Appendix O. Ocean pout

Appendix Tables and Figures by S.E. Wigley, L. Col, and C.M. Legault

Appendix Table O1. Number of commercial lengths (individual fish measured) and number of samples for Ocean pout collected during 1969 to 2007, by calendar quarter.

Year	Q1	Q2	Q3	Q4	Total	# of Samples
1969					0	
1970					0	
1971					0	
1972					0	
1973					0	
1974					0	
1975					0	
1976					0	
1977					0	
1978					0	
1979					0	
1980					0	
1981					0	
1982					0	
1983					0	
1984		592			592	5
1985	670	335			1005	9
1986	780	458			1238	11
1987	1477	717			2194	19
1988	1093	805		106	2004	17
1989	1283	864			2147	17
1990	1006	112			1118	12
1991	1044	259		93	1396	14
1992	402	181			583	6
1993	93				93	1
1994					0	1
1995		76			76	1
1996				17	17	1
1997					0	0
1998					0	0
1999					0	0
2000					0	0
2001					0	0
2002	109				109	1
2003	136	76			212	4
2004	37				37	1
2005					0	0
2006	133	54			187	4
2007	167	11			178	3

Five commercial age samples have been obtained: 28 fish in 1985; 29 fish in 1989; 53 fish in 1991(from 2 samples); and 21 fish in 1992.

Appendix Table O2. Number of observed trips and combined discard ratio of Ocean pout discards to kept of all species for selected fleets, 1989 – 2007 using NEFOP data.

	Large-mesh Otter Trawl		Small-mesh Otter Trawl		Gillnet		Scallop Dredge	
YEAR	OB trips	d/k ratio	OB trips	d/k ratio	OB trips	d/k ratio	OB trips	d/k ratio
1989	34	0.07836	91	0.06529	67	0.00001		
1990	43	0.11079	55	0.01436	84	0.00014		
1991	56	0.04205	127	0.04462	448	0.00028		
1992	58	0.01583	74	0.00543	599	0.00023	13	0.00177
1993	27	0.01606	23	0.00374	420	0.00024	20	0.00457
1994	28	0.00792	17	0.01852	195	0.00030	18	0.00200
1995	74	0.00890	77	0.00456	182	0.00004	22	0.00026
1996	44	0.00840	59	0.00356	136	0.00005	35	0.00087
1997	26	0.00922	60	0.00074	152	0.00016	26	0.00075
1998	17	0.01144	34	0.00075	209	0.00001	23	0.00138
1999	33	0.01458	53	0.00123	122	0.00023	28	0.00056
2000	93	0.00572	43	0.00058	137	0.00059	250	0.00012
2001	150	0.00827	59	0.00101	92	0.00009	64	0.00009
2002	197	0.00945	101	0.00111	125	0.00020	84	0.00004
2003	352	0.00656	106	0.00150	418	0.00017	91	0.00008
2004	563	0.00375	312	0.00163	971	0.00014	213	0.00001
2005	1363	0.00299	358	0.00293	787	0.00008	268	0.00002
2006	639	0.00269	185	0.00175	221	0.00003	199	0.00002
2007	724	0.00358	218	0.00126	259	0.00005	288	0.00003
mean 2004-2006		0.00314		0.00210		0.00009		0.00002

Appendix Table O3. Ocean pout discards (mt) and coefficient of variation from the large-mesh otter trawl, small-mesh otter trawl, gillnet, and scallop dredge fleets, 1989 – 2007. Discards were derived using a combined ratio estimator of Ocean pout discard to kept of all species.

	Large-mesh Otter Trawl		Small-mesh Otter Trawl		Gillnet		Scallop Dredge		Total	
YEAR	mt	CV	mt	CV	mt	CV	mt	CV	mt	CV
1989	4912.2	0.33	2488.3	0.50	0.1	1.50			*7400.6*	0.28
1990	8887.3	0.30	525.4	0.42	1.8	1.26			*9414.5*	0.29
1991	3189.1	0.41	1713.2	0.37	3.5	0.58			*4905.9*	0.30
1992	1147.6	0.36	192.3	0.42	3.1	0.27	177.1	0.570	1520.0	0.29
1993	941.5	0.28	146.6	0.62	3.9	0.39	254.0	0.340	1345.9	0.21
1994	445.0	0.40	784.8	4.51	4.9	0.85	46.1	0.525	1280.9	2.77
1995	417.9	0.34	146.2	0.48	0.8	0.65	8.6	0.451	573.5	0.28
1996	448.7	0.39	137.6	1.21	1.1	0.84	41.2	0.722	628.6	0.39
1997	456.3	0.53	29.3	0.49	3.2	0.59	32.6	0.290	521.5	0.46
1998	595.7	0.63	30.2	0.57	0.3	0.80	46.7	0.748	672.9	0.56
1999	701.5	0.30	45.6	0.69	4.4	0.57	34.6	0.679	786.1	0.27
2000	310.3	0.64	19.5	0.51	8.4	0.75	9.6	0.265	347.8	0.57
2001	490.0	0.36	30.4	0.43	1.3	0.56	9.8	0.413	531.6	0.34
2002	539.4	0.33	28.0	0.34	3.4	0.54	5.0	0.561	575.7	0.31
2003	379.7	0.17	34.6	0.40	3.1	0.34	9.3	0.276	426.8	0.15
2004	248.1	0.12	38.8	0.29	2.7	0.34	1.2	0.544	290.7	0.11
2005	140.5	0.09	56.2	0.21	1.0	0.62	3.1	0.196	200.8	0.09
2006	113.3	0.12	65.0	0.54	0.5	0.77	3.8	0.210	182.5	0.21
2007	143.4	0.11	26.3	0.44	0.8	0.78	4.3	0.276	175.0	0.11

Note: 1989 – 1991 total discard do not include scallop discards.

Appendix Table O4. Ocean pout discards (mt) from the large-mesh otter trawl, small-mesh otter trawl, gillnet from 1968 - 1988 and scallop dredge fleets from 1968 – 1991 based on the survey scale method.

YEAR	Large-mesh Otter Trawl	Small-mesh Otter Trawl	Gillnet	Scallop Dredge	Total
1968		3470.4	1.0	5.5	3476.9
1969		3125.1	0.9	3.5	3129.5
1970		2761.6	0.9	3.2	2765.8
1971		2018.4	0.6	2.5	2021.5
1972		1495.9	0.8	1.4	1498.2
1973		1292.2	0.6	1.4	1294.2
1974		1131.6	0.7	1.6	1133.9
1975		714.8	0.3	1.5	716.6
1976		520.0	0.2	2.0	522.2
1977		922.9	0.4	4.7	928.1
1978		1369.5	1.3	6.9	1377.6
1979		1499.2	1.9	8.1	1509.3
1980		2002.6	5.1	8.3	2015.9
1981		2724.3	5.5	13.5	2743.2
1982	2110.5	2308.1	6.3	14.6	4439.5
1983	3308.0	1161.2	6.0	13.4	4488.7
1984	2988.9	687.0	7.0	9.3	3692.2
1985	2506.7	636.8	7.4	10.1	3161.0
1986	2420.9	851.0	10.4	14.1	3296.4
1987	2002.6	597.1	7.5	16.5	2623.6
1988	1681.5	541.4	6.7	14.0	2243.6
1989				14.3	
1990				19.5	
1991				19.7	

Note: Regulatory otter trawl mesh size prior to 1982 was less than 5.5 inches;
1989 – 1991 scallop dredge discards were estimated using this method due to no observer coverage of this fleet.

Appendix Table O5. Stratified mean catch per tow in weight and numbers, mean length and individual average fish weight of Ocean pout in **NEFSC winter surveys** (strata 1-3, 5-7, 9-11, 13-14, 73-75), 1992-2007. *No vessel conversion factors applied.*

Year	Mean weight per tow (kg)	Mean number per tow	Individual average weight (kg)	Mean length (cm)
1992	34.64	47.29	0.733	51.9
1993	27.86	48.57	0.574	47.1
1994	9.18	15.28	0.601	47.1
1995	7.32	16.92	0.433	43.3
1996	9.68	17.13	0.565	47.2
1997	11.70	21.36	0.548	47.5
1998	4.77	12.63	0.378	40.4
1999	15.44	24.85	0.621	48.3
2000	8.46	18.14	0.466	44.6
2001	13.45	28.01	0.480	46.1
2002	7.94	12.05	0.659	51.1
2003	18.54	20.25	0.916	56.0
2004	9.58	12.89	0.744	49.6
2005	2.84	5.61	0.506	41.3
2006	3.09	7.44	0.415	40.3
2007	1.72	2.43	0.709	48.9

Appendix Table O6. Stratified mean catch per tow in weight and numbers, individual average fish weight and mean length of Ocean pout in **Mass. inshore spring surveys** (strata 25-36), 1978-2007.

Year	Mean weight per tow (kg)	Mean number per tow	Individual average weight (kg)	Mean length (cm)
1978	42.00	107.39	0.391	38.8
1979	47.11	94.79	0.497	39.6
1980	34.42	60.13	0.572	42.9
1981	74.98	125.46	0.598	43.5
1982	61.39	90.50	0.678	47.2
1983	98.69	123.35	0.800	50.2
1984	85.25	147.25	0.579	45.0
1985	96.36	130.93	0.736	47.2
1986	28.46	62.62	0.454	39.4
1987	31.61	66.44	0.476	41.3
1988	26.18	56.71	0.462	39.7
1989	36.40	54.19	0.672	46.8
1990	25.04	38.19	0.656	47.0
1991	21.20	29.08	0.729	49.6
1992	42.43	59.02	0.719	48.5
1993	32.87	46.82	0.702	51.0
1994	22.34	36.73	0.608	46.9
1995	25.75	44.22	0.582	46.5
1996	14.03	26.06	0.538	45.6
1997	13.05	28.04	0.465	41.9
1998	5.56	8.45	0.658	49.7
1999	5.42	8.61	0.630	46.5
2000	16.35	22.22	0.736	49.8
2001	13.27	19.55	0.679	49.9
2002	6.27	10.47	0.599	48.1
2003	4.95	8.42	0.588	47.8
2004	7.66	9.27	0.827	53.0
2005	7.48	9.51	0.787	53.4
2006	6.22	9.03	0.689	49.6
2007	5.58	8.44	0.661	48.6

Appendix Table O7. Stratified mean catch per tow in weight and numbers, individual average fish weight and mean length of Ocean pout in **NEFSC spring surveys with conversion factors applied**, in the Gulf of Maine - Mid-Atlantic region (strata 1-26, 73-76), 1968-2007; 2008 preliminary.

with vessel conversion factors

Year	Mean weight per tow (kg)	Mean number per tow	Individual average weight (kg)	Mean length (cm)
1968	5.446	6.768	0.805	51.1
1969	6.154	8.629	0.713	49.3
1970	5.143	6.133	0.839	51.9
1971	2.195	3.135	0.700	50.2
1972	4.463	5.104	0.874	51.6
1973	2.753	3.618	0.761	49.3
1974	1.479	2.310	0.640	47.0
1975	1.293	1.358	0.952	53.4
1976	1.170	1.912	0.612	46.9
1977	3.461	6.201	0.558	44.7
1978	3.371	11.831	0.285	31.6
1979	1.096	3.695	0.297	34.9
1980	4.333	8.955	0.484	42.7
1981	5.247	9.891	0.530	42.7
1982	3.273	6.083	0.538	44.0
1983	4.236	5.076	0.835	50.5
1984	5.540	7.275	0.762	50.0
1985	6.494	9.011	0.721	48.7
1986	6.345	6.995	0.907	53.0
1987	2.686	3.065	0.876	51.7
1988	3.244	5.405	0.600	45.0
1989	1.926	3.726	0.517	44.0
1990	3.501	4.459	0.785	50.3
1991	2.610	3.917	0.666	49.7
1992	2.257	2.639	0.855	52.9
1993	3.084	3.546	0.870	53.4
1994	1.593	1.848	0.862	54.3
1995	1.916	2.525	0.759	50.5
1996	2.058	3.127	0.658	47.6
1997	1.632	2.069	0.789	52.4
1998	1.733	2.957	0.586	46.1
1999	2.561	3.340	0.767	50.2
2000	2.016	3.113	0.648	48.2
2001	2.798	3.748	0.746	51.6
2002	2.025	2.809	0.721	51.3
2003	1.903	2.043	0.931	55.4
2004	0.546	0.673	0.812	50.8
2005	0.526	0.854	0.616	45.9
2006	0.526	0.789	0.667	47.4
2007	0.477	1.076	0.443	42.9
2008	*0.424*	*0.839*	*0.505*	*43.9*
mean 1968-2007	2.878			
median 1968-2007	2.586			
median 1980 -1991	3.869			

Appendix Table O8. Relative F and randomization test results of eight formulations of AIM for Ocean pout: with and without vessel conversion factor applied to the survey biomass index and landings, catch, catch calculated using half of the estimated discard, and catch calculated using twice the estimated discard.

without vessel conversion factor

	Landings	Catch	Catch (0.5xDiscards)	Catch (2xDiscards)
Relative F	564460.60	0.02	0.01	0.03
5%percentile	0.00	0.00	0.00	0.00
95% percentile	745206700000.00	4085.19	43718.27	61560.40
Randomization Test				
Critical Value	0.042	-0.081	-0.086	-0.066
Significant Level	0.732	0.570	0.552	0.608

with vessel conversion factor

	Landings	Catch	Catch (0.5xDiscards)	Catch (2xDiscards)
Relative F	0.00	0.11	0.05	0.18
5%percentile	0.00	0.00	0.00	0.00
95% percentile	1043285000000.00	1316.51	2201.72	36624.88
Randomization Test				
Critical Value	-0.011	-0.153	-0.154	-0.139
Significant Level	0.626	0.391	0.372	0.438

Appendix Table O9a. Ocean pout input vectors used in LOSS model exploration.

Input vectors

Age	M	Mean weight at age	Maturity at age	Fishing Selectivity	Index Selectivity
1	0.2	0.001	0.1	0.01	0.5
2	0.2	0.008	0.5	0.1	1
3	0.2	0.022	1	0.5	1
4	0.2	0.045	1	1	1
5	0.2	0.075	1	1	1
6	0.2	0.112	1	1	1
7	0.2	0.153	1	1	1
8	0.2	0.199	1	1	1
9	0.2	0.247	1	1	1
10	0.2	0.297	1	1	1
11	0.2	0.347	1	1	1
12	0.2	0.397	1	1	1
13	0.2	0.446	1	1	1
14	0.2	0.494	1	1	1
15	0.2	0.54	1	1	1
16	0.2	0.584	1	1	1
17	0.2	0.626	1	1	1
18	0.2	0.665	1	1	1
19	0.2	0.702	1	1	1
20	0.2	0.737	1	1	1
21	0.2	0.769	1	1	1
22	0.2	0.799	1	1	1
23	0.2	0.827	1	1	1
24	0.2	0.852	1	1	1
25	0.2	0.876	1	1	1
26	0.2	0.898	1	1	1
27	0.2	0.918	1	1	1
28	0.2	0.936	1	1	1
29	0.2	0.953	1	1	1
30	0.2	0.969	1	1	1

Appendix Table O9b. Summary of LOSS model exploration run results for Ocean pout, with varying steepness, depletion (S1/S0) values and two initial stock sizes (200,000 and 500,000).

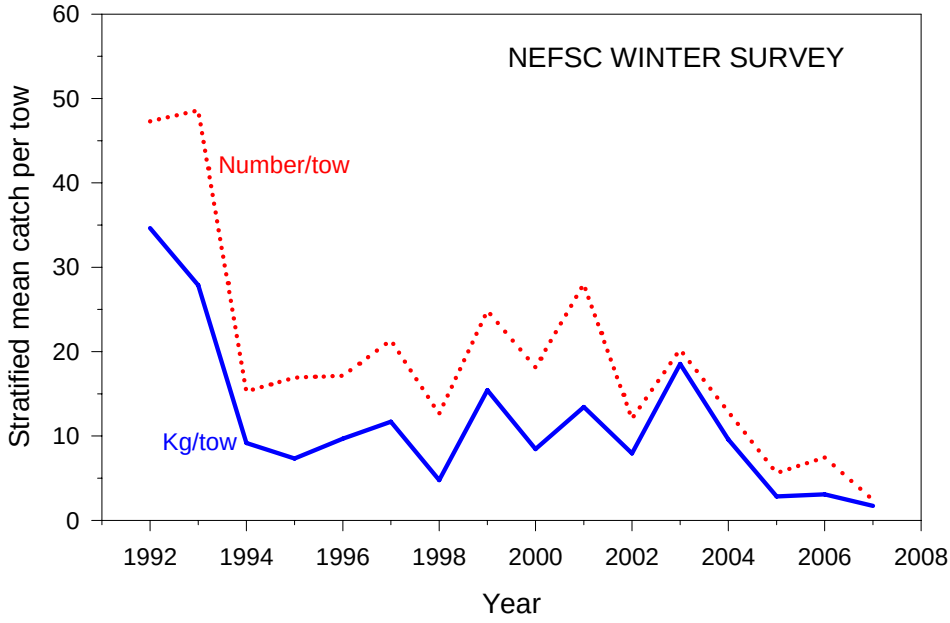
obj_fun	18.9304	18.9808	19.0364	19.0956	19.1582	19.1166	19.1019	19.103	18.9265	18.9272	18.9279	18.9292	18.9304	18.9316
likely_ind	18.9304	18.9808	19.0364	19.0956	19.1582	19.1166	19.1019	19.103	18.9265	18.9272	18.9279	18.9292	18.9304	18.9316
likely_catchwt	0.00	2.98E-10	0.00	6.45E-10	7.43E-10	2.68E-07	3.07E-07	2.45E-07	1.83E-10	1.72E-10	1.61E-10	1.43E-10	0.00	1.12E-10
Fpen	0	0	0	0	0	0	0	0	0	0	0	0	0	0
rmse	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
sigma	0.566	0.595012	0.629	0.667358	0.710524	0.68153	0.67157	0.672339	0.563567	0.563968	0.564354	0.565088	0.566	0.566417
S1/S0	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	**0.20**	**0.30**	**0.40**	**0.60**	**0.80**	**1.00**
S0	215237	164421	141935	128870	120142	296994	474431	437114	685103	475182	370631	266613	215237	185100
R0	302182	230839	199269	180927	168673	416965	666078	613687	961851	667133	520348	374311	302182	259871
steepness	**0.25**	**0.35**	**0.45**	**0.55**	**0.65**	**0.75**	**0.85**	**0.95**	0.25	0.25	0.25	0.25	0.25	0.25
Fmsy	0.016	0.042	0.066	0.088	0.109	0.131	0.155	0.181	0.016	0.016	0.016	0.016	0.016	0.016
SSBmsy	102380	71907	57774	49144	43060	100107	150123	129231	325877	226026	176295	126817	102380	88045
Fratio	0.33	0.15	0.10	0.07	0.05	0.01	0.00	0.00	0.39	0.38	0.37	0.35	0.33	0.31
SSBratio	0.51	0.60	0.71	0.86	1.05	2.75	3.04	3.25	0.13	0.20	0.26	0.38	0.51	0.62

obj_fun	18.9586	19.041	19.1067	19.1291	3525.1	19.1402	19.1412	3490.36	3.01E+08	1.71E+08	85724800	8413490	18.9586	18.9393
likely_ind	18.9586	19.041	19.1067	19.1291	19.1375	19.1402	19.1412	19.1415	20.2771	20.2588	20.2339	20.0103	18.9586	18.9393
likely_catchwt	7.72E-10	1.05E-10	5.643E-11	4.57E-11	3505.96	3.79E-11	3.56E-11	3471.22	3.01E+08	1.71E+08	85723100	8413470	7.72E-10	8.55E-11
Fpen	0	0	0	0	0	0	0	0	44745.3	22893.7	1595.37	1.3386	0	0
rmse	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
sigma	0.581939	0.631918	0.67486	0.69008	0.695939	0.697847	0.698529	0.698706	2.17506	2.13567	2.08313	1.66583	0.581939	0.570796
S1/S0	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	**0.20**	**0.30**	**0.40**	**0.60**	**0.80**	**1.00**
S0	**200,000**	**200,000**	**200,000**	**200,000**	**200,000**	**200,000**	**200,000**	**200,000**	**200,000**	**200,000**	**200,000**	**200,000**	**200,000**	**200,000**
R0	280790	280790	280790	280790	280790	280790	280790	280790	280790	280790	280790	280790	280790	280790
steepness	**0.25**	**0.35**	**0.45**	**0.55**	**0.65**	**0.75**	**0.85**	**0.95**	0.25	0.25	0.25	0.25	0.25	0.25
Fmsy	0.016	0.042	0.066	0.088	0.109	0.131	0.155	0.181	0.016	0.016	0.016	0.016	0.016	0.016
SSBmsy	95132	87467	81409	76269	71681	67414	63286	59129	95132	95132	95132	95132	95132	95132
Fratio	0.53	0.06	0.03	0.02	0.01	0.01	0.01	0.01	319.93	320.05	320.09	320.53	0.53	0.23
SSBratio	0.34	1.19	1.75	2.11	2.38	2.61	2.83	3.08	0.00	0.00	0.00	0.00	0.34	0.78

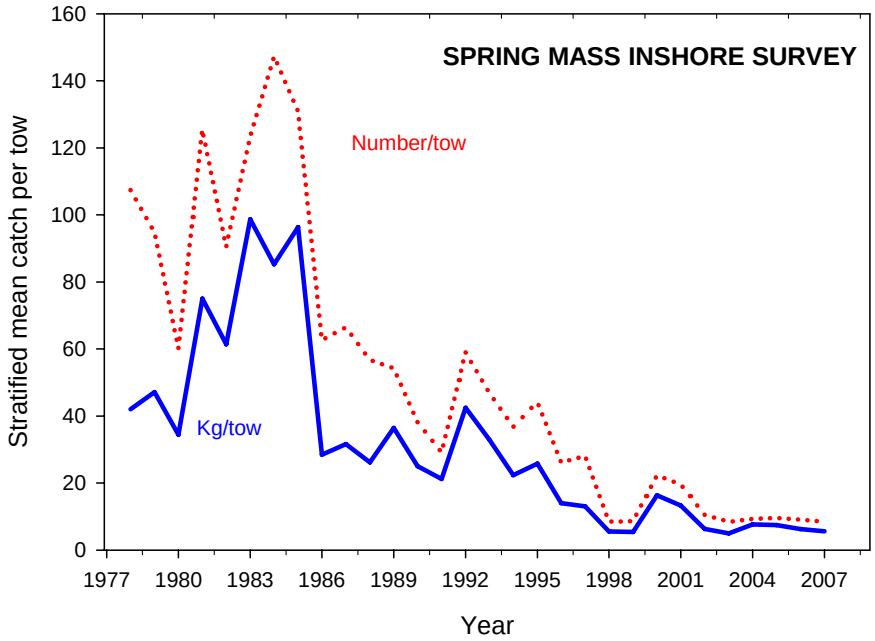
obj_fun	19.0478	19.0928	19.1015	19.1029	55473700	19.1016	24470	59.5129	18789000	18.9398	19.0255	19.0556	19.0478	2278070
likely_ind	19.0478	19.0928	19.1015	19.1029	19.0952	19.1016	19.1008	19.1	20.1336	18.9398	19.0255	19.0556	19.0478	19.0346
likely_catchwt	7.87E-12	4.79E-12	4.119E-12	3.8E-12	55473700	3.46E-12	24450.9	40.4129	18789000	1.81E-10	6.44E-11	1.59E-11	7.87E-12	2278050
Fpen	0	0	0	0	0	0	0	0	2.0263	0	0	0	0	0
rmse	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
sigma	0.636255	0.665497	0.67135	0.672252	0.667089	0.67141	0.670826	0.670305	1.88439	0.571097	0.622227	0.641219	0.636255	0.627871
S1/S0	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	**0.20**	**0.30**	**0.40**	**0.60**	**0.80**	**1.00**
S0	**500,000**	**500,000**	**500,000**	**500,000**	**500,000**	**500,000**	**500,000**	**500,000**	**500,000**	**500,000**	**500,000**	**500,000**	**500,000**	**500,000**
R0	701976	701976	701976	701976	701976	701976	701976	701976	701976	701976	701976	701976	701976	701976
steepness	**0.25**	**0.35**	**0.45**	**0.55**	**0.65**	**0.75**	**0.85**	**0.95**	0.25	0.25	0.25	0.25	0.25	0.25
Fmsy	0.016	0.042	0.066	0.088	0.109	0.131	0.155	0.181	0.016	0.016	0.016	0.016	0.016	0.016
SSBmsy	237831	218667	203521	190673	179203	168535	158214	147823	237831	237831	237831	237831	237831	237831
Fratio	0.05	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.27	0.12	0.06	0.05	0.04
SSBratio	1.43	1.95	2.24	2.46	2.63	2.84	3.04	3.27	0.00	0.26	0.61	1.10	1.43	1.68

Appendix Table O10. NEFSC spring survey index(kg/tow), total catch (‘000 mt), 3yr moving average of spring survey biomass index, relative exploitation rate (catch/ 3yr average of spring survey biomass index) for Ocean pout, 1968 – 2007; preliminary 2008.
With vessel conversion factors applied.

Year	NEFSC Spring Index kg/tow	Total Catch ('000, mt)	3 year moving average (kg/tow)	Exploitation ratio (catch/ 3yr avg index)
1968	5.446	16.5379	5.800	2.851
1969	6.154	30.1015	5.581	5.394
1970	5.143	9.9378	4.497	2.210
1971	2.195	7.9315	3.934	2.016
1972	4.463	4.8492	3.137	1.546
1973	2.753	6.6642	2.898	2.299
1974	1.479	4.8659	1.842	2.642
1975	1.293	0.9936	1.314	0.756
1976	1.170	1.2002	1.975	0.608
1977	3.461	1.9871	2.667	0.745
1978	3.371	2.4126	2.643	0.913
1979	1.096	2.1813	2.933	0.744
1980	4.333	2.3659	3.559	0.665
1981	5.247	2.9942	4.284	0.699
1982	3.273	4.7605	4.252	1.120
1983	4.236	4.8967	4.350	1.126
1984	5.540	5.0162	5.423	0.925
1985	6.494	4.6650	6.126	0.761
1986	6.345	4.0984	5.175	0.792
1987	2.686	4.8086	4.092	1.175
1988	3.244	4.0546	2.619	1.548
1989	1.926	8.7289	2.890	3.020
1990	3.501	10.7460	2.679	4.011
1991	2.610	6.3496	2.789	2.277
1992	2.257	1.9940	2.650	0.752
1993	3.084	1.5779	2.311	0.683
1994	1.593	1.4769	2.198	0.672
1995	1.916	0.6385	1.856	0.344
1996	2.058	0.6796	1.869	0.364
1997	1.632	0.5545	1.808	0.307
1998	1.733	0.6899	1.975	0.349
1999	2.561	0.8041	2.103	0.382
2000	2.016	0.3668	2.458	0.149
2001	2.798	0.5492	2.280	0.241
2002	2.025	0.5879	2.242	0.262
2003	1.903	0.4524	1.491	0.303
2004	0.546	0.2960	0.992	0.298
2005	0.526	0.2048	0.533	0.384
2006	0.526	0.1875	0.510	0.368
2007	0.477	0.1785	0.475	0.375
2008	0.424			
mean 1968-2007	2.88		2.88	1.18
median 1968-2007	2.59		2.65	0.75
1980-91 median			4.17	1.12
1977-1985 median			4.25	0.76



Appendix Figure O1. Trends in mean catch per tow, in numbers and weight (kg) for Ocean pout in the NEFSC winter survey, 1992 – 2007.



Appendix Figure O2. Trends in mean catch per tow, in numbers and weight (kg) for Ocean pout in the Massachusetts inshore survey,1978 – 2007.

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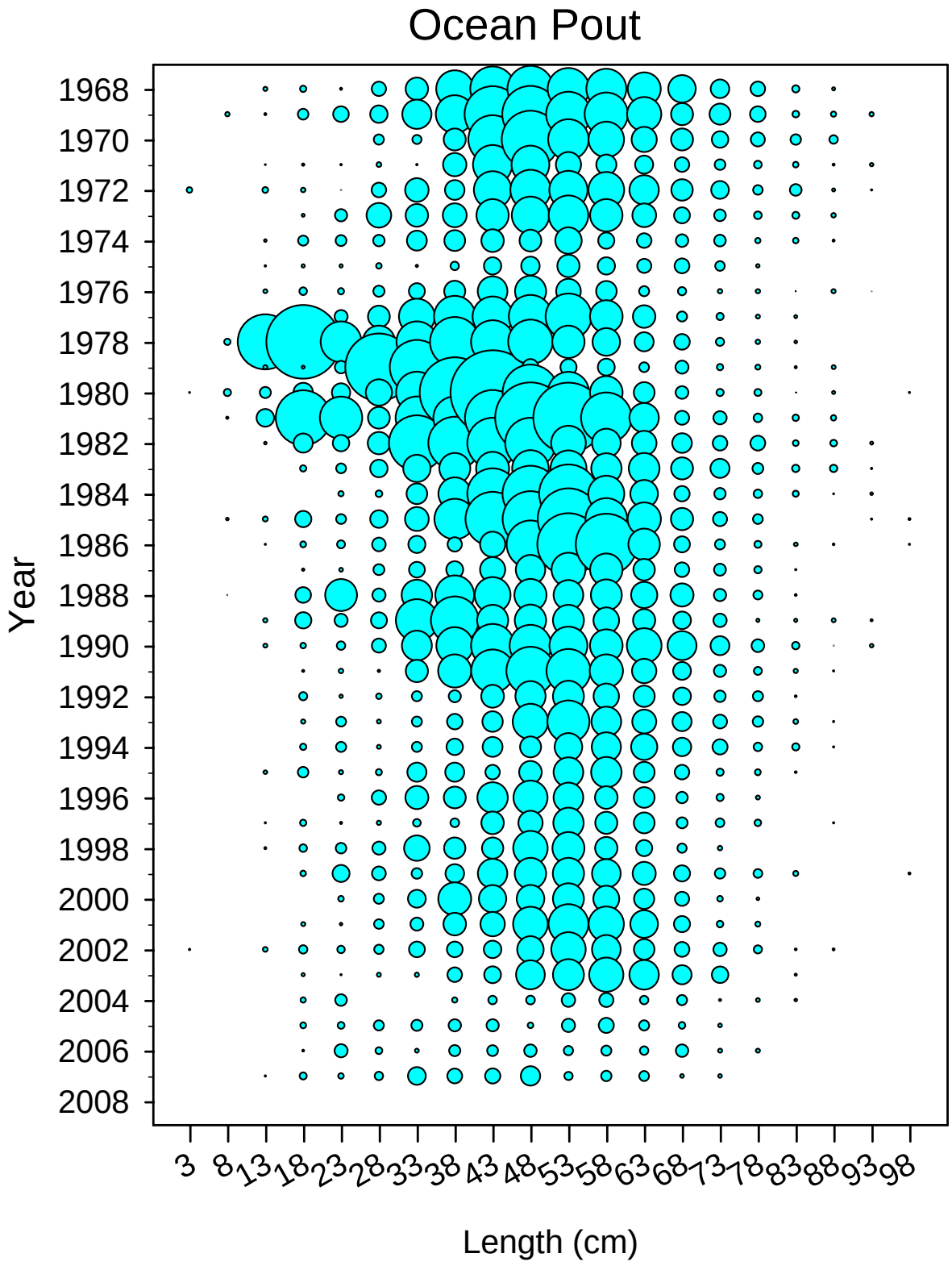
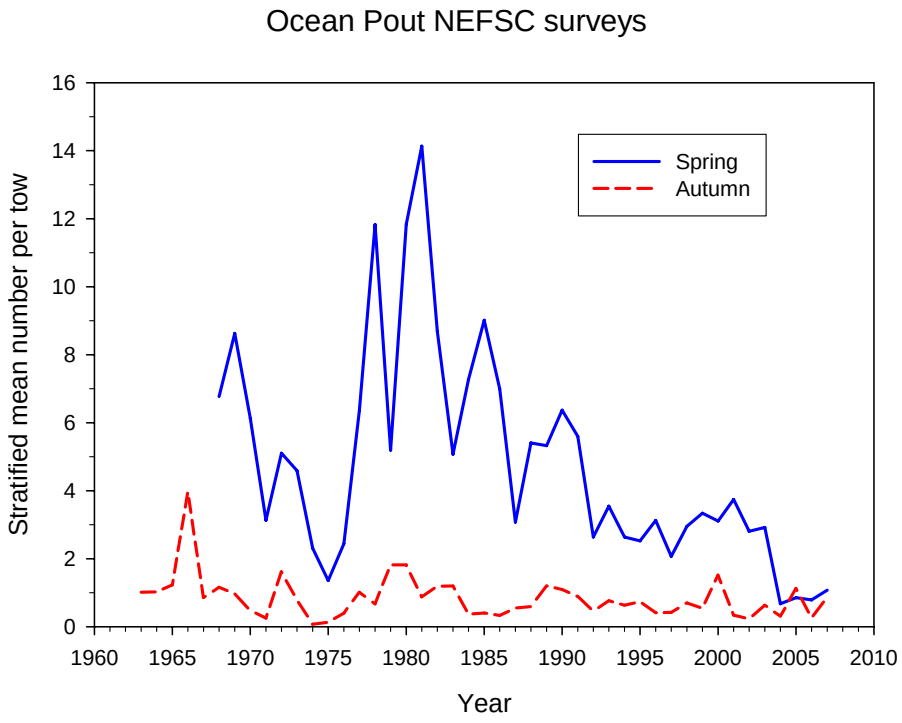
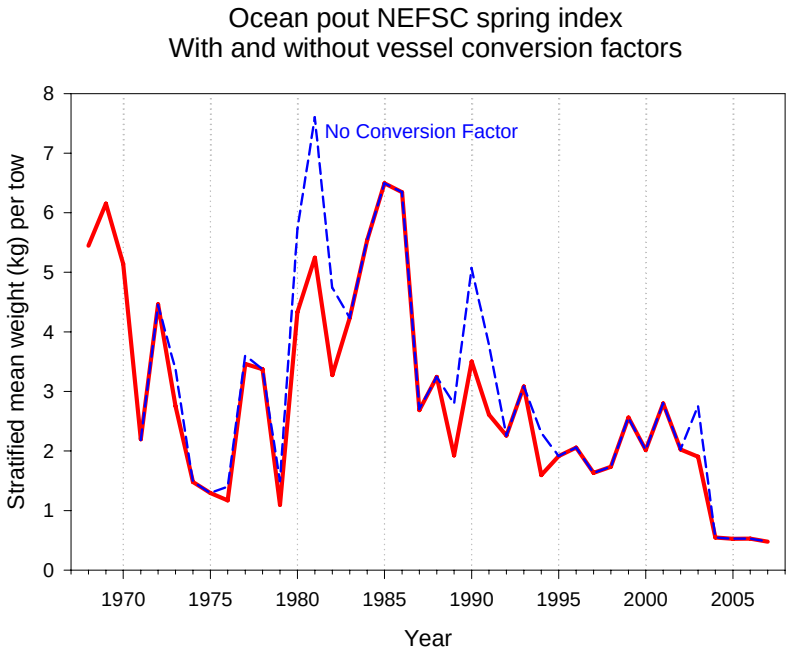


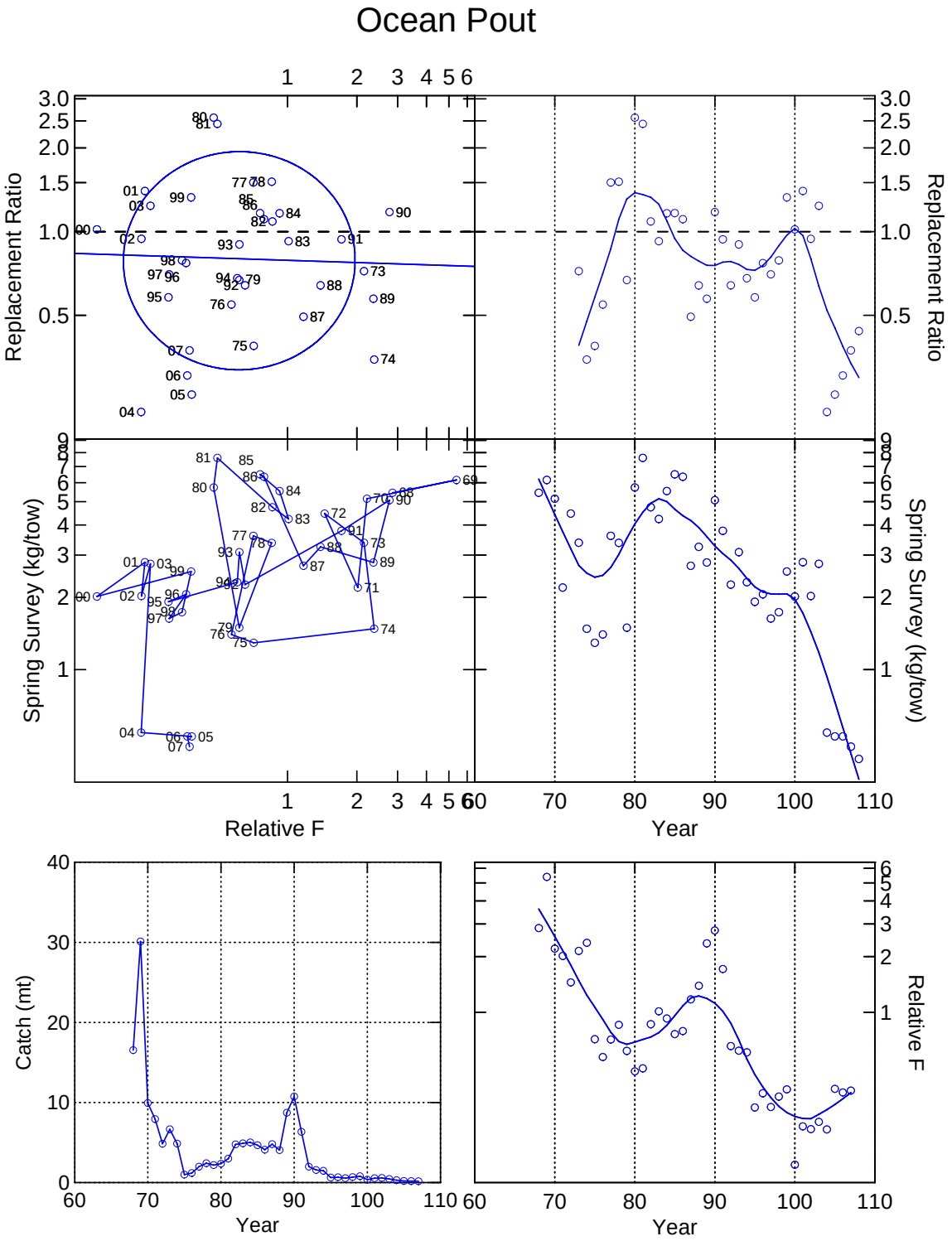
Appendix Figure O3. Stratified mean number per tow at length of Ocean pout from the NEFSC research vessel spring survey, 1968 to 2007, binned into 5 cm intervals.



Appendix Figure O4. Stratified mean number per tow of Ocean pout from NEFSC spring and autumn bottom trawl surveys, 1963 – 2007.



Appendix Figure O5. Stratified mean weight (kg) per tow of Ocean pout from NEFSC spring survey, 1968 – 2007, with and without vessel conversion factors applied.
[Note: R/V Delaware II underwent a refit in 1997].



Appendix Figure O6. Trends in relative biomass, total catch, fishing mortality rate indices (catch / survey index) and replacement ratios for Ocean pout. Relative F is computed as catch in year t divided by a 3 yr average of indices in year t-1, t, and t+1.