Tables

Table A1. Surfclam discard estimates from 1982 through 1994. Most of the discards are due to a minimum size regulation that was in effect from 1982 through 1990.

Year	Discard (mt meats)					Landings (mt meats)	Discards / Landings	Catch	Size limit (mm)
	NNJ	SNJ	NJ	DMV	Total				
1982	3,684	215	3,899	2,295	6,194	16,688	37%	22,882	140
1983	2,122	385	2,507	2,127	4,634	18,592	25%	23,226	140
1984	2,266	458	2,724	2,015	4,739	22,888	21%	27,627	133
1985	1,938	248	2,186	1,725	3,911	22,480	17%	26,391	127
1986	2,328	233	2,561	239	2,800	24,520	11%	27,320	127
1987	1,414	61	1,475	415	1,890	21,744	9%	23,634	127
1988	1,317	13	1,330	106	1,436	23,377	6%	24,813	127
1989	1,048	6	1,054	258	1,312	21,887	6%	23,199	127
1990	1,089	57	1,146	123	1,269	24,018	5%	25,287	127
1991	495	36	531	5	536	20,615	3%	21,151	--
1992	918	102	1,020	4	1,024	21,685	5%	22,709	--
1993	0	0	0	0	0	21,859	0%	21,859	--
1994	0	0	0	0	0	21,942	0%	21,942	--

Table A2. (Following page) Atlantic surfclam landings and EEZ surfclam quotas. All figures are meat weights in mt. Total landings for 1965-1981 are from NEFSC (2003) while figures for other years were from a dealer databases (CFDBS). EEZ landings for 1965-1982 are from NEFSC (2003) while figures from later years are from a logbook database (SFOQVR).

Landings for state waters are total landings - EEZ landings.

Year	Total (dealer data)	EEZ (logbooks)	State waters (dealer-logbooks)	Proportion from EEZ	EEZ Quota
1965	19,998	14,968	5,030	0.75	
1966	20,463	14,696	5,767	0.72	
1967	18,168	11,204	6,964	0.62	
1968	18,394	9,072	9,322	0.49	
1969	22,487	7,212	15,275	0.32	
1970	30,535	6,396	24,139	0.21	
1971	23,829	22,704	1,125	0.95	
1972	28,744	25,071	3,673	0.87	
1973	37,362	32,921	4,441	0.88	
1974	43,595	33,761	9,834	0.77	
1975	39,442	20,080	19,362	0.51	
1976	22,277	19,304	2,973	0.87	
1977	23,149	19,490	3,659	0.84	
1978	17,798	14,240	3,558	0.80	13,880
1979	15,836	13,186	2,650	0.83	13,880
1980	17,117	15,748	1,369	0.92	13,882
1981	20,910	16,947	3,963	0.81	13,882
1982	21,727	16,688	5,039	0.77	18,506
1983	23,631	18,592	5,038	0.79	18,892
1984	30,530	22,889	7,641	0.75	18,892
1985	28,316	22,480	5,835	0.79	21,205
1986	35,073	24,521	10,552	0.70	24,290
1987	27,231	21,744	5,486	0.80	24,290
1988	28,506	23,378	5,128	0.82	24,290
1989	30,081	21,888	8,194	0.73	25,184
1990	32,628	24,018	8,610	0.74	24,282
1991	30,794	20,615	10,179	0.67	21,976
1992	33,164	21,686	11,478	0.65	21,976
1993	32,878	21,859	11,019	0.66	21,976
1994	32,379	21,943	10,436	0.68	21,976
1995	30,061	19,627	10,434	0.65	19,779
1996	28,834	19,827	9,008	0.69	19,779
1997	26,311	18,612	7,700	0.71	19,779
1998	24,506	18,234	6,272	0.74	19,779
1999	26,677	19,577	7,100	0.73	19,779
2000	31,093	19,778	11,315	0.64	19,779
2001	31,237	22,017	9,220	0.70	21,976
2002	32,645	24,006	8,639	0.74	24,174
2003	31,526	25,017	6,509	0.79	25,061
2004	28,327	24,197	4,130	0.85	26,218
2005	26,883	21,163	5,720	0.79	26,218
2006	27,177	23,573	3,605	0.87	26,218
2007	30,004	24,915	5,089	0.83	26,218
2008	27,750	22,481	5,269	0.81	26,218
Min	15,836	6,396	1,125	0.21	13,880
Max	43,595	33,761	24,139	0.95	26,218
Mean	27,502	20,053	7,449	0.73	21,427

Table A3. EEZ surfclam landings (mt meats) by region and year. Landings from unknown regions were prorated to known areas based on logbook proportions of landings in known areas during the same year. Figures in the table differ slightly from those in NEFSC (2007) because proration calculations were corrected.

Year	SVA	DMV	NJ	LI	SNE	Other	Total EEZ
1979	0	11,836	1,350	0	0	0	13,186
1980	64	12,788	2,878	17	0	0	15,748
1981	568	7,472	8,820	88	0	0	16,947
1982	1,705	6,679	8,086	94	125	0	16,688
1983	2,225	7,173	8,095	264	836	0	18,592
1984	1,797	5,979	11,905	7	382	2,819	22,889
1985	741	7,856	11,246	0	452	2,185	22,480
1986	529	2,853	17,730	17	1,223	2,168	24,521
1987	378	1,303	18,017	0	1,140	907	21,744
1988	558	1,149	19,420	0	1,512	739	23,378
1989	439	3,123	16,532	0	1,361	433	21,888
1990	1,502	3,546	17,887	0	998	86	24,018
1991	0	1,634	18,913	15	33	21	20,615
1992	0	1,221	20,399	61	5	0	21,686
1993	0	3,414	18,365	62	3	14	21,859
1994	0	3,454	18,418	71	0	0	21,943
1995	0	2,752	16,497	0	378	0	19,627
1996	0	2,239	17,479	26	82	0	19,827
1997	0	1,540	16,999	73	0	0	18,612
1998	0	484	17,511	117	121	0	18,234
1999	0	648	18,755	157	16	0	19,577
2000	0	2,042	17,513	121	103	0	19,778
2001	0	3,282	17,719	935	81	0	22,017
2002	64	4,489	18,271	1,130	52	0	24,006
2003	0	1,432	21,693	1,625	267	0	25,017
2004	0	1,482	19,197	906	2,612	0	24,197
2005	0	1,668	16,850	759	1,885	0	21,163
2006	0	2,773	19,660	245	895	0	23,573
2007	0	3,073	20,268	1,117	458	0	24,915
2008	0	3,223	17,517	1,317	423	0	22,481
Min	0	484	1,350	0	0	0	13,186
Max	2,225	12,788	21,693	1,625	2,612	2,819	25,017
Mean	352	3,754	15,800	307	515	312	21,040

Table A4. EEZ fishing effort (hours fished by all vessels) for surfclams year based on logbook data, by stock assessment region and. The fraction of logbook effort from unknown areas in each year was prorated to known areas based on effort in known areas. Effort data prior to 1981 are less reliable due to restrictions on hours fished per day. Figures in the table differ slightly from those in NEFSC (2007) because proration calculations were corrected.

Year	SVA	DMV	NJ	LI	SNE	Other	Total EEZ
1991	0	1,254	17,243	21	107	293	18,918
1992	0	797	21,379	67	0	0	22,243
1993	0	2,423	18,232	57	15	5	20,732
1994	0	1,930	21,495	70	0	0	23,495
1995	0	1,560	18,625	0	1,059	0	21,244
1996	0	1,577	20,995	40	287	0	22,899
1997	0	1,098	20,383	77	0	0	21,558
1998	0	289	19,609	134	518	0	20,550
1999	0	734	18,146	151	149	0	19,179
2000	0	1,859	16,787	115	368	0	19,128
2001	0	2,536	18,462	962	148	0	22,108
2002	112	5,505	19,825	1,241	62	0	26,746
2003	0	2,367	25,048	1,833	176	0	29,424
2004	0	3,161	26,544	1,254	1,108	0	32,067
2005	0	2,660	24,285	1,206	1,364	0	29,515
2006	0	5,883	27,184	343	1,035	0	34,445
2007	0	7,065	34,665	1,579	960	0	44,269
2008	0	8,110	34,054	2,339	541	0	45,044
Min	0	289	16,787	0	0	0	18,918
Max	112	8,110	34,665	2,339	1,364	293	45,044
Mean	6	2,823	22,387	638	439	17	26,309

Table A5. Real and nominal ex-vessel prices for surfclams (ITQ and state fisheries combined) based on dealer data for 1982-2008. Average price was computed as total revenues divided by total landed meat weight during each year, rather than as averages of prices for individual trips, to reduce effects of small deliveries at relatively high prices. The consumer price index (CPI) used to convert nominal dollars to 1991 equivalent real dollars is for unprocessed and packaged fish, which includes shellfish and finfish (Eric Thunberg, NEFSC, pers. comm.).

Year	CPI	Prices ($ / bu)		Revenue (million $)	
		Nominal	Real ($1991)	Nominal	Real ($1991)
1982	0.67	8.94	13.36	25.186	37.653
1983	0.71	7.57	10.74	23.207	32.917
1984	0.75	8.37	11.11	33.156	43.982
1985	0.77	9.34	12.19	34.303	44.749
1986	0.84	9.20	11.01	41.841	50.082
1987	0.94	7.83	8.36	27.644	29.520
1988	0.99	7.80	7.84	28.826	28.981
1989	0.96	7.78	8.13	30.330	31.731
1990	0.98	7.66	7.78	32.393	32.899
1991	1.00	7.51	7.51	29.975	29.975
1992	1.04	7.40	7.09	31.832	30.486
1993	1.05	7.83	7.48	33.369	31.876
1994	1.08	9.82	9.10	41.241	38.200
1995	1.14	10.58	9.26	41.246	36.102
1996	1.11	10.24	9.22	38.275	34.491
1997	1.19	10.31	8.66	35.189	29.538
1998	1.23	9.19	7.50	29.200	23.829
1999	1.28	8.79	6.89	30.421	23.824
2000	1.33	9.43	7.12	38.025	28.696
2001	1.28	9.76	7.65	39.555	30.993
2002	1.28	9.45	7.39	39.988	31.267
2003	1.31	9.64	7.38	39.427	30.181
2004	1.38	9.58	6.95	35.209	25.515
2005	1.49	9.50	6.38	33.123	22.246
2006	1.59	10.19	6.42	35.908	22.613
2007	1.62	10.54	6.49	41.024	25.260
2008	1.71	10.96	6.42	39.440	23.114

Table A6. Nominal landings per unit effort (LPUE, bushels h^{-1}) for surfclam fishing (all vessels) in the US EEZ from logbooks. LPUE is total landings in bushels divided by total hours fished. Landings and fishing effort from unknown areas were prorated to area before LPUE was calculated.

Year	SVA	DMV	NJ	LI	SNE	Other	All areas
1991			142	95	40	9	141
1992		199	124	119			126
1993		183	131	143	28	390	137
1994		232	111	132			121
1995		229	115		46		120
1996		184	108	85	37		112
1997		182	108	122			112
1998		217	116	114	30		115
1999		115	134	135	14		132
2000		142	135	137	36		134
2001		168	124	126	71		129
2002	74	106	120	118	108		116
2003		78	112	115	197		110
2004		61	94	94	306		98
2005		81	90	82	179		93
2006		61	94	93	112		89
2007		56	76	92	62		73
2008		52	67	73	101		65
Min	74	52	67	73	14	9	65
Max	74	232	142	143	306	390	141
Mean	74	138	111	110	91	199	112

Table A7. Numbers of commercial trips sampled and numbers of surfclams measured in port samples from landings during 1982-2008, by region. Numbers of trips during 1982-1999 were estimated assuming 30 individuals sampled per trip, as specified in port sample instructions.

Year	DMV		NJ		LI		SNE	
	Trips	Lengths	Trips	Lengths	Trips	Lengths	Trips	Lengths
1982	259	7756	249	7477			1	30
1983	197	5923	375	11253	Unk.	Unk.	1	30
1984	102	3066	425	12751			3	90
1985	61	1832	256	7674			5	150
1986	42	1260	171	5130			11	330
1987	24	730	30	900			19	569
1988	14	420	30	900			27	810
1989	29	866	31	919			15	449
1990	30	892	30	901			7	209
1991	36	1080	76	2272				
1992	39	1170	57	1710				
1993	46	1392	31	928	Unk.	Unk.		
1994	4	119	30	900				
1995	24	720	17	510				
1996	38	1154	37	1117				
1997	54	1622	32	957				
1998	52	1560	23	690				
1999	57	1720	29	856				
2000	20	600	111	3315	1	30		
2001	33	970	42	1260				
2002	7	210	37	1111				
2003	2	60	80	2455	5	150		
2004			36	1080	2	60		
2005	19	581	61	1834	11	330		
2006	50	1541	49	1482	23	690		
2007	68	2215	72	2409	16	508		
2008	57	1712	65	1950	21	632		
Min	2	60	17	510	1	30	1	30
Max	259	7,756	425	12,751	23	690	27	810
Mean	53	1,584	92	2,768	11	343	10	296

Table A8. Number of successful random tows in NEFSC clam surveys used for estimating survey trends and efficiency corrected swept-area biomass. "Holes" (unsampled survey strata in some years) were filled by borrowing from adjacent surveys (borrowed totals are negative numbers in grey-shaded boxes). Holes that could not be filled have zeros in black boxes. Survey strata are grouped by region. Survey strata not used for surfclams are not shown.

	Years											
Stratum	**1982**	**1983**	**1984**	**1986**	**1989**	**1992**	**1994**	**1997**	**1999**	**2002**	**2005**	**2008**
						SVA						
1	**-10**	10	14	7	10	10	10	10	**-10**	0	0	0
2	0	0	0	**-1**	1	2	1	1	**-1**	0	0	0
5	4	9	13	8	8	8	7	8	**-16**	8	8	**-8**
6	1	1	1	1	1	1	1	1	**-3**	2	1	**-1**
80	**-6**	6	9	3	7	7	8	7	**-7**	0	0	0
81	**-4**	4	7	3	5	5	5	5	**-10**	5	**-5**	5
						DMV						
9	30	26	35	29	37	37	38	37	37	38	37	31
10	2	2	3	3	3	3	3	3	3	3	3	2
13	19	18	25	20	20	20	21	20	19	20	18	15
14	2	2	3	3	3	3	5	3	3	3	3	**-3**
82	1	1	1	1	1	1	1	1	2	2	**-3**	1
83	2	2	2	2	2	2	2	2	2	2	2	2
84	4	3	3	4	4	4	4	4	3	4	4	4
85	5	5	4	5	5	5	5	5	5	5	5	5
86	2	2	3	3	3	2	3	3	3	3	3	3
						NJ						
17	11	11	18	12	12	12	12	12	12	12	12	12
18	3	3	**-6**	3	3	3	3	3	3	3	3	3
21	18	18	22	19	20	20	20	20	33	27	20	28
22	3	3	**-6**	3	3	3	5	3	3	3	3	3
25	9	9	13	8	9	9	9	9	8	9	9	13
26	2	2	**-5**	3	3	3	3	3	3	3	3	3
87	8	7	10	9	9	9	9	9	9	16	8	9
88	15	15	24	17	20	20	20	21	21	20	17	19
89	15	15	21	15	18	17	18	19	18	18	15	18
90	2	2	3	2	2	2	2	2	2	2	2	1

Table 8. (cont.)

	Years											
Stratum	**1982**	**1983**	**1984**	**1986**	**1989**	**1992**	**1994**	**1997**	**1999**	**2002**	**2005**	**2008**
						LI						
29	11	10	**-20**	10	10	10	10	10	10	10	10	16
30	7	8	**-14**	6	6	6	6	6	5	6	7	12
33	4	4	**-8**	4	4	4	5	4	4	4	4	10
34	2	2	**-4**	2	2	2	5	2	1	2	2	8
91	3	2	4	4	3	3	3	3	3	3	3	5
92	2	2	3	2	2	2	2	2	2	2	2	5
93	1	2	2	1	1	1	1	1	1	2	1	4
						SNE						
37	7	4	**-7**	3	**-6**	3	5	4	4	3	**-3**	3
38	3	2	**-5**	3	3	3	5	3	3	3	2	3
41	6	5	7	5	6	6	6	6	5	6	6	6
45	3	7	9	4	4	4	4	4	4	2	4	4
46	2	5	5	3	2	3	5	3	3	2	3	3
47	4	3	4	2	2	4	4	4	3	1	7	4
94	1	2	**-2**	0	**-1**	1	2	2	**-4**	2	**-2**	2
95	4	14	11	4	4	4	4	4	4	4	**-8**	4
96	**-12**	12	**-13**	1	1	3	2	4	**-4**	0	**-1**	1
						GBK						
54	0	**-3**	3	3	**-6**	3	3	3	**-3**	0	**-2**	2
55	3	**-3**	**-3**	3	1	3	3	3	2	2	**-4**	2
57	0	0	**-2**	2	1	2	5	2	2	2	**-4**	2
59	1	4	**-5**	1	2	6	5	5	4	5	**-9**	4
61	8	1	**-6**	5	**-12**	7	5	6	6	6	**-11**	5
65	0	0	**-3**	3	**-5**	2	4	3	**-4**	1	**-1**	1
67	0	**-5**	5	5	7	7	7	7	**-7**	0	**-2**	2
68	1	**-8**	7	3	6	6	5	5	**-5**	0	**-6**	6
69	2	5	**-11**	6	6	6	7	6	8	**-8**	**-4**	4
70	1	2	**-6**	4	**-8**	4	4	4	3	2	**-6**	4
71	0	**-2**	2	3	1	2	3	3	1	2	**-3**	1
72	2	**-10**	8	1	8	8	8	8	6	**-6**	**-4**	4
73	1	1	**-4**	3	6	6	6	6	5	6	**-9**	3
74	3	**-4**	1	3	**-7**	4	4	4	3	3	**-6**	3

Table A9. (On the following pages.) NEFSC clam survey data for surfclam abundance (mean numbers per tow) and biomass (mean kg per tow). Data are for three size groups: prerecruits (50-119 mm), fishable clams (120+ mm) and all clams greater than 50 mm SL. Data from 1994 are shown but difficult to interpret due to changes in the capture efficiency of the survey dredge in some regions (see text). Note that GBK was not sampled entirely in surveys prior to 1986.

		Prerecruits (50-119 mm SL)				Large fishable (120+ mm SL)				All surfclams 50mm and above						
	Year	N / Tow	CV	KG / Tow	CV	N / Tow	CV	KG / Tow	CV	N / Tow	CV	KG / Tow	CV	N Tows	Pos. Tows	N Strata
SVA	1982	3.53	0.88	0.12818	0.91	3.73	0.92	0.2836	0.86	7.26	0.90	0.41179	0.87	25	5	5
	1983	6.60	0.62	0.23889	0.64	5.71	0.62	0.44929	0.59	12.31	0.58	0.68818	0.57	30	9	5
	1984	7.85	0.37	0.2928	0.41	21.82	0.31	1.7998	0.29	29.66	0.30	2.09259	0.29	44	16	5
	1986	1.50	0.35	0.05593	0.42	22.20	0.75	1.7068	0.74	23.69	0.72	1.76273	0.72	23	11	6
	1989	3.11	0.75	0.07396	0.7	9.78	0.83	0.85428	0.82	12.89	0.81	0.92825	0.81	32	10	6
	1992	18.15	0.86	0.74134	0.9	12.10	0.77	0.88383	0.79	30.25	0.65	1.62517	0.64	33	17	6
	1994	43.38	0.46	0.67111	0.32	6.38	0.44	0.4678	0.37	49.76	0.40	1.13892	0.29	33	19	6
	1997	10.31	0.44	0.27186	0.47	0.49	0.46	0.03244	0.44	10.80	0.43	0.3043	0.45	32	14	6
	1999	9.32	0.41	0.21099	0.36	1.22	0.46	0.09191	0.47	10.54	0.38	0.3029	0.33	47	19	6
	2002	13.69	0.61	0.31622	0.62	5.66	0.55	0.43964	0.55	19.35	0.58	0.75586	0.56	15	5	3
	2005	3.65	0.66	0.04045	0.58	0.00	0.00	0.00	0.00	3.65	0.66	0.04045	0.58	14	4	3
	2008	4.94	0.72	0.05281	0.66	0.00	0.00	0.00	0.00	4.94	0.72	0.05281	0.66	9	3	2
DMV	1982	157.13	0.46	5.37905	0.44	21.36	0.23	2.17314	0.29	178.49	0.42	7.55219	0.38	68	37	9
	1983	30.68	0.54	1.2455	0.61	31.21	0.46	2.56435	0.35	61.88	0.49	3.80985	0.42	61	30	9
	1984	184.10	0.74	4.26795	0.61	34.91	0.28	2.87828	0.28	219.01	0.63	7.14624	0.38	79	47	9
	1986	58.77	0.43	2.53211	0.46	74.79	0.38	5.42915	0.32	133.56	0.39	7.96126	0.36	70	44	9
	1989	16.71	0.54	0.66015	0.55	31.24	0.26	2.48168	0.24	47.94	0.26	3.14182	0.23	78	37	9
	1992	13.49	0.28	0.471	0.38	28.86	0.29	2.36261	0.24	42.35	0.28	2.83361	0.26	77	52	9
	1994	68.70	0.33	2.26328	0.43	60.96	0.21	4.82485	0.2	129.67	0.23	7.08813	0.22	83	63	9
	1997	77.18	0.17	2.71729	0.2	54.53	0.24	3.99175	0.22	131.71	0.17	6.70904	0.19	82	61	9
	1999	29.61	0.28	1.25239	0.28	26.36	0.22	1.94862	0.2	55.98	0.23	3.20101	0.21	78	44	9
	2002	16.47	0.28	0.48278	0.28	20.70	0.21	1.80875	0.19	37.17	0.22	2.29153	0.19	81	50	9
	2005	6.44	0.42	0.20455	0.43	4.76	0.26	0.4109	0.28	11.19	0.27	0.61545	0.24	74	40	9
	2008	9.87	0.29	0.24142	0.33	2.64	0.35	0.24522	0.35	12.50	0.28	0.48664	0.29	66	37	9
NJ	1982	33.10	0.30	1.49319	0.31	32.78	0.22	3.39903	0.2	65.88	0.19	4.89222	0.17	85	50	10
	1983	27.78	0.51	1.35886	0.55	25.38	0.22	2.61903	0.2	53.16	0.30	3.9779	0.24	85	54	10
	1984	15.93	0.23	0.59675	0.22	29.97	0.20	3.10535	0.18	45.90	0.18	3.70211	0.17	126	68	10
	1986	10.33	0.21	0.41188	0.2	29.68	0.18	3.47088	0.18	40.01	0.17	3.88276	0.17	91	59	10
	1989	9.88	0.29	0.4085	0.31	31.53	0.15	3.46162	0.13	41.40	0.15	3.87011	0.14	99	60	10
	1992	16.46	0.33	0.70917	0.42	23.22	0.16	2.65687	0.15	39.68	0.20	3.36604	0.16	98	62	10
	1994	67.39	0.20	2.22782	0.18	82.77	0.17	9.16575	0.16	150.16	0.16	11.39357	0.16	103	84	10
	1997	17.91	0.16	0.84515	0.17	83.72	0.13	9.5209	0.12	101.63	0.13	10.36605	0.12	112	83	10
	1999	8.02	0.25	0.32494	0.28	50.58	0.21	5.74409	0.17	58.60	0.21	6.06903	0.18	120	77	10
	2002	10.68	0.16	0.38791	0.16	35.03	0.17	4.57607	0.17	45.71	0.14	4.96399	0.16	115	94	10
	2005	7.81	0.20	0.33195	0.22	19.09	0.18	2.34449	0.17	26.90	0.16	2.67644	0.16	92	60	10
	2008	10.07	0.14	0.34008	0.14	17.05	0.16	2.05726	0.17	27.11	0.13	2.39734	0.15	109	88	10

		Prerecruits (50-119 mm SL)				Large fishable (120+ mm SL)				All surfclams 50mm and above						
	Year	N / Tow	CV	KG / Tow	CV	N / Tow	CV	KG / Tow	CV	N / Tow	CV	KG / Tow	CV	N Tows	Pos. Tows	N Strata
LI	1982	0.03	1.00	0.0022	1	3.99	0.61	0.64638	0.62	4.03	0.61	0.64858	0.61	29	1	7
	1983	0.17	0.61	0.00355	0.6	0.41	0.72	0.05375	0.72	0.58	0.60	0.0573	0.69	29	3	7
	1984	0.56	0.30	0.01779	0.37	1.64	0.34	0.24819	0.34	2.20	0.22	0.26597	0.31	55	12	7
	1986	0.58	0.39	0.01781	0.4	1.72	0.61	0.28911	0.61	2.30	0.45	0.30691	0.57	29	7	7
	1989	2.24	0.87	0.07423	0.88	3.48	0.72	0.4693	0.74	5.72	0.78	0.54353	0.76	28	4	7
	1992	5.73	0.44	0.25896	0.47	2.54	0.33	0.2621	0.32	8.28	0.39	0.52106	0.37	28	9	7
	1994	4.23	0.17	0.1826	0.2	7.24	0.19	0.87859	0.22	11.48	0.17	1.06119	0.21	32	11	7
	1997	1.44	0.49	0.07067	0.54	4.17	0.64	0.55448	0.63	5.62	0.59	0.62515	0.61	28	6	7
	1999	1.61	0.64	0.03764	0.48	10.71	0.65	1.40682	0.6	12.32	0.65	1.44446	0.59	30	8	7
	2002	0.85	0.45	0.02821	0.44	1.94	0.67	0.30691	0.67	2.80	0.59	0.33511	0.65	29	7	7
	2005	1.42	0.34	0.05064	0.39	12.62	0.50	1.62469	0.47	14.04	0.47	1.67533	0.46	29	7	7
	2008	1.47	0.24	0.05299	0.23	3.52	0.24	0.47737	0.23	5.00	0.21	0.53036	0.22	60	21	7
SNE	1982	2.58	0.29	0.10604	0.36	12.40	0.41	1.98556	0.42	14.99	0.33	2.0916	0.39	42	14	9
	1983	0.84	0.40	0.03775	0.44	7.88	0.39	1.43894	0.39	8.72	0.38	1.4767	0.39	54	18	9
	1984	0.81	0.36	0.03202	0.44	10.84	0.34	1.89401	0.34	11.65	0.34	1.92603	0.34	63	18	9
	1986	1.12	0.14	0.02356	0.27	4.12	0.68	0.72633	0.69	5.24	0.54	0.7499	0.67	25	8	8
	1989	1.18	0.43	0.04058	0.44	4.57	0.33	0.77265	0.33	5.75	0.31	0.81322	0.32	29	10	9
	1992	1.15	0.56	0.02842	0.5	2.49	0.58	0.45216	0.58	3.64	0.44	0.48058	0.55	31	9	9
	1994	1.26	0.52	0.05842	0.59	1.69	0.53	0.30128	0.55	2.96	0.45	0.3597	0.5	38	10	9
	1997	2.95	0.31	0.11307	0.35	12.28	0.30	2.16823	0.3	15.23	0.25	2.28129	0.29	34	13	9
	1999	2.60	0.42	0.08181	0.48	4.30	0.66	0.83016	0.66	6.90	0.45	0.91197	0.6	34	15	9
	2002	1.01	0.69	0.05603	0.73	3.85	0.27	0.6814	0.22	4.86	0.31	0.73744	0.23	24	5	8
	2005	0.26	0.49	0.03982	0.08	1.62	0.24	0.32571	0.24	2.95	0.14	0.36554	0.21	30	6	8
	2008	1.77	0.08	0.05685	0.12	5.01	0.63	0.88828	0.59	6.78	0.47	0.94513	0.56	32	7	7
GBK	1986	20.00	0.79	0.6602	0.78	4.97	0.52	0.70549	0.56	24.97	0.68	1.36568	0.53	44	20	14
	1989	5.21	0.34	0.26761	0.43	24.86	0.73	2.95529	0.73	30.07	0.66	3.22291	0.71	75	36	14
	1992	15.54	0.40	0.65507	0.46	7.89	0.33	0.94165	0.34	23.43	0.33	1.59672	0.32	66	43	14
	1994	30.01	0.33	1.50664	0.34	45.84	0.39	5.78077	0.41	75.85	0.33	7.28741	0.37	70	47	14
	1997	58.55	0.31	2.80136	0.33	23.52	0.25	2.68139	0.25	82.07	0.28	5.48275	0.26	65	45	14
	1999	24.01	0.41	1.25708	0.41	29.59	0.31	3.31966	0.3	53.60	0.35	4.57674	0.33	59	34	14
	2002	22.09	0.52	1.08775	0.54	27.05	0.43	3.19783	0.41	49.15	0.46	4.28558	0.43	43	21	11
	2008	7.45	0.28	0.41502	0.34	33.02	0.25	3.93843	0.24	40.47	0.21	4.35346	0.22	41	25	13

		Prerecruits (50-119 mm SL)				Large fishable (120+ mm SL)				All surfclams 50mm and above						
	Year	N / Tow	CV	KG / Tow	CV	N / Tow	CV	KG / Tow	CV	N / Tow	CV	KG / Tow	CV	N Tows	Pos. Tows	N Strata
SVA-SNE	1982	47.04	0.37	1.88141	0.35	17.26	0.14	1.84999	0.15	64.30	0.28	4.28	0.22	249	137	40
	1983	15.70	0.35	0.71814	0.39	16.53	0.23	1.63938	0.18	32.23	0.26	2.73	0.22	259	144	40
	1984	49.38	0.66	1.37927	0.52	21.81	0.14	2.17245	0.13	71.19	0.46	4.07	0.21	367	201	40
	1986	17.25	0.35	0.81488	0.4	30.15	0.24	2.78912	0.2	47.40	0.27	4.17	0.23	238	155	40
	1989	7.54	0.31	0.30773	0.34	18.46	0.14	1.83318	0.13	26.00	0.15	2.48	0.13	266	158	41
	1992	11.36	0.26	0.47212	0.32	15.57	0.17	1.53978	0.15	26.93	0.17	2.33	0.15	267	168	41
	1994	41.27	0.17	1.30618	0.22	38.08	0.12	3.73868	0.12	79.35	0.13	5.82	0.12	289	193	41
	1997	25.25	0.13	1.0211	0.15	37.56	0.11	3.75914	0.1	62.81	0.10	5.54	0.1	288	190	41
	1999	11.28	0.19	0.4765	0.21	21.86	0.15	2.21838	0.13	33.15	0.14	3.13	0.13	309	186	41
	2002	8.81	0.17	0.29369	0.16	17.40	0.12	1.99415	0.12	26.21	0.11	2.67	0.11	264	181	37
	2005	4.69	0.18	0.16826	0.2	9.17	0.16	1.0314	0.15	13.86	0.13	1.40	0.14	245	145	38
	2008	6.70	0.14	0.1962	0.15	7.57	0.14	0.86564	0.15	14.27	0.11	1.23	0.13	276	168	35
SVA-GBK	1986	17.87	0.33	0.77357	0.36	24.41	0.23	2.35099	0.19	42.28	0.25	3.70	0.22	282	149	54
	1989	7.01	0.26	0.29587	0.29	19.90	0.23	2.00103	0.22	26.92	0.20	2.73	0.2	341	157	55
	1992	12.30	0.22	0.49847	0.27	13.83	0.15	1.40033	0.14	26.14	0.15	2.25	0.14	333	192	55
	1994	38.72	0.15	1.32446	0.19	39.84	0.14	4.03626	0.14	78.56	0.12	6.34	0.13	359	234	55
	1997	32.78	0.15	1.33061	0.16	34.38	0.10	3.48823	0.09	67.16	0.11	5.70	0.09	353	222	55
	1999	14.16	0.20	0.61159	0.2	23.61	0.14	2.37457	0.13	37.77	0.15	3.54	0.13	368	197	55
	2002	11.75	0.24	0.43179	0.26	19.54	0.16	2.16969	0.14	31.29	0.18	3.10	0.15	307	182	48
	2008	6.89	0.13	0.23703	0.16	14.02	0.16	1.46895	0.15	20.91	0.12	2.03	0.13	317	181	48

Table A10. Summary of Patch model estimates from commercial depletion studies and associated NEFSC survey dredge efficiency estimates. All estimates are for surfclams 150+ mm SL.

Statistic	N successful experiments	Population Density (N ft^{-2})	Depletion Vessel Efficiency	Neg. Binomial Parameter *k*	Setup Density (N ft^{-2})	NEFSC Dredge Efficiency
		1997				
Mean	5	0.023	0.790	4.758	0.0061	0.317
Median		0.017	0.890	3.261	0.0069	0.270
Lower 80% CI bound		0.012	0.613	3.134	0.0049	0.225
Upper 80% CI bound		0.033	0.967	6.382	0.0072	0.409
SE		0.007	0.115	1.059	0.0008	0.060
CV (SE / Mean)		0.296	0.146	0.223	0.1281	0.189
		1999				
Mean	6 commercial depletion, 5 with setup tows	0.035	0.652	20.534	0.0061	0.189
Median		0.025	0.726	12.841	0.0058	0.199
Lower 80% CI bound		0.024	0.469	10.137	0.0051	0.130
Upper 80% CI bound		0.046	0.835	30.930	0.0070	0.248
SE		0.007	0.124	7.044	0.0006	0.039
CV (SE / Mean)		0.211	0.190	0.343	0.1012	0.205
		2002				
Mean	2	0.014	0.584	16.792	0.0070	0.516
Median		0.014	0.584	16.792	0.0070	0.516
Lower 80% CI bound		0.012	-0.268	-26.157	-0.0032	-0.282
Upper 80% CI bound		0.016	1.437	59.740	0.0173	1.313
SE		0.001	0.277	13.955	0.0033	0.259
CV (SE / Mean)		0.038	0.474	0.831	0.4740	0.503
		2004				
Mean	2 commercial depletion experiments	0.024	0.736	5.939	NA	NA
Median		0.024	0.736	5.939	NA	NA
Lower 80% CI bound		0.004	0.517	0.220	NA	NA
Upper 80% CI bound		0.043	0.955	11.658	NA	NA
SE		0.006	0.071	1.858	NA	NA
CV (SE / Mean)		0.268	0.097	0.313	NA	NA
		2005				
Mean	4	0.037	0.717	4.078	0.005	0.158
Median		0.034	0.676	4.593	0.005	0.158
Lower 80% CI bound		0.023	0.551	3.121	0.004	0.105
Upper 80% CI bound		0.051	0.882	5.035	0.006	0.210
SE		0.009	0.101	0.584	0.000	0.032
CV (SE / Mean)		0.234	0.141	0.143	0.084	0.203
		2008				
Mean	5	0.011	0.829	5.447	0.009	0.898
Median		0.010	0.931	6.327	0.008	0.627
Lower 80% CI bound		0.010	0.688	3.603	0.0000	0.412
Upper 80% CI bound		0.012	0.970	7.290	0.1534	1.383
SE		0.001	0.092	1.202	0.094	0.317
CV (SE / Mean)		0.067	0.111	0.221	10.337	0.353
		All years				
Q33%	24 commercial depletion, 21 with setup tows	0.015	0.645	4.314	0.005	0.213
Mean		0.025	0.730	9.833	0.007	0.413
Median		0.018	0.786	6.002	0.006	0.256
Q67%		0.025	0.873	7.640	0.007	0.376
Lower 80% CI bound		0.021	0.665	6.717	0.006	0.285
Upper 80% CI bound		0.029	0.794	12.950	0.008	0.541
SE		0.003	0.049	2.374	0.001	0.098
CV (SE / Mean)		0.131	0.067	0.241	0.112	0.236

Table A11 (Following pages). Summary of commercial depletion experiments, Patch model estimates, setup tows and survey dredge efficiency estimates for surfclams 150+ mm SL.

See next page.

Experiment and Study Area							Depletion Tows				
Experiment Name	Original Name	Region	Approx. latitude (decimal degrees)	Approx. longitude (decimal degrees)	Depth (m)	Mean Sediment Size (microns)	Depletion Study Vessel	Depletion Date	Ship Position Data (source / nominal accuracy / time interval)	Depletion tows: N used, [N with bushel count and length samples]	Depletion vessel blade width (ft)
SC1997-2	PP-1	NNJ (Pt. Pleasant)	40.05317	73.83917	26		Sherri Ann	6/9/1997	Loran / 100M / 1 Minute	39 [9]	8.33
SC1997-3	AC2-1	NNJ (Atlantic City)	39.39317	73.91033	30		Jersey Girl	6/10/1997	Loran / 100M / 1 Minute	13 [4]	10.83
SC1997-4	AC2-2	NNJ (Atlantic City)	39.39317	73.91033	30		Jersey Girl	6/10/1997	Loran / 100M / 1 Minute	31 [4]	10.83
SC1997-5	AC1-1	NNJ (Atlantic City)	31.36500	73.89833	30		Judy Marie	6/11/1997	Loran / 100M / 1 Minute	17 [4]	8.33
SC1997-6	AC1-2	NNJ (Atlantic City)	39.36500	73.89833	30		Judy Marie	6/11/1997	Loran / 100M / 1 Minute	19 [4]	8.33
SC1999-2	JG-1 (S99-5)	NNJ	39.68133	73.74667	24	0.88	Jersey Girl	9/14/1999	Loran / 100M / 1 Minute	4 [1]	10.83
SC1999-3	JG-2 (s99-5)	NNJ	39.68133	73.74667	24	0.88	Jersey Girl	9/14/1999	Loran / 100M / 1 Minute	5 [2]	10.83
SC1999-4	JG-3 (S99-6)	NNJ	39.52133	73.77867	26	0.67	Jersey Girl	9/14/1999	Loran / 100M / 1 Minute	6 [2]	10.83
SC1999-5	CH-1 (S99-DEII)	DMV	36.90200	74.97583	35	1.13	Christy	9/25/1999	Loran / 100M / 1 Minute	28 [6]	10.83
SC1999-6	MJ-1 (s99-3, NJ Inshore Site 1)	NJ	39.56333	73.91167	26	1.08	Melissa J	9/28/1999	Loran / 100M / 1 Minute	4 [1]	10.83
SC1999-7	MJ-1 (s99-3, NJ Inshore Site 2)	NJ	39.76800	73.91633	24	3.85	Melissa J	9/28/1999	Loran / 100M / 1 Minute	10 [2]	10.83
SC2002-2	SC02-2	NJ	40.10908	73.84423	38	0.43	Jersey Girl	8/20/2002	GPS-D/3M/2 sec.	16 [3]	10.83
SC2002-3	SC02-3	NJ	39.26923	73.78116	31	1.12	Jersey Girl	8/19/2002	GPS-D/3M/2 sec.	19 [see footnote]	10.83
SC2002-4	SC02-4	DMV	38.85791	74.40888	31	0.48	Jersey Girl	8/20/2002	GPS-D/3M/2 sec.	18 [4]	10.83
SC2004-1	SC04-1	NJ	39.28611	73.87778	35		Lisa Kim	4/8/2004	GPS-D/3M/2 sec.	24 [5] (see note)	10
SC2004-2	SC04-2	NJ	39.58278	74.02778	21		Lisa Kim	4/8/2004	GPS-D/3M/2 sec.	20 [4] (see note)	10
SC2004-3	SC04-3	DMV	38.27075	74.37920	38		Lisa Kim	7/3/2004	GPS-D/3M/10 sec.	20 [4] (see note)	10
SC2005-2	SC05-02	NJ	39.56383	73.90364	24	0.29	Lisa Kim	9/7/2005	GPS / 6 ft / 6 sec	17 [3]	10
SC2005-3	SC05-03	NJ	39.89733	73.90591	38	0.24	Lisa Kim	9/8/2005	GPS / 6 ft / 6 sec	20 [4]	10
SC2005-4	SC05-04	DMV	39.56972	73.54946	41	0.20	Lisa Kim	9/9/2005	GPS / 6 ft / 6 sec	20 [4]	10
SC2005-5	SC05-05	NJ	39.43615	73.37320	33	0.28	Lisa Kim	9/10/2005	GPS / 6 ft / 6 sec	17 [4]	10
SC2005-6	SC05-01	NJ	38.26530	74.37947	26	0.19	Lisa Kim	9/7/2005	GPS / 6 ft / 6 sec	20 [4]	10
SC2008-1	SC08-02	NJ	39.18136	-74.07645	21	0.36	Endeavor	9/12/2008	GPS / 6 ft / 6 sec	18 [4]	12.5
SC2008-2	SC08-01	NJ	39.30475	-74.05158	27	0.33	Endeavor	9/12/2008	GPS / 6 ft / 6 sec	13 [3]	12.5
SC2008-3	SC08-03	NJ	39.60343	-73.42194	37	0.36	Endeavor	9/13/2008	GPS / 6 ft / 6 sec	20 [5]	12.5
SC2008-4	SC08-04	NJ	39.81033	-73.91490	22	0.17	Endeavor	9/13/2008	GPS / 6 ft / 6 sec	17 [3]	12.5
SC2008-5		SNE	41.14656	-70.05056	24	0.24	Endeavor	9/17/2008	GPS / 6 ft / 6 sec	6 [1]	12.5
SC2008-6	SC08-09	NJ	39.31328	-74.05285	27	0.29	Endeavor	9/20/2008	GPS / 6 ft / 6 sec	17 [4]	12.5

		Patch Model						Survey setu p tows			NEFSC survey		
Experiment Name	Original Name	Cell size (ft)	Population Density (D, >=150 mm SL, N ft^{-2})	Depletion vessel efficiency (E, fully recruited, >= 150 mm SL)	Negative binomial parameter (K)	Gamma (indirect effects, γ)	Goodness of fit (-log likelihood)	Survey id, [station id] (N tows) {N tows with length data}	Catch density (d, >= 150 mm SL, N ft^{-2})	CV for catch density (se / mean)	Efficiency (e, fully recruited)	CV	Notes
SC1997-2	PP-1	16.67	0.0492	0.3540	7.5313	0.5	210.3	199703 [183-190] (8) {4}	0.0081	0.15	0.16		Forty depletion tows total but tow 1 (and samples) omitted. Setup tows during calibration survey 199703 prior to 199704 clam survey.
SC1997-3	AC2-1	21.67	0.0172	0.7646	2.6272	0.5	66.1	199703 [169, 175-181] (8) {8}	0.0042	0.10	0.25		Setup tows during calibration survey 199703 prior to 199704 clam survey.
SC1997-4	AC2-2	21.67	0.0157	0.9900	3.2368	0.5	95.8	Same as SC1997-2	0.0042	0.10	0.27		Setup tows during calibration survey 199703 prior to 199704 clam survey.
SC1997-5	AC1-1	16.67	0.0137	0.9500	3.2606	0.5055	86.9	199703 [166-168, 170-174] (8) {8}	0.0069	0.12	0.50		Same as above plus -> Previous analyses at SAW-26 (NEFSC 1998) omitted depletion tow 10, which was included here
SC1997-6	AC1-2	16.67	0.0171	0.8902	7.1339	0.5	99.2	Same as SC1997-5}	0.0069	0.12	0.40		Same as above plus -> Previous analyses at SAW-26 (NEFSC 1998) omitted depletion tows 17 and 19, which were included here
SC1999-2	JG-1 (S99 5)	21.67	0.0249	0.8453	10.2855	0.5	21.5	199903 [105-108] (4) {4}	0.0075	0.23	0.30		
SC1999-3	JG-2 (s99-5)	21.67	0.0631	0.4625	9.3468	0.5	30.0	Same as SC1999-2	0.0075	0.23	0.12		
SC1999-4	JG-3 (S99-6)	21.67	0.0251	0.9900	15.3974	0.5	31.5	199903 [112-115] (4) {4}	0.0050	0.14	0.20		
SC1999-5	CH-1 (S99-DEII)	21.67	0.0193	0.1641	5.6765	0.5	92.8	19903 [367-370] (4) {0}					No length data for setup tows
SC1999-6	MJ-1 (s99-3, NJ Inshore Site 1)	21.67	0.0245	0.8357	32.4987	0.5	18.7	199903 [82-85] (4) {4}	0.0058	0.44	0.24		Sarc31 list Blade at 13
SC1999-7	MJ-1 (s99-3, NJ Inshore Site 2)	21.67	0.0513	0.6164	49.9988	0.5	52.2	199903 [88-90] (3) {3}	0.0046	0.17	0.09		Sarc31 list Blade at 13
SC2002-2	SC02-2	21.67	0.0144	0.8610	30.7464	0.5	74.1	200206 [87-91] (5) {1}	0.0037	0.28	0.26		
SC2002-3	SC02-3	21.67	0.0134	0.3071	2.8366	0.5	88.3	200206 [202-206] (5) {4}	0.0104	0.61	0.77		Depletion tows: 1) bushel count for tow 1 only (tows 2-19 had catch < 1 bu); 2) clams counted for all tows because catches were low; and 3) lengths measured for 10 for tows. Setup tows: zero clams caught at setup tow (station 206); only two clams measured at station 205
SC2002-4	SC02-4	21.67						200206 [335-339] (5) {1}					Zero clams >= 150 mm in tows 1-3, very low and variable catches in other tows.
SC2004-1	SC04-1	20.00	0.0301241	0.8072	4.0810	0.5000	130.753						200416 Cooperative Survey (shakedown leg) stations 15-38
SC2004-2	SC04-2	20.00	0.017376	0.6646	7.7973	0.5000	102.320						200416 Cooperative Survey (shakedown leg) stations 49-68
SC2004-3	SC04-3	20.00											200416 Cooperative Survey stations146-165; zero clams >= 150 mm in tow 1, very low and variable catches in other tows.
SC2005-2	SC05-02	20.00	0.0407	0.7633	4.7110	0.5	98.5	200507 [137, 377-381] (6) {5}	0.004	0.36	0.10		
SC2005-3	SC05-03	20.00	0.0590	0.5879	4.7883	0.5	120.6	200507 [21, 384-387] (5) {3?}	0.006	0.30	0.10		
SC2005-4	SC05-04	20.00	0.0264	0.5341	4.4756	0.5	104.5	200507 [41, 391-393, 395] (5) {3}	0.006	0.26	0.21		
SC2005-5	SC05-05	20.00	0.0212	0.9823	2.3360	0.5	96.1	200507 [143, 397-402] (7) {5}	0.004	0.18	0.21		
SC2005-6	SC05-01	20.00						200507 [123-127, 354] (6) {6}					Low catches >= 150 mm SL in setup and depletion tows (less than 6% of total).
SC2008-1	SC08-02	25.00	0.0093	0.9900	6.3267	0.5	104.7	200808 [74-78]	0.020	0.68	2.10	0.61	Survey dredge efficiency > 1.
SC2008-2	SC08-01	25.00	0.0122	0.9900	8.5387	0.5	75.2	200808 [67-71]	0.008	0.82	0.63	0.73	
SC2008-3	SC08-03	25.00	0.0098	0.7105	3.8503	0.5	114.9	200808 [298-301	0.0046	0.92	0.47	0.79	Depletion tow 13 omitted because of missing catch data. One setup tow had zero catch of surfclams 150+ mm.
SC2008-4	SC08-04	25.00	0.0128	0.5244	1.6884	0.5	102.3	200808 [44, 305-306]	0.005	0.36	0.36	0.29	
SC2008-5								2008085 [358, 368-369]	0.013	1.07			Strong currents during depeletion tows made it difficult to navigate. Not used.
SC2008-6	SC08-09	25.00	0.0097	0.9310	6.8293	0.5	97.8	200808 [67-70]	0.009	0.69	0.93	0.80	

Table A12. Delaware II-Delaware II (De2De2) repeat station tow data for surfclams (50+ mm SL) in the 2008 NEFSC clam survey. Catches are numbers of surfclams (SC) or ocean quahogs (OQ) caught in the survey dredge, adjusted to a standard area swept based on sensor tow distance data (5 ft x 0.15 nm = 4557 ft^2 = 423 m^2). Stations with useful data are at the top of the table. Stations excluded from the analysis because surfclam catches for both tows were zero or because of poor dredge performance (based on differential pressure and amperage sensors) are shown at the bottom.

Original station						Repeat station					
Station	OQ Catch	SC catch	Cable	Pump	HG	Station	OQ Catch	SC catch	Cable	Pump	HG
Useful repeat stations											
1	169.359	0.688	old	old	11	324	74.810	0.000	new	new	11
13	0.000	63.610	old	old	11	316	0.000	37.623	new	new	11
16	5.754	60.833	old	old	11	315	4.233	57.151	new	new	36
17	1.486	146.325	old	old	11	292	2.100	100.778	new	new	11
23	3.112	100.376	old	old	11	294	0.000	105.844	new	new	11
25	0.966	77.240	old	old	11	313	0.000	99.657	new	new	11
26	0.000	60.142	old	old	11	314	0.000	30.489	new	new	11
30	0.000	96.674	old	old	11	312	0.000	27.551	new	new	11
37	0.000	51.172	old	old	11	302	0.000	29.068	new	new	36
38	0.837	56.900	old	old	11	296	0.000	117.536	new	new	11
39	0.000	92.336	old	old	35	297	0.000	121.142	new	new	35
41	0.000	66.101	old	old	11	303	0.000	90.476	new	new	11
42	0.000	34.171	old	old	11	304	0.000	33.665	new	new	11
48	0.000	34.617	old	old	35	317	0.000	41.730	new	new	11
51	0.000	30.731	old	old	11	318	0.000	10.907	new	new	11
170	2.915	81.633	old	new	23	325	1.485	83.876	new	new	11
172	21.295	7.453	old	new	34	327	7.068	3.534	new	new	11
178	280.119	2.163	old	new	11	333	260.802	0.000	new	new	35
179	19.830	57.508	old	new	11	335	13.517	75.309	new	new	11
180	288.316	0.786	old	new	11	336	102.231	0.000	new	new	11
181	10.589	13.614	old	new	11	337	7.724	9.655	new	new	11
182	453.819	2.187	old	new	11	338	230.036	0.000	new	new	11
214	35.610	134.060	old	new	11	295	24.768	135.096	new	new	11
Surfclam catches zero in each tow											
173	611.722	0.000	old	new	11	328	341.535	0.000	new	new	11
173	611.722	0.000	old	new	11	329	284.070	0.000	new	new	35
173	611.722	0.000	old	new	11	330	380.974	0.000	new	new	11
173	611.722	0.000	old	new	11	330	380.974	0.000	new	new	11
173	611.722	0.000	old	new	11	331	258.288	0.000	new	new	11
174	105.004	0.000	old	new	36	328	341.535	0.000	new	new	11
174	105.004	0.000	old	new	36	329	284.070	0.000	new	new	35
175	133.078	0.000	old	new	11	328	341.535	0.000	new	new	11
183	359.921	0.000	old	new	11	339	121.018	0.000	new	new	11
Poor dredge performance by sensor or HG criteria											
2	105.675	0.000	old	old	11	334	199.518	0.000	new	new	11
22	26.069	125.516	old	old	11	293	27.008	169.609	new	new	23
44	0.000	114.895	old	old	35	305	0.000	65.823	new	new	35
44	0.000	114.895	old	old	35	306	0.000	65.926	new	new	35
53	0.000	46.006	old	old	11	319	0.000	0.000	new	new	48
171	31.390	0.981	old	new	35	326	6.525	0.000	new	new	36
206	327.657	0.000	old	new	11	286	0.000	0.000	new	new	47
206	327.657	0.000	old	new	11	287	420.315	0.000	new	new	11

Table A13. *F/V Delaware II-R/V Endeavor* (De2Fv) repeat station tow data for surfclams in the 2008 NEFSC clam survey. Catches are numbers of surfclams 150+ mm adjusted to a standard area swept (423 m^2) based on sensor tow distance data.

FV sequential station number	FV original station name	FV new station name	NEFSC station name	FV catch	RV catch	RV / FV ratio	Cable	Pump
3	SC08-02-Tow002	SC2008-1 tow 2	74	1188.1	148.5	8.0	old	old
3	SC08-02-Tow002	SC2008-1 tow 2	75	1188.1	241.5	4.9	old	old
3	SC08-02-Tow002	SC2008-1 tow 2	76	1188.1	333.7	3.6	old	old
3	SC08-02-Tow002	SC2008-1 tow 2	77	1188.1	83.8	14.2	old	old
23	SC08-01-Tow002	SC2008-2 tow 2	67	2891.2	117.5	24.6	old	old
23	SC08-01-Tow002	SC2008-2 tow 2	68	2891.2	105.8	27.3	old	old
23	SC08-01-Tow002	SC2008-2 tow 2	69	2891.2	37.4	77.4	old	old
23	SC08-01-Tow002	SC2008-2 tow 2	70	2891.2	18.6	155.1	old	old
23	SC08-01-Tow002	SC2008-2 tow 2	71	2891.2	13.2	218.7	old	old
76	survey 303	NA	41	5402.6	25.0	216.3	old	old
76	survey 303	NA	303	5402.6	25.3	213.6	new	new
77	survey 36	NA	36	1336.8	9.0	148.1	old	old
78	survey 312	NA	30	12541.3	58.2	215.5	old	old
78	survey 312	NA	312	12541.3	22.5	556.8	new	new
79	survey 313	NA	25	15314.7	32.0	479.1	old	old
79	survey 313	NA	313	15314.7	78.5	195.1	new	new
80	survey 304	NA	42	21061.4	16.6	1267.4	old	old
80	survey 304	NA	304	21061.4	24.6	855.9	new	new
81	survey 316	NA	13	32295.5	69.4	465.6	old	old
81	survey 316	NA	316	32295.5	29.9	1079.5	new	new
107	SC08-05-Tow002	SC2008-5 tow 2	358	1263.5	90.4	14.0	new	new
107	SC08-05-Tow002	SC2008-5 tow 2	366	1263.5	10.6	119.5	new	new
107	SC08-05-Tow002	SC2008-5 tow 2	368	1263.5	266.1	4.7	new	new
107	SC08-05-Tow002	SC2008-5 tow 2	369	1263.5	5.9	215.1	new	new
161	survey 296	NA	38	24303.2	1.3	18412.0	old	old
161	survey 296	NA	296	24303.2	17.4	1396.6	new	new
162	survey 295	NA	214	1160.0	2.4	482.4	old	new
162	survey 295	NA	295	1160.0	8.3	139.7	new	new
192	survey 293	NA	22	0.0	1.1	0.0	old	old
192	survey 293	NA	293	0.0	2.9	0.0	new	new
193	survey 294	NA	23	6390.1	27.5	232.1	old	old
193	survey 294	NA	294	6390.1	55.9	114.4	new	new
194	survey 292	NA	17	1498.3	22.4	66.9	old	old
194	survey 292	NA	292	1498.3	14.7	101.7	new	new
195	survey 315	NA	16	3886.1	16.3	238.9	old	old
195	survey 315	NA	315	3886.1	6.9	561.2	new	new
196	survey 310	NA	310	4667.0	31.0	150.5	new	new
197	survey 49	NA	49	1835.9	3.8	479.2	old	old
198	survey 60	NA	60	1739.7	22.5	77.4	old	old
199	survey 64	NA	64	702.9	21.0	33.5	old	old
999	survey 317	NA	48	0.0	14.0	0.0	old	old
999	survey 317	NA	317	0.0	26.1	0.0	new	new

Table A14. Station numbers and total numbers measured for R/V Delaware II and F/V Endeavor tows used to estimate size-selectivity for surfclams. For each type of tow, N is the number of surfclams measured. R/V selectivity data for the station /with Selectivity ID 318 (R/V stations 51 and 318) were not used because the RV and F/V tows were more than 300 m away from one another. Data from R/V station 319 was not used because the tow was not successful (database SHG code > 136).

Experiment ID	R/V survey station id	R/V survey station N	R/V repeat station id	R/V repeat station N	F/V selectivity N (lined dredge)	F/V repeat N (unlined dredge)
36	36	14			105	84
49	49	12	not available		181	108
60	60	66			125	106
64	64	14			20	71
292	17	191	292	82	503	129
293	22	128	293	155	242	204
294	23	114	294	96	304	103
295	214	127	295	112	651	158
296	38	69	296	110	463	150
303	41	66	303	80	266	92
304	42	40	304	41	236	85
310	310	37	not available		113	77
312	30	62	312	29	230	89
313	25	65	313	79	285	108
314	26	51	314	24	245	104
315	16	62	315	50	260	98
316	13	62	316	37	328	95
317	317	33	48	41	173	97
318	318	not used	51	not used	45	113
319	53	63	319	not used	156	105

Table A15. F/V and R/V shell height composition data used to estimate NEFSC clam survey dredge selectivity for surfclams. Numbers of positive stations (e.g. R/V n positive stations) give the number of stations at which surfclams of each shell length group were captured. For example, "F/V lined dredge N positive stations" =3 for the 20-29 mm SL group because individuals in the 20-29 mm size group were observed in F/V selectivity tows at three sites.

SL group	F/V lined dredge N measurements	F/V unlined dredge N measurements	R/V N measurements	F/V lined dredge N positive stations	F/V unlined dredge N positive stations	R/V N positive stations
20-29	3	0	0	3	0	0
30-39	27	0	1	11	0	1
40-49	109	0	6	15	0	3
50-59	180	1	29	17	1	11
60-69	219	4	83	19	4	15
70-79	217	10	128	19	6	17
80-89	250	23	157	16	12	17
90-99	226	60	135	17	16	16
100-109	221	124	139	18	16	16
110-119	332	181	181	19	20	16
120-129	422	221	278	19	18	15
130-139	464	263	282	17	19	17
140-149	524	352	335	19	20	18
150-159	612	502	285	18	19	19
160-169	432	359	126	18	17	16
170-179	130	63	38	15	16	11
180-189	24	13	7	5	6	3
190-199	2	1	2	1	1	1

Table A16. Numbers of surfclams in survey dredge selectivity experiments by length group and station. For example, "5:19" means that five surfclams of a particular length at a particular station were measured in catches by the *R/V Delaware II* and 19 surfclams were measured in catches by the *F/V Endeavor*.

SL bin	Sta 36	Sta 49	Sta 60	Sta 64	Sta 292	Sta 293	Sta 294	Sta 295	Sta 296	Sta 303
25	0:0	0:0	0:0	0:0	0:0	0:0	0:0	0:0	1:0	0:0
35	0:0	1:0	1:0	0:0	0:0	0:0	1:0	1:0	1:1	0:0
45	0:0	9:0	4:0	0:0	10:0	3:0	5:0	6:0	7:4	1:0
55	0:0	13:0	6:1	0:0	9:1	13:3	15:7	31:4	26:2	4:1
65	2:1	16:0	9:1	1:0	29:4	18:14	21:9	15:5	28:11	7:4
75	5:0	10:1	13:14	1:0	20:8	16:16	8:5	7:2	33:26	25:22
85	0:1	11:1	6:17	0:0	28:10	14:23	10:2	1:1	48:26	43:31
95	0:0	8:2	8:15	0:0	15:10	18:16	10:2	8:4	40:23	41:24
105	2:0	11:1	4:5	0:0	23:12	25:40	2:8	32:19	41:19	23:13
115	1:0	8:1	5:2	2:1	31:11	43:58	20:17	90:47	44:9	15:11
125	2:1	8:0	4:0	2:1	72:38	54:68	41:34	115:81	50:12	13:5
135	3:1	3:1	1:0	0:0	94:78	24:35	35:29	97:47	42:15	7:1
145	19:3	7:2	10:0	2:2	78:69	6:7	55:46	45:23	45:19	8:6
155	29:5	38:3	19:4	6:7	36:29	0:3	55:35	11:6	31:9	12:14
165	19:1	22:0	19:4	4:2	5:3	0:0	17:16	1:0	18:2	26:7
175	2:1	4:0	8:3	2:1	0:0	0:0	2:0	0:0	2:1	17:6
185	0:0	0:0	1:0	0:0	0:0	0:0	0:0	0:0	0:0	1:1
195	0:0	0:0	0:0	0:0	0:0	0:0	0:0	0:0	0:0	0:0

SL bin	Sta 304	Sta 310	Sta 312	Sta 313	Sta 314	Sta 315	Sta 316	Sta 317	Sta 319	Total
25	1:0	0:0	0:0	0:0	0:0	0:0	0:0	1:0	0:0	3:0
35	3:0	6:0	0:0	0:0	2:0	0:0	4:0	4:0	3:0	27:1
45	5:1	26:1	0:0	0:0	3:0	2:0	17:0	5:0	6:0	109:6
55	5:4	17:3	5:0	3:0	6:1	1:0	13:1	10:1	3:0	180:29
65	16:8	9:9	6:2	6:3	8:0	1:0	7:3	14:7	6:2	219:83
75	10:6	6:4	3:3	8:4	8:4	1:1	19:4	17:7	7:1	217:128
85	9:11	4:2	5:5	18:4	11:6	0:1	17:7	20:9	5:0	250:157
95	4:3	2:6	6:5	10:8	20:4	3:2	15:0	12:7	6:4	226:135
105	1:1	1:1	6:3	11:3	12:4	1:1	7:3	10:6	9:0	221:139
115	5:3	8:0	4:1	13:4	12:5	3:3	11:4	8:4	9:0	332:181
125	3:1	4:0	9:4	10:8	3:6	12:5	12:12	5:0	3:2	422:278
135	7:4	3:1	14:8	28:22	13:7	65:26	27:2	1:2	0:3	464:282
145	24:12	1:1	23:16	36:34	20:9	96:58	14:6	22:8	13:14	524:335
155	58:16	8:4	60:23	78:37	33:10	37:14	43:26	27:17	31:23	612:285
165	38:9	10:3	58:15	31:17	66:11	3:1	53:17	11:6	31:12	432:126
175	8:2	3:2	9:6	8:0	13:7	1:0	43:7	0:0	8:2	130:38
185	1:0	0:0	1:0	0:0	0:1	0:0	20:5	0:0	0:0	24:7
195	0:0	0:0	0:0	0:0	0:0	0:0	2:2	0:0	0:0	2:2

Table A17. Revised shell length-meat weight parameters for surfclams based on fresh (not frozen) samples collected during 1997-2008 NEFSC clam surveys. The SLMW relationship is W=exp(a)L^b where W is weight in kg and L is shell length in cm. Parameters used by NEFSC (2000) in the last stock assessment for SARC-44 are shown for comparison.

Source	DMV			NJ			LI		
	a	b	n	a	b	n	a	b	n
1997 (fresh samples)	-9.92060	2.96191	702	-9.41163	2.89971	149			
2002 (fresh samples)	-10.83117	3.13644	294	-9.68603	2.93156	233			
2005 (fresh samples)	-9.80927	2.95150	250	-9.77665	2.92920	338			
2008 (fresh samples)	-9.21853	2.67956	89	-9.79938	2.89804	311	-9.92478	2.96477	130
All fresh samples	-9.6465	2.8493		-9.4326	2.851		-9.92478	2.96477	

Source	SNE			GBK		
	a	b	n	a	b	n
1997 (fresh samples)				-8.55829	2.73074	116
2002 (fresh samples)				-10.27049	3.06418	54
2005 (fresh samples)						
2008 (fresh samples)	-9.80164	2.96367	48	-9.91577	3.04589	194
All fresh samples	-9.80164	2.96367		-9.1488	2.8282	

Table A18. Regional shell length-meat weight parameter estimates from fresh material collected during NEFSC clam surveys during 1997-2008, by region with parameters from NEFSC (2000) used in the last assessment. Parameters for all fresh samples in each region were calculated by averaging the curves for each year and estimating parameters to fit the average curve.

	Updated		**NEFSC 2000 (SARC 44)**	
Region	***a***	***b***	***a***	***b***
DMV	-9.64650	2.84930	-9.48913	2.86018
NJ	-9.43260	2.85100	-9.31214	2.86372
LI	-9.92480	2.96480	-7.98370	2.58020
SNE	-9.80164	2.96367	-7.98370	2.58020
GBK	-9.14880	2.82820	-8.27443	2.65422
All but GBK	-9.47060	2.84300	-8.52318	2.67522
All	-9.34040	2.82300	-8.48764	2.67222

Table A19. Shell length-meat weight (SLMW) parameters for the entire stock of surfclams during years with NEFSC clam surveys. The SLMW relationship is W=exp(a)L^b where W is weight in kg and L is shell length in cm. The parameters change over time because the proportion of the stock in each region changed over time.

Year	a	B	exp(a)	exp(b)
1982	-9.602	2.879	6.76E-05	17.80
1983	-9.566	2.867	7.01E-05	17.59
1984	-9.570	2.868	6.98E-05	17.60
1986	-9.569	2.856	6.98E-05	17.39
1989	-9.449	2.853	7.88E-05	17.34
1992	-9.516	2.855	7.37E-05	17.38
1994	-9.422	2.848	8.09E-05	17.25
1997	-9.483	2.859	7.62E-05	17.45
1999	-9.437	2.856	7.97E-05	17.40
2002	-9.413	2.851	8.16E-05	17.30
2005	-9.364	2.855	8.58E-05	17.38
2008	-9.330	2.852	8.87E-05	17.33

Table A20. Numbers of age samples for surfclams collected in the NEFSC clam survey during 1978-2008, by region. A few samples for SVA were combined with DMV. Obvious data errors were omitted.

Survey year	Region				
	DMV	NJ	LI	SNE	GBK
1978	199	289			
1980	391	452	29	61	
1981	446	641	27	38	
1982	801	927	40	123	4
1983	564	934	6	369	
1984					643
1986	812	1216	45	71	413
1989	162	566	53	42	86
1992	145	257	47	54	311
1994	299	476			
1997	626	227			50
1999	510	496	22	50	178
2002	356	779	31	20	54
2005	339	523	21	6	
2008	138	459	99	39	105

Table A21. Von Bertalanffy growth parameters and standard errors for surfclams by region estimated using nonlinear least squares. The growth equation is $L=L_{max}$ (1-exp(-k (A-t_0))) where A is age in years, L is length in cm and L_{max}, k and t_0 are parameters. Age data were pooled across years for individual regions or across years and regions for combined regions such as "DMV to SNE" and "Whole stock".

Region	N shells	L_{max}	SE	k	SE	t_0	SE
GBK	1,844	147.10	1.379	0.253	0.010	0.041	0.085
DMV (1978-1992)	3,520	171.82	0.872	0.198	0.005	-0.739	0.081
DMV (1994-2008)	2,268	146.45	1.101	0.200	0.008	-1.012	0.132
DMV (all years)	5,788	159.95	0.736	0.206	0.005	-0.784	0.077
NJ (1978-1992)	5,282	168.64	0.670	0.236	0.005	-0.468	0.057
NJ (1999-2008)	2,960	161.73	0.866	0.193	0.006	-1.303	0.134
NJ	8,242	163.49	0.493	0.237	0.004	-0.577	0.054
LI	420	159.41	1.328	0.302	0.018	-0.050	0.160
SNE	873	165.33	1.016	0.284	0.013	0.149	0.135
GBK	1,844	147.10	1.379	0.253	0.010	0.041	0.085
DMV to SNE	13,207	163.35	0.416	0.228	0.003	-0.621	0.047
Whole stock (1986-1992)	4,280	166.93	0.899	0.200	0.005	0.086	0.074
Whole stock (1999-2008)	3,336	154.62	0.817	0.225	0.007	-0.402	0.108
Whole stock (all years)	7,616	160.27	0.605	0.213	0.004	-0.658	0.063

Table A22. Von Bertalanffy growth parameters for shell length and estimated age at recruitment to the fishery (ssumed to occur at 12 cm SL) for surfclams in the stock as a whole during years with NEFSC clam surveys. The growth equation is $L=L_{max}*(1-\exp(-k*(a-t_0)))$ where a is age in years, L is length in cm and L_{max}, k and t_0 are parameters in the table.

Parameter	Lmax	K	t0	Age at Recruitment (12 cm SL)
1982	16.631	0.229	-0.517	5.056
1983	16.637	0.222	-0.548	5.200
1984	16.626	0.222	-0.540	5.222
1986	16.784	0.212	-0.646	5.268
1989	16.194	0.228	-0.453	5.480
1992	16.530	0.220	-0.573	5.314
1994	15.436	0.231	-0.517	5.980
1997	15.661	0.233	-0.526	5.711
1999	15.568	0.238	-0.436	5.754
2002	15.488	0.235	-0.445	5.890
2005	15.368	0.247	-0.261	5.882
2008	15.357	0.247	-0.209	5.936

Table A23. Von Bertalanffy parameters for growth in meat weight for the surfclam stock as a whole and the growth parameter $J=W_{k-1}/W_k$, where k is the estimated age at which a surfclam reaches 12 cm SL, and W_k is predicted meat weight at age k.

Parameter	W_∞	K	t_0	J
1982	0.223	0.178	2.108	0.718
1983	0.223	0.178	2.221	0.722
1984	0.223	0.178	2.233	0.723
1986	0.220	0.178	2.344	0.715
1989	0.224	0.178	2.169	0.757
1992	0.223	0.178	2.238	0.733
1994	0.198	0.178	2.035	0.809
1997	0.201	0.178	2.002	0.792
1999	0.205	0.178	1.974	0.797
2002	0.204	0.178	2.016	0.804
2005	0.213	0.178	1.945	0.808
2008	0.218	0.178	1.983	0.809

Table A24. Efficiency corrected swept-area biomass estimates (1000 mt) and CVs for surfclams (120+ mm SL), by region. Figures for SVA during 2005 and 2008 are the same as during 2002 because no data were available for 2005 and 2008.

	Estimate	CV
INPUT: Nominal tow distance (d_n, *nm*)	0.15	
INPUT: Dredge width (nm)	0.0008225	
Area swept per standard tow (*a*, nm^2)	1.23375E-04	10%

Area of assessment region (*A*, nm^2) - no correction for stations with unsuitable clam habitat

S. Virginia and N. Carolina (SVA)	3,119	10%
Delmarva (DMV)	4,660	10%
New Jersey (NJ)	5,078	10%
Long Island (LI)	2,917	10%
Southern New England (SNE)	4,321	10%
Georges Bank (GBK)	5,772	10%
Total	25,867	

INPUT: Fraction suitable habitat (*u*)

S. Virginia and N. Carolina (SVA)	100%	10%
Delmarva (DMV)	100%	10%
New Jersey (NJ)	100%	10%
Long Island (LI)	100%	10%
Southern New England (SNE)	100%	10%
Georges Bank (GBK)	88%	10%

Habitat area in assessment region (*A'*, nm2)

S. Virginia and N. Carolina (SVA)	3,119	14%
Delmarva (DMV)	4,660	14%
New Jersey (NJ)	5,078	14%
Long Island (LI)	2,917	14%
Southern New England (SNE)	4,321	14%
Georges Bank (GBK)	5,079	14%

INPUT: Biomass fraction in unsurveyd deep water

S. Virginia and N. Carolina (SVA)	0%	10%
Delmarva (DMV)	0%	10%
New Jersey (NJ)	0%	10%
Long Island (LI)	0%	10%
Southern New England (SNE)	0%	10%
Georges Bank (GBK)	0%	10%

INPUT: Original survey mean catch from fishable stock (kg/tow, for tows adjusted to nominal tow distance using sensors)

	Estimates for 1997	CV	Estimates for 1999	CV	Estimates for 2002	CV	Estimates for 2005	CV	Estimates for 2008	CV
S. Virginia and N. Carolina (SVA) 120+ mm	0.0164	43%	0.0164	43%	0.3165	60%	0.3165	60%	0.3165	60%
Delmarva (DMV) 120+ mm	2.1372	21%	1.3123	20%	2.3604	21%	0.4013	32%	0.3335	34%
New Jersey (NJ) 120+ mm	6.0896	11%	4.2252	15%	4.4673	17%	2.4969	16%	2.8925	17%
Long Island (LI) 120+ mm	0.4230	63%	1.0199	45%	0.3309	64%	2.4739	34%	0.6172	26%
Southern New England (SNE) 120+ mm	1.7579	36%	1.0445	65%	0.8043	24%	0.4093	29%	1.1185	63%
Georges Bank (GBK) 120+ mm	1.7340	25%	2.1690	30%	2.0802	42%	3.7936	23%	4.6824	19%

Swept-area biomass without efficiency correction (B', 1000 mt):

S. Virginia and N. Carolina (SVA) 120+ mm	0.4156	47%	0.4156	47%	8.0021	63%	8.0021	63%	8.0021	63%
Delmarva (DMV) 120+ mm	80.7250	29%	49.5673	28%	89.1540	29%	15.1586	38%	12.5978	39%
New Jersey (NJ) 120+ mm	250.6431	23%	173.9036	25%	183.8716	26%	102.7709	26%	119.0526	26%
Long Island (LI) 120+ mm	10.0002	66%	24.1143	49%	7.8224	67%	58.4901	39%	14.5920	33%
Southern New England (SNE) 120+ mm	61.5661	41%	36.5815	68%	28.1678	31%	14.3340	35%	39.1729	66%
Georges Bank (GBK) 120+ mm	71.3893	32%	89.2975	36%	85.6404	47%	156.1816	30%	192.7744	28%
SVA to SNE	403	17%	285	19%	317	18%	199	18%	193	21%
Total (including GBK)	475	15%	374	17%	403	17%	355	17%	386	17%
INPUT: Survey dredge efficiency (e) from Patch m	0.256	21%	0.256	21%	0.256	21%	26%	21%	0.256	21%
INPUT: Adjustment for domed survey selectivity	1.453	16%	1.453	16%	1.453	16%	145%	16%	1.453	16%
Adjusted survey dredge efficiency	0.372	26%	0.372	26%	0.372	26%	37%	26%	0.372	26%

Efficiency adjusted swept area fishable biomass (B, 1000 mt)

S. Virginia and N. Carolina (SVA) 120+ mm	1.117	54%	1.117	54%	21.506	68%	21.506	68%	21.506	68%
Delmarva (DMV) 120+ mm	217	39%	133	38%	240	39%	41	46%	34	47%
New Jersey (NJ) 120+ mm	674	35%	467	36%	494	37%	276	37%	320	37%
Long Island (LI) 120+ mm	27	71%	65	56%	21	72%	157	47%	39	42%
Southern New England (SNE) 120+ mm	165	49%	98	73%	76	41%	39	44%	105	71%
Georges Bank (GBK) 120+ mm	192	41%	240	45%	230	53%	420	40%	518	38%
SVA to SNE	1,084	31%	765	32%	852	32%	534	32%	520	34%
Total (including GBK)	1,276	30%	1,005	31%	1,082	31%	954	31%	1,038	31%

Lower bound for 80% confidence intervals on fishable biomass (1000 mt, for lognormal distribution with no bias correction)

	Estimates for 1997	Estimates for 1999	Estimates for 2002	Estimates for 2005	Estimates for 2008
S. Virginia and N. Carolina (SVA) 120+ mm	0.584	0.584	9.729	9.729	9.729
Delmarva (DMV) 120+ mm	134	83	148	23	19
New Jersey (NJ) 120+ mm	438	298	312	175	202
Long Island (LI) 120+ mm	12	33	9	88	23
Southern New England (SNE) 120+ mm	92	43	46	23	46
Georges Bank (GBK) 120+ mm	115	139	121	256	324
SVA to SNE	736	512	575	359	341
Total (including GBK)	875	682	733	647	701

Upperbound for 80% confidence intervals on fishable biomass (1000 mt, for lognormal distribution with no bias correction)

S. Virginia and N. Carolina (SVA) 120+ mm	2.137	2.137	47.537	47.537	94.361
Delmarva (DMV) 120+ mm	351	214	388	71	141
New Jersey (NJ) 120+ mm	1,037	732	782	435	2,293
Long Island (LI) 120+ mm	61	126	48	279	172
Southern New England (SNE) 120+ mm	299	227	125	66	590
Georges Bank (GBK) 120+ mm	319	414	437	688	4,388
SVA to SNE	1,597	1,143	1,263	795	4,085
Total (including GBK)	1,860	1,480	1,598	1,407	9,829

Table A25. Fishing mortality estimates for surfclams based on catch and efficiency corrected swept-area biomass estimates.

INPUT: Incidental mortality allowance	12%
INPUT: Assumed CV for catch	10%

INPUT: Landings (1000 mt, discard ~ 0)	**Estimates for 1997**	**Estimates for 1999**	**Estimates for 2002**	**Estimates for 2005**	**Estimates for 2008**
S. Virginia and N. Carolina (SVA)	0.000	0.000	0.064	0.000	0.000
Delmarva (DMV)	1.540	0.648	4.489	1.668	3.223
New Jersey (NJ)	16.998	18.749	18.271	16.850	17.517
Long Island (LI)	0.073	0.157	1.130	0.759	1.317
Southern New England (SNE)	0.000	0.016	0.052	1.885	0.423
Georges Bank (GBK)	0.000	0.000	0.000	0.000	0.000
Total	18.611	19.570	24.006	21.163	22.481

Catch (1000 mt, landings + upper bound incidental mortality allowance)					
S. Virginia and N. Carolina (SVA)	0.000	0.000	0.072	0.000	0.000
Delmarva (DMV)	1.725	0.726	5.028	1.868	3.610
New Jersey (NJ)	19.038	20.999	20.463	18.872	19.619
Long Island (LI)	0.081	0.176	1.265	0.850	1.475
Southern New England (SNE)	0.000	0.018	0.058	2.112	0.474
Georges Bank (GBK)	0.000	0.000	0.000	0.000	0.000
Total	20.844	21.919	26.886	23.702	25.178

INPUT: Efficiency Corrected Swept Area Biomass for Fishable Stock (1000 mt)	**Estimates for 1997**	**CV**	**Estimates for 1999**	**CV**	**Estimates for 2002**	**CV**	**Estimates for 2005**	**CV**	**Estimates for 2008**	**CV**
S. Virginia and N. Carolina (SVA) 120+ mm	1	54%	1	54%	22	68%	22	68%	22	68%
Delmarva (DMV) 120+ mm	217	39%	133	38%	240	39%	41	46%	34	47%
New Jersey (NJ) 120+ mm	674	35%	467	36%	494	37%	276	37%	320	37%
Long Island (LI) 120+ mm	27	71%	65	56%	21	72%	157	47%	39	42%
Southern New England (SNE) 120+ mm	165	49%	98	73%	76	41%	39	44%	105	71%
Georges Bank (GBK) 120+ mm	192	41%	240	45%	230	53%	420	40%	518	38%
SVA to SNE	1,084	31%	765	32%	852	32%	534	32%	520	34%
Total (including GBK)	1,276	30%	1,005	31%	1,082	31%	954	31%	1,038	31%

Fishing mortality (y^{-1})										
S. Virginia and N. Carolina (SVA) 120+ mm	0.0000	NA	0.0000	NA	0.0034	69%	0.0000	NA	0.0000	NA
Delmarva (DMV) 120+ mm	0.0080	40%	0.0054	40%	0.0210	40%	0.0459	47%	0.1066	48%
New Jersey (NJ) 120+ mm	0.0283	36%	0.0449	38%	0.0414	38%	0.0683	38%	0.0613	38%
Long Island (LI) 120+ mm	0.0030	72%	0.0027	57%	0.0602	73%	0.0054	48%	0.0376	43%
Southern New England (SNE) 120+ mm	0.0000	50%	0.0002	74%	0.0008	42%	0.0548	45%	0.0045	72%
Georges Bank (GBK) 120+ mm	0.0000	NA	0.0000	NA	0.0000	NA	0.0000	NA	0.0000	NA
SVA to SNE	0.0192	33%	0.0287	34%	0.0316	33%	0.0444	33%	0.0484	35%
Total (including GBK)	0.0163	32%	0.0218	33%	0.0248	33%	0.0248	33%	0.0243	33%

Lower bound for 80% confidence intervals for fishing mortality (y^{-1}, for lognormal distribution with no bias correction)	**Estimates for 1997**	**Estimates for 1999**	**Estimates for 2002**	**Estimates for 2005**	**Estimates for 2008**
S. Virginia and N. Carolina (SVA) 120+ mm	NA	NA	0.0015	NA	NA
Delmarva (DMV) 120+ mm	0.0048	0.0033	0.0128	0.0259	0.0593
New Jersey (NJ) 120+ mm	0.0181	0.0282	0.0258	0.0427	0.0382
Long Island (LI) 120+ mm	0.0013	0.0014	0.0262	0.0030	0.0222
Southern New England (SNE) 120+ mm	NA	0.0001	0.0005	0.0316	0.0020
Georges Bank (GBK) 120+ mm	NA	NA	NA	NA	NA
SVA to SNE	0.0128	0.0188	0.0209	0.0293	66.6881
Total (including GBK)	0.0110	0.0145	0.0165	0.0165	160.5256

Upper bound for 80% confidence intervals for fishing mortality (y^{-1}, for lognormal distribution with no bias correction)					
S. Virginia and N. Carolina (SVA) 120+ mm	NA	NA	0.0075	NA	NA
Delmarva (DMV) 120+ mm	0.0131	0.0089	0.0345	0.0812	0.1917
New Jersey (NJ) 120+ mm	0.0442	0.0715	0.0665	0.1092	0.0985
Long Island (LI) 120+ mm	0.0069	0.0053	0.1385	0.0097	0.0638
Southern New England (SNE) 120+ mm	NA	0.0004	0.0013	0.0950	0.0103
Georges Bank (GBK) 120+ mm	NA	NA	NA	NA	NA
SVA to SNE	0.0289	0.0436	0.0477	0.0673	0.0750
Total (including GBK)	0.0243	0.0327	0.0374	0.0373	0.0366

Table A26. Building a bridge--effects of changes in criteria for omitting "bad" tows (step 1), borrowing from the 2008 survey (step 2), new shell length-meat weight (SLMW) relationships (step 3), new survey dredge selectivity estimates (step 4), and the new survey dredge selectivity curve (step 5) on efficiency corrected swept-area biomass for surfclams during 2005.

Region	NEFSC (2007)	Change criteria for "bad" tows - step 1	Borrow from 2008 survey - step 2	New SLMW - step 3	Survey data adjusted for domed selectivity - step 4	New efficiency - step 5	Percent change (New-Old)/Old
SVA	29	30	30	33	31	22	-26%
DMV	68	67	68	55	59	41	-40%
NJ	397	396	397	330	401	276	-30%
LI	206	205	206	202	228	157	-24%
SNE	29	35	28	33	56	39	33%
GBK	337	344	615	606	609	420	25%
Total	1,066	1,078	1,343	1,258	1,385	954	-11%

Table A27. Efficiency corrected swept-area biomass estimates in this assessment, compared to estimates from the last four surfclam stock assessments.

Sizes	SARC-26 All		SARC-30 All		SARC-37 110+ and 120+		SARC-44 120+ mm		New assessment 120+ mm	
Year	Biomass (1000 mt)	Survey efficiency (e)	Biomass (1000 mt)	Survey efficiency (e)	Biomass (1000 mt)	Survey efficiency (e)	Biomass (1000 mt)	Survey efficiency (e)	Biomass (1000 mt)	Survey efficiency (e)
1997	1,130	0.897	1,106	0.588	1,146	0.460	1,913	0.226	1,472	0.256
1999			1,596	0.276	1,460	0.276	1,503	0.226	1,176	0.256
2002					803	0.389	1,479	0.226	1,153	0.256
2005							1,066	0.226	1,110	0.256
2008									1,170	0.256

Table A28. Fishing mortality estimates based on catch and efficiency corrected swept-area biomass in this assessment, compared to estimates from the last four surfclam stock assessments.

Sizes	SARC-26 All		SARC-30 All		SARC-37 110+ and 120+		SARC-44 120+ mm		New assessment 120+ mm	
Year	Fishing mortality	Survey efficiency (e)	Fishing mortality	Survey efficiency (e)	Fishing mortality	Survey efficiency (e)	Fishing mortality	Survey efficiency (e)	Fishing mortality	Survey efficiency (e)
1997	0.0181	0.897	0.0188	0.588	0.0180	0.460	0.0109	0.226	0.0142	0.256
1999			0.0137	0.276	0.0150	0.276	0.0146	0.226	0.0186	0.256
2002					0.0330	0.389	0.0182	0.226	0.0233	0.256
2005							0.0222	0.226	0.0214	0.256
2008									0.0215	0.256

Table A29. Calculations to predict changes in estimated survey dredge efficiency due to dome shaped selectivity for surfclams 150+ mm SL based on all 21 actual surfclam commercial depletion experiments with set up tows by the *R/V Delaware II*. Set up tow details are given for use elsewhere.

Experiment Name	NEFSC cruise number	Station numbers for setup tows	Adjust for survey for hypothetical dome-shaped dredge selectivity?	Survey set up tow density (N per standard tow) 150+ mm SL										Ratio survey dredge efficiency with and without assuming dome shaped selectivity
				Tow 1	Tow 2	Tow 3	Tow 4	Tow 5	Tow 6	Tow 7	Tow 8	Mean setup density (n or n*)	CV	
SC1997-2	199703	183-190	No	0.000	0.000	0.542	0.000	0.000	0.997	0.000	4.109	0.706	2.02	1.320
			Yes	0.000	0.000	0.730	0.000	0.000	1.186	0.000	5.537	0.932	2.05	
SC1997-3	199703	169, 175-181	No	0.000	0.000	0.000	0.000	0.000	1.954	0.000	1.572	0.441	1.87	1.151
			Yes	0.000	0.000	0.000	0.000	0.000	2.302	0.000	1.756	0.507	1.87	
SC1997-5	199703	166-168, 170-174	No	4.317	1.535	0.000	0.000	0.000	1.175	0.000	0.000	0.878	1.73	1.386
			Yes	5.179	3.092	0.000	0.000	0.000	1.467	0.000	0.000	1.217	1.60	
SC1999-2	199903	105-108	No	49.237	19.388	45.632	22.167					34.106	0.45	1.818
			Yes	89.869	37.235	79.487	41.454					62.011	0.43	
SC1999-4	199903	112-115	No	29.371	14.262	22.280	24.975					22.722	0.28	1.455
			Yes	43.733	19.719	31.918	36.832					33.050	0.31	
SC1999-6	199903	82-85	No	32.776	56.478	10.759	6.020					26.508	0.87	1.397
			Yes	43.145	79.329	17.114	8.493					37.020	0.86	
SC1999-7	199903	88-90	No	27.350	14.881	20.057						20.763	0.30	1.424
			Yes	38.132	22.285	28.308						29.575	0.27	
SC2002-2	200206	87-91	No	33.635	0.000	0.000	0.000	0.000				6.727	2.24	1.420
			Yes	47.777	0.000	0.000	0.000	0.000				9.555	2.24	
SC2002-3	200206	202-206	No	71.064	12.849	150.440	1.039	0.000				47.078	1.38	1.941
			Yes	139.838	24.244	291.421	1.474	0.000				91.395	1.38	
SC2002-4	200206	335-339	No	1.017	0.000	0.000	0.000	0.000				0.203	2.24	1.231
			Yes	1.252	0.000	0.000	0.000	0.000				0.250	2.24	
SC2005-2	200507	137, 377-381	No	2.789	17.423	12.392	3.087	0.000	47.352			13.841	1.28	1.540
			Yes	5.142	26.205	18.544	5.729	0.000	72.236			21.309	1.26	
SC2005-3	200507	21, 384-387	No	33.017	0.000	27.587	0.000	19.024				15.925	0.97	1.725
			Yes	58.028	0.000	50.517	0.000	28.841				27.477	0.99	
SC2005-4	200507	41, 391-393, 395	No	20.743	50.243	0.000	16.476	0.000				17.492	1.18	1.401
			Yes	29.271	70.438	0.000	22.860	0.000				24.514	1.18	
SC2005-5	200507	143, 397-402	No	20.357	31.442	17.148	0.000	29.382	0.000			16.388	0.84	1.451
			Yes	30.035	45.498	24.347	0.000	42.761	0.000			23.773	0.84	
SC2005-6	200507	123-127, 354	No	3.269	3.963	6.978	2.020	4.690	3.826			4.124	0.40	1.385
			Yes	4.442	4.964	10.840	2.557	5.876	5.590			5.711	0.49	
SC2008-1	200808	74-78	No	77.758	125.312	174.265	43.610	25.195				89.228	0.68	1.912
			Yes	148.519	241.463	333.695	83.850	45.609				170.627	0.69	
SC2008-2	200808	67-71	No	68.850	62.099	24.765	9.882	9.279				34.975	0.82	1.673
			Yes	117.492	105.797	37.361	18.642	13.222				58.503	0.85	
SC2008-3	200808	298-301	No	3.191	0.000	3.088	0.789					1.767	0.92	1.823
			Yes	5.023	0.000	6.803	1.063					3.222	1.00	
SC2008-4	200808	44, 305-306	No	28.965	19.631	14.127						20.908	0.36	1.728
			Yes	47.944	35.336	25.083						36.121	0.32	
SC2008-5	200808	358, 368-369	No	47.832	130.638	3.028						60.499	1.07	1.996
			Yes	90.361	266.091	5.874						120.776	1.10	
SC2008-6	200808	67-70	No	68.850	62.099	24.765	9.882					41.399	0.69	1.687
			Yes	117.492	105.797	37.361	18.642					69.823	0.70	
											Mean	29.638	1.077	1.565

Table A30. Calculations to predict effects of dome shaped survey selectivity on efficiency corrected swept-area biomass estimates for surfclams 120+ mm SL based on all 21 actual commercial depletion experiments with set up tows by the *R/V Delaware II*. Set up tow details are given for use elsewhere. Information from Table A29 is used in these calculations.

Experiment Name	Survey set up biomass density (kg per standard tow) 120+ mm SL										Ratio efficiency corrected swept area bomass with and without assuming dome shaped selectivity
	Tow 1	Tow 2	Tow 3	Tow 4	Tow 5	Tow 6	Tow 7	Tow 8	Mean biomas density (b or b*)	CV	
SC1997-2	1.17485	2.81794	1.2596	1.58652	0.79793	2.26561	5.99174	2.89293	2.348	0.708	0.772
	1.19017	2.84189	1.28994	1.59123	0.79838	2.31165	5.99719	3.11482	2.392	0.699	
SC1997-3	0	0.86331	0.09428	0.14413	3.1936	1.48921	7.67058	4.11179	2.196	1.222	0.878
	0	0.86341	0.09458	0.14414	3.23642	1.55237	7.67638	4.17731	2.218	1.213	
SC1997-5	4.36841	0.29387	0	0	0	1.19392	1.02917	4.03984	1.366	1.329	0.757
	4.5133	0.61727	0	0	0	1.24603	1.04511	4.04435	1.433	1.273	
SC1999-2	9.32059	4.43466	9.49393	4.53104					6.945	0.410	0.914
	16.00883	7.42478	15.01543	7.71542					11.541	0.399	
SC1999-4	9.94403	5.01466	5.4824	10.12495					7.642	0.363	0.833
	12.22628	5.89088	6.91095	12.00189					9.258	0.359	
SC1999-6	9.67779	13.75515	3.01192	1.44464					6.972	0.826	0.880
	11.2486	17.21284	4.00893	1.80316					8.568	0.821	
SC1999-7	9.74365	3.58978	4.94414						6.093	0.531	0.856
	11.40007	4.70924	6.1844						7.431	0.473	
SC2002-2	15.24823	0	0	0	0				3.050	2.236	0.813
	17.60645	0	0	0	0				3.521	2.236	
SC2002-3	11.85864	1.98236	25.5799	0.14174	0				7.913	1.393	1.001
	23.54212	3.7987	49.35318	0.20095	0				15.379	1.388	
SC2002-4	14.75331	0	0	0	0				2.951	2.236	0.817
	14.84429	0	0	0	0				2.969	2.236	
SC2005-2	0.57474	4.79954	2.71874	0.79511	0	10.204			3.182	1.215	0.887
	0.95286	6.19493	3.66591	1.21376	0	14.03358			4.344	1.209	
SC2005-3	6.42795	0	5.12432	0	3.95586				3.102	0.955	0.935
	10.48768	0	8.96175	0	5.56445				5.003	0.980	
SC2005-4	5.76815	18.16377	0	5.74365	0				5.935	1.250	0.846
	7.09408	21.36932	0	6.72525	0				7.038	1.240	
SC2005-5	6.01691	8.87164	3.92568	0	6.75585	0			4.262	0.859	0.870
	7.52467	11.01364	4.97556	0	8.76345	0			5.380	0.855	
SC2005-6	5.55319	6.18964	6.64017	4.62904	6.27213	4.91524			5.700	0.141	0.756
	5.75765	6.36886	7.27015	4.73744	6.46804	5.20181			5.967	0.155	
SC2008-1	14.74444	23.61123	34.94362	9.45938	4.40948				17.434	0.694	0.932
	26.72091	43.077	61.61151	16.18006	7.7019				31.058	0.695	
SC2008-2	14.83423	13.65604	5.91768	2.26072	1.98458				7.731	0.797	0.885
	22.5226	20.48331	7.90685	3.72814	2.56615				11.441	0.824	
SC2008-3	0.94432	0.13917	1.26496	1.03247					0.845	0.579	0.711
	1.22719	0.13949	1.91408	1.1028					1.096	0.667	
SC2008-4	6.07713	4.69383	3.05753						4.609	0.328	0.893
	9.12357	7.28332	4.91975						7.109	0.296	
SC2008-5	8.28371	23.31151	0.50443						10.700	1.084	0.988
	15.30413	46.97563	1.00714						21.096	1.115	
SC2008-6	14.83423	13.65604	5.91768	2.26072					9.167	0.662	0.884
	22.5226	20.48331	7.90685	3.72814					13.660	0.677	
										mean	0.862

Table A31. Basecase KLAMZ model estimates for the entire surfclam stock. CVs were estimated using the delta method).

Year	Biomass (1000 mt)	CV	Recruitment (1000 mt)	CV	Fishing mortality (y^{-1})	CV
1981	831	0.10	NA	NA	0.0263	0.10
1982	862	0.08	103	0.15	0.0278	0.08
1983	889	0.08	101	0.15	0.0273	0.08
1984	916	0.08	104	0.15	0.0316	0.08
1985	935	0.08	102	0.15	0.0296	0.08
1986	954	0.09	104	0.14	0.0301	0.09
1987	973	0.10	106	0.14	0.0255	0.10
1988	988	0.11	102	0.14	0.0263	0.11
1989	1,003	0.11	105	0.14	0.0243	0.12
1990	1,021	0.12	109	0.14	0.0260	0.12
1991	1,029	0.13	104	0.14	0.0216	0.13
1992	1,045	0.13	109	0.14	0.0228	0.13
1993	1,059	0.13	112	0.14	0.0217	0.14
1994	1,070	0.14	109	0.14	0.0215	0.14
1995	1,082	0.14	112	0.13	0.0190	0.14
1996	1,088	0.14	107	0.13	0.0191	0.14
1997	1,090	0.14	105	0.13	0.0179	0.14
1998	1,092	0.14	106	0.13	0.0176	0.15
1999	1,086	0.15	98	0.13	0.0190	0.15
2000	1,074	0.15	95	0.13	0.0194	0.15
2001	1,059	0.15	94	0.13	0.0220	0.15
2002	1,037	0.15	89	0.13	0.0245	0.15
2003	1,012	0.15	87	0.13	0.0262	0.15
2004	984	0.15	84	0.13	0.0261	0.15
2005	955	0.15	82	0.13	0.0235	0.16
2006	931	0.15	82	0.13	0.0269	0.16
2007	905	0.16	81	0.13	0.0293	0.16
2008	878	0.16	80	0.13	0.0272	0.16
Min	831	0.08	80	0.13	0.0176	0.08
Median	1,007	0.14	103	0.13	0.0250	0.14
Mean	995	0.13	99	0.14	0.0243	0.13
Max	1,092	0.16	112	0.15	0.0316	0.16

Table A32. Changes in KLAMZ model data and configuration ("Steps") responsible for differences between basecase biomass estimates and biomass estimates in the last assessment (NEFSC 2007).

Year	NEFSC (2007)	Updated model old data (step 1)	"Bad" tows and borrow from 2008 (steps 2&3)	New SLMWT (step 4)	New efficiency (step 5)	Logistic survey selectivity (step 6)	One new growth curve for all years (step 7)	Two new growth curves before/after 1994 (step 8)	Data through 2008 (step 9)	Smooth growth parameters (step 10)	Dome shaped survey selectivity (step 11)	Basecase (step 12)
1981	1,020	1,020	997	911	824	824	1,454	795	809	789	817	831
1982	1,036	1,036	1,013	928	840	840	1,479	808	852	837	844	862
1983	1,059	1,059	1,037	954	866	866	1,441	830	891	881	867	889
1984	1,083	1,083	1,066	980	892	892	1,402	852	929	925	889	916
1985	1,141	1,141	1,122	1,034	946	946	1,391	902	965	965	908	935
1986	1,225	1,225	1,208	1,116	1,026	1,026	1,408	977	1,003	1,006	930	954
1987	1,271	1,271	1,251	1,157	1,070	1,070	1,384	1,007	1,038	1,044	949	973
1988	1,290	1,290	1,268	1,175	1,089	1,089	1,340	1,014	1,075	1,082	972	988
1989	1,289	1,289	1,266	1,173	1,089	1,089	1,284	1,005	1,108	1,115	992	1,003
1990	1,285	1,285	1,260	1,168	1,086	1,086	1,232	992	1,146	1,152	1,016	1,021
1991	1,283	1,283	1,254	1,162	1,083	1,083	1,186	980	1,185	1,188	1,041	1,029
1992	1,290	1,290	1,261	1,169	1,089	1,089	1,159	985	1,232	1,229	1,071	1,045
1993	1,476	1,476	1,466	1,365	1,266	1,266	1,317	1,183	1,286	1,277	1,106	1,059
1994	1,613	1,613	1,620	1,506	1,396	1,396	1,429	1,309	1,346	1,331	1,145	1,070
1995	1,709	1,709	1,716	1,595	1,472	1,472	1,487	1,392	1,392	1,373	1,177	1,082
1996	1,780	1,780	1,784	1,659	1,525	1,525	1,526	1,450	1,427	1,407	1,203	1,088
1997	1,842	1,842	1,853	1,721	1,581	1,581	1,574	1,505	1,448	1,430	1,220	1,090
1998	1,824	1,824	1,833	1,703	1,564	1,564	1,541	1,483	1,449	1,432	1,224	1,092
1999	1,799	1,799	1,809	1,682	1,544	1,544	1,510	1,460	1,434	1,420	1,215	1,086
2000	1,723	1,723	1,735	1,613	1,479	1,479	1,434	1,393	1,402	1,390	1,193	1,074
2001	1,628	1,628	1,642	1,527	1,399	1,399	1,345	1,311	1,358	1,349	1,162	1,059
2002	1,531	1,531	1,550	1,440	1,318	1,318	1,261	1,231	1,304	1,297	1,121	1,037
2003	1,415	1,415	1,445	1,343	1,227	1,227	1,168	1,141	1,244	1,239	1,074	1,012
2004	1,292	1,292	1,342	1,246	1,136	1,136	1,080	1,051	1,181	1,177	1,024	984
2005	1,170	1,170	1,243	1,156	1,054	1,054	995	972	1,119	1,115	973	955
2006									1,063	1,059	927	931
2007									1,008	1,004	881	905
2008									956	951	837	878
Min	1,020	1,020	997	911	824	824	995	795	809	789	817	831
Average	1,403	1,403	1,402	1,299	1,194	1,195	1,353	1,121	1,166	1,159	1,028	995
Median	1,290	1,290	1,268	1,175	1,089	1,089	1,391	1,014	1,163	1,164	1,020	1,007
Max	1,842	1,842	1,853	1,721	1,581	1,581	1,574	1,505	1,449	1,432	1,224	1,092

Table A33. Decision table analysis showing probabilities of a simulated surfclam stock with total biomass (120+ mm) at or lower than the target level (B_{Target}=B_{1999}/2), at or lower than the threshold level ($B_{Threshold}$=B_{Target}/2), and with fishing mortality rates at or higher than the threshold level ($F_{Threshold}$=M) during 2015, assuming nine states of nature and four possible management approaches. States of nature considered are ranked in order of probability as least, less and most likely. The column "Pattern ID for catchability" is to help make comparisons at the same survey dredge catchability over the range of natural mortality rates. For example, the pattern with horizontal bars identifies scenarios with low survey catchability at all natural mortality levels.

States of nature			Management actions				
Natural mortality	Survey dredge catchability	Probability for state of nature	FMP minimum	Industry estimate	FMP maximum	Fmsy proxy	Pattern ID for dredge catchability
Probability of stock biomass below B_{MSY} proxy target level in 2015							
Low	Low	Least	0	0	0	0.612	
Low	Medium	Less	0	0	0	0.982	
Low	High	Least	0	0	0.004	1	
Medium	Low	Less	0	0	0	0.91	
Medium	Medium	Most	0	0	0.002	0.952	
Medium	High	Less	0.006	0.012	0.014	0.998	
High	Low	Least	0	0	0	0.618	
High	Medium	Less	0	0.002	0.002	0.924	
High	High	Least	0	0.002	0.018	0.984	
Probability of stock biomass below $B_{Threshold}$ level in 2015							
Low	Low	Least	0	0	0	0	
Low	Medium	Less	0	0	0	0	
Low	High	Least	0	0	0	0.894	
Medium	Low	Less	0	0	0	0	
Medium	Medium	Most	0	0	0	0.002	
Medium	High	Less	0	0	0	0.268	
High	Low	Least	0	0	0	0	
High	Medium	Less	0	0	0	0	
High	High	Least	0	0	0	0.294	
Probability of overfishing in 2015							
Low	Low	Least	0	0	0	0.908	
Low	Medium	Less	0	0	0	1	
Low	High	Least	0	0	0	1	
Medium	Low	Less	0	0	0	0.312	
Medium	Medium	Most	0	0	0	0.948	
Medium	High	Less	0	0	0	1	
High	Low	Least	0	0	0	0.002	
High	Medium	Less	0	0	0	0.196	
High	High	Least	0	0	0	0.996	