

## **APPENDIX 1**

### **Discard / Kept Ratios, Landings, and Discards of Otter Trawls and Gill Nets from the Sea Sampling Database for Georges Bank Cod**

Table 1. Observed number of tows and discard ratio derived from the Sea Sampling Database, landings (mt), estimated discards (mt), and catch (mt) of Georges Bank Atlantic cod in the otter trawl and gillnet fisheries in the western part (SA 521-522,525-526,537-539 & Div. 6) and the eastern part(SA 561,562) of Georges Bank, by quarter, 1989-2000.

Table 2. Discard/Kept ratio of Georges Bank cod estimated from vessels with a history of reporting discards on the Vessel Trip Report (VTR) for any species, 1999-2000.

Appendix 1. Table 1a. Observed number of tows and discard ratios derived from the Sea Sampling Database, landings (mt), estimated discards (mt), and catch (mt) of Georges Bank Atlantic cod in the otter trawl fisheries in the western part (SA 521-522,525-526, 537-539 & Div.6) and the eastern part (SA 561, 562) of Georges Bank, by quarter,1989-2000.

WEST							OTTER TRAWL							West +East		
Year	Quarter	# Tows	D/K Landings	Discard	Catch		Year	Quarter	# Tows	D/K Landings	Discard	Catch	Landings	Discard	Catch	
1989	1	126	0.029	2686	77.894	2763.89	1989	1	16	0.018	1898	34.164	1932.16	19073	861.126	19934.126
	2	239	0.054	3987	215.298	4202.3		2	100	0.027	3061	82.647	3143.65			
	3	222	0.073	3386	247.178	3633.18		3	16	0.043	353	15.179	368.179			
	4	151	0.057	2878	164.046	3042.05		4	27	0.03	824	24.72	848.72			
	Annual			12937	704.416	13641.4		Annual			6136	156.71	6292.71			
1990	1	175	0.1	2668	266.8	2934.8	1990	1	63	0.012	2331	27.972	2358.97	23006	867.307	23873.307
	2	130	0.074	4247	314.278	4561.28		2	20	0.008	3433	27.464	3460.46			
	3	116	0.027	4495	121.365	4616.37		3	14	0.002	457	0.914	457.914			
	4	172	0.02	5206	104.12	5310.12		4	35	0.026	169	4.394	173.394			
	Annual			16616	806.563	17422.6		Annual			6390	60.744	6450.74			
1991	1	187	0.005	3254	16.27	3270.27	1991	1	81	0.016	2040	32.64	2072.64	18705	522.087	19227.087
	2	173	0.032	4331	138.592	4469.59		2	1	0.027	3745	101.115	3846.12			
	3	167	0.02	2291	45.82	2336.82		3	0	0	143	0	143			
	4	220	0.075	2502	187.65	2689.65		4	0	0	399	0	399			
	Annual			12378	388.332	12766.3		Annual			6327	133.755	6460.76			
1992	1	121	0.012	1692	20.304	1712.3	1992	1	120	0.022	1951	42.922	1993.92	2955	85.698	3040.698
	2	108	0.009	2120	19.08	2139.08		2	21	0.001	2162	2.162	2164.16			
	3	67	0.053	1340	71.02	1411.02		3	0	0	186	0	186			
	4	90	0.018	2199	39.582	2238.58		4	31	0.061	756	46.116	802.116			
	Annual			7351	149.986	7500.99		Annual			5055	91.2	5146.2			
1993	1	41	0.053	1595	84.535	1679.54	1993	1	18	0.017	1304	22.168	1326.17	11275	377.598	11652.598
	2	38	0.023	2171	49.933	2220.93		2	203	0.018	1987	35.766	2022.77			
	3	74	0.088	1257	110.616	1367.62		3	0	0	231	0	231			
	4	123	0.03	2242	67.26	2309.26		4	15	0.015	488	7.32	495.32			
	Annual			7265	312.344	7577.34		Annual			4010	65.254	4075.25			
1994	1	172	0.008	0	0	0	1994	1	114	0.003	0	0	0	0	0	1994 not available by qtr
	2	36	0.043	0	0	0		2	172	0.005	0	0	0	0		
	3	13	0	0	0	0		3	43	0.003	0	0	0	0		
	4	49	0.004	0	0	0		4	10	0	0	0	0	0		
	Annual			5916.63	0	0		Annual			1222.72	0	0	0	0	

Appendix 1. Table 1a continued. Observed number of tows and discard ratios derived from the Sea Sampling Database, landings (mt), estimated discards (mt), and catch (mt) of Georges Bank Atlantic cod in the otter trawl fisheries in the western part (SA 521-522, 525-526, 537-539 & Div.6) and the eastern part (SA 561, 562) of Georges Bank, by quarter, 1989-2000.

WEST							OTTER TRAWL EAST							West +East		
Year	Quarter	# Tows	D/K Landings	Discard	Catch		Year	Quarter	# Tows	D/K Landings	Discard	Catch				
1995	1	227	0.004	504.29	2.01716	506.307	1995	1	38	0.002	147.29	0.29458	147.585	3774.89	53.3748	3828.26475
	2	217	0.032	1008.17	32.2614	1040.43		2	38	0.001	373.8	0.3738	374.174			
	3	114	0.01	879.81	8.7981	888.608		3	8	0	38.46	0	38.46			
	4	103	0.012	800.6	9.6072	810.207		4	28	0.001	22.47	0.02247	22.4925			
	Annual			3192.87	52.6839	3245.55		Annual			582.02	0.69085	582.711			
1996	1	99	0.012	635.26	7.62312	642.883	1996	1	30	0.007	147.6	1.0332	148.633	4053.29	14.1617	4067.45172
	2	165	0.001	1330.48	1.33048	1331.81		2	124	0	497.91	0	497.91			
	3	0	0	868.53	0	868.53		3	0	0	35.87	0	35.87			
	4	58	0.009	463.88	4.17492	468.055		4	0	0	73.76	0	73.76			
	Annual			3298.15	13.1285	3311.28		Annual			755.14	1.0332	756.173			
1997	1	152	0.008	627.06	5.01648	632.076	1997	1	0	0	85.99	0	85.99	4617.16	16.974	4634.13399
	2	1	0	2058.16	0	2058.16		2	0	0	373.71	0	373.71			
	3	157	0.005	825.99	4.12995	830.12		3	0	0	26.49	0	26.49			
	4	100	0.013	602.12	7.82756	609.948		4	0	0	17.64	0	17.64			
	Annual			4113.33	16.974	4130.3		Annual			503.83	0	503.83			
1998	1	62	0.02	476.17	9.5234	485.693	1998	1	3	0.013	40.72	0.52936	41.2494	4057.82	13.2482	4071.06824
	2	0	0	1408.29	0	1408.29		2	0	0	705.43	0	705.43			
	3	40	0.004	657.07	2.62828	659.698		3	31	0.016	35.45	0.5672	36.0172			
	4	0	0	721.76	0	721.76		4	0	0	12.93	0	12.93			
	Annual			3263.29	12.1517	3275.44		Annual			794.53	1.09656	795.627			
1999	1	1	0	514.27	0	514.27	1999	1	0	0	249.49	0	249.49	4759.94	27.2957	4787.2357
	2	33	0.002	1679.74	3.35948	1683.1		2	46	0.006	862.95	5.1777	868.128			
	3	57	0.009	755.14	6.79626	761.936		3	12	0	25.48	0	25.48			
	4	106	0.018	664.57	11.9623	676.532		4	0	0	8.3	0	8.3			
	Annual			3613.72	22.118	3635.84		Annual			1146.22	5.1777	1151.4			
2000	1	146	0.047	737.99	34.6855	772.676	2000	1	44	0.012	234.52	2.81424	237.334	4727.17	100.471	4827.64073
	2	143	0.03	1559.36	46.7808	1606.14		2	39	0.02	377.78	7.5556	385.336			
	3	96	0.01	749.37	7.4937	756.864		3	29	0.058	19.67	1.14086	20.8109			
	4		0	1025.78	0	1025.78		4	0	0	22.7	0	22.7			
	Annual			4072.5	88.96	4161.46		Annual			654.67	11.5107	666.181			

Appendix 1. Table 1b. Observed number of tows and discard ratios derived from the Sea Sampling Database, landings (mt), estimated discards (mt), and catch (mt) of Georges Bank Atlantic cod in the gillnet fisheries in the western part (SA 521-522,525-526, 537-539 & Div.6) and the eastern part (SA 561, 562) of Georges Bank, by quarter, 1989-2000.

WEST							GILL NET							West +East		
Year	Quarter	# Tows	D/K	Landings	Discard	Catch	Year	Quarter	# Tows	D/K	Landings	Discard	Catch	Landings	Discard	Catch
1989	1	0	0	325	0	325	1989	1	0	0	0	0	0	3535	42.276	3577.28
	2	3	0.001	997	0.997	997.997		2	0	0	0	0	0			
	3	58	0.011	1901	20.911	1921.91		3	0	0	0	0	0			
	4	36	0.067	304	20.368	324.368		4	0	0	8	0	8			
	Annual			3527	42.276	3569.28		Annual			8	0	8			
1990	1	8	0.017	311	5.287	316.287	1990	1	0	0	0	0	0	2651	139.419	2790.42
	2	37	0.017	856	14.552	870.552		2	0	0	4	0	4			
	3	15	0.072	1294	93.168	1387.17		3	0	0	0	0	0			
	4	21	0.142	186	26.412	212.412		4	0	0	0	0	0			
	Annual			2647	139.419	2786.42		Annual			4	0	4			
1991	1	4	0.115	186	21.39	207.39	1991	1	0	0	0	0	0	2564	110.635	2674.64
	2	220	0.011	742	8.162	750.162		2	14	0.001	5	0.005	5.005			
	3	508	0.033	1236	40.788	1276.79		3	0	0	0	0	0			
	4	128	0.102	395	40.29	435.29		4	0	0	0	0	0			
	Annual			2559	110.63	2669.63		Annual			5	0.005	5.005			
1992	1	29	0.033	280	9.24	289.24	1992	1	0	0	2	0	2	2179	74.246	2253.25
	2	340	0.046	464	21.344	485.344		2	18	0.03	1	0.03	1.03			
	3	257	0.028	1134	31.752	1165.75		3	0	0	1	0	1			
	4	188	0.04	297	11.88	308.88		4	0	0	0	0	0			
	Annual			2175	74.216	2249.22		Annual			4	0.03	4.03			
1993	1	83	0.06	134	8.04	142.04	1993	1	0	0	0	0	0	1549	69.007	1618.01
	2	140	0.074	561	41.514	602.514		2	5	0.064	0	0	0			
	3	9	0.007	579	4.053	583.053		3	5	0.003	0	0	0			
	4	197	0.056	275	15.4	290.4		4	0	0	0	0	0			
	Annual			1549	69.007	1618.01		Annual			0	0	0			
1994	1	88	0.124	0	0	0	1994	1	0	0	0	0	0	<i>1994 not available by qtr</i>		
	2	0	0	0	0	0		2	0	0	0	0	0			
	3	18	0.043	0	0	0		3	0	0	0	0	0			
	4	70	0.07	0	0	0		4	0	0	0	0	0			
	Annual			1318.19	0	0		Annual			0	0	0			

Appendix 1. Table 1b continued. Observed number of tows and discard ratios derived from the Sea Sampling Database, landings (mt), estimated discards (mt), and catch (mt) of Georges Bank Atlantic cod in the gillnet fisheries in the western part (SA 521-522,525-526, 537-539 & Div.6) and the eastern part (SA 561, 562) of Georges Bank, by quarter,1989-2000.

WEST							GILL NET							EAST			West +East				
Year	Quarter	# Tows	D/K	Landings	Discard	Catch	Year	Quarter	# Tows	D/K	Landings	Discard	Catch	Year	Quarter	# Tows	D/K	Landings	Discard	Catch	
1995	1	32	0.193	119.89	23.1388	143.029	1995	1	0	0	3.51	0	3.51								
	2	40	0.028	381.02	10.6686	391.689		2	0	0	1.92	0	1.92								
	3	35	0.029	617.54	17.9087	635.449		3	0	0	0	0	0								
	4	44	0.081	194.9	15.7869	210.687		4	0	0	0	0	0								
	Annual			1313.35	67.5029	1380.85		Annual			5.43	0	5.43								
1996	1	32	0.017	94.64	1.60888	96.2489	1996	1	0	0	0	0	0								
	2	18	0.08	544.07	43.5256	587.596		2	0	0	0	0	0								
	3	6	0.146	631.26	92.164	723.424		3	0	0	0	0	0								
	4	50	0.05	286.98	14.349	301.329		4	0	0	0	0	0								
	Annual			1556.95	151.647	1708.6		Annual			0	0	0								
1997	1	28	0.068	59.45	4.0426	63.4926	1997	1	0	0	0	0	0								
	2	23	0.049	775.67	38.0078	813.678		2	0	0	0	0	0								
	3	22	0.02	588.88	11.7776	600.658		3	0	0	0.14	0	0.14								
	4	26	0.093	175.34	16.3066	191.647		4	0	0	1.88	0	1.88								
	Annual			1599.34	70.1347	1669.47		Annual			2.02	0	2.02								
1998	1	57	0.104	110.33	11.4743	121.804	1998	1	0	0	0	0	0								
	2	34	0.111	329.06	36.5257	365.586		2	0	0	10.03	0	10.03								
	3	12	0.08	240.86	19.2688	260.129		3	0	0	0	0	0								
	4	87	0.046	143.24	6.58904	149.829		4	0	0	0.91	0	0.91								
	Annual			823.49	73.8578	897.348		Annual			10.94	0	10.94								
1999	1	56	0.043	131.44	#REF!	#REF!	1999	1	0	0	0	0	0								
	2	79	0.037	663.92	#REF!	#REF!		2	0	0	0.03	0	0.03								
	3	40	0.055	471.95	#REF!	#REF!		3	0	0	0	0	0								
	4	27	0.041	184.48	#REF!	#REF!		4	0	0	0.28	0	0.28								
	Annual			1451.79	#REF!	#REF!		Annual			0.31	0	0.31								
2000	1	24	0.021	179.17	15.7368	765.107	2000	1	0	0	0	0	0								
	2	65	0.022	596.59	22.5672	1048.35		2	0	0	3.6	0	3.6								
	3	54	0.064	629.62	260.64	4333.14		3	0	0	0	0	0								
	4	0	0	225.96	0	0		4	0	0	0	0	0								
	Annual			1631.34	298.944	6146.59		Annual			3.6	0	3.6								

Appendix 1. Table 2. Discard/Kept ratio of Georges Bank cod estimated from vessels with a history of reporting discards on the Vessel Trip Report (VTR) for any species, 1999-2000.

Otter trawl

Year	Quarter	D/K	Landings	Discard	Catch
1994	1	0.016	0	0	0
	2	0.012	0	0	0
	3	0.020	0	0	0
	4	0.012	0	0	0
	Annual		0	0	0

Year	Quarter	D/K	Landings	Discard	Catch
1995	1	0.019	651.6	12.4	664.0
	2	0.013	1382.0	18.0	1399.9
	3	0.011	918.3	10.1	928.4
	4	0.009	823.1	7.4	830.5
	Annual		3774.9	47.9	3822.7

Year	Quarter	D/K	Landings	Discard	Catch
1996	1	0.004	782.9	3.1	786.0
	2	0.008	1828.4	14.6	1843.0
	3	0.004	904.4	3.6	908.0
	4	0.011	537.6	5.9	543.6
	Annual		4053.3	27.3	4080.6

Year	Quarter	D/K	Landings	Discard	Catch
1997	1	0.017	713.1	12.1	725.2
	2	0.006	2431.9	14.6	2446.5
	3	0.007	852.5	6.0	858.4
	4	0.004	619.8	2.5	622.2
	Annual		4617.2	35.2	4652.3

Year	Quarter	D/K	Landings	Discard	Catch
1998	1	0.004	516.9	2.1	519.0
	2	0.015	2113.7	31.7	2145.4
	3	0.002	692.5	1.4	693.9
	4	0.008	734.7	5.9	740.6
	Annual		4057.8	41.0	4098.9

Year	Quarter	D/K	Landings	Discard	Catch
1999	1	0.003	763.8	2.2	766.0
	2	0.021	2542.7	52.1	2594.8
	3	0.045	780.6	35.0	815.7
	4	0.090	672.9	60.3	733.2
	Annual		4759.9	149.7	4909.6

Year	Quarter	D/K	Landings	Discard	Catch
2000	1	0.026	972.5	25.7	998.2
	2	0.011	1937.1	21.1	1958.3
	3	0.030	769.0	22.8	791.8
	4	0.023	1048.5	24.4	1072.9
	Annual		4727.2	94.0	4821.2

Gill net

Year	Quarter	D/K	Landings	Discard	Catch
1994	1	0.000		0	0
	2	0.002		0	0
	3	0.004		0	0
	4	0.113		0	0
	Annual		0	0	0

Year	Quarter	D/K	Landings	Discard	Catch
1995	1	0.008	123.4	1.0	124.4
	2	0.005	382.9	1.9	384.9
	3	0.007	617.5	4.3	621.9
	4	0.012	194.9	2.3	197.2
	Annual		1318.8	9.6	1328.3

Year	Quarter	D/K	Landings	Discard	Catch
1996	1	0.011	123.4	1.4	124.8
	2	0.003	382.9	1.1	384.1
	3	0.008	617.5	4.9	622.5
	4	0.006	194.9	1.2	196.1
	Annual		1318.8	8.6	1327.4

Year	Quarter	D/K	Landings	Discard	Catch
1997	1	0.005	59.5	0.3	59.7
	2	0.002	775.7	1.6	777.2
	3	0.004	589.0	2.4	591.4
	4	0.003	177.2	0.5	177.8
	Annual		1601.4	4.7	1606.1

Year	Quarter	D/K	Landings	Discard	Catch
1998	1	0.005	110.3	0.6	110.9
	2	0.002	339.1	0.7	339.8
	3	0.005	240.9	1.2	242.1
	4	0.008	144.2	1.2	145.3
	Annual		834.4	3.6	838.0

Year	Quarter	D/K	Landings	Discard	Catch
1999	1	0.004	131.4	0.5	132.0
	2	0.012	664.0	8.0	671.9
	3	0.053	472.0	25.2	497.1
	4	0.039	184.8	7.2	191.9
	Annual		1452.1	40.8	1492.9

Year	Quarter	D/K	Landings	Discard	Catch
2000	1	0.026	179.2	4.7	183.9
	2	0.011	600.2	6.5	606.7
	3	0.030	629.6	18.6	648.3
	4	0.023	226.0	5.3	231.2
	Annual		1634.9	35.2	1670.1