SS2 ALTERNATIVE RUN (F08_MULTI_SVAge_FLAT6.REP)

```
Code_version_:__2.00o;_01/31/08;_Stock_Synthesis_2_by_Richard_Methot_(NOAA);_
using_Otter_Research_ADMB_7.0.1

Time: Thu Mar 20 15:25:00 2008

Data_File: F08_SVAgecomp6.DAT
Control_File: F08_SVAgecomp_FLAT6.CTL

Convergence_Level:
Hessian:
Sum_of_months_on_read_was:_ 12 rescaled_to_sum_to: 1

LIKELIHOOD 2882.75
indices 780.521
discard 0
length_comps 0
age_comps 2072.58
size-at-age 0
mean_body_wt 0
Equil_catch 0
catch 29.6505
Recruitment 0
Parm_priors 0
Parm_devs 0
penalties 0
Forecast_Recruitment 0

Fleet surv_lambda surv_like disc_lambda disc_like length_lambda length_like
age_lambda age_like sizeage_lambda sizeage_like
1 0 0 0 0 0 0 1 132.902 0 0
2 1 56.3759 0 0 0 0 1 94.4645 0 0
3 1 50.2471 0 0 0 0 1 170.465 0 0
4 1 28.0924 0 0 0 0 1 184.24 0 0
5 1 147.366 0 0 0 0 1 118.582 0 0
6 1 227.645 0 0 0 0 1 384.394 0 0
7 1 33.8026 0 0 0 0 1 132.792 0 0
8 1 26.9844 0 0 0 0 1 138.996 0 0
9 1 56.0583 0 0 0 0 1 336.231 0 0
10 1 35.6475 0 0 0 0 1 156.394 0 0
11 1 11.8535 0 0 0 0 1 223.12 0 0
12 1 28.2231 0 0 0 0 1 0 0 0
13 1 27.6765 0 0 0 0 1 0 0 0
14 1 50.548 0 0 0 0 1 0 0 0

Source Lambda Like
mean_body_wt 0 0
Equil_catch 0 0
Catch 10 2.96505
Recruitment 0 0
Parm_priors 0 0
Parm_devs 1 0
penalties 0
```

```
Variance_adjustments_to_input_values 1 2 3 4 5 6 7 8 9 10 11 12 13 14
Index_extra_CV  0 0 0 0 0 0 0 0 0 0 0 0 0 0
Discard_extra_CV  0 0 0 0 0 0 0 0 0 0 0 0 0 0
MeanBodyWt_extra_CV  0 0 0 0 0 0 0 0 0 0 0 0 0 0
effN_mult_Lencomp  1 1 1 1 1 1 1 1 1 1 1 1 1 1
effN_mult_Agecomp  1 1 1 1 1 1 1 1 1 1 1 1 1 1
effN_mult_Len-at-age  1 1 1 1 1 1 1 1 1 1 1 1 1 1

PARAMETERS
Num Value Phase Min Max Init Prior PR_type SD Active_Cnt Prior_Like Bound
M-G_parmsUsing_offset_approach_#:_3
Gender:_1__Pattern:_1
1 0.2 -3
2 0 -3
3 28.1 -2
4 60.2 -2
5 0.2052 -3
6 0.1 -2
7 0 -3
biology_parms
8 2.44e-006 -3
9 3.34694 -3
10 28.1 -3
11 -0.25 -3
12 1 -3
13 0 -3
recrdist_by_growthpattern:1
14 0 -3
recrdist_by_area:1
15 0 -3
recrdist_by_seas:1
16 4 -3
cohort_growth_dev:2
17 1 -3
MGparm_env_linkages
MG_parm_blockparms
M-G_parm_devs 1
1_YR1982 0 -

MGParm_Block_Assignments
SR_parms
1 10.7104 1  3 31 10.1121 0 -1 99 1 0
2 0.951334 1  0.2 1 0.8 0 -1 99 2 0
3 0.6 -1
4 0 -1
5 0.261235 1  -5 5 0 0 -1 99 3 0
6 0 -1
Recr_Devs
1982 0.325619 - - - - - - - 4
1983 0.804456 - - - - - - - 5
1984 -0.0671377 - - - - - - - 6
1985 0.55384 - - - - - - - 7
1986 0.626122 - - - - - - - 8
1987 0.364245 - - - - - - - 9
1988 -1.35316 - - - - - - - 10
1989 -0.156547 - - - - - - - 11
1990 0.310527 - - - - - - - 12
```

```
1991 0.012096 - - - - - - - 13
1992 0.254122 - - - - - - - 14
1993 0.0991567 - - - - - - - 15
1994 0.158374 - - - - - - - 16
1995 0.246814 - - - - - - - 17
1996 -0.184163 - - - - - - - 18
1997 -0.226493 - - - - - - - 19
1998 -0.145966 - - - - - - - 20
1999 -0.416833 - - - - - - - 21
2000 -0.156891 - - - - - - - 22
2001 -0.0633979 - - - - - - - 23
2002 -0.0230323 - - - - - - - 24
2003 -0.351293 - - - - - - - 25
2004 0.188345 - - - - - - - 26
2005 -0.452512 - - - - - - - 27
2006 -0.346291 - - - - - - - 28
init_F_parms
1 1.6927 1 0 2 1 1 -1 10 29 0
Q_parms
sel_parms
#_size_sel:_1
#_male
#_size_sel:_2
#_male
#_size_sel:_3
#_male
#_size_sel:_4
#_male
#_size_sel:_5
#_male
#_size_sel:_6
#_male
#_size_sel:_7
#_male
#_size_sel:_8
#_male
#_size_sel:_9
#_male
#_size_sel:_10
#_male
#_size_sel:_11
#_male
#_size_sel:_12
#_male
#_size_sel:_13
#_male
#_size_sel:_14
#_male
#_age_sel:_1
1 1.94887 2 0.5 9 4 4 -1 99 30 0
2 -3 -3
3 0.195781 3 0 9 2 2 -1 99 31 0
4 9 -3
5 -999 -2
6 -999 -2
#_male
#_age_sel:_2
```

```
7 3.48574 2 0.5 9 4 4 -1 99 32 0
8 -3 -3
9 1.27732 3 0 9 2 2 -1 99 33 0
10 9 -3
11 -999 -2
12 -999 -2
#_male
#_age_sel:_3
13 3.15264 2 0.5 9 4 4 -1 99 34 0
14 -3 -3
15 1.0745 3 0 9 2 2 -1 99 35 0
16 9 -3
17 -999 -2
18 -999 -2
#_male
#_age_sel:_4
19 1.04469 2 0.5 9 4 4 -1 99 36 0
20 -3 -3
21 6.14273e-008 3 0 9 2 2 -1 99 37 0 LO
22 9 -3
23 -999 -2
24 -999 -2
#_male
#_age_sel:_5
25 2.72982 2 0.5 9 4 4 -1 99 38 0
26 -3 -3
27 3.25786e-009 3 0 9 2 2 -1 99 39 0 LO
28 9 -3
29 -999 -2
30 -999 -2
#_male
#_age_sel:_6
31 2.5354 2 0.5 9 4 4 -1 99 40 0
32 -3 -3
33 7.49481e-010 3 0 9 2 2 -1 99 41 0 LO
34 9 -3
35 -999 -2
36 -999 -2
#_male
#_age_sel:_7
37 2.79823 2 0.5 9 4 4 -1 99 42 0
38 -3 -3
39 1.58835e-008 3 0 9 2 2 -1 99 43 0 LO
40 9 -3
41 -999 -2
42 -999 -2
#_male
#_age_sel:_8
43 1.67615 2 0.5 9 4 4 -1 99 44 0
44 -3 -3
45 0.021067 3 0 9 2 2 -1 99 45 0 LO
46 9 -3
47 -999 -2
48 -999 -2
#_male
#_age_sel:_9
49 2.5068 2 0.5 9 4 4 -1 99 46 0
```

```
50 -3 -3
51 7.19415e-010 3 0 9 2 2 -1 99 47 0 LO
52 9 -3
53 -999 -2
54 -999 -2
#_male
#_age_sel:_10
55 2.96626 2 0.5 9 4 4 -1 99 48 0
56 -3 -3
57 1.08417 3 0 9 2 2 -1 99 49 0
58 9 -3
59 -999 -2
60 -999 -2
#_male
#_age_sel:_11
61 0.999988 2 0.5 9 4 4 -1 99 50 0
62 -3 -3
63 0.0984456 3 0 9 2 2 -1 99 51 0
64 9 -3
65 -999 -2
66 -999 -2
#_male
#_age_sel:_12
67 0 -3
68 0 -3
#_male
#_age_sel:_13
69 0 -3
70 0 -3
#_male
#_age_sel:_14
71 0 -3
72 0 -3
#_male
sel_parm_env_linkages
sel_parm_blockparms
73 2.42671 2 0.5 9 4 4 -1 99 52 0
74 0.0967715 3 0 9 2 2 -1 99 53 0
SEL_parm_devs
1_YR1982 0
Forecast_Recr_Devs
2007 0 - - - - - - - 54

Selex_Block_Assignments Years:
Base_parm#  1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994
1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006
1  0 0 0 0 0 0 0 0 0 0 0 0 0 73 73 73 73 73 73 73 73 73 73 73 73
3  0 0 0 0 0 0 0 0 0 0 0 0 0 74 74 74 74 74 74 74 74 74 74 74 74

RECR_DIST
G_pattern gender Seas Area Value Used?
1 1 1 1 1 1

MOVEMENT
Seas Source Dist  0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

SUBMORPHDIST 1
```

```
MGparm_By_Year_after_adjustments
Year
1982  0.2 0 28.1 60.2 0.2052 0.1 0 2.44e-006 3.34694 28.1 -0.25 1 0 0 0 4 1
1983  0.2 0 28.1 60.2 0.2052 0.1 0 2.44e-006 3.34694 28.1 -0.25 1 0 0 0 4 1
1984  0.2 0 28.1 60.2 0.2052 0.1 0 2.44e-006 3.34694 28.1 -0.25 1 0 0 0 4 1
1985  0.2 0 28.1 60.2 0.2052 0.1 0 2.44e-006 3.34694 28.1 -0.25 1 0 0 0 4 1
1986  0.2 0 28.1 60.2 0.2052 0.1 0 2.44e-006 3.34694 28.1 -0.25 1 0 0 0 4 1
1987  0.2 0 28.1 60.2 0.2052 0.1 0 2.44e-006 3.34694 28.1 -0.25 1 0 0 0 4 1
1988  0.2 0 28.1 60.2 0.2052 0.1 0 2.44e-006 3.34694 28.1 -0.25 1 0 0 0 4 1
1989  0.2 0 28.1 60.2 0.2052 0.1 0 2.44e-006 3.34694 28.1 -0.25 1 0 0 0 4 1
1990  0.2 0 28.1 60.2 0.2052 0.1 0 2.44e-006 3.34694 28.1 -0.25 1 0 0 0 4 1
1991  0.2 0 28.1 60.2 0.2052 0.1 0 2.44e-006 3.34694 28.1 -0.25 1 0 0 0 4 1
1992  0.2 0 28.1 60.2 0.2052 0.1 0 2.44e-006 3.34694 28.1 -0.25 1 0 0 0 4 1
1993  0.2 0 28.1 60.2 0.2052 0.1 0 2.44e-006 3.34694 28.1 -0.25 1 0 0 0 4 1
1994  0.2 0 28.1 60.2 0.2052 0.1 0 2.44e-006 3.34694 28.1 -0.25 1 0 0 0 4 1
1995  0.2 0 28.1 60.2 0.2052 0.1 0 2.44e-006 3.34694 28.1 -0.25 1 0 0 0 4 1
1996  0.2 0 28.1 60.2 0.2052 0.1 0 2.44e-006 3.34694 28.1 -0.25 1 0 0 0 4 1
1997  0.2 0 28.1 60.2 0.2052 0.1 0 2.44e-006 3.34694 28.1 -0.25 1 0 0 0 4 1
1998  0.2 0 28.1 60.2 0.2052 0.1 0 2.44e-006 3.34694 28.1 -0.25 1 0 0 0 4 1
1999  0.2 0 28.1 60.2 0.2052 0.1 0 2.44e-006 3.34694 28.1 -0.25 1 0 0 0 4 1
2000  0.2 0 28.1 60.2 0.2052 0.1 0 2.44e-006 3.34694 28.1 -0.25 1 0 0 0 4 1
2001  0.2 0 28.1 60.2 0.2052 0.1 0 2.44e-006 3.34694 28.1 -0.25 1 0 0 0 4 1
2002  0.2 0 28.1 60.2 0.2052 0.1 0 2.44e-006 3.34694 28.1 -0.25 1 0 0 0 4 1
2003  0.2 0 28.1 60.2 0.2052 0.1 0 2.44e-006 3.34694 28.1 -0.25 1 0 0 0 4 1
2004  0.2 0 28.1 60.2 0.2052 0.1 0 2.44e-006 3.34694 28.1 -0.25 1 0 0 0 4 1
2005  0.2 0 28.1 60.2 0.2052 0.1 0 2.44e-006 3.34694 28.1 -0.25 1 0 0 0 4 1
2006  0.2 0 28.1 60.2 0.2052 0.1 0 2.44e-006 3.34694 28.1 -0.25 1 0 0 0 4 1

SELparm(Size)_By_Year_after_adjustments
Fleet/Svy Year

SELparm(Age)_By_Year_after_adjustments
Fleet/Svy Year
1 1982  1.94887 -3 0.195781 9 -999 -999
1 1995  2.42671 -3 0.0967715 9 -999 -999
2 1982  3.48574 -3 1.27732 9 -999 -999
3 1982  3.15264 -3 1.0745 9 -999 -999
4 1982  1.04469 -3 6.14273e-008 9 -999 -999
5 1982  2.72982 -3 3.25786e-009 9 -999 -999
6 1982  2.5354 -3 7.49481e-010 9 -999 -999
7 1982  2.79823 -3 1.58835e-008 9 -999 -999
8 1982  1.67615 -3 0.021067 9 -999 -999
9 1982  2.5068 -3 7.19415e-010 9 -999 -999
10 1982  2.96626 -3 1.08417 9 -999 -999
11 1982  0.999988 -3 0.0984456 9 -999 -999
12 1982  0 0
13 1982  0 0
14 1982  0 0

EXPLOITATION   Hrate_is_Continuous_F  Fleet_in_columns;_year_in_rows
yr seas 1
init_yr 1  1.6927
1982 1  1.18484
1983 1  1.71053
1984 1  1.78559
1985 1  1.71667
```

```
1986 1  2.25341
1987 1  1.72794
1988 1  2.13806
1989 1  1.68657
1990 1  1.78713
1991 1  1.90442
1992 1  2.11489
1993 1  1.86887
1994 1  1.6676
1995 1  2.12497
1996 1  1.70532
1997 1  1.01498
1998 1  0.950804
1999 1  0.781728
2000 1  0.94831
2001 1  0.86898
2002 1  0.733562
2003 1  0.695106
2004 1  0.675384
2005 1  0.605025
2006 1  0.442444
2007 1  0.0328236

TIME_SERIES    Bio-Smry_age:_1  Hrate_is_Continuous_F
pop year period season bio-all bio-smry SpawnBio recruit-0  enc_catch:_1
dead_catch:_1 ret_catch:_1 obs_cat:_1 Hrate-1 SPB_vir_LH
1 1980 VIRG 1 358829 358524 357261 44821.4 0 0 0 0 0  357284
1 1981 INIT 1 26674.7 26278.1 25042.3 58202 23449 23449 23449 10000 1.6927
25042.3
1 1982 TIME 1 26580.2 26278.1 25042.3 44326.9 18908.3 18908.3 18908.3 18963
1.18484 25006.3
1 1983 TIME 1 28649.5 28156.3 26977.7 72362.1 26121.7 26121.7 26121.7 26466
1.71053 27165.1
1 1984 TIME 1 28444.7 28238.8 26610.1 30206.8 24933.7 24933.7 24933.7 26057
1.78559 26688.3
1 1985 TIME 1 21556.7 21190.4 20339.8 53752.2 20000.1 20000.1 20000.1 20432
1.71667 20479
1 1986 TIME 1 21024.9 20634.5 19437.3 57288.3 20918 20918 20918 20866 2.25341
19585.7
1 1987 TIME 1 21131 20830.2 19549.4 44138.1 18364 18364 18364 18312 1.72794
19663.7
1 1988 TIME 1 21358.9 21304.6 20217.4 7974.63 20975.3 20975.3 20975.3 21761
2.13806 20238.1
1 1989 TIME 1 9772.24 9624.45 9342.89 21685.5 9244.97 9244.97 9244.97 10314
1.68657 9399.05
1 1990 TIME 1 8369.74 8149.75 7680.44 32280.6 7391.75 7391.75 7391.75 7976
1.78713 7764.04
1 1991 TIME 1 11684.4 11501.4 10774.7 26851 10640.9 10640.9 10640.9 11316
1.90442 10844.2
1 1992 TIME 1 12060.8 11825.1 11183 34582.9 11944.4 11944.4 11944.4 11805
2.11489 11272.6
1 1993 TIME 1 12542.2 12338.4 11571.5 29912.3 11341.2 11341.2 11341.2 10781
1.86887 11648.9
1 1994 TIME 1 13227.5 13007.5 12295.2 32280 11561.9 11561.9 11561.9 12182
1.6676 12378.8
1 1995 TIME 1 14270.9 14025.7 13263.7 35983.4 9681.58 9681.58 9681.58 10495
2.12497 13356.8
```

```
1 1996 TIME 1 19099.3 18928.4 17968 25083.5 12296.1 12296.1 12296.1 11643
1.70532 18033
1 1997 TIME 1 20593.3 20426.5 19654.4 24474 11242.1 11242.1 11242.1 10325
1.01498 19717.8
1 1998 TIME 1 22588.8 22404.7 21694.1 27010.3 12186.6 12186.6 12186.6 11641
0.950804 21764
1 1999 TIME 1 24050.3 23908.3 23143.9 20830.7 11199.3 11199.3 11199.3 10851
0.781728 23197.9
1 2000 TIME 1 25541.2 25355.2 24702.4 27301.4 14451.5 14451.5 14451.5 13756
0.94831 24773.1
1 2001 TIME 1 24643.4 24440.5 23695.4 29777.3 12337.4 12337.4 12337.4 11932
0.86898 23772.5
1 2002 TIME 1 26850 26635.9 25788.1 31420.5 11882 11882 11882 11308 0.733562
25869.5
1 2003 TIME 1 30852.1 30694.7 29788 23100.3 13460.1 13460.1 13460.1 12927
0.695106 29847.9
1 2004 TIME 1 32334.8 32063 31324.8 39889 14687.2 14687.2 14687.2 14306
0.675384 31428.1
1 2005 TIME 1 35545.6 35400.7 34355.7 21256.6 13651.5 13651.5 13651.5 13446
0.605025 34410.7
1 2006 TIME 1 37454.6 37292.4 36527.5 23806.8 12564 12564 12564 12574
0.442444 36589.2
1 2007 FORE 1 39972.6 39695.9 39115.4 40598.4 1187.77 1187.77 1187.77 1187.77
0.0328236 39115.4

SPR_series  uses_R0= 44821.4   ###note_Y/R_unit_is_Dead_Biomass
Year Bio_all Bio_Smry SPBzero SPBfished SPBfished/R SPR Y/R GenTime Actual:
Bio_all Bio_Smry Enc_Catch Dead_Catch Retain_Catch SPB Recruits Tot_Exploit
More_F(by_morph):  aveF-1 maxF-1
1982 26950.5 26645  357261 25626.1 0.571739 0.0717295 0.438324 0.255201 +
26580.2 26278.1 18908.3 18908.3 18908.3 25042.3 44326.9 0.71137 +  1.13793
1.18482
1983 20388.4 20082.9  357261 19133.4 0.42688 0.0535557 0.401905 0.152148 +
28649.5 28156.3 26121.7 26121.7 26121.7 26977.7 72362.1 0.911771 +  1.64279
1.71049
1984 19774.5 19469  357261 18528.3 0.413381 0.0518622 0.397902 0.141317 +
28444.7 28238.8 24933.7 24933.7 24933.7 26610.1 30206.8 0.876569 +  1.71489
1.78555
1985 20336.1 20030.6  357261 19081.8 0.42573 0.0534115 0.401569 0.151232 +
21556.7 21190.4 20000.1 20000.1 20000.1 20339.8 53752.2 0.927791 +  1.64869
1.71663
1986 16867.6 16562.1  357261 15671.6 0.349646 0.0438661 0.377277 0.0891874 +
21024.9 20634.5 20918 20918 20918 19437.3 57288.3 0.994919 +  2.16418
2.25336
1987 20241.2 19935.7  357261 18988.2 0.423642 0.0531495 0.400956 0.149564 +
21131 20830.2 18364 18364 18364 19549.4 44138.1 0.869056 +  1.65952  1.7279
1988 17468.1 17162.7  357261 16260.5 0.362785 0.0455145 0.381776 0.0999061 +
21358.9 21304.6 20975.3 20975.3 20975.3 20217.4 7974.63 0.982037 +  2.0534
2.13801
1989 20595.9 20290.5  357261 19338.1 0.431447 0.0541287 0.403232 0.155777 +
9772.24 9624.45 9244.97 9244.97 9244.97 9342.89 21685.5 0.946044 +  1.61979
1.68653
1990 19762.4 19457  357261 18516.5 0.413116 0.051829 0.397823 0.141103 +
8369.74 8149.75 7391.75 7391.75 7391.75 7680.44 32280.6 0.883151 +  1.71637
1.78709
```

```
1991 18902.2 18596.8  357261 17669.6 0.394223 0.0494586 0.392011 0.125725 +
11684.4 11501.4 10640.9 10640.9 10640.9 10774.7 26851 0.910696 +  1.82901
1.90438
1992 17596.4 17290.9  357261 16386.4 0.365594 0.0458668 0.38272 0.102209 +
12060.8 11825.1 11944.4 11944.4 11944.4 11183 34582.9 0.990345 +  2.03115
2.11485
1993 19151.5 18846.1  357261 17914.9 0.399696 0.0501452 0.39372 0.1302 +
12542.2 12338.4 11341.2 11341.2 11341.2 11571.5 29912.3 0.904242 +  1.79487
1.86883
1994 20764.6 20459.1  357261 19504.4 0.435159 0.0545944 0.404301 0.158712 +
13227.5 13007.5 11561.9 11561.9 11561.9 12295.2 32280 0.87408 +  1.60157
1.66756
1995 27642.3 27336.9  357261 26215.3 0.584883 0.0733785 0.468291 0.100934 +
14270.9 14025.7 9681.58 9681.58 9681.58 13263.7 35983.4 0.678413 +  1.9752
2.12496
1996 30826.1 30520.7  357261 29378.6 0.655459 0.0822329 0.484012 0.152606 +
19099.3 18928.4 12296.1 12296.1 12296.1 17968 25083.5 0.643796 +  1.58513
1.70531
1997 41880.4 41574.9  357261 40396.3 0.901272 0.113072 0.524221 0.301241 +
20593.3 20426.5 11242.1 11242.1 11242.1 19654.4 24474 0.545911 +  0.943439
1.01497
1998 43747.9 43442.4  357261 42260.2 0.942857 0.118289 0.529331 0.320898 +
22588.8 22404.7 12186.6 12186.6 12186.6 21694.1 27010.3 0.539495 +  0.883791
0.9508
1999 50165.6 49860.1  357261 48668.2 1.08583 0.136226 0.544062 0.379054 +
24050.3 23908.3 11199.3 11199.3 11199.3 23143.9 20830.7 0.465661 +  0.726632
0.781725
2000 43825.7 43520.3  357261 42337.9 0.94459 0.118507 0.529535 0.321688 +
25541.2 25355.2 14451.5 14451.5 14451.5 24702.4 27301.4 0.56581 +  0.881473
0.948306
2001 46537.9 46232.5  357261 45045.6 1.005 0.126086 0.536243 0.347835 +
24643.4 24440.5 12337.4 12337.4 12337.4 23695.4 29777.3 0.500638 +  0.807734
0.868976
2002 52539.3 52233.9  357261 51039.2 1.13872 0.142863 0.548534 0.397473 +
26850 26635.9 11882 11882 11882 25788.1 31420.5 0.442532 +  0.68186  0.733559
2003 54669.2 54363.7  357261 53166.8 1.18619 0.148818 0.552148 0.41282 +
30852.1 30694.7 13460.1 13460.1 13460.1 29788 23100.3 0.436277 +  0.646115
0.695103
2004 55854.3 55548.8  357261 54350.7 1.21261 0.152132 0.554006 0.420918 +
32334.8 32063 14687.2 14687.2 14687.2 31324.8 39889 0.454221 +  0.627782
0.675381
2005 60695.1 60389.7  357261 59187.4 1.32052 0.16567 0.560545 0.451127 +
35545.6 35400.7 13651.5 13651.5 13651.5 34355.7 21256.6 0.384055 +  0.562383
0.605022
2006 77364.3 77058.8  357261 75846.8 1.6922 0.212301 0.572455 0.529486 +
37454.6 37292.4 12564 12564 12564 36527.5 23806.8 0.335445 +  0.41126
0.442442
2007 291073 290767  357261 289529 6.45963 0.810415 0.198007 0.792681 +
39972.6 39695.9 1187.77 1187.77 1187.77 39115.4 40598.4 0.0297146 +
0.0305102  0.0328234

SPAWN_RECRUIT Function: 3 - - - - -
10.7104 Ln(R0) 44821.4
0.951334 steep
0.6 stddev_recr
0 env_link_
0.261235 init-eq 58202
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Virg 357261 44821.4 44821.4 37438 44821.4
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2007 39115.4 40598.4 40598.4 40598.4 40598.4 0 forecast

N_est r.m.s.e.
25 0.424012

INDEX_2
index year vuln_bio obs exp eff_Q SE Dev Like Like+log(s)
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9 1999 20658.4 2.26 0.672669 3.25614e-005 0.4 1.21187 4.58944 3.67315
9 2000 22863.3 1.69 0.744462 3.25614e-005 0.4 0.819822 2.10034 1.18405
9 2001 20228.1 0.93 0.658656 3.25614e-005 0.4 0.344984 0.371918 -0.544373
9 2002 22506.4 1.78 0.732842 3.25614e-005 0.4 0.887439 2.46109 1.5448
9 2003 26379.8 2.57 0.858964 3.25614e-005 0.4 1.09593 3.75335 2.83706
9 2004 28696.1 2.08 0.934387 3.25614e-005 0.4 0.800233 2.00116 1.08487
9 2005 27872.2 2.07 0.907559 3.25614e-005 0.4 0.824545 2.12461 1.20832
9 2006 33523.9 1.57 1.09159 3.25614e-005 0.4 0.363442 0.412783 -0.503508
10 1990 9442.94 0.29 0.308491 3.26689e-005 0.4 -0.0618109 0.0119393 -0.904351
10 1991 12712.7 0.15 0.415311 3.26689e-005 0.4 -1.01839 3.24101 2.32472
10 1992 13880.9 0.34 0.453474 3.26689e-005 0.4 -0.287991 0.259185 -0.657106
10 1993 13778.5 0.26 0.45013 3.26689e-005 0.4 -0.548855 0.941379 0.0250885
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10 1996 20928.3 0.96 0.683704 3.26689e-005 0.4 0.339408 0.359993 -0.556298
10 1997 23029.7 0.73 0.752356 3.26689e-005 0.4 -0.0301654 0.0028436 -0.913447
10 1998 24333.2 0.43 0.794939 3.26689e-005 0.4 -0.61448 1.17996 0.263665
10 1999 24739.2 0.9 0.808203 3.26689e-005 0.4 0.107581 0.0361679 -0.880123
10 2000 26338.6 2.61 0.860455 3.26689e-005 0.4 1.10964 3.84785 2.93156
10 2001 24880.8 0.98 0.812829 3.26689e-005 0.4 0.187031 0.109315 -0.806976
10 2002 27404.9 2.03 0.895289 3.26689e-005 0.4 0.818644 2.09431 1.17802
10 2003 31015.5 3.78 1.01324 3.26689e-005 0.4 1.31657 5.41672 4.50043
10 2004 32973.5 2.17 1.07721 3.26689e-005 0.4 0.700354 1.5328 0.616509
10 2005 33745.1 2.49 1.10242 3.26689e-005 0.4 0.814777 2.07457 1.15828
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11 1989 26240.6 1.69 3.66618 0.000139714 0.4 -0.77442 1.87415 0.957856
11 1990 33453.8 2.86 4.67396 0.000139714 0.4 -0.491185 0.753944 -0.162346
11 1991 41571 3.97 5.80805 0.000139714 0.4 -0.380478 0.452386 -0.463904
11 1992 43020.4 4.75 6.01055 0.000139714 0.4 -0.235372 0.173125 -0.743166
11 1993 44791.3 8.46 6.25797 0.000139714 0.4 0.301493 0.284057 -0.632234
11 1994 45132.4 2.83 6.30563 0.000139714 0.4 -0.801167 2.00584 1.08955
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11 2000 52685.8 7.35 7.36094 0.000139714 0.4 -0.00148766 6.91607e-006 -
0.916284
11 2001 54868.9 5.68 7.66596 0.000139714 0.4 -0.299838 0.280947 -0.635344
11 2002 60509.2 16.84 8.45399 0.000139714 0.4 0.689119 1.48401 0.567724
11 2003 62664.9 9.84 8.75516 0.000139714 0.4 0.116813 0.0426413 -0.873649
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11 2005 68752.2 11.19 9.60565 0.000139714 0.4 0.152669 0.0728373 -0.843453
11 2006 64140.3 10.65 8.9613 0.000139714 0.4 0.172645 0.0931444 -0.823146
12 1982 44326.9 2.27 1.40218 3.16328e-005 0.4 0.48175 0.725259 -0.191031
12 1983 72362.1 5.01 2.28901 3.16328e-005 0.4 0.783316 1.91745 1.00116
12 1984 30206.8 1.58 0.955525 3.16328e-005 0.4 0.502919 0.7904 -0.125891
12 1985 53752.2 1.26 1.70033 3.16328e-005 0.4 -0.299712 0.28071 -0.635581
12 1986 57288.3 1.26 1.81219 3.16328e-005 0.4 -0.363423 0.412739 -0.503552
12 1987 44138.1 0.39 1.39621 3.16328e-005 0.4 -1.27537 5.08302 4.16673
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12 1989 21685.5 1.24 0.685971 3.16328e-005 0.4 0.592031 1.09532 0.179026
12 1990 32280.6 2.54 1.02112 3.16328e-005 0.4 0.91126 2.59498 1.67869
12 1991 26851 2.64 0.849371 3.16328e-005 0.4 1.13404 4.01888 3.10259
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12 1993 29912.3 0.5 0.946209 3.16328e-005 0.4 -0.637856 1.27144 0.355147
12 1994 32280 2.41 1.02111 3.16328e-005 0.4 0.858741 2.30449 1.3882
12 1995 35983.4 0.63 1.13825 3.16328e-005 0.4 -0.591531 1.09346 0.177174
12 1996 25083.5 0.81 0.793459 3.16328e-005 0.4 0.020632 0.00133025 -0.91496
12 1997 24474 0.89 0.774179 3.16328e-005 0.4 0.139419 0.0607425 -0.855548
12 1998 27010.3 0.73 0.85441 3.16328e-005 0.4 -0.157366 0.077388 -0.838903
12 1999 20830.7 0.53 0.658931 3.16328e-005 0.4 -0.217742 0.148162 -0.768129
12 2000 27301.4 0.57 0.863619 3.16328e-005 0.4 -0.415495 0.539488 -0.376803
12 2001 29777.3 0.47 0.941939 3.16328e-005 0.4 -0.695208 1.51036 0.594065
12 2002 31420.5 0.77 0.993919 3.16328e-005 0.4 -0.255265 0.203625 -0.712666
12 2003 23100.3 0.44 0.730726 3.16328e-005 0.4 -0.507264 0.804113 -0.112177
12 2004 39889 1.3 1.2618 3.16328e-005 0.4 0.0298247 0.00277972 -0.913511
12 2005 21256.6 0.35 0.672404 3.16328e-005 0.4 -0.652926 1.33223 0.415937
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12 2006 23806.8 0.8 0.753074 3.16328e-005 0.4 0.0604476 0.0114185 -0.904872
13 1982 44326.9 3.408 11.875 0.000267896 0.4 -1.24831 4.8696 3.95331
13 1983 72362.1 17.699 19.3855 0.000267896 0.4 -0.0910161 0.0258873 -0.890403
13 1984 30206.8 13.31 8.09227 0.000267896 0.4 0.497606 0.773787 -0.142504
13 1985 53752.2 12.843 14.4 0.000267896 0.4 -0.114428 0.0409183 -0.875372
13 1986 57288.3 59.526 15.3473 0.000267896 0.4 1.35547 5.74159 4.8253
13 1987 44138.1 7.584 11.8244 0.000267896 0.4 -0.444124 0.616395 -0.299896
13 1988 7974.63 1.763 2.13637 0.000267896 0.4 -0.19209 0.115308 -0.800983
13 1989 21685.5 2.855 5.80944 0.000267896 0.4 -0.710412 1.57714 0.66085
13 1990 32280.6 4.733 8.64783 0.000267896 0.4 -0.602749 1.13533 0.219041
13 1991 26851 7.337 7.19326 0.000267896 0.4 0.0197849 0.00122326 -0.915067
13 1992 34582.9 8.487 9.26461 0.000267896 0.4 -0.0876667 0.024017 -0.892274
13 1993 29912.3 4.145 8.01338 0.000267896 0.4 -0.65921 1.35799 0.441702
13 1994 32280 22.311 8.64767 0.000267896 0.4 0.94779 2.80721 1.89092
13 1995 35983.4 13.067 9.63979 0.000267896 0.4 0.304191 0.289162 -0.627128
13 1996 25083.5 6.493 6.71975 0.000267896 0.4 -0.0343262 0.00368215 -0.912609
13 1997 24474 7.997 6.55646 0.000267896 0.4 0.198615 0.123275 -0.793016
13 1998 27010.3 14.983 7.23593 0.000267896 0.4 0.727857 1.65555 0.739257
13 1999 20830.7 8.565 5.58044 0.000267896 0.4 0.428416 0.573564 -0.342727
13 2000 27301.4 9.874 7.31392 0.000267896 0.4 0.300125 0.281485 -0.634806
13 2001 29777.3 13.543 7.97721 0.000267896 0.4 0.529281 0.875431 -0.0408593
13 2002 31420.5 5.406 8.41742 0.000267896 0.4 -0.442794 0.612709 -0.303582
13 2003 23100.3 8.18 6.18846 0.000267896 0.4 0.279005 0.243262 -0.673028
13 2004 39889 6.993 10.6861 0.000267896 0.4 -0.424034 0.56189 -0.354401
13 2005 21256.6 2.198 5.69454 0.000267896 0.4 -0.95196 2.83196 1.91567
13 2006 23806.8 9.658 6.37773 0.000267896 0.4 0.414974 0.538135 -0.378155
14 1986 57288.3 0.32 0.345075 6.02348e-006 0.4 -0.0754407 0.0177853 -0.898505
14 1987 44138.1 0.26 0.265865 6.02348e-006 0.4 -0.0223061 0.00155488 -
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14 1988 7974.63 0.01 0.048035 6.02348e-006 0.4 -1.56934 7.69638 6.78009
14 1989 21685.5 0.14 0.130622 6.02348e-006 0.4 0.0693359 0.0150233 -0.901267
14 1990 32280.6 0.36 0.194441 6.02348e-006 0.4 0.615973 1.1857 0.269406
14 1991 26851 0.38 0.161736 6.02348e-006 0.4 0.854203 2.2802 1.36391
14 1992 34582.9 0.37 0.20831 6.02348e-006 0.4 0.574478 1.03133 0.115037
14 1993 29912.3 0.05 0.180176 6.02348e-006 0.4 -1.28191 5.13531 4.21902
14 1994 32280 0.57 0.194438 6.02348e-006 0.4 1.07552 3.61485 2.69856
14 1995 35983.4 0.3 0.216745 6.02348e-006 0.4 0.325061 0.330201 -0.58609
14 1996 25083.5 0.08 0.15109 6.02348e-006 0.4 -0.635847 1.26344 0.347151
14 1997 24474 0.22 0.147418 6.02348e-006 0.4 0.400354 0.500884 -0.415407
14 1998 27010.3 0.39 0.162696 6.02348e-006 0.4 0.874265 2.38856 1.47227
14 1999 20830.7 0.35 0.125473 6.02348e-006 0.4 1.02584 3.2886 2.37231
14 2000 27301.4 0.21 0.164449 6.02348e-006 0.4 0.244505 0.186821 -0.72947
14 2001 29777.3 0.14 0.179363 6.02348e-006 0.4 -0.247769 0.191843 -0.724448
14 2002 31420.5 0.13 0.189261 6.02348e-006 0.4 -0.375592 0.440842 -0.475449
14 2003 23100.3 0.21 0.139144 6.02348e-006 0.4 0.411598 0.529415 -0.386875
14 2004 39889 0.27 0.240271 6.02348e-006 0.4 0.116656 0.0425268 -0.873764
14 2005 21256.6 0.01 0.128038 6.02348e-006 0.4 -2.54975 20.3163 19.4
14 2006 23806.8 0.17 0.1434 6.02348e-006 0.4 0.170163 0.0904858 -0.825805

INDEX_1
Index Do_Power Power Do_Env_var Env_Link Do_ExtraVar Qtype  Q Num=0/Bio=1
Err_type N Npos r.m.s.e. mean_input_SE mean_(Input+extra)_SE pen_mean_Qdev
rmse_Qdev
1 0  1.0 0  0.00  0.0 0  --  1 0 0 0 0 0 0 0 0
2 0  1.0 0  0.00  0.0 0 0.000876068  0 0 15 15 0.438668 0.16 0.16 0 0
3 0  1.0 0  0.00  0.0 0 7.65724e-005  0 0 25 25 0.421036 0.21 0.21 0 0
4 0  1.0 0  0.00  0.0 0 3.7939e-005  0 0 25 25 0.464731 0.31 0.31 0 0
```

```
5 0  1.0 0  0.00  0.0 0 7.19837e-005  0 0 25 25 0.721046 0.21 0.21 0 0
6 0  1.0 0  0.00  0.0 0 4.74153e-005  0 0 25 25 0.896176 0.21 0.21 0 0
7 0  1.0 0  0.00  0.0 0 3.44968e-005  0 0 23 23 0.685782 0.4 0.4 0 0
8 0  1.0 0  0.00  0.0 0 4.2525e-005  0 0 23 23 0.612727 0.4 0.4 0 0
9 0  1.0 0  0.00  0.0 0 3.25614e-005  0 0 25 25 0.847081 0.4 0.4 0 0
10 0  1.0 0  0.00  0.0 0 3.26689e-005  0 0 17 17 0.819153 0.4 0.4 0 0
11 0  1.0 0  0.00  0.0 0 0.000139714  0 0 19 19 0.446808 0.4 0.4 0 0
12 0  1.0 0  0.00  0.0 0 3.16328e-005  0 0 25 25 0.601046 0.4 0.4 0 0
13 0  1.0 0  0.00  0.0 0 0.000267896  0 0 25 25 0.595197 0.4 0.4 0 0
14 0  1.0 0  0.00  0.0 0 6.02348e-006  0 0 21 21 0.877642 0.4 0.4 0 0
rmse_Qdev_not_in_logL
pen_mean_Qdev_not_in_logL_in_randwalk_approach

INDEX_3
Index  Q_parm_assignments
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2 0 -- 0 --  0 0
3 0 -- 0 --  0 0
4 0 -- 0 --  0 0
5 0 -- 0 --  0 0
6 0 -- 0 --  0 0
7 0 -- 0 --  0 0
8 0 -- 0 --  0 0
9 0 -- 0 --  0 0
10 0 -- 0 --  0 0
11 0 -- 0 --  0 0
12 0 -- 0 --  0 0
13 0 -- 0 --  0 0
14 0 -- 0 --  0 0

DISCARD  log(L)_based_on_T-distribution_with_DF=_30
as_fraction
index year seas obs exp cv Dev Like Like+log(s)


MEAN_BODY_WT log(L)_based_on_T-distribution_with_DF=_30
 year seas index Mkt obs exp cv Dev Like Like+log(s)
 1982 1 1 0 0.504 0.5898 0.1 -0.0858002 1.42938 1.42938
 1983 1 1 0 0.521 0.610447 0.1 -0.0894474 1.45265 1.45265
 1984 1 1 0 0.518 0.559585 0.1 -0.0415851 0.32946 0.32946
 1985 1 1 0 0.575 0.617058 0.1 -0.0420578 0.273983 0.273983
 1986 1 1 0 0.613 0.513437 0.1 0.0995635 1.30635 1.30635
 1987 1 1 0 0.581 0.52464 0.1 0.0563597 0.478708 0.478708
 1988 1 1 0 0.588 0.592399 0.1 -0.00439887 0.00289133 0.00289133
 1989 1 1 0 0.668 0.687625 0.1 -0.0196249 0.0445296 0.0445296
 1990 1 1 0 0.54 0.515437 0.1 0.0245625 0.106531 0.106531
 1991 1 1 0 0.537 0.510453 0.1 0.0265472 0.125758 0.125758
 1992 1 1 0 0.595 0.527739 0.1 0.0672609 0.646565 0.646565
 1993 1 1 0 0.571 0.513394 0.1 0.0576057 0.517134 0.517134
 1994 1 1 0 0.605 0.548861 0.1 0.0561388 0.438598 0.438598
 1995 1 1 0 0.675 0.652766 0.1 0.0222343 0.0559584 0.0559584
 1996 1 1 0 0.621 0.687349 0.1 -0.0663486 0.578836 0.578836
 1997 1 1 0 0.697 0.784303 0.1 -0.0873029 0.790108 0.790108
 1998 1 1 0 0.759 0.870746 0.1 -0.111746 1.08132 1.08132
 1999 1 1 0 0.755 0.903129 0.1 -0.148129 1.8712 1.8712
 2000 1 1 0 0.85 0.942084 0.1 -0.0920844 0.594819 0.594819
 2001 1 1 0 0.903 0.942133 0.1 -0.0391327 0.0967294 0.0967294
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 2002 1 1 0 0.898 0.918153 0.1 -0.0201526 0.025999 0.025999
 2003 1 1 0 0.999 0.938836 0.1 0.0601637 0.186267 0.186267
 2004 1 1 0 0.983 0.989492 0.1 -0.00649183 0.00225323 0.00225323
 2005 1 1 0 0.949 1.005 0.1 -0.0560018 0.178885 0.178885
 2006 1 1 0 0.947 1.025 0.1 -0.0779964 0.346574 0.346574

FIT_LEN_COMPS
Index Year Seas Gender Mkt Nsamp effN Like

index N Npos mean_effN mean(inputN) HarMean(effN) Mean(effN/inputN)
MeaneffN/MeaninputN
1 0 0 0 0 0 0 -1.#IND
2 0 0 0 0 0 0 -1.#IND
3 0 0 0 0 0 0 -1.#IND
4 0 0 0 0 0 0 -1.#IND
5 0 0 0 0 0 0 -1.#IND
6 0 0 0 0 0 0 -1.#IND
7 0 0 0 0 0 0 -1.#IND
8 0 0 0 0 0 0 -1.#IND
9 0 0 0 0 0 0 -1.#IND
10 0 0 0 0 0 0 -1.#IND
11 0 0 0 0 0 0 -1.#IND
12 0 0 0 0 0 0 -1.#IND
13 0 0 0 0 0 0 -1.#IND
14 0 0 0 0 0 0 -1.#IND

FIT_AGE_COMPS
Index Year Seas Gender Mkt Ageerr Lbin_lo Lbin_hi Nsamp effN Like
1 1982 1 0 0 1 1 70 82 64.8368 3.99756
1 1983 1 0 0 1 1 70 69 16.1371 4.31202
1 1984 1 0 0 1 1 70 53 12.7667 3.16884
1 1985 1 0 0 1 1 70 65 96.5793 1.98832
1 1986 1 0 0 1 1 70 78 8.64958 11.653
1 1987 1 0 0 1 1 70 66 18.0473 6.24598
1 1988 1 0 0 1 1 70 90 60.3402 2.99848
1 1989 1 0 0 1 1 70 84 45.7634 3.85335
1 1990 1 0 0 1 1 70 34 156.495 0.488038
1 1991 1 0 0 1 1 70 46 15.2244 3.77918
1 1992 1 0 0 1 1 70 34 81.0315 1.70277
1 1993 1 0 0 1 1 70 36 32.5246 1.36151
1 1994 1 0 0 1 1 70 40 84.5481 0.963621
1 1995 1 0 0 1 1 70 30 42.3093 1.23864
1 1996 1 0 0 1 1 70 46 81.5544 2.08066
1 1997 1 0 0 1 1 70 89 18.3428 9.56086
1 1998 1 0 0 1 1 70 101 30.818 5.22017
1 1999 1 0 0 1 1 70 105 57.1213 3.74488
1 2000 1 0 0 1 1 70 110 63.8735 3.59989
1 2001 1 0 0 1 1 70 103 77.432 2.22418
1 2002 1 0 0 1 1 70 74 17.6416 7.30429
1 2003 1 0 0 1 1 70 87 21.5935 7.52746
1 2004 1 0 0 1 1 70 140 26.2485 9.53913
1 2005 1 0 0 1 1 70 172 31.5286 20.6796
1 2006 1 0 0 1 1 70 181 17.0345 13.6695
2 1992 1 0 0 1 1 70 100 39.9859 3.00673
2 1993 1 0 0 1 1 70 100 14.4874 6.89405
2 1994 1 0 0 1 1 70 100 10.6153 6.7324
2 1995 1 0 0 1 1 70 100 46.3902 6.17776
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2 1997 1 0 0 1 1 70 100 20.1382 9.40423
2 1998 1 0 0 1 1 70 100 617.382 1.47669
2 1999 1 0 0 1 1 70 100 138.907 3.49433
2 2000 1 0 0 1 1 70 100 25.3774 12.6108
2 2001 1 0 0 1 1 70 100 47.746 4.52875
2 2002 1 0 0 1 1 70 100 30.1272 5.39143
2 2003 1 0 0 1 1 70 100 597.811 0.882789
2 2004 1 0 0 1 1 70 100 33.8562 6.68653
2 2005 1 0 0 1 1 70 100 113.17 4.71701
2 2006 1 0 0 1 1 70 100 475.268 2.86737
3 1982 1 0 0 1 1 70 100 9.97462 8.04422
3 1983 1 0 0 1 1 70 100 80.0969 5.52988
3 1984 1 0 0 1 1 70 100 6.29528 23.5355
3 1985 1 0 0 1 1 70 100 47.6616 1.70478
3 1986 1 0 0 1 1 70 100 20.3029 4.25291
3 1987 1 0 0 1 1 70 100 72.3373 1.25364
3 1988 1 0 0 1 1 70 100 238.773 1.3944
3 1989 1 0 0 1 1 70 100 37.548 4.06982
3 1990 1 0 0 1 1 70 100 4.62462 20.0482
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3 1995 1 0 0 1 1 70 100 6.44256 18.3226
3 1996 1 0 0 1 1 70 100 6.02898 10.0741
3 1997 1 0 0 1 1 70 100 114.056 1.4765
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3 2001 1 0 0 1 1 70 100 37.777 3.95742
3 2002 1 0 0 1 1 70 100 22.9811 9.58721
3 2003 1 0 0 1 1 70 100 113.341 2.57241
3 2004 1 0 0 1 1 70 100 62.1463 3.99562
3 2005 1 0 0 1 1 70 100 43.765 5.15281
3 2006 1 0 0 1 1 70 100 21.9337 12.4156
4 1982 1 0 0 1 1 70 100 109.989 2.07031
4 1983 1 0 0 1 1 70 100 25.3133 5.68669
4 1984 1 0 0 1 1 70 100 115.311 1.59018
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4 1986 1 0 0 1 1 70 100 224.234 1.71442
4 1987 1 0 0 1 1 70 100 23.526 10.2368
4 1988 1 0 0 1 1 70 100 42.8965 2.00221
4 1989 1 0 0 1 1 70 100 2.88187 34.518
4 1990 1 0 0 1 1 70 100 18.0069 5.00209
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4 1992 1 0 0 1 1 70 100 20.7203 5.91734
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4 1994 1 0 0 1 1 70 100 7.35514 17.1563
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4 1998 1 0 0 1 1 70 100 29.5251 6.45008
4 1999 1 0 0 1 1 70 100 31.6055 7.42814
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4 2002 1 0 0 1 1 70 100 20.9918 13.4484
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5 2006 1 0 0 1 1 70 100 8.09588 6.43516
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11 1997 1 0 0 1 1 70 100 31.8357 4.55512
11 1998 1 0 0 1 1 70 100 8.37632 18.3787
11 1999 1 0 0 1 1 70 100 35.9082 5.87997
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11 2001 1 0 0 1 1 70 100 16.5398 7.84779
11 2002 1 0 0 1 1 70 100 21.2814 6.68675
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11 2005 1 0 0 1 1 70 100 16.497 14.5249
11 2006 1 0 0 1 1 70 100 8.65758 17.1867

index N Npos mean_effN mean(inputN) HarMean(effN) Mean(effN/inputN)
MeaneffN/MeaninputN
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2 0 15 147.655 100 21.9047 1.47655 1.47655
3 0 25 71.9399 100 18.6871 0.719399 0.719399
4 0 25 52.1643 100 19.9406 0.521643 0.521643
5 0 25 180.32 100 11.3793 1.8032 1.8032
6 0 25 1448.23 100 5.74022 14.4823 14.4823
7 0 23 95.0143 100 17.3944 0.950143 0.950143
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9 0 25 90.3048 100 6.93846 0.903048 0.903048
10 0 17 44.8152 100 20.6869 0.448152 0.448152
11 0 19 75.8133 100 11.6669 0.758133 0.758133
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13 0 0 0 0 0 0 -1.#IND
14 0 0 0 0 0 0 -1.#IND

LEN_SELEX
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20.5 21.5 22.5 23.5 24.5 25.5 26.5 27.5 28.5 29.5 30.5 31.5 32.5 33.5 34.5
35.5 36.5 37.5 38.5 39.5 40.5 41.5 42.5 43.5 44.5 45.5 46.5 47.5 48.5 49.5
50.5 51.5 52.5 53.5 54.5 55.5 56.5 57.5 58.5 59.5 60.5 61.5 62.5 63.5 64.5
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1
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1
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RETENTION
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20.5 21.5 22.5 23.5 24.5 25.5 26.5 27.5 28.5 29.5 30.5 31.5 32.5 33.5 34.5
35.5 36.5 37.5 38.5 39.5 40.5 41.5 42.5 43.5 44.5 45.5 46.5 47.5 48.5 49.5
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DISCARD_MORT
fleet year gender label  10.5 11.5 12.5 13.5 14.5 15.5 16.5 17.5 18.5 19.5
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KEEPERS equals_sel*retain
fleet year gender label  10.5 11.5 12.5 13.5 14.5 15.5 16.5 17.5 18.5 19.5
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35.5 36.5 37.5 38.5 39.5 40.5 41.5 42.5 43.5 44.5 45.5 46.5 47.5 48.5 49.5
50.5 51.5 52.5 53.5 54.5 55.5 56.5 57.5 58.5 59.5 60.5 61.5 62.5 63.5 64.5
65.5 66.5 67.5 68.5 69.5 70.5 71.5 72.5 73.5 74.5 75.5 76.5 77.5 78.5 79.5
1 1982 1 1982-1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
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35.5 36.5 37.5 38.5 39.5 40.5 41.5 42.5 43.5 44.5 45.5 46.5 47.5 48.5 49.5
50.5 51.5 52.5 53.5 54.5 55.5 56.5 57.5 58.5 59.5 60.5 61.5 62.5 63.5 64.5
65.5 66.5 67.5 68.5 69.5 70.5 71.5 72.5 73.5 74.5 75.5 76.5 77.5 78.5 79.5
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AGE_SELEX
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0.999237 0.998501 0.997519 0.996292 0.994821 0.993107 0.991151 0.988955
0.98652 0.983849
1 1994 1 1994-1 0.0440365 0.477016 0.999411 0.999979 0.999969 0.999727
0.999237 0.998501 0.997519 0.996292 0.994821 0.993107 0.991151 0.988955
0.98652 0.983849
1 1995 1 1995-1 0.00476902 0.157596 0.848032 0.999824 0.999996 0.999868
0.999491 0.998866 0.997996 0.996881 0.99552 0.993917 0.992071 0.989984
0.987658 0.985094
1 2006 1 2006-1 0.00476902 0.157596 0.848032 0.999824 0.999996 0.999868
0.999491 0.998866 0.997996 0.996881 0.99552 0.993917 0.992071 0.989984
0.987658 0.985094
1 2007 1 2007-1 0.00476902 0.157596 0.848032 0.999824 0.999996 0.999868
0.999491 0.998866 0.997996 0.996881 0.99552 0.993917 0.992071 0.989984
0.987658 0.985094
2 1982 1 1982-2 0.0337993 0.178606 0.540432 0.936431 0.99992 0.999997 0.99987
0.999495 0.998873 0.998005 0.996891 0.995534 0.993932 0.992088 0.990004
0.987679
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0.999495 0.998873 0.998005 0.996891 0.995534 0.993932 0.992088 0.990004
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3 1982 1 1982-3 0.0335775 0.205499 0.6353 0.992599 0.999977 0.999984 0.999778
0.999324 0.998624 0.997678 0.996487 0.995052 0.993373 0.991453 0.989292
0.986892
3 2006 1 2006-3 0.0335775 0.205499 0.6353 0.992599 0.999977 0.999984 0.999778
0.999324 0.998624 0.997678 0.996487 0.995052 0.993373 0.991453 0.989292
0.986892
4 1982 1 1982-4 0.335777 0.9986 0.999966 0.999983 0.999775 0.99932 0.998618
0.99767 0.996477 0.995039 0.993359 0.991437 0.989274 0.986872 0.984233
0.981359
4 2006 1 2006-4 0.335777 0.9986 0.999966 0.999983 0.999775 0.99932 0.998618
0.99767 0.996477 0.995039 0.993359 0.991437 0.989274 0.986872 0.984233
0.981359
5 1982 1 1982-5 0.000580775 0.0501765 0.587146 0.999014 0.999989 0.999931
0.999625 0.999072 0.998273 0.997228 0.995938 0.994405 0.992629 0.990611
0.988354 0.985858
5 2006 1 2006-5 0.000580775 0.0501765 0.587146 0.999014 0.999989 0.999931
0.999625 0.999072 0.998273 0.997228 0.995938 0.994405 0.992629 0.990611
0.988354 0.985858
6 1982 1 1982-6 0.00161586 0.0946661 0.751006 0.99966 0.999994 0.999893
0.999541 0.998942 0.998098 0.997007 0.995673 0.994094 0.992273 0.990211
0.98791 0.98537
```

```
6 2006 1 2006-6 0.00161586 0.0946661 0.751006 0.99966 0.999994 0.999893
0.999541 0.998942 0.998098 0.997007 0.995673 0.994094 0.992273 0.990211
0.98791 0.98537
7 1982 1 1982-7 0.000397994 0.039417 0.528854 0.998658 0.999986 0.999942
0.999652 0.999115 0.998332 0.997303 0.99603 0.994512 0.992752 0.99075
0.988508 0.986028
7 2006 1 2006-7 0.000397994 0.039417 0.528854 0.998658 0.999986 0.999942
0.999652 0.999115 0.998332 0.997303 0.99603 0.994512 0.992752 0.99075
0.988508 0.986028
8 1982 1 1982-8 0.063872 0.639238 0.999273 0.999991 0.99993 0.999623 0.999069
0.998269 0.997224 0.995933 0.994399 0.992622 0.990603 0.988345 0.985849
0.983116
8 2006 1 2006-8 0.063872 0.639238 0.999273 0.999991 0.99993 0.999623 0.999069
0.998269 0.997224 0.995933 0.994399 0.992622 0.990603 0.988345 0.985849
0.983116
9 1982 1 1982-9 0.0018665 0.103273 0.773762 0.999708 0.999994 0.999887
0.999528 0.998923 0.998071 0.996974 0.995633 0.994048 0.99222 0.990152
0.987844 0.985298
9 2006 1 2006-9 0.0018665 0.103273 0.773762 0.999708 0.999994 0.999887
0.999528 0.998923 0.998071 0.996974 0.995633 0.994048 0.99222 0.990152
0.987844 0.985298
10 1982 1 1982-10 0.0510192 0.270505 0.729261 0.999868 0.999988 0.999966
0.999716 0.999218 0.998474 0.997485 0.99625 0.994771 0.99305 0.991087
0.988883 0.986441
10 2006 1 2006-10 0.0510192 0.270505 0.729261 0.999868 0.999988 0.999966
0.999716 0.999218 0.998474 0.997485 0.99625 0.994771 0.99305 0.991087
0.988883 0.986441
11 1982 1 1982-11 0.404074 1 0.999973 0.99998 0.999761 0.999295 0.998582
0.997624 0.99642 0.994973 0.993282 0.991349 0.989176 0.986765 0.984116
0.981232
11 2006 1 2006-11 0.404074 1 0.999973 0.99998 0.999761 0.999295 0.998582
0.997624 0.99642 0.994973 0.993282 0.991349 0.989176 0.986765 0.984116
0.981232
12 1982 1 1982-12 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0
12 2006 1 2006-12 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0
13 1982 1 1982-13 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0
13 2006 1 2006-13 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0
14 1982 1 1982-14 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0
14 2006 1 2006-14 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0

AGE_SELEX_from_size_selex_in_endyear
fleet year morph season 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
1 2006 1 1  1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
2 2006 1 1  1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
3 2006 1 1  1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
4 2006 1 1  1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
5 2006 1 1  1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
6 2006 1 1  1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
7 2006 1 1  1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
8 2006 1 1  1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
9 2006 1 1  1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
10 2006 1 1  1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
11 2006 1 1  1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
12 2006 1 1  1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
13 2006 1 1  1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
14 2006 1 1  1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
```

```
AGE_SELEX_mortality_in_endyear
fleet year morph season label 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
1 2006 1 1 sel*wt  0.000854034 0.0702472 0.684762 1.22432 1.6606 2.08789
2.48716 2.84561 3.15546 3.41444 3.62515 3.79322 3.9253 4.02784 4.10649
4.16593
1 2006 1 1 sel*ret*wt  0.000854034 0.0702472 0.684762 1.22432 1.6606 2.08789
2.48716 2.84561 3.15546 3.41444 3.62515 3.79322 3.9253 4.02784 4.10649
4.16593
1 2006 1 1 sel_nums  0.00476902 0.157596 0.848032 0.999824 0.999996 0.999868
0.999491 0.998866 0.997996 0.996881 0.99552 0.993917 0.992071 0.989984
0.987658 0.985094
1 2006 1 1 sel*ret_nums  0.00476902 0.157596 0.848032 0.999824 0.999996
0.999868 0.999491 0.998866 0.997996 0.996881 0.99552 0.993917 0.992071
0.989984 0.987658 0.985094
1 2006 1 1 dead_nums  0.00476902 0.157596 0.848032 0.999824 0.999996 0.999868
0.999491 0.998866 0.997996 0.996881 0.99552 0.993917 0.992071 0.989984
0.987658 0.985094
1 2006 1 1 dead*wt  0.000854034 0.0702472 0.684762 1.22432 1.6606 2.08789
2.48716 2.84561 3.15546 3.41444 3.62515 3.79322 3.9253 4.02784 4.10649
4.16593

ENVIRONMENTAL_DATA Begins_in_startyr-1

NUMBERS_AT_AGE
Population 1 gmorph 1 gender: 1 GrowPattern: 1 birthseason: 1
Year Per Seas  0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
1980 VIRG 1  44821.4 36696.6 30044.7 24598.5 20139.5 16488.9 13499.9 11052.8
9049.28 7408.93 6065.92 4966.35 4066.1 3329.04 2725.59 12285.6
1981 INIT 1  58202 44228.9 16150.2 2435.68 366.981 55.2936 8.3346 1.25734
0.189918 0.0287341 0.00435645 0.000662139 0.000100931 1.54362e-005 2.36956e-
006 4.32162e-007
1982 TIME 1  44326.9 44228.9 16150.2 2435.68 366.981 55.2936 8.3346 1.25734
0.189918 0.0287341 0.00435645 0.000662139 0.000100931 1.54362e-005 2.36956e-
006 4.32162e-007
1983 TIME 1  72362.1 34446.8 20577.4 4046.24 609.82 91.8821 13.848 2.08857
0.315353 0.0476884 0.00722566 0.00109741 0.000167135 2.55358e-005 3.91556e-
006 7.13091e-007
1984 TIME 1  30206.8 54946.3 12471.8 3048.57 598.876 90.2596 13.6051 2.05221
0.309907 0.0468716 0.00710292 0.00107893 0.000164346 2.51137e-005 3.85145e-
006 7.01526e-007
1985 TIME 1  53752.2 22861.1 19194.1 1714.17 418.583 82.2298 12.3986 1.87052
0.282523 0.042739 0.00647819 0.000984287 0.000149971 2.2924e-005 3.51677e-006
6.40821e-007
1986 TIME 1  57288.3 40804.4 8252.85 2826.23 252.157 61.5752 12.1014 1.82618
0.275856 0.0417355 0.00632689 0.000961428 0.000146509 2.23979e-005 3.43658e-
006 6.26327e-007
1987 TIME 1  44138.1 42472.8 11403 710.685 243.067 21.6869 5.29871 1.0425
0.157583 0.0238565 0.00361936 0.000550498 8.39769e-005 1.28535e-005 1.97476e-
006 3.6052e-007
1988 TIME 1  7974.63 33489.5 15250.5 1660.23 103.371 35.3554 3.1558 0.771702
0.152023 0.0230185 0.00349219 0.00053116 8.10282e-005 1.24025e-005 1.90553e-
006 3.47914e-007
1989 TIME 1  21685.5 5942.39 9888.21 1473.75 160.244 9.97754 3.41432 0.305079
0.07472 0.0147506 0.00223932 0.000340802 5.20261e-005 7.96981e-006 1.22563e-
006 2.24049e-007
```

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1990 TIME 1  32280.6 16483.7 2176.23 1500.45 223.416 24.2929 1.5132 0.518247
0.0463644 0.0113744 0.00225009 0.000342439 5.22667e-005 8.00528e-006
1.23087e-006 2.24968e-007
1991 TIME 1  26851 24428.9 5753.92 298.648 205.702 30.6293 3.33189 0.207725
0.071236 0.00638425 0.00156966 0.000311328 4.75262e-005 7.27934e-006
1.11931e-006 2.04595e-007
1992 TIME 1  34582.9 20215.3 8063.36 702.287 36.4118 25.08 3.73617 0.406804
0.0253976 0.00872601 0.000783864 0.000193265 3.84577e-005 5.89272e-006
9.0634e-007 1.65734e-007
1993 TIME 1  29912.3 25796.2 6035.16 797.466 69.3727 3.59687 2.47876 0.369643
0.0403104 0.00252189 0.000868713 7.82804e-005 1.93704e-005 3.87049e-006
5.95821e-007 1.09054e-007
1994 TIME 1  32280 22555.3 8660.28 763.252 100.747 8.76425 0.454619 0.313584
0.0468275 0.00511602 0.000320802 0.000110811 1.00173e-005 2.48784e-006
4.99151e-007 9.13882e-008
1995 TIME 1  35983.4 24557.4 8335.31 1339.28 117.922 15.5656 1.35464
0.0703254 0.0485682 0.00726458 0.000795298 4.9992e-005 1.73175e-005 1.57062e-
006 3.91502e-007 9.33735e-008
1996 TIME 1  25083.5 29163.7 14384.1 1125.76 131.013 11.5313 1.52253 0.13261
0.00689349 0.0047696 0.000715104 7.85135e-005 4.95217e-006 1.7222e-006
1.56889e-007 4.87256e-008
1997 TIME 1  24474 20370.3 18250.1 2773.09 167.536 19.4916 1.71597 0.226712
0.0197672 0.00102909 0.000713384 0.000107206 1.18027e-005 7.4679e-007
2.60635e-007 3.12736e-008
1998 TIME 1  27010.3 19940.8 14212.5 6318.24 822.972 49.7112 5.78428 0.50942
0.0673469 0.00587722 0.000306318 0.000212638 3.20068e-005 3.53036e-006
2.2385e-007 8.77307e-008
1999 TIME 1  20830.7 22014.1 14054.3 5195.58 1999.31 260.375 15.7297 1.83093
0.161345 0.021348 0.00186497 9.73271e-005 6.76651e-005 1.0203e-005 1.12763e-
006 9.98107e-008
2000 TIME 1  27301.4 16991.2 15934.5 5929.83 1946.86 749.072 97.5628 5.89569
0.68659 0.0605449 0.00801784 0.000701187 3.66387e-005 2.55092e-005 3.85274e-
006 4.64411e-007
2001 TIME 1  29777.3 22251.6 11980.1 5837.42 1881.09 617.493 237.615 30.9592
1.87196 0.218182 0.0192601 0.00255386 0.000223684 1.17085e-005 8.16804e-006
1.38576e-006
2002 TIME 1  31420.5 24278.8 15886.5 4694.19 2004.64 645.892 212.046 81.6231
10.6406 0.643874 0.0751179 0.0066389 0.000881538 7.73348e-005 4.05535e-006
3.31683e-006
2003 TIME 1  23100.3 25635.1 17707.6 6982.34 1845.76 788.127 253.958 83.3971
32.1169 4.18951 0.25372 0.0296299 0.00262176 0.000348599 3.06285e-005
2.92722e-006
2004 TIME 1  39889 18850.3 18810.5 8040.77 2853.08 754.116 322.03 103.795
34.0999 13.1401 1.7154 0.103984 0.012157 0.00107708 0.00014342 1.38299e-005
2005 TIME 1  21256.6 32553.4 13875.1 8685.64 3351 1188.89 314.269 134.237
43.2846 14.2288 5.48706 0.716976 0.0435087 0.00509305 0.000451867 6.6085e-005
2006 TIME 1  23806.8 17353.3 24228.5 6800.61 3883.56 1498.16 531.567 140.546
60.0553 19.375 6.37337 2.45979 0.321725 0.0195453 0.00229082 0.000233346
2007 FORE 1  40598.4 19450.3 13250.7 13630.7 3577.43 2042.78 788.086 279.67
73.965 31.6174 10.2054 3.35907 1.29735 0.169824 0.0103266 0.00133514

CATCH_AT_AGE
 fleet 1 fleetarea 1 gmorph 1
Year Seas  0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
1981 E  3793.85 22504.5 12264.6 1850.09 278.751 41.9957 6.3289 0.954482
0.144114 0.0217931 0.00330212 0.000501538 7.63888e-005 1.16721e-005 1.78994e-
006 3.26086e-007
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1982 1 2044.24 17469.7 10355 1562.16 235.368 35.4586 5.34338 0.805773
0.121645 0.0183923 0.00278627 0.000423091 6.44236e-005 9.84092e-006 1.50862e-
006 2.74737e-007
1983 1 4764.73 17649 15692.8 3086.48 465.17 70.0807 10.5601 1.59221 0.240313
0.0363227 0.00550027 0.000834782 0.000127035 1.93917e-005 2.97047e-006
5.40376e-007
1984 1 2073 28953.7 9673.46 2365.08 464.605 70.0165 10.5518 1.5912 0.240197
0.0363111 0.00549945 0.000834807 0.000127063 1.93997e-005 2.9723e-006
5.40819e-007
1985 1 3551.6 11740.7 14659 1309.45 319.753 62.8089 9.46848 1.42804 0.215606
0.0325999 0.00493841 0.000749815 0.000114155 1.74336e-005 2.67182e-006
4.8632e-007
1986 1 4913.17 24789.1 6927 2372.58 211.682 51.6877 10.1567 1.53239 0.23141
0.0349983 0.00530326 0.000805466 0.00012267 1.87412e-005 2.87341e-006
5.23262e-007
1987 1 2934.81 21906.8 8731.54 544.311 186.163 16.6083 4.05706 0.79798
0.120574 0.0182448 0.00276634 0.000420465 6.40901e-005 9.80086e-006 1.50427e-
006 2.74326e-007
1988 1 650.478 19731.8 12597.6 1371.67 85.4046 29.2081 2.6067 0.63728
0.125504 0.0189957 0.00288053 0.000437888 6.67579e-005 1.0211e-005 1.5676e-
006 2.85966e-007
1989 1 1408.6 3016.32 7498.08 1117.78 121.538 7.56679 2.58884 0.231251
0.0566152 0.0111709 0.00169485 0.000257757 3.93168e-005 6.0174e-006 9.24439e-
007 1.68801e-007
1990 1 2217.16 8690.84 1688.5 1164.44 173.383 18.8508 1.17399 0.401959
0.0359473 0.0088146 0.00174271 0.000265045 4.04231e-005 6.18597e-006
9.50224e-007 1.7349e-007
1991 1 1960.43 13412.6 4571.27 237.314 163.456 24.3366 2.6469 0.164976
0.0565558 0.00506635 0.00124497 0.000246774 3.76447e-005 5.76121e-006
8.85075e-007 1.61621e-007
1992 1 2791.67 11834.1 6637.8 578.231 29.9797 20.6481 3.07547 0.334786
0.0208948 0.00717614 0.000644334 0.000158775 3.15746e-005 4.8346e-006
7.43002e-007 1.35746e-007
1993 1 2144.78 13996 4761.99 629.365 54.7492 2.83841 1.95572 0.291567
0.0317844 0.00198759 0.000684291 6.16227e-005 1.52374e-005 3.04215e-006
4.67876e-007 8.55495e-008
1994 1 2074.03 11363.1 6536.59 576.22 76.0588 6.61593 0.343112 0.236598
0.0353168 0.00385648 0.000241675 8.3419e-005 7.5349e-006 1.86961e-006
3.74726e-007 6.85299e-008
1995 1 328.891 6369.35 6489.33 1104.31 97.2387 12.8349 1.11686 0.0579697
0.040024 0.00598446 0.000654871 4.11438e-005 1.4244e-005 1.29099e-006
3.21558e-007 7.66277e-008
1996 1 184.166 6257.1 10200.4 857.627 99.8148 8.78494 1.15974 0.100985
0.00524771 0.00362924 0.000543831 5.96699e-005 3.76078e-006 1.30676e-006
1.18929e-007 3.68971e-008
1997 1 107.119 2736.38 9682.14 1629.06 98.4297 11.4507 1.00785 0.133107
0.0115997 0.000603486 0.000418007 6.2757e-005 6.90152e-006 4.36132e-007
1.52e-007 1.82101e-008
1998 1 110.762 2521.3 7224.83 3568.22 464.822 28.0751 3.266 0.287526
0.0379914 0.00331315 0.000172535 0.000119651 1.79895e-005 1.98167e-006
1.2547e-007 4.90948e-008
1999 1 70.2586 2317.44 6241.45 2586.79 995.539 129.64 7.8298 0.911002
0.0802323 0.0106078 0.000925847 4.82647e-005 3.35132e-005 5.04618e-006
5.56815e-007 4.91992e-008
2000 1 111.663 2143.12 8086.1 3343.47 1097.83 422.367 54.9985 3.32226
0.386691 0.0340757 0.00450879 0.000393917 2.05595e-005 1.42957e-005 2.15599e-
006 2.59466e-007

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2001 1  111.622 2587.03 5730.64 3115.59 1004.1 329.582 126.794 16.5136
0.997944 0.116229 0.0102512 0.00135789 0.00011879 6.20952e-006 4.3253e-006
7.32587e-007
2002 1  99.4579 2407 6737.9 2238.11 955.891 307.96 101.077 38.8909 5.06686
0.306365 0.0357085 0.0031524 0.00041805 3.66209e-005 1.91724e-006 1.56526e-
006
2003 1  69.294 2415.17 7217.93 3206.5 847.733 361.943 116.598 38.2726 14.7301
1.91996 0.116162 0.0135502 0.00119741 0.000158975 1.39446e-005 1.33026e-006
2004 1  116.266 1728.11 7504.41 3618.14 1283.97 339.344 144.871 46.6732
15.3242 5.90033 0.769521 0.0465933 0.00544011 0.000481256 6.3975e-005
6.15762e-006
2005 1  55.5117 2687.56 5090.25 3608.89 1392.52 494.001 130.547 55.7361
17.9605 5.89922 2.27263 0.296604 0.0179743 0.00210076 0.00018606 2.71587e-005
2006 1  45.482 1060.55 6912.96 2219.64 1267.73 489 173.451 45.8373 19.5726
6.30884 2.073 0.799039 0.104353 0.00632888 0.00074038 7.52585e-005

BIOLOGY 1 70 15 1 N_Used_morphs;_lengths;_ages;_season;_by_season_in_endyr
bin low Mean_Size Wt_len-F mat_len spawn Wt_len-M
1 10 10.5 0.0063863 1 0.0063863
2 11 11.5 0.00865928 1 0.00865928
3 12 12.5 0.0114467 1 0.0114467
4 13 13.5 0.0148098 1 0.0148098
5 14 14.5 0.0188113 1 0.0188113
6 15 15.5 0.0235157 1 0.0235157
7 16 16.5 0.0289892 1 0.0289892
8 17 17.5 0.0352991 1 0.0352991
9 18 18.5 0.0425145 1 0.0425145
10 19 19.5 0.0507059 1 0.0507059
11 20 20.5 0.0599448 1 0.0599448
12 21 21.5 0.0703042 1 0.0703042
13 22 22.5 0.0818585 1 0.0818585
14 23 23.5 0.0946829 1 0.0946829
15 24 24.5 0.108854 1 0.108854
16 25 25.5 0.12445 1 0.12445
17 26 26.5 0.14155 1 0.14155
18 27 27.5 0.160232 1 0.160232
19 28 28.5 0.180579 1 0.180579
20 29 29.5 0.202673 1 0.202673
21 30 30.5 0.226596 1 0.226596
22 31 31.5 0.252433 1 0.252433
23 32 32.5 0.280267 1 0.280267
24 33 33.5 0.310187 1 0.310187
25 34 34.5 0.342277 1 0.342277
26 35 35.5 0.376627 1 0.376627
27 36 36.5 0.413324 1 0.413324
28 37 37.5 0.452458 1 0.452458
29 38 38.5 0.494119 1 0.494119
30 39 39.5 0.538399 1 0.538399
31 40 40.5 0.58539 1 0.58539
32 41 41.5 0.635184 1 0.635184
33 42 42.5 0.687876 1 0.687876
34 43 43.5 0.743558 1 0.743558
35 44 44.5 0.802328 1 0.802328
36 45 45.5 0.86428 1 0.86428
37 46 46.5 0.929512 1 0.929512
38 47 47.5 0.99812 1 0.99812
39 48 48.5 1.0702 1 1.0702
```

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40 49 49.5 1.14586 1 1.14586
41 50 50.5 1.22519 1 1.22519
42 51 51.5 1.3083 1 1.3083
43 52 52.5 1.39527 1 1.39527
44 53 53.5 1.48623 1 1.48623
45 54 54.5 1.58127 1 1.58127
46 55 55.5 1.68048 1 1.68048
47 56 56.5 1.78398 1 1.78398
48 57 57.5 1.89188 1 1.89188
49 58 58.5 2.00426 1 2.00426
50 59 59.5 2.12125 1 2.12125
51 60 60.5 2.24294 1 2.24294
52 61 61.5 2.36945 1 2.36945
53 62 62.5 2.50088 1 2.50088
54 63 63.5 2.63734 1 2.63734
55 64 64.5 2.77893 1 2.77893
56 65 65.5 2.92577 1 2.92577
57 66 66.5 3.07797 1 3.07797
58 67 67.5 3.23564 1 3.23564
59 68 68.5 3.39888 1 3.39888
60 69 69.5 3.56782 1 3.56782
61 70 70.5 3.74255 1 3.74255
62 71 71.5 3.9232 1 3.9232
63 72 72.5 4.10988 1 4.10988
64 73 73.5 4.30271 1 4.30271
65 74 74.5 4.50178 1 4.50178
66 75 75.5 4.70723 1 4.70723
67 76 76.5 4.91917 1 4.91917
68 77 77.5 5.13771 1 5.13771
69 78 78.5 5.36296 1 5.36296
70 79 79.5 5.59506 1 5.59506

Growth_Parameters
 Count Yr Morph A1 A2 L-at-A1 L-at-A2 K A-at-L0 Linf CVmin CVmax natM_amin
natM_max M_young M_old
 1 1982 1 0.5 6 28.1 60.2 0.2052 -1.76669 75.5491 0.1 0.1 0 2 0.2 0.2

Season gmorph GrowPattern Sex BirthSeas age age_Beg age_Mid M Len_Beg Len_Mid
SD_Beg SD_Mid Wt_Beg Wt_Mid Len_Mat Age_Mat Mat*Fecund Len:_1 SelWt:_1
RetWt:_1 Len:_2 SelWt:_2 RetWt:_2 Len:_3 SelWt:_3 RetWt:_3 Len:_4 SelWt:_4
RetWt:_4 Len:_5 SelWt:_5 RetWt:_5 Len:_6 SelWt:_6 RetWt:_6 Len:_7 SelWt:_7
RetWt:_7 Len:_8 SelWt:_8 RetWt:_8 Len:_9 SelWt:_9 RetWt:_9 Len:_10 SelWt:_10
RetWt:_10 Len:_11 SelWt:_11 RetWt:_11 Len:_12 SelWt:_12 RetWt:_12 Len:_13
SelWt:_13 RetWt:_13 Len:_14 SelWt:_14 RetWt:_14
1 1 1 1 1 0 0 0.5 0.2 10 28.1 1 2.81 0.006815 0.17908 1 0.38 0.0025897 28.1
0.17908 0.17908 28.1 0.17908 0.17908 28.1 0.17908 0.17908 28.1 0.17908
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1 1 1 1 1 1 1 1.5 0.2 32.7269 36.9026 3.27269 3.69026 0.298237 0.445742 1
0.91 0.271396 36.9026 0.445742 0.445742 36.9026 0.445742 0.445742 36.9026
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1 1 1 1 1 2 2 2.5 0.2 40.6711 44.0721 4.06711 4.40721 0.61717 0.807472 1 0.98
0.604826 44.0721 0.807472 0.807472 44.0721 0.807472 0.807472 44.0721 0.807472
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0.807472 44.0721 0.807472 0.807472 44.0721 0.807472 0.807472 44.0721 0.807472
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1 1 1 1 1 3 3 3.5 0.2 47.1415 49.9116 4.71415 4.99116 1.01154 1.22454 1 1
1.01154 49.9116 1.22454 1.22454 49.9116 1.22454 1.22454 49.9116 1.22454
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1 1 1 1 1 4 4 4.5 0.2 52.4115 54.6677 5.24115 5.46677 1.44214 1.66061 1 1
1.44214 54.6677 1.66061 1.66061 54.6677 1.66061 1.66061 54.6677 1.66061
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1 1 1 1 1 5 5 5.5 0.2 56.7039 58.5416 5.67039 5.85416 1.8768 2.08816 1 1
1.8768 58.5413 2.08816 2.08816 58.5413 2.08816 2.08816 58.5413 2.08816
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1 1 1 1 1 6 6 6.5 0.2 60.2 61.6967 6.02 6.16967 2.29261 2.48843 1 1 2.29261
61.6933 2.48843 2.48843 61.6933 2.48843 2.48843 61.6933 2.48843 2.48843
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1 1 1 1 1 7 7 7.5 0.2 63.0475 64.2666 6.30475 6.42666 2.67421 2.84884 1 1
2.67421 64.2476 2.84884 2.84884 64.2476 2.84884 2.84884 64.2476 2.84884
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1 1 1 1 1 8 8 8.5 0.2 65.3667 66.3596 6.53667 6.63596 3.01152 3.1618 1 1
3.01152 66.3006 3.1618 3.1618 66.3006 3.1618 3.1618 66.3006 3.1618 3.1618
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1 1 1 1 1 9 9 9.5 0.2 67.2557 68.0644 6.72557 6.80644 3.29959 3.42512 1 1
3.29959 67.9344 3.42512 3.42512 67.9344 3.42512 3.42512 67.9344 3.42512
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1 1 1 1 1 10 10 10.5 0.2 68.7943 69.453 6.87943 6.9453 3.53886 3.64146 1 1
3.53886 69.2242 3.64146 3.64146 69.2242 3.64146 3.64146 69.2242 3.64146
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1 1 1 1 1 11 11 11.5 0.2 70.0474 70.5839 7.00474 7.05839 3.73371 3.81643 1 1
3.73371 70.2376 3.81643 3.81643 70.2376 3.81643 3.81643 70.2376 3.81643
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1 1 1 1 1 12 12 12.5 0.2 71.0681 71.505 7.10681 7.1505 3.89048 3.95667 1 1
3.89048 71.0329 3.95667 3.95667 71.0329 3.95667 3.95667 71.0329 3.95667
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1 1 1 1 1 13 13 13.5 0.2 71.8994 72.2553 7.18994 7.22553 4.0158 4.06859 1 1
4.0158 71.6577 4.06859 4.06859 71.6577 4.06859 4.06859 71.6577 4.06859
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1 1 1 1 1 14 14 14.5 0.2 72.5765 72.8663 7.25765 7.28663 4.11573 4.15781 1 1
4.11573 72.1499 4.15781 4.15781 72.1499 4.15781 4.15781 72.1499 4.15781
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1 1 1 1 1 15 15 15.5 0.2 73.1279 73.364 7.31279 7.3364 4.19539 4.22897 1 1
4.19539 72.5389 4.22897 4.22897 72.5389 4.22897 4.22897 72.5389 4.22897
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MEAN_BODY_WT(begin)
morph year season 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
1 1982 1  0.006815 0.298237 0.61717 1.01154 1.44214 1.8768 2.29261 2.67421
3.01152 3.29959 3.53886 3.73371 3.89048 4.0158 4.11573 4.19539
1 1983 1  0.006815 0.298237 0.61717 1.01154 1.44214 1.8768 2.29261 2.67421
3.01152 3.29959 3.53886 3.73371 3.89048 4.0158 4.11573 4.19539
1 1984 1  0.006815 0.298237 0.61717 1.01154 1.44214 1.8768 2.29261 2.67421
3.01152 3.29959 3.53886 3.73371 3.89048 4.0158 4.11573 4.19539
1 1985 1  0.006815 0.298237 0.61717 1.01154 1.44214 1.8768 2.29261 2.67421
3.01152 3.29959 3.53886 3.73371 3.89048 4.0158 4.11573 4.19539
1 1986 1  0.006815 0.298237 0.61717 1.01154 1.44214 1.8768 2.29261 2.67421
3.01152 3.29959 3.53886 3.73371 3.89048 4.0158 4.11573 4.19539
1 1987 1  0.006815 0.298237 0.61717 1.01154 1.44214 1.8768 2.29261 2.67421
3.01152 3.29959 3.53886 3.73371 3.89048 4.0158 4.11573 4.19539
1 1988 1  0.006815 0.298237 0.61717 1.01154 1.44214 1.8768 2.29261 2.67421
3.01152 3.29959 3.53886 3.73371 3.89048 4.0158 4.11573 4.19539
1 1989 1  0.006815 0.298237 0.61717 1.01154 1.44214 1.8768 2.29261 2.67421
3.01152 3.29959 3.53886 3.73371 3.89048 4.0158 4.11573 4.19539
1 1990 1  0.006815 0.298237 0.61717 1.01154 1.44214 1.8768 2.29261 2.67421
3.01152 3.29959 3.53886 3.73371 3.89048 4.0158 4.11573 4.19539
1 1991 1  0.006815 0.298237 0.61717 1.01154 1.44214 1.8768 2.29261 2.67421
3.01152 3.29959 3.53886 3.73371 3.89048 4.0158 4.11573 4.19539
1 1992 1  0.006815 0.298237 0.61717 1.01154 1.44214 1.8768 2.29261 2.67421
3.01152 3.29959 3.53886 3.73371 3.89048 4.0158 4.11573 4.19539
1 1993 1  0.006815 0.298237 0.61717 1.01154 1.44214 1.8768 2.29261 2.67421
3.01152 3.29959 3.53886 3.73371 3.89048 4.0158 4.11573 4.19539
1 1994 1  0.006815 0.298237 0.61717 1.01154 1.44214 1.8768 2.29261 2.67421
3.01152 3.29959 3.53886 3.73371 3.89048 4.0158 4.11573 4.19539
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1 1995 1 0.006815 0.298237 0.61717 1.01154 1.44214 1.8768 2.29261 2.67421
3.01152 3.29959 3.53886 3.73371 3.89048 4.0158 4.11573 4.19539
1 1996 1 0.006815 0.298237 0.61717 1.01154 1.44214 1.8768 2.29261 2.67421
3.01152 3.29959 3.53886 3.73371 3.89048 4.0158 4.11573 4.19539
1 1997 1 0.006815 0.298237 0.61717 1.01154 1.44214 1.8768 2.29261 2.67421
3.01152 3.29959 3.53886 3.73371 3.89048 4.0158 4.11573 4.19539
1 1998 1 0.006815 0.298237 0.61717 1.01154 1.44214 1.8768 2.29261 2.67421
3.01152 3.29959 3.53886 3.73371 3.89048 4.0158 4.11573 4.19539
1 1999 1 0.006815 0.298237 0.61717 1.01154 1.44214 1.8768 2.29261 2.67421
3.01152 3.29959 3.53886 3.73371 3.89048 4.0158 4.11573 4.19539
1 2000 1 0.006815 0.298237 0.61717 1.01154 1.44214 1.8768 2.29261 2.67421
3.01152 3.29959 3.53886 3.73371 3.89048 4.0158 4.11573 4.19539
1 2001 1 0.006815 0.298237 0.61717 1.01154 1.44214 1.8768 2.29261 2.67421
3.01152 3.29959 3.53886 3.73371 3.89048 4.0158 4.11573 4.19539
1 2002 1 0.006815 0.298237 0.61717 1.01154 1.44214 1.8768 2.29261 2.67421
3.01152 3.29959 3.53886 3.73371 3.89048 4.0158 4.11573 4.19539
1 2003 1 0.006815 0.298237 0.61717 1.01154 1.44214 1.8768 2.29261 2.67421
3.01152 3.29959 3.53886 3.73371 3.89048 4.0158 4.11573 4.19539
1 2004 1 0.006815 0.298237 0.61717 1.01154 1.44214 1.8768 2.29261 2.67421
3.01152 3.29959 3.53886 3.73371 3.89048 4.0158 4.11573 4.19539
1 2005 1 0.006815 0.298237 0.61717 1.01154 1.44214 1.8768 2.29261 2.67421
3.01152 3.29959 3.53886 3.73371 3.89048 4.0158 4.11573 4.19539
1 2006 1 0.006815 0.298237 0.61717 1.01154 1.44214 1.8768 2.29261 2.67421
3.01152 3.29959 3.53886 3.73371 3.89048 4.0158 4.11573 4.19539
1 2007 1 0.006815 0.298237 0.61717 1.01154 1.44214 1.8768 2.29261 2.67421
3.01152 3.29959 3.53886 3.73371 3.89048 4.0158 4.11573 4.19539

MEAN_SIZE_TIMESERIES
morph year season beg/mid 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
1 1982 1 0 10 32.7269 40.6711 47.1415 52.4115 56.7039 60.2 63.0475 65.3667
67.2557 68.7943 70.0474 71.0681 71.8994 72.5765 73.1279
1 1982 1 1 28.1 36.9026 44.0721 49.9116 54.6677 58.5416 61.6967 64.2666
66.3596 68.0644 69.453 70.5839 71.505 72.2553 72.8663 73.364
1 1983 1 0 10 32.7269 40.6711 47.1415 52.4115 56.7039 60.2 63.0475 65.3667
67.2557 68.7943 70.0474 71.0681 71.8994 72.5765 73.1279
1 1983 1 1 28.1 36.9026 44.0721 49.9116 54.6677 58.5416 61.6967 64.2666
66.3596 68.0644 69.453 70.5839 71.505 72.2553 72.8663 73.364
1 1984 1 0 10 32.7269 40.6711 47.1415 52.4115 56.7039 60.2 63.0475 65.3667
67.2557 68.7943 70.0474 71.0681 71.8994 72.5765 73.1279
1 1984 1 1 28.1 36.9026 44.0721 49.9116 54.6677 58.5416 61.6967 64.2666
66.3596 68.0644 69.453 70.5839 71.505 72.2553 72.8663 73.364
1 1985 1 0 10 32.7269 40.6711 47.1415 52.4115 56.7039 60.2 63.0475 65.3667
67.2557 68.7943 70.0474 71.0681 71.8994 72.5765 73.1279
1 1985 1 1 28.1 36.9026 44.0721 49.9116 54.6677 58.5416 61.6967 64.2666
66.3596 68.0644 69.453 70.5839 71.505 72.2553 72.8663 73.364
1 1986 1 0 10 32.7269 40.6711 47.1415 52.4115 56.7039 60.2 63.0475 65.3667
67.2557 68.7943 70.0474 71.0681 71.8994 72.5765 73.1279
1 1986 1 1 28.1 36.9026 44.0721 49.9116 54.6677 58.5416 61.6967 64.2666
66.3596 68.0644 69.453 70.5839 71.505 72.2553 72.8663 73.364
1 1987 1 0 10 32.7269 40.6711 47.1415 52.4115 56.7039 60.2 63.0475 65.3667
67.2557 68.7943 70.0474 71.0681 71.8994 72.5765 73.1279
1 1987 1 1 28.1 36.9026 44.0721 49.9116 54.6677 58.5416 61.6967 64.2666
66.3596 68.0644 69.453 70.5839 71.505 72.2553 72.8663 73.364
1 1988 1 0 10 32.7269 40.6711 47.1415 52.4115 56.7039 60.2 63.0475 65.3667
67.2557 68.7943 70.0474 71.0681 71.8994 72.5765 73.1279
1 1988 1 1 28.1 36.9026 44.0721 49.9116 54.6677 58.5416 61.6967 64.2666
66.3596 68.0644 69.453 70.5839 71.505 72.2553 72.8663 73.364

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1 1989 1 0 10 32.7269 40.6711 47.1415 52.4115 56.7039 60.2 63.0475 65.3667
67.2557 68.7943 70.0474 71.0681 71.8994 72.5765 73.1279
1 1989 1 1 28.1 36.9026 44.0721 49.9116 54.6677 58.5416 61.6967 64.2666
66.3596 68.0644 69.453 70.5839 71.505 72.2553 72.8663 73.364
1 1990 1 0 10 32.7269 40.6711 47.1415 52.4115 56.7039 60.2 63.0475 65.3667
67.2557 68.7943 70.0474 71.0681 71.8994 72.5765 73.1279
1 1990 1 1 28.1 36.9026 44.0721 49.9116 54.6677 58.5416 61.6967 64.2666
66.3596 68.0644 69.453 70.5839 71.505 72.2553 72.8663 73.364
1 1991 1 0 10 32.7269 40.6711 47.1415 52.4115 56.7039 60.2 63.0475 65.3667
67.2557 68.7943 70.0474 71.0681 71.8994 72.5765 73.1279
1 1991 1 1 28.1 36.9026 44.0721 49.9116 54.6677 58.5416 61.6967 64.2666
66.3596 68.0644 69.453 70.5839 71.505 72.2553 72.8663 73.364
1 1992 1 0 10 32.7269 40.6711 47.1415 52.4115 56.7039 60.2 63.0475 65.3667
67.2557 68.7943 70.0474 71.0681 71.8994 72.5765 73.1279
1 1992 1 1 28.1 36.9026 44.0721 49.9116 54.6677 58.5416 61.6967 64.2666
66.3596 68.0644 69.453 70.5839 71.505 72.2553 72.8663 73.364
1 1993 1 0 10 32.7269 40.6711 47.1415 52.4115 56.7039 60.2 63.0475 65.3667
67.2557 68.7943 70.0474 71.0681 71.8994 72.5765 73.1279
1 1993 1 1 28.1 36.9026 44.0721 49.9116 54.6677 58.5416 61.6967 64.2666
66.3596 68.0644 69.453 70.5839 71.505 72.2553 72.8663 73.364
1 1994 1 0 10 32.7269 40.6711 47.1415 52.4115 56.7039 60.2 63.0475 65.3667
67.2557 68.7943 70.0474 71.0681 71.8994 72.5765 73.1279
1 1994 1 1 28.1 36.9026 44.0721 49.9116 54.6677 58.5416 61.6967 64.2666
66.3596 68.0644 69.453 70.5839 71.505 72.2553 72.8663 73.364
1 1995 1 0 10 32.7269 40.6711 47.1415 52.4115 56.7039 60.2 63.0475 65.3667
67.2557 68.7943 70.0474 71.0681 71.8994 72.5765 73.1279
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14 2006 L 1 76 1
14 2006 L 1 77 1
14 2006 L 1 78 1
14 2006 L 1 79 1
```