

Appendix 2. Age-specific bottom trawl survey abundance indices for Gulf of Maine cod.

Table 1. Stratified mean catch per tow at age (numbers) of Atlantic cod in NEFC offshore spring and autumn bottom trawl surveys in the Gulf of Maine, 1963 - 2000.

Table 2. Standardized [for both door and gear changes] stratified mean number per tow at age and standardized stratified mean weight (kg) per tow of Atlantic cod in NEFSC offshore spring and autumn research vessel bottom trawl surveys in the Gulf of Maine, 1963-2000.

Table 3. Stratified mean catch per tow in numbers and weight (kg) of Atlantic cod in State of Massachusetts inshore spring and autumn bottom trawl surveys in territorial waters adjacent to the Georges Bank area (Mass. Regions 1-3) and in the Gulf of Maine (Mass. Regions 4-5), 1978 - 2000.

Appendix 2:Table 1. Stratified mean catch per tow at age (numbers) of Atlantic cod in NEFC offshore spring and autumn bottom trawl surveys in the Gulf of Maine, 1963 - 2000. [a,b]

Year	Age Group											Totals					Str. Mean Wgt per tow	
	0	1	2	3	4	5	6	7	8	9	10+	0+	1+	2+	3+	4+		5+
1968	0.082	0.393	0.791	0.902	0.542	0.345	0.133	0.083	0.071	0.038	0.106	3.486	3.404	3.011	2.220	1.318	0.776	11.06
1969	0.000	0.000	0.023	0.197	0.564	0.517	0.406	0.164	0.092	0.057	0.065	2.085	2.085	2.085	2.062	1.865	1.301	8.15
1970	0.000	0.102	0.079	0.035	0.060	0.175	0.299	0.394	0.048	0.038	0.184	1.414	1.414	1.312	1.233	1.198	1.138	6.83
1971	0.000	0.016	0.091	0.070	0.187	0.031	0.053	0.192	0.132	0.099	0.046	0.917	0.917	0.901	0.810	0.740	0.553	4.31
1972	0.000	0.226	0.098	0.333	0.126	0.128	0.023	0.068	0.065	0.147	0.105	1.319	1.319	1.093	0.995	0.662	0.536	4.96
1973	0.000	0.022	2.724	0.581	0.397	0.224	0.125	0.061	0.143	0.161	0.392	4.830	4.830	4.808	2.084	1.503	1.106	11.60
1974	0.000	0.305	0.036	0.871	0.211	0.142	0.073	0.031	0.031	0.013	0.149	1.862	1.862	1.557	1.521	0.650	0.439	4.59
1975	0.004	0.060	0.448	0.068	0.683	0.166	0.071	0.003	0.003	0.012	0.092	1.610	1.606	1.546	1.098	1.030	0.347	3.72
1976	0.000	0.027	0.195	0.672	0.098	0.575	0.055	0.069	0.042	0.000	0.047	1.780	1.780	1.753	1.558	0.886	0.788	4.66
1977	0.000	0.016	0.191	0.334	1.278	0.070	0.507	0.004	0.065	0.000	0.024	2.489	2.489	2.473	2.282	1.948	0.670	5.27
1978	0.000	0.022	0.067	0.183	0.223	0.491	0.048	0.205	0.005	0.068	0.005	1.317	1.317	1.295	1.228	1.045	0.822	4.75
1979	0.028	0.343	1.045	0.136	0.320	0.257	0.439	0.038	0.091	0.008	0.034	2.739	2.711	2.368	1.323	1.187	0.867	5.86
1980	0.057	0.057	0.357	0.278	0.100	0.339	0.194	0.246	0.000	0.105	0.011	1.744	1.687	1.630	1.273	0.995	0.895	5.69
1981	0.000	0.823	0.537	0.800	0.987	0.266	0.233	0.089	0.126	0.086	0.000	3.947	3.947	3.124	2.587	1.787	0.800	9.94
1982	0.012	0.273	0.827	0.419	0.563	0.701	0.095	0.088	0.000	0.034	0.032	3.044	3.032	2.759	1.932	1.513	0.950	7.94
1983	0.008	0.401	0.627	0.534	0.411	0.229	0.116	0.059	0.000	0.058	0.065	2.508	2.500	2.099	1.472	0.938	0.527	6.48
1984	0.000	0.097	0.662	0.735	0.475	0.122	0.034	0.037	0.019	0.000	0.000	2.181	2.181	2.084	1.422	0.687	0.212	3.60
1985	0.000	0.028	0.238	0.622	0.665	0.677	0.095	0.114	0.052	0.000	0.026	2.517	2.517	2.489	2.251	1.629	0.964	7.65
1986	0.000	0.417	0.330	0.647	0.387	0.074	0.046	0.027	0.011	0.000	0.018	1.957	1.957	1.540	1.210	0.563	0.176	3.60
1987	0.000	0.049	0.638	0.486	0.300	0.128	0.011	0.045	0.011	0.000	0.014	1.682	1.682	1.633	0.995	0.509	0.209	3.01
1988	0.029	0.663	1.053	0.633	0.355	0.217	0.087	0.063	0.000	0.027	0.000	3.127	3.098	2.435	1.382	0.749	0.394	3.30
1989	0.000	0.029	0.822	1.000	0.800	0.114	0.097	0.000	0.000	0.000	0.000	2.862	2.862	2.833	2.011	1.011	0.211	3.78
1990	0.000	0.000	0.241	1.680	0.794	0.211	0.041	0.023	0.000	0.000	0.000	2.990	2.990	2.990	2.749	1.069	0.275	4.59
1991	0.000	0.054	0.265	0.449	1.870	0.339	0.030	0.023	0.000	0.000	0.000	3.030	3.030	2.976	2.711	2.262	0.392	4.31
1992	0.000	0.050	0.230	0.240	0.280	1.310	0.220	0.070	0.000	0.010	0.000	2.410	2.410	2.350	2.130	1.890	1.610	8.66
1993	0.000	0.200	0.500	0.800	0.330	0.090	0.480	0.060	0.020	0.000	0.023	2.503	2.503	2.303	1.803	1.003	0.673	5.87
1994	0.000	0.020	0.400	0.490	0.270	0.120	0.060	0.160	0.030	0.030	0.020	1.609	1.609	1.589	1.189	0.699	0.429	3.62
1995	0.000	0.050	0.180	1.120	0.370	0.150	0.030	0.000	0.010	0.000	0.000	1.930	1.930	1.880	1.700	0.580	0.210	2.43
1996	0.000	0.060	0.020	0.590	1.330	0.040	0.060	0.000	0.000	0.000	0.000	2.465	2.465	2.405	2.385	1.795	0.465	5.43
1997	0.000	0.158	0.132	0.399	0.264	0.876	0.242	0.120	0.000	0.000	0.000	2.191	2.191	2.033	1.901	1.502	1.238	5.62
1998	0.000	0.018	0.224	0.330	0.517	0.142	0.421	0.022	0.037	0.000	0.000	1.710	1.710	1.692	1.468	1.138	0.621	4.18
1999	0.000	0.166	0.344	0.713	0.344	0.315	0.134	0.273	0.000	0.000	0.011	2.301	2.301	2.135	1.791	1.078	0.734	5.09
2000	0.026	1.184	0.725	0.438	0.457	0.107	0.101	0.024	0.022	0.000	0.000	3.083	3.057	1.873	1.148	0.710	0.253	3.21

[a] Strata 26-30 and 36-40.

[b] Spring surveys during 1973-1981 were accomplished with a '41 Yankee' trawl; in all other years, spring surveys were accomplished with a '36 Yankee' trawl. No adjustments have been made to the catch per tow data for these gear differences.

Appendix 2:Table 1 (Continued). [a,b]

Year	Age Group											Totals					Str. Mean Wgt per tow	
	0	1	2	3	4	5	6	7	8	9	10+	0+	1+	2+	3+	4+		5+
1963	0.032	0.416	0.865	0.803	0.544	0.371	0.344	0.192	0.117	0.061	0.048	3.793	3.761	3.345	2.480	1.677	1.133	11.08
1964	0.000	0.059	0.078	0.302	0.549	0.547	0.502	0.239	0.152	0.073	0.065	2.566	2.566	2.507	2.429	2.127	1.578	14.07
1965	0.001	0.545	0.564	0.528	0.481	0.318	0.240	0.109	0.051	0.028	0.016	2.881	2.880	2.335	1.771	1.243	0.762	7.41
1966	0.109	0.131	0.410	0.447	0.460	0.358	0.283	0.123	0.050	0.031	0.023	2.425	2.316	2.185	1.775	1.328	0.868	7.97
1967	0.008	0.083	0.138	0.368	0.430	0.246	0.172	0.104	0.045	0.026	0.022	1.642	1.634	1.551	1.413	1.045	0.615	5.70
1968	0.008	0.023	0.115	0.461	0.805	0.624	0.402	0.167	0.100	0.046	0.061	2.812	2.804	2.781	2.666	2.205	1.400	12.00
1969	0.010	0.038	0.079	0.227	0.404	0.354	0.299	0.141	0.093	0.083	0.040	1.768	1.758	1.720	1.641	1.414	1.010	9.49
1970	0.476	0.603	0.170	0.353	0.211	0.313	0.271	0.506	0.084	0.060	0.094	3.141	2.665	2.062	1.892	1.539	1.328	10.14
1971	0.863	0.114	0.153	0.135	0.383	0.295	0.278	0.163	0.204	0.128	0.082	2.798	1.935	1.821	1.668	1.533	1.150	10.20
1972	0.020	3.576	0.780	0.978	0.150	0.060	0.110	0.025	0.102	0.155	0.010	5.966	5.946	2.370	1.590	0.612	0.462	8.00
1973	0.408	0.210	1.393	0.089	0.325	0.136	0.050	0.018	0.033	0.108	0.087	2.857	2.449	2.239	0.846	0.757	0.432	5.39
1974	0.181	0.720	0.121	1.118	0.187	0.230	0.050	0.008	0.008	0.027	0.127	2.777	2.596	1.876	1.755	0.637	0.450	5.54
1975	0.030	0.094	1.966	0.086	1.510	0.163	0.070	0.011	0.002	0.002	0.008	3.942	3.912	3.818	1.852	1.766	0.256	5.32
1976	0.000	0.156	0.134	0.405	0.064	0.492	0.037	0.061	0.000	0.010	0.020	1.379	1.379	1.223	1.089	0.684	0.620	4.16
1977	0.000	0.018	0.291	0.446	0.937	0.123	0.481	0.031	0.079	0.018	0.078	2.502	2.502	2.484	2.193	1.747	0.810	9.42
1978	0.202	1.111	0.301	0.907	0.532	1.160	0.091	0.264	0.007	0.049	0.041	4.665	4.463	3.352	3.051	2.144	1.612	11.88
1979	0.003	0.236	0.381	0.104	0.536	0.251	0.501	0.033	0.138	0.000	0.053	2.236	2.233	1.997	1.616	1.512	0.976	10.83
1980	0.022	1.026	2.111	1.423	0.403	0.188	0.272	0.168	0.024	0.015	0.058	5.710	5.688	4.662	2.551	1.128	0.725	13.09
1981	0.008	0.397	0.245	0.352	0.304	0.057	0.076	0.024	0.069	0.000	0.018	1.550	1.542	1.145	0.900	0.548	0.244	4.97
1982	0.000	0.449	2.014	1.585	0.748	0.159	0.000	0.025	0.000	0.000	0.000	4.980	4.980	4.531	2.517	0.932	0.184	9.92
1983	0.029	1.064	0.626	0.546	0.089	0.169	0.126	0.000	0.000	0.000	0.058	2.707	2.678	1.614	0.988	0.442	0.353	5.44
1984	0.028	0.246	0.270	0.362	0.256	0.141	0.131	0.057	0.000	0.020	0.042	1.553	1.525	1.279	1.009	0.647	0.391	5.44
1985	0.266	0.378	0.910	0.763	0.209	0.218	0.074	0.000	0.034	0.021	0.049	2.922	2.656	2.278	1.368	0.605	0.396	8.49
1986	0.000	0.301	0.490	0.654	0.333	0.086	0.042	0.000	0.000	0.024	0.021	1.951	1.951	1.650	1.160	0.506	0.173	5.10
1987	0.138	0.599	1.324	0.600	0.257	0.061	0.000	0.000	0.000	0.000	0.000	2.979	2.841	2.242	0.918	0.318	0.061	3.41
1988	0.000	1.951	2.245	0.960	0.528	0.110	0.076	0.033	0.000	0.000	0.000	5.903	5.903	3.952	1.707	0.747	0.219	6.61
1989	0.000	0.526	3.026	1.717	0.372	0.220	0.018	0.000	0.000	0.011	0.000	5.890	5.890	5.364	2.338	0.621	0.249	6.84
1990	0.008	0.037	0.464	2.080	0.788	0.352	0.036	0.013	0.000	0.000	0.000	3.778	3.770	3.733	3.269	1.189	0.401	7.33
1991	0.010	0.180	0.180	0.280	0.800	0.100	0.000	0.030	0.000	0.000	0.000	1.580	1.570	1.390	1.210	0.930	0.130	4.15
1992	0.060	0.290	0.450	0.140	0.040	0.330	0.110	0.000	0.010	0.000	0.000	1.430	1.370	1.080	0.630	0.490	0.450	2.45
1993	0.050	0.250	0.720	0.460	0.040	0.000	0.040	0.000	0.000	0.000	0.000	1.560	1.510	1.260	0.540	0.080	0.040	1.50
1994	0.030	0.210	0.880	0.830	0.090	0.050	0.000	0.050	0.000	0.000	0.000	2.140	2.110	1.900	1.020	0.190	0.100	2.74
1995	0.010	0.070	0.280	1.232	0.330	0.080	0.010	0.000	0.000	0.000	0.000	2.010	2.000	1.930	1.650	0.420	0.090	3.67
1996	0.030	0.120	0.380	0.190	0.540	0.060	0.000	0.000	0.000	0.000	0.000	1.320	1.290	1.170	0.790	0.600	0.060	2.35
1997	0.000	0.297	0.086	0.160	0.182	0.149	0.000	0.000	0.000	0.000	0.000	0.872	0.872	0.575	0.490	0.330	0.149	1.87
1998	0.050	0.097	0.320	0.115	0.192	0.039	0.031	0.000	0.000	0.000	0.000	0.843	0.793	0.696	0.376	0.261	0.069	1.50
1999	0.025	0.431	0.363	0.590	0.243	0.132	0.023	0.000	0.000	0.000	0.000	1.807	1.782	1.351	0.998	0.408	0.165	3.50
2000	0.008	0.533	0.984	0.394	0.507	0.134	0.010	0.034	0.000	0.000	0.000	2.604	2.596	2.063	1.079	0.685	0.178	4.65

[a] Strata 26-30 and 36-40.

[b] Autumn catch per tow at age values for 1963-1969 obtained by applying combined 1970-1981 age-length keys to stratified mean catch per tow at length distributions from each survey.

Appendix 2:Table 2. Standardized [for both door and gear changes] stratified mean number per tow at age and standardized stratified mean weight (kg) per tow of Atlantic cod in NEFSC offshore spring and autumn research vessel bottom trawl surveys in the Gulf of Maine, 1963-2000. [a,b]

Year	Age Group											Totals					Standardized Mean Wt (kg) /Tow	
	0	1	2	3	4	5	6	7	8	9	10+	0+	1+	2+	3+	4+		5+
Spring [c,d,e]																		
1968	0.128	0.613	1.234	1.407	0.846	0.538	0.207	0.129	0.111	0.059	0.165	5.438	5.310	4.697	3.463	2.056	1.211	17.92
1969	0.000	0.000	0.036	0.307	0.880	0.807	0.633	0.256	0.144	0.089	0.101	3.253	3.253	3.253	3.217	2.909	2.030	13.20
1970	0.000	0.159	0.123	0.055	0.094	0.273	0.466	0.615	0.075	0.059	0.287	2.206	2.206	2.047	1.923	1.869	1.775	11.06
1971	0.000	0.025	0.142	0.109	0.292	0.048	0.083	0.300	0.206	0.154	0.072	1.431	1.431	1.406	1.264	1.154	0.863	6.98
1972	0.000	0.353	0.153	0.519	0.197	0.200	0.036	0.106	0.101	0.229	0.164	2.058	2.058	1.705	1.552	1.033	0.836	8.04
1973	0.000	0.034	4.249	0.906	0.619	0.349	0.195	0.095	0.223	0.251	0.612	7.535	7.535	7.500	3.251	2.345	1.725	18.79
1974	0.000	0.476	0.056	1.359	0.329	0.222	0.114	0.048	0.048	0.020	0.232	2.905	2.905	2.429	2.373	1.014	0.685	7.44
1975	0.006	0.094	0.699	0.106	1.065	0.259	0.111	0.005	0.005	0.019	0.144	2.512	2.505	2.412	1.713	1.607	0.541	6.03
1976	0.000	0.042	0.304	1.048	0.153	0.897	0.086	0.108	0.066	0.000	0.073	2.777	2.777	2.735	2.430	1.382	1.229	7.55
1977	0.000	0.025	0.298	0.521	1.994	0.109	0.791	0.006	0.101	0.000	0.037	3.883	3.883	3.858	3.560	3.039	1.045	8.54
1978	0.000	0.034	0.105	0.285	0.348	0.766	0.075	0.320	0.008	0.106	0.008	2.055	2.055	2.020	1.916	1.630	1.282	7.70
1979	0.044	0.535	1.630	0.212	0.499	0.401	0.685	0.059	0.142	0.012	0.053	4.273	4.229	3.694	2.064	1.852	1.353	9.49
1980	0.070	0.070	0.440	0.343	0.123	0.418	0.239	0.303	0.000	0.129	0.014	2.149	2.079	2.009	1.569	1.226	1.103	6.18
1981	0.000	1.014	0.662	0.986	1.216	0.328	0.287	0.110	0.155	0.106	0.000	4.864	4.864	3.850	3.188	2.202	0.986	10.79
1982	0.015	0.336	1.019	0.516	0.694	0.864	0.117	0.108	0.000	0.042	0.039	3.751	3.737	3.400	2.381	1.865	1.171	8.62
1983	0.012	0.626	0.978	0.833	0.641	0.357	0.181	0.092	0.000	0.090	0.101	3.912	3.900	3.274	2.296	1.463	0.822	10.50
1984	0.000	0.151	1.033	1.147	0.741	0.190	0.053	0.058	0.030	0.000	0.000	3.402	3.402	3.251	2.218	1.072	0.331	5.83
1985	0.000	0.028	0.238	0.622	0.665	0.677	0.095	0.114	0.052	0.000	0.026	2.517	2.517	2.489	2.251	1.629	0.964	7.65
1986	0.000	0.417	0.330	0.647	0.387	0.074	0.046	0.027	0.011	0.000	0.018	1.957	1.957	1.540	1.210	0.563	0.176	3.60
1987	0.000	0.049	0.638	0.486	0.300	0.128	0.011	0.045	0.011	0.000	0.014	1.682	1.682	1.633	0.995	0.509	0.209	3.01
1988	0.029	0.663	1.053	0.633	0.355	0.217	0.087	0.063	0.000	0.027	0.000	3.127	3.098	2.435	1.382	0.749	0.394	3.30
1989	0.000	0.023	0.649	0.790	0.632	0.090	0.077	0.000	0.000	0.000	0.000	2.261	2.261	2.238	1.589	0.799	0.167	2.53
1990	0.000	0.000	0.190	1.327	0.627	0.167	0.032	0.018	0.000	0.000	0.000	2.362	2.362	2.362	2.172	0.845	0.217	3.08
1991	0.000	0.043	0.209	0.355	1.477	0.268	0.024	0.018	0.000	0.000	0.000	2.394	2.394	2.351	2.142	1.787	0.310	2.89
1992	0.000	0.050	0.230	0.240	0.280	1.310	0.220	0.070	0.000	0.010	0.000	2.410	2.410	2.360	2.130	1.890	1.610	8.66
1993	0.000	0.200	0.500	0.800	0.330	0.090	0.480	0.060	0.020	0.000	0.023	2.503	2.503	2.303	1.803	1.003	0.673	5.87
1994	0.000	0.016	0.316	0.387	0.213	0.095	0.047	0.126	0.024	0.024	0.018	1.266	1.266	1.251	0.935	0.547	0.334	2.43
1995	0.000	0.050	0.180	1.120	0.370	0.150	0.030	0.000	0.010	0.000	0.000	1.910	1.910	1.860	1.680	0.560	0.190	2.43
1996	0.000	0.060	0.020	0.590	1.330	0.400	0.060	0.000	0.000	0.000	0.000	2.465	2.465	2.405	2.385	1.795	0.465	5.43
1997	0.000	0.158	0.132	0.399	0.264	0.876	0.242	0.120	0.000	0.000	0.000	2.191	2.191	2.033	1.901	1.502	1.238	5.62
1998	0.000	0.018	0.224	0.330	0.517	0.142	0.421	0.022	0.037	0.000	0.000	1.710	1.710	1.692	1.468	1.138	0.621	4.18
1999	0.000	0.166	0.344	0.713	0.344	0.315	0.134	0.273	0.000	0.000	0.011	2.301	2.301	2.135	1.791	1.078	0.734	5.09
2000	0.026	1.184	0.725	0.438	0.457	0.107	0.101	0.024	0.022	0.000	0.000	3.083	3.057	1.873	1.148	0.710	0.253	3.21

[a] Strata 26-30 and 36-40.

[c] Spring surveys during 1973-1981 were accomplished with a '41 Yankee' trawl; in all other years, spring surveys were accomplished with a '36 Yankee' trawl. No adjustments have been made to the catch per tow data for these differences.

[d] During 1963-1984, BMW oval doors were used in the spring and autumn surveys; since 1985, Portuguese polyvalent doors have been used in both surveys. Adjustments have been made to the 1963-1984 catch per tow data to standardize these data to polyvalent door equivalents. Conversion coefficients of 1.56 (numbers) and 1.62 (weight) were used in this standardization (NEFSC 1991).

[e] In the Gulf of Maine, spring surveys during 1980-1982, 1989-1991 and 1994, and autumn surveys during 1977-1978, 1980, 1989-1991 and 1993, were accomplished with the R/V DELAWARE II; in all other years, the surveys were accomplished using the R/V ALBATROSS IV. Adjustments have been made to the R/V DELAWARE II catch per tow data to standardize these to R/V ALBATROSS IV equivalents. Conversion coefficients of 0.79 (numbers) and 0.67 (weight) were used in this standardization (NEFSC 1991).

Appendix 2:Table 2 (Continued). [a,b]

Year	Age Group											Totals					Standardized Mean Wt (kg)/Tow	
	0	1	2	3	4	5	6	7	8	9	10+	0+	1+	2+	3+	4+		5+
Autumn [d,e]																		
1963	0.050	0.649	1.349	1.253	0.849	0.579	0.537	0.300	0.183	0.095	0.075	5.917	5.867	5.218	3.869	2.616	1.767	17.95
1964	0.000	0.092	0.122	0.471	0.856	0.853	0.783	0.373	0.237	0.114	0.101	4.003	4.003	3.911	3.789	3.318	2.462	22.79
1965	0.002	0.850	0.880	0.824	0.750	0.496	0.374	0.170	0.080	0.044	0.025	4.494	4.493	3.643	2.763	1.939	1.189	12.00
1966	0.170	0.204	0.640	0.697	0.718	0.558	0.441	0.192	0.078	0.048	0.036	3.783	3.613	3.409	2.769	2.072	1.354	12.91
1967	0.012	0.129	0.215	0.574	0.671	0.384	0.268	0.162	0.070	0.041	0.034	2.562	2.549	2.420	2.204	1.630	0.959	9.23
1968	0.012	0.036	0.179	0.719	1.256	0.973	0.627	0.261	0.156	0.072	0.095	4.387	4.374	4.338	4.159	3.440	2.184	19.44
1969	0.016	0.059	0.123	0.354	0.630	0.552	0.466	0.220	0.145	0.129	0.062	2.758	2.742	2.683	2.560	2.206	1.576	15.37
1970	0.743	0.941	0.265	0.551	0.329	0.488	0.423	0.789	0.131	0.094	0.147	4.900	4.157	3.217	2.952	2.401	2.072	16.43
1971	1.346	0.178	0.239	0.211	0.597	0.460	0.434	0.254	0.318	0.200	0.128	4.365	3.019	2.841	2.602	2.391	1.794	16.52
1972	0.031	5.579	1.217	1.526	0.234	0.094	0.172	0.039	0.159	0.242	0.016	9.307	9.276	3.697	2.480	0.955	0.721	12.96
1973	0.636	0.328	2.173	0.139	0.507	0.212	0.078	0.028	0.051	0.168	0.136	4.457	3.820	3.493	1.320	1.181	0.674	8.73
1974	0.282	1.123	0.189	1.744	0.292	0.359	0.078	0.012	0.012	0.042	0.198	4.332	4.050	2.927	2.738	0.994	0.702	8.97
1975	0.047	0.147	3.067	0.134	2.356	0.254	0.109	0.017	0.003	0.003	0.012	6.150	6.103	5.956	2.889	2.755	0.399	8.62
1976	0.000	0.243	0.209	0.632	0.100	0.768	0.058	0.095	0.000	0.016	0.031	2.151	2.151	1.908	1.699	1.067	0.967	6.74
1977	0.000	0.022	0.359	0.550	1.155	0.152	0.593	0.038	0.097	0.022	0.096	3.083	3.083	3.061	2.703	2.153	0.998	10.22
1978	0.249	1.369	0.371	1.118	0.656	1.430	0.112	0.325	0.009	0.060	0.051	5.749	5.500	4.131	3.760	2.642	1.987	12.89
1979	0.005	0.368	0.594	0.162	0.836	0.392	0.782	0.051	0.215	0.000	0.083	3.488	3.483	3.115	2.521	2.359	1.523	17.54
1980	0.027	1.264	2.602	1.754	0.497	0.232	0.335	0.207	0.030	0.018	0.071	7.037	7.010	5.745	3.144	1.390	0.893	14.21
1981	0.012	0.619	0.382	0.549	0.474	0.089	0.119	0.037	0.108	0.000	0.028	2.418	2.406	1.786	1.404	0.855	0.381	8.05
1982	0.000	0.700	3.142	2.473	1.167	0.248	0.000	0.039	0.000	0.000	0.000	7.769	7.769	7.068	3.927	1.454	0.287	16.07
1983	0.045	1.660	0.977	0.852	0.139	0.264	0.197	0.000	0.000	0.000	0.090	4.223	4.178	2.518	1.541	0.690	0.551	8.81
1984	0.044	0.384	0.421	0.565	0.399	0.220	0.204	0.089	0.000	0.031	0.066	2.423	2.379	1.995	1.574	1.009	0.610	8.81
1985	0.266	0.378	0.910	0.763	0.209	0.218	0.074	0.000	0.034	0.021	0.049	2.922	2.656	2.278	1.368	0.605	0.396	8.49
1986	0.000	0.301	0.490	0.654	0.333	0.086	0.042	0.000	0.000	0.024	0.021	1.951	1.951	1.650	1.160	0.506	0.173	5.10
1987	0.138	0.599	1.324	0.600	0.257	0.061	0.000	0.000	0.000	0.000	0.000	2.979	2.841	2.242	0.918	0.318	0.061	3.41
1988	0.000	1.951	2.245	0.960	0.528	0.110	0.076	0.033	0.000	0.000	0.000	5.903	5.903	3.952	1.707	0.747	0.219	6.61
1989	0.000	0.416	2.391	1.356	0.294	0.174	0.014	0.000	0.000	0.009	0.000	4.653	4.238	4.238	1.847	0.491	0.197	4.58
1990	0.006	0.029	0.367	1.643	0.623	0.278	0.028	0.010	0.000	0.000	0.000	2.985	2.978	2.949	2.583	0.939	0.317	4.91
1991	0.008	0.142	0.142	0.221	0.632	0.079	0.000	0.024	0.000	0.000	0.000	1.248	1.240	1.098	0.956	0.735	0.103	2.78
1992	0.060	0.290	0.450	0.140	0.040	0.330	0.110	0.000	0.010	0.000	0.000	1.430	1.370	1.080	0.630	0.490	0.450	2.45
1993	0.040	0.198	0.569	0.363	0.032	0.000	0.032	0.000	0.000	0.000	0.000	1.232	1.193	0.995	0.427	0.063	0.032	1.00
1994	0.030	0.210	0.880	0.830	0.090	0.050	0.000	0.050	0.000	0.000	0.000	2.140	2.110	1.900	1.020	0.190	0.100	2.74
1995	0.010	0.070	0.280	1.230	0.330	0.080	0.010	0.000	0.000	0.000	0.000	2.010	2.000	1.930	1.650	0.420	0.090	3.67
1996	0.030	0.120	0.380	0.190	0.540	0.060	0.000	0.000	0.000	0.000	0.000	1.320	1.290	1.170	0.790	0.600	0.060	2.35
1997	0.000	0.297	0.086	0.160	0.182	0.149	0.000	0.000	0.000	0.000	0.000	0.872	0.872	0.575	0.490	0.330	0.149	1.87
1998	0.050	0.097	0.320	0.115	0.192	0.039	0.031	0.000	0.000	0.000	0.000	0.843	0.793	0.696	0.376	0.261	0.069	1.50
1999	0.025	0.431	0.363	0.590	0.243	0.132	0.023	0.000	0.000	0.000	0.000	1.807	1.782	1.351	0.998	0.408	0.165	3.50
2000	0.008	0.533	0.984	0.394	0.507	0.134	0.010	0.034	0.000	0.000	0.000	2.804	2.596	2.063	1.079	0.685	0.178	4.65

[a] Strata 26-30 and 36-40.

[b] Autumn catch per tow at age values for 1963-1969 obtained by applying combined 1970-1981 age-length keys to stratified mean catch per tow at length distributions from each survey.

[d] During 1963-1984, BMW oval doors were used in the spring and autumn surveys; since 1985, Portugeuse polyvalent doors have been used in both surveys. Adjustments have been made to the 1963-1984 catch per tow data to standardize these data to polyvalent door equivalents. Conversion coefficients of 1.56 (numbers) and 1.62 (weight) were used in this standardization (NEFSC 1991).

[e] In the Gulf of Maine, spring surveys during 1980-1982, 1989-1991 and 1994, and autumn surveys during 1977-1978, 1980, 1989-1991 and 1993 were accomplished with the R/V DELAWARE II; in all other years, the surveys were accomplished using the R/V ALBATROSS IV. Adjustments have been made to the R/V DELAWARE II catch per tow data to standardize these to R/V ALBATROSS IV equivalents. Conversion coefficients of 0.79 (numbers) and 0.67 (weight) were used in this standardization (NEFSC 1991).

Appendix 2:Table 3. Stratified mean catch per tow in numbers and weight (kg) of Atlantic cod in State of Massachusetts inshore spring and autumn bottom trawl surveys in territorial waters adjacent to the Gulf of Maine (Mass. Regions 4-5), 1978 - 2000. [a]

Year	Age Group											Totals				Stratified Mean Weight/tow (kg)
	0	1	2	3	4	5	6	7	8	9	10+	0+	1+	2+	3+	
Gulf of Maine Area (Mass. Regions 4-5)																
Spring																
1978	21.965	12.784	4.162	4.572	0.872	1.028	0.000	0.000	0.023	0.000	0.000	45.406	23.441	10.657	6.495	12.16
1979	56.393	36.630	2.581	1.533	4.659	1.995	0.183	0.000	0.000	0.000	0.069	104.043	47.650	11.020	8.439	20.53
1980	8.156	50.311	12.679	0.971	0.745	0.737	0.080	0.214	0.000	0.025	0.000	73.918	65.762	15.451	2.772	17.71
1981	19.753	24.794	23.884	3.122	1.279	0.041	0.146	0.022	0.022	0.000	0.000	73.063	53.310	28.516	4.632	21.79
1982	1.489	16.235	7.060	3.418	1.147	0.232	0.011	0.057	0.045	0.000	0.000	29.694	28.205	11.970	4.910	13.42
1983	0.453	27.703	18.572	5.331	0.501	1.221	0.142	0.022	0.000	0.000	0.000	53.945	53.492	25.789	7.217	19.77
1984	0.206	2.896	5.408	2.271	0.865	0.138	0.162	0.000	0.000	0.000	0.000	11.946	11.740	8.844	3.436	8.63
1985	0.793	2.711	3.822	2.794	0.692	0.000	0.000	0.000	0.000	0.000	0.000	10.812	10.019	7.308	3.486	6.42
1986	0.957	19.960	3.222	0.887	0.426	0.090	0.019	0.000	0.000	0.000	0.000	25.561	24.604	4.644	1.422	7.77
1987	0.659	8.590	6.997	2.268	0.257	0.147	0.048	0.000	0.000	0.087	0.000	19.053	18.394	9.804	2.807	9.59
1988	1.595	11.841	11.356	2.511	1.370	0.000	0.039	0.000	0.000	0.000	0.000	28.712	27.117	15.276	3.920	9.66
1989	0.157	20.679	25.260	6.580	0.458	0.106	0.124	0.000	0.000	0.000	0.000	53.364	53.207	32.528	7.268	18.26
1990	4.10	6.33	6.89	17.77	2.64	0.18	0.05	0.02	0.000	0.000	0.000	37.980	33.88	27.55	20.66	19.51
1991	0.32	5.88	3.56	2.54	5.03	0.36	0.000	0.000	0.000	0.000	0.000	17.69	17.37	11.49	7.93	11.37
1992	1.36	6.42	6.35	3.58	0.65	1.37	0.12	0.04	0.00	0.00	0.00	19.88	18.53	12.11	5.76	10.10
1993	69.03	3.40	7.76	3.60	1.45	0.05	0.30	0.00	0.00	0.00	0.00	85.59	16.56	13.16	5.40	7.63
1994	3.90	4.45	5.67	2.46	0.52	0.23	0.03	0.06	0.00	0.03	0.00	17.35	13.45	9.00	3.33	4.83
1995	9.84	6.41	1.36	3.89	1.20	0.09	0.00	0.00	0.00	0.00	0.00	22.79	12.95	6.54	5.18	4.49
1996	6.39	1.37	0.65	1.15	2.00	0.38	0.00	0.00	0.00	0.00	0.00	11.96	5.57	4.20	3.55	4.06
1997	10.40	3.66	1.25	1.05	0.22	0.50	0.03	0.00	0.00	0.00	0.00	17.09	6.69	3.03	1.78	2.97
1998	20.72	3.15	1.80	0.99	1.06	0.08	0.46	0.04	0.00	0.00	0.00	28.30	7.58	4.43	2.63	5.76
1999	116.22	14.36	3.57	3.46	1.20	1.08	0.06	0.22	0.04	0.00	0.00	140.08	23.84	9.48	5.91	14.19
2000	1.83	27.99	7.12	2.85	2.60	0.78	0.77	0.06	0.13	0.00	0.00	44.10	42.47	14.48	7.36	22.36
Autumn																
1978	151.533	2.082	0.000	0.120	0.140	0.318	0.000	0.080	0.000	0.000	0.000	154.273	2.740	0.658	0.658	3.02
1979	4.933	3.430	0.042	0.000	0.026	0.000	0.000	0.000	0.000	0.000	0.000	8.431	3.498	0.068	0.026	0.99
1980	5.680	8.834	0.052	0.000	0.000	0.050	0.000	0.000	0.000	0.000	0.000	14.616	8.936	0.102	0.050	1.57
1981	2.018	5.652	7.290	0.729	0.000	0.000	0.000	0.000	0.000	0.000	0.000	15.689	13.671	8.019	0.729	6.65
1982	4.667	2.346	1.005	0.060	0.050	0.000	0.000	0.000	0.000	0.000	0.000	8.128	3.461	1.115	0.110	1.35
1983	1.308	0.651	0.100	0.013	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.072	0.764	0.113	0.013	0.18
1984	12.296	0.344	0.022	0.013	0.000	0.000	0.000	0.000	0.000	0.000	0.000	12.675	0.379	0.035	0.013	0.18
1985	2.832	0.419	0.018	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.279	0.447	0.028	0.010	0.09
1986	2.478	1.150	0.833	0.000	0.067	0.000	0.000	0.000	0.000	0.000	0.000	4.528	2.050	0.900	0.067	0.55
1987	389.584	2.386	0.020	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	391.990	2.406	0.020	0.000	0.45
1988	4.571	20.490	0.679	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	25.740	21.169	0.679	0.000	1.57
1989	2.971	2.700	0.350	0.210	0.185	0.000	0.000	0.000	0.000	0.000	0.000	6.416	3.445	0.745	0.395	1.27
1990	9.37	9.13	1.74	0.31	0.06	0.03	0.000	0.000	0.000	0.000	0.000	20.638	11.27	2.14	0.40	1.56
1991	4.65	4.20	0.81	0.03	0.05	0.01	0.00	0.00	0.00	0.00	0.00	9.74	5.09	0.89	0.08	0.80
1992	24.30	2.01	0.11	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	26.48	2.18	0.17	0.06	0.42
1993	49.92	3.32	0.61	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	54.21	4.29	0.97	0.36	1.97
1994	33.49	14.13	6.37	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	54.26	20.77	6.64	0.27	4.47
1995	2.56	0.64	0.54	0.79	0.02	0.00	0.00	0.00	0.00	0.00	0.00	4.55	1.99	1.35	0.81	0.74
1996	7.59	0.15	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	7.78	0.19	0.04	0.03	0.09
1997	2.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.04	0.02	0.00	0.00	0.02
1998	2.61	1.04	0.62	0.08	0.11	0.00	0.00	0.00	0.00	0.00	0.00	4.46	1.85	0.81	0.19	0.56
1999	6.34	0.98	0.28	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	7.65	1.31	0.33	0.05	0.43
2000	0.04	0.54	0.27	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.91	0.87	0.33	0.06	0.34

[a] Massachusetts sampling strata 25-36.