

12. APPENDICES

APPENDIX 1: The parameter file for the baseline Sheephead model in Synthesis

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spbase.d13      LOOP1:  8  LIKE:  -342.57294  DELTA LIKE:      .00025  ENDBIO:      1037.
spbase.r01
spbase.p34
Baseline best-fit Sheephead model for the 2004 assessment
 100.000000      .001000      BEGIN AND END DELTA F PER LOOP1
  3  .95          FIRST LOOP1 FOR LAMBDA & VALUE
 1.500          MAX VALUE FOR CROSS DERIVATIVE
 1 READ HESSIAN
spbase.hes
 1 WRITE HESSIAN
spbase.hes
 .001          MIN SAMPLE FRAC. PER AGE
  1  20  1  20      MINAGE, MAXAGE,  SUMMARY AGE RANGE
1947  2003      BEGIN YEAR, END YEAR
  1          12  0  0  0      NPER, MON/PER
 6.00          SPAWNMONTH
 4  4  NFISHERY, NSURVEY
 1 N SEXES
 1000. REF RECR LEVEL
 0 MORTOPT
 .350000      .001000      3.000000 'NATMORT      '  0  1  0      .000000      .0000 !  1 NO PICK      .000      -.01      .0000000
HKLINE  TYPE:  1
 8 SELECTIVITY PATTERN
  0  0  0  2  0  0      0 AGE TYPES USED
  1.00000      .20 ' HKLINE CATCH      '  ! # =  1 VALUE:      -.05724
  1.00000      .20 ' HKLINE SIZECOMP      '  ! # =  2 VALUE:      -32.06566
  1  0  0  0  0  0 SEL. COMPONENTS
 .005793      .000100      1.000000 'HKLINE INITIAL S'  2  1  0      .000000      .0000 !  2 OK      .000      -127453.15      .0000099
 .999978      .000100      1.000000 'HKLINE INFLECT  '  2  1  0      .000000      .0000 !  3 OK      .000*****      .0000000
 .308123      .000100      5.000000 'HKLINE SLOPE      '  2  1  0      .000000      .0000 !  4 OK      -.001      -678.28      .0019460
TRAPS  TYPE:  2
 8 SELECTIVITY PATTERN
  0  0  0  4  0  0      0 AGE TYPES USED
  1.00000      .20 ' TRAP CATCH      '  ! # =  3 VALUE:      .00000
  1.00000      .20 ' TRAP SIZECOMP      '  ! # =  4 VALUE:      -42.90195
  1  0  0  0  0  0 SEL. COMPONENTS
 .005481      .000100      1.000000 'TRAPS INITIAL SE'  2  1  0      .000000      .0000 !  5 OK      .000      -56403.75      .0000261
 .350618      .000100      1.000000 'TRAP INFLECT  '  2  1  0      .000000      .0000 !  6 OK      .000      -5741.37      .0003282
 .689538      .000100      5.000000 'TRAP SLOPE      '  2  1  0      .000000      .0000 !  7 OK      .000      -79.50      .0268074
SETNET  TYPE:  3
 8 SELECTIVITY PATTERN
  0  0  0  6  0  0      0 AGE TYPES USED
  1.00000      .20 ' SETNET CATCH      '  ! # =  5 VALUE:      .00000
  1.00000      .20 ' SETNET SIZECOMP      '  ! # =  6 VALUE:      -12.87307
  1  0  0  0  0  0 SEL. COMPONENTS
 .001891      .000100      1.000000 'SETNET INITIAL S'  2  1  0      .000000      .0000 !  8 OK      .000      -245098.78      .0000049

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.999995 .000100 1.000000 'SETNET INFLECT ' 2 1 0 .000000 .0000 ! 9 OK .000***** .0000000
.254941 .000100 5.000000 'SETNET SLOPE ' 2 1 0 .000000 .0000 ! 10 OK .000 -1056.43 .0013201
RECREA TYPE: 4
8 SELECTIVITY PATTERN
0 0 0 8 0 0 0 AGE TYPES USED
1.00000 .20 'RECREA CATCH ' ! # = 7 VALUE: -.05724
1.00000 .20 'RECREA SIZECOMP ' ! # = 8 VALUE: -189.16699
1 0 0 0 0 0 SEL. COMPONENTS
.001230 .000100 1.000000 'RECREA INITIAL S' 2 1 0 .000000 .0000 ! 11 OK .000 -3000281.69 .0000004
.308864 .010000 1.000000 'RECREA INFLECT ' 2 1 0 .000000 .0000 ! 12 OK .000 -63814.08 .0000950
.536938 .010000 5.000000 'RECREA SLOPE ' 2 1 0 .000000 .0000 ! 13 OK .000 -2673.40 .0010982
CPFV1 TYPE: 5
2 SELECTIVITY PATTERN
0 0 0 0 0 0 0 AGE TYPES USED
.000121 0 1 2 Q, QUANT, LOGERROR=1, BIO=1 or NUM=2
1.00000 .20 'CPFV1 Q ' ! # = 9 VALUE: -12.39961
4.000000 -.200000 1.000000 'CPFV1 SELTYPE ' 0 -1947 0 .000000 .0000 ! 14 NO PICK .000 -.01 .0000000
10.000000 .010000 10.000000 'CPFV1 MINSIZE ' 0 -1947 0 .000000 .0000 ! 15 NO PICK .000 -.01 .0000000
100.000000 .001000 100.000000 'CPFV1 MAXSIZE ' 0 -1947 0 .000000 .0000 ! 16 NO PICK .000 -.01 .0000000
CPFV2 TYPE: 6
2 SELECTIVITY PATTERN
0 0 0 0 0 0 0 AGE TYPES USED
.000035 0 1 2 Q, QUANT, LOGERROR=1, BIO=1 or NUM=2
1.00000 .20 'CPFV2 Q ' ! # = 10 VALUE: -16.93212
4.000000 -.200000 1.000000 'CPFV2 SELTYPE ' 0 -1960 0 .000000 .0000 ! 17 NO PICK .000 -.01 .0000000
10.000000 .010000 10.000000 'CPFV2 MINSIZE ' 0 -1960 0 .000000 .0000 ! 18 NO PICK .000 -.01 .0000000
100.000000 .001000 100.000000 'CPFV2 MAXSIZE ' 0 -1960 0 .000000 .0000 ! 19 NO PICK .000 -.01 .0000000
CPFV3 TYPE: 7
2 SELECTIVITY PATTERN
0 0 0 0 0 0 0 AGE TYPES USED
.001145 0 1 2 Q, QUANT, LOGERROR=1, BIO=1 or NUM=2
1.00000 .20 'CPFV3 Q ' ! # = 11 VALUE: 10.09611
4.000000 -.200000 1.000000 'CPFV3 SELTYPE ' 0 -1980 0 .000000 .0000 ! 20 NO PICK .000 -.01 .0000000
10.000000 .010000 10.000000 'CPFV3 MINSIZE ' 0 -1980 0 .000000 .0000 ! 21 NO PICK .000 -.01 .0000000
100.000000 .001000 100.000000 'CPFV3 MAXSIZE ' 0 -1980 0 .000000 .0000 ! 22 NO PICK .000 -.01 .0000000
CalCOFI TYPE: 8
4 SELECTIVITY PATTERN
0 0 0 0 0 0 0 AGE TYPES USED
.000001 0 1 2 Q, QUANT, LOGERROR=1, BIO=1 or NUM=2
1.00000 .20 'CalCOFI SPB ' ! # = 12 VALUE: -46.21517
1 AGEERR: 1: MULTINOMIAL, 0: S(LOG(P))=CONSTANT, -1: S=P*Q/N
200.000 : MAX N FOR MULTINOMIAL
3 1=%CORRECT, 2=C.V., 3=%AGREE, 4=READ %AGREE @AGE
.800000 .300000 .950000 '%AGREE @ MIN ' 0 -1980 0 .000000 .0000 ! 23 NO PICK .000 -.01 .0000000
.050000 .000000 .900000 '%AGREE @ MAX ' 0 -1980 0 .000000 .0000 ! 24 NO PICK .000 -.01 .0000000
1.000000 .001000 2.000000 '%AGREE POWER ' 0 -1980 0 .000000 .0000 ! 25 NO PICK .000 -.01 .0000000
.150000 .010000 .300000 'OLD DISCOUNT ' 0 -1980 0 .000000 .0000 ! 26 NO PICK .000 -.01 .0000000
.000000 .001000 .100000 '%MIS_SEXED ' 0 -1980 0 .000000 .0000 ! 27 NO PICK .000 -.01 .0000000
0 END OF EFFORT
0 FIX n FMORTs

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2 MATURITY

25.240000	10.000000	100.000000	'MATURITY INFL	'	0	1	0	.000000	.0000 !	28 NO PICK	.000	- .01	.0000000
1.060000	.001000	5.000000	'MATURITY SLOPE	'	0	1	0	.000000	.0000 !	29 NO PICK	.000	- .01	.0000000
.000000	.000000	5.000000	'MATURITY - DD	'	0	1	0	.000000	.0000 !	30 NO PICK	.000	- .01	.0000000
36.700000	10.000000	100.000000	'MATURITY - INFL2'	'	0	1	0	.000000	.0000 !	31 NO PICK	.000	- .01	.0000000
.320000	.001000	5.000000	'MATURITY - SLP2'	'	0	1	0	.000000	.0000 !	32 NO PICK	.000	- .01	.0000000

1 GROWTH: 1=CONSTANT, 2=MORT. INFLUENCE
1.0000 13.0000 AGE AT WHICH L1 AND L2 OCCUR
1 1=NORMAL, 2=LOGNORMAL

12.920000	1.000000	100.000000	'L1	'	0	1	0	.000000	.0000 !	33 NO PICK	.000	- .01	.0000000
52.600000	10.000000	100.000000	'LINF	'	0	1	0	.000000	.0000 !	34 NO PICK	.000	- .01	.0000000
.068000	.000100	4.000000	'K	'	0	1	0	.000000	.0000 !	35 NO PICK	.000	- .01	.0000000
.144787	.001000	.290000	'CV1	'	2	1	0	.000000	.0000 !	36 OK	.000	-16525.43	.0027558
.260825	.001000	.290000	'CV1	'	2	1	0	.000000	.0000 !	37 OK	-.001	-2272.83	.0140529

0 DEFINE MARKET CATEGORIES
0 ENVIRONMENTAL FXN: [-INDEX] [FXN TYPE(1-4)] [ENVVAR USED]
0 ESTIMATE N ENVIRON VALUES
0 PENALTIES
0 ENVIRONMENT EFFECT ON EXP(RECR)

13 STOCK-RECR
3 1=B-H, 2=RICKER, 3=new B-H, 4=HOCKEY
0 0=recr is mult x averecr, 1=log(DEV) from S-R

.00000	-.61	' SPAWN-RECR-IND	' ! # = 13 VALUE:	-2450.28137
.00000	-.30	' SPAWN-RECR-MEAN	' ! # = 14 VALUE:	-267579.98097

1.392113	.200000	15.000000	'VIRGIN RECR MULT'	'	2	1	0	.000000	.0000 !	38 OK	.000	-1.01	.0000000
.700000	.100000	.990000	'B/H S/R PARAM	'	2	1	0	.000000	.0000 !	39 OK	.000	-1.01	.0000000
.879565	.100000	1000.000000	'BACK. RECRUIT	'	2	1	0	.000000	.0000 !	40 OK	.000	-573.49	.0023595
.610740	.100000	.990000	'S/R STD.DEV.	'	2	1	0	.000000	.0000 !	41 OK	.000	-1.01	.0000000
.000000	-.100000	.100000	'RECR TREND	'	0	1	0	.000000	.0000 !	42 NO PICK	.000	- .01	.0000000
1.000000	.010000	10.000000	'RECR-MULT	'	0	1	0	.000000	.0000 !	43 NO PICK	.000	- .01	.0000000

-2 INIT AGE COMP

.10000E-04	.10000E-04	.10000E+04	'RECR 1947	'	2	1947	0	.00000E+00	.0000 !	44 BOUND	.000	- .01	.0000000
.10000E-04	.10000E-04	.10000E+04	'RECR 1948	'	2	1948	0	.00000E+00	.0000 !	45 BOUND	.000	- .01	.0000000
.10000E-04	.10000E-04	.10000E+04	'RECR 1949	'	2	1949	0	.00000E+00	.0000 !	46 BOUND	.000	- .01	.0000000
.379973	.000010	1000.000000	'RECR 1950	'	2	1950	0	.000000	.0000 !	47 OK	.013	- .32	7.0221005
.908167	.000010	1000.000000	'RECR 1951	'	2	1951	0	.000000	.0000 !	48 OK	.014	- .33	11.6044858
.258704	.000010	1000.000000	'RECR 1952	'	2	1952	0	.000000	.0000 !	49 OK	.001	- .37	9.7869974
.10000E-04	.10000E-04	.10000E+04	'RECR 1953	'	2	1953	0	.00000E+00	.0000 !	50 BOUND	.000	- .01	.0000000
.209285	.000010	1000.000000	'RECR 1954	'	2	1954	0	.000000	.0000 !	51 OK	.001	- .40	8.9602294
.868467	.000010	1000.000000	'RECR 1955	'	2	1955	0	.000000	.0000 !	52 OK	-.005	- .38	10.5169026
.256415	.000010	1000.000000	'RECR 1956	'	2	1956	0	.000000	.0000 !	53 OK	-.003	- .36	13.5930758
.114372	.000010	1000.000000	'RECR 1957	'	2	1957	0	.000000	.0000 !	54 OK	-.007	- .26	15.0761416
.10000E-04	.10000E-04	.10000E+04	'RECR 1958	'	2	1958	0	.00000E+00	.0000 !	55 BOUND	.000	- .01	127.7874979
3.843077	.000010	1000.000000	'RECR 1959	'	2	1959	0	.000000	.0000 !	56 BIG DX	-.052	- .03	81.8756818
3.961665	.000010	1000.000000	'RECR 1960	'	2	1960	0	.000000	.0000 !	57 OK	-.049	- .02	187.5174318
1.639433	.000010	1000.000000	'RECR 1961	'	2	1961	0	.000000	.0000 !	58 BIG DX	-.084	- .03	198.3726438
3.557151	.000010	1000.000000	'RECR 1962	'	2	1962	0	.000000	.0000 !	59 OK	-.045	- .05	116.1409925
3.167107	.000010	1000.000000	'RECR 1963	'	2	1963	0	.000000	.0000 !	60 OK	-.016	- .08	65.2935513
.10000E-04	.10000E-04	.10000E+04	'RECR 1964	'	2	1964	0	.00000E+00	.0000 !	61 BOUND	.000	- .01	.0000000
.10000E-04	.10000E-04	.10000E+04	'RECR 1965	'	2	1965	0	.00000E+00	.0000 !	62 BOUND	.000	- .01	.0000000
.10000E-04	.10000E-04	.10000E+04	'RECR 1966	'	2	1966	0	.00000E+00	.0000 !	63 BOUND	.000	- .01	.0000000

.10000E-04	.10000E-04	.10000E+04	'RECR 1967	'	2	1967	0	.00000E+00	.0000 !	64 BOUND	.000	-.01	.0000000
4.058199	.000010	1000.000000	'RECR 1968	'	2	1968	0	.000000	.0000 !	65 OK	-.004	-.38	15.1548928
6.746247	.000010	1000.000000	'RECR 1969	'	2	1969	0	.000000	.0000 !	66 OK	.009	-.43	17.9949524
2.263120	.000010	1000.000000	'RECR 1970	'	2	1970	0	.000000	.0000 !	67 OK	-.039	-.50	12.3161679
2.819827	.000010	1000.000000	'RECR 1971	'	2	1971	0	.000000	.0000 !	68 OK	.004	-.84	6.2505783
2.811472	.000010	1000.000000	'RECR 1972	'	2	1972	0	.000000	.0000 !	69 OK	-.007	-1.81	2.2175872
.10000E-04	.10000E-04	.10000E+04	'RECR 1973	'	2	1973	0	.00000E+00	.0000 !	70 BOUND	.000	-.01	.0000000
1.281670	.000010	1000.000000	'RECR 1974	'	2	1974	0	.000000	.0000 !	71 OK	.004	-3.60	1.5302221
4.359793	.000010	1000.000000	'RECR 1975	'	2	1975	0	.000000	.0000 !	72 OK	.000	-3.14	.8295523
.10000E-04	.10000E-04	.10000E+04	'RECR 1976	'	2	1976	0	.00000E+00	.0000 !	73 BOUND	.000	-.01	.0000000
2.345187	.000010	1000.000000	'RECR 1977	'	2	1977	0	.000000	.0000 !	74 OK	-.003	-2.84	8.8355504
2.139460	.000010	1000.000000	'RECR 1978	'	2	1978	0	.000000	.0000 !	75 OK	-.010	-2.48	9.2595675
3.442073	.000010	1000.000000	'RECR 1979	'	2	1979	0	.000000	.0000 !	76 OK	-.004	-1.98	2.6593930
6.434604	.000010	1000.000000	'RECR 1980	'	2	1980	0	.000000	.0000 !	77 OK	.005	-1.75	3.6192893
4.488103	.000010	1000.000000	'RECR 1981	'	2	1981	0	.000000	.0000 !	78 OK	.003	-1.70	3.8544547
3.369834	.000010	1000.000000	'RECR 1982	'	2	1982	0	.000000	.0000 !	79 OK	.011	-1.96	2.9144829
4.526783	.000010	1000.000000	'RECR 1983	'	2	1983	0	.000000	.0000 !	80 OK	.006	-2.31	2.1294228
.878214	.000010	1000.000000	'RECR 1984	'	2	1984	0	.000000	.0000 !	81 OK	.010	-2.73	2.5683371
4.654983	.000010	1000.000000	'RECR 1985	'	2	1985	0	.000000	.0000 !	82 OK	.018	-3.02	3.0108088
.538834	.000010	1000.000000	'RECR 1986	'	2	1986	0	.000000	.0000 !	83 OK	.004	-3.17	2.6616016
4.618527	.000010	1000.000000	'RECR 1987	'	2	1987	0	.000000	.0000 !	84 OK	.009	-3.19	2.5481074
.705957	.000010	1000.000000	'RECR 1988	'	2	1988	0	.000000	.0000 !	85 OK	-.006	-3.45	2.5707334
2.543166	.000010	1000.000000	'RECR 1989	'	2	1989	0	.000000	.0000 !	86 OK	-.001	-4.36	1.2442657
.10000E-04	.10000E-04	.10000E+04	'RECR 1990	'	2	1990	0	.00000E+00	.0000 !	87 BOUND	.000	-.01	.0000000
2.689334	.000010	1000.000000	'RECR 1991	'	2	1991	0	.000000	.0000 !	88 OK	-.003	-7.08	.7294157
.10000E-04	.10000E-04	.10000E+04	'RECR 1992	'	2	1992	0	.00000E+00	.0000 !	89 BOUND	.000	-.01	.0000000
3.813868	.000010	1000.000000	'RECR 1993	'	2	1993	0	.000000	.0000 !	90 OK	-.007	-9.09	.4811933
.875257	.000010	1000.000000	'RECR 1994	'	2	1994	0	.000000	.0000 !	91 OK	.009	-10.01	.5349557
.429165	.000010	1000.000000	'RECR 1995	'	2	1995	0	.000000	.0000 !	92 OK	.005	-10.17	.7489634
2.545830	.000010	1000.000000	'RECR 1996	'	2	1996	0	.000000	.0000 !	93 OK	.009	-9.40	2.0086865
1.288574	.000010	1000.000000	'RECR 1997	'	2	1997	0	.000000	.0000 !	94 OK	.003	-7.95	1.2004215
2.577891	.000010	1000.000000	'RECR 1998	'	2	1998	0	.000000	.0000 !	95 OK	.006	-5.82	.8848554
1.696037	.000010	1000.000000	'RECR 1999	'	2	1999	0	.000000	.0000 !	96 OK	-.005	-6.42	.7654103
.107711	.000010	1000.000000	'RECR 2000	'	2	2000	0	.000000	.0000 !	97 OK	-.008	-8.36	.3551433
-999.000000	.000010	1000.000000	'RECR 2001	'	0	2001	0	.000000	.0000 !	98 NO PICK	.000	-.01	.0000000
-999.000000	.000010	1000.000000	'RECR 2002	'	0	2002	0	.000000	.0000 !	99 NO PICK	.000	-.01	.0000000
-999.000000	.000010	1000.000000	'RECR 2003	'	0	2003	0	.000000	.0000 !	100 NO PICK	.000	-.01	.0000000

APPENDIX 2: The data file for the baseline Sheephead model in Synthesis

sheephead data file for 2004 assessment assembled by Meisha Key & Suzanne Alonzo

55.47	1	hkline	trap	setnet	recrea
1947	1	87.77	0	0	21.03
1948	1	45.46	0	0	27.91
1949	1	28.81	0	0	24.97
1950	1	30.03	0	0	23.09
1951	1	27.86	0	0	33.01
1952	1	16.43	0	0	26.65
1953	1	16.07	0	0	28.05
1954	1	13.24	0	0	34.77
1955	1	5.97	0	0	26.64
1956	1	2.98	0	0	27.75
1957	1	5	0	0	28.26
1958	1	5.16	0	0	33.14
1959	1	4.64	0	0	31.56
1960	1	2.15	0	0	22.5
1961	1	5.72	0	0	28.43
1962	1	9.22	0	0	25.65
1963	1	12.71	0	0	33.66
1964	1	8.13	0	0	47.21
1965	1	5.51	0	0	71.19
1966	1	7.25	0	0	89.49
1967	1	8.9	0	0	72.85
1968	1	5.78	0	0	57.32
1969	1	6.03	0	0	84.09
1970	1	1.73	0	0	67.65
1971	1	4.02	0	0	65.77
1972	1	3.21	0	0	58.08
1973	1	1.39	0	0	78.6
1974	1	1.69	0	0	52.96
1975	1	2.74	0	0	53.15
1976	1	3.78	0	0	57.08
1977	1	2.91	0	0	49.94
1978	1	0.94	0.49	3.63	59.48
1979	1	0.23	0.45	3.32	55.58
1980	1	0.85	1.08	2.2	143.57
1981	1	0.36	0.36	5.13	106.97
1982	1	0.44	0.82	4.08	92.03
1983	1	0.88	0.34	4.5	155.35
1984	1	1.96	0.28	9.15	131.2
1985	1	0.17	0.08	12.67	200.2
1986	1	0.39	0	12.88	223.3

1969	1	8	6	0.0618	0.4	CPFV Logbook CPUE per
1970	1	8	6	0.0452	0.4	CPFV Logbook CPUE per angler
1971	1	8	6	0.0526	0.4	CPFV Logbook CPUE per
1972	1	8	6	0.0423	0.4	CPFV Logbook CPUE per
1973	1	8	6	0.0525	0.4	CPFV Logbook CPUE per angler
1974	1	8	6	0.0375	0.4	CPFV Logbook CPUE per angler
1975	1	8	6	0.0408	0.4	CPFV Logbook CPUE per
1976	1	8	6	0.0448	0.4	CPFV Logbook CPUE per angler
1977	1	8	6	0.0398	0.4	CPFV Logbook CPUE per angler
1978	1	8	6	0.047	0.4	CPFV Logbook CPUE per angler
1979	1	8	6	0.0407	0.4	CPFV Logbook CPUE per angler
1980	1	8	6	0.0451	0.4	CPFV Logbook CPUE per angler
1981	1	8	6	0.056	0.4	CPFV Logbook CPUE per angler
1980	1	8	7	1.7322	0.2	CPFV logbook by DFG block
1981	1	8	7	1.9716	0.2	CPFV logbook by DFG block
1982	1	8	7	1.7744	0.2	CPFV logbook by DFG block
1983	1	8	7	3.2815	0.2	CPFV logbook by DFG block
1984	1	8	7	2.5572	0.2	CPFV logbook by DFG block
1985	1	8	7	1.9315	0.2	CPFV logbook by DFG bl
1986	1	8	7	3.1116	0.2	CPFV logbook by DFG bl
1987	1	8	7	1.7721	0.2	CPFV logbook by DFG block
1988	1	8	7	2.8178	0.2	CPFV logbook by DFG block
1989	1	8	7	2.1687	0.2	CPFV logbook by DFG block
1990	1	8	7	2.2795	0.2	CPFV logbook by DFG block
1991	1	8	7	2.4404	0.2	CPFV logbook by DFG block
1992	1	8	7	1.5472	0.2	CPFV logbook by DFG block
1993	1	8	7	1.89	0.2	CPFV logbook by DFG block
1994	1	8	7	1.2557	0.2	CPFV logbook by DFG block
1995	1	8	7	1.2804	0.2	CPFV logbook by DFG block
1996	1	8	7	1.2231	0.2	CPFV logbook by DFG block
1997	1	8	7	1.0815	0.2	CPFV logbook by DFG block
1998	1	8	7	0.7118	0.2	CPFV logbook by DFG block
1999	1	8	7	0.8609	0.2	CPFV logbook by DFG block
2000	1	8	7	1.1381	0.2	CPFV logbook by DFG block
2001	1	8	7	1.4589	0.2	CPFV logbook by DFG block
2002	1	8	7	0.9112	0.2	CPFV logbook by DFG block
2003	1	8	7	0.6342	0.2	CPFV logbook by DFG block
1951	1	8	8	0.005	1.1	CalCOFI
1952	1	8	8	0.005	1.1	CalCOFI
1953	1	8	8	0.005	1.1	CalCOFI
1954	1	8	8	0.005	1.1	CalCOFI
1955	1	8	8	0.005	1.1	CalCOFI
1956	1	8	8	0.005	1.1	CalCOFI

1957	1	8	8	0.005	1.1	CalCOFI
1958	1	8	8	0.005	1.1	CalCOFI
1959	1	8	8	0.005	1.1	CalCOFI
1960	1	8	8	0.005	1.1	CalCOFI
1961	1	8	8	0.03	1.1	CalCOFI
1962	1	8	8	0.0536	1.1	CalCOFI
1963	1	8	8	0.1286	1.1	CalCOFI
1964	1	8	8	0.0135	1.1	CalCOFI
1965	1	8	8	0.1277	1.1	CalCOFI
1966	1	8	8	0.073	1.1	CalCOFI
1967	1	8	8	0.07	1.1	CalCOFI
1968	1	8	8	0.005	1.1	CalCOFI
1969	1	8	8	0.0173	1.1	CalCOFI
1970	1	8	8	-1	1.1	placeholder
1971	1	8	8	-1	1.1	placeholder
1972	1	8	8	0.005	1.1	CalCOFI
1973	1	8	8	-1	1.1	placeholder
1974	1	8	8	-1	1.1	CalCOFI
1975	1	8	8	0.0279	1.1	CalCOFI
1976	1	8	8	-1	1.1	placeholder
1977	1	8	8	-1	1.1	CalCOFI
1978	1	8	8	0.0848	1.1	CalCOFI
1979	1	8	8	-1	1.1	CalCOFI
1980	1	8	8	-1	1.1	CalCOFI
1981	1	8	8	0.2721	1.1	CalCOFI
1982	1	8	8	-1	1.1	CalCOFI
1983	1	8	8	-1	1.1	CalCOFI
1984	1	8	8	0.3701	1.1	CalCOFI
1985	1	8	8	0.171	1.1	CalCOFI
1986	1	8	8	0.005	1.1	CalCOFI
1987	1	8	8	0.005	1.1	CalCOFI
1988	1	8	8	0.048	1.1	CalCOFI
1989	1	8	8	0.0939	1.1	CalCOFI
1990	1	8	8	0.1078	1.1	CalCOFI
1991	1	8	8	0.0983	1.1	CalCOFI
1992	1	8	8	0.0229	1.1	CalCOFI
1993	1	8	8	0.0342	1.1	CalCOFI
1994	1	8	8	0.005	1.1	CalCOFI
1995	1	8	8	0.1605	1.1	CalCOFI
1996	1	8	8	0.0094	1.1	CalCOFI
1997	1	8	8	0.0188	1.1	CalCOFI
1998	1	8	8	0.1215	1.1	CalCOFI
1999	1	8	8	0.005	1.1	CalCOFI

2000	1	8	8	0.0699	1.1	CalCOFI													
2001	1	8	8	0.005	1.1	CalCOFI													
2002	1	8	8	0.005	1.1	CalCOFI													
2003	1	8	8	-1	1.1	CalCOFI													
-1	1	1	1	1	1	END OF SURVEY													
-1	-1 (no bins defined for perfect ages)																		
-1	-1 (no bins for imprecise ages)																		
-1	-1 (no bins defined for biased ages)																		
17	17 (17 2-cm length bins [18-50 cm])																		
18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	83.86		
25.2	1.06	length@50% mature, slope (Warner 1975) (could use Cowen 1990 for other estimates)																	
3E-05	2.857	both sexes length-weight (alpha & beta) from deMartini et al. 1994																	
129	0	eggs/kg on weight (intercept & slope) from deMartini et al. 1994 (could use Warner 1975 instead)																	
3E-05	2.857	both sexes length-weight (alpha & beta) from deMartini et al. 1994																	
Length composition																			
1975	1	4	4	1	79	1	1	17	17	0									
0	0	0.0268	0	0.0446	0.0446	0.1339	0.1339	0.1071	0.0625	0.0714	0.0982	0.0804	0.0714	0.0357	0.0357	0.0536			
1976	1	4	4	1	186	1	1	17	17	0									
0	0.0038	0.0038	0.0038	0.0113	0.0113	0.0679	0.0792	0.117	0.1434	0.1245	0.0792	0.0981	0.0679	0.0415	0.0415	0.1057			
1977	1	4	4	1	431	1	1	17	17	0									
0.0049	0.0016	0.0081	0.0326	0.0765	0.1059	0.1238	0.1238	0.1173	0.0961	0.0586	0.0489	0.0537	0.0244	0.0293	0.0228	0.0717			
1978	1	4	4	1	486	1	1	17	17	0									
0.0043	0.0043	0.013	0.0332	0.0506	0.0838	0.1084	0.1084	0.1185	0.0882	0.0607	0.0795	0.0535	0.0419	0.0419	0.0231	0.0867			
1980	1	4	4	1	44	1	1	17	17	0									
0	0	0	0.0159	0.0476	0.0635	0.0476	0.0476	0.0794	0.0952	0.0476	0.0317	0.0635	0.0635	0.0476	0.0317	0.3175			
1981	1	4	4	1	58	1	1	17	17	0									
0	0.0122	0.0366	0.0244	0.061	0.0488	0.0732	0.122	0.122	0.0732	0.0488	0.0366	0.0488	0.0244	0.0732	0	0.1951			
1982	1	4	4	1	27	1	1	17	17	0									
0	0	0	0	0.1026	0.1795	0.1026	0.1795	0.1026	0.1282	0.1538	0.0256	0	0	0	0	0.0256			
1983	1	4	4	1	273	1	1	17	17	0									
0	0.0077	0.0077	0.0617	0.0848	0.144	0.1105	0.1465	0.0925	0.0951	0.0771	0.0463	0.0411	0.0257	0.0231	0.0154	0.0206			
1984	1	4	4	1	283	1	1	17	17	0									
0.0025	0.0025	0.0223	0.0496	0.1042	0.1117	0.1266	0.1216	0.1216	0.0819	0.1017	0.0397	0.0248	0.0248	0.0223	0.0124	0.0298			
1985	1	4	4	1	381	1	1	17	17	0									
0	0	0.0129	0.0221	0.0812	0.1255	0.1255	0.1144	0.1162	0.107	0.0812	0.0664	0.0498	0.0443	0.0148	0.0092	0.0295			
1986	1	4	4	1	534	1	1	17	17	0									
0	0.0053	0.0171	0.0315	0.0618	0.0933	0.117	0.1261	0.1209	0.1038	0.0775	0.0631	0.0512	0.0329	0.0184	0.025	0.0552			
1987	1	4	4	1	478	1	1	17	17	0									
0	0.0059	0.0132	0.0309	0.0691	0.1	0.1118	0.0765	0.1029	0.0926	0.0897	0.0647	0.0618	0.0397	0.0353	0.0309	0.075			
1988	1	4	4	1	491	1	1	17	17	0									
0	0	0.0029	0.0129	0.0415	0.073	0.073	0.1016	0.0801	0.0801	0.0873	0.0658	0.0644	0.0629	0.0472	0.0372	0.1702			
1989	1	4	4	1	272	1	1	17	17	0									
0	0	0.0026	0.0258	0.0672	0.1085	0.1034	0.1085	0.0982	0.1034	0.0982	0.0749	0.0491	0.0388	0.0336	0.0181	0.0698			

1993	1	1	4	1	5	1	1	17	17	0						
0	0	0	0	0	0	0	0	0	0	0.1667	0.0833	0	0	0	0	0.75
1993	1	4	4	1	25	1	1	17	17	0						
0	0	0.0286	0.0857	0.0571	0.1429	0.0571	0.0857	0.0857	0.0571	0.0571	0.1143	0.0571	0.0286	0.0286	0	0.1143
1994	1	4	4	1	32	1	1	17	17	0						
0	0	0	0.0889	0.0667	0.0667	0.1111	0.1333	0.0667	0.0667	0.0889	0.1111	0.0222	0.0222	0.0222	0.0444	0.0889
1995	1	1	4	1	5	1	1	17	17	0						
0	0	0.0833	0.0833	0.5	0.0833	0	0	0	0	0	0	0.0833	0	0.0833	0	0.0833
1995	1	4	4	1	29	1	1	17	17	0						
0	0	0.0732	0.0732	0.122	0.0732	0.0976	0.1463	0.0976	0.0488	0.0488	0.122	0.0732	0.0244	0	0	0
1996	1	1	4	1	5	1	1	17	17	0						
0	0	0	0	0	0	0	0	0	0	0	0.037	0.1111	0.037	0.1481	0.037	0.6296
1996	1	2	4	1	31	1	1	17	17	0						
0	0	0	0.1	0	0.1333	0.2333	0.1	0.0667	0.1333	0.0333	0.0667	0.1333	0	0	0	0
1996	1	4	4	1	47	1	1	17	17	0						
0	0	0.0149	0.0299	0.1045	0.0746	0.2388	0.1045	0.0597	0.0597	0.0896	0.0149	0.0746	0.0149	0.0299	0.0299	0.0597
1997	1	1	4	1	5	1	1	17	17	0						
0	0	0	0	0	0	0.2	0.1	0	0.1	0.3	0	0.2	0	0.1	0	0
1997	1	2	4	1	31	1	1	17	17	0						
0	0	0.0081	0.0323	0.0806	0.1935	0.1452	0.1411	0.1048	0.0726	0.0605	0.0403	0.0363	0.0161	0.0202	0.0121	0.0363
1997	1	3	4	1	8	1	1	17	17	0						
0	0	0	0.0833	0	0	0	0	0	0	0	0	0	0	0	0.0833	0.8333
1997	1	4	4	1	14	1	1	17	17	0						
0	0	0	0.15	0.05	0.15	0.25	0.05	0.1	0.05	0.1	0	0	0.05	0	0	0.05
1998	1	1	4	1	5	1	1	17	17	0						
0	0	0	0	0	0	0	0	0	0	0	0	0	0.0667	0	0.3333	0.6
1998	1	4	4	1	74	1	1	17	17	0						
0	0	0.0094	0.0472	0.0755	0.1604	0.1226	0.0283	0.1038	0.066	0.066	0.0943	0.066	0.0189	0.0283	0.0377	0.0755
1999	1	1	4	1	5	1	1	17	17	0						
0	0	0	0	0	0	0	0	0	0	0	0	0.0769	0.0769	0.1538	0.1538	0.5385
1999	1	2	4	1	31	1	1	17	17	0						
0	0	0	0	0	0.0588	0.2353	0.25	0.1618	0.0588	0.0882	0.0294	0.0441	0.0294	0.0294	0	0.0147
1999	1	3	4	1	6	1	1	17	17	0						
0	0	0	0	0	0	0	0	0	0	0.125	0.125	0	0.125	0	0	0.625
1999	1	4	4	1	272	1	1	17	17	0						
0.0026	0	0.0388	0.0517	0.0749	0.1447	0.124	0.093	0.0749	0.0827	0.0439	0.0465	0.0362	0.0491	0.0362	0.0103	0.0904
2000	1	1	4	1	5	1	1	17	17	0						
0	0	0	0.125	0	0	0	0	0	0	0	0	0.125	0	0	0.125	0.625
2000	1	2	4	1	31	1	1	17	17	0						
0	0	0	0	0	0.2195	0.1707	0.0976	0.122	0.0488	0.0488	0.0488	0	0.0976	0.0244	0	0.122
2000	1	4	4	1	183	1	1	17	17	0						
0	0.0038	0.0115	0.0538	0.0769	0.1269	0.1346	0.1385	0.0962	0.1115	0.0692	0.0654	0.0308	0.0346	0.0269	0.0077	0.0115
2001	1	1	4	1	5	1	1	17	17	0						

0	0	0	0	0	0	0	0	0	0	0	0	0	0.0667	0.0667	0	0.8667
2001	1	2	4	1	31	1	1	17	17	0						
0	0	0	0	0	0	0.1018	0.1614	0.1333	0.1228	0.0807	0.0772	0.0772	0.0491	0.0526	0.0211	0.1228
2001	1	3	4	1	26	1	1	17	17	0						
0	0	0	0	0.0263	0.0789	0.0526	0.0263	0.0789	0	0.0526	0.0789	0.0263	0.0789	0.1842	0.0263	0.2895
2001	1	4	4	1	101	1	1	17	17	0						
0	0	0	0.0069	0.0417	0.125	0.2153	0.1458	0.1181	0.0764	0.0764	0.0625	0.0694	0.0069	0.0278	0.0069	0.0208
2002	1	2	4	1	31	1	1	17	17	0						
0	0	0	0	0	0.0058	0.0526	0.117	0.1053	0.0994	0.1228	0.0409	0.0643	0.0877	0.0819	0.076	0.1462
2002	1	4	4	1	129	1	1	17	17	0						
0	0	0	0.0109	0.0326	0.0707	0.1848	0.1522	0.1522	0.1196	0.087	0.0489	0.0326	0.0326	0.0217	0.0163	0.038
2003	1	1	4	1	5	1	1	17	17	0						
0	0	0	0	0	0	0	0	0	0.1429	0	0	0	0.2857	0	0	0.5714
2003	1	2	4	1	31	1	1	17	17	0						
0	0	0	0	0	0	0.0814	0.2127	0.1991	0.1719	0.0633	0.0633	0.0724	0.0181	0.0452	0.0362	0.0362
2003	1	4	4	1	195	1	1	17	17	0						
0	0	0	0	0.0072	0.0578	0.2383	0.1805	0.1552	0.083	0.0686	0.0578	0.0578	0.0433	0.0181	0.0072	0.0253

APPENDIX 3: The parameter file for the Review Panel baseline Sheephead model in Synthesis

```

panel.d02      LOOP1: 7 LIKE: -423.56754 DELTA LIKE: .00020 ENDBI0: 239.
panel.r01
panel.p11
stage 2 changes requested by panel - virgin recruits, new baseline model search ascending only fir
 100.000000 .001000 BEGIN AND END DELTA F PER LOOP1
 3 .95 FIRST LOOP1 FOR LAMBDA & VALUE
 1.500 MAX VALUE FOR CROSS DERIVATIVE
 1 READ HESSIAN
spbase.hes
 1 WRITE HESSIAN
spbase.hes
.001 MIN SAMPLE FRAC. PER AGE
 1 20 7 20 MINAGE, MAXAGE, SUMMARY AGE RANGE
1947 2003 BEGIN YEAR, END YEAR
 1 12 0 0 0 NPER, MON/PER
6.00 SPAWNMONTH
 4 4 NFISHERY, NSURVEY
 1 N SEXES
 1000. REF RECR LEVEL
 0 MORTOPT
 .20000 .001000 3.000000 'NATMORT' ' 0 1 0 .000000 .0000 ! 1 NO PICK .000
 -.01 .0000000
HKLINE TYPE: 1
 8 SELECTIVITY PATTERN
 0 0 0 2 0 0 0 AGE TYPES USED
 1.00000 .20 ' HKLINE CATCH ' ! # = 1 VALUE: .00000
 1.00000 .20 ' HKLINE SIZECOMP ' ! # = 2 VALUE: -46.77540
 1 0 0 0 0 0 SEL. COMPONENTS
 .007365 .000100 1.000000 'HKLINE INITIAL S' 2 1 0 .000000 .0000 ! 2 OK .000
-88714.10 .0000164
 .520713 .000100 1.000000 'HKLINE INFLECT ' 2 1 0 .000000 .0000 ! 3 OK .000
-1274.55 .0018583
 .302354 .000100 5.000000 'HKLINE SLOPE ' 2 1 0 .000000 .0000 ! 4 OK .000
-317.86 .0069934
TRAPS TYPE: 2
 8 SELECTIVITY PATTERN
 0 0 0 4 0 0 0 AGE TYPES USED
 1.00000 .20 ' TRAP CATCH ' ! # = 3 VALUE: .00000
 1.00000 .20 ' TRAP SIZECOMP ' ! # = 4 VALUE: -50.68638
 1 0 0 0 0 0 SEL. COMPONENTS
 .011185 .000100 1.000000 'TRAPS INITIAL SE' 2 1 0 .000000 .0000 ! 5 OK .000
-17408.33 .0000846
 .178000 .000100 1.000000 'TRAP INFLECT ' 2 1 0 .000000 .0000 ! 6 OK .000
-19389.62 .0000787
 .752285 .000100 5.000000 'TRAP SLOPE ' 2 1 0 .000000 .0000 ! 7 OK .000
-39.55 .0476835
SETNET TYPE: 3
 8 SELECTIVITY PATTERN
 0 0 0 6 0 0 0 AGE TYPES USED

```

```

1.00000 .20 ' SETNET CATCH ' ! # = 5 VALUE: .00000
1.00000 .20 ' SETNET SIZECOMP ' ! # = 6 VALUE: -24.76985
1 0 0 0 0 0 SEL. COMPONENTS
.000612 .000100 1.000000 ' SETNET INITIAL S' 2 1 0 .000000 .0000 ! 8 OK .000
-1067543.78 .0000012
.656452 .000100 1.000000 ' SETNET INFLECT ' 2 1 0 .000000 .0000 ! 9 OK .000
-296.55 .0091487
.179861 .000100 5.000000 ' SETNET SLOPE ' 2 1 0 .000000 .0000 ! 10 OK .000
-2802.16 .0010298
RECREA TYPE: 4
8 SELECTIVITY PATTERN
0 0 0 0 8 0 0 0 AGE TYPES USED
1.00000 .20 ' RECREA CATCH ' ! # = 7 VALUE: .00000
1.00000 .20 ' RECREA SIZECOMP ' ! # = 8 VALUE: -238.95360
1 0 0 0 0 0 SEL. COMPONENTS
.002149 .000100 1.000000 ' RECREA INITIAL S' 2 1 0 .000000 .0000 ! 11 OK .000
-846539.13 .0000013
.148960 .010000 1.000000 ' RECREA INFLECT ' 2 1 0 .000000 .0000 ! 12 OK .000
-216535.95 .0000100
.562873 .010000 5.000000 ' RECREA SLOPE ' 2 1 0 .000000 .0000 ! 13 OK .000
-1521.75 .0012841
CPFV1 TYPE: 5
2 SELECTIVITY PATTERN
0 0 0 0 0 0 0 0 AGE TYPES USED
.000083 0 1 2 Q, QUANT, LOGERROR=1, B10=1 or NUM=2
1.00000 .20 ' CPFV1 Q ' ! # = 9 VALUE: -12.25646
4.000000 -.200000 1.000000 ' CPFV1 SELTYPE ' 0 -1947 0 .000000 .0000 ! 14 NO PICK .000
-.01 .0000000
10.000000 .010000 10.000000 ' CPFV1 MIN SIZE ' 0 -1947 0 .000000 .0000 ! 15 NO PICK .000
-.01 .0000000
100.000000 .001000 100.000000 ' CPFV1 MAX SIZE ' 0 -1947 0 .000000 .0000 ! 16 NO PICK .000
-.01 .0000000
CPFV2 TYPE: 6
2 SELECTIVITY PATTERN
0 0 0 0 0 0 0 0 AGE TYPES USED
.000069 0 1 2 Q, QUANT, LOGERROR=1, B10=1 or NUM=2
1.00000 .20 ' CPFV2 Q ' ! # = 10 VALUE: -16.82161
4.000000 -.200000 1.000000 ' CPFV2 SELTYPE ' 0 -1960 0 .000000 .0000 ! 17 NO PICK .000
-.01 .0000000
10.000000 .010000 10.000000 ' CPFV2 MIN SIZE ' 0 -1960 0 .000000 .0000 ! 18 NO PICK .000
-.01 .0000000
100.000000 .001000 100.000000 ' CPFV2 MAX SIZE ' 0 -1960 0 .000000 .0000 ! 19 NO PICK .000
-.01 .0000000
CPFV3 TYPE: 7
2 SELECTIVITY PATTERN
0 0 0 0 0 0 0 0 AGE TYPES USED
.001813 0 1 2 Q, QUANT, LOGERROR=1, B10=1 or NUM=2
1.00000 .20 ' CPFV3 Q ' ! # = 11 VALUE: 4.56110
4.000000 -.200000 1.000000 ' CPFV3 SELTYPE ' 0 -1980 0 .000000 .0000 ! 20 NO PICK .000
-.01 .0000000

```

```

10.000000 .010000 10.000000 ' CPFV3 MINSIZE ' 0 -1980 0 .000000 .0000 ! 21 NO PICK .000
-.01 .000000
100.000000 .001000 100.000000 ' CPFV3 MAXSIZE ' 0 -1980 0 .000000 .0000 ! 22 NO PICK .000
-.01 .000000
CAL COFI TYPE: 8
4 SELECTIVITY PATTERN
0 0 0 0 0 0 0 AGE TYPES USED
.000002 0 1 2 0, QUANT, LOGERROR=1, BIO=1 or NUM=2
1.00000 .20 ' Cal COFI SPB ' ! # = 12 VALUE: -34.43127
1 AGEERR: 1: MULTINOMIAL, 0: S(LOG(P))=CONSTANT, -1: S=P*Q/N
200.000 : MAX N FOR MULTINOMIAL
3 1=%CORRECT, 2=C.V., 3=%AGREE, 4=READ %AGREE @AGE
.800000 .300000 .950000 '%AGREE @ MIN ' 0 -1980 0 .000000 .0000 ! 23 NO PICK .000
-.01 .000000
.050000 .000000 .900000 '%AGREE @ MAX ' 0 -1980 0 .000000 .0000 ! 24 NO PICK .000
-.01 .000000
1.000000 .001000 2.000000 '%AGREE POWER ' 0 -1980 0 .000000 .0000 ! 25 NO PICK .000
-.01 .000000
.150000 .010000 .300000 ' OLD DISCOUNT ' 0 -1980 0 .000000 .0000 ! 26 NO PICK .000
-.01 .000000
.000000 .001000 .100000 '%MIS_SEXED ' 0 -1980 0 .000000 .0000 ! 27 NO PICK .000
-.01 .000000
0 END OF EFFORT
0 FIX n FMORTs
2 MATURITY
25.240000 10.000000 100.000000 ' MATURITY INFL ' 0 1 0 .000000 .0000 ! 28 NO PICK .000
-.01 .000000
1.060000 .001000 5.000000 ' MATURITY SLOPE ' 0 1 0 .000000 .0000 ! 29 NO PICK .000
-.01 .000000
.000000 .000000 5.000000 ' MATURITY - DD ' 0 1 0 .000000 .0000 ! 30 NO PICK .000
-.01 .000000
36.700000 10.000000 100.000000 ' MATURITY - INFL2 ' 0 1 0 .000000 .0000 ! 31 NO PICK .000
-.01 .000000
.320000 .001000 5.000000 ' MATURITY - SLP2 ' 0 1 0 .000000 .0000 ! 32 NO PICK .000
-.01 .000000
1 GROWTH: 1=CONSTANT, 2=MORT. INFLUENCE
1.0000 13.0000 AGE AT WHICH L1 AND L2 OCCUR
1 1=NORMAL, 2=LOGNORMAL
12.920000 1.000000 100.000000 ' L1 ' 0 1 0 .000000 .0000 ! 33 NO PICK .000
-.01 .000000
52.600000 10.000000 100.000000 ' LINF ' 0 1 0 .000000 .0000 ! 34 NO PICK .000
-.01 .000000
.068000 .000100 4.000000 ' K ' 0 1 0 .000000 .0000 ! 35 NO PICK .000
-.01 .000000
.110000 .001000 .290000 ' CV1 ' 0 1 0 .000000 .0000 ! 36 NO PICK .000
-.01 .000000
.110000 .001000 .290000 ' CV1 ' 0 1 0 .000000 .0000 ! 37 NO PICK .000
-.01 .000000
0 DEFINE MARKET CATEGORIES
0 ENVIRONMENTAL FXN: [-INDEX] [FXN TYPE(1-4)] [ENVVAR USED]

```

```

0 ESTIMATE N ENVIRON VALUES
0 PENALTIES
0 ENVIRONMENT EFFECT ON EXP(RECR)
13 STOCK-RECR
3 1=B-H, 2=RICKER, 3=new B-H, 4=HOCKEY
0 0=recr is mult x averecr, 1=log(DEV) from S-R
.01000 -.80 ' SPAWN-RECR-IND ' ! # = 13 VALUE: -31.05687
.01000 -.30 ' SPAWN-RECR-MEAN ' ! # = 14 VALUE: -312.34996
.219875 .200000 15.000000 ' VIRGIN RECR MULT' 2 1 0 .000000 .0000 ! 38 OK .000
-1476.24 .0011552
.990000 .100000 .990000 ' B/H S/R PARAM ' 0 1 0 .000000 .0000 ! 39 NO PICK .000
-.01 .0000000
1.163816 .100000 1000.000000 ' BACK. RECRUIT ' 0 1 0 .000000 .0000 ! 40 NO PICK .000
-.01 .0000000
.800000 .100000 .990000 ' S/R STD. DEV. ' 0 1 0 .000000 .0000 ! 41 NO PICK .000
-.01 .0000000
.000000 -.100000 .100000 ' RECR TREND ' 0 1 0 .000000 .0000 ! 42 NO PICK .000
-.01 .0000000
1.000000 .010000 10.000000 ' RECR-MULT ' 0 1 0 .000000 .0000 ! 43 NO PICK .000
-.01 .0000000
-1 INIT AGE COMP
.122439 .000010 1000.000000 ' RECR 1947 ' 2 1947 0 .000000 .0000 ! 44 OK .000
-17.97 .0682950
.130241 .000010 1000.000000 ' RECR 1948 ' 2 1948 0 .000000 .0000 ! 45 OK .000
-15.57 .0804081
.138544 .000010 1000.000000 ' RECR 1949 ' 2 1949 0 .000000 .0000 ! 46 OK .000
-13.68 .0986575
.146323 .000010 1000.000000 ' RECR 1950 ' 2 1950 0 .000000 .0000 ! 47 OK .000
-12.53 .1149593
.151967 .000010 1000.000000 ' RECR 1951 ' 2 1951 0 .000000 .0000 ! 48 OK .000
-12.15 .1289720
.151368 .000010 1000.000000 ' RECR 1952 ' 2 1952 0 .000000 .0000 ! 49 OK .000
-13.03 .1300624
.153277 .000010 1000.000000 ' RECR 1953 ' 2 1953 0 .000000 .0000 ! 50 OK .000
-13.72 .1376645
.159185 .000010 1000.000000 ' RECR 1954 ' 2 1954 0 .000000 .0000 ! 51 OK .000
-14.19 .1471341
.164010 .000010 1000.000000 ' RECR 1955 ' 2 1955 0 .000000 .0000 ! 52 OK .000
-14.89 .1624994
.160454 .000010 1000.000000 ' RECR 1956 ' 2 1956 0 .000000 .0000 ! 53 OK .000
-17.30 .1438551
.147861 .000010 1000.000000 ' RECR 1957 ' 2 1957 0 .000000 .0000 ! 54 OK .000
-21.13 .1134823
.139406 .000010 1000.000000 ' RECR 1958 ' 2 1958 0 .000000 .0000 ! 55 OK .000
-24.91 .0953660
.129684 .000010 1000.000000 ' RECR 1959 ' 2 1959 0 .000000 .0000 ! 56 OK .000
-29.29 .0827939
1.612239 .000010 1000.000000 ' RECR 1960 ' 2 1960 0 .000000 .0000 ! 57 OK -.001
-18.21 .3101900
.123475 .000010 1000.000000 ' RECR 1961 ' 2 1961 0 .000000 .0000 ! 58 OK .000

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APPENDIX 4: The data file for the Review Panel baseline Sheephead model in Synthesis
 "sheephead data file for 2004 assessment, assembled by Meisha Key & Suzanne Alonzo"

		hkline	trap	setnet	recrea
55.47	1				
1947	1	87.77	0	0	21.03
1948	1	45.46	0	0	27.91
1949	1	28.81	0	0	24.97
1950	1	30.03	0	0	23.09
1951	1	27.86	0	0	33.01
1952	1	16.43	0	0	26.65
1953	1	16.07	0	0	28.05
1954	1	13.24	0	0	34.77
1955	1	5.97	0	0	26.64
1956	1	2.98	0	0	27.75
1957	1	5	0	0	28.26
1958	1	5.16	0	0	33.14
1959	1	4.64	0	0	31.56
1960	1	2.15	0	0	22.5
1961	1	5.72	0	0	28.43
1962	1	9.22	0	0	25.65
1963	1	12.71	0	0	33.66
1964	1	8.13	0	0	47.21
1965	1	5.51	0	0	71.19
1966	1	7.25	0	0	89.49
1967	1	8.9	0	0	72.85
1968	1	5.78	0	0	57.32
1969	1	6.03	0	0	84.09
1970	1	1.73	0	0	67.65
1971	1	4.02	0	0	65.77
1972	1	3.21	0	0	58.08
1973	1	1.39	0	0	78.6
1974	1	1.69	0	0	52.96
1975	1	2.74	0	0	53.15
1976	1	3.78	0	0	57.08
1977	1	2.91	0	0	49.94
1978	1	0.94	0.49	3.63	59.48
1979	1	0.23	0.45	3.32	55.58
1980	1	0.85	1.08	2.2	143.57
1981	1	0.36	0.36	5.13	106.97
1982	1	0.44	0.82	4.08	92.03
1983	1	0.88	0.34	4.5	155.35
1984	1	1.96	0.28	9.15	131.2
1985	1	0.17	0.08	12.67	200.2
1986	1	0.39	0	12.88	223.3
1987	1	2.76	0	12.16	108.09
1988	1	2.84	0	10.47	178.84
1989	1	7.84	0	7.25	64.64
1990	1	49.6	0	6.54	60
1991	1	80.43	0	6.66	73.63
1992	1	111.2	0	6.14	45.5

NEW VERSION OF THE DATA FILE FOR THE PANEL
 SAME AS SPBASE.D13 EXCEPT LENGTH COMPOSITION
 ARE NOT BINNED ABOVE 50CM

1993	1	127.11	11.88	4.33	78.24				
1994	1	27.06	89.92	0.72	121.12				
1995	1	26.4	88.2	0.47	54.52				
1996	1	20.89	92.83	0.68	81.22				
1997	1	22.02	115.69	1.28	59.81				
1998	1	24.79	93.32	0.94	76.51				
1999	1	11.24	46.68	0.9	84.94				
2000	1	15.16	62.31	1.21	100.09				
2001	1	10.96	55.78	1.39	58.85				
2002	1	10.34	43.71	0.66	60.26				
2003	1	10.87	36.98	0.15	68.51				
-1	1	1	1	1	1	1			
-1	1	1	1				OF		
1947	1	8	5	0.036178903	0.4		OF	CATCH	DATA
1948	1	8	5	0.042331585	0.4			EFFORT	AND
1949	1	8	5	0.032857006	0.4			CPUE	DATA
1950	1	8	5	0.026239105	0.4				
1951	1	8	5	0.036656857	0.4				
1952	1	8	5	0.028024765	0.4				
1953	1	8	5	0.034549713	0.4				
1954	1	8	5	0.040397227	0.4				
1955	1	8	5	0.028415067	0.4				
1956	1	8	5	0.028273841	0.4				
1957	1	8	5	0.028171772	0.4				
1958	1	8	5	0.035174085	0.4				
1959	1	8	5	0.030774256	0.4				
1960	1	8	5	0.022355231	0.4				
1961	1	8	5	0.030677383	0.4				
1960	1	8	6	0.018103586	0.4				
1961	1	8	6	0.025609682	0.4				
1962	1	8	6	0.022635962	0.4				
1963	1	8	6	0.028675825	0.4				
1964	1	8	6	0.038568111	0.4				
1965	1	8	6	0.060530182	0.4				
1966	1	8	6	0.061805134	0.4				
1967	1	8	6	0.054705667	0.4				
1968	1	8	6	0.038927611	0.4				
1969	1	8	6	0.061815297	0.4				
1970	1	8	6	0.045188114	0.4				
1971	1	8	6	0.052600786	0.4				
1972	1	8	6	0.042316728	0.4				
1973	1	8	6	0.052532667	0.4				
1974	1	8	6	0.037546657	0.4				
1975	1	8	6	0.040767219	0.4				
1976	1	8	6	0.044756237	0.4				
1977	1	8	6	0.039791441	0.4				
1978	1	8	6	0.046977309	0.4				
1979	1	8	6	0.040688144	0.4				
1980	1	8	6	0.045104848	0.4				
1981	1	8	6	0.055954773	0.4				

1980	1	8	7	1. 732179064	0. 2
1981	1	8	7	1. 971613638	0. 2
1982	1	8	7	1. 774373126	0. 2
1983	1	8	7	3. 281535519	0. 2
1984	1	8	7	2. 557200197	0. 2
1985	1	8	7	1. 931451602	0. 2
1986	1	8	7	3. 111646369	0. 2
1987	1	8	7	1. 772070442	0. 2
1988	1	8	7	2. 817807005	0. 2
1989	1	8	7	2. 168732715	0. 2
1990	1	8	7	2. 279456015	0. 2
1991	1	8	7	2. 440362891	0. 2
1992	1	8	7	1. 547237147	0. 2
1993	1	8	7	1. 890015687	0. 2
1994	1	8	7	1. 255741401	0. 2
1995	1	8	7	1. 280379067	0. 2
1996	1	8	7	1. 223139248	0. 2
1997	1	8	7	1. 081495203	0. 2
1998	1	8	7	0. 71177501	0. 2
1999	1	8	7	0. 860862578	0. 2
2000	1	8	7	1. 138076258	0. 2
2001	1	8	7	1. 45894012	0. 2
2002	1	8	7	0. 911182492	0. 2
2003	1	8	7	0. 634184694	0. 2
1951	1	8	8	-1 1. 1	
1952	1	8	8	-1 1. 1	
1953	1	8	8	-1 1. 1	
1954	1	8	8	-1 1. 1	
1955	1	8	8	-1 1. 1	
1956	1	8	8	-1 1. 1	
1957	1	8	8	-1 1. 1	
1958	1	8	8	-1 1. 1	
1959	1	8	8	-1 1. 1	
1960	1	8	8	-1 1. 1	
1961	1	8	8	0. 02997 1. 1	
1962	1	8	8	0. 05363 1. 1	
1963	1	8	8	0. 12863 1. 1	
1964	1	8	8	0. 01345 1. 1	
1965	1	8	8	0. 12768 1. 1	
1966	1	8	8	0. 073 1. 1	
1967	1	8	8	0. 07004 1. 1	
1968	1	8	8	0. 005 1. 1	
1969	1	8	8	0. 01733 1. 1	
1970	1	8	8	-1 1. 1	
1971	1	8	8	-1 1. 1	
1972	1	8	8	0. 005 1. 1	
1973	1	8	8	-1 1. 1	
1974	1	8	8	-1 1. 1	

1975	1	8	8	0.02788	1.1
1976	1	8	8	-1	1.1
1977	1	8	8	-1	1.1
1978	1	8	8	0.08477	1.1
1979	1	8	8	-1	1.1
1980	1	8	8	-1	1.1
1981	1	8	8	0.27208	1.1
1982	1	8	8	-1	1.1
1983	1	8	8	-1	1.1
1984	1	8	8	0.37014	1.1
1985	1	8	8	0.17095	1.1
1986	1	8	8	0.005	1.1
1987	1	8	8	0.005	1.1
1988	1	8	8	0.04798	1.1
1989	1	8	8	0.09385	1.1
1990	1	8	8	0.10783	1.1
1991	1	8	8	0.09826	1.1
1992	1	8	8	0.02285	1.1
1993	1	8	8	0.03417	1.1
1994	1	8	8	0.005	1.1
1995	1	8	8	0.16048	1.1
1996	1	8	8	0.00941	1.1
1997	1	8	8	0.01878	1.1
1998	1	8	8	0.12147	1.1
1999	1	8	8	0.005	1.1
2000	1	8	8	0.06988	1.1
2001	1	8	8	0.005	1.1
2002	1	8	8	0.005	1.1
2003	1	8	8	-1	1.1
-1	1	1	1	1	1
-1	-1	(no bins defined for perfect ages)			
-1	-1	(no bins for imprecise ages)			

OF

SURVEY

ABUNDANCE

DATA

-1	-1	(no bins defined for biased ages)												
30	30	(30 2-cm length bins [18-50 cm])												
18	20	22	24	26	28	30	34	36	38	40	42	44	46	48
50	52	54	56	58	60	62	64	66	68	70	72	74	78	
83.86														
25.2	-1.06	"length@50%mature, slope (Warner 1975) (could use Cowen 1990 for other estimates)"												
0.000026935	2.857	both sexes length-weight (alpha & beta) from deMartini et al. 1994												
129	0	eggs/kg on weight (intercept & slope) from deMartini et al. 1994 (could use Warner 1975 instead)												
0.000026935	2.857	both sexes length-weight (alpha & beta) from deMartini et al. 1994												
BEGINNING OF SIZE AND AGE COMPOSITION														
1975	1	4	4	1	79	1	30	30	0					
0	0	0.026785714	0	0.044642857	0.044642857	0.125	0.116071429	0.0625						
0.071428571		0.098214286	0.080357143	0.071428571	0.035714286	0.035714286	0.008928571							
0.017857143		0.008928571	0.008928571	0	0	0	0.008928571	0	0	0	0	0	0	0
0	0													
1976	1	4	4	1	186	1	30	30	0					
0	0.003773585	0.003773585	0.003773585	0.011320755	0.011320755	0.056603774								
0.113207547		0.150943396	0.124528302	0.079245283	0.098113208	0.067924528	0.041509434							
0.037735849		0.041509434	0.018867925	0.018867925	0.01509434	0.003773585	0.011320755							0
0	0	0	0	0	0									
1977	1	4	4	1	431	1	30	30	0					
0.003257329		0.003257329	0.008143322	0.03257329	0.076547231	0.105863192	0.118892508							
0.117263844		0.091205212	0.063517915	0.048859935	0.053745928	0.024429967	0.029315961							
0.022801303		0.016286645	0.013029316	0.013029316	0.011400651	0.001628664	0.004885993							
0.001628664		0.001628664	0	0.003257329	0	0.001628664	0.003257329	0						
1978	1	4	4	1	486	1	30	30	0					
0.00433526		0.00433526	0.01300578	0.033236994	0.050578035	0.083815029	0.105491329							
0.115606936		0.086705202	0.067919075	0.079479769	0.053468208	0.041907514	0.041907514							
0.023121387		0.01300578	0.020231214	0.007225434	0.01734104	0.00433526	0.010115607							
0.005780347		0.002890173	0	0.002890173	0.001445087	0.001445087	0	0						
1980	1	4	4	1	44	1	30	30	0					

0	0	0	0.015873016	0.047619048	0.063492063	0.047619048	0.079365079				
0.095238095	0.047619048	0.031746032	0.063492063	0.063492063	0.047619048	0.031746032	0.047619048	0.031746032			
0.063492063	0.047619048	0.047619048	0.047619048	0.047619048	0.031746032	0.047619048	0	0			
0.015873016	0	0	0.015873016	0	0						
1981	1	4	4	1	58	1	30	30	0		
0	0.012195122	0.036585366	0.024390244	0.06097561	0.048780488	0.073170732	0.12195122				
0.073170732	0.048780488	0.036585366	0.048780488	0.024390244	0.073170732	0	0.06097561				
0.036585366	0.048780488	0	0.024390244	0.024390244	0	0	0	0	0	0	0
0	0										
1982	1	4	4	1	27	1	30	30	0		
0	0	0	0	0.102564103	0.179487179	0.102564103	0.102564103	0.128205128			
0.153846154	0.025641026	0	0	0	0	0	0	0	0	0	0
0	0.025641026	0	0	0	0	0	0				
1983	1	4	4	1	273	1	30	30	0		
0	0.007712082	0.007712082	0.061696658	0.084832905	0.143958869	0.110539846					
0.092544987	0.095115681	0.077120823	0.046272494	0.041131105	0.025706941	0.023136247					
0.015424165	0.002570694	0.005141388	0.002570694	0.002570694	0	0.002570694					
0.002570694	0	0	0.002570694	0	0	0					
1984	1	4	4	1	283	1	30	30	0		
0.00248139	0.00248139	0.022332506	0.049627792	0.104218362	0.111662531	0.126550868					
0.121588089	0.081885856	0.101736973	0.039702233	0.024813896	0.024813896	0.022332506					
0.012406948	0	0.014888337	0	0.004962779	0.004962779	0.00248139	0	0.00248139			
0	0	0	0	0	0						
1985	1	4	4	1	381	1	30	30	0		
0	0	0.012915129	0.022140221	0.081180812	0.125461255	0.116236162					
0.10701107	0.081180812	0.066420664	0.049815498	0.044280443	0.014760148	0.009225092					
0.009225092	0.003690037	0.001845018	0.003690037	0.003690037	0.001845018	0					
0.001845018	0.001845018	0	0	0	0.001845018	0					
1986	1	4	4	1	534	1	30	30	0		
0	0.005256242	0.017082786	0.031537451	0.061760841	0.093298292	0.11695138					
0.120893561	0.103810775	0.077529566	0.063074901	0.051248357	0.032851511	0.018396846					
0.024967148	0.019710907	0.011826544	0.006570302	0.003942181	0.005256242	0.002628121					0
0	0.00131406	0.00131406	0	0	0.002628121						
1987	1	4	4	1	478	1	30	30	0		
0	0.005882353	0.013235294	0.030882353	0.069117647	0.1	0.111764706	0.102941176				
0.092647059	0.089705882	0.064705882	0.061764706	0.039705882	0.035294118	0.030882353					
0.027941176	0.013235294	0.013235294	0.001470588	0.005882353	0.004411765	0.004411765					
0.002941176	0.001470588	0	0	0	0						
1988	1	4	4	1	491	1	30	30	0		
0	0	0.00286123	0.012875536	0.04148784	0.072961373	0.072961373	0.080114449				
0.080114449	0.087267525	0.065808298	0.064377682	0.062947067	0.0472103	0.037195994					
0.038626609	0.030042918	0.028612303	0.015736767	0.021459227	0.014306152	0.004291845					

0.005722461 1989	0.005722461 4	0.00286123 1	0.00286123 272	0.00286123 1	0.00286123 30	0 30	0 0	0			
0 0.103359173 0.020671835 1993	0 0.098191214 0.015503876 1	0 0.02583979 0.074935401 0.005167959 4	0 0.025839793 0.074935401 0.005167959 5	0 0.067183463 0.049095607 0.018087855 1	0 0.108527132 0.03875969 0.002583979 30	0 0.103359173 0.033591731 0.005167959 30	0 0.098191214 0.018087855 0.002583979 0	0			0
0 0.083333333 1993	0 0.083333333 4	0 0.083333333 4	0 0.083333333 25	0 0.083333333 1	0 0.083333333 30	0 0.166666667 0	0 0.083333333 0	0 0.166666667 30	0		0
0 0.057142857 0.028571429 1994	0 0.057142857 0.028571429 4	0 0.028571429 0.057142857 4	0 0.085714286 0.114285714 0.057142857 32	0 0.057142857 0.057142857 1	0 0.142857143 0.028571429 0	0 0.057142857 0.028571429 0	0 0.085714286 0 0	0 0 0			0
0 0.066666667 0 1995	0 0.088888889 0.022222222 1	0 0.088888889 0.022222222 4	0 0.066666667 0.111111111 0.022222222 5	0 0.066666667 0.022222222 1	0 0.066666667 0.022222222 30	0 0.111111111 0.022222222 0	0 0.066666667 0.044444444 0	0 0.022222222 0			0
0 0.083333333 1995	0 0.083333333 4	0 0.083333333 4	0 0.083333333 29	0.5 0.083333333 1	0.083333333 0 30	0 0 30	0 0 0	0 0 0			0
0 0.048780488 0 1996	0 0.073170732 0.048780488 2	0 0.073170732 0.12195122 4	0 0.12195122 0.073170732 31	0 0.12195122 0.073170732 1	0 0.073170732 0.024390244 30	0 0.073170732 0.024390244 30	0 0.097560976 0	0 0 0			0
0 0.033333333 0 1996	0 0.066666667 0 1	0 0.1 0.066666667 4	0 0.133333333 0.133333333 5	0 0.133333333 0 1	0 0.233333333 0 30	0 0.066666667 0 30	0 0.133333333 0 0	0 0 0			0
0 0.037037037 0.148148148 1996	0 0.148148148 0.037037037 4	0 0.037037037 0 4	0 0.037037037 0 47	0 0.074074074 0 1	0 0.037037037 0 30	0 0.037037037 0 30	0 0.037037037 0.222222222 0	0 0.111111111 0.111111111 0			
0 0.059701493 0.029850746 0	0 0.089552239 0.014925373 0	0 0.029850746 0.014925373 0	0 0.104477612 0.074626866 0.014925373 0	0 0.074626866 0.014925373 0	0 0.074626866 0.014925373 0	0 0.23880597 0.029850746 0	0 0.059701493 0.029850746 0	0 0 0			0

2000	1	2	4	1	31	1	30	30	0				
0	0	0	0	0	0.219512195	0.170731707	0.12195122	0.048780488					
0.048780488	0.048780488	0	0	0	0.097560976	0.024390244	0	0.024390244	0	0			
0.048780488	0.024390244	0	0	0	0.024390244	0	0	0	0	0			
2000	1	1	4	1	5	1	30	30	0				
0	0	0	0.125	0	0	0	0	0	0	0	0.125	0	0
0.125	0.125	0.125	0.125	0.125	0	0.125	0	0	0	0	0	0	0
2000	1	4	4	1	183	1	30	30	0				
0	0.003846154	0.011538462	0.053846154	0.076923077	0.126923077	0.134615385							
0.096153846	0.111538462	0.069230769	0.065384615	0.030769231	0.034615385	0.026923077							
0.007692308	0.003846154	0.003846154	0.003846154	0	0	0							
0	0	0	0										
2001	1	3	4	1	26	1	30	30	0				
0	0	0	0	0.026315789	0.078947368	0.052631579	0.078947368	0					
0.052631579	0.078947368	0.026315789	0.078947368	0.026315789	0.078947368	0.184210526	0.026315789	0.052631579					
0.131578947	0.052631579	0.026315789	0.026315789	0	0	0	0	0.026315789	0				
0	0												
2001	1	2	4	1	31	1	30	30	0				
0	0	0	0	0	0	0.101754386	0.133333333	0.122807018	0.080701754				
0.077192982	0.077192982	0.049122807	0.052631579	0.021052632	0.024561404	0.024561404							
0.024561404	0.028070175	0.010526316	0.003508772	0.007017544	0	0							
0	0												
2001	1	1	4	1	5	1	30	30	0				
0	0	0	0	0	0	0	0	0	0	0	0.066666667		
0.066666667	0	0	0.266666667	0.066666667	0.066666667	0.066666667	0.066666667	0.066666667	0.066666667	0.133333333			
0.066666667	0	0.066666667	0.066666667	0.066666667	0.066666667	0	0	0	0				
2001	1	4	4	1	101	1	30	30	0				
0	0	0	0.006944444	0.041666667	0.125	0.215277778	0.118055556	0.076388889					
0.076388889	0.0625	0.069444444	0.006944444	0.027777778	0.006944444	0.006944444	0.006944444	0.006944444					
0.006944444	0	0.006944444	0	0	0	0	0	0					
2002	1	2	4	1	31	1	30	30	0				
0	0	0	0	0.005847953	0.052631579	0.105263158	0.099415205						
0.122807018	0.040935673	0.064327485	0.087719298	0.081871345	0.076023392	0.070175439							
0.01754386	0.01754386	0.01754386	0.023391813	0	0	0	0	0					
0	0												
2002	1	4	4	1	129	1	30	30	0				
0	0	0	0.010869565	0.032608696	0.070652174	0.184782609	0.152173913						
0.119565217	0.086956522	0.048913043	0.032608696	0.032608696	0.032608696	0.02173913	0.016304348						
0.005434783	0	0.010869565	0	0.010869565	0	0	0						
0.005434783	0	0	0	0	0	0	0						
2003	1	2	4	1	31	1	30	30	0				

