

Appendix A. ADAPT analysis of southern New England – Mid Atlantic yellowtail flounder.

Fisheries Assessment Toolbox Southern New England - Mid Atlantic Yellowtail Flounder - SAW36
2002 Run Number 6 10/21/02 1:07:24 PM

FACT Version 1.5.0

Southern New England - Mid Atlantic Yellowtail Flounder - SAW36 2002 1973 - 2002

Input Parameters and Options Selected

Natural mortality is a matrix below

Oldest age (not in the plus group) is 6

For all years prior to the terminal year (29), backcalculated
stock sizes for the following ages used to estimate

total mortality (Z) for age 6 : 3 4 5 6

This method for estimating F on the oldest age is generally used when a
flat-topped partial recruitment curve is thought to be characteristic of the stock.
F for age 7 + is then calculated from the following

ratios of F[age 7 +] to F[age 6]

1973	1
1974	1
1975	1
1976	1
1977	1
1978	1
1979	1
1980	1
1981	1
1982	1
1983	1
1984	1
1985	1
1986	1
1987	1
1988	1
1989	1
1990	1
1991	1
1992	1
1993	1
1994	1
1995	1
1996	1
1997	1
1998	1
1999	1
2000	1
2001	1

Stock size of the 7 + group is then calculated using
the following method: CATCH EQUATION

Partial recruitment estimate for 2002

1	0.01
2	0.12
3	0.58
4	1
5	1
6	1

Objective function is Sum w*(LOG(OBS)-LOG(PRED))**2

Indices normalized (by dividing by mean observed value)
before tuning to VPA stocksizes

Downweighting is None or Uniform

Biomass estimates (other than SSB) reflect mean stock sizes.

SSB calculated as in the NEFSC projection program

(see note below SSB table for description of the algorithm).

Initial estimates of parameters for the Marquardt algorithm
and lower and upper bounds on the parameter estimates:

Par.	Initial Est	Lower Bnd	Upper Bnd
N 2	1.00E+06	0.00E+00	1.00E+08
N 3	1.00E+06	0.00E+00	1.00E+08
N 4	1.00E+05	0.00E+00	1.00E+08
N 5	1.00E+05	0.00E+00	1.00E+08
q Fall1	1.00E-04	0.00E+00	1.00E-01
q Fall2	1.00E-04	0.00E+00	1.00E-01
q Fall3	1.00E-04	0.00E+00	1.00E-01
q Fall4	1.00E-04	0.00E+00	1.00E-01
q Fall5	1.00E-04	0.00E+00	1.00E-01
q Fall6	1.00E-04	0.00E+00	1.00E-01
q Fall7	1.00E-04	0.00E+00	1.00E-01
q Spring1	1.00E-04	0.00E+00	1.00E-01
q Spring2	1.00E-04	0.00E+00	1.00E-01
q Spring3	1.00E-04	0.00E+00	1.00E-01
q Spring4	1.00E-04	0.00E+00	1.00E-01
q Spring5	1.00E-04	0.00E+00	1.00E-01
q Spring6	1.00E-04	0.00E+00	1.00E-01
q Spring7	1.00E-04	0.00E+00	1.00E-01
q Winter1	1.00E-04	0.00E+00	1.00E-01
q Winter2	1.00E-04	0.00E+00	1.00E-01
q Winter3	1.00E-04	0.00E+00	1.00E-01
q Winter4	1.00E-04	0.00E+00	1.00E-01
q Winter5	1.00E-04	0.00E+00	1.00E-01
q Scall1	1.00E-04	0.00E+00	1.00E-01

The following indices of abundance are available

1	Fall1
2	Fall2
3	Fall3
4	Fall4
5	Fall5
6	Fall6
7	Fall7
8	Spring1
9	Spring2
10	Spring3
11	Spring4
12	Spring5
13	Spring6
14	Spring7
15	Winter1
16	Winter2
17	Winter3
18	Winter4
19	Winter5
20	Winter6
21	Winter7
22	Scall1

The Indices that will be used in this run are:

1	Fall1
2	Fall2
3	Fall3
4	Fall4
5	Fall5
6	Fall6
7	Fall7
8	Spring1
9	Spring2
10	Spring3
11	Spring4
12	Spring5
13	Spring6
14	Spring7
15	Winter1
16	Winter2
17	Winter3
18	Winter4
19	Winter5
20	Scall1

Obs Indices (before transvba.formation) by index and year; with Index means

	1973	1974	1975	1976	1977	1978	1979
Fall1	1.78	0.70	1.53	1.96	2.29	2.08	1.49
Fall2	1.75	1.19	0.42	4.20	1.44	4.77	3.28
Fall3	4.09	0.43	0.14	0.35	0.52	0.30	1.58
Fall4	2.32	1.64	0.22	0.05	0.04	0.24	0.24
Fall5	1.56	0.69	0.21	0.07	0.04	0.02	0.03
Fall6	0.77	0.30	0.05	0.19	0.04	0.01	0.03
Fall7	0.16	0.20	0.07	0.32	0.07	0.07	0.00
Spring1	0.84	0.51	0.36	0.02	1.62	2.68	1.00
Spring2	5.47	2.19	1.17	4.18	1.56	10.30	2.97
Spring3	14.75	2.61	0.41	0.54	2.76	1.79	1.60
Spring4	8.34	5.02	0.67	0.26	0.24	0.78	0.26
Spring5	6.43	2.89	0.71	0.25	0.15	0.25	0.12
Spring6	7.99	1.15	0.53	0.34	0.19	0.13	0.02
Spring7	1.17	1.46	0.35	0.13	0.23	0.29	0.04
Winter1	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Winter2	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Winter3	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Winter4	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Winter5	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Scall1	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1980	1981	1982	1983	1984	1985	1986
Fall1	1.15	9.51	2.04	1.92	1.44	0.87	0.61
Fall2	2.91	9.50	17.79	11.28	1.28	0.38	1.83
Fall3	0.76	1.25	4.39	5.59	1.53	0.13	0.52
Fall4	0.31	0.20	0.54	0.46	0.33	0.08	0.12
Fall5	0.00	0.10	0.22	0.04	0.00	0.00	0.03
Fall6	0.00	0.04	0.00	0.00	0.00	0.00	0.00
Fall7	0.00	0.00	0.00	0.03	0.00	0.00	0.00
Spring1	0.68	0.81	0.15	0.02	0.04	0.27	0.02
Spring2	6.35	18.60	17.33	5.33	0.45	1.61	2.89
Spring3	4.30	4.82	5.61	8.80	0.90	0.41	0.92
Spring4	2.68	2.50	1.41	0.60	2.11	0.48	0.24
Spring5	0.26	0.58	0.47	0.19	0.35	0.71	0.12
Spring6	0.07	0.11	0.14	0.00	0.26	0.14	0.02
Spring7	0.04	0.00	0.02	0.00	0.00	0.02	0.00
Winter1	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Winter2	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Winter3	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Winter4	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Winter5	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Scall1	0.00	0.00	0.36	0.26	0.18	0.47	0.02
	1987	1988	1989	1990	1991	1992	1993
Fall1	1.07	4.37	0.20	0.54	0.59	0.17	0.33
Fall2	0.45	0.31	10.49	1.85	0.24	0.02	0.03
Fall3	0.36	0.14	1.37	3.12	1.52	0.07	0.13
Fall4	0.03	0.16	0.07	0.19	0.37	0.29	0.10
Fall5	0.02	0.02	0.00	0.00	0.00	0.00	0.00
Fall6	0.00	0.03	0.00	0.00	0.00	0.00	0.00
Fall7	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Spring1	0.00	0.29	0.16	0.09	0.23	0.04	0.02
Spring2	0.09	0.36	11.21	0.49	0.61	0.05	0.25
Spring3	0.70	0.13	0.54	15.35	2.51	0.57	0.11
Spring4	0.17	0.17	0.11	2.19	4.16	1.60	0.44
Spring5	0.00	0.29	0.00	0.08	0.54	0.00	0.07
Spring6	0.00	0.03	0.00	0.00	0.06	0.00	0.00
Spring7	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Winter1	0.00	0.00	0.00	0.00	0.00	0.01	0.60
Winter2	0.00	0.00	0.00	0.00	0.00	1.62	1.92
Winter3	0.00	0.00	0.00	0.00	0.00	3.48	1.06
Winter4	0.00	0.00	0.00	0.00	0.00	8.06	2.49
Winter5	0.00	0.00	0.00	0.00	0.00	0.96	0.29
Scall1	0.05	7.36	0.58	0.16	0.15	0.11	0.17

	1994	1995	1996	1997	1998	1999	2000
Fall1	0.73	0.14	0.45	0.82	0.89	1.24	0.05
Fall2	0.45	0.65	0.16	0.52	1.62	0.39	1.67
Fall3	0.11	0.26	0.32	1.46	0.12	0.28	0.30
Fall4	0.13	0.12	0.00	0.27	0.05	0.03	0.17
Fall5	0.07	0.00	0.00	0.02	0.00	0.03	0.00
Fall6	0.03	0.00	0.00	0.00	0.02	0.00	0.00
Fall7	0.00	0.05	0.00	0.00	0.00	0.00	0.02
Spring1	0.02	0.02	0.00	0.05	0.07	0.04	0.02
Spring2	0.27	1.17	0.40	0.89	3.02	0.65	1.25
Spring3	0.02	0.07	1.30	1.14	0.39	1.93	1.01
Spring4	0.00	0.09	0.57	0.33	0.16	0.35	0.56
Spring5	0.07	0.02	0.07	0.07	0.04	0.07	0.04
Spring6	0.02	0.04	0.00	0.00	0.02	0.00	0.00
Spring7	0.00	0.03	0.00	0.00	0.00	0.02	0.00
Winter1	0.37	0.09	0.04	0.16	0.12	0.24	0.11
Winter2	8.65	10.68	1.29	2.38	7.84	2.91	4.92
Winter3	0.74	2.70	8.24	9.79	1.60	10.18	3.01
Winter4	1.65	0.60	0.85	2.96	1.16	0.78	1.16
Winter5	0.97	0.25	0.14	0.53	0.11	0.31	0.07
Scall1	0.57	0.07	0.12	0.74	0.25	0.36	0.08

	2001	2002	Average
Fall1	0.39	0.00	1.426
Fall2	0.61	0.00	2.809
Fall3	0.16	0.00	1.079
Fall4	0.07	0.00	0.315
Fall5	0.00	0.00	0.198
Fall6	0.00	0.00	0.135
Fall7	0.00	0.00	0.101
Spring1	0.00	0.05	0.373
Spring2	0.07	1.19	3.412
Spring3	1.16	0.24	2.578
Spring4	0.24	0.20	1.272
Spring5	0.08	0.07	0.556
Spring6	0.02	0.00	0.593
Spring7	0.00	0.00	0.316
Winter1	0.03	0.01	0.161
Winter2	0.90	2.74	4.167
Winter3	8.54	2.58	4.717
Winter4	1.62	2.05	2.124
Winter5	0.25	0.10	0.363
Scall1	0.06	0.02	0.578

Catch at age (thousands) - C:\all_work\yt\2002\SNEMA\snemayt_2002_wg.7

	1973	1974	1975	1976	1977	1978	1979
1	220	861	8910	214	5513	8698	205
2	5632	28519	4129	6677	5027	14191	19419
3	11951	5556	1884	1181	4891	2164	8667
4	7978	7370	1130	327	507	1470	1062
5	5226	3687	1597	449	278	247	438
6	5305	1598	792	477	304	61	101
7	981	1750	660	419	345	119	30
1+	37293	49341	19102	9744	16865	26950	29922
	1980	1981	1982	1983	1984	1985	1986
1	1006	38	169	2668	517	2239	463
2	10215	7029	35696	19288	6200	8074	9970
3	6595	7578	14358	42837	19990	2175	3326
4	3829	2926	1858	3601	8129	1968	635
5	512	1111	415	385	878	1109	356
6	129	161	79	146	245	204	127
7	38	22	07	46	30	42	22
1+	22324	18865	52582	68971	35989	15811	14899

	1987	1988	1989	1990	1991	1992	1993
1	1594	5899	24	192	446	477	13
2	3437	2109	19920	2056	1610	1453	457
3	2368	536	3347	42644	5169	2097	447
4	926	506	462	2209	9703	2739	711
5	167	134	48	90	168	297	145
6	55	26	03	05	34	14	04
7	10	06	00	00	17	04	00
1+	8557	9216	23804	47196	17147	7081	1777

	1994	1995	1996	1997	1998	1999	2000
1	154	07	22	02	03	06	35
2	748	308	427	103	511	105	567
3	312	180	626	1166	635	2321	1091
4	281	219	249	538	306	288	447
5	309	31	60	62	81	103	15
6	127	07	17	05	14	13	03
7	04	08	06	06	04	05	02
1+	1935	760	1407	1882	1554	2841	2160

2001							
1	01						
2	275						
3	1413						
4	424						
5	129						
6	32						
7	19						
1+	2293						

Weight at age (mid year) in kg - C:\all_work\yt\2002\SNEMA\snemayt_2002_wg.7

	1973	1974	1975	1976	1977	1978	1979
1	0.210	0.203	0.218	0.228	0.215	0.234	0.189
2	0.296	0.308	0.289	0.303	0.283	0.293	0.301
3	0.348	0.352	0.376	0.408	0.381	0.383	0.364
4	0.375	0.396	0.432	0.498	0.504	0.536	0.475
5	0.382	0.439	0.435	0.499	0.513	0.662	0.590
6	0.418	0.431	0.457	0.543	0.481	0.686	0.673
7	0.485	0.481	0.510	0.573	0.596	0.641	0.624

	1980	1981	1982	1983	1984	1985	1986
1	0.206	0.140	0.226	0.175	0.182	0.183	0.186
2	0.281	0.262	0.263	0.261	0.237	0.260	0.284
3	0.384	0.342	0.353	0.339	0.295	0.365	0.331
4	0.500	0.474	0.499	0.496	0.388	0.408	0.463
5	0.682	0.596	0.660	0.668	0.487	0.504	0.587
6	0.874	0.669	0.822	0.815	0.652	0.577	0.614
7	1.098	0.514	0.956	0.831	0.355	0.674	0.767

	1987	1988	1989	1990	1991	1992	1993
1	0.247	0.270	0.311	0.301	0.206	0.167	0.122
2	0.268	0.293	0.338	0.327	0.262	0.316	0.354
3	0.353	0.396	0.394	0.378	0.337	0.368	0.430
4	0.404	0.493	0.553	0.455	0.414	0.434	0.451
5	0.520	0.611	0.735	0.763	0.678	0.599	0.641
6	0.587	0.795	0.957	0.884	0.900	0.804	1.040
7	0.780	0.937	0.793	0.793	0.599	1.375	0.793

	1994	1995	1996	1997	1998	1999	2000
1	0.068	0.123	0.148	0.140	0.162	0.221	0.034
2	0.203	0.299	0.373	0.288	0.294	0.290	0.352
3	0.352	0.401	0.408	0.415	0.411	0.441	0.475
4	0.444	0.458	0.466	0.478	0.565	0.562	0.606
5	0.573	0.663	0.592	0.583	0.768	0.673	0.756
6	0.710	0.720	0.710	0.912	0.848	1.020	1.090
7	0.902	0.714	0.780	1.312	0.970	1.098	1.040

2001

1	0.153
2	0.378
3	0.438
4	0.622
5	0.763
6	0.938
7	0.990

Percent Mature (females)- C:\all_work\yt\2002\SNEMA\snemayt_2002_wg.7
1973-2001

1	13
2	74
3	98
4	100
5	100
6	100
7	100

Natural Mortality C:\all_work\yt\2002\SNEMA\snemayt_2002_wg.7
1973-2001

1	.200
2	.200
3	.200
4	.200
5	.200
6	.200
7	.200

Sex Ratio (Percent Female) - C:\all_work\yt\2002\SNEMA\snemayt_2002_wg.7
1973-2001

1	0.5
2	0.5
3	0.5
4	0.5
5	0.5
6	0.5
7	0.5

pF is 0.4167
pM is 0.4167

Residual Sum of Squares from Marquardt Algorithm

Number 1
RSS 2254.67452500633
Lambda 1.00E-02

Number 2
RSS 1837.58596458109
Lambda 1.00E-03

Number 3
RSS 1533.87137995026
Lambda 1.00E-01

Number	8	
RSS		902.470268516996
Lambda		1.00E+00
Number	9	
RSS		853.418790581784
Lambda		1.00E+02
Number	10	
RSS		773.710725418962
Lambda		1.00E+01
Number	11	
RSS		736.70318527732
Lambda		1.00E+00
Number	12	
RSS		677.581261671293
Lambda		1.00E+02
Number	13	
RSS		575.34423973156
Lambda		1.00E+01
Number	14	
RSS		538.653804623563
Lambda		1.00E+00
Number	15	
RSS		428.559911705117
Lambda		1.00E+02
Number	16	
RSS		346.123578384847
Lambda		1.00E+01
Number	17	
RSS		310.039088660565
Lambda		1.00E+00
Number	18	
RSS		300.649364298216
Lambda		1.00E+02
Number	19	
RSS		299.626622195729
Lambda		1.00E+01
Number	20	
RSS		299.598539596868
Lambda		1.00E+00
Number	21	
RSS		299.59484703991
Lambda		1.00E-01
Number	22	
RSS		299.594128545266
Lambda		1.00E+01
Number	23	
RSS		299.594025497619
Lambda		1.00E+00
Number	24	
RSS		299.594029756406
Lambda		1.00E-01
Number	25	
RSS		299.594024402707
Lambda		1.00E-02

RESULTS

Approximate Statistics Assuming Linearity Near Solution

Sum of Squares: 299.594024402707

Mean Square Residuals: 0.79258

	PAR.	EST.	STD. ERR.	T-STATISTIC	C.V.
N 2	2.50E+03	1.04E+03	2.42E+00	0.41	
N 3	9.91E+02	3.57E+02	2.77E+00	0.36	
N 4	1.46E+03	6.24E+02	2.33E+00	0.43	
N 5	2.60E+02	1.24E+02	2.10E+00	0.48	
q Fall1	5.67E-05	9.49E-06	5.98E+00	0.17	
q Fall2	5.27E-05	8.79E-06	6.00E+00	0.17	
q Fall3	1.53E-04	2.55E-05	6.00E+00	0.17	
q Fall4	5.60E-04	9.53E-05	5.88E+00	0.17	
q Fall5	1.01E-03	2.26E-04	4.47E+00	0.22	
q Fall6	1.63E-03	4.39E-04	3.71E+00	0.27	
q Fall7	6.05E-03	1.71E-03	3.53E+00	0.28	
q Spring1	2.34E-05	4.12E-06	5.68E+00	0.18	
q Spring2	3.99E-05	6.57E-06	6.08E+00	0.16	
q Spring3	7.83E-05	1.28E-05	6.10E+00	0.16	
q Spring4	2.53E-04	4.22E-05	5.98E+00	0.17	
q Spring5	7.34E-04	1.28E-04	5.71E+00	0.17	
q Spring6	7.61E-04	1.56E-04	4.87E+00	0.21	
q Spring7	2.05E-03	5.29E-04	3.87E+00	0.26	
q Winter1	2.10E-04	6.07E-05	3.46E+00	0.29	
q Winter2	3.07E-04	8.43E-05	3.64E+00	0.27	
q Winter3	4.46E-04	1.22E-04	3.66E+00	0.27	
q Winter4	1.03E-03	2.82E-04	3.65E+00	0.27	
q Winter5	4.33E-03	1.21E-03	3.57E+00	0.28	
q Scall1	5.52E-05	1.12E-05	4.95E+00	0.20	

Catchability Estimates in Original Units

	Estimate	Std.Err.	C.V.
	-----	-----	-----
q Fall1	8.08E-05	1.35E-05	0.17
q Fall2	1.48E-04	2.47E-05	0.17
q Fall3	1.65E-04	2.75E-05	0.17
q Fall4	1.77E-04	3.00E-05	0.17
q Fall5	2.00E-04	4.47E-05	0.22
q Fall6	2.20E-04	5.95E-05	0.27
q Fall7	6.14E-04	1.74E-04	0.28
q Spring1	8.74E-06	1.54E-06	0.18
q Spring2	1.36E-04	2.24E-05	0.16
q Spring3	2.02E-04	3.31E-05	0.16
q Spring4	3.21E-04	5.37E-05	0.17
q Spring5	4.08E-04	7.14E-05	0.17
q Spring6	4.51E-04	9.28E-05	0.21
q Spring7	6.47E-04	1.67E-04	0.26
q Winter1	3.38E-05	9.77E-06	0.29
q Winter2	1.28E-03	3.51E-04	0.27
q Winter3	2.10E-03	5.74E-04	0.27
q Winter4	2.18E-03	5.99E-04	0.27
q Winter5	1.57E-03	4.40E-04	0.28
q Scall1	3.19E-05	6.45E-06	0.20

CORRELATION BETWEEN PARAMETERS ESTIMATED (SYMBOLIC FORM)

N 2
N 3
N 4
N 5
Fall
Fall
Fall
Fall
Fall
Fall
Fall
Fall
Spring
Spring
Spring
Spring
Spring
Spring
Spring
Spring
Winter
Winter
Winter
Winter
Winter
Winter
Scall

SYMBOLS: = LARGE NEGATIVE CORRELATION whenever -1 <= R < -L
 - MODERATE NEGATIVE CORRELATION whenever -L <= R < -M
 . SMALL CORRELATION whenever -M <= R <= +M
 + MODERATE POSITIVE CORRELATION whenever +M < R <= +L
 * LARGE POSITIVE CORRELATION whenever +L < R <= +1

Where R is the estimated correlation, M is, 0.25 and L is 0.5

Summary of Residuals

Fall

Tuned to: mean and number

For ages: 1

Year	Obs.	Pred.	Ln Scd.	Obs.	Ln Scd.	Pred.	Wt.	Wt. Res.	Std. Res.	Pred. Stk.	Sze.
1973	1.779	3.181	0.221	0.803	1	-0.581	-0.653	39348			
1974	0.695	0.744	-0.719	-0.650	1	-0.069	-0.077	9208			
1975	1.533	1.941	0.073	0.309	1	-0.236	-0.265	24015			
1976	1.964	1.064	0.320	-0.293	1	0.613	0.689	13160			
1977	2.289	3.466	0.473	0.888	1	-0.415	-0.466	42875			
1978	2.080	3.617	0.378	0.931	1	-0.553	-0.621	44739			
1979	1.493	2.339	0.046	0.495	1	-0.449	-0.504	28935			
1980	1.153	3.221	-0.212	0.815	1	-1.027	-1.154	39837			
1981	9.511	10.144	1.898	1.962	1	-0.064	-0.072	125483			
1982	2.040	4.699	0.358	1.193	1	-0.834	-0.937	58127			
1983	1.920	1.118	0.298	-0.244	1	0.541	0.608	13824			
1984	1.444	1.384	0.013	-0.030	1	0.043	0.048	17118			
1985	0.869	1.449	-0.495	0.016	1	-0.511	-0.574	17919			
1986	0.606	0.518	-0.856	-1.013	1	0.158	0.177	6403			
1987	1.067	1.039	-0.290	-0.317	1	0.027	0.030	12847			
1988	4.370	8.853	1.120	1.826	1	-0.706	-0.793	109512			
1989	0.198	1.301	-1.974	-0.092	1	-1.883	-2.115	16093			
1990	0.539	0.585	-0.973	-0.891	1	-0.081	-0.091	7232			
1991	0.588	0.270	-0.886	-1.663	1	0.777	0.873	3344			
1992	0.168	0.147	-2.138	-2.275	1	0.136	0.153	1814			
1993	0.332	0.149	-1.457	-2.258	1	0.801	0.899	1844			
1994	0.732	0.210	-0.667	-1.914	1	1.248	1.401	2601			
1995	0.139	0.248	-2.328	-1.748	1	-0.580	-0.651	3071			
1996	0.448	0.145	-1.158	-2.287	1	1.129	1.268	1792			
1997	0.822	0.436	-0.551	-1.185	1	0.634	0.712	5393			
1998	0.890	0.247	-0.471	-1.752	1	1.281	1.439	3059			
1999	1.238	0.421	-0.141	-1.219	1	1.078	1.211	5212			
2000	0.049	0.137	-3.371	-2.342	1	-1.028	-1.155	1695			
2001	0.390	0.224	-1.296	-1.850	1	0.554	0.622	2773			
2002	0.000	0.000	0	0	0	0.000	0.000	00			

Partial Variance: 0.606

Fall

Tuned to: mean and number

For ages: 2

Year	Obs.	Pred.	Ln Scd.	Obs.	Ln Scd.	Pred.	Wt.	Wt. Res.	Std. Res.	Pred. Stk.	Sze.
1973	1.747	1.939	-0.475	-0.371	1	-0.104	-0.117	13095			
1974	1.185	1.988	-0.863	-0.346	1	-0.517	-0.581	13424			
1975	0.416	0.724	-1.910	-1.356	1	-0.554	-0.622	4888			
1976	4.204	1.863	0.403	-0.410	1	0.814	0.914	12583			
1977	1.439	1.182	-0.669	-0.865	1	0.196	0.221	7984			
1978	4.771	3.743	0.530	0.287	1	0.243	0.273	25276			
1979	3.283	3.292	0.156	0.159	1	-0.003	-0.003	22235			
1980	2.908	2.691	0.035	-0.043	1	0.077	0.087	18175			
1981	9.498	4.241	1.218	0.412	1	0.806	0.906	28644			
1982	17.794	12.463	1.846	1.490	1	0.356	0.400	84167			
1983	11.278	5.530	1.390	0.677	1	0.713	0.801	37343			
1984	1.275	0.999	-0.790	-1.034	1	0.244	0.275	6743			
1985	0.375	1.377	-2.014	-0.713	1	-1.301	-1.461	9299			
1986	1.826	1.164	-0.431	-0.881	1	0.450	0.506	7860			
1987	0.451	0.453	-1.829	-1.824	1	-0.005	-0.006	3061			
1988	0.310	1.302	-2.204	-0.769	1	-1.435	-1.612	8793			
1989	10.492	11.418	1.318	1.402	1	-0.085	-0.095	77107			
1990	1.847	1.798	-0.419	-0.446	1	0.027	0.030	12141			
1991	0.243	0.743	-2.447	-1.330	1	-1.118	-1.255	5017			
1992	0.024	0.259	-4.763	-2.384	1	-2.378	-2.672	1748			
1993	0.028	0.156	-4.608	-2.891	1	-1.718	-1.929	1053			
1994	0.448	0.163	-1.836	-2.848	1	1.012	1.137	1099			
1995	0.645	0.283	-1.471	-2.295	1	0.824	0.925	1911			
1996	0.161	0.340	-2.859	-2.111	1	-0.748	-0.841	2298			
1997	0.519	0.208	-1.689	-2.601	1	0.913	1.025	1407			
1998	1.620	0.616	-0.550	-1.517	1	0.966	1.086	4162			
1999	0.392	0.363	-1.969	-2.046	1	0.077	0.086	2452			
2000	1.669	0.590	-0.521	-1.561	1	1.040	1.168	3983			
2001	0.611	0.183	-1.525	-2.732	1	1.206	1.355	1235			
2002	0.000	0.000	0	0	0	0.000	0.000	00			

Partial Variance: 0.83

Fall

Tuned to: mean and number

For ages: 3

Year	Obs.	Pred.	Ln Scd.	Obs.	Ln Scd.	Pred.	Wt.	Wt. Res.	Std. Res.	Pred. Stk.	Sze.
1973	4.086	3.113	1.332	1.060	1	0.272	0.305	18871			
1974	0.433	0.879	-0.913	-0.205	1	-0.708	-0.795	5326			
1975	0.136	0.303	-2.071	-1.270	1	-0.801	-0.900	1837			
1976	0.350	0.306	-1.126	-1.259	1	0.133	0.150	1857			
1977	0.519	0.815	-0.732	-0.280	1	-0.452	-0.508	4943			
1978	0.296	0.571	-1.293	-0.636	1	-0.658	-0.739	3463			
1979	1.579	1.720	0.381	0.466	1	-0.086	-0.096	10429			
1980	0.757	1.231	-0.354	0.131	1	-0.486	-0.546	7460			
1981	1.251	1.080	0.148	0.001	1	0.147	0.165	6545			
1982	4.392	2.018	1.404	0.626	1	0.778	0.874	12232			
1983	5.593	4.752	1.646	1.483	1	0.163	0.183	28808			
1984	1.529	1.687	0.349	0.447	1	-0.099	-0.111	10229			
1985	0.134	0.336	-2.086	-1.166	1	-0.920	-1.033	2038			
1986	0.523	0.450	-0.724	-0.875	1	0.151	0.170	2725			
1987	0.359	0.271	-1.100	-1.381	1	0.280	0.315	1645			
1988	0.141	0.170	-2.035	-1.847	1	-0.188	-0.211	1031			
1989	1.370	0.744	0.239	-0.372	1	0.610	0.686	4511			
1990	3.117	4.823	1.061	1.497	1	-0.437	-0.490	29238			
1991	1.516	1.028	0.340	-0.049	1	0.389	0.437	6230			
1992	0.072	0.377	-2.707	-1.052	1	-1.655	-1.859	2284			
1993	0.130	0.108	-2.116	-2.298	1	0.182	0.205	657			
1994	0.107	0.085	-2.311	-2.540	1	0.230	0.258	516			
1995	0.257	0.087	-1.435	-2.521	1	1.086	1.220	526			
1996	0.320	0.182	-1.215	-1.778	1	0.563	0.632	1105			
1997	1.459	0.170	0.302	-1.848	1	2.149	2.414	1031			
1998	0.124	0.125	-2.163	-2.157	1	-0.007	-0.007	757			
1999	0.279	0.301	-1.353	-1.276	1	-0.076	-0.086	1825			
2000	0.303	0.225	-1.270	-1.569	1	0.299	0.336	1362			
2001	0.158	0.374	-1.921	-1.059	1	-0.862	-0.968	2268			
2002	0.000	0.000	0	0	0	0.000	0.000	00			

Partial Variance: 0.513

Fall

Tuned to: mean and number

For ages: 4

Year	Obs.	Pred.	Ln Scd.	Obs.	Ln Scd.	Pred.	Wt.	Wt. Res.	Std. Res.	Pred. Stk.	Sze.
1973	2.318	1.798	1.995	1.741	1.741	1	1	0.254	0.285	10185	
1974	1.640	1.175	1.649	1.316	1.316	1	1	0.333	0.374	6657	
1975	0.217	0.317	-0.373	0.007	0.007	1	1	-0.380	-0.427	1797	
1976	0.046	0.118	-1.924	-0.985	-0.985	1	1	-0.940	-1.056	667	
1977	0.044	0.141	-1.969	-0.804	-0.804	1	1	-1.165	-1.309	799	
1978	0.236	0.260	-0.289	-0.193	-0.193	1	1	-0.097	-0.109	1472	
1979	0.241	0.253	-0.268	-0.221	-0.221	1	1	-0.048	-0.053	1431	
1980	0.313	0.550	-0.007	0.557	0.557	1	1	-0.564	-0.633	3114	
1981	0.198	0.341	-0.465	0.078	0.078	1	1	-0.543	-0.610	1930	
1982	0.535	0.296	0.529	-0.063	-0.063	1	1	0.592	0.665	1676	
1983	0.458	0.526	0.374	0.511	0.511	1	1	-0.138	-0.155	2977	
1984	0.334	0.822	0.058	0.959	0.959	1	1	-0.901	-1.012	4657	
1985	0.080	0.231	-1.371	-0.309	-0.309	1	1	-1.062	-1.193	1311	
1986	0.123	0.095	-0.941	-1.203	-1.203	1	1	0.262	0.294	536	
1987	0.030	0.091	-2.352	-1.244	-1.244	1	1	-1.108	-1.245	515	
1988	0.156	0.043	-0.703	-1.984	-1.984	1	1	1.281	1.439	245	
1989	0.072	0.064	-1.476	-1.590	-1.590	1	1	0.114	0.128	364	
1990	0.194	0.172	-0.485	-0.604	-0.604	1	1	0.119	0.133	976	
1991	0.367	0.546	0.152	0.549	0.549	1	1	-0.396	-0.445	3090	
1992	0.285	0.258	-0.101	-0.201	-0.201	1	1	0.101	0.113	1460	
1993	0.104	0.125	-1.109	-0.922	-0.922	1	1	-0.187	-0.210	710	
1994	0.129	0.035	-0.893	-2.186	-2.186	1	1	1.293	1.452	201	
1995	0.115	0.031	-1.008	-2.329	-2.329	1	1	1.321	1.483	174	
1996	0.000	0.000	0	0	0	1	1	0.000	0.000	00	
1997	0.271	0.058	-0.151	-1.684	-1.684	1	1	1.533	1.722	331	
1998	0.049	0.046	-1.861	-1.917	-1.917	1	1	0.056	0.063	262	
1999	0.028	0.038	-2.421	-2.114	-2.114	1	1	-0.307	-0.345	216	
2000	0.171	0.081	-0.611	-1.357	-1.357	1	1	0.745	0.837	460	
2001	0.071	0.084	-1.490	-1.322	-1.322	1	1	-0.168	-0.189	476	
2002	0.000	0.000	0	0	0	1	1	0.000	0.000	00	

Partial Variance: 0.564

Fall

Tuned to: mean and number

For ages: 5

Year	Obs.	Pred.	Ln Scd.	Obs.	Ln Scd.	Pred.	Wt.	Wt. Res.	Std. Res.	Pred. Stk.	Sze.
1973	1.564	1.023	2.066	1.641	1.641	1	1	0.425	0.477	5114	
1974	0.687	0.651	1.243	1.189	1.189	1	1	0.054	0.061	3253	
1975	0.213	0.401	0.072	0.706	0.706	1	1	-0.633	-0.712	2006	
1976	0.073	0.161	-0.999	-0.210	-0.210	1	1	-0.789	-0.886	803	
1977	0.040	0.052	-1.600	-1.342	-1.342	1	1	-0.258	-0.290	259	
1978	0.024	0.065	-2.111	-1.111	-1.111	1	1	-1.000	-1.124	326	
1979	0.026	0.087	-2.031	-0.825	-0.825	1	1	-1.206	-1.355	434	
1980	0.000	0.000	0	0	0	1	1	0.000	0.000	00	
1981	0.103	0.104	-0.654	-0.646	-0.646	1	1	-0.009	-0.010	520	
1982	0.215	0.081	0.081	-0.897	-0.897	1	1	0.978	1.099	404	
1983	0.038	0.103	-1.652	-0.653	-0.653	1	1	-0.998	-1.121	516	
1984	0.000	0.000	0	0	0	1	1	0.000	0.000	00	
1985	0.000	0.000	0	0	0	1	1	0.000	0.000	00	
1986	0.025	0.044	-2.070	-1.506	-1.506	1	1	-0.564	-0.634	220	
1987	0.024	0.024	-2.111	-2.101	-2.101	1	1	-0.011	-0.012	121	
1988	0.021	0.009	-2.245	-3.074	-3.074	1	1	0.830	0.932	46	
1989	0.000	0.000	0	0	0	1	1	0.000	0.000	00	
1990	0.000	0.000	0	0	0	1	1	0.000	0.000	00	
1991	0.000	0.000	0	0	0	1	1	0.000	0.000	00	
1992	0.000	0.000	0	0	0	1	1	0.000	0.000	00	
1993	0.000	0.000	0	0	0	1	1	0.000	0.000	00	
1994	0.066	0.023	-1.100	-2.161	-2.161	1	1	1.061	1.192	114	
1995	0.000	0.000	0	0	0	1	1	0.000	0.000	00	
1996	0.000	0.000	0	0	0	1	1	0.000	0.000	00	
1997	0.024	0.011	-2.111	-2.924	-2.924	1	1	0.813	0.914	53	
1998	0.000	0.000	0	0	0	1	1	0.000	0.000	00	
1999	0.028	0.008	-1.957	-3.264	-3.264	1	1	1.307	1.468	38	
2000	0.000	0.000	0	0	0	1	1	0.000	0.000	00	
2001	0.000	0.000	0	0	0	1	1	0.000	0.000	00	
2002	0.000	0.000	0	0	0	1	1	0.000	0.000	00	

Partial Variance: 0.688

Fall

Tuned to: mean and number

For ages: 6

Year	Obs.	Pred.	Ln Scd.	Obs.	Ln Scd.	Pred.	Wt.	Wt. Res.	Std. Res.	Pred. Stk.	Sze.
1973	0.768	1.559	1.736		2.444		1	-0.708	-0.795		7071
1974	0.297	0.312	0.786		0.834		1	-0.049	-0.055		1414
1975	0.048	0.209	-1.037		0.435		1	-1.472	-1.653		949
1976	0.190	0.176	0.339		0.263		1	0.076	0.085		799
1977	0.035	0.069	-1.353		-0.675		1	-0.678	-0.761		313
1978	0.006	0.018	-3.116		-2.023		1	-1.093	-1.228		81
1979	0.026	0.026	-1.650		-1.639		1	-0.011	-0.013		119
1980	0.000	0.000	0		0		1	0.000	0.000		00
1981	0.037	0.026	-1.297		-1.636		1	0.339	0.381		120
1982	0.000	0.000	0		0		1	0.000	0.000		00
1983	0.000	0.000	0		0		1	0.000	0.000		00
1984	0.000	0.000	0		0		1	0.000	0.000		00
1985	0.000	0.000	0		0		1	0.000	0.000		00
1986	0.000	0.000	0		0		1	0.000	0.000		00
1987	0.000	0.000	0		0		1	0.000	0.000		00
1988	0.034	0.007	-1.382		-3.029		1	1.648	1.851		30
1989	0.000	0.000	0		0		1	0.000	0.000		00
1990	0.000	0.000	0		0		1	0.000	0.000		00
1991	0.000	0.000	0		0		1	0.000	0.000		00
1992	0.000	0.000	0		0		1	0.000	0.000		00
1993	0.000	0.000	0		0		1	0.000	0.000		00
1994	0.025	0.026	-1.689		-1.651		1	-0.039	-0.043		118
1995	0.000	0.000	0		0		1	0.000	0.000		00
1996	0.000	0.000	0		0		1	0.000	0.000		00
1997	0.000	0.000	0		0		1	0.000	0.000		00
1998	0.023	0.003	-1.772		-3.759		1	1.987	2.232		14
1999	0.000	0.000	0		0		1	0.000	0.000		00
2000	0.000	0.000	0		0		1	0.000	0.000		00
2001	0.000	0.000	0		0		1	0.000	0.000		00
2002	0.000	0.000	0		0		0	0.000	0.000		00

Partial Variance: 1.134

Fall

Tuned to: mean and number

For ages: 7

Year	Obs.	Pred.	Ln Scd.	Obs.	Ln Scd.	Pred.	Wt.	Wt. Res.	Std. Res.	Pred. Stk.	Sze.
1973	0.162	0.791	0.469		2.055		1	-1.586	-1.782		1289
1974	0.202	0.931	0.689		2.218		1	-1.528	-1.717		1517
1975	0.070	0.478	-0.371		1.550		1	-1.921	-2.157		778
1976	0.320	0.426	1.149		1.435		1	-0.285	-0.321		693
1977	0.065	0.214	-0.445		0.747		1	-1.192	-1.338		349
1978	0.069	0.096	-0.385		-0.056		1	-0.329	-0.370		156
1979	0.000	0.000	0		0		1	0.000	0.000		00
1980	0.000	0.000	0		0		1	0.000	0.000		00
1981	0.000	0.000	0		0		1	0.000	0.000		00
1982	0.000	0.000	0		0		1	0.000	0.000		00
1983	0.026	0.018	-1.361		-1.734		1	0.373	0.419		29
1984	0.000	0.000	0		0		1	0.000	0.000		00
1985	0.000	0.000	0		0		1	0.000	0.000		00
1986	0.000	0.000	0		0		1	0.000	0.000		00
1987	0.024	0.004	-1.441		-3.311		1	1.870	2.101		06
1988	0.000	0.000	0		0		1	0.000	0.000		00
1989	0.000	0.000	0		0		1	0.000	0.000		00
1990	0.000	0.000	0		0		1	0.000	0.000		00
1991	0.000	0.000	0		0		1	0.000	0.000		00
1992	0.000	0.000	0		0		1	0.000	0.000		00
1993	0.000	0.000	0		0		1	0.000	0.000		00
1994	0.000	0.000	0		0		1	0.000	0.000		00
1995	0.053	0.009	-0.649		-2.478		1	1.829	2.055		14
1996	0.000	0.000	0		0		1	0.000	0.000		00
1997	0.000	0.000	0		0		1	0.000	0.000		00
1998	0.000	0.000	0		0		1	0.000	0.000		00
1999	0.000	0.000	0		0		1	0.000	0.000		00
2000	0.023	0.001	-1.484		-4.252		1	2.769	3.110		02
2001	0.000	0.000	0		0		1	0.000	0.000		00
2002	0.000	0.000	0		0		0	0.000	0.000		00

Partial Variance: 2.818

Spring

Tuned to: 1-Jan and number

For ages: 1

Year	Obs.	Pred.	Ln Scd.	Obs.	Ln Scd.	Pred.	Wt.	Wt. Res.	Std. Res.	Pred. Stk.	Sze.
1973	0.838	0.381	0.809		0.020		1	0.789	0.886	43532	
1974	0.511	0.093	0.314		-1.390		1	1.705	1.915	10627	
1975	0.358	0.276	-0.042		-0.302		1	0.260	0.292	31562	
1976	0.016	0.128	-3.150		-1.070		1	-2.079	-2.335	14634	
1977	1.618	0.440	1.467		0.165		1	1.302	1.463	50316	
1978	2.681	0.474	1.972		0.238		1	1.734	1.947	54165	
1979	1.002	0.280	0.988		-0.287		1	1.275	1.432	32034	
1980	0.683	0.389	0.604		0.042		1	0.563	0.632	44493	
1981	0.810	1.211	0.775		1.177		1	-0.402	-0.452	138470	
1982	0.149	0.562	-0.918		0.409		1	-1.327	-1.490	64223	
1983	0.016	0.146	-3.150		-0.937		1	-2.213	-2.485	16726	
1984	0.038	0.168	-2.285		-0.801		1	-1.484	-1.667	19164	
1985	0.267	0.184	-0.335		-0.710		1	0.375	0.421	20993	
1986	0.016	0.064	-3.150		-1.764		1	-1.386	-1.556	7315	
1987	0.000	0.000	0		0		1	0.000	0.000	00	
1988	0.285	1.084	-0.270		1.067		1	-1.336	-1.501	124008	
1989	0.162	0.155	-0.835		-0.876		1	0.042	0.047	17769	
1990	0.090	0.071	-1.422		-1.664		1	0.242	0.272	8083	
1991	0.228	0.034	-0.493		-2.384		1	1.891	2.125	3934	
1992	0.036	0.020	-2.339		-2.935		1	0.596	0.670	2267	
1993	0.016	0.018	-3.150		-3.040		1	-0.109	-0.123	2041	
1994	0.016	0.026	-3.150		-2.671		1	-0.478	-0.537	2953	
1995	0.016	0.030	-3.150		-2.532		1	-0.617	-0.693	3392	
1996	0.000	0.000	0		0		1	0.000	0.000	00	
1997	0.053	0.052	-1.952		-1.970		1	0.018	0.021	5951	
1998	0.068	0.030	-1.703		-2.537		1	0.834	0.937	3377	
1999	0.036	0.050	-2.339		-2.004		1	-0.335	-0.376	5753	
2000	0.019	0.017	-2.978		-3.118		1	0.140	0.157	1889	
2001	0.000	0.000	0		0		1	0.000	0.000	00	
2002	0.049	0.000	-2.030		0		0	0.000	0.000	00	

Partial Variance: 1.274

Spring

Tuned to: 1-Jan and number

For ages: 2

Year	Obs.	Pred.	Ln Scd.	Obs.	Ln Scd.	Pred.	Wt.	Wt. Res.	Std. Res.	Pred. Stk.	Sze.
1973	5.467	2.410	0.472		-0.348		1	0.819	0.920	17681	
1974	2.188	4.830	-0.444		0.348		1	-0.792	-0.890	35442	
1975	1.171	1.080	-1.069		-1.151		1	0.081	0.091	7921	
1976	4.182	2.423	0.204		-0.342		1	0.546	0.613	17779	
1977	1.557	1.607	-0.784		-0.753		1	-0.031	-0.035	11788	
1978	10.302	4.935	1.105		0.369		1	0.736	0.827	36207	
1979	2.967	4.971	-0.140		0.377		1	-0.516	-0.580	36476	
1980	6.353	3.549	0.622		0.040		1	0.582	0.654	26042	
1981	18.598	4.841	1.696		0.350		1	1.346	1.512	35518	
1982	17.329	15.447	1.625		1.510		1	0.115	0.129	113335	
1983	5.329	7.146	0.446		0.739		1	-0.293	-0.329	52429	
1984	0.453	1.537	-2.019		-0.797		1	-1.222	-1.373	11280	
1985	1.613	2.075	-0.749		-0.497		1	-0.252	-0.283	15223	
1986	2.893	2.066	-0.165		-0.501		1	0.336	0.378	15161	
1987	0.086	0.759	-3.681		-1.503		1	-2.178	-2.446	5570	
1988	0.357	1.482	-2.257		-0.834		1	-1.424	-1.599	10875	
1989	11.211	13.110	1.190		1.346		1	-0.156	-0.176	96192	
1990	0.485	1.980	-1.951		-0.544		1	-1.407	-1.580	14526	
1991	0.611	0.878	-1.720		-1.357		1	-0.363	-0.408	6444	
1992	0.051	0.384	-4.203		-2.184		1	-2.019	-2.267	2817	
1993	0.253	0.194	-2.602		-2.866		1	0.265	0.297	1425	
1994	0.269	0.226	-2.540		-2.714		1	0.173	0.195	1660	
1995	1.169	0.310	-1.071		-2.397		1	1.326	1.489	2278	
1996	0.398	0.378	-2.148		-2.201		1	0.053	0.059	2771	
1997	0.885	0.219	-1.349		-2.745		1	1.396	1.568	1608	
1998	3.016	0.664	-0.123		-1.637		1	1.514	1.700	4871	
1999	0.651	0.376	-1.656		-2.204		1	0.548	0.615	2762	
2000	1.245	0.641	-1.008		-1.672		1	0.663	0.745	4705	
2001	0.069	0.206	-3.901		-2.805		1	-1.096	-1.231	1515	
2002	1.191	0.341	-1.052		-2.302		1	1.250	1.404	2504	

Partial Variance: 1.004

Spring

Tuned to: 1-Jan and number

For ages: 3

Year	Obs.	Pred.	Ln Scd.	Obs.	Ln Scd.	Pred.	Wt.	Wt. Res.	Std. Res.	Pred. Stk.	Sze.
1973	14.753	5.632	1.744	0.781	1	0.963	1	0.963	1.082	27907	
1974	2.607	1.893	0.011	-0.309	1	0.320	1	0.320	0.359	9380	
1975	0.406	0.648	-1.849	-1.381	1	-0.468	1	-0.468	-0.526	3212	
1976	0.536	0.555	-1.571	-1.536	1	-0.035	1	-0.035	-0.039	2749	
1977	2.758	1.718	0.067	-0.406	1	0.473	1	0.473	0.531	8514	
1978	1.791	1.030	-0.364	-0.918	1	0.553	1	0.553	0.622	5103	
1979	1.601	3.391	-0.477	0.274	1	-0.751	1	-0.751	-0.843	16803	
1980	4.298	2.481	0.511	-0.039	1	0.549	1	0.549	0.617	12293	
1981	4.817	2.438	0.625	-0.056	1	0.681	1	0.681	0.765	12078	
1982	5.610	4.585	0.777	0.576	1	0.202	1	0.202	0.227	22719	
1983	8.803	12.208	1.228	1.555	1	-0.327	1	-0.327	-0.367	60492	
1984	0.902	5.141	-1.050	0.690	1	-1.740	1	-1.740	-1.955	25473	
1985	0.406	0.732	-1.849	-1.260	1	-0.589	1	-0.589	-0.661	3625	
1986	0.916	1.041	-1.035	-0.907	1	-0.128	1	-0.128	-0.144	5158	
1987	0.701	0.685	-1.302	-1.326	1	0.024	1	0.024	0.027	3392	
1988	0.125	0.293	-3.027	-2.176	1	-0.851	1	-0.851	-0.956	1450	
1989	0.537	1.412	-1.569	-0.602	1	-0.967	1	-0.967	-1.086	6995	
1990	15.349	12.257	1.784	1.559	1	0.225	1	0.225	0.253	60731	
1991	2.509	2.025	-0.027	-0.242	1	0.214	1	0.214	0.241	10032	
1992	0.571	0.771	-1.508	-1.208	1	-0.300	1	-0.300	-0.337	3819	
1993	0.112	0.200	-3.136	-2.556	1	-0.581	1	-0.581	-0.652	992	
1994	0.016	0.152	-5.082	-2.831	1	-2.251	1	-2.251	-2.529	753	
1995	0.068	0.138	-3.635	-2.930	1	-0.705	1	-0.705	-0.792	682	
1996	1.303	0.320	-0.683	-2.086	1	1.404	1	1.404	1.577	1586	
1997	1.144	0.380	-0.813	-1.915	1	1.103	1	1.103	1.238	1882	
1998	0.386	0.247	-1.899	-2.346	1	0.447	1	0.447	0.502	1223	
1999	1.930	0.711	-0.290	-1.288	1	0.998	1	0.998	1.121	3525	
2000	1.006	0.437	-0.941	-1.775	1	0.833	1	0.833	0.936	2166	
2001	1.158	0.674	-0.801	-1.342	1	0.541	1	0.541	0.608	3339	
2002	0.235	0.200	-2.395	-2.556	1	0.161	1	0.161	0.181	991	

Partial Variance: 0.687

Spring

Tuned to: 1-Jan and number

For ages: 4

Year	Obs.	Pred.	Ln Scd.	Obs.	Ln Scd.	Pred.	Wt.	Wt. Res.	Std. Res.	Pred. Stk.	Sze.
1973	8.335	5.167	1.880	1.401	1	0.478	1	0.478	0.537	16078	
1974	5.016	3.867	1.372	1.112	1	0.260	1	0.260	0.292	12035	
1975	0.665	0.852	-0.649	-0.401	1	-0.248	1	-0.248	-0.279	2653	
1976	0.256	0.297	-1.603	-1.454	1	-0.150	1	-0.150	-0.168	925	
1977	0.242	0.380	-1.660	-1.209	1	-0.451	1	-0.451	-0.507	1182	
1978	0.778	0.818	-0.492	-0.442	1	-0.050	1	-0.050	-0.056	2545	
1979	0.255	0.713	-1.607	-0.579	1	-1.029	1	-1.029	-1.155	2220	
1980	2.684	1.901	0.746	0.401	1	0.345	1	0.345	0.388	5915	
1981	2.502	1.317	0.676	0.034	1	0.642	1	0.642	0.721	4097	
1982	1.406	0.974	0.100	-0.267	1	0.367	1	0.367	0.412	3032	
1983	0.598	1.803	-0.755	0.348	1	-1.103	1	-1.103	-1.239	5609	
1984	2.110	3.460	0.506	1.000	1	-0.495	1	-0.495	-0.555	10766	
1985	0.480	0.889	-0.975	-0.358	1	-0.617	1	-0.617	-0.693	2767	
1986	0.237	0.321	-1.681	-1.376	1	-0.304	1	-0.304	-0.342	1000	
1987	0.167	0.390	-2.031	-1.183	1	-0.848	1	-0.848	-0.952	1213	
1988	0.174	0.204	-1.990	-1.831	1	-0.158	1	-0.158	-0.178	634	
1989	0.113	0.226	-2.421	-1.729	1	-0.692	1	-0.692	-0.777	702	
1990	2.194	0.867	0.545	-0.383	1	0.928	1	0.928	1.043	2699	
1991	4.156	3.579	1.184	1.034	1	0.150	1	0.150	0.168	11136	
1992	1.597	1.137	0.227	-0.113	1	0.340	1	0.340	0.382	3537	
1993	0.441	0.395	-1.060	-1.170	1	0.110	1	0.110	0.124	1229	
1994	0.000	0.000	0	0	1	0.000	1	0.000	0.000	00	
1995	0.092	0.107	-2.627	-2.472	1	-0.155	1	-0.155	-0.174	334	
1996	0.566	0.127	-0.810	-2.304	1	1.494	1	1.494	1.678	395	
1997	0.327	0.235	-1.359	-1.688	1	0.329	1	0.329	0.369	732	
1998	0.161	0.156	-2.067	-2.098	1	0.031	1	0.031	0.034	486	
1999	0.349	0.137	-1.294	-2.227	1	0.933	1	0.933	1.048	427	
2000	0.559	0.253	-0.823	-1.617	1	0.794	1	0.794	0.892	786	
2001	0.240	0.253	-1.668	-1.616	1	-0.052	1	-0.052	-0.058	786	
2002	0.200	0.468	-1.850	-1.001	1	-0.849	1	-0.849	-0.954	1455	

Partial Variance: 0.398

Spring

Tuned to: 1-Jan and number

For ages: 5

Year	Obs.	Pred.	Ln Scd.	Obs.	Ln Scd.	Pred.	Wt.	Wt. Res.	Std. Res.	Pred. Stk.	Sze.
1973	6.432	3.641	2.448		1.879		1	0.569	0.639		8927
1974	2.891	2.425	1.649		1.473		1	0.176	0.198		5945
1975	0.709	1.299	0.243		0.849		1	-0.605	-0.680		3185
1976	0.245	0.469	-0.819		-0.171		1	-0.649	-0.729		1149
1977	0.154	0.188	-1.284		-1.083		1	-0.201	-0.226		462
1978	0.253	0.208	-0.787		-0.984		1	0.197	0.222		509
1979	0.124	0.307	-1.500		-0.592		1	-0.908	-1.020		754
1980	0.261	0.349	-0.756		-0.465		1	-0.291	-0.327		856
1981	0.580	0.562	0.042		0.011		1	0.031	0.035		1378
1982	0.467	0.288	-0.174		-0.656		1	0.482	0.541		707
1983	0.191	0.327	-1.068		-0.531		1	-0.537	-0.603		801
1984	0.354	0.544	-0.451		-0.021		1	-0.430	-0.483		1334
1985	0.714	0.595	0.250		0.068		1	0.182	0.205		1459
1986	0.124	0.198	-1.500		-1.033		1	-0.467	-0.525		485
1987	0.000	0.000	0		0		1	0.000	0.000		00
1988	0.294	0.063	-0.637		-2.172		1	1.535	1.724		155
1989	0.000	0.000	0		0		1	0.000	0.000		00
1990	0.079	0.064	-1.951		-2.161		1	0.210	0.236		157
1991	0.539	0.086	-0.031		-1.867		1	1.836	2.062		211
1992	0.000	0.000	0		0		1	0.000	0.000		00
1993	0.071	0.170	-2.058		-1.184		1	-0.874	-0.982		417
1994	0.068	0.148	-2.101		-1.323		1	-0.778	-0.874		363
1995	0.019	0.032	-3.376		-2.844		1	-0.533	-0.598		79
1996	0.072	0.031	-2.044		-2.893		1	0.850	0.954		75
1997	0.067	0.040	-2.116		-2.628		1	0.512	0.575		98
1998	0.036	0.046	-2.737		-2.492		1	-0.246	-0.276		113
1999	0.074	0.049	-2.017		-2.422		1	0.406	0.456		121
2000	0.043	0.036	-2.559		-2.728		1	0.169	0.189		89
2001	0.082	0.098	-1.914		-1.740		1	-0.174	-0.195		239
2002	0.067	0.106	-2.116		-1.656		1	-0.460	-0.516		260

Partial Variance: 0.465

Spring

Tuned to: 1-Jan and number

For ages: 6

Year	Obs.	Pred.	Ln Scd.	Obs.	Ln Scd.	Pred.	Wt.	Wt. Res.	Std. Res.	Pred. Stk.	Sze.
1973	7.987	4.967	2.601		2.126		1	0.475	0.534		11005
1974	1.154	1.165	0.666		0.675		1	-0.009	-0.010		2580
1975	0.531	0.691	-0.110		0.153		1	-0.263	-0.296		1531
1976	0.338	0.525	-0.562		-0.122		1	-0.440	-0.494		1162
1977	0.189	0.241	-1.143		-0.899		1	-0.244	-0.275		535
1978	0.126	0.057	-1.549		-2.341		1	0.792	0.890		126
1979	0.018	0.087	-3.494		-1.915		1	-1.579	-1.774		193
1980	0.070	0.100	-2.136		-1.783		1	-0.353	-0.397		221
1981	0.113	0.107	-1.657		-1.709		1	0.051	0.058		238
1982	0.135	0.056	-1.480		-2.367		1	0.888	0.997		123
1983	0.000	0.000	0		0		1	0.000	0.000		00
1984	0.262	0.139	-0.816		-1.452		1	0.635	0.713		308
1985	0.135	0.134	-1.480		-1.483		1	0.004	0.004		298
1986	0.016	0.086	-3.612		-1.927		1	-1.685	-1.893		191
1987	0.000	0.000	0		0		1	0.000	0.000		00
1988	0.029	0.022	-3.018		-3.294		1	0.276	0.310		49
1989	0.000	0.000	0		0		1	0.000	0.000		00
1990	0.000	0.000	0		0		1	0.000	0.000		00
1991	0.060	0.021	-2.290		-3.328		1	1.037	1.165		47
1992	0.000	0.000	0		0		1	0.000	0.000		00
1993	0.000	0.000	0		0		1	0.000	0.000		00
1994	0.019	0.095	-3.440		-1.831		1	-1.609	-1.808		210
1995	0.037	0.008	-2.774		-4.310		1	1.536	1.726		18
1996	0.000	0.000	0		0		1	0.000	0.000		00
1997	0.000	0.000	0		0		1	0.000	0.000		00
1998	0.021	0.011	-3.340		-3.981		1	0.640	0.719		25
1999	0.000	0.000	0		0		1	0.000	0.000		00
2000	0.000	0.000	0		0		1	0.000	0.000		00
2001	0.023	0.027	-3.249		-3.097		1	-0.152	-0.171		59
2002	0.000	0.000	0		0		0	0.000	0.000		00

Partial Variance: 0.807

Spring

Tuned to: 1-Jan and number

For ages: 7

Year	Obs.	Pred.	Ln Scd.	Obs.	Ln Scd.	Pred.	Wt.	Wt. Res.	Std. Res.	Pred. Stk.	Sze.
1973	1.166	1.299	1.305		1.413		1	-0.108	-0.121	2006	
1974	1.462	1.792	1.532		1.735		1	-0.204	-0.229	2769	
1975	0.353	0.813	0.110		0.945		1	-0.834	-0.937	1256	
1976	0.126	0.653	-0.920		0.726		1	-1.646	-1.848	1009	
1977	0.225	0.386	-0.340		0.199		1	-0.539	-0.606	596	
1978	0.291	0.157	-0.083		-0.697		1	0.615	0.690	243	
1979	0.044	0.037	-1.972		-2.156		1	0.184	0.207	57	
1980	0.035	0.041	-2.201		-2.034		1	-0.166	-0.187	64	
1981	0.000	0.000	0		0		1	0.000	0.000	00	
1982	0.017	0.007	-2.923		-3.823		1	0.901	1.012	11	
1983	0.000	0.000	0		0		1	0.000	0.000	00	
1984	0.000	0.000	0		0		1	0.000	0.000	00	
1985	0.019	0.039	-2.812		-2.099		1	-0.713	-0.801	60	
1986	0.000	0.000	0		0		1	0.000	0.000	00	
1987	0.000	0.000	0		0		1	0.000	0.000	00	
1988	0.000	0.000	0		0		1	0.000	0.000	00	
1989	0.000	0.000	0		0		1	0.000	0.000	00	
1990	0.000	0.000	0		0		1	0.000	0.000	00	
1991	0.000	0.000	0		0		1	0.000	0.000	00	
1992	0.000	0.000	0		0		1	0.000	0.000	00	
1993	0.000	0.000	0		0		1	0.000	0.000	00	
1994	0.000	0.000	0		0		1	0.000	0.000	00	
1995	0.032	0.013	-2.290		-3.199		1	0.908	1.020	20	
1996	0.000	0.000	0		0		1	0.000	0.000	00	
1997	0.000	0.000	0		0		1	0.000	0.000	00	
1998	0.000	0.000	0		0		1	0.000	0.000	00	
1999	0.023	0.005	-2.621		-4.222		1	1.602	1.799	07	
2000	0.000	0.000	0		0		1	0.000	0.000	00	
2001	0.000	0.000	0		0		1	0.000	0.000	00	
2002	0.000	0.000	0		0		0	0.000	0.000	00	

Partial Variance: 0.824

Winter

Tuned to: 1-Jan and number

For ages: 1

Year	Obs.	Pred.	Ln Scd.	Obs.	Ln Scd.	Pred.	Wt.	Wt. Res.	Std. Res.	Pred. Stk.	Sze.
1973	0.000	0.000	0		0		1	0.000	0.000	00	
1974	0.000	0.000	0		0		1	0.000	0.000	00	
1975	0.000	0.000	0		0		1	0.000	0.000	00	
1976	0.000	0.000	0		0		1	0.000	0.000	00	
1977	0.000	0.000	0		0		1	0.000	0.000	00	
1978	0.000	0.000	0		0		1	0.000	0.000	00	
1979	0.000	0.000	0		0		1	0.000	0.000	00	
1980	0.000	0.000	0		0		1	0.000	0.000	00	
1981	0.000	0.000	0		0		1	0.000	0.000	00	
1982	0.000	0.000	0		0		1	0.000	0.000	00	
1983	0.000	0.000	0		0		1	0.000	0.000	00	
1984	0.000	0.000	0		0		1	0.000	0.000	00	
1985	0.000	0.000	0		0		1	0.000	0.000	00	
1986	0.000	0.000	0		0		1	0.000	0.000	00	
1987	0.000	0.000	0		0		1	0.000	0.000	00	
1988	0.000	0.000	0		0		1	0.000	0.000	00	
1989	0.000	0.000	0		0		1	0.000	0.000	00	
1990	0.000	0.000	0		0		1	0.000	0.000	00	
1991	0.000	0.000	0		0		1	0.000	0.000	00	
1992	0.011	0.077	-2.683		-0.741		1	-1.942	-2.181	2267	
1993	0.596	0.069	1.309		-0.846		1	2.155	2.421	2041	
1994	0.366	0.100	0.822		-0.477		1	1.299	1.459	2953	
1995	0.090	0.115	-0.581		-0.338		1	-0.243	-0.273	3392	
1996	0.041	0.067	-1.367		-0.872		1	-0.495	-0.556	1988	
1997	0.156	0.201	-0.031		0.224		1	-0.255	-0.286	5951	
1998	0.118	0.114	-0.310		-0.343		1	0.033	0.037	3377	
1999	0.243	0.195	0.412		0.190		1	0.222	0.249	5753	
2000	0.109	0.064	-0.389		-0.924		1	0.534	0.600	1889	
2001	0.028	0.104	-1.749		-0.441		1	-1.307	-1.469	3060	
2002	0.012	0.000	-2.596		0		0	0.000	0.000	00	

Partial Variance: 1.277

Winter

Tuned to: 1-Jan and number

For ages: 2

Year	Obs.	Pred.	Ln Scd.	Obs.	Ln Scd.	Pred.	Wt.	Wt. Res.	Std. Res.	Pred. Stk.	Sze.
1973	0.000	0.000	0	0	0		1	0.000	0.000	00	
1974	0.000	0.000	0	0	0		1	0.000	0.000	00	
1975	0.000	0.000	0	0	0		1	0.000	0.000	00	
1976	0.000	0.000	0	0	0		1	0.000	0.000	00	
1977	0.000	0.000	0	0	0		1	0.000	0.000	00	
1978	0.000	0.000	0	0	0		1	0.000	0.000	00	
1979	0.000	0.000	0	0	0		1	0.000	0.000	00	
1980	0.000	0.000	0	0	0		1	0.000	0.000	00	
1981	0.000	0.000	0	0	0		1	0.000	0.000	00	
1982	0.000	0.000	0	0	0		1	0.000	0.000	00	
1983	0.000	0.000	0	0	0		1	0.000	0.000	00	
1984	0.000	0.000	0	0	0		1	0.000	0.000	00	
1985	0.000	0.000	0	0	0		1	0.000	0.000	00	
1986	0.000	0.000	0	0	0		1	0.000	0.000	00	
1987	0.000	0.000	0	0	0		1	0.000	0.000	00	
1988	0.000	0.000	0	0	0		1	0.000	0.000	00	
1989	0.000	0.000	0	0	0		1	0.000	0.000	00	
1990	0.000	0.000	0	0	0		1	0.000	0.000	00	
1991	0.000	0.000	0	0	0		1	0.000	0.000	00	
1992	1.619	3.601	-0.945		-0.146		1	-0.799	-0.898	2817	
1993	1.924	1.821	-0.773		-0.828		1	0.055	0.062	1425	
1994	8.654	2.121	0.731		-0.675		1	1.406	1.579	1660	
1995	10.681	2.912	0.941		-0.358		1	1.300	1.460	2278	
1996	1.285	3.542	-1.177		-0.163		1	-1.014	-1.139	2771	
1997	2.380	2.056	-0.560		-0.707		1	0.147	0.165	1608	
1998	7.841	6.226	0.632		0.401		1	0.231	0.259	4871	
1999	2.909	3.530	-0.359		-0.166		1	-0.194	-0.217	2762	
2000	4.917	6.014	0.165		0.367		1	-0.201	-0.226	4705	
2001	0.895	1.936	-1.538		-0.766		1	-0.772	-0.867	1515	
2002	2.735	3.201	-0.421		-0.264		1	-0.157	-0.177	2504	

Partial Variance: 0.623

Winter

Tuned to: 1-Jan and number

For ages: 3

Year	Obs.	Pred.	Ln Scd.	Obs.	Ln Scd.	Pred.	Wt.	Wt. Res.	Std. Res.	Pred. Stk.	Sze.
1973	0.000	0.000	0	0	0		1	0.000	0.000	00	
1974	0.000	0.000	0	0	0		1	0.000	0.000	00	
1975	0.000	0.000	0	0	0		1	0.000	0.000	00	
1976	0.000	0.000	0	0	0		1	0.000	0.000	00	
1977	0.000	0.000	0	0	0		1	0.000	0.000	00	
1978	0.000	0.000	0	0	0		1	0.000	0.000	00	
1979	0.000	0.000	0	0	0		1	0.000	0.000	00	
1980	0.000	0.000	0	0	0		1	0.000	0.000	00	
1981	0.000	0.000	0	0	0		1	0.000	0.000	00	
1982	0.000	0.000	0	0	0		1	0.000	0.000	00	
1983	0.000	0.000	0	0	0		1	0.000	0.000	00	
1984	0.000	0.000	0	0	0		1	0.000	0.000	00	
1985	0.000	0.000	0	0	0		1	0.000	0.000	00	
1986	0.000	0.000	0	0	0		1	0.000	0.000	00	
1987	0.000	0.000	0	0	0		1	0.000	0.000	00	
1988	0.000	0.000	0	0	0		1	0.000	0.000	00	
1989	0.000	0.000	0	0	0		1	0.000	0.000	00	
1990	0.000	0.000	0	0	0		1	0.000	0.000	00	
1991	0.000	0.000	0	0	0		1	0.000	0.000	00	
1992	3.477	8.029	-0.305		0.532		1	-0.837	-0.940	3819	
1993	1.057	2.085	-1.496		-0.816		1	-0.679	-0.763	992	
1994	0.742	1.583	-1.850		-1.092		1	-0.758	-0.851	753	
1995	2.698	1.434	-0.559		-1.191		1	0.632	0.710	682	
1996	8.235	3.335	0.557		-0.347		1	0.904	1.015	1586	
1997	9.785	3.957	0.730		-0.176		1	0.905	1.017	1882	
1998	1.596	2.572	-1.084		-0.607		1	-0.477	-0.536	1223	
1999	10.176	7.412	0.769		0.452		1	0.317	0.356	3525	
2000	3.006	4.554	-0.451		-0.035		1	-0.415	-0.467	2166	
2001	8.542	7.020	0.594		0.398		1	0.196	0.220	3339	
2002	2.578	2.085	-0.604		-0.817		1	0.212	0.239	991	

Partial Variance: 0.445

Winter

Tuned to: 1-Jan and number

For ages: 4

Year	Obs.	Pred.	Ln Scd.	Obs.	Ln Scd.	Pred.	Wt.	Wt. Res.	Std. Res.	Pred. Stk.	Sze.
1973	0.000	0.000	0	0	0		1	0.000	0.000	00	
1974	0.000	0.000	0	0	0		1	0.000	0.000	00	
1975	0.000	0.000	0	0	0		1	0.000	0.000	00	
1976	0.000	0.000	0	0	0		1	0.000	0.000	00	
1977	0.000	0.000	0	0	0		1	0.000	0.000	00	
1978	0.000	0.000	0	0	0		1	0.000	0.000	00	
1979	0.000	0.000	0	0	0		1	0.000	0.000	00	
1980	0.000	0.000	0	0	0		1	0.000	0.000	00	
1981	0.000	0.000	0	0	0		1	0.000	0.000	00	
1982	0.000	0.000	0	0	0		1	0.000	0.000	00	
1983	0.000	0.000	0	0	0		1	0.000	0.000	00	
1984	0.000	0.000	0	0	0		1	0.000	0.000	00	
1985	0.000	0.000	0	0	0		1	0.000	0.000	00	
1986	0.000	0.000	0	0	0		1	0.000	0.000	00	
1987	0.000	0.000	0	0	0		1	0.000	0.000	00	
1988	0.000	0.000	0	0	0		1	0.000	0.000	00	
1989	0.000	0.000	0	0	0		1	0.000	0.000	00	
1990	0.000	0.000	0	0	0		1	0.000	0.000	00	
1991	0.000	0.000	0	0	0		1	0.000	0.000	00	
1992	8.063	7.722	1.334		1.291		1	0.043	0.049	3537	
1993	2.487	2.684	0.158		0.234		1	-0.076	-0.085	1229	
1994	1.654	0.890	-0.250		-0.870		1	0.620	0.697	407	
1995	0.597	0.730	-1.269		-1.069		1	-0.201	-0.225	334	
1996	0.851	0.863	-0.915		-0.900		1	-0.014	-0.016	395	
1997	2.958	1.599	0.331		-0.284		1	0.615	0.691	732	
1998	1.158	1.061	-0.607		-0.694		1	0.088	0.099	486	
1999	0.777	0.932	-1.006		-0.823		1	-0.182	-0.205	427	
2000	1.160	1.717	-0.605		-0.213		1	-0.392	-0.440	786	
2001	1.615	1.717	-0.274		-0.213		1	-0.061	-0.069	786	
2002	2.047	3.177	-0.037		0.403		1	-0.440	-0.494	1455	

Partial Variance: 0.123

Winter

Tuned to: 1-Jan and number

For ages: 5

Year	Obs.	Pred.	Ln Scd.	Obs.	Ln Scd.	Pred.	Wt.	Wt. Res.	Std. Res.	Pred. Stk.	Sze.
1973	0.000	0.000	0	0	0		1	0.000	0.000	00	
1974	0.000	0.000	0	0	0		1	0.000	0.000	00	
1975	0.000	0.000	0	0	0		1	0.000	0.000	00	
1976	0.000	0.000	0	0	0		1	0.000	0.000	00	
1977	0.000	0.000	0	0	0		1	0.000	0.000	00	
1978	0.000	0.000	0	0	0		1	0.000	0.000	00	
1979	0.000	0.000	0	0	0		1	0.000	0.000	00	
1980	0.000	0.000	0	0	0		1	0.000	0.000	00	
1981	0.000	0.000	0	0	0		1	0.000	0.000	00	
1982	0.000	0.000	0	0	0		1	0.000	0.000	00	
1983	0.000	0.000	0	0	0		1	0.000	0.000	00	
1984	0.000	0.000	0	0	0		1	0.000	0.000	00	
1985	0.000	0.000	0	0	0		1	0.000	0.000	00	
1986	0.000	0.000	0	0	0		1	0.000	0.000	00	
1987	0.000	0.000	0	0	0		1	0.000	0.000	00	
1988	0.000	0.000	0	0	0		1	0.000	0.000	00	
1989	0.000	0.000	0	0	0		1	0.000	0.000	00	
1990	0.000	0.000	0	0	0		1	0.000	0.000	00	
1991	0.000	0.000	0	0	0		1	0.000	0.000	00	
1992	0.959	0.531	0.972		0.381		1	0.592	0.664	338	
1993	0.292	0.655	-0.217		0.592		1	-0.809	-0.908	417	
1994	0.966	0.570	0.980		0.452		1	0.527	0.592	363	
1995	0.253	0.125	-0.360		-1.068		1	0.708	0.795	79	
1996	0.140	0.119	-0.952		-1.118		1	0.166	0.187	75	
1997	0.529	0.155	0.378		-0.852		1	1.230	1.381	98	
1998	0.112	0.177	-1.175		-0.716		1	-0.459	-0.515	113	
1999	0.311	0.190	-0.154		-0.647		1	0.493	0.554	121	
2000	0.073	0.140	-1.603		-0.953		1	-0.650	-0.730	89	
2001	0.254	0.376	-0.356		0.035		1	-0.391	-0.440	239	
2002	0.100	0.409	-1.288		0.119		1	-1.407	-1.581	260	

Partial Variance: 0.646

Scall

Tuned to: mean and number

For ages: 1

Year	Obs.	Pred.	Ln Scd.	Obs.	Ln Scd.	Pred.	Wt.	Wt. Res.	Std. Res.	Pred. Stk.	Sze.
1973	0.000	0.000	0	0	0	0	1	0.000	0.000	00	
1974	0.000	0.000	0	0	0	0	1	0.000	0.000	00	
1975	0.000	0.000	0	0	0	0	1	0.000	0.000	00	
1976	0.000	0.000	0	0	0	0	1	0.000	0.000	00	
1977	0.000	0.000	0	0	0	0	1	0.000	0.000	00	
1978	0.000	0.000	0	0	0	0	1	0.000	0.000	00	
1979	0.000	0.000	0	0	0	0	1	0.000	0.000	00	
1980	0.000	0.000	0	0	0	0	1	0.000	0.000	00	
1981	0.000	0.000	0	0	0	0	1	0.000	0.000	00	
1982	0.362	1.854	-0.467		1.166		1	-1.633	-1.835	58127	
1983	0.255	0.441	-0.818		-0.270		1	-0.548	-0.615	13824	
1984	0.180	0.546	-1.166		-0.056		1	-1.110	-1.246	17118	
1985	0.465	0.572	-0.217		-0.011		1	-0.206	-0.232	17919	
1986	0.015	0.204	-3.651		-1.040		1	-2.611	-2.933	6403	
1987	0.054	0.410	-2.370		-0.343		1	-2.027	-2.276	12847	
1988	7.359	3.493	2.545		1.799		1	0.745	0.837	109512	
1989	0.579	0.513	0.002		-0.118		1	0.120	0.135	16093	
1990	0.158	0.231	-1.296		-0.918		1	-0.378	-0.425	7232	
1991	0.151	0.107	-1.342		-1.689		1	0.347	0.390	3344	
1992	0.108	0.058	-1.677		-2.301		1	0.624	0.701	1814	
1993	0.170	0.059	-1.223		-2.285		1	1.061	1.192	1844	
1994	0.573	0.083	-0.008		-1.941		1	1.933	2.171	2601	
1995	0.072	0.098	-2.082		-1.775		1	-0.308	-0.346	3071	
1996	0.120	0.057	-1.572		-2.313		1	0.742	0.833	1792	
1997	0.736	0.172	0.242		-1.211		1	1.454	1.633	5393	
1998	0.253	0.098	-0.826		-1.779		1	0.953	1.070	3059	
1999	0.357	0.166	-0.481		-1.246		1	0.764	0.859	5212	
2000	0.082	0.054	-1.952		-2.369		1	0.416	0.468	1695	
2001	0.063	0.088	-2.216		-1.877		1	-0.339	-0.381	2773	
2002	0.020	0.000	-3.363		0		0	0.000	0.000	00	

Partial Variance: 1.303

Partial variance (and proportion of total) by index

Index	Partial Variance	Proportion
Fall 1	0.606	0.036
Fall 2	0.83	0.049
Fall 3	0.513	0.03
Fall 4	0.564	0.033
Fall 5	0.688	0.04
Fall 6	1.134	0.067
Fall 7	2.818	0.166
Spring 1	1.274	0.075
Spring 2	1.004	0.059
Spring 3	0.687	0.04
Spring 4	0.398	0.023
Spring 5	0.465	0.027
Spring 6	0.807	0.047
Spring 7	0.824	0.048
Winter 1	1.277	0.075
Winter 2	0.623	0.037
Winter 3	0.445	0.026
Winter 4	0.123	0.007
Winter 5	0.646	0.038
Scall 1	1.303	0.076

Standardized residuals by index and year; with row/column/grand means

	1973	1974	1975	1976	1977	1978	1979
Fall1	-0.653	-0.077	-0.265	0.689	-0.466	-0.621	-0.504
Fall2	-0.117	-0.581	-0.622	0.914	0.221	0.273	-0.003
Fall3	0.305	-0.795	-0.900	0.150	-0.508	-0.739	-0.096
Fall4	0.285	0.374	-0.427	-1.056	-1.309	-0.109	-0.053
Fall5	0.477	0.061	-0.712	-0.886	-0.290	-1.124	-1.355
Fall6	-0.795	-0.055	-1.653	0.085	-0.761	-1.228	-0.013
Fall7	-1.782	-1.717	-2.157	-0.321	-1.338	-0.370	0.000
Spring1	0.886	1.915	0.292	-2.335	1.463	1.947	1.432
Spring2	0.920	-0.890	0.091	0.613	-0.035	0.827	-0.580
Spring3	1.082	0.359	-0.526	-0.039	0.531	0.622	-0.843
Spring4	0.537	0.292	-0.279	-0.168	-0.507	-0.056	-1.155
Spring5	0.639	0.198	-0.680	-0.729	-0.226	0.222	-1.020
Spring6	0.534	-0.010	-0.296	-0.494	-0.275	0.890	-1.774
Spring7	-0.121	-0.229	-0.937	-1.848	-0.606	0.690	0.207
Winter1	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Winter2	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Winter3	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Winter4	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Winter5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Scall1	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Col Avg	0.157	-0.083	-0.648	-0.388	-0.293	0.087	-0.443

	1980	1981	1982	1983	1984	1985	1986
Fall1	-1.154	-0.072	-0.937	0.608	0.048	-0.574	0.177
Fall2	0.087	0.906	0.400	0.801	0.275	-1.461	0.506
Fall3	-0.546	0.165	0.874	0.183	-0.111	-1.033	0.170
Fall4	-0.633	-0.610	0.665	-0.155	-1.012	-1.193	0.294
Fall5	0.000	-0.010	1.099	-1.121	0.000	0.000	-0.634
Fall6	0.000	0.381	0.000	0.000	0.000	0.000	0.000
Fall7	0.000	0.000	0.000	0.419	0.000	0.000	0.000
Spring1	0.632	-0.452	-1.490	-2.485	-1.667	0.421	-1.556
Spring2	0.654	1.512	0.129	-0.329	-1.373	-0.283	0.378
Spring3	0.617	0.765	0.227	-0.367	-1.955	-0.661	-0.144
Spring4	0.388	0.721	0.412	-1.239	-0.555	-0.693	-0.342
Spring5	-0.327	0.035	0.541	-0.603	-0.483	0.205	-0.525
Spring6	-0.397	0.058	0.997	0.000	0.713	0.004	-1.893
Spring7	-0.187	0.000	1.012	0.000	0.000	-0.801	0.000
Winter1	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Winter2	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Winter3	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Winter4	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Winter5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Scall1	0.000	0.000	-1.835	-0.615	-1.246	-0.232	-2.933
Col Avg	-0.079	0.283	0.161	-0.409	-0.670	-0.525	-0.542

	1987	1988	1989	1990	1991	1992	1993
Fall1	0.030	-0.793	-2.115	-0.091	0.873	0.153	0.899
Fall2	-0.006	-1.612	-0.095	0.030	-1.255	-2.672	-1.929
Fall3	0.315	-0.211	0.686	-0.490	0.437	-1.859	0.205
Fall4	-1.245	1.439	0.128	0.133	-0.445	0.113	-0.210
Fall5	-0.012	0.932	0.000	0.000	0.000	0.000	0.000
Fall6	0.000	1.851	0.000	0.000	0.000	0.000	0.000
Fall7	2.101	0.000	0.000	0.000	0.000	0.000	0.000
Spring1	0.000	-1.501	0.047	0.272	2.125	0.670	-0.123
Spring2	-2.446	-1.599	-0.176	-1.580	-0.408	-2.267	0.297
Spring3	0.027	-0.956	-1.086	0.253	0.241	-0.337	-0.652
Spring4	-0.952	-0.178	-0.777	1.043	0.168	0.382	0.124
Spring5	0.000	1.724	0.000	0.236	2.062	0.000	-0.982
Spring6	0.000	0.310	0.000	0.000	1.165	0.000	0.000
Spring7	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Winter1	0.000	0.000	0.000	0.000	0.000	-2.181	2.421
Winter2	0.000	0.000	0.000	0.000	0.000	-0.898	0.062
Winter3	0.000	0.000	0.000	0.000	0.000	-0.940	-0.763
Winter4	0.000	0.000	0.000	0.000	0.000	0.049	-0.085
Winter5	0.000	0.000	0.000	0.000	0.000	0.664	-0.908
Scall1	-2.276	0.837	0.135	-0.425	0.390	0.701	1.192
Col Avg	-0.446	0.019	-0.361	-0.062	0.487	-0.602	-0.030

	1994	1995	1996	1997	1998	1999	2000
Fall1	1.401	-0.651	1.268	0.712	1.439	1.211	-1.155
Fall2	1.137	0.925	-0.841	1.025	1.086	0.086	1.168
Fall3	0.258	1.220	0.632	2.414	-0.007	-0.086	0.336
Fall4	1.452	1.483	0.000	1.722	0.063	-0.345	0.837
Fall5	1.192	0.000	0.000	0.914	0.000	1.468	0.000
Fall6	-0.043	0.000	0.000	0.000	2.232	0.000	0.000
Fall7	0.000	2.055	0.000	0.000	0.000	0.000	3.110
Spring1	-0.537	-0.693	0.000	0.021	0.937	-0.376	0.157
Spring2	0.195	1.489	0.059	1.568	1.700	0.615	0.745
Spring3	-2.529	-0.792	1.577	1.238	0.502	1.121	0.936
Spring4	0.000	-0.174	1.678	0.369	0.034	1.048	0.892
Spring5	-0.874	-0.598	0.954	0.575	-0.276	0.456	0.189
Spring6	-1.808	1.726	0.000	0.000	0.719	0.000	0.000
Spring7	0.000	1.020	0.000	0.000	0.000	1.799	0.000
Winter1	1.459	-0.273	-0.556	-0.286	0.037	0.249	0.600
Winter2	1.579	1.460	-1.139	0.165	0.259	-0.217	-0.226
Winter3	-0.851	0.710	1.015	1.017	-0.536	0.356	-0.467
Winter4	0.697	-0.225	-0.016	0.691	0.099	-0.205	-0.440
Winter5	0.592	0.795	0.187	1.381	-0.515	0.554	-0.730
Scall1	2.171	-0.346	0.833	1.633	1.070	0.859	0.468
Col Avg	0.323	0.507	0.435	0.947	0.520	0.505	0.401

	2001	2002					
Fall1	0.622	0.000					
Fall2	1.355	0.000					
Fall3	-0.968	0.000					
Fall4	-0.189	0.000					
Fall5	0.000	0.000					
Fall6	0.000	0.000					
Fall7	0.000	0.000					
Spring1	0.000	0.000					
Spring2	-1.231	1.404					
Spring3	0.608	0.181					
Spring4	-0.058	-0.954					
Spring5	-0.195	-0.516					
Spring6	-0.171	0.000					
Spring7	0.000	0.000					
Winter1	-1.469	0.000					
Winter2	-0.867	-0.177					
Winter3	0.220	0.239					
Winter4	-0.069	-0.494					
Winter5	-0.440	-1.581					
Scall1	-0.381	0.000					
Col Avg	-0.216	-0.173					

Percent of total sum of squares by index and year; with row/column sums

	1973	1974	1975	1976	1977	1978	1979
Fall1	0.113	0.002	0.019	0.125	0.057	0.102	0.067
Fall2	0.004	0.089	0.102	0.221	0.013	0.020	0.000
Fall3	0.025	0.167	0.214	0.006	0.068	0.144	0.002
Fall4	0.022	0.037	0.048	0.295	0.453	0.003	0.001
Fall5	0.060	0.001	0.134	0.208	0.022	0.334	0.485
Fall6	0.167	0.001	0.723	0.002	0.153	0.399	0.000
Fall7	0.840	0.780	1.231	0.027	0.474	0.036	0.000
Spring1	0.208	0.970	0.023	1.443	0.566	1.003	0.542
Spring2	0.224	0.209	0.002	0.099	0.000	0.181	0.089
Spring3	0.310	0.034	0.073	0.000	0.075	0.102	0.188
Spring4	0.076	0.023	0.021	0.007	0.068	0.001	0.353
Spring5	0.108	0.010	0.122	0.141	0.013	0.013	0.275
Spring6	0.075	0.000	0.023	0.065	0.020	0.209	0.832
Spring7	0.004	0.014	0.232	0.904	0.097	0.126	0.011
Winter1	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Winter2	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Winter3	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Winter4	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Winter5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Scall1	0.000	0.000	0.000	0.000	0.000	0.000	0.000
++	2.235	2.337	2.968	3.543	2.081	2.674	2.847
	1980	1981	1982	1983	1984	1985	1986
Fall1	0.352	0.001	0.232	0.098	0.001	0.087	0.008
Fall2	0.002	0.217	0.042	0.170	0.020	0.565	0.068
Fall3	0.079	0.007	0.202	0.009	0.003	0.282	0.008
Fall4	0.106	0.098	0.117	0.006	0.271	0.377	0.023
Fall5	0.000	0.000	0.319	0.333	0.000	0.000	0.106
Fall6	0.000	0.038	0.000	0.000	0.000	0.000	0.000
Fall7	0.000	0.000	0.000	0.046	0.000	0.000	0.000
Spring1	0.106	0.054	0.588	1.634	0.735	0.047	0.641
Spring2	0.113	0.605	0.004	0.029	0.498	0.021	0.038
Spring3	0.101	0.155	0.014	0.036	1.011	0.116	0.005
Spring4	0.040	0.138	0.045	0.406	0.082	0.127	0.031
Spring5	0.028	0.000	0.078	0.096	0.062	0.011	0.073
Spring6	0.042	0.001	0.263	0.000	0.135	0.000	0.948
Spring7	0.009	0.000	0.271	0.000	0.000	0.170	0.000
Winter1	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Winter2	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Winter3	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Winter4	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Winter5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Scall1	0.000	0.000	0.891	0.100	0.411	0.014	2.276
++	0.978	1.314	3.065	2.963	3.228	1.817	4.224

	1987	1988	1989	1990	1991	1992	1993
Fall1	0.000	0.166	1.183	0.002	0.201	0.006	0.214
Fall2	0.000	0.687	0.002	0.000	0.417	1.888	0.985
Fall3	0.026	0.012	0.124	0.064	0.050	0.914	0.011
Fall4	0.410	0.548	0.004	0.005	0.052	0.003	0.012
Fall5	0.000	0.230	0.000	0.000	0.000	0.000	0.000
Fall6	0.000	0.906	0.000	0.000	0.000	0.000	0.000
Fall7	1.168	0.000	0.000	0.000	0.000	0.000	0.000
Spring1	0.000	0.596	0.001	0.020	1.194	0.119	0.004
Spring2	1.583	0.676	0.008	0.660	0.044	1.360	0.023
Spring3	0.000	0.242	0.312	0.017	0.015	0.030	0.112
Spring4	0.240	0.008	0.160	0.288	0.007	0.039	0.004
Spring5	0.000	0.786	0.000	0.015	1.125	0.000	0.255
Spring6	0.000	0.025	0.000	0.000	0.359	0.000	0.000
Spring7	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Winter1	0.000	0.000	0.000	0.000	0.000	1.259	1.551
Winter2	0.000	0.000	0.000	0.000	0.000	0.213	0.001
Winter3	0.000	0.000	0.000	0.000	0.000	0.234	0.154
Winter4	0.000	0.000	0.000	0.000	0.000	0.001	0.002
Winter5	0.000	0.000	0.000	0.000	0.000	0.117	0.218
Scall1	1.371	0.185	0.005	0.048	0.040	0.130	0.376

++ 4.798 5.069 1.799 1.118 3.507 6.313 3.922

	1994	1995	1996	1997	1998	1999	2000
Fall1	0.519	0.112	0.426	0.134	0.547	0.388	0.353
Fall2	0.342	0.226	0.187	0.278	0.312	0.002	0.361
Fall3	0.018	0.394	0.106	1.542	0.000	0.002	0.030
Fall4	0.558	0.582	0.000	0.785	0.001	0.032	0.185
Fall5	0.376	0.000	0.000	0.221	0.000	0.570	0.000
Fall6	0.000	0.000	0.000	0.000	1.318	0.000	0.000
Fall7	0.000	1.117	0.000	0.000	0.000	0.000	2.559
Spring1	0.076	0.127	0.000	0.000	0.232	0.037	0.007
Spring2	0.010	0.587	0.001	0.650	0.765	0.100	0.147
Spring3	1.692	0.166	0.658	0.406	0.067	0.332	0.232
Spring4	0.000	0.008	0.745	0.036	0.000	0.291	0.210
Spring5	0.202	0.095	0.241	0.087	0.020	0.055	0.009
Spring6	0.865	0.788	0.000	0.000	0.137	0.000	0.000
Spring7	0.000	0.275	0.000	0.000	0.000	0.856	0.000
Winter1	0.563	0.020	0.082	0.022	0.000	0.016	0.095
Winter2	0.660	0.564	0.343	0.007	0.018	0.013	0.014
Winter3	0.192	0.133	0.273	0.274	0.076	0.034	0.058
Winter4	0.128	0.013	0.000	0.126	0.003	0.011	0.051
Winter5	0.093	0.167	0.009	0.505	0.070	0.081	0.141
Scall1	1.247	0.032	0.184	0.705	0.303	0.195	0.058

++ 7.540 5.407 3.253 5.778 3.869 3.015 4.510

	2001	2002	++
Fall1	0.102	0.000	5.621
Fall2	0.486	0.000	7.706
Fall3	0.248	0.000	4.758
Fall4	0.009	0.000	5.043
Fall5	0.000	0.000	3.400
Fall6	0.000	0.000	3.709
Fall7	0.000	0.000	8.278
Spring1	0.000	0.000	10.972
Spring2	0.401	0.521	9.651
Spring3	0.098	0.009	6.606
Spring4	0.001	0.241	3.695
Spring5	0.010	0.071	4.003
Spring6	0.008	0.000	4.794
Spring7	0.000	0.000	2.969
Winter1	0.571	0.000	4.178
Winter2	0.199	0.008	2.039
Winter3	0.013	0.015	1.454
Winter4	0.001	0.065	0.401
Winter5	0.051	0.661	2.114
Scall1	0.038	0.000	8.609

++ 2.236 1.590 100.000

STOCK NUMBERS (Jan 1) in thousands - C:\all_work\yt\2002\SNEMA\snemayt_2002_wg.7

	1973	1974	1975	1976	1977	1978	1979
1	43532	10627	31562	14634	50316	54165	32034
2	17681	35442	7921	17779	11788	36207	36476
3	27907	9380	3212	2749	8514	5103	16803
4	16078	12035	2653	925	1182	2545	2220
5	8927	5945	3185	1149	462	509	754
6	11005	2580	1531	1162	535	126	193
7	2006	2769	1256	1009	596	243	57

1+ 127136 78777 51320 39409 73393 98899 88537

	1980	1981	1982	1983	1984	1985	1986
1	44493	138470	64223	16726	19164	20993	7315
2	26042	35518	113335	52429	11280	15223	15161
3	12293	12078	22719	60492	25473	3625	5158
4	5915	4097	3032	5609	10766	2767	1000
5	856	1378	707	801	1334	1459	485
6	221	238	123	203	308	298	191
7	64	32	11	62	36	60	32

1+ 89884 191811 204151 136323 68361 44425 29342

	1987	1988	1989	1990	1991	1992	1993
1	15044	124008	17769	8083	3934	2267	2041
2	5570	10875	96192	14526	6444	2817	1425
3	3392	1450	6995	60731	10032	3819	992
4	1213	634	702	2699	11136	3537	1229
5	244	155	61	157	211	338	417
6	75	49	06	07	47	21	08
7	13	11	00	00	23	06	00

1+ 25551 137183 121725 86202 31827 12804 6112

	1994	1995	1996	1997	1998	1999	2000
1	2953	3392	1988	5951	3377	5753	1889
2	1660	2278	2771	1608	4871	2762	4705
3	753	682	1586	1882	1223	3525	2166
4	407	334	395	732	486	427	786
5	363	79	75	98	113	121	89
6	210	18	37	08	25	19	06
7	07	20	13	09	07	07	04

1+	6353	6803	6866	10289	10101	12615	9645
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	2001	2002
1	3060	00
2	1515	2504
3	3339	991
4	786	1455
5	239	260
6	59	79
7	35	31

1+	9033	5321
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FISHING MORTALITY - C:\all_work\yt\2002\SNEMA\snemayt_2002_wg.7

	1973	1974	1975	1976	1977	1978	1979
1	0.01	0.09	0.37	0.02	0.13	0.20	0.01
2	0.43	2.20	0.86	0.54	0.64	0.57	0.89
3	0.64	1.06	1.04	0.64	1.01	0.63	0.84
4	0.79	1.13	0.64	0.50	0.64	1.02	0.75
5	1.04	1.16	0.81	0.57	1.10	0.77	1.03
6	0.76	1.15	0.85	0.60	0.99	0.76	0.86
7	0.76	1.15	0.85	0.60	0.99	0.76	0.86

	1980	1981	1982	1983	1984	1985	1986
1	0.03	0.00	0.00	0.19	0.03	0.13	0.07
2	0.57	0.25	0.43	0.52	0.94	0.88	1.30
3	0.90	1.18	1.20	1.53	2.02	1.09	1.25
4	1.26	1.56	1.13	1.24	1.80	1.54	1.21
5	1.08	2.22	1.05	0.76	1.30	1.83	1.67
6	1.04	1.38	1.24	1.58	2.12	1.41	1.33
7	1.04	1.38	1.24	1.58	2.12	1.41	1.33

	1987	1988	1989	1990	1991	1992	1993
1	0.12	0.05	0.00	0.03	0.13	0.26	0.01
2	1.15	0.24	0.26	0.17	0.32	0.84	0.44
3	1.48	0.53	0.75	1.50	0.84	0.93	0.69
4	1.86	2.13	1.30	2.35	3.29	1.94	1.02
5	1.41	3.06	1.99	1.00	2.13	3.55	0.48
6	1.66	0.89	0.82	1.62	1.60	1.40	0.81
7	1.66	0.89	0.82	1.62	1.60	1.40	0.81

	1994	1995	1996	1997	1998	1999	2000
1	0.06	0.00	0.01	0.00	0.00	0.00	0.02
2	0.69	0.16	0.19	0.07	0.12	0.04	0.14
3	0.61	0.34	0.57	1.15	0.85	1.30	0.81
4	1.44	1.29	1.19	1.67	1.19	1.37	0.99
5	2.82	0.57	2.11	1.19	1.58	2.84	0.21
6	1.10	0.58	0.71	1.33	1.00	1.40	0.85
7	1.10	0.58	0.71	1.33	1.00	1.40	0.85

2001

1	0.00
2	0.22
3	0.63
4	0.91
5	0.91
6	0.91
7	0.91

4,6

Average F for 4,6

	1973	1974	1975	1976	1977	1978	1979
4,6	0.87	1.15	0.76	0.55	0.91	0.85	0.88
	1980	1981	1982	1983	1984	1985	1986
4,6	1.12	1.72	1.14	1.19	1.74	1.60	1.40
	1987	1988	1989	1990	1991	1992	1993
4,6	1.64	2.03	1.37	1.66	2.34	2.30	0.77
	1994	1995	1996	1997	1998	1999	2000
4,6	1.79	0.81	1.34	1.40	1.25	1.87	0.68

2001

4,6	0.91
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BACKCALCULATED PARTIAL RECRUITMENT

	1973	1974	1975	1976	1977	1978	1979
1	0.01	0.04	0.36	0.03	0.12	0.19	0.01
2	0.42	1.00	0.82	0.83	0.58	0.56	0.86
3	0.62	0.48	1.00	1.00	0.92	0.62	0.82
4	0.76	0.51	0.61	0.77	0.59	1.00	0.73
5	1.00	0.53	0.77	0.88	1.00	0.76	1.00
6	0.73	0.52	0.81	0.94	0.90	0.75	0.84
7	0.73	0.52	0.81	0.94	0.90	0.75	0.84
	1980	1981	1982	1983	1984	1985	1986
1	0.02	0.00	0.00	0.12	0.01	0.07	0.04
2	0.45	0.11	0.35	0.33	0.44	0.48	0.78
3	0.72	0.53	0.97	0.97	0.95	0.59	0.75
4	1.00	0.70	0.92	0.78	0.85	0.84	0.73
5	0.86	1.00	0.85	0.48	0.61	1.00	1.00
6	0.83	0.62	1.00	1.00	1.00	0.77	0.80
7	0.83	0.62	1.00	1.00	1.00	0.77	0.80
	1987	1988	1989	1990	1991	1992	1993
1	0.07	0.02	0.00	0.01	0.04	0.07	0.01
2	0.62	0.08	0.13	0.07	0.10	0.24	0.43
3	0.80	0.17	0.38	0.64	0.26	0.26	0.68
4	1.00	0.70	0.65	1.00	1.00	0.55	1.00
5	0.76	1.00	1.00	0.43	0.65	1.00	0.48
6	0.89	0.29	0.41	0.69	0.48	0.40	0.79
7	0.89	0.29	0.41	0.69	0.48	0.40	0.79

	1994	1995	1996	1997	1998	1999	2000
1	0.02	0.00	0.01	0.00	0.00	0.00	0.02
2	0.24	0.13	0.09	0.04	0.08	0.02	0.14
3	0.22	0.27	0.27	0.69	0.54	0.46	0.82
4	0.51	1.00	0.56	1.00	0.76	0.48	1.00
5	1.00	0.44	1.00	0.71	1.00	1.00	0.21
6	0.39	0.45	0.34	0.80	0.63	0.49	0.86
7	0.39	0.45	0.34	0.80	0.63	0.49	0.86
2001							
1	0.00						
2	0.25						
3	0.70						
4	1.00						
5	1.00						
6	1.00						
7	1.00						

MEAN BIOMASS (using catch mean weights at age)

	1973	1974	1975	1976	1977	1978	1979
1	8263	1869	5235	3001	9218	10469	5469
2	3876	4135	1413	3813	2260	7406	6693
3	6567	1875	691	758	1883	1327	3796
4	3819	2636	777	332	403	789	680
5	1953	1428	873	401	133	216	256
6	2956	609	434	434	150	56	80
7	625	730	397	397	208	100	22
1+	28060	13282	9818	9135	14255	20362	16995
1980							
1	8207	17568	13137	2419	3115	3279	1191
2	5107	7505	22136	9747	1598	2418	2232
3	2864	2238	4318	9766	3018	744	902
4	1557	915	836	1477	1807	535	248
5	329	310	267	344	337	314	129
6	111	80	54	78	78	85	60
7	40	08	05	24	05	20	13
1+	18215	28623	40753	23855	9958	7396	4775
1987							
1	3173	29568	5005	2177	689	303	225
2	821	2576	26062	3970	1315	553	373
3	581	409	1777	11052	2100	841	282
4	208	121	201	444	1279	634	320
5	63	28	18	70	55	53	194
6	20	24	04	03	20	08	05
7	05	06	00	00	06	04	00
1+	4870	32732	33068	17715	5464	2395	1400

	1994	1995	1996	1997	1998	1999	2000
1	177	378	265	755	496	1152	58
2	223	572	857	405	1224	711	1402
3	182	211	451	428	311	805	647
4	89	80	100	158	148	121	279
5	65	37	17	31	41	26	55
6	84	09	17	04	12	10	04
7	03	10	07	06	04	04	02

1+ 823 1295 1714 1787 2235 2828 2447

2001

1	424
2	467
3	994
4	296
5	110
6	34
7	21

1+ 2345 00

SSB AT THE START OF THE SPAWNING SEASON -MALES AND FEMALES (MT) (using SSB mean weights)

	1973	1974	1975	1976	1977	1978	1979
1	1091	248	704	396	1226	1397	722
2	2974	2970	1090	2933	1742	5701	5164
3	6704	1912	705	773	1922	1354	3879
4	3983	2739	809	345	420	822	709
5	2033	1483	910	417	138	225	267
6	3082	633	452	451	157	58	84
7	652	758	414	414	216	104	23

1+ 20518 10742 5084 5730 5820 9662 10847

	1980	1981	1982	1983	1984	1985	1986
1	1085	2318	1734	323	412	436	158
2	3932	5716	16980	7496	1233	1866	1707
3	2927	2276	4388	9789	2920	758	915
4	1612	934	869	1529	1816	547	257
5	342	300	278	359	348	315	131
6	115	82	56	79	76	88	62
7	42	08	06	25	05	21	13

1+ 10054 11635 24309 19600 6810 4030 3244

	1987	1988	1989	1990	1991	1992	1993
1	422	3916	661	288	92	41	30
2	630	1962	19864	3013	1005	426	286
3	583	416	1816	11096	2146	859	288
4	208	118	208	424	1075	630	333
5	65	24	18	73	54	43	201
6	20	25	04	03	20	08	05
7	05	07	00	00	06	04	00

1+ 1934 6467 22570 14896 4397 2011 1144

	1994	1995	1996	1997	1998	1999	2000
1	23	50	35	100	65	152	08
2	172	433	651	306	926	536	1062
3	185	214	460	435	318	815	661
4	91	82	103	161	154	125	290
5	59	38	17	32	41	23	57
6	87	09	18	04	13	10	04
7	03	10	07	06	04	04	03
1+	622	837	1291	1043	1521	1665	2085
2001							
1	56						
2	355						
3	1014						
4	308						
5	115						
6	35						
7	22						
1+	1905						

The number of bootstraps: 500
 Bootstrap Output Variable: N hat

	NLLS ESTIMATE	BOOTSTRAP MEAN	BOOTSTRAP StdError	C.V. FOR NLLS SOLN			
N 2	2504	2616	903	0.36			
N 3	991	1005	286	0.29			
N 4	1455	1519	535	0.37			
N 5	260	268	96	0.37			

	BIAS ESTIMATE	BIAS STD ERROR	PERCENT BIAS	NLLS EST CORRECTED FOR BIAS	C.V. FOR CORRECTED ESTIMATE	LOWER 80%CI	UPPER 80%CI
N 2	111	40	4.45	2393	0.377183	1706	3851
N 3	13	13	1.33	978	0.291857	670	1412
N 4	64	24	4.40	1391	0.384760	978	2329
N 5	08	04	2.96	253	0.379237	169	413

Bootstrap Output Variable: Q_unscaled

	NLLS ESTIMATE	BOOTSTRAP MEAN	BOOTSTRAP StdError	C.V. FOR NLLS SOLN			
q Fall1	0.0000808	0.0000808	0.0000104	0.13			
q Fall2	0.0001481	0.0001487	0.0000196	0.13			
q Fall3	0.0001650	0.0001663	0.0000238	0.14			
q Fall4	0.0001766	0.0001783	0.0000246	0.14			
q Fall5	0.0002000	0.0002016	0.0000379	0.19			
q Fall6	0.0002205	0.0002253	0.0000481	0.22			
q Fall7	0.0006139	0.0006278	0.0001346	0.22			
q Spring1	0.0000087	0.0000088	0.0000012	0.14			
q Spring2	0.0001363	0.0001378	0.0000177	0.13			
q Spring3	0.0002018	0.0002046	0.0000260	0.13			
q Spring4	0.0003214	0.0003253	0.0000444	0.14			
q Spring5	0.0004079	0.0004140	0.0000579	0.14			
q Spring6	0.0004513	0.0004622	0.0000775	0.17			
q Spring7	0.0006472	0.0006572	0.0001314	0.20			
q Winter1	0.0000338	0.0000345	0.0000079	0.23			
q Winter2	0.0012783	0.0013130	0.0002887	0.23			
q Winter3	0.0021025	0.0021916	0.0004958	0.24			
q Winter4	0.0021832	0.0022407	0.0004851	0.22			
q Winter5	0.0015704	0.0015940	0.0003468	0.22			
q Scall1	0.0000319	0.0000327	0.0000052	0.16			

	BIAS ESTIMATE	BIAS STD ERROR	PERCENT BIAS	NLLS EST CORRECTED FOR BIAS	C.V. FOR CORRECTED ESTIMATE	LOWER 80%CI	UPPER 80%CI
q Fall1	-0.00000007	0.000000463	-0.092	0.000080916	0.13	0.0000696	0.0000970
q Fall2	0.00000064	0.000000877	0.433	0.000147436	0.13	0.0001253	0.0001761
q Fall3	0.00000135	0.000001063	0.820	0.000163604	0.15	0.0001331	0.0001972
q Fall4	0.00000174	0.000001100	0.988	0.000174815	0.14	0.0001491	0.0002117
q Fall5	0.00000155	0.000001695	0.774	0.000198467	0.19	0.0001596	0.0002567
q Fall6	0.00000479	0.000002152	2.173	0.000215704	0.22	0.0001640	0.0002780
q Fall7	0.00001390	0.000006018	2.264	0.000600007	0.22	0.0004825	0.0008119
q Spring1	0.00000004	0.000000054	0.437	0.000008706	0.14	0.0000073	0.0000105
q Spring2	0.00000148	0.000000793	1.088	0.000134809	0.13	0.0001140	0.0001603
q Spring3	0.00000281	0.000001165	1.394	0.000199007	0.13	0.0001706	0.0002365
q Spring4	0.00000397	0.000001986	1.235	0.000317388	0.14	0.0002681	0.0003838
q Spring5	0.00000609	0.000002590	1.493	0.000401781	0.14	0.0003272	0.0004783
q Spring6	0.00001086	0.000003465	2.406	0.000440473	0.18	0.0003525	0.0005474
q Spring7	0.00000996	0.000005878	1.539	0.000637248	0.21	0.0005042	0.0008452
q Winter1	0.00000065	0.000000354	1.916	0.000033180	0.24	0.0000261	0.0000468
q Winter2	0.00003473	0.000012911	2.717	0.001243555	0.23	0.0009529	0.0016541
q Winter3	0.00008911	0.000022175	4.238	0.002013365	0.25	0.0015846	0.0027634
q Winter4	0.00005752	0.000021694	2.634	0.002125698	0.23	0.0015969	0.0027981
q Winter5	0.00002359	0.000015508	1.502	0.001546815	0.22	0.0012007	0.0020593
q Scall1	0.00000078	0.000000233	2.434	0.000031120	0.17	0.0000260	0.0000383

Bootstrap Output Variable: N t1

	NLLS ESTIMATE	BOOTSTRAP MEAN	BOOTSTRAP StdError	C.V. FOR NLLS SOLN			
Age 1	12073.0	12069.0	192.0	0.0159			
Age 2	2504.2	2615.6	902.6	0.3604			
Age 3	991.5	1004.7	285.5	0.2880			
Age 4	1455.3	1519.3	535.3	0.3678			
Age 5	260.2	267.9	95.8	0.3680			
Age 6	79.2	81.5	29.1	0.3680			
Age 7	31.1	32.0	11.5	0.3693			

	BIAS ESTIMATE	BIAS STD ERROR	PERCENT BIAS	NLLS EST CORRECTED FOR BIAS	C.V. FOR CORRECTED ESTIMATE	LOWER 80%CI	UPPER 80%CI
Age 1	-4.06	8.59	-0.034	12077.08	0.02	11838.2	12316.1
Age 2	111.35	40.36	4.447	2392.88	0.38	1705.6	3850.5
Age 3	13.22	12.77	1.333	978.26	0.29	670.3	1411.7
Age 4	63.97	23.94	4.396	1391.36	0.38	978.5	2328.8
Age 5	7.69	4.28	2.955	252.53	0.38	168.9	413.0
Age 6	2.34	1.30	2.955	76.83	0.38	51.4	125.7
Age 7	0.93	0.51	2.980	30.18	0.38	20.2	49.4

Bootstrap Output Variable: F t

	NLLS ESTIMATE	BOOTSTRAP MEAN	BOOTSTRAP StdError	C.V. FOR NLLS SOLN
Age 1	0.0004	0.0004	0.0001	0.36
Age 2	0.2239	0.2369	0.0663	0.30
Age 3	0.6305	0.6535	0.1717	0.27
Age 4	0.9060	0.9446	0.2350	0.26
Age 5	0.9060	0.9446	0.2350	0.26
Age 6	0.9060	0.9446	0.2350	0.26
Age 7	0.9060	0.9446	0.2350	0.26

	BIAS ESTIMATE	BIAS STD ERROR	PERCENT BIAS	NLLS EST CORRECTED FOR BIAS	C.V. FOR CORRECTED ESTIMATE	LOWER 80%CI	UPPER 80%CI
Age 1	0.0000244	0.0000059	6.762	0.0003368	0.39	0.0002	0.0005
Age 2	0.0129957	0.0029659	5.804	0.2109237	0.31	0.1618	0.3144
Age 3	0.0230126	0.0076774	3.650	0.6074698	0.28	0.4370	0.8347
Age 4	0.0386459	0.0105101	4.266	0.8673368	0.27	0.6547	1.1830
Age 5	0.0386459	0.0105101	4.266	0.8673368	0.27	0.6547	1.1830
Age 6	0.0386459	0.0105101	4.266	0.8673368	0.27	0.6547	1.1830
Age 7	0.0386459	0.0105101	4.266	0.8673368	0.27	0.6547	1.1830

Bootstrap Output Variable: F full t

	NLLS ESTIMATE	BOOTSTRAP MEAN	BOOTSTRAP StdError	C.V. FOR NLLS SOLN
	0.9060	0.9446	0.2350	0.26

	BIAS ESTIMATE	BIAS STD ERROR	PERCENT BIAS	NLLS EST CORRECTED FOR BIAS	C.V. FOR CORRECTED ESTIMATE	LOWER 80%CI	UPPER 80%CI
	0.03865	0.01051	4.27	0.86734	0.27	0.6547	1.1830

Bootstrap Output Variable: PR t

	NLLS ESTIMATE	BOOTSTRAP MEAN	BOOTSTRAP StdError	C.V. FOR NLLS SOLN
Age 1	0.0004	0.0004	0.0002	0.42
Age 2	0.2472	0.2585	0.0886	0.36
Age 3	0.6959	0.7028	0.1893	0.27
Age 4	1.0000	0.9826	0.0628	0.06
Age 5	1.0000	0.9826	0.0628	0.06
Age 6	1.0000	0.9826	0.0628	0.06
Age 7	1.0000	0.9826	0.0628	0.06

	BIAS ESTIMATE	BIAS STD ERROR	PERCENT BIAS	NLLS EST CORRECTED FOR BIAS	C.V. FOR CORRECTED ESTIMATE	LOWER 80%CI	UPPER 80%CI
Age 1	0.00002	0.000008	5.57	0.00037654	0.45	0.0002	0.0006
Age 2	0.01135	0.003962	4.59	0.23581026	0.38	0.1568	0.3695
Age 3	0.00690	0.008466	0.99	0.68901412	0.27	0.4486	1.0000
Age 4	-0.01739	0.002809	-1.74	1.01739148	0.06	1.0000	1.0000
Age 5	-0.01739	0.002809	-1.74	1.01739148	0.06	0.4857	1.0000
Age 6	-0.01739	0.002809	-1.74	1.01739148	0.06	0.8500	1.0000
Age 7	-0.01739	0.002809	-1.74	1.01739148	0.06	0.8500	1.0000

Bootstrap Output Variable: PR mean

	NLLS ESTIMATE	BOOTSTRAP MEAN	BOOTSTRAP StdError	C.V. FOR NLLS SOLN
Age 1	0.0015	0.0015	0.0003	0.17
Age 2	0.0814	0.0816	0.0103	0.13
Age 3	0.6398	0.6360	0.0581	0.09
Age 4	0.7839	0.7787	0.0243	0.03
Age 5	0.5926	0.5890	0.0178	0.03
Age 6	0.7509	0.7460	0.0205	0.03
Age 7	0.7509	0.7460	0.0205	0.03

	BIAS ESTIMATE	BIAS STD ERROR	PERCENT BIAS	NLLS EST CORRECTED FOR BIAS	C.V. FOR CORRECTED ESTIMATE	LOWER 80%CI	UPPER 80%CI
Age 1	0.00002	0.0000117	1.16	0.0014842	0.18	0.0012	0.0019
Age 2	0.00018	0.0004585	0.22	0.0812317	0.13	0.0675	0.0933
Age 3	-0.00376	0.0025972	-0.59	0.6435728	0.09	0.5549	0.7144
Age 4	-0.00518	0.0010885	-0.66	0.7890372	0.03	0.7510	0.7956
Age 5	-0.00358	0.0007954	-0.60	0.5961522	0.03	0.5716	0.6010
Age 6	-0.00489	0.0009181	-0.65	0.7557880	0.03	0.7279	0.7573
Age 7	-0.00489	0.0009181	-0.65	0.7557880	0.03	0.7279	0.7573

Bootstrap Output Variable: Mean Biomass

	NLLS ESTIMATE	BOOTSTRAP MEAN	BOOTSTRAP StdError	C.V. FOR NLLS SOLN
	2345.3292	2406.5608	371.0577	0.16

	BIAS ESTIMATE	BIAS STD ERROR	PERCENT BIAS	NLLS EST CORRECTED FOR BIAS	C.V. FOR CORRECTED ESTIMATE	LOWER 80%CI	UPPER 80%CI
	61.2316	16.5942	2.61	2284.0977	0.16	1884.2525	2750.0318

Bootstrap Output Variable: SSB female mean

```
-----  
      NLLS      BOOTSTRAP      BOOTSTRAP      C.V. FOR  
ESTIMATE      MEAN      StdError      NLLS SOLN  
      917.5135      938.9216      158.9272      0.17  
  
      BIAS      BIAS      PERCENT      NLLS EST      C.V. FOR  
ESTIMATE      STD ERROR      BIAS      CORRECTED      CORRECTED      LOWER      UPPER  
      21.408      7.107      2.33      FOR BIAS      ESTIMATE      80%CI      80%CI  
      896.105      0.18      739.0302      1102.0618
```

Bootstrap Output Variable: SSB spawn t

```
-----  
      NLLS      BOOTSTRAP      BOOTSTRAP      C.V. FOR  
ESTIMATE      MEAN      StdError      NLLS SOLN  
      1905.5690      1947.7482      328.0158      0.17  
  
      BIAS      BIAS      PERCENT      NLLS EST      C.V. FOR  
ESTIMATE      STD ERROR      BIAS      CORRECTED      CORRECTED      LOWER      UPPER  
      42.18      14.67      2.21      FOR BIAS      ESTIMATE      80%CI      80%CI  
      1863.39      0.18      1531.9580      2283.3856
```

Bootstrap Output Variable: Jan 1 biomass

```
-----  
      NLLS      BOOTSTRAP      BOOTSTRAP      C.V. FOR  
ESTIMATE      MEAN      StdError      NLLS SOLN  
      2788.5938      2857.2002      376.5306      0.14  
  
      BIAS      BIAS      PERCENT      NLLS EST      C.V. FOR  
ESTIMATE      STD ERROR      BIAS      CORRECTED      CORRECTED      LOWER      UPPER  
      68.61      16.84      2.46      FOR BIAS      ESTIMATE      80%CI      80%CI  
      2719.99      0.14      2320.80      3191.17
```



```

Projection Input:
SNE-MA yellowtail SAW 36
  2002 ! first year
    9 ! number of years
    10 ! recruitment simulations
123456 ! seed
  0 ! age-2 recruitment?
  0 ! F and quota basis?
  1 ! discards?
  0 ! quota-based?
  0 ! constant catch?
  0 ! F target?
  0 ! index?
  1 ! thresholds?
  0 ! market categories?
  0 ! total mortality?
  0 ! PR?
  1 ! constant discards?
  1 ! bounded recruitment?
  1 ! constant M?
  1 ! bootstrap abundance?
  7 1 7 ! ages, first and last
0.2      ! M
0.131 0.310 0.418 0.525 0.671 0.869 0.976 ! spawn wts
0.201 0.339 0.420 0.528 0.672 0.876 0.968 ! landed wts
0.131 0.277 0.396 0.495 0.649 0.716 0.591 ! discard wts
0.13   0.74   0.98   1.00   1.00   1.00   1.00 ! maturity
0.42 ! spawning time
  14 ! recruitment option
  39 ! hindcast recruitment
182892327 172024752 275646040 431913366 291823020
171800743 129205446 54628713 179950495 40162129 22014851 8603342 18977723
24303218 28325495 25737624 18472772 14269802 77224807 25241337 23761139
17871287 10756188 7504950 13210396 54077970 2451733 6673267 7275990 2073020
4111386 9060644 1720297 5547030 10176980 11014851 15320545 610149 4831683
  500 ! number of bootstrap replicates
snemayt.dat
  1000.0 ! bootstrap scaling
  69500000 130200000 0.26 130200000 0.15 ! SSB,Jan1B,Ffull,MeanB,Fwb thresholds
  0.01 0.17 0.64 1.00 1.00 1.00 1.00 ! PR
  1.00 0.39 0.13 0.10 0.08 0.06 0.04 ! proportion discard at age
  0.77 0.08 0.08 0.08 0.08 0.08 0.08 0.08 0.08 ! schedule of F

```

Projection Output:
 PROJECTION RUN: SNE-MA yellowtail SAW 36
 INPUT FILE: snemayt.in
 OUTPUT FILE: snemayt.out
 RECRUITMENT MODEL: 14
 NUMBER OF SIMULATIONS: 10

F-BASED PROJECTIONS

TIME-VARYING F

YEAR	F
2002	0.770
2003	0.080
2004	0.080
2005	0.080
2006	0.080
2007	0.080
2008	0.080
2009	0.080
2010	0.080

SPAWNING STOCK BIOMASS (THOUSAND MT)

YEAR	AVG SSB (000 MT)	STD
2002	1.599	0.298
2003	2.860	1.427
2004	13.064	15.107
2005	26.895	25.678
2006	40.607	32.735
2007	53.798	37.935
2008	66.628	42.755
2009	77.313	46.003
2010	85.109	47.370

PERCENTILES OF SPAWNING STOCK BIOMASS (000 MT)

YEAR	1%	5%	10%	25%	50%	75%	90%	95%	99%
2002	1.010	1.145	1.230	1.400	1.576	1.768	1.964	2.109	2.455
2003	1.459	1.635	1.743	1.968	2.316	3.056	4.903	6.155	7.940
2004	2.168	2.781	3.218	4.197	6.347	12.566	34.086	50.377	68.814
2005	3.473	4.788	5.680	8.259	14.216	40.843	67.374	79.008	107.339
2006	5.272	7.569	9.278	13.462	30.733	57.557	88.306	106.690	137.556
2007	7.625	10.536	13.147	20.696	48.275	77.207	107.740	125.456	166.765
2008	10.088	14.348	17.557	29.955	59.017	92.535	127.027	147.530	187.692
2009	12.543	17.810	22.432	41.383	69.407	105.044	141.615	164.215	210.577
2010	15.074	21.368	27.140	50.048	78.121	113.597	149.628	172.825	218.372

ANNUAL PROBABILITY THAT SSB EXCEEDS THRESHOLD: 69.500 THOUSAND MT

YEAR	Pr(SSB > Threshold Value)
2002	0.000
2003	0.000
2004	0.009
2005	0.094
2006	0.191
2007	0.296
2008	0.403
2009	0.499
2010	0.570

MEAN BIOMASS (THOUSAND MT) FOR AGES:1 TO 7

YEAR	AVG MEAN B (000 MT)	STD
2002	2.347	0.438
2003	12.857	16.000
2004	27.036	26.593
2005	41.119	33.791
2006	54.647	38.975
2007	67.652	43.775
2008	80.199	47.993
2009	90.282	50.264
2010	97.850	51.371

PERCENTILES OF MEAN STOCK BIOMASS (000 MT)

YEAR	1%	5%	10%	25%	50%	75%	90%	95%	99%
2002	1.561	1.719	1.832	2.038	2.285	2.602	2.949	3.123	3.462
2003	2.038	2.445	2.900	3.686	5.582	12.150	35.145	52.908	72.367
2004	3.251	4.517	5.314	7.668	13.393	41.492	69.040	81.475	109.408
2005	5.117	7.166	8.782	12.913	31.047	58.820	90.170	108.789	141.561
2006	7.294	10.348	12.869	20.419	49.264	78.808	109.765	128.767	170.671
2007	10.103	14.271	17.402	30.014	59.633	94.078	129.440	150.296	191.361
2008	12.864	17.985	22.830	42.846	72.269	109.076	147.397	171.181	216.355
2009	15.378	22.150	28.210	53.864	83.806	120.543	159.873	182.652	229.137
2010	17.723	26.220	34.072	59.425	91.292	129.136	168.028	192.651	244.075

ANNUAL PROBABILITY THAT MEAN BIOMASS EXCEEDS THRESHOLD: 130.200 THOUSAND MT

YEAR	Pr(MEAN B > Threshold Value)
2002	0.000
2003	0.000
2004	0.003
2005	0.019
2006	0.047
2007	0.098
2008	0.148
2009	0.203
2010	0.247

F WEIGHTED BY MEAN BIOMASS FOR AGES:1 TO 7

YEAR	AVG F_WT_B	STD
2002	0.339	0.055
2003	0.019	0.012
2004	0.019	0.010
2005	0.029	0.013
2006	0.040	0.017
2007	0.048	0.017
2008	0.053	0.017
2009	0.056	0.016
2010	0.058	0.015

PERCENTILES OF F WEIGHTED BY MEAN BIOMASS FOR AGES:1 TO 7

YEAR	1%	5%	10%	25%	50%	75%	90%	95%	99%
2002	0.213	0.248	0.263	0.298	0.340	0.377	0.407	0.432	0.455
2003	0.002	0.003	0.003	0.009	0.019	0.028	0.035	0.040	0.046
2004	0.003	0.005	0.006	0.013	0.018	0.025	0.032	0.037	0.047
2005	0.005	0.008	0.011	0.018	0.029	0.040	0.047	0.049	0.052
2006	0.008	0.013	0.017	0.026	0.041	0.052	0.065	0.071	0.076
2007	0.012	0.017	0.022	0.035	0.049	0.061	0.071	0.073	0.077
2008	0.015	0.022	0.028	0.041	0.055	0.067	0.073	0.075	0.078
2009	0.017	0.026	0.033	0.047	0.059	0.069	0.074	0.076	0.078
2010	0.020	0.029	0.036	0.049	0.061	0.070	0.075	0.076	0.078

ANNUAL PROBABILITY THAT F WEIGHTED BY MEAN BIOMASS EXCEEDS THRESHOLD: 0.150

YEAR	Pr(F_WT_B > Threshold Value)
2002	1.000
2003	0.000
2004	0.000
2005	0.000
2006	0.000
2007	0.000
2008	0.000
2009	0.000
2010	0.000

TOTAL STOCK BIOMASS (THOUSAND MT)

YEAR	AVG TOTAL B (000 MT)	STD
2002	2.738	0.486
2003	10.062	11.516
2004	24.662	24.707
2005	40.440	34.024
2006	55.877	40.800
2007	70.739	46.438
2008	85.083	51.557
2009	96.885	54.654
2010	105.635	56.014

PERCENTILES OF TOTAL STOCK BIOMASS (000 MT)

YEAR	1%	5%	10%	25%	50%	75%	90%	95%	99%
2002	1.802	2.011	2.155	2.409	2.680	3.033	3.342	3.619	4.147
2003	2.094	2.512	2.817	3.467	4.839	9.568	26.115	38.905	52.614
2004	3.305	4.465	5.209	7.257	12.203	35.879	60.802	77.685	106.955
2005	5.225	7.225	8.751	12.923	28.674	57.674	90.782	109.364	143.211
2006	7.578	10.588	13.253	20.976	48.527	80.248	114.790	134.991	177.643
2007	10.643	14.881	18.235	31.262	62.375	98.908	137.166	158.296	208.638
2008	13.552	19.079	24.064	43.714	75.645	115.795	157.500	183.377	228.320
2009	16.625	23.688	30.492	56.093	89.530	129.495	173.253	198.489	250.636
2010	18.981	28.361	36.776	64.333	98.300	139.949	181.911	208.433	266.101

ANNUAL PROBABILITY THAT TOTAL STOCK BIOMASS EXCEEDS THRESHOLD: 130.200 THOUSAND MT

YEAR	Pr(B > Threshold Value)
2002	0.000
2003	0.000
2004	0.002
2005	0.020
2006	0.058
2007	0.119
2008	0.183
2009	0.247
2010	0.298

RECRUITMENT UNITS ARE:1000. FISH

YEAR	BIRTH AVG RECRUITMENT	STD
2002	58573.279	87822.835
2003	56524.878	84965.556
2004	58471.407	86814.705
2005	57596.970	85476.250
2006	58253.177	87169.046
2007	57140.893	85821.791
2008	55820.108	83912.057
2009	56379.506	85850.529
2010	58637.002	87321.454

PERCENTILES OF RECRUITMENT UNITS ARE:1000. FISH

BIRTH

YEAR	1%	5%	10%	25%	50%	75%	90%	95%	99%
2002	1018.267	2071.224	4021.731	8317.955	18503.778	54466.973	180862.574	278699.800	384818.709
2003	1144.985	2064.392	3751.467	8287.612	18627.473	54274.084	179807.293	265690.350	381284.249
2004	1075.200	2144.316	3972.979	8496.329	18515.138	54458.072	180581.827	277279.026	381165.172
2005	1058.458	2072.680	3663.450	7992.174	18518.436	54554.924	180490.794	272068.438	373664.005
2006	921.483	2052.621	4236.482	8431.217	18518.502	54332.282	180924.818	278781.468	377325.052
2007	1074.421	2034.327	3586.985	7731.133	18486.214	54373.408	180345.097	276507.941	373513.187
2008	996.945	2013.260	3825.499	8268.403	18661.578	54186.043	179638.406	262426.739	368414.393
2009	1039.406	2027.709	3775.032	8098.643	18362.350	54248.785	179993.917	276769.805	386213.932
2010	1197.368	2113.122	4112.679	8475.510	18615.929	54416.846	180636.299	276781.524	371811.659

LANDINGS FOR F-BASED PROJECTIONS

YEAR	AVG LANDINGS (000 MT)	STD
2002	0.676	0.149
2003	0.088	0.016
2004	0.254	0.184
2005	0.903	0.973
2006	1.874	1.754
2007	2.825	2.251
2008	3.779	2.658
2009	4.586	2.932
2010	5.190	3.093

PERCENTILES OF LANDINGS (000 MT)

YEAR	1%	5%	10%	25%	50%	75%	90%	95%	99%
2002	0.390	0.476	0.506	0.568	0.661	0.758	0.859	0.928	1.082
2003	0.057	0.063	0.068	0.077	0.087	0.097	0.108	0.118	0.136
2004	0.104	0.118	0.128	0.146	0.175	0.254	0.515	0.701	0.928
2005	0.157	0.200	0.228	0.298	0.463	0.984	2.250	3.235	4.428
2006	0.249	0.337	0.405	0.593	1.066	2.799	4.588	5.500	7.464
2007	0.372	0.527	0.657	0.976	2.125	3.983	6.123	7.349	9.603
2008	0.531	0.747	0.934	1.489	3.383	5.389	7.595	8.820	11.682
2009	0.692	0.988	1.232	2.102	4.096	6.321	8.764	10.126	12.850
2010	0.842	1.214	1.544	2.734	4.669	7.012	9.488	11.024	14.100

DISCARDS FOR F-BASED PROJECTIONS

YEAR	AVG DISCARDS (000 MT)	STD
2002	0.099	0.019
2003	0.018	0.009
2004	0.082	0.095
2005	0.168	0.162
2006	0.268	0.222
2007	0.345	0.250
2008	0.395	0.262
2009	0.414	0.266
2010	0.428	0.266

PERCENTILES OF DISCARDS (000 MT)

YEAR	1%	5%	10%	25%	50%	75%	90%	95%	99%
2002	0.062	0.070	0.076	0.086	0.097	0.109	0.123	0.131	0.150
2003	0.009	0.010	0.011	0.012	0.014	0.019	0.030	0.038	0.048
2004	0.013	0.017	0.020	0.026	0.039	0.079	0.214	0.317	0.433
2005	0.020	0.029	0.034	0.050	0.088	0.256	0.423	0.498	0.677
2006	0.030	0.046	0.057	0.085	0.200	0.380	0.595	0.711	0.944
2007	0.043	0.063	0.080	0.128	0.303	0.493	0.703	0.831	1.087
2008	0.054	0.080	0.100	0.176	0.351	0.553	0.766	0.903	1.134
2009	0.063	0.090	0.117	0.194	0.369	0.570	0.792	0.909	1.200
2010	0.073	0.101	0.128	0.211	0.380	0.584	0.795	0.937	1.202

ANNUAL PROBABILITY FULLY-RECRUITED F EXCEEDS THRESHOLD: 0.260

YEAR	Pr(F > Threshold Value)
2002	1.000
2003	0.000
2004	0.000
2005	0.000
2006	0.000
2007	0.000
2008	0.000
2009	0.000
2010	0.000