.288	24.8	6.5	3.3	0.508	29.1	10.0	4.1
1984	7.7	3.2	0.416	27.9	7.8	4.1	0.526	29.0	7.8	3.9
1985	7.2	2.1	0.292	24.8	14.0	6.3	0.450	28.0	13.0	5.7
1986	67.6	15.3	0.226	23.3	18.8	6.7	0.356	26.1	26.1	8.0
1987	26.5	4.8	0.181	21.9	11.5	5.6	0.487	29.2	13.7	5.5
1988	18.5	5.1	0.276	21.9	11.4	6.5	0.570	29.1	12.4	6.3
1989	14.0	2.9	0.207	22.6	21.3	7.5	0.352	25.9	20.3	6.8
1990	57.6	14.5	0.252	23.8	31.7	11.7	0.369	26.7	35.5	12.2
1991	7.2	1.1	0.153	20.4	21.1	9.6	0.455	28.5	19.1	8.4
1992	7.8	1.2	0.147	20.0	24.9	9.3	0.374	27.3	22.4	8.1
1993	53.7	7.4	0.137	20.0	32.5	11.9	0.366	26.3	35.6	11.2
1994	31.5	5.4	0.171	21.7	19.0	6.0	0.317	25.0	20.9	5.9
1995	109.7	11.1	0.102	18.5	19.9	3.5	0.177	21.3	33.2	4.7
1996	53.8	9.1	0.169	21.5	189.9	34.4	0.181	21.8	169.6	30.6
1997	105.6	15.7	0.149	20.3	57.9	19.5	0.337	26.0	65.0	18.9
1998	48.7	10.7	0.219	20.4	128.9	35.4	0.275	23.6	117.0	31.7
1999	164.2	35.1	0.214	23.2	68.2	20.7	0.304	25.6	82.5	22.9
2000	133.3	22.0	0.165	21.6	99.4	26.9	0.271	24.8	104.4	26.2

Table C6. Yield and spawning stock biomass pre recruit analysis for Gulf of Maine - Georges Bank redfish.

The NEFC Yield and Stock Size per Recruit Program - PDBYPRC
 PC Ver. 2.0 [Method of Thompson and Bell (1934)] 1-Jan-1999

Run Date: 10- 5-2001; Time: 10:04:15.27
 REDFISH UPDATED AVE WTS & FPAT, MAT VECTOR (MAYO ET AL. 1990)

Proportion of F before spawning: .4000
 Proportion of M before spawning: .4000
 Natural Mortality is Constant at: .050
 Initial age is: 1; Last age is: 26
 Last age is a PLUS group;
 Original age-specific PRs, Mats, and Mean Wts from file:
 ==> d:\assess\redf\yrred.dat

Age-specific Input data for Yield per Recruit Analysis

Age	Fish Mort Pattern	Nat Mort Pattern	Proportion Mature	Average Weights Catch	Stock
1	.0138	1.0000	.0100	.010	.002
2	.0312	1.0000	.0200	.020	.012
3	.0697	1.0000	.0500	.059	.033
4	.1507	1.0000	.1500	.099	.064
5	.2999	1.0000	.3600	.145	.103
6	.5084	1.0000	.6400	.178	.148
7	.7291	1.0000	.8500	.201	.196
8	.9289	1.0000	.9500	.250	.246
9	1.0000	1.0000	.9800	.272	.295
10	1.0000	1.0000	.9900	.310	.343
11	1.0000	1.0000	1.0000	.348	.388
12	1.0000	1.0000	1.0000	.391	.430
13	1.0000	1.0000	1.0000	.423	.469
14	1.0000	1.0000	1.0000	.429	.505
15	1.0000	1.0000	1.0000	.463	.537
16	1.0000	1.0000	1.0000	.495	.566
17	1.0000	1.0000	1.0000	.503	.592
18	1.0000	1.0000	1.0000	.508	.615
19	1.0000	1.0000	1.0000	.548	.636
20	1.0000	1.0000	1.0000	.558	.654
21	1.0000	1.0000	1.0000	.565	.669
22	1.0000	1.0000	1.0000	.581	.683
23	1.0000	1.0000	1.0000	.595	.696
24	1.0000	1.0000	1.0000	.583	.706
25	1.0000	1.0000	1.0000	.581	.716
26+	1.0000	1.0000	1.0000	.637	.750

Summary of Yield per Recruit Analysis for:
 REDFISH UPDATED AVE WTS & FPAT, MAT VECTOR (MAYO ET AL. 1990)

Slope of the Yield/Recruit Curve at F=0.00: --> 7.5310
 F level at slope=1/10 of the above slope (F0.1): -----> .059
 Yield/Recruit corresponding to F0.1: -----> .1632
 F level to produce Maximum Yield/Recruit (Fmax): -----> .127
 Yield/Recruit corresponding to Fmax: -----> .1806
 F level at 30 % of Max Spawning Potential (F30): -----> .075
 SSB/Recruit corresponding to F30: -----> 2.6312

Listing of Yield per Recruit Results for:
 REDFISH UPDATED AVE WTS & FPAT, MAT VECTOR (MAYO ET AL. 1990)

	FMORT	TOTCTHN	TOTCTHW	TOTSTKN	TOTSTKW	SPNSTKN	SPNSTKW	% MSP
	.00	.00000	.00000	20.5042	9.1737	15.7030	8.7760	100.00
	.05	.38712	.15522	12.7649	3.9263	8.0041	3.5674	40.65
F0.1	.06	.41925	.16317	12.1227	3.5252	7.3690	3.1719	36.14
F30%	.07	.46461	.17220	11.2165	2.9757	6.4750	2.6312	29.98
	.10	.51797	.17890	10.1507	2.3604	5.4286	2.0284	23.11
Fmax	.13	.55860	.18057	9.3395	1.9207	4.6377	1.6001	18.23
	.15	.58466	.17981	8.8194	1.6549	4.1345	1.3428	15.30
	.20	.62564	.17533	8.0023	1.2684	3.3532	.9718	11.07
	.25	.65370	.16973	7.4432	1.0297	2.8287	.7459	8.50
	.30	.67435	.16423	7.0323	.8698	2.4512	.5967	6.80
	.35	.69033	.15916	6.7145	.7561	2.1657	.4923	5.61
	.40	.70318	.15459	6.4593	.6714	1.9418	.4158	4.74
	.45	.71381	.15049	6.2483	.6060	1.7611	.3578	4.08
	.50	.72281	.14681	6.0696	.5540	1.6119	.3124	3.56
	.55	.73058	.14349	5.9156	.5117	1.4864	.2762	3.15
	.60	.73739	.14047	5.7808	.4765	1.3793	.2467	2.81
	.65	.74343	.13772	5.6612	.4467	1.2868	.2222	2.53
	.70	.74885	.13520	5.5540	.4212	1.2058	.2016	2.30
	.75	.75376	.13288	5.4570	.3991	1.1345	.1841	2.10
	.80	.75823	.13072	5.3685	.3797	1.0710	.1690	1.93
	.85	.76234	.12871	5.2872	.3625	1.0141	.1559	1.78
	.90	.76614	.12683	5.2122	.3471	.9628	.1444	1.65
	.95	.76967	.12506	5.1425	.3333	.9163	.1343	1.53
	1.00	.77296	.12340	5.0775	.3208	.8740	.1253	1.43

Table C7. Commercial Landings (mt), NEFSC autumn survey biomass index (kg/tow), and index of exploitation for Gulf of Maine redfish.

Year	Commercial Landings (mt)	Biomass Index	Exploitation Ratio
1963	10046	24.1	0.4168
1964	8313	54.6	0.1523
1965	8057	13.1	0.6150
1966	8569	29.1	0.2945
1967	10864	24.3	0.4471
1968	6777	40.4	0.1677
1969	12455	23.5	0.5300
1970	16741	32.9	0.5088
1971	20034	23.4	0.8562
1972	19095	24.6	0.7762
1973	17360	17.0	1.0212
1974	10471	24.2	0.4327
1975	10572	39.9	0.2650
1976	10696	15.3	0.6991
1977	13223	17.3	0.7643
1978	14083	20.7	0.6803
1979	14755	16.0	0.9222
1980	10183	12.6	0.8082
1981	7915	12.2	0.6488
1982	6903	3.4	2.0303
1983	5328	4.1	1.2995
1984	4793	3.9	1.2290
1985	4282	5.7	0.7512
1986	2929	8.0	0.3661
1987	1894	5.5	0.3444
1988	1177	6.3	0.1868
1989	637	6.8	0.0937
1990	601	12.2	0.0493
1991	525	8.4	0.0625
1992	849	8.1	0.1049
1993	800	11.2	0.0714
1994	440	5.9	0.0741
1995	440	4.7	0.0946
1996	322	30.6	0.0105
1997	251	18.9	0.0133
1998	320	31.7	0.0101
1999	353	22.9	0.0154
2000	319	26.2	0.0122

Table C8. Spawning biomass (thousand mt), fully-recruited fishing mortality, recruitment (millions of age-1 fish), and population biomass (thousand mt) estimates for Gulf of Maine redfish during the period 1963-2000 from the age-structured dynamics model.

Year	Spawning biomass	Fishing mortality	Recruitment	Population biomass
1963	111.7	0.09	48.3	136.5
1964	112.9	0.08	98.1	137.7
1965	115.7	0.08	76.9	141.1
1966	120.2	0.07	33.8	147.0
1967	122.8	0.09	7.8	150.8
1968	126.0	0.05	4.3	150.8
1969	131.0	0.09	2.6	153.7
1970	130.2	0.11	2.8	148.3
1971	124.7	0.14	4.2	139.6
1972	114.0	0.15	249.2	128.6
1973	101.3	0.16	6.5	116.2
1974	91.0	0.11	2.5	110.6
1975	85.1	0.12	1.9	109.9
1976	82.9	0.14	1.7	108.8
1977	81.9	0.18	1.6	101.9
1978	76.4	0.21	2.2	89.7
1979	68.1	0.29	52.8	79.9
1980	54.4	0.24	2.5	63.1
1981	44.3	0.25	2.8	53.3
1982	35.8	0.28	10.2	45.1
1983	30.4	0.20	21.2	38.2
1984	27.9	0.17	8.7	34.2
1985	25.3	0.17	20.0	31.0
1986	24.3	0.12	11.2	29.7
1987	23.7	0.08	5.1	29.2
1988	24.1	0.05	4.4	29.2
1989	25.5	0.03	29.0	30.2
1990	27.9	0.02	51.4	32.6
1991	29.4	0.02	8.7	34.5
1992	30.6	0.03	35.7	37.8
1993	32.5	0.03	327.5	44.3
1994	35.9	0.01	73.3	51.6
1995	40.3	0.01	35.0	66.1
1996	47.7	0.01	22.4	81.6
1997	62.7	<0.01	24.9	99.2
1998	81.9	<0.01	32.2	111.2
1999	100.5	<0.01	34.5	120.5
2000	119.6	<0.01	29.2	134.6

Table C9. Estimates of relative biomass and fishing mortality for redfish from ASPIC with 80% confidence intervals (CI).

Year	Bt/Bmsy	Lower	Upper	Ft/Fmsy	Lower	Upper
		80% CI	80% CI		80% CI	80% CI
1963	31%	29%	34%	157%	157%	158%
1964	32%	29%	34%	127%	127%	129%
1965	33%	30%	35%	119%	118%	120%
1966	34%	32%	37%	121%	120%	124%
1967	36%	34%	38%	150%	147%	155%
1968	36%	34%	38%	90%	87%	94%
1969	39%	37%	40%	160%	153%	169%
1970	39%	38%	40%	221%	210%	235%
1971	37%	36%	37%	286%	271%	304%
1972	33%	32%	34%	305%	290%	324%
1973	29%	28%	30%	314%	299%	332%
1974	26%	25%	27%	204%	195%	216%
1975	25%	24%	26%	212%	201%	226%
1976	24%	24%	25%	223%	210%	239%
1977	23%	23%	24%	296%	278%	319%
1978	21%	21%	21%	360%	337%	388%
1979	18%	18%	18%	463%	435%	496%
1980	14%	14%	14%	397%	378%	423%
1981	12%	11%	12%	367%	351%	388%
1982	10%	10%	10%	376%	361%	394%
1983	8%	8%	9%	335%	321%	351%
1984	7%	7%	8%	342%	324%	359%
1985	6%	6%	7%	349%	323%	375%
1986	6%	5%	7%	264%	238%	291%
1987	5%	5%	6%	175%	154%	198%
1988	5%	5%	7%	103%	90%	118%
1989	6%	5%	7%	50%	44%	58%
1990	7%	6%	8%	42%	36%	48%
1991	8%	6%	9%	32%	27%	36%
1992	9%	7%	10%	45%	38%	52%
1993	10%	9%	12%	37%	31%	43%
1994	11%	10%	13%	18%	15%	21%
1995	13%	11%	16%	15%	13%	18%
1996	15%	13%	18%	10%	8%	12%
1997	18%	15%	21%	6%	5%	8%
1998	21%	18%	25%	7%	6%	9%
1999	24%	21%	29%	7%	5%	8%
2000	28%	24%	34%	5%	4%	7%
2001	33%	27%	40%			

Table C10. Results from alternative ASPIC analyses as compared to the accepted run, "REDFISH3" (B1R: B_{1934}/B_{MSY} ; IQR: interquartile range; Q: catchability).

run options	REDFISH3	REDFISHX	REDFISH2		REDFISHT		
CPUE	included	excluded	excluded		included		
B1R	fixed	fixed	estimated	sensitivity	fixed		
time series results	1934-2000	1934-2000	1934-2000	to B1R and CPUE	1934-1999	sensitivity to time series	
B1R	2	2	1.647	17.7%	2	0.0%	
IQR	0%	0%	25%				
MSY	20.18	20.19	20.77	2.9%	16.12	20.1%	
IQR	8%	12%	13%				
r	0.1776	0.1779	0.1766	0.7%	0.118	33.6%	
IQR	16%	23%	25%				
qCPUE	0.0489				0.03623	25.9%	
IQR	17%						
qFall	0.3811	0.3772	0.3776	1.0%	0.2942	22.8%	
IQR	15%	22%	23%				
qSpring	0.3577	0.3569	0.3569	0.2%	0.2758	22.9%	
IQR	17%	24%	24%				
Bmsy	227.2	227.1	227.1	0.0%	273.3	20.3%	
IQR	8%	11%	11%				
Fmsy	0.0888	0.08893	0.08893	0.1%	0.05898	33.6%	
IQR	16%	23%	23%				
B2001/Bmsy	0.3289	0.3363	0.3363	2.2%			
IQR	21%	25%	25%				
F2000/Fmsy	0.05496	0.05011	0.05011	8.8%			
IQR	16%	33%	33%				
B1996/Bmsy	0.1539				0.1193	22.5%	
IQR	17%						
F1995/Fmsy	0.152				0.24	57.9%	
IQR	19%						
% bootstrap convergence	100	100	0.79				
random seed sensitivity	<0.01%	<0.01%	25%				