

Appendix C-5

Weakfish

ADAPT Output

SAW/SARC 48
June 1-4, 2009
Woods Hole, MA

VPA Version 2.8.0

Model ID: Weakfish SASC preferred run

Input File: C:\WEAKVPA\FINAL RUNS\UNLAGGED NJ\FINAL RUN\FINAL RUN BOOT AND RETRO_00.DAT

Date of Run: 21-APR-2009

Time of Run: 14:12

Levenburg-Marquardt Algorithm Completed 16 Iterations
Residual Sum of Squares = 446.968

Number of Residuals = 359
Number of Parameters = 6
Degrees of Freedom = 353
Mean Squared Residual = 1.26620
Standard Deviation = 1.12526

Number of Years = 26
Number of Ages = 6
First Year = 1982
Youngest Age = 1
Oldest True Age = 5

Number of Survey Indices Available = 38
Number of Survey Indices Used in Estimate = 23

VPA Classic Method - Auto Estimated Q's

Stock Numbers Predicted in Terminal Year Plus One (2008)

Age	Stock Predicted	Std. Error	CV
1	16442.584	0.190205E+05	0.115679E+01
2	11406.889	0.683918E+04	0.599566E+00
3	3737.354	0.173831E+04	0.465117E+00
4	1060.126	0.480622E+03	0.453364E+00
5	200.106	0.953091E+02	0.476292E+00
6	4.679	0.537012E+01	0.114759E+01

Catchability Values for Each Survey Used in Estimate

INDEX	Catchability	Std. Error	CV
1	0.211918E-02	0.690956E-03	0.326049E+00
2	0.250557E-02	0.718644E-03	0.286818E+00
3	0.141990E-02	0.541978E-03	0.381702E+00
4	0.132513E-02	0.421512E-03	0.318091E+00
5	0.892300E-03	0.279400E-03	0.313123E+00
6	0.792329E-03	0.193343E-03	0.244019E+00
7	0.359433E-05	0.842737E-06	0.234463E+00
8	0.789323E-05	0.180624E-05	0.228835E+00
9	0.578221E-05	0.164373E-05	0.284273E+00
10	0.333437E-05	0.147753E-05	0.443120E+00
11	0.185515E-05	0.821036E-06	0.442572E+00
12	0.149946E-05	0.932948E-06	0.622190E+00
13	0.315053E-04	0.562930E-05	0.178678E+00
14	0.157929E-03	0.311494E-04	0.197237E+00

15	0.455255E-03	0.137916E-03	0.302942E+00
16	0.849967E-03	0.384431E-03	0.452289E+00
17	0.112275E-02	0.627731E-03	0.559104E+00
18	0.701428E-04	0.801330E-05	0.114243E+00
34	0.568621E-05	0.113335E-05	0.199316E+00
35	0.197591E-04	0.314498E-05	0.159167E+00
36	0.573293E-04	0.105223E-04	0.183542E+00
37	0.641095E-04	0.121778E-04	0.189953E+00
38	0.183228E-04	0.213521E-05	0.116533E+00

-- Non-Linear Least Squares Fit --

Default Tolerances Used

Scaled Gradient Tolerance = 6.055454E-06
 Scaled Step Tolerance = 3.666853E-11
 Relative Function Tolerance = 3.666853E-11
 Absolute Function Tolerance = 4.930381E-32

VPA Method Options

- Catchability Values Estimated as an Analytic Function of N
- Catch Equation Used in Cohort Solution
- Plus Group Backward Calculation Method Used
- Arithmetic Average Used in F-Oldest Calculation
- F-Oldest Calculation in Years Prior to Terminal Year
 Uses Fishing Mortality in Ages 4 to 4
- Calculation of Population of Age 1 In Year 2008
 = Stock Estimate

Stock Estimates

Age 1
 Age 2
 Age 3
 Age 4
 Age 5
 Age 6

Full F in Terminal Year = 0.5570

F in Oldest True Age in Terminal Year = 0.5570

Full F Calculated Using Average Method

Age	Input Partial Recruitment	Calc Partial Recruitment	Fishing Mortality	Used In Full F	Comments
1	0.120	0.083	0.0464	YES	Stock Estimate in T+1
2	0.280	0.428	0.2383	YES	Stock Estimate in T+1
3	0.570	0.627	0.3495	YES	Stock Estimate in T+1
4	1.000	0.831	0.4631	YES	Stock Estimate in T+1
5	1.000	1.000	0.5570		Input PR * Full F

Catch At Age - Input Data

AGE	1982	1983	1984	1985	1986
1	9914.2	8004.0	10444.2	14153.2	18610.7
2	12967.0	12869.1	14736.9	11262.3	15778.4
3	5473.0	5822.7	6521.1	3246.1	4942.4
4	2778.2	2780.0	3045.3	1171.0	1823.7
5	721.6	568.2	484.5	212.9	264.1
6	639.5	424.1	254.5	55.1	52.1
AGE	1987	1988	1989	1990	1991
1	16256.3	8161.9	3705.0	9510.1	9795.9
2	14343.1	16140.8	5304.9	4890.1	5825.6
3	4347.1	10545.3	4333.5	2093.6	2750.0
4	1485.2	6092.0	2922.3	1204.8	1373.6
5	145.4	1050.5	626.2	591.4	463.4
6	11.0	70.7	84.6	89.1	57.3
AGE	1992	1993	1994	1995	1996
1	5179.5	4974.8	3761.9	4336.3	2498.8
2	6046.0	6357.0	4347.4	3727.7	2689.5
3	2211.0	2179.8	3561.0	3566.7	5033.3
4	1255.0	1138.6	1563.5	1637.8	3174.2
5	527.8	401.1	204.1	198.1	1379.3
6	65.0	48.2	39.8	54.3	100.1
AGE	1997	1998	1999	2000	2001
1	1716.4	1270.6	1412.6	1377.0	2420.7
2	2394.2	2138.3	1300.4	1727.1	2953.1
3	2913.2	3983.1	2256.6	1985.7	1474.1
4	5522.0	2019.2	3326.0	1663.7	1219.9
5	1523.1	2928.8	725.7	1528.2	658.7
6	410.2	909.5	1145.0	403.0	485.9
AGE	2002	2003	2004	2005	2006
1	2591.7	335.6	852.3	334.3	747.3
2	1070.5	949.9	1511.9	1771.5	637.3
3	2695.7	959.7	667.8	1255.2	959.2
4	823.9	718.4	115.8	191.5	252.9
5	388.2	209.5	49.7	10.2	15.5
6	231.5	254.2	38.4	27.1	11.9

Catch At Age - Input Data

AGE	2007
1	616.6
2	1148.0
3	507.6
4	135.2
5	25.2
6	5.8

Weight At Age - Input Data

AGE	1982	1983	1984	1985	1986
1	0.1420	0.1210	0.1590	0.1420	0.1890
2	0.2790	0.2540	0.2940	0.4480	0.4850
3	0.5210	0.4850	0.5670	1.1400	1.2830
4	0.8210	1.5040	1.1860	2.6890	2.7130
5	1.4110	2.3710	1.6670	2.5760	2.9550
6	3.0330	2.8620	2.5360	3.0550	3.1730

AGE	1987	1988	1989	1990	1991
1	0.1250	0.1290	0.1260	0.1000	0.1050
2	0.2940	0.2560	0.2670	0.2310	0.3630
3	0.5670	0.5390	0.5720	0.6210	0.7480
4	1.1860	1.1180	1.0970	1.1270	1.2050
5	1.6670	1.8810	1.7960	1.6740	1.6870
6	2.5360	3.0260	3.3480	2.2070	2.1570

AGE	1992	1993	1994	1995	1996
1	0.0850	0.0760	0.1180	0.1080	0.1040
2	0.3130	0.2040	0.2570	0.2050	0.2100
3	0.6660	0.3940	0.4460	0.3330	0.3510
4	1.0970	0.6350	0.6750	0.4860	0.5220
5	1.5590	0.9110	0.9320	0.6620	0.7170
6	2.0170	1.2080	1.2060	0.8530	0.9300

AGE	1997	1998	1999	2000	2001
1	0.1860	0.1200	0.1050	0.1050	0.2000
2	0.3000	0.2300	0.2410	0.2410	0.3800
3	0.4380	0.3740	0.4280	0.4280	0.4500
4	0.5960	0.5470	0.6570	0.6570	0.7200
5	0.7700	0.7420	0.9150	0.9150	1.0900
6	0.9560	0.9530	1.1910	1.1910	2.3900

AGE	2002	2003	2004	2005	2006
1	0.2600	0.2200	0.2280	0.2790	0.2910
2	0.3200	0.3100	0.3440	0.3540	0.3310
3	0.5700	0.4000	0.4480	0.4420	0.4820
4	0.7200	0.6600	0.7850	0.5070	0.7250
5	0.9000	1.5300	1.6150	1.2320	0.9100
6	1.3900	2.5700	4.1650	3.7100	4.8610

Weight At Age - Input Data

AGE	2007
1	0.2150
2	0.3450
3	0.4680
4	0.8400
5	0.9700
6	3.8980

JAN-1 Weights at Age - Input Data

AGE	1982	1983	1984	1985	1986
1	0.1060	0.0780	0.0950	0.0770	0.1520
2	0.2120	0.1900	0.1890	0.2670	0.2620
3	0.3070	0.3680	0.3790	0.5790	0.7580
4	0.4830	0.8850	0.7580	1.2350	1.7590
5	1.0760	1.4000	1.5830	1.7500	2.8190
6	3.0330	2.8600	2.5360	3.0600	3.1730
AGE	1987	1988	1989	1990	1991
1	0.0870	0.0900	0.1090	0.0600	0.0360
2	0.2360	0.1790	0.1860	0.1040	0.2150
3	0.5240	0.3980	0.3830	0.4070	0.5430
4	1.2340	0.7960	0.7690	0.8650	0.9710
5	2.1270	1.4940	1.4170	1.3990	1.4460
6	2.5360	3.0260	3.3480	1.9450	1.9250
AGE	1992	1993	1994	1995	1996
1	0.0270	0.0360	0.0690	0.0710	0.0660
2	0.1810	0.1320	0.1810	0.1530	0.1520
3	0.4770	0.2920	0.3460	0.2650	0.2760
4	0.8750	0.5090	0.5560	0.4070	0.4330
5	1.3260	0.7690	0.8000	0.5720	0.6170
6	1.7900	1.0580	1.0670	0.7550	0.8220

AGE	1997	1998	1999	2000	2001
1	0.1390	0.0780	0.0590	0.0590	0.0430
2	0.2390	0.1700	0.1660	0.1660	0.1820
3	0.3660	0.2980	0.3290	0.3290	0.4250
4	0.5150	0.4570	0.5380	0.5380	0.7510
5	0.6810	0.6420	0.7830	0.7830	1.1340
6	0.8620	0.8460	1.0510	1.0510	1.5480

AGE	2002	2003	2004	2005	2006
1	0.0920	0.0670	0.1160	0.1010	0.1330
2	0.2650	0.2490	0.2790	0.2370	0.2870
3	0.5200	0.5440	0.5120	0.4310	0.5000
4	0.8360	0.9240	0.8020	0.6740	0.7620
5	1.1910	1.3560	1.1340	0.9530	1.0640
6	1.5660	1.8090	1.4930	1.2570	1.3920

JAN-1 Weights at Age - Input Data

AGE	2007	2008
1	0.1740	0.1740
2	0.3880	0.3880
3	0.6750	0.6750
4	1.0150	1.0150
5	1.3880	1.3880
6	1.7760	1.7760

SSB Weight At Age - Input Data

AGE	1982	1983	1984	1985	1986
1	0.0950	0.0700	0.0860	0.0690	0.1370
2	0.2120	0.1900	0.1890	0.2670	0.2620
3	0.3070	0.3680	0.3790	0.5790	0.7580
4	0.4830	0.8850	0.7580	1.2350	1.7590
5	1.0760	1.3950	1.5830	1.7480	2.8190
6	3.0330	2.8620	2.5360	3.0550	3.1730

AGE	1987	1988	1989	1990	1991
1	0.0780	0.0810	0.0980	0.1000	0.1100
2	0.2360	0.1790	0.1860	0.1800	0.3100
3	0.5240	0.3980	0.3830	0.5400	0.6800
4	1.2340	0.7960	0.7690	1.0400	1.1200
5	2.1270	1.4940	1.4170	1.5800	1.6000
6	2.5360	3.0260	3.3480	2.3900	2.3300

AGE	1992	1993	1994	1995	1996
1	0.0900	0.0800	0.1200	0.1100	0.1000
2	0.2600	0.1800	0.2300	0.1900	0.1900
3	0.6000	0.3600	0.4100	0.3100	0.3200
4	1.0200	0.5900	0.6300	0.4600	0.4900
5	1.4800	0.8600	0.8900	0.6300	0.6800
6	2.1900	1.3300	1.3200	0.9400	1.0200
AGE	1997	1998	1999	2000	2001
1	0.1900	0.1200	0.1100	0.1100	0.0860
2	0.2800	0.2100	0.2100	0.2100	0.2680
3	0.4100	0.3500	0.3900	0.3900	0.5470
4	0.5700	0.5200	0.6200	0.6200	0.8990
5	0.7400	0.7100	0.8700	0.8700	1.2970
6	1.0300	1.0400	1.3100	1.3100	1.7170
AGE	2002	2003	2004	2005	2006
1	0.1500	0.1250	0.1720	0.1480	0.1870
2	0.3580	0.3550	0.3640	0.3080	0.3660
3	0.6400	0.6880	0.6220	0.5230	0.6000
4	0.9740	1.0930	0.9310	0.7820	0.8790
5	1.3400	1.5360	1.2750	1.0720	1.1920
6	1.7190	1.9910	1.6410	1.3830	1.5290

SSB Weight At Age - Input Data

AGE	2007
1	0.2500
2	0.4950
3	0.8060
4	1.1610
5	1.5420
6	1.9330

Natural Mortality - Input Data

AGE	1982	1983	1984	1985	1986
1	0.2500	0.2500	0.2500	0.2500	0.2500
2	0.2500	0.2500	0.2500	0.2500	0.2500
3	0.2500	0.2500	0.2500	0.2500	0.2500
4	0.2500	0.2500	0.2500	0.2500	0.2500
5	0.2500	0.2500	0.2500	0.2500	0.2500
6	0.2500	0.2500	0.2500	0.2500	0.2500
AGE	1987	1988	1989	1990	1991
1	0.2500	0.2500	0.2500	0.2500	0.2500
2	0.2500	0.2500	0.2500	0.2500	0.2500
3	0.2500	0.2500	0.2500	0.2500	0.2500
4	0.2500	0.2500	0.2500	0.2500	0.2500
5	0.2500	0.2500	0.2500	0.2500	0.2500
6	0.2500	0.2500	0.2500	0.2500	0.2500
AGE	1992	1993	1994	1995	1996
1	0.2500	0.2500	0.2500	0.2500	0.2500
2	0.2500	0.2500	0.2500	0.2500	0.2500
3	0.2500	0.2500	0.2500	0.2500	0.2500
4	0.2500	0.2500	0.2500	0.2500	0.2500
5	0.2500	0.2500	0.2500	0.2500	0.2500
6	0.2500	0.2500	0.2500	0.2500	0.2500
AGE	1997	1998	1999	2000	2001
1	0.2500	0.2500	0.2500	0.2500	0.2500
2	0.2500	0.2500	0.2500	0.2500	0.2500
3	0.2500	0.2500	0.2500	0.2500	0.2500
4	0.2500	0.2500	0.2500	0.2500	0.2500
5	0.2500	0.2500	0.2500	0.2500	0.2500
6	0.2500	0.2500	0.2500	0.2500	0.2500
AGE	2002	2003	2004	2005	2006
1	0.2500	0.2500	0.2500	0.2500	0.2500
2	0.2500	0.2500	0.2500	0.2500	0.2500
3	0.2500	0.2500	0.2500	0.2500	0.2500
4	0.2500	0.2500	0.2500	0.2500	0.2500
5	0.2500	0.2500	0.2500	0.2500	0.2500
6	0.2500	0.2500	0.2500	0.2500	0.2500

Natural Mortality - Input Data

AGE	2007
1	0.2500
2	0.2500
3	0.2500
4	0.2500
5	0.2500
6	0.2500
Proportion of Natural Mortality Before Spawning = 0.4000	
Proportion of Fishing Mortality Before Spawning = 0.4000	

Maturity - Input Data

AGE	1982	1983	1984	1985	1986
1	0.9000	0.9000	0.9000	0.9000	0.9000
2	1.0000	1.0000	1.0000	1.0000	1.0000
3	1.0000	1.0000	1.0000	1.0000	1.0000
4	1.0000	1.0000	1.0000	1.0000	1.0000
5	1.0000	1.0000	1.0000	1.0000	1.0000
6	1.0000	1.0000	1.0000	1.0000	1.0000
AGE	1987	1988	1989	1990	1991
1	0.9000	0.9000	0.9000	0.9000	0.9000
2	1.0000	1.0000	1.0000	1.0000	1.0000
3	1.0000	1.0000	1.0000	1.0000	1.0000
4	1.0000	1.0000	1.0000	1.0000	1.0000
5	1.0000	1.0000	1.0000	1.0000	1.0000
6	1.0000	1.0000	1.0000	1.0000	1.0000
AGE	1992	1993	1994	1995	1996
1	0.9000	0.9000	0.9000	0.9000	0.9000
2	1.0000	1.0000	1.0000	1.0000	1.0000
3	1.0000	1.0000	1.0000	1.0000	1.0000
4	1.0000	1.0000	1.0000	1.0000	1.0000
5	1.0000	1.0000	1.0000	1.0000	1.0000
6	1.0000	1.0000	1.0000	1.0000	1.0000
AGE	1997	1998	1999	2000	2001
1	0.9000	0.9000	0.9000	0.9000	0.9000
2	1.0000	1.0000	1.0000	1.0000	1.0000
3	1.0000	1.0000	1.0000	1.0000	1.0000
4	1.0000	1.0000	1.0000	1.0000	1.0000
5	1.0000	1.0000	1.0000	1.0000	1.0000
6	1.0000	1.0000	1.0000	1.0000	1.0000

AGE	2002	2003	2004	2005	2006
1	0.9000	0.9000	0.9000	0.9000	0.9000
2	1.0000	1.0000	1.0000	1.0000	1.0000
3	1.0000	1.0000	1.0000	1.0000	1.0000
4	1.0000	1.0000	1.0000	1.0000	1.0000
5	1.0000	1.0000	1.0000	1.0000	1.0000
6	1.0000	1.0000	1.0000	1.0000	1.0000

Maturity - Input Data

AGE	2007
1	0.9000
2	1.0000
3	1.0000
4	1.0000
5	1.0000
6	1.0000

Input Partial Recruitment

AGE	
1	0.1200
2	0.2800
3	0.5700
4	1.0000
5	1.0000

Input F-Plus Ratio

YEAR

1982	1.0000
1983	1.0000
1984	1.0000
1985	1.0000
1986	1.0000
1987	1.0000
1988	1.0000
1989	1.0000
1990	1.0000
1991	1.0000
1992	1.0000
1993	1.0000
1994	1.0000
1995	1.0000
1996	1.0000
1997	1.0000
1998	1.0000
1999	1.0000
2000	1.0000
2001	1.0000
2002	1.0000
2003	1.0000
2004	1.0000
2005	1.0000
2006	1.0000
2007	1.0000

SURVEY - INPUT DATA

INDEX	1	2	3	4	5
SURVEY TAG	DEDFW	DEDFW	DEDFW	DEDFW	DEDFW
AGE	1	2	3	4	5
TIME	MEAN	MEAN	MEAN	MEAN	MEAN
TYPE	NUMBERS	NUMBERS	NUMBERS	NUMBERS	NUMBERS
RETRO FLAG	1	1	1	1	1
1982	4.7100	7.3300	3.0200	1.4500	0.2400
1983	5.3900	8.0000	3.3400	1.5700	0.2000
1984	2.9900	5.3200	2.4200	1.1500	0.1300
1985	0.0000	0.0000	0.0000	0.0000	0.0000
1986	0.0000	0.0000	0.0000	0.0000	0.0000
1987	0.0000	0.0000	0.0000	0.0000	0.0000
1988	0.0000	0.0000	0.0000	0.0000	0.0000
1989	0.0000	0.0000	0.0000	0.0000	0.0000
1990	0.0000	0.0000	0.0000	0.0000	0.0000
1991	27.1588	3.6382	0.6383	0.0000	0.0000
1992	21.1512	2.6081	0.0318	0.0318	0.0000
1993	50.2801	25.4220	3.9002	0.5169	0.0000
1994	113.4222	68.5360	23.6497	0.9653	0.0000
1995	75.2633	53.4866	15.7403	5.4251	0.0764
1996	44.0437	48.3017	111.1071	23.8182	6.3870
1997	33.4142	25.0014	13.5633	34.5991	2.9623
1998	23.3566	24.6266	20.3749	11.5955	20.7062
1999	42.0661	20.1604	17.0310	6.7402	2.5878
2000	97.8468	50.3831	23.6377	5.7446	0.6592
2001	13.1139	42.6313	18.7718	5.5263	0.5702
2002	89.3537	23.3228	27.9672	3.8367	0.4039
2003	50.1607	13.9835	1.2183	0.4237	0.0000
2004	26.3628	22.4048	0.1089	0.0000	0.0000
2005	12.0686	14.5354	2.3872	0.0000	0.0000
2006	58.3793	37.1285	10.0217	0.7848	0.0000
2007	23.4698	17.4276	2.0963	0.1644	0.0000
2008	0.0000	0.0000	0.0000	0.0000	0.0000

SURVEY - INPUT DATA

INDEX	6	7	8	9	10
SURVEY TAG	DEDFW	NJDEP	NJDEP	NJDEP	NJDEP
AGE	6	1	2	3	4
TIME	MEAN	JAN-1	JAN-1	JAN-1	JAN-1
TYPE	NUMBERS	NUMBERS	NUMBERS	NUMBERS	NUMBERS
RETRO FLAG	1	1	1	1	1
1982	0.3300	0.0000	0.0000	0.0000	0.0000
1983	0.1800	0.0000	0.0000	0.0000	0.0000
1984	0.0700	0.0000	0.0000	0.0000	0.0000
1985	0.0000	0.0000	0.0000	0.0000	0.0000
1986	0.0000	0.0000	0.0000	0.0000	0.0000
1987	0.0000	0.0000	0.0000	0.0000	0.0000
1988	0.0000	0.0000	0.0000	0.0000	0.0000
1989	0.0000	0.0000	0.0000	0.0000	0.0000
1990	0.0000	0.0356	0.0260	0.0057	0.0024
1991	0.0000	0.0745	0.0523	0.0099	0.0023
1992	0.0000	0.0892	0.3206	0.0585	0.0007
1993	0.0000	0.0405	0.1103	0.0445	0.0181
1994	0.0000	0.2556	0.1489	0.0316	0.0000
1995	0.0000	0.0398	0.1607	0.0702	0.0082
1996	0.1331	0.0543	0.0434	0.1177	0.0273
1997	0.4740	0.1323	0.0342	0.0466	0.1339
1998	1.3252	0.0087	0.0440	0.0679	0.0350
1999	4.0331	0.0222	0.0396	0.0302	0.0053
2000	0.9418	0.0397	0.1255	0.1011	0.2153
2001	0.0877	0.0047	0.0788	0.1381	0.0582
2002	0.0000	0.1398	0.0546	0.0239	0.0029
2003	0.0000	0.0416	0.0407	0.0021	0.0003
2004	0.0000	0.0591	0.1735	0.0726	0.0129
2005	0.0000	0.0977	0.0934	0.0099	0.0008
2006	0.0000	0.0746	0.0747	0.0161	0.0000
2007	0.0000	0.0926	0.0122	0.0009	0.0001
2008	0.0000	0.0591	0.1735	0.0726	0.0129

SURVEY - INPUT DATA

INDEX	11	12	13	14	15
SURVEY TAG	NJDEP	NJDEP	NCGill	NCGill	NCGill
AGE	5	6	1	2	3
TIME	JAN-1	JAN-1	MEAN	MEAN	MEAN
TYPE	NUMBERS	NUMBERS	NUMBERS	NUMBERS	NUMBERS
RETRO FLAG	1	1	1	1	1
1982	0.0000	0.0000	0.0000	0.0000	0.0000
1983	0.0000	0.0000	0.0000	0.0000	0.0000
1984	0.0000	0.0000	0.0000	0.0000	0.0000
1985	0.0000	0.0000	0.0000	0.0000	0.0000
1986	0.0000	0.0000	0.0000	0.0000	0.0000
1987	0.0000	0.0000	0.0000	0.0000	0.0000
1988	0.0000	0.0000	0.0000	0.0000	0.0000
1989	0.0000	0.0000	0.0000	0.0000	0.0000
1990	0.0003	0.0000	0.0000	0.0000	0.0000
1991	0.0001	0.0000	0.0000	0.0000	0.0000
1992	0.0000	0.0000	0.0000	0.0000	0.0000
1993	0.0014	0.0000	0.0000	0.0000	0.0000
1994	0.0000	0.0000	0.0000	0.0000	0.0000
1995	0.0000	0.0000	0.0000	0.0000	0.0000
1996	0.0107	0.0009	0.0000	0.0000	0.0000
1997	0.0116	0.0000	0.0000	0.0000	0.0000
1998	0.0821	0.0113	0.0000	0.0000	0.0000
1999	0.0015	0.0012	0.0000	0.0000	0.0000
2000	0.0112	0.0002	0.0000	0.0000	0.0000
2001	0.0137	0.0029	0.1480	1.4886	0.3694
2002	0.0000	0.0000	0.1729	0.2674	1.0873
2003	0.0000	0.0000	0.1454	0.3669	0.3450
2004	0.0002	0.0000	0.2269	0.5946	0.5840
2005	0.0000	0.0000	0.1719	0.4862	0.6925
2006	0.0000	0.0000	0.1974	0.3766	0.5534
2007	0.0000	0.0000	0.1597	0.2564	0.1790
2008	0.0002	0.0000	0.0000	0.0000	0.0000

SURVEY - INPUT DATA

INDEX	16	17	18	19	20
SURVEY TAG	NCGill	NCGill	NCGill	SEAFALL	SEAFALL
AGE	4	5	6	1	2
TIME	MEAN	MEAN	MEAN	JAN-1	JAN-1
TYPE	NUMBERS	NUMBERS	NUMBERS	NUMBERS	NUMBERS
RETRO FLAG	1	1	1	1	1
1982	0.0000	0.0000	0.0000	0.0000	0.0000
1983	0.0000	0.0000	0.0000	0.0000	0.0000
1984	0.0000	0.0000	0.0000	0.0000	0.0000
1985	0.0000	0.0000	0.0000	0.0000	0.0000
1986	0.0000	0.0000	0.0000	0.0000	0.0000
1987	0.0000	0.0000	0.0000	0.0000	0.0000
1988	0.0000	0.0000	0.0000	0.0000	0.0000
1989	0.0000	0.0000	0.0000	0.0000	0.0000
1990	0.0000	0.0000	0.0000	0.0000	0.0000
1991	0.0000	0.0000	0.0000	2.1500	1.3200
1992	0.0000	0.0000	0.0000	0.8500	5.6700
1993	0.0000	0.0000	0.0000	0.2000	0.6200
1994	0.0000	0.0000	0.0000	15.2600	27.4000
1995	0.0000	0.0000	0.0000	43.7800	7.0200
1996	0.0000	0.0000	0.0000	3.6400	4.1600
1997	0.0000	0.0000	0.0000	20.3400	1.1500
1998	0.0000	0.0000	0.0000	0.7100	4.0900
1999	0.0000	0.0000	0.0000	4.5400	9.8700
2000	0.0000	0.0000	0.0000	24.5400	4.2100
2001	0.1459	0.1127	0.0000	8.9600	5.0100
2002	0.2423	0.0569	0.0089	5.6000	0.9300
2003	0.6802	0.0583	0.0000	44.3300	12.0000
2004	0.1885	0.0722	0.0000	22.2200	13.2200
2005	0.1747	0.0343	0.0009	10.8900	22.4300
2006	0.2130	0.0543	0.0008	238.5600	221.3300
2007	0.1140	0.0520	0.0008	2.6200	32.4200
2008	0.0000	0.0000	0.0000	0.6600	1.9000

SURVEY - INPUT DATA

INDEX	21	22	23	24	25
SURVEY TAG	SEAFALL	SEAFALL	SEAFALL	SEAFALL	RI
AGE	3	4	5	6	1
TIME	JAN-1	JAN-1	JAN-1	JAN-1	JAN-1
TYPE	NUMBERS	NUMBERS	NUMBERS	NUMBERS	NUMBERS
RETRO FLAG	1	1	1	1	1
1982	0.0000	0.0000	0.0000	0.0000	5.0400
1983	0.0000	0.0000	0.0000	0.0000	4.1100
1984	0.0000	0.0000	0.0000	0.0000	0.7900
1985	0.0000	0.0000	0.0000	0.0000	0.3800
1986	0.0000	0.0000	0.0000	0.0000	2.3700
1987	0.0000	0.0000	0.0000	0.0000	0.7000
1988	0.0000	0.0000	0.0000	0.0000	0.3300
1989	0.0000	0.0000	0.0000	0.0000	0.9000
1990	0.0000	0.0000	0.0000	0.0000	0.4200
1991	0.0500	0.0100	0.0000	0.0000	2.4500
1992	0.4200	0.0900	0.0100	0.0100	1.6600
1993	0.1100	0.0100	0.0100	0.0000	2.3500
1994	1.0300	0.0100	0.0100	0.0100	1.3000
1995	0.4800	0.1800	0.0300	0.0000	1.5700
1996	0.4500	0.0700	0.0000	0.0100	0.0900
1997	0.3100	0.0300	0.0000	0.0100	6.3400
1998	1.8400	0.7500	0.0800	0.0100	6.6900
1999	4.7200	0.9600	0.5900	0.0600	1.3900
2000	0.2700	0.0500	0.0100	0.0100	1.0000
2001	0.7400	0.0400	0.0100	0.0100	2.1000
2002	0.3300	0.0100	0.0100	0.0100	2.3900
2003	0.7700	1.4000	0.0100	0.0100	2.0700
2004	0.9100	0.1100	0.2200	0.0100	16.5400
2005	2.4400	0.0900	0.0000	0.0000	0.4000
2006	33.7400	0.7500	0.0000	0.0000	8.6400
2007	7.3000	1.7800	0.0000	0.0000	0.1600
2008	0.3900	0.1800	0.0000	0.0000	4.8300

SURVEY - INPUT DATA

INDEX	26	27	28	29	30
SURVEY TAG	CT	NY	DEDFW	MDDNR1	MDDNR2
AGE	1	1	1	1	1
TIME	JAN-1	JAN-1	JAN-1	JAN-1	JAN-1
TYPE	NUMBERS	NUMBERS	NUMBERS	NUMBERS	NUMBERS
RETRO FLAG	1	1	1	1	1
1982	0.0000	0.0000	5.9800	0.2400	1.8500
1983	0.0000	0.0000	11.4900	0.2200	0.0000
1984	0.0000	0.0000	4.4700	1.3200	0.0000
1985	1.0000	0.0000	6.6700	0.1300	0.5200
1986	6.1900	0.0000	9.3500	1.6600	1.4000
1987	13.1600	0.0000	12.9400	0.4400	0.8500
1988	0.6300	0.6000	5.9800	0.3600	0.5600
1989	3.4900	0.1100	4.7300	0.2300	0.0000
1990	8.6900	1.3800	11.1100	0.4400	0.8700
1991	5.5600	0.5500	8.7300	0.9500	1.7200
1992	11.9500	20.6400	20.0700	0.7800	1.8900
1993	3.0500	3.2600	14.7200	3.2400	1.8100
1994	4.0800	1.0300	14.7900	1.5900	0.9100
1995	11.1900	8.3300	11.4700	2.3300	1.8400
1996	5.2200	1.6000	13.4900	5.9500	4.4400
1997	15.2300	24.4900	11.9300	6.4000	3.1800
1998	12.3800	18.7500	15.4000	4.2800	3.0600
1999	5.0200	1.0300	11.3500	5.8700	2.8000
2000	30.9300	8.4300	13.5100	3.2600	2.7600
2001	63.3100	15.8800	14.1600	6.5400	2.3400
2002	40.0900	16.1800	7.5700	8.1000	2.5600
2003	41.3500	12.1700	5.9600	3.9200	0.6100
2004	49.4100	7.0100	10.4400	4.8900	5.6400
2005	58.9800	5.5200	8.3900	1.6200	3.3900
2006	25.8600	31.9800	16.8400	3.5500	4.9800
2007	1.0500	8.7000	5.3500	2.4100	1.5000
2008	63.9300	12.0700	13.7000	1.6400	2.3200

SURVEY - INPUT DATA

INDEX	31	32	33	34	35
SURVEY TAG	VIMS	NCDMF	NCDMF	MRFSS	MRFSS
AGE	1	1	2	3	4
TIME	JAN-1	JAN-1	JAN-1	JAN-1	JAN-1
TYPE	NUMBERS	NUMBERS	NUMBERS	NUMBERS	NUMBERS
RETRO FLAG	1	1	1	1	1
1982	6.0200	0.0000	0.0000	0.1865	0.2176
1983	10.9500	0.0000	0.0000	0.0084	0.0588
1984	10.8500	0.0000	0.0000	0.1771	0.1631
1985	6.0500	0.0000	0.0000	0.1033	0.0919
1986	37.0400	0.0000	0.0000	0.0933	0.0758
1987	4.6200	0.0000	0.0000	0.3885	0.1329
1988	17.8500	12.1400	53.1400	0.2272	0.1262
1989	21.7200	101.5000	36.3800	0.1498	0.1915
1990	21.2700	14.2000	13.6400	0.0527	0.0527
1991	30.0100	50.2000	17.1800	0.0574	0.0309
1992	15.3200	36.9600	14.7400	0.0530	0.0485
1993	15.9100	42.7100	19.9200	0.0370	0.0328
1994	15.4200	8.7000	67.7100	0.0300	0.0258
1995	7.0400	68.0600	71.4300	0.0355	0.0659
1996	11.0000	38.2100	42.2800	0.0271	0.0588
1997	7.4200	72.3900	32.6200	0.0137	0.0504
1998	14.8200	32.7900	55.7000	0.0151	0.0605
1999	9.9500	70.4400	25.8100	0.0162	0.0647
2000	16.2500	99.9000	48.3600	0.0105	0.0264
2001	11.0900	62.9900	123.6600	0.0109	0.0274
2002	11.5200	30.3000	52.7500	0.0368	0.0263
2003	8.5900	22.0000	20.6400	0.0051	0.0462
2004	5.4200	23.9300	17.3900	0.0094	0.0047
2005	10.4700	28.7500	31.2400	0.0135	0.0058
2006	7.1000	28.7600	29.0000	0.0489	0.0384
2007	6.2000	39.0900	83.8200	0.0084	0.0196
2008	14.3700	56.7700	21.5300	0.0113	0.0054

SURVEY - INPUT DATA

INDEX	36	37	38		
SURVEY TAG	MRFSS	MRFSS	rec		
AGE	5	6	2 - 6	NUMBERS	NUMBERS
TIME	JAN-1	JAN-1	MEAN	NUMBERS	NUMBERS
TYPE	NUMBERS	NUMBERS	NUMBERS	NUMBERS	NUMBERS
RETRO FLAG	1	1	1		

1982	0.2131	0.1066	0.2021
1983	0.0671	0.0630	0.5109
1984	0.1165	0.0326	0.3001
1985	0.0632	0.0172	0.2777
1986	0.0525	0.0175	0.7681
1987	0.0664	0.0102	0.5178
1988	0.0707	0.0101	0.5738
1989	0.1290	0.0291	0.1673
1990	0.0341	0.0093	0.1557
1991	0.0177	0.0044	0.1778
1992	0.0265	0.0088	0.1928
1993	0.0287	0.0082	0.1651
1994	0.0172	0.0043	0.3849
1995	0.0304	0.0000	0.5079
1996	0.0407	0.0045	0.6054
1997	0.1054	0.0321	0.5177
1998	0.0958	0.0302	0.5297
1999	0.1024	0.0323	0.4101
2000	0.0632	0.0474	0.4585
2001	0.0328	0.0711	0.2818
2002	0.0158	0.0158	0.2379
2003	0.0205	0.0154	0.1162
2004	0.0047	0.0047	0.1154
2005	0.0021	0.0020	0.2243
2006	0.0058	0.0001	0.1704
2007	0.0088	0.0009	0.0884
2008	0.0026	0.0003	0.0000

Additional Output Files

Population File C:\WEAKVPA\FINAL RUNS\UNLAGGED NJ\FINAL RUN\FINAL RUN BOOT AND R
 Auxilliary File C:\WEAKVPA\FINAL RUNS\UNLAGGED NJ\FINAL RUN\FINAL RUN BOOT AND R
 Covariance File C:\WEAKVPA\FINAL RUNS\UNLAGGED NJ\FINAL RUN\FINAL RUN BOOT AND R
 Residuals File C:\WEAKVPA\FINAL RUNS\UNLAGGED NJ\FINAL RUN\FINAL RUN BOOT AND R
 Log File C:\WEAKVPA\FINAL RUNS\UNLAGGED NJ\FINAL RUN\FINAL RUN BOOT AND R

Bootstrap Files

Bootstrap Stock Numbers C:\WEAKVPA\FINAL RUNS\UNLAGGED NJ\FINAL RUN\FINAL RUN BOOT AND R
 Bootstrap Fishing Mortality C:\WEAKVPA\FINAL RUNS\UNLAGGED NJ\FINAL RUN\FINAL RUN BOOT AND R
 Bootstrap Biomass C:\WEAKVPA\FINAL RUNS\UNLAGGED NJ\FINAL RUN\FINAL RUN BOOT AND R
 Bootstrap Catchability C:\WEAKVPA\FINAL RUNS\UNLAGGED NJ\FINAL RUN\FINAL RUN BOOT AND R

Estimation Results

JAN-1 Population Numbers

AGE	1982	1983	1984	1985	1986
1	45006.	41012.	44143.	63406.	70885.
2	28860.	26376.	24931.	25244.	36997.
3	10964.	11224.	9394.	6722.	9886.
4	4051.	3800.	3706.	1739.	2422.
5	1052.	777.	590.	316.	351.
6	932.	580.	310.	82.	69.
=====					
Total	90865.	83769.	83073.	97508.	120610.
AGE	1987	1988	1989	1990	1991
1	54403.	26316.	20817.	26655.	29497.
2	38942.	28181.	13374.	12966.	12476.
3	15109.	17841.	8028.	5802.	5842.
4	3421.	7971.	4810.	2508.	2696.
5	335.	1374.	1031.	1231.	909.
6	25.	93.	139.	185.	112.
=====					
Total	112235.	81776.	48198.	49348.	51532.
AGE	1992	1993	1994	1995	1996
1	35646.	36736.	49285.	23406.	29734.
2	14433.	23219.	24247.	35078.	14430.
3	4665.	5987.	12530.	15075.	24047.
4	2166.	1717.	2765.	6649.	8621.
5	911.	605.	361.	804.	3746.
6	112.	73.	70.	220.	272.
=====					
Total	57932.	68337.	89257.	81232.	80849.
AGE	1997	1998	1999	2000	2001
1	16171.	11394.	9380.	12496.	6263.
2	20962.	11087.	7759.	6066.	8523.
3	8882.	14224.	6762.	4903.	3216.
4	14322.	4378.	7599.	3299.	2092.
5	3950.	6349.	1658.	3031.	1130.
6	1064.	1972.	2616.	799.	833.
=====					
Total	65352.	49404.	35774.	30594.	22057.

AGE	2002	2003	2004	2005	2006
1	5969.	5630.	6107.	4480.	8662.
2	2772.	2398.	4090.	4009.	3196.
3	4065.	1227.	1042.	1869.	1584.
4	1226.	854.	142.	238.	380.
5	578.	249.	61.	13.	23.
6	345.	302.	47.	34.	18.
=====					
Total	14954.	10662.	11489.	10643.	13864.

JAN-1 Population Numbers

AGE	2007	2008
1	15343.	16443.
2	6090.	11407.
3	1931.	3737.
4	408.	1060.
5	79.	200.
6	15.	5.
=====		
Total	23866.	32852.

Fishing Mortality Calculated

AGE	1982	1983	1984	1985	1986
1	0.2844	0.2477	0.3088	0.2887	0.3490
2	0.6944	0.7824	1.0608	0.6875	0.6456
3	0.8095	0.8582	1.4370	0.7706	0.8113
4	1.4015	1.6135	2.2116	1.3506	1.7287
5	1.4015	1.6135	2.2116	1.3506	1.7287
6	1.4015	1.6135	2.2116	1.3506	1.7287
=====					
AGE	1987	1988	1989	1990	1991
1	0.4078	0.4269	0.2234	0.5092	0.4648
2	0.5306	1.0057	0.5851	0.5473	0.7337
3	0.3895	1.0608	0.9134	0.5166	0.7423
4	0.6618	1.7955	1.1127	0.7645	0.8351
5	0.6618	1.7955	1.1127	0.7645	0.8351
6	0.6618	1.7955	1.1127	0.7645	0.8351
=====					
AGE	1992	1993	1994	1995	1996
1	0.1787	0.1655	0.0900	0.2337	0.0996
2	0.6299	0.3669	0.2253	0.1276	0.2352
3	0.7496	0.5227	0.3837	0.3088	0.2682
4	1.0256	1.3097	0.9848	0.3237	0.5304
5	1.0256	1.3097	0.9848	0.3237	0.5304
6	1.0256	1.3097	0.9848	0.3237	0.5304

AGE	1997	1998	1999	2000	2001
1	0.1274	0.1343	0.1858	0.1326	0.5652
2	0.1378	0.2445	0.2090	0.3845	0.4904
3	0.4576	0.3769	0.4676	0.6017	0.7142
4	0.5634	0.7208	0.6693	0.8219	1.0366
5	0.5634	0.7208	0.6693	0.8219	1.0366
6	0.5634	0.7208	0.6693	0.8219	1.0366

AGE	2002	2003	2004	2005	2006
1	0.6618	0.0696	0.1710	0.0879	0.1024
2	0.5647	0.5839	0.5331	0.6783	0.2539
3	1.3097	1.9079	1.2269	1.3426	1.1059
4	1.3437	2.3915	2.1654	2.0733	1.3175
5	1.3437	2.3915	2.1654	2.0733	1.3175
6	1.3437	2.3915	2.1654	2.0733	1.3175

Fishing Mortality Calculated

AGE	2007
1	0.0464
2	0.2383
3	0.3495
4	0.4631
5	0.5570
6	0.5570

Average Fishing Mortality For Ages 4- 5

Year	Average F	N Weighted	Biomass Wtd	Catch Wtd
1982	1.4015	1.4015	1.4015	1.4015
1983	1.6135	1.6135	1.6135	1.6135
1984	2.2116	2.2116	2.2116	2.2116
1985	1.3506	1.3506	1.3506	1.3506
1986	1.7287	1.7287	1.7287	1.7287
1987	0.6618	0.6618	0.6618	0.6618
1988	1.7955	1.7955	1.7955	1.7955
1989	1.1127	1.1127	1.1127	1.1127
1990	0.7645	0.7645	0.7645	0.7645
1991	0.8351	0.8351	0.8351	0.8351
1992	1.0256	1.0256	1.0256	1.0256
1993	1.3097	1.3097	1.3097	1.3097
1994	0.9848	0.9848	0.9848	0.9848
1995	0.3237	0.3237	0.3237	0.3237
1996	0.5304	0.5304	0.5304	0.5304
1997	0.5634	0.5634	0.5634	0.5634
1998	0.7208	0.7208	0.7208	0.7208
1999	0.6693	0.6693	0.6693	0.6693
2000	0.8219	0.8219	0.8219	0.8219

2001	1.0366	1.0366	1.0366	1.0366
2002	1.3437	1.3437	1.3437	1.3437
2003	2.3915	2.3915	2.3915	2.3915
2004	2.1654	2.1654	2.1654	2.1654
2005	2.0733	2.0733	2.0733	2.0733
2006	1.3175	1.3175	1.3175	1.3175
2007	0.5101	0.4784	0.4828	0.4779

Average Fishing Mortality For Ages 1- 5

Year Average F N Weighted Biomass Wtd Catch Wtd

1982	0.9182	0.5433	0.7299	0.6642
1983	1.0231	0.5748	0.9195	0.7473
1984	1.4460	0.7622	1.2146	1.0228
1985	0.8896	0.4477	0.6967	0.5392
1986	1.0526	0.5097	0.7580	0.5867
1987	0.5303	0.4564	0.4913	0.4651
1988	1.2169	0.9216	1.2525	1.0414
1989	0.7895	0.5474	0.8092	0.7008
1990	0.6204	0.5395	0.6247	0.5453
1991	0.7222	0.5875	0.7466	0.6137
1992	0.7219	0.3824	0.7490	0.5401
1993	0.7349	0.3042	0.5366	0.4193
1994	0.5337	0.1994	0.3409	0.3293
1995	0.2635	0.2100	0.2348	0.2365
1996	0.3328	0.2403	0.3384	0.3145
1997	0.3699	0.3003	0.3954	0.4159
1998	0.4395	0.3655	0.5010	0.4669
1999	0.4402	0.3837	0.5308	0.4768
2000	0.5525	0.4075	0.6482	0.5633
2001	0.7686	0.6293	0.8023	0.6666
2002	1.0447	0.9078	1.1444	0.9880
2003	1.4689	0.6538	1.5688	1.4585
2004	1.2523	0.4319	0.6936	0.6660
2005	1.2511	0.5790	0.8919	0.9359
2006	0.8194	0.2876	0.5168	0.6327
2007	0.3309	0.1288	0.2034	0.2287

Back Calculated Partial Recruitment

AGE	1982	1983	1984	1985	1986
1	0.2029	0.1535	0.1396	0.2138	0.2019
2	0.4954	0.4849	0.4797	0.5090	0.3735
3	0.5776	0.5319	0.6498	0.5705	0.4693
4	1.0000	1.0000	1.0000	1.0000	1.0000
5	1.0000	1.0000	1.0000	1.0000	1.0000
6	1.0000	1.0000	1.0000	1.0000	1.0000
AGE	1987	1988	1989	1990	1991
1	0.6162	0.2377	0.2008	0.6660	0.5566
2	0.8018	0.5601	0.5258	0.7158	0.8786
3	0.5885	0.5908	0.8208	0.6758	0.8889
4	1.0000	1.0000	1.0000	1.0000	1.0000
5	1.0000	1.0000	1.0000	1.0000	1.0000
6	1.0000	1.0000	1.0000	1.0000	1.0000
AGE	1992	1993	1994	1995	1996
1	0.1742	0.1264	0.0914	0.7218	0.1878
2	0.6142	0.2801	0.2287	0.3941	0.4435
3	0.7309	0.3991	0.3896	0.9540	0.5057
4	1.0000	1.0000	1.0000	1.0000	1.0000
5	1.0000	1.0000	1.0000	1.0000	1.0000
6	1.0000	1.0000	1.0000	1.0000	1.0000
AGE	1997	1998	1999	2000	2001
1	0.2262	0.1863	0.2776	0.1614	0.5453
2	0.2446	0.3391	0.3123	0.4678	0.4731
3	0.8122	0.5229	0.6988	0.7321	0.6890
4	1.0000	1.0000	1.0000	1.0000	1.0000
5	1.0000	1.0000	1.0000	1.0000	1.0000
6	1.0000	1.0000	1.0000	1.0000	1.0000
AGE	2002	2003	2004	2005	2006
1	0.4925	0.0291	0.0790	0.0424	0.0777
2	0.4202	0.2441	0.2462	0.3272	0.1927
3	0.9747	0.7978	0.5666	0.6475	0.8394
4	1.0000	1.0000	1.0000	1.0000	1.0000
5	1.0000	1.0000	1.0000	1.0000	1.0000
6	1.0000	1.0000	1.0000	1.0000	1.0000

Back Calculated Partial Recruitment

AGE	2007
1	0.0834
2	0.4277
3	0.6275
4	0.8314
5	1.0000
6	1.0000

JAN-1 Biomass

AGE	1982	1983	1984	1985	1986
1	4771.	3199.	4194.	4882.	10774.
2	6118.	5011.	4712.	6740.	9693.
3	3366.	4131.	3560.	3892.	7494.
4	1956.	3363.	2809.	2147.	4261.
5	1132.	1087.	933.	553.	989.
6	2828.	1658.	785.	250.	220.
=====					
Total	20171.	18450.	16993.	18465.	33431.

AGE	1987	1988	1989	1990	1991
1	4733.	2368.	2269.	1599.	1062.
2	9190.	5044.	2488.	1348.	2682.
3	7917.	7101.	3075.	2362.	3172.
4	4221.	6345.	3699.	2170.	2617.
5	712.	2054.	1461.	1722.	1315.
6	64.	280.	466.	361.	216.
=====					
Total	26838.	23192.	13457.	9562.	11065.

AGE	1992	1993	1994	1995	1996
1	962.	1323.	3401.	1662.	1962.
2	2612.	3065.	4389.	5367.	2193.
3	2225.	1748.	4335.	3995.	6637.
4	1895.	874.	1537.	2706.	3733.
5	1208.	465.	289.	460.	2311.
6	201.	77.	75.	166.	223.
=====					
Total	9104.	7551.	14026.	14356.	17060.

AGE	1997	1998	1999	2000	2001
1	2248.	889.	553.	737.	269.
2	5010.	1885.	1288.	1007.	1551.
3	3251.	4239.	2225.	1613.	1367.
4	7376.	2001.	4088.	1775.	1571.
5	2690.	4076.	1298.	2373.	1281.
6	917.	1668.	2749.	840.	1290.
=====					
Total	21492.	14757.	12202.	8345.	7329.

AGE	2002	2003	2004	2005	2006
1	549.	377.	708.	453.	1152.
2	735.	597.	1141.	950.	917.
3	2114.	668.	533.	806.	792.
4	1025.	789.	114.	160.	290.
5	688.	338.	69.	12.	25.
6	540.	547.	70.	42.	25.
=====					
Total	5650.	3316.	2636.	2423.	3201.

JAN-1 Biomass

AGE	2007	2008
1	2670.	2861.
2	2363.	4426.
3	1303.	2523.
4	414.	1076.
5	110.	278.
6	27.	8.
=====		
Total	6887.	11172.

Mean Biomass

AGE	1982	1983	1984	1985	1986
1	4951.	3909.	5377.	6961.	10079.
2	5210.	4178.	4084.	7339.	11854.
3	3522.	3290.	2573.	4802.	7816.
4	1627.	2591.	1633.	2331.	2862.
5	726.	835.	365.	406.	451.
6	1384.	752.	292.	125.	96.
Total	17421.	15556.	14324.	21965.	33158.
AGE	1987	1988	1989	1990	1991
1	4983.	2467.	2089.	1868.	2213.
2	7948.	4109.	2421.	2064.	2882.
3	6329.	5358.	2714.	2517.	2771.
4	2662.	3793.	2881.	1776.	1982.
5	366.	1100.	1011.	1295.	936.
6	42.	119.	255.	257.	148.
Total	22330.	16946.	11371.	9777.	10933.
AGE	1992	1993	1994	1995	1996
1	2464.	2285.	4930.	2004.	2610.
2	3004.	3535.	4960.	5989.	2401.
3	1964.	1643.	4139.	3846.	6587.
4	1342.	552.	1072.	2459.	3124.
5	802.	279.	193.	405.	1865.
6	128.	44.	49.	143.	176.
Total	9705.	8338.	15342.	14846.	16762.
AGE	1997	1998	1999	2000	2001
1	2505.	1135.	798.	1090.	857.
2	5213.	2012.	1499.	1083.	2288.
3	2789.	3952.	2065.	1412.	929.
4	5841.	1532.	3265.	1330.	847.
5	2082.	3015.	992.	1701.	693.
6	696.	1202.	2038.	584.	1120.
Total	19126.	12849.	10658.	7200.	6734.

AGE	2002	2003	2004	2005	2006
1	1018.	1060.	1136.	1061.	2125.
2	607.	504.	976.	925.	831.
3	1173.	201.	244.	413.	418.
4	441.	198.	42.	47.	139.
5	260.	134.	37.	6.	11.
6	239.	273.	74.	48.	44.
Total	3739.	2371.	2509.	2500.	3567.

Mean Biomass

AGE	2007
1	2855.
2	1662.
3	680.
4	245.
5	53.
6	41.
Total	5535.

Spawning Stock Biomass

AGE	1982	1983	1984	1985	1986
1	3107.	2117.	2732.	3174.	6878.
2	4194.	3316.	2789.	4633.	6775.
3	2203.	2651.	1813.	2587.	4902.
4	1011.	1596.	1049.	1132.	1931.
5	585.	514.	349.	291.	448.
6	1461.	787.	293.	132.	100.
Total	12560.	10982.	9026.	11949.	21033.

AGE	1987	1988	1989	1990	1991
1	2936.	1463.	1519.	1771.	2194.
2	6726.	3053.	1781.	1697.	2609.
3	6130.	4203.	1931.	2306.	2671.
4	2931.	2799.	2145.	1738.	1956.
5	495.	906.	847.	1296.	943.
6	45.	124.	270.	295.	170.
Total	19262.	12548.	8493.	9103.	10543.

AGE	1992	1993	1994	1995	1996
1	2432.	2240.	4646.	1910.	2327.
2	2639.	3266.	4611.	5731.	2258.
3	1877.	1582.	3987.	3737.	6254.
4	1326.	543.	1063.	2431.	3092.
5	809.	279.	196.	403.	1864.
6	147.	52.	57.	165.	203.
Total	9231.	7961.	14560.	14376.	15998.

AGE	1997	1998	1999	2000	2001
1	2378.	1055.	780.	1062.	350.
2	5026.	1911.	1356.	988.	1699.
3	2744.	3874.	1979.	1360.	1196.
4	5896.	1544.	3262.	1332.	1124.
5	2111.	3057.	999.	1717.	876.
6	791.	1391.	2373.	682.	855.
Total	18947.	12832.	10748.	7141.	6100.

AGE	2002	2003	2004	2005	2006
1	560.	557.	799.	521.	1266.
2	716.	610.	1088.	852.	956.
3	1394.	356.	359.	517.	553.
4	631.	325.	50.	73.	179.
5	409.	133.	30.	5.	15.
6	313.	209.	29.	18.	15.
Total	4024.	2190.	2355.	1987.	2983.

Spawning Stock Biomass

AGE	2007
1	3066.
2	2480.
3	1224.
4	356.
5	89.
6	21.
Total	7236.

Catch Biomass

AGE	1982	1983	1984	1985	1986
1	1408.	968.	1661.	2010.	3517.
2	3618.	3269.	4333.	5046.	7653.
3	2851.	2824.	3697.	3701.	6341.
4	2281.	4181.	3612.	3149.	4948.
5	1018.	1347.	808.	548.	780.
6	1940.	1214.	645.	168.	165.
Total	13116.	13803.	14756.	14621.	23404.
AGE	1987	1988	1989	1990	1991
1	2032.	1053.	467.	951.	1029.
2	4217.	4132.	1416.	1130.	2115.
3	2465.	5684.	2479.	1300.	2057.
4	1761.	6811.	3206.	1358.	1655.
5	242.	1976.	1125.	990.	782.
6	28.	214.	283.	197.	124.
Total	10745.	19870.	8976.	5925.	7761.
AGE	1992	1993	1994	1995	1996
1	440.	378.	444.	468.	260.
2	1892.	1297.	1117.	764.	565.
3	1473.	859.	1588.	1188.	1767.
4	1377.	723.	1055.	796.	1657.
5	823.	365.	190.	131.	989.
6	131.	58.	48.	46.	93.
Total	6136.	3680.	4443.	3394.	5330.
AGE	1997	1998	1999	2000	2001
1	319.	152.	148.	145.	484.
2	718.	492.	313.	416.	1122.
3	1276.	1490.	966.	850.	663.
4	3291.	1105.	2185.	1093.	878.
5	1173.	2173.	664.	1398.	718.
6	392.	867.	1364.	480.	1161.
Total	7170.	6278.	5640.	4382.	5027.

AGE	2002	2003	2004	2005	2006
1	674.	74.	194.	93.	217.
2	343.	294.	520.	627.	211.
3	1537.	384.	299.	555.	462.
4	593.	474.	91.	97.	183.
5	349.	321.	80.	13.	14.
6	322.	653.	160.	101.	58.
Total	3817.	2200.	1345.	1485.	1146.

Catch Biomass

AGE	2007
1	133.
2	396.
3	238.
4	114.
5	24.
6	23.
Total	927.

Catch Numbers

AGE	1982	1983	1984	1985	1986
1	9914.2	8004.0	10444.2	14153.2	18610.7
2	12967.0	12869.1	14736.9	11262.3	15778.4
3	5473.0	5822.7	6521.1	3246.1	4942.4
4	2778.2	2780.0	3045.3	1171.0	1823.7
5	721.6	568.2	484.5	212.9	264.1
6	639.5	424.1	254.5	55.1	52.1
Total	32493.5	30468.1	35486.5	30100.6	41471.4
AGE	1987	1988	1989	1990	1991
1	16256.3	8161.9	3705.0	9510.1	9795.9
2	14343.1	16140.8	5304.9	4890.1	5825.6
3	4347.1	10545.3	4333.5	2093.6	2750.0
4	1485.2	6092.0	2922.3	1204.8	1373.6
5	145.4	1050.5	626.2	591.4	463.4
6	11.0	70.7	84.6	89.1	57.3
Total	36588.1	42061.2	16976.5	18379.1	20265.8

AGE	1992	1993	1994	1995	1996
1	5179.5	4974.8	3761.9	4336.3	2498.8
2	6046.0	6357.0	4347.4	3727.7	2689.5
3	2211.0	2179.8	3561.0	3566.7	5033.3
4	1255.0	1138.6	1563.5	1637.8	3174.2
5	527.8	401.1	204.1	198.1	1379.3
6	65.0	48.2	39.8	54.3	100.1
=====					
Total	15284.3	15099.5	13477.7	13520.9	14875.2
AGE	1997	1998	1999	2000	2001
1	1716.4	1270.6	1412.6	1377.0	2420.7
2	2394.2	2138.3	1300.4	1727.1	2953.1
3	2913.2	3983.1	2256.6	1985.7	1474.1
4	5522.0	2019.2	3326.0	1663.7	1219.9
5	1523.1	2928.8	725.7	1528.2	658.7
6	410.2	909.5	1145.0	403.0	485.9
=====					
Total	14479.1	13249.5	10166.3	8684.7	9212.4
AGE	2002	2003	2004	2005	2006
1	2591.7	335.6	852.3	334.3	747.3
2	1070.5	949.9	1511.9	1771.5	637.3
3	2695.7	959.7	667.8	1255.2	959.2
4	823.9	718.4	115.8	191.5	252.9
5	388.2	209.5	49.7	10.2	15.5
6	231.5	254.2	38.4	27.1	11.9
=====					
Total	7801.5	3427.3	3235.9	3589.8	2624.1

Catch Numbers

AGE	2007
1	616.6
2	1148.0
3	507.6
4	135.2
5	25.2
6	5.8
=====	
Total	2438.4

Surplus Production

Average Adjustment Factor (Delta) = 1.0000

Year	Biomass	Delta Biomass	Catch Biomass	Surplus Production
1982	20171.083	-1721.376	13115.726	11394.350
1983	18449.707	-1456.223	13803.341	12347.118
1984	16993.483	1471.296	14755.539	16226.835
1985	18464.779	14965.989	14621.399	29587.388
1986	33430.768	-6592.756	23404.472	16811.716
1987	26838.012	-3646.337	10745.440	7099.103
1988	23191.675	-9734.783	19869.631	10134.849
1989	13456.893	-3894.793	8975.659	5080.867
1990	9562.100	1503.181	5925.206	7428.387
1991	11065.281	-1961.751	7760.802	5799.051
1992	9103.530	-1552.084	6135.862	4583.777
1993	7551.446	6474.078	3680.393	10154.471
1994	14025.524	330.412	4442.975	4773.387
1995	14355.936	2704.246	3393.641	6097.887
1996	17060.182	4431.459	5330.342	9761.801
1997	21491.641	-6734.272	7169.542	435.270
1998	14757.369	-2555.289	6278.386	3723.097
1999	12202.080	-3856.852	5640.437	1783.585
2000	8345.228	-1015.922	4382.023	3366.100
2001	7329.306	-1679.011	5027.275	3348.264
2002	5650.295	-2334.027	3817.324	1483.297
2003	3316.268	-680.319	2200.154	1519.835
2004	2635.949	-213.040	1344.697	1131.657
2005	2422.910	777.898	1485.377	2263.275
2006	3200.807	3686.450	1146.048	4832.498
2007	6887.257	4284.426	926.806	5211.232
2008	11171.683			

Summary of Survey Indices Used in the Estimate

INDEX	Survey Tag	Age	Time	Type	Catchability	Std. Error	CV
1	DEDFW	1	MEAN	NUMBER	0.2119E-02	0.6910E-03	0.3260E+00
2	DEDFW	2	MEAN	NUMBER	0.2506E-02	0.7186E-03	0.2868E+00
3	DEDFW	3	MEAN	NUMBER	0.1420E-02	0.5420E-03	0.3817E+00
4	DEDFW	4	MEAN	NUMBER	0.1325E-02	0.4215E-03	0.3181E+00
5	DEDFW	5	MEAN	NUMBER	0.8923E-03	0.2794E-03	0.3131E+00
6	DEDFW	6	MEAN	NUMBER	0.7923E-03	0.1933E-03	0.2440E+00
7	NJDEP	1	JAN-1	NUMBER	0.3594E-05	0.8427E-06	0.2345E+00
8	NJDEP	2	JAN-1	NUMBER	0.7893E-05	0.1806E-05	0.2288E+00
9	NJDEP	3	JAN-1	NUMBER	0.5782E-05	0.1644E-05	0.2843E+00
10	NJDEP	4	JAN-1	NUMBER	0.3334E-05	0.1478E-05	0.4431E+00
11	NJDEP	5	JAN-1	NUMBER	0.1855E-05	0.8210E-06	0.4426E+00
12	NJDEP	6	JAN-1	NUMBER	0.1499E-05	0.9329E-06	0.6222E+00
13	NCGill	1	MEAN	NUMBER	0.3151E-04	0.5629E-05	0.1787E+00
14	NCGill	2	MEAN	NUMBER	0.1579E-03	0.3115E-04	0.1972E+00
15	NCGill	3	MEAN	NUMBER	0.4553E-03	0.1379E-03	0.3029E+00
16	NCGill	4	MEAN	NUMBER	0.8500E-03	0.3844E-03	0.4523E+00
17	NCGill	5	MEAN	NUMBER	0.1123E-02	0.6277E-03	0.5591E+00
18	NCGill	6	MEAN	NUMBER	0.7014E-04	0.8013E-05	0.1142E+00
34	MRFSS	3	JAN-1	NUMBER	0.5686E-05	0.1133E-05	0.1993E+00
35	MRFSS	4	JAN-1	NUMBER	0.1976E-04	0.3145E-05	0.1592E+00
36	MRFSS	5	JAN-1	NUMBER	0.5733E-04	0.1052E-04	0.1835E+00
37	MRFSS	6	JAN-1	NUMBER	0.6411E-04	0.1218E-04	0.1900E+00
38	rec	2 - 6	MEAN	NUMBER	0.1832E-04	0.2135E-05	0.1165E+00

Survey Index: 1 Tag: DEDFW AGE = 1
 Time = MEAN Type = NUMBER
 Catchability = 0.211918E-02 % Variance Contribution = 9.0380
 Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1982	0.471000E+01	0.738853E+02	-0.275283E+01
1983	0.539000E+01	0.684657E+02	-0.254179E+01
1984	0.299000E+01	0.716663E+02	-0.317675E+01
1985	N/A	0.103885E+03	N/A
1986	N/A	0.113012E+03	N/A
1987	N/A	0.844810E+02	N/A
1988	N/A	0.405200E+02	N/A
1989	N/A	0.351415E+02	N/A
1990	N/A	0.395799E+02	N/A
1991	0.271588E+02	0.446618E+02	-0.497418E+00
1992	0.211512E+02	0.614345E+02	-0.106627E+01
1993	0.502801E+02	0.637032E+02	-0.236626E+00
1994	0.113422E+03	0.885392E+02	0.247672E+00
1995	0.752633E+02	0.393266E+02	0.649090E+00
1996	0.440437E+02	0.531771E+02	-0.188446E+00
1997	0.334142E+02	0.285450E+02	0.157499E+00
1998	0.233566E+02	0.200478E+02	0.152759E+00
1999	0.420661E+02	0.161125E+02	0.959645E+00
2000	0.978468E+02	0.220036E+02	0.149220E+01
2001	0.131139E+02	0.907614E+01	0.368024E+00
2002	0.893537E+02	0.829898E+01	0.237647E+01
2003	0.501607E+02	0.102129E+02	0.159158E+01
2004	0.263628E+02	0.105631E+02	0.914585E+00
2005	0.120686E+02	0.805700E+01	0.404066E+00
2006	0.583793E+02	0.154717E+02	0.132795E+01
2007	0.234698E+02	0.281381E+02	-0.181410E+00
2008	N/A	0.000000E+00	N/A

Survey Index: 2 Tag: DEDFW AGE = 2
 Time = MEAN Type = NUMBER
 Catchability = 0.250557E-02 % Variance Contribution = 6.9939
 Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1982	0.733000E+01	0.467906E+02	-0.185371E+01
1983	0.800000E+01	0.412148E+02	-0.163935E+01
1984	0.532000E+01	0.348077E+02	-0.187836E+01
1985	N/A	0.410478E+02	N/A
1986	N/A	0.612378E+02	N/A
1987	N/A	0.677316E+02	N/A
1988	N/A	0.402116E+02	N/A
1989	N/A	0.227189E+02	N/A
1990	N/A	0.223886E+02	N/A
1991	0.363820E+01	0.198952E+02	-0.169899E+01
1992	0.260810E+01	0.240493E+02	-0.222148E+01
1993	0.254220E+02	0.434173E+02	-0.535244E+00
1994	0.685360E+02	0.483542E+02	0.348806E+00
1995	0.534866E+02	0.732032E+02	-0.313808E+00
1996	0.483017E+02	0.286455E+02	0.522469E+00
1997	0.250014E+02	0.435367E+02	-0.554673E+00
1998	0.246266E+02	0.219172E+02	0.116556E+00

1999	0.201604E+02	0.155890E+02	0.257153E+00
2000	0.503831E+02	0.112544E+02	0.149890E+01
2001	0.426313E+02	0.150866E+02	0.103878E+01
2002	0.233228E+02	0.475010E+01	0.159127E+01
2003	0.139835E+02	0.407628E+01	0.123269E+01
2004	0.224048E+02	0.710606E+01	0.114833E+01
2005	0.145354E+02	0.654358E+01	0.798103E+00
2006	0.371285E+02	0.628982E+01	0.177545E+01
2007	0.174276E+02	0.120726E+02	0.367117E+00
2008	N/A	0.000000E+00	N/A

Survey Index: 3 Tag: DEDFW AGE = 3
Time = MEAN Type = NUMBER
Catchability = 0.141990E-02 % Variance Contribution = 12.3867
Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1982	0.302000E+01	0.959993E+01	-0.115650E+01
1983	0.334000E+01	0.963323E+01	-0.105925E+01
1984	0.242000E+01	0.644333E+01	-0.979278E+00
1985	N/A	0.598131E+01	N/A
1986	N/A	0.865021E+01	N/A
1987	N/A	0.158488E+02	N/A
1988	N/A	0.141154E+02	N/A
1989	N/A	0.673682E+01	N/A
1990	N/A	0.575404E+01	N/A
1991	0.638300E+00	0.526027E+01	-0.210913E+01
1992	0.318000E-01	0.418784E+01	-0.488047E+01
1993	0.390020E+01	0.592142E+01	-0.417548E+00
1994	0.236497E+02	0.131776E+02	0.584832E+00
1995	0.157403E+02	0.163978E+02	-0.409246E-01
1996	0.111107E+03	0.266459E+02	0.142786E+01
1997	0.135633E+02	0.903976E+01	0.405735E+00
1998	0.203749E+02	0.150050E+02	0.305919E+00
1999	0.170310E+02	0.685167E+01	0.910544E+00
2000	0.236377E+02	0.468592E+01	0.161828E+01
2001	0.187718E+02	0.293052E+01	0.185718E+01
2002	0.279672E+02	0.292249E+01	0.225860E+01
2003	0.121830E+01	0.714240E+00	0.533992E+00
2004	0.108900E+00	0.772872E+00	-0.195968E+01
2005	0.238720E+01	0.132749E+01	0.586831E+00
2006	0.100217E+02	0.123151E+01	0.209652E+01
2007	0.209630E+01	0.206199E+01	0.165018E-01
2008	N/A	0.000000E+00	N/A

Survey Index: 4 Tag: DEDFW AGE = 4
 Time = MEAN Type = NUMBER
 Catchability = 0.132513E-02 % Variance Contribution = 6.1574
 Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1982	0.145000E+01	0.262682E+01	-0.594210E+00
1983	0.157000E+01	0.228320E+01	-0.374501E+00
1984	0.115000E+01	0.182466E+01	-0.461634E+00
1985	N/A	0.114891E+01	N/A
1986	N/A	0.139797E+01	N/A
1987	N/A	0.297395E+01	N/A
1988	N/A	0.449595E+01	N/A
1989	N/A	0.348012E+01	N/A
1990	N/A	0.208826E+01	N/A
1991	N/A	0.217973E+01	N/A
1992	0.318000E-01	0.162151E+01	-0.393165E+01
1993	0.516900E+00	0.115204E+01	-0.801444E+00
1994	0.965300E+00	0.210378E+01	-0.779051E+00
1995	0.542510E+01	0.670420E+01	-0.211698E+00
1996	0.238182E+02	0.793064E+01	0.109972E+01
1997	0.345991E+02	0.129877E+02	0.979823E+00
1998	0.115955E+02	0.371187E+01	0.113908E+01
1999	0.674020E+01	0.658549E+01	0.232210E-01
2000	0.574460E+01	0.268239E+01	0.761552E+00
2001	0.552630E+01	0.155948E+01	0.126517E+01
2002	0.383670E+01	0.812500E+00	0.155225E+01
2003	0.423700E+00	0.398061E+00	0.624205E-01
2004	N/A	0.708650E-01	N/A
2005	N/A	0.122394E+00	N/A
2006	0.784800E+00	0.254361E+00	0.112667E+01
2007	0.164400E+00	0.386844E+00	-0.855720E+00
2008	N/A	0.000000E+00	N/A

Survey Index: 5 Tag: DEDFW AGE = 5
 Time = MEAN Type = NUMBER
 Catchability = 0.892300E-03 % Variance Contribution = 2.4129
 Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1982	0.240000E+00	0.459426E+00	-0.649339E+00
1983	0.200000E+00	0.314233E+00	-0.451818E+00
1984	0.130000E+00	0.195478E+00	-0.407916E+00
1985	N/A	0.140655E+00	N/A
1986	N/A	0.136321E+00	N/A
1987	N/A	0.196049E+00	N/A
1988	N/A	0.522047E+00	N/A
1989	N/A	0.502152E+00	N/A
1990	N/A	0.690244E+00	N/A
1991	N/A	0.495165E+00	N/A
1992	N/A	0.459195E+00	N/A
1993	N/A	0.273277E+00	N/A
1994	N/A	0.184926E+00	N/A
1995	0.764000E-01	0.546038E+00	-0.196671E+01
1996	0.638700E+01	0.232052E+01	0.101247E+01
1997	0.296230E+01	0.241222E+01	0.205417E+00
1998	0.207062E+02	0.362540E+01	0.174247E+01

1999	0.258780E+01	0.967554E+00	0.983792E+00
2000	0.659200E+00	0.165913E+01	-0.923019E+00
2001	0.570200E+00	0.567015E+00	0.560103E-02
2002	0.403900E+00	0.257785E+00	0.449043E+00
2003	N/A	0.781663E-01	N/A
2004	N/A	0.204801E-01	N/A
2005	N/A	0.438978E-02	N/A
2006	N/A	0.104975E-01	N/A
2007	N/A	0.485526E-01	N/A
2008	N/A	0.000000E+00	N/A

Survey Index: 6 Tag: DEDFW AGE = 6
Time = MEAN Type = NUMBER
Catchability = 0.792329E-03 % Variance Contribution = 0.9592
Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1982	0.330000E+00	0.361538E+00	-0.912754E-01
1983	0.180000E+00	0.208264E+00	-0.145849E+00
1984	0.700000E-01	0.911775E-01	-0.264313E+00
1985	N/A	0.323241E-01	N/A
1986	N/A	0.238797E-01	N/A
1987	N/A	0.131701E-01	N/A
1988	N/A	0.311981E-01	N/A
1989	N/A	0.602403E-01	N/A
1990	N/A	0.923408E-01	N/A
1991	N/A	0.543680E-01	N/A
1992	N/A	0.502153E-01	N/A
1993	N/A	0.291603E-01	N/A
1994	N/A	0.320208E-01	N/A
1995	N/A	0.132902E+00	N/A
1996	0.133100E+00	0.149539E+00	-0.116458E+00
1997	0.474000E+00	0.576872E+00	-0.196413E+00
1998	0.132520E+01	0.999686E+00	0.281878E+00
1999	0.403310E+01	0.135556E+01	0.109032E+01
2000	0.941800E+00	0.388507E+00	0.885482E+00
2001	0.877000E-01	0.371406E+00	-0.144337E+01
2002	N/A	0.136505E+00	N/A
2003	N/A	0.842182E-01	N/A
2004	N/A	0.140508E-01	N/A
2005	N/A	0.103564E-01	N/A
2006	N/A	0.715643E-02	N/A
2007	N/A	0.824995E-02	N/A
2008	N/A	0.000000E+00	N/A

Survey Index: 7 Tag: NJDEP AGE = 1
 Time = JAN-1 Type = NUMBER
 Catchability = 0.359433E-05 % Variance Contribution = 4.2063
 Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1982	N/A	0.161766E+00	N/A
1983	N/A	0.147412E+00	N/A
1984	N/A	0.158664E+00	N/A
1985	N/A	0.227900E+00	N/A
1986	N/A	0.254782E+00	N/A
1987	N/A	0.195543E+00	N/A
1988	N/A	0.945887E-01	N/A
1989	N/A	0.748213E-01	N/A
1990	0.356000E-01	0.958075E-01	-0.989996E+00
1991	0.745000E-01	0.106023E+00	-0.352853E+00
1992	0.892000E-01	0.128123E+00	-0.362106E+00
1993	0.405000E-01	0.132043E+00	-0.118182E+01
1994	0.255600E+00	0.177147E+00	0.366634E+00
1995	0.398000E-01	0.841277E-01	-0.748469E+00
1996	0.543000E-01	0.106875E+00	-0.677135E+00
1997	0.132300E+00	0.581249E-01	0.822478E+00
1998	0.870000E-02	0.409543E-01	-0.154913E+01
1999	0.222000E-01	0.337142E-01	-0.417827E+00
2000	0.397000E-01	0.449140E-01	-0.123398E+00
2001	0.470000E-02	0.225119E-01	-0.156648E+01
2002	0.139800E+00	0.214550E-01	0.187426E+01
2003	0.416000E-01	0.202377E-01	0.720554E+00
2004	0.591000E-01	0.219511E-01	0.990414E+00
2005	0.977000E-01	0.161042E-01	0.180282E+01
2006	0.746000E-01	0.311356E-01	0.873789E+00
2007	0.926000E-01	0.551475E-01	0.518277E+00
2008	0.591000E-01	0.591000E-01	-0.412020E-10

Survey Index: 8 Tag: NJDEP AGE = 2
 Time = JAN-1 Type = NUMBER
 Catchability = 0.789323E-05 % Variance Contribution = 4.0068
 Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1982	N/A	0.227799E+00	N/A
1983	N/A	0.208188E+00	N/A
1984	N/A	0.196790E+00	N/A
1985	N/A	0.199258E+00	N/A
1986	N/A	0.292026E+00	N/A
1987	N/A	0.307377E+00	N/A
1988	N/A	0.222438E+00	N/A
1989	N/A	0.105565E+00	N/A
1990	0.260000E-01	0.102342E+00	-0.137023E+01
1991	0.523000E-01	0.984749E-01	-0.632805E+00
1992	0.320600E+00	0.113919E+00	0.103470E+01
1993	0.110300E+00	0.183272E+00	-0.507765E+00
1994	0.148900E+00	0.191384E+00	-0.251006E+00
1995	0.160700E+00	0.276881E+00	-0.544049E+00
1996	0.434000E-01	0.113899E+00	-0.964856E+00
1997	0.342000E-01	0.165460E+00	-0.157650E+01
1998	0.440000E-01	0.875156E-01	-0.687628E+00

1999	0.396000E-01	0.612397E-01	-0.435966E+00
2000	0.125500E+00	0.478838E-01	0.963528E+00
2001	0.788000E-01	0.672743E-01	0.158135E+00
2002	0.546000E-01	0.218780E-01	0.914550E+00
2003	0.407000E-01	0.189310E-01	0.765425E+00
2004	0.173500E+00	0.322836E-01	0.168162E+01
2005	0.934000E-01	0.316417E-01	0.108241E+01
2006	0.747000E-01	0.252241E-01	0.108568E+01
2007	0.122000E-01	0.480692E-01	-0.137121E+01
2008	0.173500E+00	0.900372E-01	0.655955E+00

Survey Index: 9 Tag: NJDEP AGE = 3
Time = JAN-1 Type = NUMBER
Catchability = 0.578221E-05 % Variance Contribution = 6.1833
Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1982	N/A	0.633936E-01	N/A
1983	N/A	0.649021E-01	N/A
1984	N/A	0.543188E-01	N/A
1985	N/A	0.388655E-01	N/A
1986	N/A	0.571641E-01	N/A
1987	N/A	0.873606E-01	N/A
1988	N/A	0.103158E+00	N/A
1989	N/A	0.464186E-01	N/A
1990	0.570000E-02	0.335504E-01	-0.177258E+01
1991	0.990000E-02	0.337790E-01	-0.122731E+01
1992	0.585000E-01	0.269751E-01	0.774113E+00
1993	0.445000E-01	0.346179E-01	0.251119E+00
1994	0.316000E-01	0.724498E-01	-0.829737E+00
1995	0.702000E-01	0.871642E-01	-0.216445E+00
1996	0.117700E+00	0.139042E+00	-0.166640E+00
1997	0.466000E-01	0.513596E-01	-0.972513E-01
1998	0.679000E-01	0.822465E-01	-0.191685E+00
1999	0.302000E-01	0.391010E-01	-0.258307E+00
2000	0.101100E+00	0.283483E-01	0.127154E+01
2001	0.138100E+00	0.185980E-01	0.200492E+01
2002	0.239000E-01	0.235026E-01	0.167678E-01
2003	0.210000E-02	0.709649E-02	-0.121766E+01
2004	0.726000E-01	0.602374E-02	0.248926E+01
2005	0.990000E-02	0.108076E-01	-0.877138E-01
2006	0.161000E-01	0.916087E-02	0.563878E+00
2007	0.900000E-03	0.111642E-01	-0.251807E+01
2008	0.726000E-01	0.216102E-01	0.121180E+01

Survey Index: 10 Tag: NJDEP AGE = 4
 Time = JAN-1 Type = NUMBER
 Catchability = 0.333437E-05 % Variance Contribution = 11.9491
 Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1982	N/A	0.135059E-01	N/A
1983	N/A	0.126716E-01	N/A
1984	N/A	0.123559E-01	N/A
1985	N/A	0.579695E-02	N/A
1986	N/A	0.807695E-02	N/A
1987	N/A	0.114061E-01	N/A
1988	N/A	0.265780E-01	N/A
1989	N/A	0.160385E-01	N/A
1990	0.240000E-02	0.836319E-02	-0.124837E+01
1991	0.230000E-02	0.898825E-02	-0.136301E+01
1992	0.700000E-03	0.722129E-02	-0.233371E+01
1993	0.181000E-01	0.572456E-02	0.115115E+01
1994	N/A	0.921814E-02	N/A
1995	0.820000E-02	0.221689E-01	-0.994556E+00
1996	0.273000E-01	0.287445E-01	-0.515612E-01
1997	0.133900E+00	0.477540E-01	0.103103E+01
1998	0.350000E-01	0.145963E-01	0.874583E+00
1999	0.530000E-02	0.253380E-01	-0.156460E+01
2000	0.215300E+00	0.110012E-01	0.297403E+01
2001	0.582000E-01	0.697527E-02	0.212151E+01
2002	0.290000E-02	0.408907E-02	-0.343607E+00
2003	0.300000E-03	0.284880E-02	-0.225087E+01
2004	0.129000E-01	0.472948E-03	0.330600E+01
2005	0.800000E-03	0.793219E-03	0.851259E-02
2006	N/A	0.126766E-02	N/A
2007	0.100000E-03	0.136139E-02	-0.261109E+01
2008	0.129000E-01	0.353485E-02	0.129456E+01

Survey Index: 11 Tag: NJDEP AGE = 5
 Time = JAN-1 Type = NUMBER
 Catchability = 0.185515E-05 % Variance Contribution = 4.8204
 Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1982	N/A	0.195174E-02	N/A
1983	N/A	0.144096E-02	N/A
1984	N/A	0.109371E-02	N/A
1985	N/A	0.586385E-03	N/A
1986	N/A	0.650769E-03	N/A
1987	N/A	0.621271E-03	N/A
1988	N/A	0.254990E-02	N/A
1989	N/A	0.191212E-02	N/A
1990	0.300000E-03	0.228403E-02	-0.202992E+01
1991	0.100000E-03	0.168708E-02	-0.282558E+01
1992	N/A	0.168968E-02	N/A
1993	0.140000E-02	0.112199E-02	0.221371E+00
1994	N/A	0.669503E-03	N/A
1995	N/A	0.149187E-02	N/A
1996	0.107000E-01	0.694935E-02	0.431596E+00
1997	0.116000E-01	0.732835E-02	0.459255E+00
1998	0.821000E-01	0.117792E-01	0.194160E+01

1999	0.150000E-02	0.307589E-02	-0.718130E+00
2000	0.112000E-01	0.562222E-02	0.689186E+00
2001	0.137000E-01	0.209550E-02	0.187760E+01
2002	N/A	0.107194E-02	N/A
2003	N/A	0.462215E-03	N/A
2004	0.200000E-03	0.112934E-03	0.571511E+00
2005	N/A	0.235065E-04	N/A
2006	N/A	0.432264E-04	N/A
2007	N/A	0.147097E-03	N/A
2008	0.200000E-03	0.371226E-03	-0.618494E+00

Survey Index: 12 Tag: NJDEP AGE = 6
Time = JAN-1 Type = NUMBER
Catchability = 0.149946E-05 % Variance Contribution = 1.7322
Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1982	N/A	0.139805E-02	N/A
1983	N/A	0.869313E-03	N/A
1984	N/A	0.464359E-03	N/A
1985	N/A	0.122663E-03	N/A
1986	N/A	0.103765E-03	N/A
1987	N/A	0.379897E-04	N/A
1988	N/A	0.138708E-03	N/A
1989	N/A	0.208799E-03	N/A
1990	N/A	0.278135E-03	N/A
1991	N/A	0.168612E-03	N/A
1992	N/A	0.168192E-03	N/A
1993	N/A	0.108978E-03	N/A
1994	N/A	0.105523E-03	N/A
1995	N/A	0.330524E-03	N/A
1996	0.900000E-03	0.407639E-03	0.792013E+00
1997	N/A	0.159525E-02	N/A
1998	0.113000E-01	0.295655E-02	0.134078E+01
1999	0.120000E-02	0.392262E-02	-0.118444E+01
2000	0.200000E-03	0.119837E-02	-0.179040E+01
2001	0.290000E-02	0.124941E-02	0.842041E+00
2002	N/A	0.516680E-03	N/A
2003	N/A	0.453306E-03	N/A
2004	N/A	0.705272E-04	N/A
2005	N/A	0.504794E-04	N/A
2006	N/A	0.268238E-04	N/A
2007	N/A	0.227511E-04	N/A
2008	N/A	0.701670E-05	N/A

Survey Index: 13 Tag: NCGill AGE = 1
 Time = MEAN Type = NUMBER
 Catchability = 0.315053E-04 % Variance Contribution = 0.3000
 Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1982	N/A	0.109843E+01	N/A
1983	N/A	0.101786E+01	N/A
1984	N/A	0.106544E+01	N/A
1985	N/A	0.154444E+01	N/A
1986	N/A	0.168012E+01	N/A
1987	N/A	0.125596E+01	N/A
1988	N/A	0.602400E+00	N/A
1989	N/A	0.522440E+00	N/A
1990	N/A	0.588423E+00	N/A
1991	N/A	0.663976E+00	N/A
1992	N/A	0.913330E+00	N/A
1993	N/A	0.947059E+00	N/A
1994	N/A	0.131629E+01	N/A
1995	N/A	0.584659E+00	N/A
1996	N/A	0.790570E+00	N/A
1997	N/A	0.424371E+00	N/A
1998	N/A	0.298046E+00	N/A
1999	N/A	0.239541E+00	N/A
2000	N/A	0.327121E+00	N/A
2001	0.148000E+00	0.134933E+00	0.924368E-01
2002	0.172900E+00	0.123379E+00	0.337455E+00
2003	0.145400E+00	0.151833E+00	-0.432916E-01
2004	0.226900E+00	0.157039E+00	0.368014E+00
2005	0.171900E+00	0.119781E+00	0.361246E+00
2006	0.197400E+00	0.230014E+00	-0.152906E+00
2007	0.159700E+00	0.418322E+00	-0.962953E+00
2008	N/A	0.000000E+00	N/A

Survey Index: 14 Tag: NCGill AGE = 2
 Time = MEAN Type = NUMBER
 Catchability = 0.157929E-03 % Variance Contribution = 0.3656
 Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1982	N/A	0.294926E+01	N/A
1983	N/A	0.259781E+01	N/A
1984	N/A	0.219397E+01	N/A
1985	N/A	0.258729E+01	N/A
1986	N/A	0.385989E+01	N/A
1987	N/A	0.426920E+01	N/A
1988	N/A	0.253458E+01	N/A
1989	N/A	0.143200E+01	N/A
1990	N/A	0.141118E+01	N/A
1991	N/A	0.125401E+01	N/A
1992	N/A	0.151585E+01	N/A
1993	N/A	0.273664E+01	N/A
1994	N/A	0.304782E+01	N/A
1995	N/A	0.461408E+01	N/A
1996	N/A	0.180556E+01	N/A
1997	N/A	0.274417E+01	N/A
1998	N/A	0.138146E+01	N/A

1999	N/A	0.982593E+00	N/A
2000	N/A	0.709375E+00	N/A
2001	0.148860E+01	0.950925E+00	0.448156E+00
2002	0.267400E+00	0.299404E+00	-0.113048E+00
2003	0.366900E+00	0.256932E+00	0.356276E+00
2004	0.594600E+00	0.447902E+00	0.283313E+00
2005	0.486200E+00	0.412449E+00	0.164508E+00
2006	0.376600E+00	0.396454E+00	-0.513775E-01
2007	0.256400E+00	0.760949E+00	-0.108783E+01
2008	N/A	0.000000E+00	N/A

Survey Index: 15 Tag: NCGill AGE = 3
Time = MEAN Type = NUMBER
Catchability = 0.455255E-03 % Variance Contribution = 0.8624
Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1982	N/A	0.307798E+01	N/A
1983	N/A	0.308866E+01	N/A
1984	N/A	0.206590E+01	N/A
1985	N/A	0.191776E+01	N/A
1986	N/A	0.277348E+01	N/A
1987	N/A	0.508153E+01	N/A
1988	N/A	0.452576E+01	N/A
1989	N/A	0.216000E+01	N/A
1990	N/A	0.184489E+01	N/A
1991	N/A	0.168658E+01	N/A
1992	N/A	0.134273E+01	N/A
1993	N/A	0.189856E+01	N/A
1994	N/A	0.422507E+01	N/A
1995	N/A	0.525756E+01	N/A
1996	N/A	0.854335E+01	N/A
1997	N/A	0.289838E+01	N/A
1998	N/A	0.481099E+01	N/A
1999	N/A	0.219682E+01	N/A
2000	N/A	0.150243E+01	N/A
2001	0.369400E+00	0.939598E+00	-0.933572E+00
2002	0.108730E+01	0.937026E+00	0.148742E+00
2003	0.345000E+00	0.229004E+00	0.409806E+00
2004	0.584000E+00	0.247803E+00	0.857269E+00
2005	0.692500E+00	0.425627E+00	0.486744E+00
2006	0.553400E+00	0.394852E+00	0.337570E+00
2007	0.179000E+00	0.661127E+00	-0.130656E+01
2008	N/A	0.000000E+00	N/A

Survey Index: 16 Tag: NCGill AGE = 4
 Time = MEAN Type = NUMBER
 Catchability = 0.849967E-03 % Variance Contribution = 1.9222
 Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1982	N/A	0.168490E+01	N/A
1983	N/A	0.146449E+01	N/A
1984	N/A	0.117038E+01	N/A
1985	N/A	0.736933E+00	N/A
1986	N/A	0.896685E+00	N/A
1987	N/A	0.190755E+01	N/A
1988	N/A	0.288380E+01	N/A
1989	N/A	0.223222E+01	N/A
1990	N/A	0.133945E+01	N/A
1991	N/A	0.139812E+01	N/A
1992	N/A	0.104007E+01	N/A
1993	N/A	0.738946E+00	N/A
1994	N/A	0.134941E+01	N/A
1995	N/A	0.430022E+01	N/A
1996	N/A	0.508688E+01	N/A
1997	N/A	0.833060E+01	N/A
1998	N/A	0.238087E+01	N/A
1999	N/A	0.422407E+01	N/A
2000	N/A	0.172054E+01	N/A
2001	0.145900E+00	0.100028E+01	-0.192512E+01
2002	0.242300E+00	0.521155E+00	-0.765871E+00
2003	0.680200E+00	0.255325E+00	0.979851E+00
2004	0.188500E+00	0.454543E-01	0.142239E+01
2005	0.174700E+00	0.785060E-01	0.799895E+00
2006	0.213000E+00	0.163153E+00	0.266605E+00
2007	0.114000E+00	0.248130E+00	-0.777755E+00
2008	N/A	0.000000E+00	N/A

Survey Index: 17 Tag: NCGill AGE = 5
 Time = MEAN Type = NUMBER
 Catchability = 0.112275E-02 % Variance Contribution = 2.9374
 Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1982	N/A	0.578078E+00	N/A
1983	N/A	0.395387E+00	N/A
1984	N/A	0.245963E+00	N/A
1985	N/A	0.176981E+00	N/A
1986	N/A	0.171528E+00	N/A
1987	N/A	0.246681E+00	N/A
1988	N/A	0.656871E+00	N/A
1989	N/A	0.631838E+00	N/A
1990	N/A	0.868507E+00	N/A
1991	N/A	0.623047E+00	N/A
1992	N/A	0.577788E+00	N/A
1993	N/A	0.343854E+00	N/A
1994	N/A	0.232685E+00	N/A
1995	N/A	0.687058E+00	N/A
1996	N/A	0.291982E+01	N/A
1997	N/A	0.303520E+01	N/A
1998	N/A	0.456170E+01	N/A

1999	N/A	0.121744E+01	N/A
2000	N/A	0.208761E+01	N/A
2001	0.112700E+00	0.713453E+00	-0.184539E+01
2002	0.569000E-01	0.324360E+00	-0.174056E+01
2003	0.583000E-01	0.983536E-01	-0.522967E+00
2004	0.722000E-01	0.257693E-01	0.103026E+01
2005	0.343000E-01	0.552349E-02	0.182614E+01
2006	0.543000E-01	0.132086E-01	0.141366E+01
2007	0.520000E-01	0.610918E-01	-0.161134E+00
2008	N/A	0.000000E+00	N/A

Survey Index: 18 Tag: NCGill AGE = 6
Time = MEAN Type = NUMBER
Catchability = 0.701428E-04 % Variance Contribution = 0.0350
Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1982	N/A	0.320060E-01	N/A
1983	N/A	0.184371E-01	N/A
1984	N/A	0.807171E-02	N/A
1985	N/A	0.286157E-02	N/A
1986	N/A	0.211400E-02	N/A
1987	N/A	0.116591E-02	N/A
1988	N/A	0.276188E-02	N/A
1989	N/A	0.533291E-02	N/A
1990	N/A	0.817469E-02	N/A
1991	N/A	0.481306E-02	N/A
1992	N/A	0.444543E-02	N/A
1993	N/A	0.258149E-02	N/A
1994	N/A	0.283472E-02	N/A
1995	N/A	0.117655E-01	N/A
1996	N/A	0.132383E-01	N/A
1997	N/A	0.510690E-01	N/A
1998	N/A	0.884996E-01	N/A
1999	N/A	0.120004E+00	N/A
2000	N/A	0.343935E-01	N/A
2001	N/A	0.328796E-01	N/A
2002	0.890000E-02	0.120844E-01	-0.305863E+00
2003	N/A	0.745561E-02	N/A
2004	N/A	0.124388E-02	N/A
2005	0.900000E-03	0.916821E-03	-0.185177E-01
2006	0.800000E-03	0.633540E-03	0.233288E+00
2007	0.800000E-03	0.730347E-03	0.910925E-01
2008	N/A	0.000000E+00	N/A

Survey Index: 34 Tag: MRFSS AGE = 3
Time = JAN-1 Type = NUMBER
Catchability = 0.568621E-05 % Variance Contribution = 6.2394
Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
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1982	0.186500E+00	0.623411E-01	0.109581E+01
1983	0.840000E-02	0.638246E-01	-0.202791E+01
1984	0.177100E+00	0.534169E-01	0.119859E+01
1985	0.103300E+00	0.382202E-01	0.994273E+00
1986	0.933000E-01	0.562150E-01	0.506636E+00
1987	0.388500E+00	0.859102E-01	0.150899E+01
1988	0.227200E+00	0.101446E+00	0.806307E+00
1989	0.149800E+00	0.456479E-01	0.118834E+01
1990	0.527000E-01	0.329934E-01	0.468309E+00
1991	0.574000E-01	0.332182E-01	0.546947E+00
1992	0.530000E-01	0.265272E-01	0.692120E+00
1993	0.370000E-01	0.340431E-01	0.832897E-01
1994	0.300000E-01	0.712470E-01	-0.864955E+00
1995	0.355000E-01	0.857170E-01	-0.881519E+00
1996	0.271000E-01	0.136734E+00	-0.161850E+01
1997	0.137000E-01	0.505069E-01	-0.130471E+01
1998	0.151000E-01	0.808810E-01	-0.167828E+01
1999	0.162000E-01	0.384518E-01	-0.864395E+00
2000	0.105000E-01	0.278777E-01	-0.976451E+00
2001	0.109000E-01	0.182892E-01	-0.517548E+00
2002	0.368000E-01	0.231124E-01	0.465129E+00
2003	0.510000E-02	0.697867E-02	-0.313617E+00
2004	0.940000E-02	0.592373E-02	0.461743E+00
2005	0.135000E-01	0.106282E-01	0.239183E+00
2006	0.489000E-01	0.900877E-02	0.169158E+01
2007	0.840000E-02	0.109788E-01	-0.267736E+00
2008	0.113000E-01	0.212514E-01	-0.631620E+00

Survey Index: 35 Tag: MRFSS AGE = 4
Time = JAN-1 Type = NUMBER
Catchability = 0.197591E-04 % Variance Contribution = 3.9789
Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1982	0.217600E+00	0.800344E-01	0.100020E+01
1983	0.588000E-01	0.750905E-01	-0.244552E+00
1984	0.163100E+00	0.732198E-01	0.800898E+00
1985	0.919000E-01	0.343520E-01	0.984040E+00
1986	0.758000E-01	0.478630E-01	0.459755E+00
1987	0.132900E+00	0.675912E-01	0.676120E+00
1988	0.126200E+00	0.157498E+00	-0.221545E+00
1989	0.191500E+00	0.950421E-01	0.700568E+00
1990	0.527000E-01	0.495592E-01	0.614469E-01
1991	0.309000E-01	0.532633E-01	-0.544491E+00
1992	0.485000E-01	0.427925E-01	0.125202E+00
1993	0.328000E-01	0.339231E-01	-0.336667E-01
1994	0.258000E-01	0.546256E-01	-0.750127E+00
1995	0.659000E-01	0.131370E+00	-0.689881E+00
1996	0.588000E-01	0.170337E+00	-0.106364E+01
1997	0.504000E-01	0.282985E+00	-0.172540E+01
1998	0.605000E-01	0.864957E-01	-0.357451E+00
1999	0.647000E-01	0.150150E+00	-0.841873E+00
2000	0.264000E-01	0.651916E-01	-0.903967E+00
2001	0.274000E-01	0.413346E-01	-0.411157E+00
2002	0.263000E-01	0.242313E-01	0.819223E-01
2003	0.462000E-01	0.168816E-01	0.100675E+01
2004	0.470000E-02	0.280263E-02	0.517003E+00
2005	0.580000E-02	0.470052E-02	0.210185E+00
2006	0.384000E-01	0.751199E-02	0.163156E+01

2007 0.196000E-01 0.806740E-02 0.887698E+00
 2008 0.540000E-02 0.209471E-01 -0.135560E+01

Survey Index: 36 Tag: MRFSS AGE = 5
 Time = JAN-1 Type = NUMBER
 Catchability = 0.573293E-04 % Variance Contribution = 5.2909
 Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1982	0.213100E+00	0.603143E-01	0.126219E+01
1983	0.671000E-01	0.445299E-01	0.410023E+00
1984	0.116500E+00	0.337989E-01	0.123746E+01
1985	0.632000E-01	0.181210E-01	0.124923E+01
1986	0.525000E-01	0.201106E-01	0.959565E+00
1987	0.664000E-01	0.191991E-01	0.124084E+01
1988	0.707000E-01	0.787992E-01	-0.108457E+00
1989	0.129000E+00	0.590901E-01	0.780749E+00
1990	0.341000E-01	0.705832E-01	-0.727495E+00
1991	0.177000E-01	0.521355E-01	-0.108028E+01
1992	0.265000E-01	0.522160E-01	-0.678244E+00
1993	0.287000E-01	0.346726E-01	-0.189054E+00
1994	0.172000E-01	0.206896E-01	-0.184720E+00
1995	0.304000E-01	0.461032E-01	-0.416440E+00
1996	0.407000E-01	0.214755E+00	-0.166327E+01
1997	0.105400E+00	0.226467E+00	-0.764837E+00
1998	0.958000E-01	0.364012E+00	-0.133492E+01
1999	0.102400E+00	0.950540E-01	0.744420E-01
2000	0.632000E-01	0.173743E+00	-0.101127E+01
2001	0.328000E-01	0.647571E-01	-0.680216E+00
2002	0.158000E-01	0.331260E-01	-0.740308E+00
2003	0.205000E-01	0.142838E-01	0.361301E+00
2004	0.470000E-02	0.348999E-02	0.297662E+00
2005	0.210000E-02	0.726420E-03	0.106156E+01
2006	0.580000E-02	0.133582E-02	0.146831E+01
2007	0.880000E-02	0.454571E-02	0.660568E+00
2008	0.260000E-02	0.114720E-01	-0.148439E+01

Survey Index: 37 Tag: MRFSS AGE = 6
 Time = JAN-1 Type = NUMBER
 Catchability = 0.641095E-04 % Variance Contribution = 5.2472
 Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1982	0.106600E+00	0.597736E-01	0.578519E+00
1983	0.630000E-01	0.371676E-01	0.527698E+00
1984	0.326000E-01	0.198537E-01	0.495921E+00
1985	0.172000E-01	0.524448E-02	0.118773E+01
1986	0.175000E-01	0.443650E-02	0.137234E+01
1987	0.102000E-01	0.162425E-02	0.183734E+01
1988	0.101000E-01	0.593049E-02	0.532429E+00
1989	0.291000E-01	0.892724E-02	0.118163E+01
1990	0.930000E-02	0.118917E-01	-0.245824E+00
1991	0.440000E-02	0.720905E-02	-0.493732E+00
1992	0.880000E-02	0.719106E-02	0.201914E+00
1993	0.820000E-02	0.465936E-02	0.565255E+00
1994	0.430000E-02	0.451166E-02	-0.480511E-01

1995	N/A	0.141316E-01	N/A
1996	0.450000E-02	0.174286E-01	-0.135404E+01
1997	0.321000E-01	0.682052E-01	-0.753665E+00
1998	0.302000E-01	0.126408E+00	-0.143167E+01
1999	0.323000E-01	0.167712E+00	-0.164718E+01
2000	0.474000E-01	0.512363E-01	-0.778251E-01
2001	0.711000E-01	0.534186E-01	0.285929E+00
2002	0.158000E-01	0.220907E-01	-0.335147E+00
2003	0.154000E-01	0.193812E-01	-0.229934E+00
2004	0.470000E-02	0.301540E-02	0.443830E+00
2005	0.200000E-02	0.215825E-02	-0.761511E-01
2006	0.100000E-03	0.114686E-02	-0.243961E+01
2007	0.900000E-03	0.972727E-03	-0.777085E-01
2008	0.300000E-03	0.300000E-03	-0.601915E-07

Survey Index: 38 Tag: rec AGE = 2 - 6
Time = MEAN Type = NUMBER
Catchability = 0.183228E-04 % Variance Contribution = 1.9749
Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1982	0.202100E+00	0.520167E+00	-0.945387E+00
1983	0.510900E+00	0.468545E+00	0.865428E-01
1984	0.300100E+00	0.369041E+00	-0.206792E+00
1985	0.277700E+00	0.396881E+00	-0.357096E+00
1986	0.768100E+00	0.582127E+00	0.277232E+00
1987	0.517800E+00	0.745277E+00	-0.364167E+00
1988	0.573800E+00	0.549817E+00	0.426957E-01
1989	0.167300E+00	0.312897E+00	-0.626086E+00
1990	0.155700E+00	0.283159E+00	-0.598077E+00
1991	0.177800E+00	0.254934E+00	-0.360346E+00
1992	0.192800E+00	0.262921E+00	-0.310198E+00
1993	0.165100E+00	0.416130E+00	-0.924446E+00
1994	0.384900E+00	0.557280E+00	-0.370084E+00
1995	0.507900E+00	0.853909E+00	-0.519540E+00
1996	0.605400E+00	0.714092E+00	-0.165123E+00
1997	0.517700E+00	0.677484E+00	-0.268991E+00
1998	0.529700E+00	0.502793E+00	0.521319E-01
1999	0.410100E+00	0.344690E+00	0.173756E+00
2000	0.458500E+00	0.222913E+00	0.721180E+00
2001	0.281800E+00	0.189937E+00	0.394505E+00
2002	0.237900E+00	0.921340E-01	0.948606E+00
2003	0.116200E+00	0.480825E-01	0.882394E+00
2004	0.115400E+00	0.636639E-01	0.594786E+00
2005	0.224300E+00	0.670042E-01	0.120823E+01
2006	0.170400E+00	0.657861E-01	0.951740E+00
2007	0.884000E-01	0.121430E+00	-0.317465E+00
2008	N/A	0.000000E+00	N/A

Bootstrap Summary Report

Number of Bootstrap Repetitions Requested = 500
Number of Bootstrap Repetitions Completed = 500
Bootstrap Output Variable: Stock Estimates (2008)

	NLLS Estimate	Bootstrap Mean	Bootstrap Std Error	C.V. For NLLS Soln.
N 1	16443.	25024.	22636.	0.9046
N 2	11407.	12666.	7057.	0.5572
N 3	3737.	4081.	1660.	0.4068
N 4	1060.	1164.	585.	0.5025
N 5	200.	212.	112.	0.5300
N 6	5.	7.	6.	0.9056

	Bias Estimate	Bias Std. Error	Per Cent Bias	NLLS Estimate Corrected For Bias	C.V. For Corrected Estimate
N 1	8581.	1083.	52.1885	7861.	2.8794
N 2	1259.	321.	11.0380	10148.	0.6954
N 3	344.	76.	9.1983	3394.	0.4892
N 4	104.	27.	9.7640	957.	0.6113
N 5	12.	5.	6.0242	188.	0.5979
N 6	2.	0.	40.6860	3.	2.1480

	LOWER 80. % CI	UPPER 80. % CI
N 1	3841.	59080.
N 2	5384.	22460.
N 3	2138.	6142.
N 4	499.	1998.
N 5	89.	356.
N 6	1.	14.

Bootstrap Output Variable: Catchability Estimates

	NLLS Estimate	Bootstrap Mean	Bootstrap Std Error	C.V. For NLLS Soln.
Q 1	0.211918E-02	0.227085E-02	0.680531E-03	0.2997
Q 2	0.250557E-02	0.258029E-02	0.657196E-03	0.2547
Q 3	0.141990E-02	0.150457E-02	0.548043E-03	0.3643
Q 4	0.132513E-02	0.141311E-02	0.406719E-03	0.2878
Q 5	0.892300E-03	0.970657E-03	0.310111E-03	0.3195
Q 6	0.792329E-03	0.820719E-03	0.196189E-03	0.2390
Q 7	0.359433E-05	0.377379E-05	0.918097E-06	0.2433
Q 8	0.789323E-05	0.816576E-05	0.175158E-05	0.2145
Q 9	0.578221E-05	0.596933E-05	0.167484E-05	0.2806
Q 10	0.333437E-05	0.372262E-05	0.155389E-05	0.4174
Q 11	0.185515E-05	0.203206E-05	0.895587E-06	0.4407
Q 12	0.149946E-05	0.177698E-05	0.114970E-05	0.6470
Q 13	0.315053E-04	0.320050E-04	0.597824E-05	0.1868
Q 14	0.157929E-03	0.161713E-03	0.331682E-04	0.2051
Q 15	0.455255E-03	0.475327E-03	0.145131E-03	0.3053
Q 16	0.849967E-03	0.924423E-03	0.418767E-03	0.4530
Q 17	0.112275E-02	0.131778E-02	0.739879E-03	0.5615
Q 18	0.701428E-04	0.720016E-04	0.110620E-04	0.1536
Q 34	0.568621E-05	0.575464E-05	0.111705E-05	0.1941
Q 35	0.197591E-04	0.196796E-04	0.322614E-05	0.1639
Q 36	0.573293E-04	0.575328E-04	0.104855E-04	0.1823
Q 37	0.641095E-04	0.664651E-04	0.127805E-04	0.1923
Q 38	0.183228E-04	0.183956E-04	0.225698E-05	0.1227

	Bias Estimate	Bias Std. Error	Per Cent Bias	NLLS Estimate Corrected For Bias	C.V. For Corrected Estimate
Q 1	0.1517E-03	0.3118E-04	7.1569	0.1968E-02	0.3459
Q 2	0.7472E-04	0.2958E-04	2.9820	0.2431E-02	0.2704
Q 3	0.8468E-04	0.2480E-04	5.9635	0.1335E-02	0.4105
Q 4	0.8798E-04	0.1861E-04	6.6391	0.1237E-02	0.3288
Q 5	0.7836E-04	0.1431E-04	8.7815	0.8139E-03	0.3810
Q 6	0.2839E-04	0.8865E-05	3.5831	0.7639E-03	0.2568
Q 7	0.1795E-06	0.4184E-07	4.9931	0.3415E-05	0.2689
Q 8	0.2725E-06	0.7928E-07	3.4527	0.7621E-05	0.2298
Q 9	0.1871E-06	0.7537E-07	3.2361	0.5595E-05	0.2993
Q 10	0.3882E-06	0.7163E-07	11.6438	0.2946E-05	0.5274
Q 11	0.1769E-06	0.4083E-07	9.5362	0.1678E-05	0.5336
Q 12	0.2775E-06	0.5290E-07	18.5079	0.1222E-05	0.9409
Q 13	0.4997E-06	0.2683E-06	1.5861	0.3101E-04	0.1928
Q 14	0.3784E-05	0.1493E-05	2.3959	0.1541E-03	0.2152
Q 15	0.2007E-04	0.6552E-05	4.4090	0.4352E-03	0.3335
Q 16	0.7446E-04	0.1902E-04	8.7599	0.7755E-03	0.5400
Q 17	0.1950E-03	0.3422E-04	17.3716	0.9277E-03	0.7975
Q 18	0.1859E-05	0.5017E-06	2.6500	0.6828E-04	0.1620
Q 34	0.6843E-07	0.5005E-07	1.2034	0.5618E-05	0.1988
Q 35	-0.7948E-07	0.1443E-06	-0.4023	0.1984E-04	0.1626
Q 36	0.2034E-06	0.4690E-06	0.3548	0.5713E-04	0.1836
Q 37	0.2356E-05	0.5812E-06	3.6744	0.6175E-04	0.2070
Q 38	0.7283E-07	0.1010E-06	0.3975	0.1825E-04	0.1237

	LOWER 80. % CI	UPPER 80. % CI
Q 1	0.145102E-02	0.315938E-02
Q 2	0.177309E-02	0.350300E-02
Q 3	0.861406E-03	0.226706E-02
Q 4	0.941045E-03	0.197397E-02
Q 5	0.603069E-03	0.134357E-02
Q 6	0.588875E-03	0.106866E-02
Q 7	0.267697E-05	0.495628E-05
Q 8	0.591968E-05	0.104718E-04
Q 9	0.411532E-05	0.810935E-05
Q 10	0.197659E-05	0.583408E-05
Q 11	0.108615E-05	0.330985E-05
Q 12	0.656648E-06	0.334615E-05
Q 13	0.249530E-04	0.394452E-04
Q 14	0.121522E-03	0.205019E-03
Q 15	0.299199E-03	0.658288E-03
Q 16	0.472049E-03	0.149022E-02
Q 17	0.587057E-03	0.213450E-02
Q 18	0.585721E-04	0.876035E-04
Q 34	0.439891E-05	0.722621E-05
Q 35	0.160044E-04	0.238337E-04
Q 36	0.451248E-04	0.715270E-04
Q 37	0.506761E-04	0.827805E-04
Q 38	0.153827E-04	0.214638E-04

Bootstrap Output Variable: Fishing Mortality (2007)

		NLLS Estimate	Bootstrap Mean	Bootstrap Std Error	C.V. For NLLS Soln.
AGE	1	0.0464	0.0557	0.032226	0.5785
AGE	2	0.2383	0.2501	0.093221	0.3727
AGE	3	0.3495	0.3949	0.201140	0.5093
AGE	4	0.4631	0.5229	0.219453	0.4197
AGE	5	0.5570	0.6212	0.163984	0.2640
AGE	6	0.5570	0.6212	0.163984	0.2640

		Bias Estimate	Bias Std. Error	Per Cent Bias	NLLS Estimate Corrected For Bias	C.V. For Corrected Estimate
AGE	1	0.009267	0.001500	19.9549	0.0372	0.8670
AGE	2	0.011890	0.004203	4.9903	0.2264	0.4118
AGE	3	0.045404	0.009222	12.9899	0.3041	0.6614
AGE	4	0.059782	0.010173	12.9083	0.4033	0.5441
AGE	5	0.064133	0.007876	11.5133	0.4929	0.3327
AGE	6	0.064133	0.007876	11.5133	0.4929	0.3327

	LOWER	UPPER	
	80. % CI	80. % CI	
AGE	1	0.023788	0.094236
AGE	2	0.148484	0.382338
AGE	3	0.199230	0.626814
AGE	4	0.285896	0.831382
AGE	5	0.440975	0.841022
AGE	6	0.440975	0.841022

Bootstrap Output Variable: Average F (2007) AGES 4 - 5

	NLLS Estimate	Bootstrap Mean	Bootstrap Std Error	C.V. For NLLS Soln.
AVG F	0.5101	0.5720	0.177343	0.3100
N WTD	0.4784	0.5403	0.203690	0.3770
B WTD	0.4828	0.5453	0.199536	0.3659
C WTD	0.4779	0.5383	0.203961	0.3789

	Bias Estimate	Bias Std. Error	Per Cent Bias	NLLS Estimate Corrected For Bias	C.V. For Corrected Estimate
AVG F	0.061958	0.008402	12.1466	0.4481	0.3957
N WTD	0.061952	0.009522	12.9498	0.4164	0.4891
B WTD	0.062470	0.009351	12.9382	0.4204	0.4747
C WTD	0.060465	0.009515	12.6529	0.4174	0.4886

	LOWER 80. % CI	UPPER 80. % CI
AVG F	0.377615	0.824861
N WTD	0.323682	0.817200
B WTD	0.334919	0.818263
C WTD	0.321282	0.814314

Bootstrap Output Variable: Biomass

JAN-1 Biomass (2008) Mean Biomass & SSB (2007)

	NLLS Estimate	Bootstrap Mean	Bootstrap Std Error	C.V. For NLLS Soln.
JAN-1	11172.	13511.	5152.	0.3813
MEAN	5535.	6042.	1915.	0.3169
SSB	7236.	7875.	2216.	0.2814

	Bias Estimate	Bias Std. Error	Per Cent Bias	NLLS Estimate Corrected For Bias	C.V. For Corrected Estimate
JAN-1	2339.	253.	20.9357	8833.	0.5833
MEAN	507.	89.	9.1632	5028.	0.3809
SSB	638.	103.	8.8192	6598.	0.3359

	LOWER 80. % CI	UPPER 80. % CI
JAN-1	7985.	20256.
MEAN	3873.	8677.
SSB	5300.	10733.

Plus Group Diagnostic Report

Calculation Method Selected = Backward

Year	Population Backward	Population Forward	F Forward	F Backward	Ratio
1982	932.	932.	1.401488	1.401496	1.000005
1983	580.	545.	1.886933	1.613466	0.855073
1984	310.	327.	1.886933	2.211595	1.172058
1985	82.	71.	1.886933	1.350613	0.715771
1986	69.	64.	2.130353	1.728682	0.811454
1987	25.	54.	0.257708	0.661775	2.567921
1988	93.	167.	0.637377	1.795549	2.817093
1989	139.	247.	0.484230	1.112728	2.297934
1990	185.	382.	0.303597	0.764521	2.518214
1991	112.	666.	0.102052	0.835058	8.182700
1992	112.	776.	0.099279	1.025611	10.330604
1993	73.	801.	0.070292	1.309665	18.631764
1994	70.	709.	0.065466	0.984819	15.043320
1995	220.	622.	0.103631	0.323722	3.123799
1996	272.	890.	0.135564	0.530377	3.912380
1997	1064.	2322.	0.221603	0.563406	2.542413
1998	1972.	3200.	0.383713	0.720849	1.878615
1999	2616.	4103.	0.375361	0.669256	1.782965
2000	799.	2857.	0.173012	0.821885	4.750451
2001	833.	2909.	0.208224	1.036577	4.978188
2002	345.	2152.	0.129287	1.343702	10.393179
2003	302.	1590.	0.198410	2.391292	12.052273
2004	47.	1033.	0.042879	2.163593	50.458683
2005	34.	776.	0.040222	2.060598	51.230496
2006	18.	582.	0.023370	1.280009	54.771862
2007	15.	448.	0.014739	0.551376	37.408845
2008	9.	381.	N/A	N/A	