

Tanner Crab Assessment 2022 Appendix D: Comparison Tables–All Models

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Tables

Table 1: Estimated rates of natural mortality (period of elevated M is 1980-1984).

case	immature	mature			
	all	female		male	
	typical	typical	elevated	typical	elevated
22.01	0.237	0.306	0.606	0.304	0.712
22.07	0.233	0.312	–	0.301	–
22.08	0.236	0.304	–	0.313	–
22.09	0.237	0.306	0.606	0.304	0.712
22.10	0.236	0.307	0.599	0.305	0.723
22.11	0.233	0.312	–	0.301	–
22.03	0.236	0.307	0.599	0.305	0.723

Table 2: Estimated fully-selected survey catchability. The year indicates the start of the time block in which the value is used.

case	NMFS F		NMFS M		SBS BSFRF F	SBS BSFRF M
	female		male		female	male
	1975	1982	1975	1982	2013	2013
22.01	0.34	0.27	0.50	0.50	1.00	1.00
22.07	–	0.27	–	0.52	1.00	1.00
22.08	–	0.20	–	0.44	1.00	1.00
22.09	0.34	0.27	0.50	0.50	1.00	1.00
22.10	0.34	0.27	0.51	0.52	1.00	1.00
22.11	–	0.27	–	0.52	1.00	1.00
22.03	0.34	0.27	0.51	0.52	1.00	1.00

Table 3: Estimated retained catch abundance (millions; 1965-1989).

y	22.01	22.07	22.08	22.09	22.10	22.11	22.03
1965	1.9	–	–	1.9	1.9	–	1.9
1966	2.4	–	–	2.4	2.4	–	2.4
1967	13.3	–	–	13.3	13.2	–	13.2
1968	17.8	–	–	17.8	17.7	–	17.7
1969	27.7	–	–	27.7	27.6	–	27.6
1970	26.5	–	–	26.5	26.4	–	26.4
1971	22.1	–	–	22.1	22.1	–	22.1
1972	17.8	–	–	17.8	17.8	–	17.8
1973	12.7	–	–	12.7	12.6	–	12.6
1974	14.2	–	–	14.2	14.2	–	14.2
1975	16.5	–	–	16.5	16.4	–	16.4
1976	27.4	–	–	27.4	27.3	–	27.3
1977	33.3	–	–	33.3	33.2	–	33.2
1978	21.2	–	–	21.2	21.1	–	21.1
1979	18.4	–	–	18.4	18.3	–	18.3
1980	13.7	–	–	13.7	13.7	–	13.7
1981	5.0	–	–	5.0	5.0	–	5.0
1982	2.3	2.2	2.2	2.3	2.3	2.2	2.3
1983	0.5	0.5	0.5	0.5	0.5	0.5	0.5
1984	1.4	1.3	1.3	1.4	1.4	1.3	1.4
1987	1.0	0.9	0.9	1.0	1.0	0.9	1.0
1988	3.1	3.1	3.1	3.1	3.1	3.1	3.1
1989	10.6	10.7	10.7	10.6	10.6	10.7	10.6

Table 4: Estimated retained catch abundance (millions; 1990+).

y	22.01	22.07	22.08	22.09	22.10	22.11	22.03
1990	17.3	17.4	17.4	17.3	17.3	17.4	17.3
1991	13.7	13.7	13.6	13.7	13.7	13.7	13.7
1992	15.4	15.5	15.4	15.4	15.5	15.5	15.5
1993	7.3	7.4	7.4	7.3	7.3	7.4	7.3
1994	3.4	3.4	3.4	3.4	3.4	3.4	3.4
1995	1.9	1.9	1.9	1.9	1.9	1.9	1.9
1996	0.8	0.7	0.7	0.8	0.7	0.7	0.7
2005	0.4	0.4	0.4	0.4	0.4	0.4	0.4
2006	0.9	1.0	1.0	0.9	0.9	1.0	0.9
2007	0.9	0.9	0.9	0.9	0.9	0.9	0.9
2008	0.8	0.9	0.9	0.8	0.9	0.9	0.9
2009	0.5	0.5	0.5	0.5	0.5	0.5	0.5
2013	1.5	1.5	1.5	1.5	1.5	1.5	1.5
2014	7.5	7.5	7.5	7.4	7.4	7.4	7.5
2015	10.6	10.7	10.7	10.6	10.5	10.6	10.6
2017	1.3	1.3	1.3	1.3	1.3	1.3	1.3
2018	1.3	1.3	1.3	1.3	1.3	1.3	1.3
2020	0.8	0.8	0.8	0.8	0.8	0.8	0.8
2021	0.6	0.6	0.6	0.7	0.7	0.7	0.6

Table 5: Estimated retained catch biomass (1,000's t; 1965-1989).

y	22.01	22.07	22.08	22.09	22.10	22.11	22.03
1965	1.9	–	–	1.9	1.9	–	1.9
1966	2.4	–	–	2.4	2.4	–	2.4
1967	13.6	–	–	13.6	13.6	–	13.6
1968	18.0	–	–	18.0	18.0	–	18.0
1969	27.4	–	–	27.4	27.4	–	27.4
1970	25.3	–	–	25.3	25.3	–	25.3
1971	20.4	–	–	20.4	20.4	–	20.4
1972	16.4	–	–	16.4	16.4	–	16.4
1973	12.7	–	–	12.7	12.7	–	12.7
1974	14.6	–	–	14.6	14.6	–	14.6
1975	17.0	–	–	17.0	17.0	–	17.0
1976	28.1	–	–	28.1	28.1	–	28.1
1977	33.9	–	–	33.9	33.8	–	33.8
1978	21.2	–	–	21.2	21.1	–	21.1
1979	18.0	–	–	18.0	18.0	–	18.0
1980	13.4	–	–	13.4	13.4	–	13.4
1981	5.0	–	–	5.0	5.0	–	5.0
1982	2.4	2.4	2.4	2.4	2.4	2.4	2.4
1983	0.5	0.5	0.5	0.5	0.5	0.5	0.5
1984	1.4	1.4	1.4	1.4	1.4	1.4	1.4
1987	1.0	1.0	1.0	1.0	1.0	1.0	1.0
1988	3.2	3.2	3.2	3.2	3.2	3.2	3.2
1989	10.9	10.9	10.8	10.9	10.9	10.9	10.9

Table 6: Estimated retained catch biomass (1,000's t; 1990+).

y	22.01	22.07	22.08	22.09	22.10	22.11	22.03
1990	17.5	17.5	17.5	17.5	17.6	17.5	17.6
1991	14.1	14.0	14.0	14.1	14.1	14.0	14.1
1992	15.6	15.6	15.5	15.6	15.6	15.6	15.6
1993	7.6	7.6	7.6	7.6	7.6	7.6	7.6
1994	3.6	3.6	3.6	3.6	3.6	3.6	3.6
1995	2.0	1.9	1.9	2.0	1.9	1.9	1.9
1996	0.8	0.8	0.8	0.8	0.8	0.8	0.8
2005	0.4	0.4	0.4	0.4	0.4	0.4	0.4
2006	1.0	1.0	1.0	1.0	1.0	1.0	1.0
2007	1.0	1.0	1.0	1.0	1.0	1.0	1.0
2008	0.9	0.9	0.9	0.9	0.9	0.9	0.9
2009	0.6	0.6	0.6	0.6	0.6	0.6	0.6
2013	1.3	1.3	1.3	1.3	1.3	1.3	1.3
2014	6.2	6.2	6.2	6.2	6.2	6.2	6.2
2015	8.9	8.9	8.9	8.9	8.9	8.9	8.9
2017	1.1	1.1	1.1	1.1	1.1	1.1	1.1
2018	1.1	1.1	1.1	1.1	1.1	1.1	1.1
2020	0.7	0.7	0.7	0.7	0.7	0.7	0.7
2021	0.5	0.5	0.5	0.5	0.5	0.5	0.5

Table 7: Estimated discard catch mortality (abundance) in the directed fishery (millions; 1965-1989).

y	22.01		22.07		22.08		22.09		22.10		22.11		22.03	
	female	male	female	male	female	male	female	male	female	male	female	male	female	male
1965	0.12	1.08	-	-	-	-	0.12	1.08	0.10	1.05	-	-	0.10	1.05
1966	0.15	1.40	-	-	-	-	0.15	1.41	0.13	1.36	-	-	0.13	1.36
1967	1.03	9.17	-	-	-	-	1.03	9.19	0.90	8.90	-	-	0.90	8.87
1968	2.04	16.83	-	-	-	-	2.04	16.87	1.78	16.28	-	-	1.77	16.23
1969	7.51	52.19	-	-	-	-	7.51	52.28	6.52	50.13	-	-	6.52	50.02
1970	46.79	195.32	-	-	-	-	46.70	195.30	42.04	189.33	-	-	42.13	189.36
1971	101.06	302.56	-	-	-	-	100.74	302.24	90.82	289.70	-	-	91.22	290.11
1972	11.31	57.43	-	-	-	-	11.30	57.45	9.65	53.76	-	-	9.67	53.75
1973	1.75	12.03	-	-	-	-	1.75	12.06	1.53	11.59	-	-	1.53	11.56
1974	1.26	9.47	-	-	-	-	1.26	9.50	1.11	9.21	-	-	1.11	9.18
1975	1.31	10.02	-	-	-	-	1.31	10.05	1.16	9.78	-	-	1.16	9.75
1976	2.42	18.29	-	-	-	-	2.42	18.34	2.14	17.86	-	-	2.14	17.81
1977	4.37	30.70	-	-	-	-	4.37	30.77	3.84	29.82	-	-	3.83	29.73
1978	4.99	31.49	-	-	-	-	5.00	31.55	4.33	30.21	-	-	4.33	30.14
1979	7.59	43.98	-	-	-	-	7.58	44.01	6.55	41.81	-	-	6.55	41.76
1980	5.36	30.99	-	-	-	-	5.37	31.08	4.80	30.12	-	-	4.79	30.02
1981	0.86	5.63	-	-	-	-	0.87	5.65	0.78	5.50	-	-	0.78	5.48
1982	0.22	1.55	0.23	1.22	0.35	1.75	0.22	1.56	0.20	1.52	0.23	1.23	0.20	1.51
1983	0.04	0.26	0.03	0.16	0.04	0.19	0.04	0.26	0.03	0.25	0.03	0.16	0.03	0.25
1984	0.10	0.63	0.08	0.42	0.09	0.45	0.10	0.63	0.09	0.61	0.08	0.42	0.09	0.61
1987	0.08	0.60	0.07	0.52	0.08	0.55	0.08	0.61	0.07	0.58	0.07	0.52	0.07	0.58
1988	0.24	2.07	0.22	1.94	0.25	2.00	0.24	2.08	0.21	2.01	0.22	1.95	0.21	2.01
1989	0.90	7.71	0.79	7.31	0.85	7.22	0.90	7.73	0.81	7.55	0.79	7.33	0.80	7.53

Table 8: Estimated discard catch mortality in abundance in the directed fishery (millions; 1990+).

y	22.01		22.07		22.08		22.09		22.10		22.11		22.03	
	female	male	female	male	female	male	female	male	female	male	female	male	female	male
1990	0.91	5.42	0.91	5.76	0.90	5.54	0.91	5.43	0.93	5.91	0.91	5.78	0.93	5.90
1991	1.36	3.65	1.39	4.24	1.34	4.01	1.36	3.65	1.41	4.23	1.39	4.25	1.41	4.23
1992	1.52	4.62	1.52	4.88	1.37	4.37	1.52	4.62	1.52	4.77	1.52	4.88	1.52	4.77
1993	1.02	2.59	0.94	2.40	0.86	2.26	1.02	2.59	0.92	2.36	0.94	2.40	0.92	2.36
1994	0.98	1.94	0.88	1.85	0.86	1.79	0.98	1.95	0.89	1.84	0.88	1.85	0.89	1.84
1995	0.68	1.35	0.60	1.34	0.59	1.30	0.68	1.35	0.62	1.34	0.60	1.34	0.62	1.34
1996	0.49	1.01	0.48	0.99	0.47	0.99	0.49	1.01	0.50	0.98	0.48	0.99	0.50	0.98
1997	0.32	1.04	0.30	1.19	0.29	1.17	0.32	1.04	0.30	1.18	0.30	1.19	0.30	1.18
1998	0.24	0.76	0.22	0.76	0.21	0.74	0.24	0.76	0.22	0.75	0.22	0.76	0.22	0.75
1999	0.13	0.41	0.13	0.41	0.13	0.41	0.13	0.41	0.13	0.41	0.13	0.41	0.13	0.41
2000	0.16	0.50	0.15	0.50	0.15	0.50	0.16	0.50	0.15	0.50	0.15	0.50	0.15	0.50
2001	0.24	0.74	0.23	0.76	0.23	0.76	0.24	0.74	0.23	0.76	0.23	0.76	0.23	0.76
2002	0.13	0.40	0.12	0.41	0.12	0.41	0.13	0.40	0.12	0.41	0.12	0.41	0.12	0.41
2003	0.09	0.28	0.08	0.28	0.08	0.28	0.09	0.28	0.08	0.28	0.08	0.28	0.08	0.28
2004	0.14	0.46	0.13	0.45	0.13	0.45	0.14	0.46	0.13	0.45	0.13	0.45	0.13	0.45
2005	0.09	0.50	0.09	0.50	0.09	0.50	0.09	0.50	0.09	0.50	0.09	0.50	0.09	0.50
2006	0.11	0.84	0.10	0.63	0.10	0.64	0.11	0.84	0.10	0.63	0.10	0.63	0.10	0.63
2007	0.11	0.89	0.10	0.80	0.10	0.81	0.11	0.89	0.10	0.79	0.10	0.80	0.10	0.79
2008	0.08	0.48	0.07	0.47	0.07	0.48	0.08	0.48	0.07	0.47	0.07	0.47	0.07	0.47
2009	0.06	0.38	0.05	0.39	0.05	0.39	0.06	0.38	0.05	0.39	0.05	0.39	0.05	0.39
2010	0.05	0.39	0.04	0.40	0.04	0.40	0.05	0.39	0.04	0.40	0.04	0.40	0.04	0.40
2011	0.07	0.54	0.06	0.57	0.06	0.57	0.07	0.54	0.06	0.57	0.06	0.57	0.06	0.57
2012	0.05	0.41	0.04	0.42	0.04	0.42	0.05	0.41	0.04	0.42	0.04	0.42	0.04	0.42
2013	0.07	0.47	0.06	0.50	0.06	0.49	0.07	0.47	0.06	0.50	0.06	0.50	0.06	0.50
2014	0.12	1.15	0.11	1.35	0.11	1.34	0.12	1.16	0.11	1.34	0.11	1.36	0.11	1.33
2015	0.11	1.21	0.10	1.33	0.10	1.34	0.12	1.23	0.11	1.34	0.10	1.36	0.11	1.31
2016	0.06	0.60	0.05	0.65	0.05	0.65	0.06	0.60	0.06	0.65	0.05	0.65	0.06	0.65
2017	0.03	0.27	0.03	0.28	0.03	0.28	0.03	0.28	0.03	0.28	0.03	0.28	0.03	0.28
2018	0.03	0.27	0.03	0.28	0.03	0.28	0.03	0.27	0.03	0.28	0.03	0.28	0.03	0.28
2019	0.04	0.29	0.04	0.30	0.04	0.30	0.04	0.29	0.04	0.30	0.04	0.30	0.04	0.30
2020	0.03	0.17	0.03	0.17	0.03	0.18	0.03	0.17	0.03	0.17	0.03	0.18	0.03	0.17
2021	0.04	0.22	0.04	0.23	0.04	0.23	0.04	0.19	0.04	0.18	0.04	0.19	0.04	0.22

Table 9: Estimated discard mortality (biomass) in the directed fishery (1,000's t; 1965-1989).

y	22.01		22.07		22.08		22.09		22.10		22.11		22.03	
	female	male	female	male	female	male	female	male	female	male	female	male	female	male
1965	0.05	0.62	-	-	-	-	0.05	0.62	0.05	0.60	-	-	0.05	0.60
1966	0.06	0.69	-	-	-	-	0.06	0.69	0.06	0.67	-	-	0.06	0.67
1967	0.12	1.81	-	-	-	-	0.12	1.81	0.11	1.77	-	-	0.11	1.76
1968	0.19	2.89	-	-	-	-	0.19	2.90	0.17	2.82	-	-	0.17	2.81
1969	0.50	7.47	-	-	-	-	0.50	7.49	0.45	7.26	-	-	0.45	7.24
1970	2.52	22.97	-	-	-	-	2.52	22.97	2.32	22.52	-	-	2.32	22.53
1971	5.16	31.40	-	-	-	-	5.15	31.38	4.75	30.51	-	-	4.77	30.54
1972	0.73	7.83	-	-	-	-	0.73	7.83	0.65	7.47	-	-	0.65	7.47
1973	0.73	5.13	-	-	-	-	0.73	5.14	0.71	5.06	-	-	0.71	5.05
1974	0.88	6.42	-	-	-	-	0.88	6.42	0.86	6.32	-	-	0.86	6.32
1975	0.39	3.94	-	-	-	-	0.39	3.95	0.37	3.84	-	-	0.37	3.83
1976	0.31	4.47	-	-	-	-	0.31	4.47	0.29	4.32	-	-	0.29	4.31
1977	0.38	5.71	-	-	-	-	0.38	5.72	0.34	5.52	-	-	0.34	5.51
1978	0.38	5.19	-	-	-	-	0.38	5.19	0.34	5.00	-	-	0.34	4.99
1979	0.58	6.75	-	-	-	-	0.58	6.75	0.52	6.49	-	-	0.52	6.48
1980	0.41	4.91	-	-	-	-	0.41	4.92	0.38	4.79	-	-	0.38	4.78
1981	0.13	1.69	-	-	-	-	0.13	1.69	0.12	1.62	-	-	0.12	1.62
1982	0.04	0.61	0.05	0.49	0.06	0.54	0.04	0.61	0.04	0.58	0.05	0.49	0.04	0.58
1983	0.04	0.30	0.03	0.28	0.04	0.29	0.04	0.30	0.04	0.30	0.03	0.28	0.04	0.30
1984	0.03	0.39	0.03	0.41	0.04	0.43	0.03	0.39	0.03	0.37	0.03	0.41	0.03	0.37
1985	0.03	0.35	0.03	0.39	0.03	0.40	0.03	0.35	0.03	0.33	0.03	0.39	0.03	0.33
1986	0.05	0.54	0.04	0.55	0.05	0.54	0.05	0.54	0.04	0.52	0.04	0.55	0.04	0.52
1987	0.05	0.63	0.04	0.59	0.05	0.57	0.05	0.63	0.04	0.60	0.04	0.59	0.04	0.60
1988	0.05	0.82	0.04	0.77	0.05	0.76	0.05	0.82	0.04	0.79	0.04	0.77	0.04	0.79
1989	0.10	1.90	0.09	1.81	0.10	1.76	0.10	1.90	0.09	1.84	0.09	1.81	0.09	1.84

Table 10: Estimated discard mortality (biomass) in the directed fishery (1,000's t; 1990+).

y	22.01		22.07		22.08		22.09		22.10		22.11		22.03	
	female	male	female	male	female	male	female	male	female	male	female	male	female	male
1990	0.167	3.015	0.169	3.226	0.169	3.071	0.167	3.021	0.170	3.295	0.169	3.232	0.170	3.289
1991	0.248	1.935	0.258	2.275	0.250	2.123	0.248	1.936	0.256	2.246	0.258	2.275	0.256	2.245
1992	0.292	2.525	0.301	2.715	0.266	2.390	0.292	2.525	0.295	2.621	0.301	2.716	0.295	2.621
1993	0.203	1.484	0.189	1.375	0.172	1.285	0.203	1.485	0.183	1.337	0.189	1.375	0.183	1.337
1994	0.171	0.918	0.153	0.882	0.146	0.845	0.171	0.918	0.151	0.871	0.153	0.882	0.151	0.871
1995	0.107	0.599	0.094	0.607	0.091	0.583	0.107	0.599	0.095	0.602	0.094	0.607	0.095	0.601
1996	0.068	0.423	0.069	0.420	0.068	0.421	0.068	0.423	0.070	0.410	0.069	0.420	0.070	0.410
1997	0.051	0.456	0.047	0.524	0.047	0.528	0.051	0.456	0.048	0.522	0.047	0.524	0.048	0.522
1998	0.036	0.320	0.032	0.315	0.032	0.319	0.036	0.320	0.033	0.314	0.032	0.315	0.033	0.314
1999	0.018	0.156	0.017	0.157	0.017	0.158	0.018	0.156	0.017	0.156	0.017	0.157	0.017	0.156
2000	0.021	0.190	0.019	0.191	0.019	0.191	0.021	0.190	0.019	0.190	0.019	0.191	0.019	0.190
2001	0.029	0.272	0.027	0.278	0.027	0.277	0.029	0.272	0.027	0.278	0.027	0.278	0.027	0.278
2002	0.015	0.151	0.015	0.151	0.015	0.150	0.015	0.151	0.015	0.151	0.015	0.151	0.015	0.151
2003	0.010	0.101	0.010	0.102	0.010	0.101	0.010	0.101	0.010	0.102	0.010	0.102	0.010	0.102
2004	0.017	0.174	0.016	0.168	0.016	0.167	0.017	0.174	0.016	0.168	0.016	0.168	0.016	0.168
2005	0.013	0.233	0.012	0.229	0.012	0.229	0.013	0.233	0.012	0.229	0.012	0.229	0.012	0.229
2006	0.017	0.423	0.014	0.312	0.015	0.311	0.017	0.423	0.015	0.312	0.014	0.312	0.015	0.312
2007	0.019	0.446	0.016	0.401	0.017	0.403	0.019	0.446	0.017	0.398	0.016	0.401	0.017	0.397
2008	0.014	0.263	0.012	0.255	0.012	0.255	0.014	0.263	0.012	0.255	0.012	0.255	0.012	0.255
2009	0.011	0.204	0.009	0.211	0.009	0.213	0.011	0.204	0.009	0.211	0.009	0.211	0.009	0.211
2010	0.007	0.205	0.006	0.212	0.006	0.213	0.007	0.205	0.006	0.211	0.006	0.212	0.006	0.211
2011	0.010	0.273	0.009	0.291	0.009	0.293	0.010	0.273	0.009	0.290	0.009	0.291	0.009	0.290
2012	0.007	0.199	0.006	0.208	0.006	0.209	0.007	0.199	0.006	0.208	0.006	0.208	0.006	0.208
2013	0.011	0.228	0.010	0.242	0.010	0.242	0.011	0.228	0.010	0.241	0.010	0.241	0.010	0.241
2014	0.023	0.587	0.021	0.690	0.021	0.687	0.023	0.590	0.022	0.686	0.021	0.692	0.022	0.683
2015	0.024	0.613	0.021	0.681	0.021	0.685	0.024	0.622	0.022	0.679	0.021	0.689	0.022	0.671
2016	0.011	0.332	0.010	0.358	0.010	0.357	0.011	0.332	0.010	0.357	0.010	0.358	0.010	0.357
2017	0.006	0.149	0.005	0.154	0.005	0.154	0.006	0.150	0.005	0.153	0.005	0.154	0.005	0.153
2018	0.006	0.139	0.005	0.144	0.005	0.145	0.006	0.140	0.005	0.143	0.005	0.144	0.005	0.142
2019	0.006	0.145	0.005	0.148	0.005	0.148	0.006	0.145	0.005	0.148	0.005	0.148	0.005	0.148
2020	0.004	0.070	0.004	0.073	0.004	0.073	0.004	0.071	0.004	0.072	0.004	0.073	0.004	0.072
2021	0.006	0.089	0.006	0.092	0.006	0.093	0.006	0.072	0.005	0.072	0.005	0.072	0.006	0.091

Table 11: Estimated discard catch mortality (abundance) in the snow crab fishery (millions; 1965-1989).

y	22.01		22.07		22.08		22.09		22.10		22.11		22.03	
	female	male	female	male	female	male	female	male	female	male	female	male	female	male
1965	0.06	0.42	-	-	-	-	0.06	0.42	0.05	0.42	-	-	0.05	0.42
1966	0.07	0.45	-	-	-	-	0.07	0.45	0.05	0.44	-	-	0.05	0.44
1967	0.08	0.47	-	-	-	-	0.08	0.47	0.06	0.46	-	-	0.06	0.46
1968	0.10	0.49	-	-	-	-	0.10	0.49	0.07	0.48	-	-	0.07	0.48
1969	0.12	0.51	-	-	-	-	0.12	0.51	0.09	0.50	-	-	0.09	0.50
1970	0.15	0.48	-	-	-	-	0.15	0.48	0.12	0.47	-	-	0.12	0.47
1971	0.18	0.51	-	-	-	-	0.18	0.51	0.15	0.50	-	-	0.15	0.50
1972	0.20	0.79	-	-	-	-	0.20	0.79	0.17	0.78	-	-	0.17	0.78
1973	0.21	1.11	-	-	-	-	0.21	1.11	0.18	1.09	-	-	0.18	1.09
1974	0.20	1.19	-	-	-	-	0.20	1.19	0.17	1.17	-	-	0.17	1.17
1975	0.17	1.09	-	-	-	-	0.17	1.09	0.15	1.07	-	-	0.15	1.07
1976	0.15	0.91	-	-	-	-	0.15	0.91	0.13	0.89	-	-	0.13	0.89
1977	0.14	0.71	-	-	-	-	0.14	0.71	0.11	0.69	-	-	0.11	0.69
1978	0.26	1.16	-	-	-	-	0.26	1.16	0.21	1.13	-	-	0.21	1.13
1979	0.35	1.48	-	-	-	-	0.35	1.48	0.29	1.45	-	-	0.29	1.45
1980	0.53	2.33	-	-	-	-	0.53	2.33	0.44	2.27	-	-	0.44	2.27
1981	0.44	2.28	-	-	-	-	0.44	2.28	0.38	2.21	-	-	0.38	2.21
1982	0.20	1.16	0.14	0.79	0.18	0.94	0.20	1.15	0.17	1.12	0.14	0.79	0.17	1.12
1983	0.09	0.50	0.07	0.43	0.09	0.53	0.09	0.50	0.07	0.48	0.07	0.43	0.07	0.48
1984	0.14	0.74	0.13	0.77	0.16	0.91	0.14	0.74	0.11	0.71	0.13	0.77	0.11	0.71
1985	0.20	1.03	0.17	1.05	0.22	1.17	0.20	1.03	0.15	0.99	0.17	1.05	0.15	0.99
1986	0.27	1.41	0.21	1.31	0.26	1.42	0.27	1.41	0.21	1.35	0.21	1.31	0.21	1.35
1987	0.40	2.20	0.31	2.01	0.37	2.12	0.40	2.20	0.31	2.11	0.31	2.01	0.31	2.11
1988	0.41	2.45	0.33	2.28	0.36	2.35	0.41	2.45	0.32	2.35	0.33	2.28	0.32	2.36
1989	0.60	3.72	0.50	3.54	0.52	3.55	0.60	3.72	0.49	3.58	0.50	3.54	0.49	3.58

Table 12: Estimated discard catch mortality in abundance in the snow crab fishery (millions; 1990+).

y	22.01		22.07		22.08		22.09		22.10		22.11		22.03	
	female	male	female	male	female	male	female	male	female	male	female	male	female	male
1990	0.91	5.42	0.91	5.76	0.90	5.54	0.91	5.43	0.93	5.91	0.91	5.78	0.93	5.90
1991	1.36	3.65	1.39	4.24	1.34	4.01	1.36	3.65	1.41	4.23	1.39	4.25	1.41	4.23
1992	1.52	4.62	1.52	4.88	1.37	4.37	1.52	4.62	1.52	4.77	1.52	4.88	1.52	4.77
1993	1.02	2.59	0.94	2.40	0.86	2.26	1.02	2.59	0.92	2.36	0.94	2.40	0.92	2.36
1994	0.98	1.94	0.88	1.85	0.86	1.79	0.98	1.95	0.89	1.84	0.88	1.85	0.89	1.84
1995	0.68	1.35	0.60	1.34	0.59	1.30	0.68	1.35	0.62	1.34	0.60	1.34	0.62	1.34
1996	0.49	1.01	0.48	0.99	0.47	0.99	0.49	1.01	0.50	0.98	0.48	0.99	0.50	0.98
1997	0.32	1.04	0.30	1.19	0.29	1.17	0.32	1.04	0.30	1.18	0.30	1.19	0.30	1.18
1998	0.24	0.76	0.22	0.76	0.21	0.74	0.24	0.76	0.22	0.75	0.22	0.76	0.22	0.75
1999	0.13	0.41	0.13	0.41	0.13	0.41	0.13	0.41	0.13	0.41	0.13	0.41	0.13	0.41
2000	0.16	0.50	0.15	0.50	0.15	0.50	0.16	0.50	0.15	0.50	0.15	0.50	0.15	0.50
2001	0.24	0.74	0.23	0.76	0.23	0.76	0.24	0.74	0.23	0.76	0.23	0.76	0.23	0.76
2002	0.13	0.40	0.12	0.41	0.12	0.41	0.13	0.40	0.12	0.41	0.12	0.41	0.12	0.41
2003	0.09	0.28	0.08	0.28	0.08	0.28	0.09	0.28	0.08	0.28	0.08	0.28	0.08	0.28
2004	0.14	0.46	0.13	0.45	0.13	0.45	0.14	0.46	0.13	0.45	0.13	0.45	0.13	0.45
2005	0.09	0.50	0.09	0.50	0.09	0.50	0.09	0.50	0.09	0.50	0.09	0.50	0.09	0.50
2006	0.11	0.84	0.10	0.63	0.10	0.64	0.11	0.84	0.10	0.63	0.10	0.63	0.10	0.63
2007	0.11	0.89	0.10	0.80	0.10	0.81	0.11	0.89	0.10	0.79	0.10	0.80	0.10	0.79
2008	0.08	0.48	0.07	0.47	0.07	0.48	0.08	0.48	0.07	0.47	0.07	0.47	0.07	0.47
2009	0.06	0.38	0.05	0.39	0.05	0.39	0.06	0.38	0.05	0.39	0.05	0.39	0.05	0.39
2010	0.05	0.39	0.04	0.40	0.04	0.40	0.05	0.39	0.04	0.40	0.04	0.40	0.04	0.40
2011	0.07	0.54	0.06	0.57	0.06	0.57	0.07	0.54	0.06	0.57	0.06	0.57	0.06	0.57
2012	0.05	0.41	0.04	0.42	0.04	0.42	0.05	0.41	0.04	0.42	0.04	0.42	0.04	0.42
2013	0.07	0.47	0.06	0.50	0.06	0.49	0.07	0.47	0.06	0.50	0.06	0.50	0.06	0.50
2014	0.12	1.15	0.11	1.35	0.11	1.34	0.12	1.16	0.11	1.34	0.11	1.36	0.11	1.33
2015	0.11	1.21	0.10	1.33	0.10	1.34	0.12	1.23	0.11	1.34	0.10	1.36	0.11	1.31
2016	0.06	0.60	0.05	0.65	0.05	0.65	0.06	0.60	0.06	0.65	0.05	0.65	0.06	0.65
2017	0.03	0.27	0.03	0.28	0.03	0.28	0.03	0.28	0.03	0.28	0.03	0.28	0.03	0.28
2018	0.03	0.27	0.03	0.28	0.03	0.28	0.03	0.27	0.03	0.28	0.03	0.28	0.03	0.28
2019	0.04	0.29	0.04	0.30	0.04	0.30	0.04	0.29	0.04	0.30	0.04	0.30	0.04	0.30
2020	0.03	0.17	0.03	0.17	0.03	0.18	0.03	0.17	0.03	0.17	0.03	0.18	0.03	0.17
2021	0.04	0.22	0.04	0.23	0.04	0.23	0.04	0.19	0.04	0.18	0.04	0.19	0.04	0.22

Table 13: Estimated discard mortality (biomass) in the snow crab fishery (1,000's t; 1965-1989).

y	22.01		22.07		22.08		22.09		22.10		22.11		22.03	
	female	male	female	male	female	male	female	male	female	male	female	male	female	male
1965	0.05	0.62	-	-	-	-	0.05	0.62	0.05	0.60	-	-	0.05	0.60
1966	0.06	0.69	-	-	-	-	0.06	0.69	0.06	0.67	-	-	0.06	0.67
1967	0.12	1.81	-	-	-	-	0.12	1.81	0.11	1.77	-	-	0.11	1.76
1968	0.19	2.89	-	-	-	-	0.19	2.90	0.17	2.82	-	-	0.17	2.81
1969	0.50	7.47	-	-	-	-	0.50	7.49	0.45	7.26	-	-	0.45	7.24
1970	2.52	22.97	-	-	-	-	2.52	22.97	2.32	22.52	-	-	2.32	22.53
1971	5.16	31.40	-	-	-	-	5.15	31.38	4.75	30.51	-	-	4.77	30.54
1972	0.73	7.83	-	-	-	-	0.73	7.83	0.65	7.47	-	-	0.65	7.47
1973	0.73	5.13	-	-	-	-	0.73	5.14	0.71	5.06	-	-	0.71	5.05
1974	0.88	6.42	-	-	-	-	0.88	6.42	0.86	6.32	-	-	0.86	6.32
1975	0.39	3.94	-	-	-	-	0.39	3.95	0.37	3.84	-	-	0.37	3.83
1976	0.31	4.47	-	-	-	-	0.31	4.47	0.29	4.32	-	-	0.29	4.31
1977	0.38	5.71	-	-	-	-	0.38	5.72	0.34	5.52	-	-	0.34	5.51
1978	0.38	5.19	-	-	-	-	0.38	5.19	0.34	5.00	-	-	0.34	4.99
1979	0.58	6.75	-	-	-	-	0.58	6.75	0.52	6.49	-	-	0.52	6.48
1980	0.41	4.91	-	-	-	-	0.41	4.92	0.38	4.79	-	-	0.38	4.78
1981	0.13	1.69	-	-	-	-	0.13	1.69	0.12	1.62	-	-	0.12	1.62
1982	0.04	0.61	0.05	0.49	0.06	0.54	0.04	0.61	0.04	0.58	0.05	0.49	0.04	0.58
1983	0.04	0.30	0.03	0.28	0.04	0.29	0.04	0.30	0.04	0.30	0.03	0.28	0.04	0.30
1984	0.03	0.39	0.03	0.41	0.04	0.43	0.03	0.39	0.03	0.37	0.03	0.41	0.03	0.37
1985	0.03	0.35	0.03	0.39	0.03	0.40	0.03	0.35	0.03	0.33	0.03	0.39	0.03	0.33
1986	0.05	0.54	0.04	0.55	0.05	0.54	0.05	0.54	0.04	0.52	0.04	0.55	0.04	0.52
1987	0.05	0.63	0.04	0.59	0.05	0.57	0.05	0.63	0.04	0.60	0.04	0.59	0.04	0.60
1988	0.05	0.82	0.04	0.77	0.05	0.76	0.05	0.82	0.04	0.79	0.04	0.77	0.04	0.79
1989	0.10	1.90	0.09	1.81	0.10	1.76	0.10	1.90	0.09	1.84	0.09	1.81	0.09	1.84

Table 14: Estimated discard mortality (biomass) in the snow crab fishery (1,000's t; 1990+).

y	22.01		22.07		22.08		22.09		22.10		22.11		22.03	
	female	male	female	male	female	male	female	male	female	male	female	male	female	male
1990	0.167	3.015	0.169	3.226	0.169	3.071	0.167	3.021	0.170	3.295	0.169	3.232	0.170	3.289
1991	0.248	1.935	0.258	2.275	0.250	2.123	0.248	1.936	0.256	2.246	0.258	2.275	0.256	2.245
1992	0.292	2.525	0.301	2.715	0.266	2.390	0.292	2.525	0.295	2.621	0.301	2.716	0.295	2.621
1993	0.203	1.484	0.189	1.375	0.172	1.285	0.203	1.485	0.183	1.337	0.189	1.375	0.183	1.337
1994	0.171	0.918	0.153	0.882	0.146	0.845	0.171	0.918	0.151	0.871	0.153	0.882	0.151	0.871
1995	0.107	0.599	0.094	0.607	0.091	0.583	0.107	0.599	0.095	0.602	0.094	0.607	0.095	0.601
1996	0.068	0.423	0.069	0.420	0.068	0.421	0.068	0.423	0.070	0.410	0.069	0.420	0.070	0.410
1997	0.051	0.456	0.047	0.524	0.047	0.528	0.051	0.456	0.048	0.522	0.047	0.524	0.048	0.522
1998	0.036	0.320	0.032	0.315	0.032	0.319	0.036	0.320	0.033	0.314	0.032	0.315	0.033	0.314
1999	0.018	0.156	0.017	0.157	0.017	0.158	0.018	0.156	0.017	0.156	0.017	0.157	0.017	0.156
2000	0.021	0.190	0.019	0.191	0.019	0.191	0.021	0.190	0.019	0.190	0.019	0.191	0.019	0.190
2001	0.029	0.272	0.027	0.278	0.027	0.277	0.029	0.272	0.027	0.278	0.027	0.278	0.027	0.278
2002	0.015	0.151	0.015	0.151	0.015	0.150	0.015	0.151	0.015	0.151	0.015	0.151	0.015	0.151
2003	0.010	0.101	0.010	0.102	0.010	0.101	0.010	0.101	0.010	0.102	0.010	0.102	0.010	0.102
2004	0.017	0.174	0.016	0.168	0.016	0.167	0.017	0.174	0.016	0.168	0.016	0.168	0.016	0.168
2005	0.013	0.233	0.012	0.229	0.012	0.229	0.013	0.233	0.012	0.229	0.012	0.229	0.012	0.229
2006	0.017	0.423	0.014	0.312	0.015	0.311	0.017	0.423	0.015	0.312	0.014	0.312	0.015	0.312
2007	0.019	0.446	0.016	0.401	0.017	0.403	0.019	0.446	0.017	0.398	0.016	0.401	0.017	0.397
2008	0.014	0.263	0.012	0.255	0.012	0.255	0.014	0.263	0.012	0.255	0.012	0.255	0.012	0.255
2009	0.011	0.204	0.009	0.211	0.009	0.213	0.011	0.204	0.009	0.211	0.009	0.211	0.009	0.211
2010	0.007	0.205	0.006	0.212	0.006	0.213	0.007	0.205	0.006	0.211	0.006	0.212	0.006	0.211
2011	0.010	0.273	0.009	0.291	0.009	0.293	0.010	0.273	0.009	0.290	0.009	0.291	0.009	0.290
2012	0.007	0.199	0.006	0.208	0.006	0.209	0.007	0.199	0.006	0.208	0.006	0.208	0.006	0.208
2013	0.011	0.228	0.010	0.242	0.010	0.242	0.011	0.228	0.010	0.241	0.010	0.241	0.010	0.241
2014	0.023	0.587	0.021	0.690	0.021	0.687	0.023	0.590	0.022	0.686	0.021	0.692	0.022	0.683
2015	0.024	0.613	0.021	0.681	0.021	0.685	0.024	0.622	0.022	0.679	0.021	0.689	0.022	0.671
2016	0.011	0.332	0.010	0.358	0.010	0.357	0.011	0.332	0.010	0.357	0.010	0.358	0.010	0.357
2017	0.006	0.149	0.005	0.154	0.005	0.154	0.006	0.150	0.005	0.153	0.005	0.154	0.005	0.153
2018	0.006	0.139	0.005	0.144	0.005	0.145	0.006	0.140	0.005	0.143	0.005	0.144	0.005	0.142
2019	0.006	0.145	0.005	0.148	0.005	0.148	0.006	0.145	0.005	0.148	0.005	0.148	0.005	0.148
2020	0.004	0.070	0.004	0.073	0.004	0.073	0.004	0.071	0.004	0.072	0.004	0.073	0.004	0.072
2021	0.006	0.089	0.006	0.092	0.006	0.093	0.006	0.072	0.005	0.072	0.005	0.072	0.006	0.091

Table 15: Estimated discard catch mortality (abundance) in the BBRKC fishery (millions; 1965-1989).

y	22.01		22.07		22.08		22.09		22.10		22.11		22.03	
	female	male	female	male	female	male	female	male	female	male	female	male	female	male
1965	0.023	0.624	-	-	-	-	0.023	0.624	0.024	0.556	-	-	0.024	0.556
1966	0.024	0.653	-	-	-	-	0.024	0.653	0.026	0.581	-	-	0.026	0.581
1967	0.027	0.620	-	-	-	-	0.027	0.620	0.029	0.551	-	-	0.029	0.551
1968	0.041	0.675	-	-	-	-	0.041	0.675	0.043	0.598	-	-	0.043	0.598
1969	0.043	0.384	-	-	-	-	0.043	0.385	0.046	0.339	-	-	0.046	0.338
1970	0.047	0.121	-	-	-	-	0.047	0.122	0.050	0.103	-	-	0.050	0.103
1971	0.040	0.054	-	-	-	-	0.040	0.054	0.044	0.046	-	-	0.044	0.046
1972	0.091	0.418	-	-	-	-	0.091	0.419	0.100	0.374	-	-	0.099	0.373
1973	0.115	1.583	-	-	-	-	0.115	1.583	0.123	1.412	-	-	0.123	1.412
1974	0.140	2.702	-	-	-	-	0.140	2.701	0.146	2.389	-	-	0.146	2.390
1975	0.129	2.664	-	-	-	-	0.129	2.664	0.133	2.346	-	-	0.133	2.347
1976	0.179	3.325	-	-	-	-	0.179	3.325	0.183	2.924	-	-	0.183	2.925
1977	0.214	2.851	-	-	-	-	0.214	2.851	0.219	2.508	-	-	0.219	2.508
1978	0.164	1.413	-	-	-	-	0.164	1.414	0.169	1.245	-	-	0.169	1.245
1979	0.116	0.702	-	-	-	-	0.116	0.703	0.121	0.616	-	-	0.121	0.616
1980	0.182	1.133	-	-	-	-	0.182	1.133	0.191	0.976	-	-	0.191	0.977
1981	0.150	1.653	-	-	-	-	0.150	1.652	0.158	1.428	-	-	0.158	1.430
1982	0.033	0.583	0.075	0.448	0.079	0.353	0.033	0.583	0.035	0.507	0.075	0.448	0.035	0.507
1984	0.013	0.291	0.036	0.414	0.040	0.404	0.013	0.291	0.014	0.252	0.036	0.414	0.014	0.252
1985	0.009	0.199	0.022	0.252	0.025	0.240	0.009	0.199	0.009	0.173	0.022	0.252	0.009	0.173
1986	0.019	0.440	0.037	0.454	0.042	0.413	0.019	0.440	0.020	0.383	0.037	0.454	0.020	0.383
1987	0.027	0.611	0.042	0.577	0.049	0.509	0.027	0.611	0.028	0.533	0.042	0.577	0.028	0.533
1988	0.022	0.501	0.029	0.448	0.033	0.400	0.022	0.501	0.023	0.435	0.029	0.448	0.023	0.435
1989	0.036	0.763	0.044	0.690	0.047	0.618	0.036	0.763	0.037	0.659	0.044	0.690	0.037	0.659

Table 16: Estimated discard catch mortality in abundance in the BBRKC fishery (millions; 1990+).

y	22.01		22.07		22.08		22.09		22.10		22.11		22.03	
	female	male	female	male	female	male	female	male	female	male	female	male	female	male
1990	0.91	5.42	0.91	5.76	0.90	5.54	0.91	5.43	0.93	5.91	0.91	5.78	0.93	5.90
1991	1.36	3.65	1.39	4.24	1.34	4.01	1.36	3.65	1.41	4.23	1.39	4.25	1.41	4.23
1992	1.52	4.62	1.52	4.88	1.37	4.37	1.52	4.62	1.52	4.77	1.52	4.88	1.52	4.77
1993	1.02	2.59	0.94	2.40	0.86	2.26	1.02	2.59	0.92	2.36	0.94	2.40	0.92	2.36
1994	0.98	1.94	0.88	1.85	0.86	1.79	0.98	1.95	0.89	1.84	0.88	1.85	0.89	1.84
1995	0.68	1.35	0.60	1.34	0.59	1.30	0.68	1.35	0.62	1.34	0.60	1.34	0.62	1.34
1996	0.49	1.01	0.48	0.99	0.47	0.99	0.49	1.01	0.50	0.98	0.48	0.99	0.50	0.98
1997	0.32	1.04	0.30	1.19	0.29	1.17	0.32	1.04	0.30	1.18	0.30	1.19	0.30	1.18
1998	0.24	0.76	0.22	0.76	0.21	0.74	0.24	0.76	0.22	0.75	0.22	0.76	0.22	0.75
1999	0.13	0.41	0.13	0.41	0.13	0.41	0.13	0.41	0.13	0.41	0.13	0.41	0.13	0.41
2000	0.16	0.50	0.15	0.50	0.15	0.50	0.16	0.50	0.15	0.50	0.15	0.50	0.15	0.50
2001	0.24	0.74	0.23	0.76	0.23	0.76	0.24	0.74	0.23	0.76	0.23	0.76	0.23	0.76
2002	0.13	0.40	0.12	0.41	0.12	0.41	0.13	0.40	0.12	0.41	0.12	0.41	0.12	0.41
2003	0.09	0.28	0.08	0.28	0.08	0.28	0.09	0.28	0.08	0.28	0.08	0.28	0.08	0.28
2004	0.14	0.46	0.13	0.45	0.13	0.45	0.14	0.46	0.13	0.45	0.13	0.45	0.13	0.45
2005	0.09	0.50	0.09	0.50	0.09	0.50	0.09	0.50	0.09	0.50	0.09	0.50	0.09	0.50
2006	0.11	0.84	0.10	0.63	0.10	0.64	0.11	0.84	0.10	0.63	0.10	0.63	0.10	0.63
2007	0.11	0.89	0.10	0.80	0.10	0.81	0.11	0.89	0.10	0.79	0.10	0.80	0.10	0.79
2008	0.08	0.48	0.07	0.47	0.07	0.48	0.08	0.48	0.07	0.47	0.07	0.47	0.07	0.47
2009	0.06	0.38	0.05	0.39	0.05	0.39	0.06	0.38	0.05	0.39	0.05	0.39	0.05	0.39
2010	0.05	0.39	0.04	0.40	0.04	0.40	0.05	0.39	0.04	0.40	0.04	0.40	0.04	0.40
2011	0.07	0.54	0.06	0.57	0.06	0.57	0.07	0.54	0.06	0.57	0.06	0.57	0.06	0.57
2012	0.05	0.41	0.04	0.42	0.04	0.42	0.05	0.41	0.04	0.42	0.04	0.42	0.04	0.42
2013	0.07	0.47	0.06	0.50	0.06	0.49	0.07	0.47	0.06	0.50	0.06	0.50	0.06	0.50
2014	0.12	1.15	0.11	1.35	0.11	1.34	0.12	1.16	0.11	1.34	0.11	1.36	0.11	1.33
2015	0.11	1.21	0.10	1.33	0.10	1.34	0.12	1.23	0.11	1.34	0.10	1.36	0.11	1.31
2016	0.06	0.60	0.05	0.65	0.05	0.65	0.06	0.60	0.06	0.65	0.05	0.65	0.06	0.65
2017	0.03	0.27	0.03	0.28	0.03	0.28	0.03	0.28	0.03	0.28	0.03	0.28	0.03	0.28
2018	0.03	0.27	0.03	0.28	0.03	0.28	0.03	0.27	0.03	0.28	0.03	0.28	0.03	0.28
2019	0.04	0.29	0.04	0.30	0.04	0.30	0.04	0.29	0.04	0.30	0.04	0.30	0.04	0.30
2020	0.03	0.17	0.03	0.17	0.03	0.18	0.03	0.17	0.03	0.17	0.03	0.18	0.03	0.17
2021	0.04	0.22	0.04	0.23	0.04	0.23	0.04	0.19	0.04	0.18	0.04	0.19	0.04	0.22

Table 17: Estimated discard mortality (biomass) in the BBRKC fishery (1,000's t; 1965-1989).

y	22.01		22.07		22.08		22.09		22.10		22.11		22.03	
	female	male	female	male	female	male	female	male	female	male	female	male	female	male
1965	0.05	0.62	-	-	-	-	0.05	0.62	0.05	0.60	-	-	0.05	0.60
1966	0.06	0.69	-	-	-	-	0.06	0.69	0.06	0.67	-	-	0.06	0.67
1967	0.12	1.81	-	-	-	-	0.12	1.81	0.11	1.77	-	-	0.11	1.76
1968	0.19	2.89	-	-	-	-	0.19	2.90	0.17	2.82	-	-	0.17	2.81
1969	0.50	7.47	-	-	-	-	0.50	7.49	0.45	7.26	-	-	0.45	7.24
1970	2.52	22.97	-	-	-	-	2.52	22.97	2.32	22.52	-	-	2.32	22.53
1971	5.16	31.40	-	-	-	-	5.15	31.38	4.75	30.51	-	-	4.77	30.54
1972	0.73	7.83	-	-	-	-	0.73	7.83	0.65	7.47	-	-	0.65	7.47
1973	0.73	5.13	-	-	-	-	0.73	5.14	0.71	5.06	-	-	0.71	5.05
1974	0.88	6.42	-	-	-	-	0.88	6.42	0.86	6.32	-	-	0.86	6.32
1975	0.39	3.94	-	-	-	-	0.39	3.95	0.37	3.84	-	-	0.37	3.83
1976	0.31	4.47	-	-	-	-	0.31	4.47	0.29	4.32	-	-	0.29	4.31
1977	0.38	5.71	-	-	-	-	0.38	5.72	0.34	5.52	-	-	0.34	5.51
1978	0.38	5.19	-	-	-	-	0.38	5.19	0.34	5.00	-	-	0.34	4.99
1979	0.58	6.75	-	-	-	-	0.58	6.75	0.52	6.49	-	-	0.52	6.48
1980	0.41	4.91	-	-	-	-	0.41	4.92	0.38	4.79	-	-	0.38	4.78
1981	0.13	1.69	-	-	-	-	0.13	1.69	0.12	1.62	-	-	0.12	1.62
1982	0.04	0.61	0.05	0.49	0.06	0.54	0.04	0.61	0.04	0.58	0.05	0.49	0.04	0.58
1983	0.04	0.30	0.03	0.28	0.04	0.29	0.04	0.30	0.04	0.30	0.03	0.28	0.04	0.30
1984	0.03	0.39	0.03	0.41	0.04	0.43	0.03	0.39	0.03	0.37	0.03	0.41	0.03	0.37
1985	0.03	0.35	0.03	0.39	0.03	0.40	0.03	0.35	0.03	0.33	0.03	0.39	0.03	0.33
1986	0.05	0.54	0.04	0.55	0.05	0.54	0.05	0.54	0.04	0.52	0.04	0.55	0.04	0.52
1987	0.05	0.63	0.04	0.59	0.05	0.57	0.05	0.63	0.04	0.60	0.04	0.59	0.04	0.60
1988	0.05	0.82	0.04	0.77	0.05	0.76	0.05	0.82	0.04	0.79	0.04	0.77	0.04	0.79
1989	0.10	1.90	0.09	1.81	0.10	1.76	0.10	1.90	0.09	1.84	0.09	1.81	0.09	1.84

Table 18: Estimated discard mortality (biomass) in the BBRKC fishery (1,000's t; 1990+).

y	22.01		22.07		22.08		22.09		22.10		22.11		22.03	
	female	male	female	male	female	male	female	male	female	male	female	male	female	male
1990	0.167	3.015	0.169	3.226	0.169	3.071	0.167	3.021	0.170	3.295	0.169	3.232	0.170	3.289
1991	0.248	1.935	0.258	2.275	0.250	2.123	0.248	1.936	0.256	2.246	0.258	2.275	0.256	2.245
1992	0.292	2.525	0.301	2.715	0.266	2.390	0.292	2.525	0.295	2.621	0.301	2.716	0.295	2.621
1993	0.203	1.484	0.189	1.375	0.172	1.285	0.203	1.485	0.183	1.337	0.189	1.375	0.183	1.337
1994	0.171	0.918	0.153	0.882	0.146	0.845	0.171	0.918	0.151	0.871	0.153	0.882	0.151	0.871
1995	0.107	0.599	0.094	0.607	0.091	0.583	0.107	0.599	0.095	0.602	0.094	0.607	0.095	0.601
1996	0.068	0.423	0.069	0.420	0.068	0.421	0.068	0.423	0.070	0.410	0.069	0.420	0.070	0.410
1997	0.051	0.456	0.047	0.524	0.047	0.528	0.051	0.456	0.048	0.522	0.047	0.524	0.048	0.522
1998	0.036	0.320	0.032	0.315	0.032	0.319	0.036	0.320	0.033	0.314	0.032	0.315	0.033	0.314
1999	0.018	0.156	0.017	0.157	0.017	0.158	0.018	0.156	0.017	0.156	0.017	0.157	0.017	0.156
2000	0.021	0.190	0.019	0.191	0.019	0.191	0.021	0.190	0.019	0.190	0.019	0.191	0.019	0.190
2001	0.029	0.272	0.027	0.278	0.027	0.277	0.029	0.272	0.027	0.278	0.027	0.278	0.027	0.278
2002	0.015	0.151	0.015	0.151	0.015	0.150	0.015	0.151	0.015	0.151	0.015	0.151	0.015	0.151
2003	0.010	0.101	0.010	0.102	0.010	0.101	0.010	0.101	0.010	0.102	0.010	0.102	0.010	0.102
2004	0.017	0.174	0.016	0.168	0.016	0.167	0.017	0.174	0.016	0.168	0.016	0.168	0.016	0.168
2005	0.013	0.233	0.012	0.229	0.012	0.229	0.013	0.233	0.012	0.229	0.012	0.229	0.012	0.229
2006	0.017	0.423	0.014	0.312	0.015	0.311	0.017	0.423	0.015	0.312	0.014	0.312	0.015	0.312
2007	0.019	0.446	0.016	0.401	0.017	0.403	0.019	0.446	0.017	0.398	0.016	0.401	0.017	0.397
2008	0.014	0.263	0.012	0.255	0.012	0.255	0.014	0.263	0.012	0.255	0.012	0.255	0.012	0.255
2009	0.011	0.204	0.009	0.211	0.009	0.213	0.011	0.204	0.009	0.211	0.009	0.211	0.009	0.211
2010	0.007	0.205	0.006	0.212	0.006	0.213	0.007	0.205	0.006	0.211	0.006	0.212	0.006	0.211
2011	0.010	0.273	0.009	0.291	0.009	0.293	0.010	0.273	0.009	0.290	0.009	0.291	0.009	0.290
2012	0.007	0.199	0.006	0.208	0.006	0.209	0.007	0.199	0.006	0.208	0.006	0.208	0.006	0.208
2013	0.011	0.228	0.010	0.242	0.010	0.242	0.011	0.228	0.010	0.241	0.010	0.241	0.010	0.241
2014	0.023	0.587	0.021	0.690	0.021	0.687	0.023	0.590	0.022	0.686	0.021	0.692	0.022	0.683
2015	0.024	0.613	0.021	0.681	0.021	0.685	0.024	0.622	0.022	0.679	0.021	0.689	0.022	0.671
2016	0.011	0.332	0.010	0.358	0.010	0.357	0.011	0.332	0.010	0.357	0.010	0.358	0.010	0.357
2017	0.006	0.149	0.005	0.154	0.005	0.154	0.006	0.150	0.005	0.153	0.005	0.154	0.005	0.153
2018	0.006	0.139	0.005	0.144	0.005	0.145	0.006	0.140	0.005	0.143	0.005	0.144	0.005	0.142
2019	0.006	0.145	0.005	0.148	0.005	0.148	0.006	0.145	0.005	0.148	0.005	0.148	0.005	0.148
2020	0.004	0.070	0.004	0.073	0.004	0.073	0.004	0.071	0.004	0.072	0.004	0.073	0.004	0.072
2021	0.006	0.089	0.006	0.092	0.006	0.093	0.006	0.072	0.005	0.072	0.005	0.072	0.006	0.091

Table 19: Estimated discard catch mortality (abundance) in the groundfish fisheries (millions; 1965-1989).

y	22.01		22.07		22.08		22.09		22.10		22.11		22.03	
	female	male	female	male	female	male	female	male	female	male	female	male	female	male
1965	2.0	3.7	-	-	-	-	2.0	3.7	2.0	3.7	-	-	2.0	3.7
1966	2.3	4.3	-	-	-	-	2.3	4.3	2.3	4.3	-	-	2.3	4.3
1967	3.1	5.2	-	-	-	-	3.1	5.2	3.1	5.3	-	-	3.1	5.3
1968	4.3	6.9	-	-	-	-	4.3	6.9	4.3	6.9	-	-	4.3	6.9
1969	5.4	8.6	-	-	-	-	5.4	8.6	5.4	8.6	-	-	5.4	8.6
1970	5.9	9.7	-	-	-	-	5.9	9.7	5.9	9.8	-	-	5.9	9.8
1971	5.8	9.8	-	-	-	-	5.8	9.8	5.8	9.8	-	-	5.8	9.8
1972	5.2	9.7	-	-	-	-	5.2	9.7	5.2	9.7	-	-	5.2	9.7
1973	20.8	41.1	-	-	-	-	20.8	41.1	20.4	41.0	-	-	20.4	41.0
1974	24.5	49.7	-	-	-	-	24.5	49.7	24.2	49.7	-	-	24.2	49.7
1975	9.3	18.5	-	-	-	-	9.3	18.5	9.2	18.5	-	-	9.2	18.5
1976	5.5	10.0	-	-	-	-	5.5	10.0	5.4	10.0	-	-	5.4	10.0
1977	4.2	7.0	-	-	-	-	4.2	7.0	4.1	7.0	-	-	4.1	7.0
1978	3.2	5.4	-	-	-	-	3.2	5.4	3.1	5.4	-	-	3.1	5.4
1979	5.3	9.8	-	-	-	-	5.3	9.8	5.3	9.8	-	-	5.3	9.8
1980	2.8	5.6	-	-	-	-	2.8	5.6	2.8	5.6	-	-	2.8	5.6
1981	1.7	3.3	-	-	-	-	1.7	3.3	1.6	3.3	-	-	1.6	3.3
1982	0.5	0.9	0.4	0.8	0.4	0.9	0.5	0.9	0.5	0.9	0.4	0.8	0.5	0.9
1983	0.8	1.4	0.6	1.3	0.6	1.3	0.8	1.4	0.8	1.4	0.6	1.3	0.8	1.4
1984	1.1	1.7	0.8	1.5	0.8	1.5	1.1	1.7	1.1	1.7	0.8	1.5	1.1	1.7
1985	0.8	1.2	0.6	1.1	0.6	1.2	0.8	1.2	0.8	1.2	0.6	1.1	0.8	1.2
1986	1.2	2.0	0.9	2.0	1.0	2.0	1.2	2.0	1.2	2.0	0.9	2.0	1.2	2.0
1987	1.2	1.9	1.2	1.9	1.2	1.8	1.2	1.9	1.2	1.9	1.2	1.9	1.2	1.9
1988	0.8	1.2	0.7	1.2	0.7	1.2	0.8	1.2	0.8	1.2	0.7	1.2	0.8	1.2
1989	0.9	1.5	0.9	1.5	0.9	1.5	0.9	1.5	0.9	1.6	0.9	1.5	0.9	1.6

Table 20: Estimated discard catch mortality in abundance in the groundfish fisheries (millions; 1990+).

y	22.01		22.07		22.08		22.09		22.10		22.11		22.03	
	female	male	female	male	female	male	female	male	female	male	female	male	female	male
1990	0.91	5.42	0.91	5.76	0.90	5.54	0.91	5.43	0.93	5.91	0.91	5.78	0.93	5.90
1991	1.36	3.65	1.39	4.24	1.34	4.01	1.36	3.65	1.41	4.23	1.39	4.25	1.41	4.23
1992	1.52	4.62	1.52	4.88	1.37	4.37	1.52	4.62	1.52	4.77	1.52	4.88	1.52	4.77
1993	1.02	2.59	0.94	2.40	0.86	2.26	1.02	2.59	0.92	2.36	0.94	2.40	0.92	2.36
1994	0.98	1.94	0.88	1.85	0.86	1.79	0.98	1.95	0.89	1.84	0.88	1.85	0.89	1.84
1995	0.68	1.35	0.60	1.34	0.59	1.30	0.68	1.35	0.62	1.34	0.60	1.34	0.62	1.34
1996	0.49	1.01	0.48	0.99	0.47	0.99	0.49	1.01	0.50	0.98	0.48	0.99	0.50	0.98
1997	0.32	1.04	0.30	1.19	0.29	1.17	0.32	1.04	0.30	1.18	0.30	1.19	0.30	1.18
1998	0.24	0.76	0.22	0.76	0.21	0.74	0.24	0.76	0.22	0.75	0.22	0.76	0.22	0.75
1999	0.13	0.41	0.13	0.41	0.13	0.41	0.13	0.41	0.13	0.41	0.13	0.41	0.13	0.41
2000	0.16	0.50	0.15	0.50	0.15	0.50	0.16	0.50	0.15	0.50	0.15	0.50	0.15	0.50
2001	0.24	0.74	0.23	0.76	0.23	0.76	0.24	0.74	0.23	0.76	0.23	0.76	0.23	0.76
2002	0.13	0.40	0.12	0.41	0.12	0.41	0.13	0.40	0.12	0.41	0.12	0.41	0.12	0.41
2003	0.09	0.28	0.08	0.28	0.08	0.28	0.09	0.28	0.08	0.28	0.08	0.28	0.08	0.28
2004	0.14	0.46	0.13	0.45	0.13	0.45	0.14	0.46	0.13	0.45	0.13	0.45	0.13	0.45
2005	0.09	0.50	0.09	0.50	0.09	0.50	0.09	0.50	0.09	0.50	0.09	0.50	0.09	0.50
2006	0.11	0.84	0.10	0.63	0.10	0.64	0.11	0.84	0.10	0.63	0.10	0.63	0.10	0.63
2007	0.11	0.89	0.10	0.80	0.10	0.81	0.11	0.89	0.10	0.79	0.10	0.80	0.10	0.79
2008	0.08	0.48	0.07	0.47	0.07	0.48	0.08	0.48	0.07	0.47	0.07	0.47	0.07	0.47
2009	0.06	0.38	0.05	0.39	0.05	0.39	0.06	0.38	0.05	0.39	0.05	0.39	0.05	0.39
2010	0.05	0.39	0.04	0.40	0.04	0.40	0.05	0.39	0.04	0.40	0.04	0.40	0.04	0.40
2011	0.07	0.54	0.06	0.57	0.06	0.57	0.07	0.54	0.06	0.57	0.06	0.57	0.06	0.57
2012	0.05	0.41	0.04	0.42	0.04	0.42	0.05	0.41	0.04	0.42	0.04	0.42	0.04	0.42
2013	0.07	0.47	0.06	0.50	0.06	0.49	0.07	0.47	0.06	0.50	0.06	0.50	0.06	0.50
2014	0.12	1.15	0.11	1.35	0.11	1.34	0.12	1.16	0.11	1.34	0.11	1.36	0.11	1.33
2015	0.11	1.21	0.10	1.33	0.10	1.34	0.12	1.23	0.11	1.34	0.10	1.36	0.11	1.31
2016	0.06	0.60	0.05	0.65	0.05	0.65	0.06	0.60	0.06	0.65	0.05	0.65	0.06	0.65
2017	0.03	0.27	0.03	0.28	0.03	0.28	0.03	0.28	0.03	0.28	0.03	0.28	0.03	0.28
2018	0.03	0.27	0.03	0.28	0.03	0.28	0.03	0.27	0.03	0.28	0.03	0.28	0.03	0.28
2019	0.04	0.29	0.04	0.30	0.04	0.30	0.04	0.29	0.04	0.30	0.04	0.30	0.04	0.30
2020	0.03	0.17	0.03	0.17	0.03	0.18	0.03	0.17	0.03	0.17	0.03	0.18	0.03	0.17
2021	0.04	0.22	0.04	0.23	0.04	0.23	0.04	0.19	0.04	0.18	0.04	0.19	0.04	0.22

Table 21: Estimated discard mortality (biomass) in the groundfish fisheries (1,000's t; 1965-1989).

y	22.01		22.07		22.08		22.09		22.10		22.11		22.03	
	female	male	female	male	female	male	female	male	female	male	female	male	female	male
1965	0.05	0.62	-	-	-	-	0.05	0.62	0.05	0.60	-	-	0.05	0.60
1966	0.06	0.69	-	-	-	-	0.06	0.69	0.06	0.67	-	-	0.06	0.67
1967	0.12	1.81	-	-	-	-	0.12	1.81	0.11	1.77	-	-	0.11	1.76
1968	0.19	2.89	-	-	-	-	0.19	2.90	0.17	2.82	-	-	0.17	2.81
1969	0.50	7.47	-	-	-	-	0.50	7.49	0.45	7.26	-	-	0.45	7.24
1970	2.52	22.97	-	-	-	-	2.52	22.97	2.32	22.52	-	-	2.32	22.53
1971	5.16	31.40	-	-	-	-	5.15	31.38	4.75	30.51	-	-	4.77	30.54
1972	0.73	7.83	-	-	-	-	0.73	7.83	0.65	7.47	-	-	0.65	7.47
1973	0.73	5.13	-	-	-	-	0.73	5.14	0.71	5.06	-	-	0.71	5.05
1974	0.88	6.42	-	-	-	-	0.88	6.42	0.86	6.32	-	-	0.86	6.32
1975	0.39	3.94	-	-	-	-	0.39	3.95	0.37	3.84	-	-	0.37	3.83
1976	0.31	4.47	-	-	-	-	0.31	4.47	0.29	4.32	-	-	0.29	4.31
1977	0.38	5.71	-	-	-	-	0.38	5.72	0.34	5.52	-	-	0.34	5.51
1978	0.38	5.19	-	-	-	-	0.38	5.19	0.34	5.00	-	-	0.34	4.99
1979	0.58	6.75	-	-	-	-	0.58	6.75	0.52	6.49	-	-	0.52	6.48
1980	0.41	4.91	-	-	-	-	0.41	4.92	0.38	4.79	-	-	0.38	4.78
1981	0.13	1.69	-	-	-	-	0.13	1.69	0.12	1.62	-	-	0.12	1.62
1982	0.04	0.61	0.05	0.49	0.06	0.54	0.04	0.61	0.04	0.58	0.05	0.49	0.04	0.58
1983	0.04	0.30	0.03	0.28	0.04	0.29	0.04	0.30	0.04	0.30	0.03	0.28	0.04	0.30
1984	0.03	0.39	0.03	0.41	0.04	0.43	0.03	0.39	0.03	0.37	0.03	0.41	0.03	0.37
1985	0.03	0.35	0.03	0.39	0.03	0.40	0.03	0.35	0.03	0.33	0.03	0.39	0.03	0.33
1986	0.05	0.54	0.04	0.55	0.05	0.54	0.05	0.54	0.04	0.52	0.04	0.55	0.04	0.52
1987	0.05	0.63	0.04	0.59	0.05	0.57	0.05	0.63	0.04	0.60	0.04	0.59	0.04	0.60
1988	0.05	0.82	0.04	0.77	0.05	0.76	0.05	0.82	0.04	0.79	0.04	0.77	0.04	0.79
1989	0.10	1.90	0.09	1.81	0.10	1.76	0.10	1.90	0.09	1.84	0.09	1.81	0.09	1.84

Table 22: Estimated discard mortality (biomass) in the groundfish fisheries (1,000's t; 1990+).

y	22.01		22.07		22.08		22.09		22.10		22.11		22.03	
	female	male	female	male	female	male	female	male	female	male	female	male	female	male
1990	0.167	3.015	0.169	3.226	0.169	3.071	0.167	3.021	0.170	3.295	0.169	3.232	0.170	3.289
1991	0.248	1.935	0.258	2.275	0.250	2.123	0.248	1.936	0.256	2.246	0.258	2.275	0.256	2.245
1992	0.292	2.525	0.301	2.715	0.266	2.390	0.292	2.525	0.295	2.621	0.301	2.716	0.295	2.621
1993	0.203	1.484	0.189	1.375	0.172	1.285	0.203	1.485	0.183	1.337	0.189	1.375	0.183	1.337
1994	0.171	0.918	0.153	0.882	0.146	0.845	0.171	0.918	0.151	0.871	0.153	0.882	0.151	0.871
1995	0.107	0.599	0.094	0.607	0.091	0.583	0.107	0.599	0.095	0.602	0.094	0.607	0.095	0.601
1996	0.068	0.423	0.069	0.420	0.068	0.421	0.068	0.423	0.070	0.410	0.069	0.420	0.070	0.410
1997	0.051	0.456	0.047	0.524	0.047	0.528	0.051	0.456	0.048	0.522	0.047	0.524	0.048	0.522
1998	0.036	0.320	0.032	0.315	0.032	0.319	0.036	0.320	0.033	0.314	0.032	0.315	0.033	0.314
1999	0.018	0.156	0.017	0.157	0.017	0.158	0.018	0.156	0.017	0.156	0.017	0.157	0.017	0.156
2000	0.021	0.190	0.019	0.191	0.019	0.191	0.021	0.190	0.019	0.190	0.019	0.191	0.019	0.190
2001	0.029	0.272	0.027	0.278	0.027	0.277	0.029	0.272	0.027	0.278	0.027	0.278	0.027	0.278
2002	0.015	0.151	0.015	0.151	0.015	0.150	0.015	0.151	0.015	0.151	0.015	0.151	0.015	0.151
2003	0.010	0.101	0.010	0.102	0.010	0.101	0.010	0.101	0.010	0.102	0.010	0.102	0.010	0.102
2004	0.017	0.174	0.016	0.168	0.016	0.167	0.017	0.174	0.016	0.168	0.016	0.168	0.016	0.168
2005	0.013	0.233	0.012	0.229	0.012	0.229	0.013	0.233	0.012	0.229	0.012	0.229	0.012	0.229
2006	0.017	0.423	0.014	0.312	0.015	0.311	0.017	0.423	0.015	0.312	0.014	0.312	0.015	0.312
2007	0.019	0.446	0.016	0.401	0.017	0.403	0.019	0.446	0.017	0.398	0.016	0.401	0.017	0.397
2008	0.014	0.263	0.012	0.255	0.012	0.255	0.014	0.263	0.012	0.255	0.012	0.255	0.012	0.255
2009	0.011	0.204	0.009	0.211	0.009	0.213	0.011	0.204	0.009	0.211	0.009	0.211	0.009	0.211
2010	0.007	0.205	0.006	0.212	0.006	0.213	0.007	0.205	0.006	0.211	0.006	0.212	0.006	0.211
2011	0.010	0.273	0.009	0.291	0.009	0.293	0.010	0.273	0.009	0.290	0.009	0.291	0.009	0.290
2012	0.007	0.199	0.006	0.208	0.006	0.209	0.007	0.199	0.006	0.208	0.006	0.208	0.006	0.208
2013	0.011	0.228	0.010	0.242	0.010	0.242	0.011	0.228	0.010	0.241	0.010	0.241	0.010	0.241
2014	0.023	0.587	0.021	0.690	0.021	0.687	0.023	0.590	0.022	0.686	0.021	0.692	0.022	0.683
2015	0.024	0.613	0.021	0.681	0.021	0.685	0.024	0.622	0.022	0.679	0.021	0.689	0.022	0.671
2016	0.011	0.332	0.010	0.358	0.010	0.357	0.011	0.332	0.010	0.357	0.010	0.358	0.010	0.357
2017	0.006	0.149	0.005	0.154	0.005	0.154	0.006	0.150	0.005	0.153	0.005	0.154	0.005	0.153
2018	0.006	0.139	0.005	0.144	0.005	0.145	0.006	0.140	0.005	0.143	0.005	0.144	0.005	0.142
2019	0.006	0.145	0.005	0.148	0.005	0.148	0.006	0.145	0.005	0.148	0.005	0.148	0.005	0.148
2020	0.004	0.070	0.004	0.073	0.004	0.073	0.004	0.071	0.004	0.072	0.004	0.073	0.004	0.072
2021	0.006	0.089	0.006	0.092	0.006	0.093	0.006	0.072	0.005	0.072	0.005	0.072	0.006	0.091

Table 23: Estimated abundance in the NMFS EBS survey for females (millions; 1975-2000).

y	22.01		22.07		22.08		22.09		22.10		22.11		22.03	
	immature	mature	immature	mature	immature	mature	immature	mature	immature	mature	immature	mature	immature	mature
1975	71.1	243.4	-	-	-	-	71.1	243.4	71.2	243.2	-	-	71.2	243.2
1976	86.2	209.0	-	-	-	-	86.3	209.0	87.0	208.7	-	-	86.9	208.7
1977	106.1	178.3	-	-	-	-	106.1	178.2	107.0	178.0	-	-	107.0	178.0
1978	114.8	160.5	-	-	-	-	114.9	160.5	115.5	160.6	-	-	115.5	160.6
1979	105.2	161.8	-	-	-	-	105.2	161.8	105.4	162.2	-	-	105.4	162.2
1980	78.2	173.0	-	-	-	-	78.2	173.0	77.9	173.7	-	-	77.9	173.7
1981	49.3	137.3	-	-	-	-	49.3	137.3	48.9	138.5	-	-	48.9	138.5
1982	81.7	127.2	39.9	103.9	50.4	110.4	81.8	127.2	80.8	127.9	39.9	103.9	80.8	127.8
1983	119.2	87.1	97.1	85.7	111.8	93.7	119.3	87.1	118.2	87.7	97.2	85.7	118.2	87.7
1984	143.0	60.1	132.5	69.1	138.8	76.5	143.1	60.1	141.2	60.7	132.5	69.1	141.1	60.6
1985	170.8	46.2	170.3	59.6	168.6	67.1	170.9	46.3	168.3	46.8	170.3	59.6	168.3	46.7
1986	189.5	55.7	195.3	61.1	185.0	69.2	189.5	55.7	187.5	56.0	195.3	61.1	187.5	56.0
1987	188.1	70.9	196.7	73.4	182.3	80.0	188.1	70.9	187.5	70.8	196.8	73.5	187.5	70.7
1988	165.0	85.9	173.7	88.1	159.3	96.3	165.0	85.9	167.4	85.4	173.7	88.2	167.4	85.3
1989	126.7	97.8	134.0	100.1	123.3	97.7	126.7	97.8	130.2	97.1	134.0	100.1	130.2	97.0
1990	88.3	104.7	92.1	107.2	84.1	101.6	88.3	104.7	89.8	104.3	92.1	107.2	89.8	104.2
1991	56.2	104.0	57.8	106.8	53.9	99.4	56.2	104.0	56.7	104.2	57.8	106.8	56.7	104.2
1992	36.1	94.9	36.4	97.5	36.9	90.1	36.1	94.9	35.9	95.6	36.4	97.6	35.9	95.6
1993	26.1	80.4	26.1	82.3	27.6	76.2	26.1	80.4	25.6	81.1	26.1	82.3	25.6	81.1
1994	23.7	65.2	23.8	66.2	25.2	61.9	23.7	65.2	23.5	65.6	23.8	66.2	23.5	65.6
1995	28.5	52.1	28.7	52.4	28.7	49.9	28.5	52.1	28.5	52.2	28.8	52.4	28.5	52.2
1996	31.1	42.0	31.5	42.0	30.4	40.9	31.1	42.0	31.2	42.1	31.5	42.0	31.2	42.1
1997	47.7	34.9	48.0	34.7	47.7	34.2	47.7	34.9	47.9	34.9	48.0	34.7	47.8	34.9
1998	46.4	30.8	46.9	30.4	46.1	30.0	46.4	30.8	46.5	30.8	46.9	30.4	46.5	30.8
1999	76.5	29.3	77.2	28.8	78.9	28.2	76.6	29.3	76.9	29.3	77.3	28.8	76.9	29.3
2000	73.6	30.2	74.5	29.5	74.9	28.9	73.6	30.2	73.8	30.3	74.5	29.5	73.7	30.3

Table 24: Estimated abundance in the NMFS EBS survey for females (millions; 2001+).

y	22.01		22.07		22.08		22.09		22.10		22.11		22.03	
	immature	mature	immature	mature	immature	mature	immature	mature	immature	mature	immature	mature	immature	mature
2001	116.6	32.9	117.2	32.2	120.4	31.5	116.6	32.9	117.0	33.0	117.2	32.2	117.0	33.0
2002	108.9	37.6	110.5	36.7	109.6	36.2	108.9	37.6	109.5	37.8	110.5	36.7	109.5	37.8
2003	147.9	44.5	149.7	43.5	151.7	43.1	147.9	44.5	149.1	44.7	149.7	43.5	149.1	44.7
2004	152.1	53.2	151.3	51.9	164.5	51.5	152.1	53.2	151.6	53.5	151.3	51.9	151.6	53.5
2005	125.0	62.9	124.5	61.6	134.6	60.6	125.0	62.9	124.0	63.2	124.5	61.6	124.0	63.2
2006	93.0	72.5	92.7	70.9	100.0	70.2	93.0	72.5	91.7	72.9	92.6	70.9	91.7	72.9
2007	68.1	80.9	67.8	79.2	73.8	73.8	68.1	80.9	67.0	81.2	67.8	79.2	67.0	81.2
2008	59.3	81.7	60.7	79.9	57.1	81.4	59.3	81.7	58.4	81.5	60.7	79.9	58.4	81.5
2009	131.9	73.4	130.7	71.5	120.0	73.3	131.9	73.4	131.6	72.9	130.7	71.5	131.6	72.9
2010	143.1	63.0	142.9	61.0	138.4	62.8	143.1	63.0	143.9	62.4	142.9	61.0	143.9	62.4
2011	132.2	59.0	132.5	56.8	125.1	57.8	132.2	59.0	133.0	58.6	132.4	56.7	133.0	58.6
2012	98.8	67.2	99.7	64.5	91.6	63.4	98.8	67.2	99.2	67.0	99.7	64.5	99.3	67.0
2013	67.5	80.5	68.4	78.0	64.5	74.1	67.5	80.5	67.7	80.5	68.4	78.0	67.7	80.5
2014	41.4	83.7	41.7	81.8	42.8	76.1	41.4	83.7	41.4	83.8	41.7	81.8	41.4	83.8
2015	30.9	75.0	31.2	73.3	33.5	67.8	30.9	75.0	30.9	75.0	31.2	73.3	30.9	75.0
2016	29.5	62.3	29.8	60.8	32.6	56.6	29.5	62.3	29.4	62.3	29.8	60.8	29.4	62.3
2017	77.0	51.4	77.3	49.9	80.1	47.6	77.0	51.4	77.0	51.3	77.3	49.9	77.1	51.3
2018	87.0	43.0	86.9	41.7	92.8	40.7	87.0	43.0	87.1	43.0	86.9	41.7	87.1	43.0
2019	106.6	39.0	106.7	37.4	121.4	37.4	106.6	39.0	106.6	38.9	106.7	37.4	106.7	38.9
2020	86.3	42.5	86.8	40.7	95.0	41.5	86.2	42.5	86.1	42.5	86.7	40.7	86.1	42.6
2021	108.2	51.2	109.3	49.5	116.8	50.6	108.2	51.2	108.2	51.3	109.3	49.5	108.2	51.3
2022	168.0	57.4	168.8	55.9	178.7	57.9	168.0	57.4	168.3	57.5	168.8	55.9	168.4	57.5

Table 25: Estimated biomass in the NMFS EBS survey for females (1,000's t; 1975-2000).

y	22.01		22.07		22.08		22.09		22.10		22.11		22.03	
	immature	mature	immature	mature	immature	mature	immature	mature	immature	mature	immature	mature	immature	mature
1975	4.4	44.1	-	-	-	-	4.4	44.1	4.4	44.1	-	-	4.4	44.1
1976	4.0	38.2	-	-	-	-	4.0	38.2	4.0	38.2	-	-	4.0	38.2
1977	4.8	32.5	-	-	-	-	4.8	32.5	4.8	32.5	-	-	4.8	32.5
1978	6.3	28.7	-	-	-	-	6.3	28.7	6.3	28.7	-	-	6.3	28.7
1979	7.2	28.1	-	-	-	-	7.2	28.1	7.2	28.1	-	-	7.2	28.1
1980	6.3	29.9	-	-	-	-	6.3	29.9	6.3	30.0	-	-	6.3	30.0
1981	4.2	24.4	-	-	-	-	4.2	24.4	4.1	24.6	-	-	4.1	24.6
1982	4.2	21.9	2.3	18.8	2.9	20.7	4.2	21.9	4.1	22.0	2.3	18.8	4.1	22.0
1983	3.7	15.3	2.2	15.9	2.6	18.1	3.7	15.3	3.7	15.4	2.2	15.9	3.7	15.4
1984	4.4	10.5	3.4	12.7	3.8	14.6	4.4	10.5	4.3	10.6	3.4	12.7	4.3	10.6
1985	5.7	7.8	5.2	10.6	5.5	12.3	5.7	7.8	5.6	7.9	5.2	10.6	5.6	7.9
1986	7.0	9.0	7.1	10.2	6.9	12.0	7.0	9.0	7.0	9.0	7.1	10.2	6.9	9.0
1987	7.7	11.2	8.0	11.9	7.3	13.4	7.7	11.2	7.6	11.2	8.0	11.9	7.6	11.2
1988	7.5	13.7	7.9	14.3	7.0	15.0	7.5	13.7	7.4	13.6	7.9	14.3	7.4	13.6
1989	6.6	15.8	7.0	16.4	6.2	16.3	6.6	15.8	6.7	15.7	7.0	16.4	6.7	15.7
1990	5.3	17.1	5.6	17.7	4.9	17.0	5.2	17.1	5.3	17.0	5.6	17.7	5.4	17.0
1991	3.6	17.3	3.8	17.9	3.3	16.8	3.6	17.3	3.7	17.3	3.8	17.9	3.7	17.3
1992	2.2	16.1	2.3	16.7	2.1	15.5	2.2	16.1	2.3	16.2	2.3	16.7	2.3	16.2
1993	1.4	13.8	1.4	14.3	1.3	13.2	1.4	13.8	1.4	13.9	1.4	14.3	1.4	13.9
1994	1.0	11.3	1.0	11.6	1.1	10.8	1.0	11.3	1.0	11.3	1.0	11.6	1.0	11.3
1995	1.0	9.0	1.0	9.2	1.0	8.7	1.0	9.0	1.0	9.0	1.0	9.2	1.0	9.0
1996	1.1	7.2	1.1	7.3	1.1	7.1	1.1	7.2	1.1	7.2	1.1	7.3	1.1	7.2
1997	1.4	6.0	1.4	6.0	1.4	5.9	1.4	6.0	1.4	6.0	1.4	6.0	1.4	6.0
1998	1.7	5.2	1.7	5.2	1.6	5.1	1.7	5.2	1.7	5.2	1.7	5.2	1.7	5.2
1999	2.3	4.8	2.3	4.8	2.3	4.7	2.3	4.8	2.3	4.8	2.3	4.8	2.3	4.8
2000	2.7	4.9	2.7	4.8	2.7	4.7	2.7	4.9	2.7	4.9	2.7	4.8	2.7	4.9

Table 26: Estimated biomass in the NMFS EBS survey for females (1,000's t; 2001+).

y	22.01		22.07		22.08		22.09		22.10		22.11		22.03	
	immature	mature	immature	mature	immature	mature	immature	mature	immature	mature	immature	mature	immature	mature
2001	3.6	5.3	3.6	5.2	3.6	5.1	3.6	5.3	3.6	5.3	3.6	5.2	3.6	5.3
2002	4.1	5.9	4.2	5.9	4.1	5.8	4.1	5.9	4.1	6.0	4.2	5.9	4.1	6.0
2003	5.0	7.0	5.1	6.9	5.0	6.9	5.0	7.0	5.1	7.0	5.1	6.9	5.1	7.0
2004	5.7	8.4	5.7	8.3	5.8	8.2	5.7	8.4	5.7	8.4	5.7	8.3	5.7	8.4
2005	5.8	9.9	5.8	9.9	5.9	9.7	5.8	9.9	5.8	10.0	5.8	9.9	5.8	10.0
2006	5.3	11.5	5.3	11.4	5.5	11.3	5.3	11.5	5.2	11.6	5.3	11.4	5.2	11.6
2007	4.1	13.0	4.1	12.9	4.3	13.0	4.1	13.0	4.0	13.1	4.1	12.9	4.0	13.1
2008	2.8	13.6	2.8	13.4	2.8	13.6	2.8	13.6	2.7	13.6	2.8	13.4	2.7	13.6
2009	3.1	12.5	3.1	12.3	2.9	12.6	3.1	12.5	3.0	12.5	3.1	12.3	3.0	12.5
2010	4.2	10.8	4.2	10.5	3.9	10.8	4.2	10.8	4.2	10.7	4.2	10.5	4.2	10.7
2011	5.5	9.7	5.5	9.5	5.1	9.7	5.5	9.7	5.5	9.6	5.5	9.5	5.5	9.6
2012	5.8	10.5	5.8	10.2	5.2	10.2	5.8	10.5	5.8	10.5	5.8	10.2	5.8	10.5
2013	4.4	12.7	4.5	12.5	4.0	12.0	4.4	12.7	4.4	12.7	4.5	12.5	4.4	12.7
2014	2.6	13.9	2.6	13.7	2.4	12.8	2.6	13.9	2.6	13.9	2.6	13.7	2.6	13.9
2015	1.5	12.8	1.5	12.7	1.5	11.7	1.5	12.8	1.5	12.8	1.5	12.7	1.5	12.8
2016	1.2	10.8	1.2	10.6	1.3	9.8	1.2	10.8	1.2	10.8	1.2	10.6	1.2	10.8
2017	1.8	8.9	1.8	8.7	1.9	8.2	1.8	8.9	1.8	8.9	1.8	8.7	1.8	8.9
2018	2.5	7.4	2.5	7.2	2.6	7.0	2.5	7.4	2.5	7.4	2.5	7.2	2.5	7.4
2019	3.6	6.5	3.6	6.3	3.9	6.3	3.6	6.5	3.6	6.5	3.6	6.3	3.6	6.5
2020	4.1	6.7	4.2	6.5	4.4	6.6	4.1	6.7	4.1	6.7	4.2	6.5	4.1	6.7
2021	4.3	8.0	4.3	7.9	4.6	8.1	4.3	8.0	4.3	8.1	4.3	7.9	4.3	8.1
2022	4.8	9.3	4.8	9.1	5.1	9.4	4.8	9.3	4.8	9.3	4.8	9.1	4.8	9.3

Table 27: Estimated abundance in the NMFS EBS survey for males (millions; 1975-2000).

y	22.01		22.07		22.08		22.09		22.10		22.11		22.03	
	immature	mature	immature	mature	immature	mature	immature	mature	immature	mature	immature	mature	immature	mature
1975	127.2	305.6	-	-	-	-	127.2	305.6	127.4	305.2	-	-	127.4	305.2
1976	150.8	265.4	-	-	-	-	150.8	265.4	151.0	264.9	-	-	151.0	264.9
1977	174.8	216.3	-	-	-	-	174.8	216.4	174.7	216.0	-	-	174.7	215.9
1978	182.0	174.9	-	-	-	-	181.9	174.9	181.4	174.5	-	-	181.4	174.5
1979	171.5	166.1	-	-	-	-	171.5	166.1	171.3	165.5	-	-	171.3	165.5
1980	138.5	179.3	-	-	-	-	138.5	179.3	138.7	178.7	-	-	138.7	178.8
1981	94.0	145.8	-	-	-	-	94.0	145.7	94.3	144.5	-	-	94.2	144.5
1982	117.6	154.2	63.9	102.6	63.0	123.2	117.7	154.2	117.4	152.8	64.0	102.6	117.4	152.8
1983	145.2	108.7	116.9	95.1	115.5	116.0	145.3	108.7	143.8	107.4	117.0	95.1	143.7	107.4
1984	169.5	73.3	157.5	79.2	151.2	93.3	169.6	73.3	166.7	72.1	157.6	79.2	166.7	72.1
1985	203.8	53.3	203.3	70.6	194.6	78.5	203.9	53.3	200.1	52.2	203.4	70.6	200.0	52.2
1986	232.7	66.3	238.7	75.1	227.2	78.9	232.7	66.3	229.5	65.2	238.7	75.2	229.5	65.2
1987	239.0	87.9	249.6	93.1	236.3	94.6	239.0	87.9	237.5	86.6	249.6	93.2	237.5	86.6
1988	216.5	113.4	228.5	118.8	214.9	117.5	216.4	113.5	218.6	111.7	228.4	118.8	218.7	111.7
1989	174.7	133.8	185.3	140.7	176.1	135.0	174.7	133.8	178.9	131.9	185.3	140.7	178.9	131.9
1990	129.5	142.1	136.3	150.3	130.4	141.8	129.5	142.1	132.4	140.5	136.3	150.3	132.4	140.5
1991	86.9	137.1	90.9	145.4	89.0	136.7	86.9	137.1	89.1	135.6	90.9	145.4	89.1	135.7
1992	55.8	126.8	57.5	134.4	59.8	126.3	55.8	126.8	56.9	125.9	57.5	134.4	56.9	125.9
1993	37.8	103.8	38.3	110.4	41.3	105.0	37.8	103.8	37.8	103.8	38.3	110.4	37.8	103.8
1994	31.4	83.2	31.5	88.7	34.2	85.1	31.4	83.2	31.1	83.7	31.5	88.7	31.1	83.7
1995	35.2	66.3	35.5	70.4	36.5	68.2	35.2	66.4	35.0	66.4	35.5	70.4	35.0	66.4
1996	37.9	53.3	38.6	56.3	38.2	55.4	37.9	53.3	37.9	53.1	38.6	56.3	37.9	53.1
1997	56.4	44.1	56.8	46.5	56.3	46.2	56.4	44.1	56.3	43.9	56.8	46.5	56.3	43.9
1998	56.6	38.8	57.3	40.6	56.7	40.2	56.6	38.8	56.5	38.5	57.3	40.6	56.5	38.5
1999	90.6	37.1	91.5	38.6	92.5	37.8	90.6	37.1	90.5	36.9	91.5	38.6	90.5	36.9
2000	90.1	38.9	91.5	40.2	92.7	38.8	90.1	38.9	90.1	38.7	91.5	40.2	90.1	38.7

Table 28: Estimated abundance in the NMFS EBS survey for males (millions; 2001+).

y	22.01		22.07		22.08		22.09		22.10		22.11		22.03	
	immature	mature	immature	mature	immature	mature	immature	mature	immature	mature	immature	mature	immature	mature
2001	138.6	43.4	139.5	44.5	142.6	43.1	138.6	43.4	138.4	43.2	139.5	44.5	138.4	43.2
2002	134.2	50.1	136.4	51.2	137.5	49.9	134.2	50.1	134.5	49.9	136.4	51.2	134.5	49.9
2003	179.7	60.0	182.3	61.2	185.1	60.2	179.7	60.0	180.4	59.9	182.2	61.2	180.5	59.9
2004	188.5	72.9	188.3	74.3	204.1	73.4	188.4	72.9	187.6	72.9	188.3	74.3	187.7	73.0
2005	163.2	87.8	163.6	89.4	178.9	88.3	163.1	87.8	162.3	87.9	163.6	89.4	162.3	88.0
2006	130.4	102.9	130.8	104.9	145.6	103.5	130.3	102.8	129.6	103.2	130.8	104.8	129.7	103.2
2007	102.1	116.1	102.3	118.5	116.4	118.5	102.1	116.0	101.4	116.7	102.2	118.5	101.5	116.7
2008	83.8	124.0	85.5	126.4	87.5	129.2	83.8	124.0	83.0	124.4	85.5	126.4	83.0	124.5
2009	152.6	118.2	151.5	120.2	139.9	124.8	152.6	118.2	151.3	118.2	151.5	120.2	151.3	118.2
2010	165.3	102.4	165.5	104.1	159.9	108.4	165.3	102.4	165.1	102.2	165.5	104.1	165.2	102.2
2011	162.3	90.5	163.1	91.9	155.9	94.6	162.2	90.5	162.6	90.1	163.1	91.9	162.6	90.1
2012	138.0	93.1	139.5	94.2	133.0	93.5	138.0	93.1	138.9	92.5	139.5	94.2	138.9	92.5
2013	105.9	112.0	107.5	113.2	105.9	107.6	105.9	112.0	107.2	111.4	107.5	113.2	107.2	111.4
2014	65.9	127.4	67.1	129.0	70.5	120.6	65.9	127.4	67.0	127.2	67.1	129.0	67.0	127.2
2015	43.7	118.7	44.6	120.4	48.5	112.8	43.7	118.7	44.2	118.8	44.6	120.4	44.2	118.8
2016	38.2	96.0	38.7	97.4	43.2	91.8	38.2	96.0	38.3	96.1	38.7	97.4	38.2	96.1
2017	88.3	79.2	88.6	80.5	91.1	76.5	88.2	79.2	87.7	79.2	88.6	80.5	87.8	79.2
2018	100.5	65.7	100.6	66.9	107.2	64.6	100.5	65.7	100.0	65.7	100.6	66.9	100.0	65.7
2019	126.0	56.9	126.4	57.9	142.5	56.9	125.9	56.9	125.4	56.8	126.3	57.9	125.4	56.8
2020	112.2	57.2	113.1	57.9	126.1	57.6	112.1	57.2	111.9	56.9	113.1	57.9	112.0	56.9
2021	139.4	68.2	141.0	69.0	152.8	69.3	139.4	68.2	139.2	67.9	141.0	68.9	139.3	67.9
2022	200.8	82.1	202.1	83.2	214.7	84.8	200.8	82.0	200.5	81.8	202.0	83.2	200.5	81.8

Table 29: Estimated biomass in the NMFS EBS survey for males (1,000's t; 1975-2000).

y	22.01		22.07		22.08		22.09		22.10		22.11		22.03	
	immature	mature	immature	mature	immature	mature	immature	mature	immature	mature	immature	mature	immature	mature
1975	16.7	164.0	-	-	-	-	16.7	164.0	16.8	164.3	-	-	16.8	164.3
1976	13.2	143.2	-	-	-	-	13.2	143.2	13.3	143.4	-	-	13.3	143.4
1977	13.3	112.3	-	-	-	-	13.3	112.3	13.3	112.5	-	-	13.3	112.5
1978	17.1	82.3	-	-	-	-	17.1	82.3	17.1	82.4	-	-	17.1	82.4
1979	22.4	72.2	-	-	-	-	22.4	72.2	22.3	72.2	-	-	22.3	72.2
1980	23.7	77.5	-	-	-	-	23.7	77.5	23.7	77.5	-	-	23.7	77.5
1981	18.2	69.5	-	-	-	-	18.2	69.5	18.3	69.1	-	-	18.3	69.1
1982	15.7	78.0	9.5	47.2	12.1	52.6	15.8	78.0	15.8	77.7	9.5	47.2	15.8	77.7
1983	10.1	59.3	4.9	49.9	4.9	58.9	10.1	59.3	10.1	59.0	4.9	49.9	10.1	59.0
1984	9.6	40.6	6.7	41.4	6.1	48.1	9.6	40.6	9.5	40.2	6.7	41.4	9.5	40.2
1985	11.9	28.1	10.6	34.7	10.2	38.5	11.9	28.1	11.8	27.7	10.6	34.7	11.8	27.7
1986	15.9	32.5	15.6	34.6	15.4	36.2	15.9	32.5	15.7	32.2	15.6	34.6	15.7	32.2
1987	19.5	41.2	20.0	41.4	19.5	42.0	19.5	41.2	19.2	40.8	20.0	41.5	19.2	40.8
1988	20.4	53.8	21.5	53.9	20.3	53.7	20.4	53.8	20.2	53.2	21.5	53.9	20.2	53.2
1989	19.5	64.5	20.6	65.8	19.3	63.6	19.5	64.5	19.5	63.8	20.6	65.8	19.5	63.8
1990	17.1	67.5	18.3	69.7	17.1	66.3	17.1	67.5	17.4	66.8	18.3	69.7	17.4	66.8
1991	13.1	63.6	14.1	65.8	13.3	62.7	13.1	63.5	13.6	62.5	14.1	65.8	13.6	62.5
1992	8.6	59.2	9.2	61.3	8.9	58.5	8.6	59.2	9.0	58.4	9.2	61.3	9.0	58.4
1993	5.1	47.5	5.3	49.4	5.4	48.1	5.1	47.5	5.2	47.3	5.3	49.4	5.2	47.3
1994	3.2	37.8	3.2	39.7	3.5	39.1	3.2	37.8	3.2	38.2	3.2	39.7	3.2	38.2
1995	2.6	30.2	2.6	31.6	2.9	31.4	2.6	30.2	2.5	30.4	2.6	31.6	2.5	30.4
1996	2.6	24.2	2.6	25.1	2.9	25.4	2.6	24.2	2.6	24.2	2.6	25.1	2.6	24.2
1997	3.1	20.0	3.2	20.7	3.2	21.3	3.1	20.0	3.1	20.0	3.2	20.7	3.1	19.9
1998	3.8	17.6	3.9	18.1	3.8	18.6	3.8	17.6	3.8	17.5	3.9	18.1	3.8	17.5
1999	5.0	16.9	5.1	17.3	5.0	17.4	5.0	16.9	5.0	16.8	5.1	17.3	5.0	16.8
2000	6.2	17.8	6.3	18.1	6.3	17.8	6.2	17.8	6.2	17.8	6.3	18.1	6.2	17.8

Table 30: Estimated biomass in the NMFS EBS survey for males (1,000's t; 2001+).

y	22.01		22.07		22.08		22.09		22.10		22.11		22.03	
	immature	mature	immature	mature	immature	mature	immature	mature	immature	mature	immature	mature	immature	mature
2001	7.9	20.0	8.0	20.3	8.2	19.8	7.9	20.0	7.9	20.0	8.0	20.3	7.9	20.0
2002	9.5	23.3	9.6	23.5	9.9	23.0	9.5	23.3	9.5	23.3	9.6	23.5	9.5	23.3
2003	11.7	27.9	12.0	28.2	12.3	27.8	11.7	27.9	11.8	28.0	12.0	28.2	11.8	28.0
2004	13.7	34.3	13.9	34.7	14.4	34.2	13.7	34.3	13.7	34.5	13.9	34.7	13.7	34.5
2005	15.0	41.8	15.2	42.1	15.8	41.7	15.0	41.8	15.0	42.0	15.2	42.1	15.0	42.0
2006	15.2	49.7	15.4	50.2	16.4	49.4	15.2	49.7	15.2	50.0	15.4	50.2	15.2	50.0
2007	14.1	56.7	14.2	57.4	15.7	56.9	14.1	56.7	14.1	57.3	14.2	57.4	14.1	57.3
2008	10.4	63.0	10.5	63.6	11.8	64.4	10.4	63.0	10.3	63.6	10.5	63.6	10.3	63.6
2009	7.5	63.2	7.5	63.6	8.1	65.6	7.5	63.2	7.4	63.5	7.5	63.6	7.4	63.5
2010	7.7	55.7	7.8	56.0	7.8	58.2	7.7	55.7	7.7	55.8	7.7	56.0	7.7	55.8
2011	11.1	47.6	11.2	47.9	10.6	49.6	11.1	47.6	11.0	47.6	11.1	47.9	11.0	47.6
2012	15.4	45.1	15.5	45.3	14.4	45.8	15.4	45.1	15.4	45.0	15.5	45.3	15.4	45.0
2013	16.0	52.9	16.2	53.0	15.3	51.0	16.0	52.9	16.1	52.8	16.2	52.9	16.1	52.8
2014	10.8	64.2	11.1	64.2	10.9	60.0	10.9	64.2	11.1	64.2	11.1	64.2	11.1	64.2
2015	5.6	63.0	5.8	63.0	6.0	58.9	5.7	63.0	5.8	63.1	5.8	63.0	5.8	63.1
2016	3.5	51.2	3.6	51.2	4.0	48.2	3.5	51.2	3.6	51.3	3.6	51.2	3.6	51.3
2017	3.8	42.4	3.8	42.6	4.3	40.2	3.8	42.4	3.8	42.6	3.8	42.6	3.8	42.6
2018	4.6	34.9	4.7	35.0	5.2	33.7	4.6	34.9	4.6	35.0	4.7	35.0	4.6	35.0
2019	6.8	29.3	6.9	29.5	7.5	28.9	6.8	29.3	6.8	29.4	6.9	29.5	6.8	29.4
2020	9.9	27.4	10.0	27.5	10.7	27.3	9.9	27.4	9.8	27.4	9.9	27.5	9.8	27.4
2021	12.0	31.4	12.2	31.4	13.2	31.5	12.0	31.4	12.0	31.3	12.2	31.4	12.0	31.3
2022	12.1	39.6	12.3	39.7	13.8	40.1	12.1	39.6	12.2	39.6	12.3	39.7	12.2	39.6

Table 31: Estimated abundance in the BSFRF SBS survey for females (millions; 2001+).

y	22.01		22.07		22.08		22.09		22.10		22.11		22.03	
	immature	mature	immature	mature	immature	mature	immature	mature	immature	mature	immature	mature	immature	mature
2013	11.4	44.5	11.3	43.5	12.5	54.2	11.4	44.5	11.3	44.2	11.3	43.5	11.3	44.2
2014	7.8	28.2	7.6	27.1	9.1	32.4	7.8	28.2	7.7	28.0	7.6	27.1	7.7	28.0
2015	5.7	28.1	5.5	26.8	7.0	31.4	5.7	28.1	5.6	27.9	5.5	26.8	5.6	27.9
2016	18.5	97.5	18.2	95.1	23.7	113.5	18.5	97.5	18.2	96.5	18.2	95.1	18.2	96.6
2017	265.9	149.5	259.4	143.5	301.1	176.2	265.8	149.5	261.8	147.9	259.3	143.5	261.9	147.9

Table 32: Estimated biomass in the BSFRF SBS survey for females (1,000's t; 2001+).

y	22.01		22.07		22.08		22.09		22.10		22.11		22.03	
	immature	mature	immature	mature	immature	mature	immature	mature	immature	mature	immature	mature	immature	mature
2013	1.0	9.6	1.0	9.4	1.1	11.8	1.0	9.6	1.0	9.5	1.0	9.4	1.0	9.6
2014	0.5	6.3	0.5	6.1	0.6	7.3	0.5	6.3	0.5	6.2	0.5	6.1	0.5	6.2
2015	0.3	6.8	0.3	6.4	0.4	7.5	0.3	6.8	0.3	6.7	0.3	6.4	0.3	6.7
2016	1.2	19.0	1.2	18.5	1.5	22.0	1.2	19.0	1.2	18.8	1.2	18.5	1.2	18.8
2017	6.0	23.6	5.9	23.0	7.4	28.3	6.0	23.6	5.9	23.3	5.9	23.0	5.9	23.3

Table 33: Estimated abundance in the BSFRF SBS survey for males (millions; 2001+).

y	22.01		22.07		22.08		22.09		22.10		22.11		22.03	
	immature	mature	immature	mature	immature	mature	immature	mature	immature	mature	immature	mature	immature	mature
2013	43.1	65.6	42.4	63.9	48.4	72.6	43.1	65.6	42.9	63.9	42.4	63.9	42.9	63.9
2014	22.9	86.7	22.7	84.3	26.9	93.6	22.9	86.7	23.0	84.8	22.7	84.3	23.0	84.9
2015	16.3	68.2	16.1	66.4	20.1	73.4	16.3	68.2	16.3	67.0	16.1	66.4	16.3	67.0
2016	19.3	102.0	19.0	100.5	25.3	112.1	19.3	102.0	19.1	100.2	19.0	100.5	19.1	100.1
2017	224.3	112.4	218.5	111.1	257.4	125.3	224.2	112.4	221.1	110.1	218.4	111.1	221.2	110.1

Table 34: Estimated biomass in the BSFRF SBS survey for males (1,000's t; 2001+).

y	22.01		22.07		22.08		22.09		22.10		22.11		22.03	
	immature	mature	immature	mature	immature	mature	immature	mature	immature	mature	immature	mature	immature	mature
2013	7.2	35.1	7.1	33.8	7.7	38.9	7.2	35.1	7.1	34.2	7.1	33.8	7.1	34.2
2014	5.3	52.3	5.2	50.2	5.9	55.6	5.3	52.3	5.3	51.3	5.2	50.1	5.3	51.3
2015	2.7	40.8	2.7	39.0	3.2	43.0	2.7	40.8	2.7	40.1	2.7	39.0	2.7	40.1
2016	3.5	51.1	3.5	49.6	4.5	55.5	3.5	51.1	3.5	50.2	3.5	49.6	3.5	50.2
2017	8.0	51.8	7.8	50.8	10.1	57.5	8.0	51.8	7.9	50.7	7.8	50.8	7.9	50.7

Table 37: Estimated population biomass (1,000's t; 1948-1990).

Year	22.01				22.02				22.06				22.09				22.10				22.11				22.03							
	female		male		female		male		female		male		female		male		female		male		female		male		female		male					
	immature	mature	immature	mature	immature	mature	immature	mature	immature	mature	immature	mature	immature	mature	immature	mature	immature	mature	immature	mature	immature	mature	immature	mature	immature	mature	immature	mature				
1949	3.19	-	-	-	3.19	-	-	-	3.19	-	-	-	3.19	-	-	-	3.19	-	-	-	3.19	-	-	-	3.19	-	-	-				
1950	4.89	0.03	8.80	0.03	4.89	0.04	8.80	0.04	4.89	0.04	8.80	0.04	4.89	0.04	8.80	0.04	4.89	0.04	8.80	0.04	4.89	0.04	8.80	0.04	4.89	0.04	8.80	0.04	4.89	0.04		
1951	15.56	0.82	0.03	18.52	0.37	0.03	-	-	15.56	0.81	0.03	18.52	0.37	0.03	15.56	0.81	0.03	18.51	0.36	0.03	-	-	-	15.59	0.84	0.03	18.42	0.36	0.03			
1952	22.49	4.26	0.62	22.00	4.47	0.14	-	-	22.50	4.26	0.62	22.00	4.47	0.14	22.50	4.26	0.62	22.00	4.47	0.14	22.50	4.26	0.62	22.00	4.47	0.14	22.50	4.26	0.62	22.00	4.47	0.14
1953	26.47	10.10	3.50	43.85	16.44	3.60	-	-	26.49	10.10	3.50	43.86	16.42	3.60	26.44	10.23	3.65	43.64	16.63	3.54	-	-	-	26.45	10.24	3.60	43.60	16.66	3.55			
1954	27.73	14.42	10.05	48.92	23.00	14.01	-	-	27.74	14.43	10.06	48.94	23.00	14.00	27.68	14.53	10.09	48.80	23.72	14.05	-	-	-	27.66	14.54	10.09	48.82	23.76	14.70			
1955	28.03	15.89	17.98	49.87	41.15	34.78	-	-	28.04	15.89	17.98	49.90	41.14	34.74	27.95	15.96	18.14	49.80	41.00	34.32	-	-	-	27.95	15.97	18.13	49.80	41.02	34.36			
1956	28.26	16.14	24.87	50.22	42.55	34.08	-	-	28.27	16.15	24.88	50.24	42.55	34.08	28.17	16.23	25.00	50.14	42.46	34.31	-	-	-	28.15	16.23	25.00	50.11	42.30	34.26			
1957	28.58	16.24	30.12	50.68	42.78	39.29	-	-	28.59	16.25	30.14	50.71	42.78	39.29	28.49	16.30	30.25	50.59	42.71	39.72	-	-	-	28.49	16.31	30.28	50.50	42.73	39.75			
1958	29.02	16.27	35.65	51.24	43.05	41.58	-	-	29.04	16.28	35.67	51.26	43.05	41.59	28.92	16.35	34.46	51.11	42.97	40.95	-	-	-	28.92	16.33	34.47	51.22	42.99	40.98			
1959	29.64	16.55	37.03	52.24	43.44	40.87	-	-	29.66	16.56	37.05	52.26	43.44	40.89	29.55	16.61	37.12	52.13	43.35	40.18	-	-	-	29.53	16.64	37.13	52.11	43.37	40.21			
1960	30.49	16.49	39.25	53.34	44.00	39.14	-	-	30.52	16.52	39.27	53.36	44.00	39.17	30.42	16.57	39.22	53.26	43.90	39.50	-	-	-	30.42	16.57	39.23	53.27	43.91	39.51			
1961	31.09	17.17	41.24	55.30	44.78	40.05	-	-	31.21	17.18	41.26	55.33	44.79	40.18	31.13	17.22	41.30	55.10	44.66	40.23	-	-	-	31.13	17.22	41.30	55.09	44.68	40.24			
1962	33.34	17.67	42.98	57.25	45.47	40.96	-	-	33.36	17.67	42.99	57.26	45.48	40.98	33.15	17.71	42.30	57.10	45.72	40.60	-	-	-	33.14	17.71	42.30	57.06	45.73	40.60			
1963	35.71	18.35	44.47	61.22	47.37	40.86	-	-	35.73	18.36	44.50	61.25	47.37	40.88	35.47	18.39	44.49	60.87	47.18	40.45	-	-	-	35.48	18.39	44.49	60.84	47.19	40.46			
1964	39.29	19.38	46.23	66.23	49.43	41.66	-	-	39.30	19.31	46.16	66.26	49.44	41.70	39.08	19.32	46.11	65.96	49.19	41.70	-	-	-	39.04	19.32	46.12	65.91	49.20	41.69			
1965	45.11	20.64	48.64	74.40	52.32	41.53	-	-	45.15	20.65	48.67	74.45	52.33	41.58	44.71	20.65	48.61	73.77	52.00	41.50	-	-	-	44.68	20.65	48.61	73.74	52.01	41.49			
1966	53.49	23.64	50.41	86.42	56.47	42.62	-	-	53.64	23.65	50.46	86.49	56.48	42.67	53.29	23.62	50.37	87.79	56.04	43.07	-	-	-	53.36	23.62	50.37	87.75	56.05	43.06			
1967	77.46	25.83	53.65	110.23	62.80	42.96	-	-	77.73	25.85	53.68	110.32	62.81	43.02	77.14	25.80	53.54	110.19	62.21	42.74	-	-	-	77.08	25.79	53.53	110.12	62.21	42.74			
1968	113.72	31.51	58.20	162.74	72.92	43.43	-	-	113.25	31.54	58.29	162.86	72.93	43.48	112.30	31.49	58.65	161.36	72.01	43.84	-	-	-	112.29	31.49	58.64	161.30	72.01	43.84			
1969	145.85	42.72	65.53	216.62	91.77	45.96	-	-	145.23	42.76	65.57	216.73	91.79	45.99	144.24	42.81	65.38	213.96	90.68	45.38	-	-	-	144.19	42.78	65.36	213.90	90.67	45.37			
1970	182.72	61.49	79.33	297.28	126.31	48.73	-	-	182.37	61.55	79.25	297.36	126.33	48.74	180.48	61.40	79.22	292.86	125.06	49.11	-	-	-	180.47	61.39	79.19	292.81	125.07	49.11			
1971	153.73	89.76	96.29	289.09	107.21	51.55	-	-	153.73	89.82	96.30	289.13	107.23	51.59	150.71	90.08	97.04	284.49	105.73	50.30	-	-	-	150.74	90.06	96.98	284.53	105.75	50.27			
1972	120.59	104.44	130.63	256.10	109.62	53.36	-	-	120.57	102.48	128.62	256.12	109.68	54.46	117.51	103.60	122.40	251.74	108.44	50.00	-	-	-	117.54	103.60	122.37	251.76	108.45	50.00			
1973	83.44	92.14	102.03	191.01	269.06	172.22	-	-	83.42	92.17	102.02	191.02	269.02	172.35	81.11	90.53	103.17	187.30	256.88	171.79	-	-	-	81.13	90.56	103.07	187.42	256.96	171.68			
1974	57.50	65.49	103.07	127.56	212.11	205.23	-	-	57.50	65.47	103.14	127.79	212.07	205.31	56.18	63.36	104.87	125.70	204.03	200.35	-	-	-	56.14	63.79	104.52	125.69	200.31				
1975	46.91	42.95	103.44	92.88	137.91	340.23	-	-	46.93	42.93	103.91	92.95	137.88	340.28	46.08	41.94	100.98	91.85	133.25	334.71	-	-	-	46.06	41.96	100.96	91.83	133.29	334.71			
1976	53.63	29.25	104.20	87.32	91.60	224.79	-	-	53.67	29.25	104.23	87.30	91.60	224.83	52.86	29.22	102.13	86.49	90.56	218.54	-	-	-	52.85	29.22	102.12	86.42	90.59	218.54			
1977	67.17	23.47	101.49	99.51	65.69	287.12	-	-	67.21	23.48	101.52	99.58	65.72	287.16	66.31	23.39	100.49	99.88	65.32	281.72	-	-	-	66.29	23.29	100.49	99.84	65.31	281.72			
1978	73.56	27.50	120.30	121.36	60.38	195.91	-	-	73.60	27.52	120.25	121.41	60.29	195.95	73.22	27.38	119.63	119.27	59.67	191.95	-	-	-	73.50	27.38	119.59	119.20	59.66	191.96			
1979	73.23	40.31	107.50	136.47	84.41	152.73	-	-	73.27	40.33	107.55	136.52	84.40	152.78	72.11	40.16	106.26	134.16	80.13	149.75	-	-	-	72.10	40.16	106.24	134.16	80.15	149.75			
1980	53.76	50.80	106.90	124.86	117.20	125.24	-	-	53.78	50.83	106.97	124.89	117.27	125.27	54.64	50.33	106.64	123.10	115.19	123.52	-	-	-	54.64	50.32	106.62	123.09	115.21	123.54			
1981	35.10	41.14	84.86	87.73	114.40	108.84	-	-	35.10	41.20	85.00	87.80	114.41	108.81	34.18	40.82	84.91	86.74	112.36	97.54	-	-	-	34.18	40.81	84.90	86.72	112.38	97.59			
1982	23.40	26.73	69.49	51.30	97.41	11.23	30.07	30.07	23.40	26.69	69.49	51.30	97.41	11.23	23.28	26.25	68.73	50.62	68.80	11.23	30.06	30.06	29.10	26.48	56.48	25.20	28.26	68.74	50.61	92.03		
1983	21.14	14.53	13.85	37.38	51.70	89.16	13.23	8.95	36.35	20.29	35.31	79.97	17.77	15.45	83.44	21.03	15.29	32.63	51.07	85.91	13.23	8.94	36.34	20.30	35.31	79.96	20.64	14.19	12.05	38.81	51.06	85.92
1984	23.50	9.40	30.27	27.00	68.11	28.29	4.02	49.18	21.40	11.60	34.11	25.95	6.70	73.86	24.62	14.42	13.03	35.53	44.96	38.17	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00		
1985	32.88	9.36	24.63	40.16	44.99	30.13	1.94	30.27	44.17	13.33	68.13	36.84	9.98	56.60	49.59	13.00	9.49	32.09	59.96	40.16	44.18	44.18	44.18	44.18	44.18	44.18	44.18	44.18	44.18			
1986	30.62	14.44	25.11	62.21	30.53	48.																										

Table 39: Comparison of estimates of mature biomass-at-mating by sex (in 1000's t) from the base and preferred models (model start to 1980).

year	female				male			
	22.01	22.09	22.10	22.03	22.01	22.09	22.10	22.03
1948	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1949	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1950	0.032	0.032	0.033	0.033	0.029	0.029	0.028	0.028
1951	0.695	0.695	0.712	0.713	0.493	0.492	0.484	0.485
1952	4.021	4.021	4.098	4.102	4.036	4.030	3.970	3.977
1953	11.278	11.280	11.435	11.443	16.704	16.684	16.457	16.484
1954	20.165	20.172	20.359	20.370	38.956	38.927	38.480	38.527
1955	27.898	27.909	28.082	28.094	61.493	61.474	60.928	60.978
1956	33.787	33.802	33.948	33.960	78.769	78.765	78.173	78.219
1957	38.193	38.210	38.330	38.342	91.416	91.424	90.768	90.808
1958	41.533	41.552	41.649	41.660	100.711	100.728	100.002	100.037
1959	44.137	44.158	44.234	44.243	107.738	107.763	106.961	106.990
1960	46.261	46.284	46.340	46.348	113.233	113.263	112.385	112.410
1961	48.116	48.140	48.176	48.182	117.621	117.655	116.719	116.738
1962	49.885	49.910	49.924	49.928	121.431	121.469	120.485	120.497
1963	51.744	51.771	51.759	51.760	125.123	125.164	124.133	124.139
1964	53.890	53.918	53.875	53.874	129.464	129.507	128.389	128.389
1965	56.571	56.603	56.519	56.515	134.720	134.767	133.519	133.510
1966	60.179	60.214	60.080	60.071	141.266	141.317	139.877	139.860
1967	65.276	65.316	65.142	65.128	136.078	136.125	134.492	134.476
1968	73.499	73.549	73.362	73.341	132.301	132.339	130.501	130.492
1969	87.706	87.774	87.768	87.734	119.587	119.605	117.859	117.871
1970	108.000	108.115	108.888	108.819	91.381	91.430	90.039	90.010
1971	135.327	135.522	137.446	137.306	93.414	93.525	93.171	93.073
1972	181.715	181.897	183.091	182.982	192.991	193.129	192.630	192.519
1973	207.584	207.713	207.110	207.052	328.587	328.671	325.461	325.437
1974	203.967	204.044	202.062	202.041	381.258	381.302	375.316	375.336
1975	184.272	184.321	181.917	181.911	363.958	363.991	357.184	357.206
1976	158.688	158.731	156.525	156.519	299.326	299.361	293.471	293.487
1977	134.828	134.875	133.086	133.074	219.536	219.573	215.242	215.257
1978	120.577	120.631	119.229	119.212	171.151	171.195	167.916	167.924
1979	119.998	120.061	118.983	118.966	151.543	151.578	148.598	148.621
1980	106.622	106.673	106.312	106.301	131.690	131.648	127.914	127.985

Table 40: Comparison of estimates of mature biomass-at-mating by sex (in 1000's t) from the base and preferred models (1981 to model end).

year	female							male						
	22.01	22.07	22.08	22.09	22.10	22.11	22.03	22.01	22.07	22.08	22.09	22.10	22.11	22.03
1981	86.0	-	-	86.0	86.0	-	86.0	127.2	-	-	127.2	123.1	-	123.2
1982	65.1	65.6	93.5	65.1	65.2	65.6	65.2	116.4	89.5	121.5	116.4	112.7	89.5	112.7
1983	45.4	55.3	81.7	45.4	45.5	55.3	45.5	88.9	94.2	133.1	88.9	85.9	94.2	85.9
1984	31.2	44.1	65.7	31.2	31.3	44.1	31.3	58.7	76.3	106.1	58.7	56.5	76.3	56.5
1985	28.2	37.1	55.8	28.2	28.2	37.1	28.2	54.6	66.4	87.3	54.6	52.7	66.4	52.6
1986	32.6	36.2	54.5	32.6	32.4	36.2	32.4	63.9	67.0	83.1	63.9	61.9	67.0	61.9
1987	40.8	42.3	61.2	40.8	40.4	42.3	40.4	80.6	79.7	96.0	80.6	78.1	79.7	78.0
1988	49.8	50.9	69.0	49.8	49.1	50.9	49.0	103.2	101.4	120.0	103.2	99.7	101.4	99.7
1989	57.0	58.1	74.5	57.0	56.1	58.1	56.1	112.7	112.5	130.7	112.7	108.6	112.5	108.6
1990	61.4	62.6	77.6	61.5	60.5	62.6	60.5	108.6	108.7	125.9	108.6	103.2	108.7	103.2
1991	61.6	62.8	76.3	61.6	61.0	62.8	61.0	109.1	109.1	125.4	109.0	103.3	109.1	103.3
1992	56.8	58.0	69.8	56.8	56.6	58.0	56.6	96.1	96.7	112.6	96.1	91.8	96.6	91.8
1993	48.8	49.7	59.8	48.8	48.8	49.7	48.8	84.5	86.4	100.6	84.5	82.8	86.3	82.8
1994	40.0	40.4	48.9	40.0	39.9	40.4	39.9	71.9	73.6	85.8	71.9	71.0	73.6	71.0
1995	32.0	32.1	39.5	32.0	31.9	32.0	31.9	58.7	59.7	70.1	58.7	57.6	59.7	57.6
1996	25.7	25.5	32.1	25.8	25.5	25.5	25.5	47.6	48.1	57.3	47.6	46.5	48.1	46.5
1997	21.3	21.0	26.8	21.3	21.1	21.0	21.1	40.0	40.1	48.5	40.0	38.8	40.1	38.8
1998	18.5	18.2	23.3	18.5	18.4	18.2	18.4	35.4	35.5	42.7	35.4	34.5	35.5	34.5
1999	17.4	17.0	21.6	17.4	17.3	17.0	17.3	34.4	34.2	40.4	34.4	33.5	34.3	33.5
2000	17.7	17.2	21.8	17.7	17.6	17.2	17.6	36.0	35.7	41.3	36.0	35.1	35.7	35.1
2001	19.1	18.6	23.5	19.1	19.0	18.6	19.0	40.3	39.7	45.6	40.3	39.3	39.7	39.3
2002	21.7	21.0	26.8	21.7	21.5	21.0	21.5	47.1	46.3	53.4	47.1	46.1	46.3	46.1
2003	25.5	24.8	31.8	25.5	25.4	24.8	25.4	56.7	55.6	64.6	56.7	55.6	55.6	55.6
2004	30.5	29.7	38.0	30.5	30.4	29.7	30.4	69.4	68.1	79.3	69.4	68.1	68.1	68.1
2005	36.2	35.3	45.0	36.2	36.1	35.3	36.1	83.6	81.8	95.6	83.5	82.1	81.8	82.1
2006	42.0	40.9	52.1	42.0	41.8	40.9	41.8	98.0	96.5	112.4	98.0	96.8	96.4	96.8
2007	47.3	46.1	59.7	47.3	47.1	46.1	47.1	111.8	110.0	129.3	111.7	110.6	110.0	110.6
2008	49.0	47.7	62.7	49.0	48.5	47.7	48.5	124.1	121.7	146.1	124.0	122.4	121.7	122.4
2009	45.1	43.7	57.6	45.1	44.3	43.6	44.3	123.3	120.5	147.3	123.3	121.1	120.5	121.1
2010	38.7	37.3	49.5	38.7	38.0	37.3	38.0	108.8	106.2	130.7	108.8	106.6	106.2	106.6
2011	35.2	33.7	44.4	35.2	34.5	33.6	34.5	93.3	91.1	111.5	93.3	91.2	91.1	91.2
2012	38.5	36.8	47.0	38.5	38.0	36.8	38.0	90.4	88.2	104.7	90.4	88.2	88.2	88.2
2013	46.5	44.8	55.2	46.5	46.0	44.8	46.0	105.6	102.6	116.3	105.6	103.0	102.5	103.0
2014	50.1	48.7	58.6	50.1	49.7	48.6	49.7	120.4	116.5	129.3	120.4	117.3	116.4	117.3
2015	46.1	44.8	53.4	46.1	45.7	44.8	45.7	113.5	109.8	122.3	113.4	110.8	109.7	110.8
2016	38.7	37.5	44.9	38.7	38.3	37.5	38.3	100.1	97.3	108.3	100.1	98.1	97.3	98.1
2017	31.9	30.7	37.6	31.9	31.5	30.7	31.5	82.0	79.9	89.4	82.0	80.4	79.9	80.4
2018	26.5	25.5	32.0	26.5	26.2	25.5	26.2	67.3	65.7	74.8	67.3	65.9	65.7	65.9
2019	23.4	22.4	28.8	23.4	23.2	22.4	23.2	57.9	56.5	65.5	57.9	56.6	56.5	56.6
2020	24.5	23.4	30.7	24.5	24.3	23.4	24.3	54.5	53.1	62.4	54.5	53.3	53.1	53.3
2021	29.4	28.3	37.3	29.4	29.1	28.2	29.2	63.6	61.7	73.2	63.6	62.1	61.8	62.0

Table 41: Comparison of estimates of recruitment (in millions) from the base and preferred models (model start to 1980)

year	22.01	22.09	22.10	22.03
1948	539.2	539.5	538.1	538.2
1949	539.7	539.9	538.6	538.7
1950	540.7	541.0	539.6	539.7
1951	542.6	542.8	541.4	541.5
1952	545.4	545.7	544.2	544.3
1953	549.7	550.0	548.4	548.5
1954	555.9	556.2	554.4	554.5
1955	564.6	564.8	562.9	562.9
1956	576.6	576.9	574.7	574.7
1957	593.3	593.6	591.0	591.0
1958	616.1	616.4	613.3	613.2
1959	647.5	647.8	643.9	643.8
1960	691.2	691.6	686.6	686.4
1961	754.4	754.9	748.4	748.1
1962	851.0	851.6	842.8	842.4
1963	1011.8	1012.5	1000.7	1000.1
1964	1316.9	1318.1	1302.8	1301.8
1965	1976.3	1978.6	1962.0	1960.0
1966	3404.1	3408.3	3395.2	3392.1
1967	4693.6	4695.1	4631.2	4631.4
1968	3019.5	3016.2	2909.9	2913.2
1969	1729.6	1728.2	1674.6	1675.9
1970	1285.6	1285.6	1268.6	1269.0
1971	820.1	820.1	813.3	813.6
1972	559.4	560.0	556.2	555.9
1973	770.6	772.2	762.2	760.8
1974	1342.1	1341.5	1310.1	1311.1
1975	2413.0	2416.3	2388.9	2386.2
1976	1710.1	1710.3	1687.4	1688.1
1977	654.4	653.4	628.4	629.4
1978	296.1	296.4	293.6	293.5
1979	287.2	287.4	282.6	282.5
1980	341.8	342.1	335.5	335.3

Table 42: Comparison of estimates of recruitment (in millions) from the base and preferred models (1981 to model end).

year	22.01	22.07	22.08	22.09	22.10	22.11	22.03
1981	296.1	–	–	296.1	288.2	–	288.2
1982	1008.5	1051.3	1300.5	1009.5	985.2	1052.1	984.4
1983	761.3	758.6	792.8	761.5	734.1	758.6	734.0
1984	871.7	885.3	950.9	871.6	844.7	884.9	844.9
1985	878.7	882.4	952.7	879.1	869.7	882.6	869.3
1986	736.5	751.1	838.0	736.3	739.2	750.7	739.5
1987	470.6	483.9	547.5	470.1	501.2	483.3	501.7
1988	220.0	224.9	289.6	220.1	233.1	224.9	233.1
1989	138.3	116.5	138.0	138.2	114.5	116.3	114.7
1990	89.2	84.1	117.6	89.1	85.5	84.0	85.5
1991	92.7	90.7	139.9	92.7	93.3	90.7	93.3
1992	91.7	91.9	107.6	91.7	90.7	91.8	90.7
1993	111.8	109.4	124.4	111.9	111.0	109.4	111.0
1994	182.2	177.6	189.0	182.3	180.2	177.6	180.2
1995	146.2	143.7	160.0	146.2	143.9	143.7	144.0
1996	366.2	354.0	413.0	366.3	361.6	354.1	361.6
1997	134.0	132.6	158.0	134.0	132.0	132.5	132.0
1998	630.5	616.2	726.4	630.8	625.5	616.4	625.3
1999	205.3	203.3	239.6	205.2	201.9	203.1	202.1
2000	929.8	897.9	1059.8	930.1	919.2	897.9	919.1
2001	269.2	274.8	300.3	269.2	270.5	274.7	270.5
2002	1016.7	993.6	1180.4	1016.6	1013.4	993.2	1013.6
2003	607.3	551.0	858.0	607.1	576.6	550.6	576.9
2004	192.8	190.7	250.9	192.6	186.4	190.5	186.6
2005	118.8	116.3	160.2	118.7	116.9	116.2	117.0
2006	204.5	196.3	266.4	204.7	201.7	196.4	201.6
2007	323.7	338.2	271.6	323.9	316.3	338.4	316.2
2008	1398.8	1320.6	1351.0	1399.2	1377.0	1320.4	1377.0
2009	504.3	500.2	696.0	503.9	511.4	499.9	511.6
2010	243.9	236.7	270.3	243.5	243.1	236.2	243.5
2011	67.4	66.4	77.9	67.3	66.6	66.3	66.6
2012	170.8	165.2	222.2	170.7	168.8	165.2	168.8
2013	99.1	95.5	151.9	99.0	97.7	95.5	97.7
2014	119.2	118.4	139.7	119.3	117.4	118.6	117.3
2015	140.7	136.5	170.1	140.6	137.9	136.5	137.9
2016	849.6	826.1	925.9	849.0	836.8	825.3	837.6
2017	346.4	330.3	467.2	346.9	342.8	330.5	342.6
2018	537.9	522.8	777.4	537.6	530.0	522.5	530.2
2019	68.4	65.8	67.8	68.3	67.1	65.8	67.1
2020	777.4	763.0	887.4	777.5	767.6	763.0	767.6
2021	1377.6	1337.0	1584.9	1377.6	1362.4	1336.8	1362.5

Table 43: Comparison of exploitation rates (i.e., catch divided by biomass) from the model scenarios (model start to 1980).

year	22.01	22.09	22.10	22.03
1949	0.00054	0.00054	0.00055	0.00055
1950	0.00095	0.00095	0.00096	0.00096
1951	0.00158	0.00158	0.00159	0.00159
1952	0.00243	0.00243	0.00244	0.00244
1953	0.00410	0.00410	0.00412	0.00412
1954	0.00647	0.00647	0.00651	0.00651
1955	0.00857	0.00857	0.00862	0.00861
1956	0.00988	0.00989	0.00993	0.00993
1957	0.01026	0.01027	0.01035	0.01034
1958	0.01067	0.01068	0.01075	0.01075
1959	0.01077	0.01078	0.01087	0.01086
1960	0.01092	0.01093	0.01101	0.01100
1961	0.01165	0.01166	0.01167	0.01166
1962	0.01236	0.01236	0.01231	0.01230
1963	0.01305	0.01306	0.01293	0.01292
1964	0.01276	0.01276	0.01265	0.01264
1965	0.01297	0.01297	0.01285	0.01285
1966	0.01385	0.01384	0.01374	0.01374
1967	0.04606	0.04606	0.04598	0.04597
1968	0.05407	0.05408	0.05390	0.05388
1969	0.08708	0.08710	0.08639	0.08634
1970	0.15822	0.15813	0.15665	0.15671
1971	0.18991	0.18968	0.18593	0.18617
1972	0.05734	0.05732	0.05583	0.05584
1973	0.03761	0.03762	0.03760	0.03758
1974	0.04647	0.04648	0.04662	0.04660
1975	0.04070	0.04071	0.04076	0.04074
1976	0.06293	0.06295	0.06300	0.06297
1977	0.08755	0.08758	0.08751	0.08746
1978	0.07219	0.07221	0.07174	0.07169
1979	0.07994	0.07992	0.07899	0.07895
1980	0.05871	0.05876	0.05857	0.05849

Table 44: Comparison of exploitation rates (i.e., catch divided by biomass) from the model scenarios (from 1981 to model end).

year	22.01	22.07	22.08	22.09	22.10	22.11	22.03
1981	0.0264	–	–	0.0264	0.0262	–	0.0262
1982	0.0140	0.0196	0.0147	0.0140	0.0139	0.0196	0.0139
1983	0.0059	0.0068	0.0051	0.0059	0.0059	0.0068	0.0059
1984	0.0151	0.0162	0.0122	0.0151	0.0151	0.0162	0.0151
1985	0.0062	0.0062	0.0050	0.0062	0.0061	0.0062	0.0061
1986	0.0080	0.0078	0.0062	0.0080	0.0078	0.0078	0.0078
1987	0.0138	0.0131	0.0108	0.0138	0.0137	0.0131	0.0137
1988	0.0216	0.0207	0.0175	0.0216	0.0216	0.0207	0.0216
1989	0.0569	0.0551	0.0472	0.0570	0.0573	0.0551	0.0573
1990	0.0927	0.0937	0.0802	0.0927	0.0980	0.0938	0.0979
1991	0.0774	0.0806	0.0685	0.0774	0.0832	0.0806	0.0832
1992	0.1050	0.1064	0.0878	0.1050	0.1085	0.1065	0.1085
1993	0.0709	0.0676	0.0561	0.0709	0.0687	0.0676	0.0687
1994	0.0427	0.0411	0.0341	0.0427	0.0419	0.0411	0.0419
1995	0.0315	0.0309	0.0253	0.0315	0.0315	0.0309	0.0315
1996	0.0257	0.0256	0.0211	0.0257	0.0258	0.0256	0.0258
1997	0.0157	0.0177	0.0147	0.0157	0.0180	0.0177	0.0180
1998	0.0117	0.0115	0.0096	0.0117	0.0116	0.0115	0.0116
1999	0.0054	0.0054	0.0046	0.0054	0.0055	0.0054	0.0055
2000	0.0060	0.0061	0.0051	0.0060	0.0061	0.0061	0.0061
2001	0.0072	0.0074	0.0062	0.0072	0.0074	0.0074	0.0074
2002	0.0035	0.0035	0.0029	0.0035	0.0035	0.0035	0.0035
2003	0.0019	0.0019	0.0016	0.0019	0.0019	0.0019	0.0019
2004	0.0028	0.0027	0.0023	0.0028	0.0027	0.0027	0.0027
2005	0.0061	0.0061	0.0050	0.0061	0.0060	0.0061	0.0060
2006	0.0107	0.0091	0.0075	0.0107	0.0091	0.0091	0.0091
2007	0.0107	0.0101	0.0083	0.0107	0.0100	0.0102	0.0100
2008	0.0076	0.0076	0.0062	0.0076	0.0076	0.0076	0.0076
2009	0.0058	0.0060	0.0049	0.0058	0.0060	0.0060	0.0060
2010	0.0027	0.0028	0.0023	0.0027	0.0028	0.0028	0.0028
2011	0.0036	0.0040	0.0033	0.0036	0.0039	0.0040	0.0039
2012	0.0025	0.0027	0.0023	0.0025	0.0027	0.0027	0.0027
2013	0.0085	0.0089	0.0078	0.0085	0.0088	0.0089	0.0088
2014	0.0328	0.0352	0.0309	0.0329	0.0348	0.0353	0.0348
2015	0.0491	0.0516	0.0453	0.0492	0.0510	0.0518	0.0508
2016	0.0055	0.0060	0.0052	0.0055	0.0059	0.0060	0.0059
2017	0.0105	0.0109	0.0094	0.0106	0.0108	0.0109	0.0108
2018	0.0112	0.0116	0.0098	0.0112	0.0115	0.0116	0.0115
2019	0.0030	0.0032	0.0026	0.0030	0.0031	0.0032	0.0031
2020	0.0061	0.0063	0.0051	0.0061	0.0062	0.0063	0.0062
2021	0.0043	0.0045	0.0036	0.0040	0.0041	0.0041	0.0044

