2011 petrale sole rebuilding analysis

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Summary

Based on the 2011 stock assessment, this rebuilding analysis compares the results of applying a suite of potential future management actions to the U.S. petrale sole stock. The 2011 base case assessment results estimate that the petrale sole resource is at 18% of the unexploited equilibrium spawning biomass at the beginning of 2011. This is an increase from the 2009 petrale sole stock assessment, which estimated depletion in 2009 to be 11.6%. Based on the 2009 stock assessment, the 2010 coast-wide ACL was reduced to 1,200 mt to reflect the overfished status of the stock and the 2011 coast-wide OFL and ACL were set at 1,021 mt and 976 mt, respectively. The 2012 ACL is set at the current proposed level of 1,279 mt. The distributions of catches between each fishing fleet are those from the 2011 stock assessment. Beginning in 2011, various management options are considered ranging from zero fishing mortality to the largest removal that could occur without overfishing (OFL catches). In the absence of fishing mortality from 2013 forward, the petrale sole stock is projected to have a 75% probability of recovery to the rebuilding target (*SB25%*) by 2013, similar to the 2009 petrale sole rebuilding analysis. If the OFL catches were removed (in 2011 and 2012) the stock is not projected to reach the rebuilding target until 2014, which is earlier than the year estimated in the 2009 rebuilding analysis. The 25:5, *F30%*, control rule (the OFL since the stock is estimated over 25% depletion in 2013) produces an ACL of 2711 mt in 2013 and has a 75% probability of rebuilding by 2013 and a 100% probability of recovery by 2014. A range of alternate management approaches to recovery are presented. All of the rebuilding alternatives, except for the SPR=0.2 alternatives, suggest that the petrale sole stock will rebuild before the T_{TARGET} year of 2016 with 100% probability. Note that the SPR=0.2 option is not a viable management option but is presented for comparison as estimates of Fmsy for flatfish have been just over SPR=0.2. Assuming 2012 catch equal to the current 2012 ACL is projected to allow the petrale stock to increase in 2013. The projected stock increase is due to a large 2007 recruitment entering the spawning biomass as well as a slightly more optimistic estimate of stock status resulting from the influence of the standardized winter CPUE indices in the 2011 stock assessment.

Introduction

The 2009 coast-wide petrale sole stock assessment documented that the stock had declined below the overfished level, as defined by the control rule applied to petrale sole at that time (40:10 rule), during the early 1950s and had remained below this through 2010 (Haltuch and Hicks 2009). Given the relatively high productivity of flatfish stocks the PFMC implemented a new control rule for all council managed flatfish stocks (25:5 control rule) during 2009. This generalized flatfish proxy control rule resulted in an overfished declaration for petrale sole during 2009 and the first rebuilding plan for petrale sole was completed (Haltuch and Hicks 2009a). This is the second rebuilding analysis for petrale sole and was completed during August 2011 using version 3.12b running 1000 simulations.

2011 Assessment summary

As with the 2009 petrale sole stock assessment, the current 2011 model is implemented as a single-area model. The current assessment has been upgraded to the newest version of SS (3.21d). Substantive changes from the 2009 petrale sole stock assessment are detailed below. The 2009 model was split into two seasons, winter (Nov.-Feb.) and summer (Mar.-Oct.) due to the timing of the fisheries and the shift over time toward fishing in the winter on spawning aggregations. Hence, the fishing year defined within the model is offset by two months from the calendar year. Early SS models did not allow the specification of catches from different

fleets to take place at different times of the year so a seasonal model was implemented. More recent SS versions allow the timing of the catches from each fleet to be specified at the correct time. Therefore, the 2011 model is a 12-month model with removals from fishery catch assigned to the appropriate season, as defined above. In transitioning from the seasonal to the 12-month model, the STAT verified that the two model configurations give essentially the same results using the data available in 2009. The ageing-error analysis has been updated to reflect the inter-lab comparison between the CAP and the WDFW. This analysis was conducted using data from additional ageing of otoliths included in the bomb radiocarbon age-validation study, as well as new break-and-burn double-reads provided by the CAP aging lab. The aging analysis has also been improved through the incorporation of new triple-read age data.

Major choices in the structuring of this stock assessment model include a seasonal fleet structure for each state, splitting the triennial survey into an early and late time period, and estimating selectivity and retention curves for each fleet. The seasonal fleet structure is used due to higher winter catches in recent decades. The fisheries are divided into WA-Winter, WA-Summer, OR-Winter, OR-Summer, CA-Winter, and CA-Summer fisheries. The model includes catch, length- and age-frequency data from the trawl fleets described above as well as standardized winter CPUE indices from 1987-2009 developed for the 2011 stock assessment. Biological data are derived from both port and on-board observer sampling programs. The National Marine Fisheries Service (NMFS) triennial bottom trawl survey (1980, 1983, 1986, 1989, 1992, 1995, 1998, 2001, and 2004) and Northwest Fisheries Science Center (NWFSC) trawl survey (2003–2010) relative biomass indices and biological sampling provide fishery independent information on relative trend and demographics of the petrale sole stock.

Petrale sole were lightly exploited during the early 1900s but by the 1950s the fishery was well developed and showing clear signs of depletion and declines in catches and biomass. The rate of decline in spawning biomass accelerated through the 1930s–1960s reaching minimums generally around or below 10% of the unexploited levels during the 1980s and 1990s. The petrale sole spawning stock biomass is estimated to have increased from its lowest estimated levels during the early 1990s, peaking in 2005, in response to above average recruitment. However, this increasing trend has reversed during 2005-2010 and the stock has been declining, due to strong year classes having passed through the fishery. Since 2010 the total biomass of the stock has increased slightly as a large 2007 recruitment appears to be moving into the population. Note that these fish are not yet fully mature so this increase is not strongly reflected in the spawning biomass. The estimated base model relative depletion level in 2011 is 18% (~95% asymptotic interval: ±3.6%, ~ 75% interval based on the range of states of nature: 15.1-21.4%), corresponding to 4,720 mt (~95% asymptotic interval: ±493 mt, states of nature interval: 4,440-5,052 mt) of female spawning biomass in the base model. The base model indicates that the spawning biomass has been below 25% of the unfished level since 1956. Unfished spawning stock biomass was estimated to be 26,278 mt in the base case model. The target stock size ($SB_{25\%}$) is therefore 6,570 mt which gives a catch of 2,578 mt. The 2011 stock assessment produced slightly more optimistic estimate of stock status, in comparison to the 2009 stock assessment, due to the use of the standardized winter CPUE indices.

Two alternative states of nature were presented as a decision table (Table 1), with the relative probabilities of each state of nature, 25%, based on the value for female natural mortality. Landings in 2011–2012 in the decision table are 976 mt and 1160 mt for all cases. Selectivity and fleet allocations are projected based the average 2009-2010 values. The low female M (0.13) state of nature projects the spawning stock depletion to increase beyond the target stock size of 25% of the unfished spawning biomass in 2014, one year later than the base

case model. The high female M (0.19) state-of-nature forecasts the petrale sole stock to be above the 25% of unfished spawning biomass target in 2013.

Important changes in the 2011 assessment included:

1. An annual model with removal of catches at during the winter and summer seasons

2. A new inter-lab ageing-error analysis and use of triple read otolith data

3. Inclusion of standardized commercial winter CPUE analyses from 1987-2009 for each fleet

4. Inclusion of a new, wider, prior on M (O. Hamel pers. comm.)

Management performance under rebuilding

This is the second rebuilding plan for petrale sole. Management actions implemented under the first rebuilding plan, completed during 2009, reduced the 2010 coast-wide ACL to 1,200 mt to reflect the overfished status of the stock and the 2011 coast-wide OFL and ACL were set at 1,021 mt and 976 mt, respectively. Since 2010 the total biomass of the stock has increased slightly as a large 2007 recruitment appears to be moving into the population. Note that these fish are not yet fully mature so this increase is not strongly reflected in the spawning biomass. However as the 2007 year class matures the size of the stock should continue to increase. The estimated base model relative depletion level in 2011 is 18% (~95% asymptotic interval: ±3.6%, ~ 75% interval based on the range of states of nature: 15.1-21.4%).

Rebuilding calculations

This rebuilding analysis was conducted using software developed by A. Punt (version 3.12b, January 2010). The steps followed were:

1. Define how virgin biomass (*SB0*) will be calculated.

2. Define how future recruitment will be generated.

3. Define the fishery selectivity and allocation to be applied during rebuilding.

4. Decide how to include uncertainty in input parameters from the stock assessment in the rebuilding analysis.

5. Calculate rebuilding reference points from the most current assessment results

    a) Calculate the projected year in which the stock would rebuild with a 50% probability if all future fishing mortality was eliminated (TF=0).

    b) Calculate the projected year for a 50% probability of rebuilding from the year in which the stock was first declared overfished (TMIN).
    c) Calculate the mean generation time.
    d) Calculate the maximum allowable rebuilding time (TMAX).

6. Identification and analysis of alternative harvest strategies for rebuilding.

1. Definition of SB0

The equilibrium spawning biomass level (*SB0*) used in this rebuilding analysis is calculated via the stock-recruitment relationship in order to be consistent with assessment model results. This level is estimated to be 26,278 mt in the base case assessment model, which dictates that the rebuilding target ($SB_{25\%}$) is 6,570 mt (Table 2).

2. Generation of future recruitment

The parameters of the stock recruitment relationship, unexploited equilibrium recruitment, the natural log of *R0*, steepness, *h*, and the degree of recruitment variability, σr,, from the 2011 stock assessment are used to generate future recruitments in the rebuilding analysis. The base model values are 16,512, 0.86, and 0.4 for *R0*, *h*, and, σr, respectively. The values for the high state of nature are 22,791, 0.8, and 0.4 for *R0*, *h*, and, σr,, respectively. The values for the low state of nature are 11,838, 0.93, and 0.4 for *R0*, *h*, and, σr,, respectively. Projections in Stock Synthesis do not include recruitment variability while the rebuilding analysis does include recruitment variability.

3. Fishery selectivity and allocation

In order to project the effect of fishing on the petrale sole rebuilding trajectory, it is necessary to specify the fishery selectivity and relative allocation among fleets. This analysis produces projections that use the selectivity from 2010 and the average allocation from 2009-2010. This allocation choice was made to capture any changes in the fraction of the catch coming from each state due to changes in fishing opportunities during the last 2 years. This choice is consist with the assessment model results.

4. Inclusion of uncertainty

The calculation of T_{MIN} and the evaluation of alternative harvest strategies within the rebuilding software involve projecting the population ahead taking account of uncertainty about future recruitment. Model and parameter uncertainty are included in this rebuilding analysis by including the two alternative states of nature from the 2011 stock assessment, based on identifying low (0.13) and high values (0.19) for the value of female natural mortality. The base model is given 50% of the weight and each alternative state of nature is given 25% of the weight.

5. Calculate reference points

The 2011 ACL is set at 976 mt. The 2012 ACL is set at 1,160 mt based on the 25:5 flatfish control rule. The distributions of catches between each fishing fleet are set to the average from 2009-2010. Recovery in the absence of fishing (TF=0) was calculated by setting fishing mortality to zero in 2011 for all projections. The value for TF=0 is 2014. The value for TMIN, the median year for rebuilding to the target level in the absence of fishing since the first year catches can be set to zero (2011) is 2013. All of the rebuilding alternatives, except for the SPR=0.2 and SPR that produces 50% probability of recovery by TMID alternatives, suggest that the petrale sole stock will rebuild before the TTARGET year of 2016. This calculation reflects a period of below average recruitments during the 2000s and a strong 2007 recruitment moving into the spawning biomass. The estimated generation time is 14 years. In conjunction with TMIN, the mean generation time generally dictates the estimate of TMAX, unless the stock can rebuild within 10 years of TMIN. Petrale sole are able to rebuild to the target biomass within ten years, so TMAX is 2021. All reference points from the rebuilding analysis are summarized in Table 2.

6. Alternate rebuilding strategies

Assuming that a constant rate of harvest will be applied throughout a rebuilding period, the basis for rebuilding alternatives can be divided into two approaches: 1) strategies based on selection of a harvest rate (SPR rate), or 2) strategies based selection of a TTARGET (year for 50% probability of recovery). This rebuilding analysis presents 5 alternate strategies spread among the approaches based on the selection of a harvest rate. Alternatives 1-5 correspond to requests made in the PFMC terms of reference for rebuilding analysis. A sixth alternative that corresponds to a range of years between TMIN and TMAX that produce 50% probability of recovery given the control rule was also explored. Due to the short time frame in which the petrale sole stock can rebuild, specifying years for which the probability of recovery is 50% were redundant with the range of harvest rates evaluated. Therefore these runs are not included this final document.

Specifically, the alternatives are:

1) Apply the SPR:
    a. 0.20
    b. 0.30
    c. 0.40
    d. 0.50
    e. 0.60
2) Eliminate all harvest beginning in 2011 (F=0).
3) Apply the ACL and 25:5 control rule.
4) Apply the OFL.

Results

Summary results from the rebuilding alternatives are presented in Table 3. Detailed results are presented in Tables 4-6 and Figures 1-3. In the absence of any future fishing mortality, the petrale sole stock is projected to have a 25% probability of recovery to the rebuilding target (*SB25%*) by 2012 and a 75% probability of rebuilding by 2013. The stock is also projected to reach these levels in 2012 and 2013 if the OFL catches are removed (Table 3). These two scenarios bound the range of fishing mortality between none and the overfishing level. All other scenarios lie within this range. The more aggressive, SPR=0.2 catches, in comparison to the current 25:5 control rule, are not a viable management option but are presented in this rebuilding plan because it is analogous to the harvest policy that would be set using the species specific estimates of reference points from the stock assessment. However, all catch options recover the stock on or before 2016 with a 75% probability of recovery due to the strong 2007 recruitment maturing into the spawning biomass. If catches are set at using the 25:5 control rule in 2013 the fishery the OFL and ACL are the same, 2711 mt, because the stock is projected to recover with greater than 50% probability in 2013. Conversely, a less aggressive harvest policy, e.g. the SPR = 0.5 alternative, sets annual catches at 1265 mt in 2013 and 1432 mt in 2014.

Acknowledgements

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Tables

Table 1. Forecasts from SS3 using the 25-5 control rule for the base model and alternative states of nature given.

			State of nature					
			Female M=0.13		Base case Female M estimated = 0.16		Female M=0.19	
Relative probability			0.25		0.5		0.25	
Management decision	Year	Catch (mt)	Depletion	Spawning biomass (mt)	Depletion	Spawning biomass (mt)	Depletion	Spawning biomass (mt)
25-5 catches (= OFL here) from base case	2013	2,766	24.1%	7,085	28.0%	7,361	32.6%	7,689
	2014	2,831	25.7%	7,547	29.6%	7,791	34.1%	8,039
	2015	2,799	25.9%	7,614	29.7%	7,803	33.7%	7,942
	2016	2,725	25.5%	7,481	29.0%	7,614	32.4%	7,653
	2017	2,603	24.9%	7,304	28.2%	7,403	31.3%	7,372
	2018	2,653	24.4%	7,184	27.6%	7,248	30.6%	7,212
	2019	2,575	24.0%	7,048	27.3%	7,165	30.1%	7,095
	2020	2,565	23.7%	6,975	27.2%	7,135	30.0%	7,073
	2021	2,563	23.6%	6,922	27.1%	7,133	30.0%	7,083
	2022	2,564	23.4%	6,878	27.2%	7,141	30.1%	7,099

Table 2. Summary of rebuilding reference points.

Parameter	2009 rebuilding analysis	2011 rebuilding analysis
SB0	25,334	26,278
Rebuilding target (*SB25%*)	6,334	6,570
SB2009 or 2011	2,938	4,720
SPR2009 or 2011	0.10	0.46
Year rebuilding begins	2011	2011
Present year	2009	2011
TMIN	2013-2014[a]	2013
Mean generation time	16	14
TMAX	2021	2021
TF=0 (beginning in 2011)	2013-2014 [a]	2013
PMAX	**NA**	**NA**
TTARGET	2016	2016
SPRTARGET	**NA**	**NA**

[a] A range of years are presented because the 2009 rebuilding analysis evaluated a range of alternative catch options for 2010, prior to the stock being declared overfished in 2011.

Table 3. Results of rebuilding alternatives based on Council requests. ACLs for 2013 and 2014 were obtained by a stepwise discounting the 2013 and 2014 OFL catches obtained using the 25-5 control rule catches and discounting them by the Pstar buffer (4.4%).

	Run #							
	SPR= 0.2	SPR= 0.3	SPR= 0.4	SPR= 0.5	SPR= 0.6	F=0	25-5 rule	OFL Rule
2013 AC (mt)	4286	2711	1831	1265	867	0	2711	2711
2013 OFL (mt)	2711	2711	2711	2711	2711	2711	2711	2711
2014 AC (mt)	3888	2774	1994	1432	1008	0	2774	2774
2014 OFL (mt)	2463	2774	2948	3061	3141	3315	2774	2774
50% prob.	2013	2013	2013	2013	2013	2013	2013	2013
Recovery by:								
SPR_{TARGET}	0.20	0.30	0.40	0.50	0.60	1.00	0.30	0.30
Probability of recovery (%) by reference points:								
$T_{F=0}$ from 2011 (2013)	75	75	75	75	75	75	75	75
T_{MIN} (2013)	75	75	75	75	75	75	75	75
T_{TARGET}(2016)	75	100	100	100	100	100	100	100
T_{MAX} (2021)	75	100	100	100	100	100	100	100

Table 4. Probability of recovery for rebuilding alternatives.

	SPR= 0.2	SPR= 0.3	SPR= 0.4	SPR= 0.5	SPR= 0.6	F=0	25-5 rule	OFL Rule
2011	0	0	0	0	0	0	0	0
2012	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
2013	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
2014	0.75	1	1	1	1	1	1	1
2015	0.75	1	1	1	1	1	1	1
2016	0.75	1	1	1	1	1	1	1
2017	0.75	1	1	1	1	1	1	1
2018	0.75	1	1	1	1	1	1	1
2019	0.751	1	1	1	1	1	1	1
2020	0.751	1	1	1	1	1	1	1
2021	0.754	1	1	1	1	1	1	1
2022	0.756	1	1	1	1	1	1	1
2023	0.759	1	1	1	1	1	1	1
2024	0.759	1	1	1	1	1	1	1
2025	0.759	1	1	1	1	1	1	1
2026	0.761	1	1	1	1	1	1	1
2027	0.762	1	1	1	1	1	1	1
2028	0.763	1	1	1	1	1	1	1
2029	0.766	1	1	1	1	1	1	1
2030	0.767	1	1	1	1	1	1	1
2031	0.769	1	1	1	1	1	1	1
2032	0.772	1	1	1	1	1	1	1
2033	0.772	1	1	1	1	1	1	1
2034	0.775	1	1	1	1	1	1	1
2035	0.775	1	1	1	1	1	1	1

Table 5. Median spawning biomass (mt) for rebuilding alternatives.

	SPR= 0.2	SPR= 0.3	SPR= 0.4	SPR= 0.5	SPR= 0.6	F=0	25-5 rule	OFL Rule
2011	4720	4720	4720	4720	4720	4720	4720	4720
2012	5938	5938	5938	5938	5938	5938	5938	5938
2013	7353	7353	7353	7353	7353	7353	7353	7353
2014	6948	7777	8241	8540	8750	9208	7777	7777
2015	6290	7783	8703	9329	9784	10820	7783	7783
2016	5654	7594	8905	9845	10553	12240	7594	7594
2017	5180	7370	8983	10201	11151	13522	7370	7370
2018	4911	7212	9048	10499	11670	14739	7212	7212
2019	4820	7174	9157	10798	12165	15847	7174	7174
2020	4781	7152	9259	11057	12583	16873	7152	7152
2021	4727	7159	9360	11291	12964	17829	7159	7159
2022	4658	7133	9420	11462	13288	18705	7133	7133
2023	4577	7083	9447	11595	13532	19471	7083	7083
2024	4532	7100	9514	11740	13766	20147	7100	7100
2025	4493	7089	9541	11835	13966	20808	7089	7089
2026	4456	7086	9618	11966	14191	21440	7086	7086
2027	4446	7108	9672	12090	14371	22045	7108	7108
2028	4423	7072	9670	12161	14504	22489	7072	7072
2029	4459	7125	9703	12225	14632	23001	7125	7125
2030	4423	7148	9797	12324	14797	23453	7148	7148
2031	4366	7083	9731	12324	14800	23697	7083	7083
2032	4353	7059	9692	12272	14830	23985	7059	7059
2033	4339	7051	9726	12303	14860	24208	7051	7051
2034	4341	7056	9714	12364	14909	24366	7056	7056
2035	4305	7047	9712	12367	14985	24562	7047	7047

Table 6. Median catches (mt) for rebuilding alternatives.

	SPR= 0.2	SPR= 0.3	SPR= 0.4	SPR= 0.5	SPR= 0.6	F=0	25-5 rule	OFL Rule
2011	976	976	976	976	976	0	976	976
2012	1160	1160	1160	1160	1160	0	1160	1160
2013	4286	2711	1831	1265	867	0	2711	2711
2014	3888	2774	1994	1432	1007	0	2774	2774
2015	3471	2738	2081	1548	1116	0	2738	2738
2016	3127	2660	2118	1624	1197	0	2660	2660
2017	2880	2585	2133	1678	1260	0	2585	2585
2018	2751	2525	2139	1720	1314	0	2525	2525
2019	2687	2486	2149	1752	1358	0	2486	2486
2020	2651	2476	2163	1787	1396	0	2476	2476
2021	2630	2473	2178	1813	1430	0	2473	2473
2022	2597	2473	2192	1836	1458	0	2473	2473
2023	2575	2467	2204	1863	1484	0	2467	2467
2024	2544	2478	2218	1889	1515	0	2478	2478
2025	2530	2490	2245	1913	1541	0	2490	2490
2026	2512	2476	2249	1932	1561	0	2476	2476
2027	2498	2464	2247	1936	1575	0	2464	2464
2028	2499	2471	2261	1949	1594	0	2471	2471
2029	2483	2474	2270	1961	1601	0	2474	2474
2030	2473	2466	2268	1972	1613	0	2466	2466
2031	2456	2453	2262	1975	1620	0	2453	2453
2032	2443	2459	2263	1969	1622	0	2459	2459
2033	2446	2449	2273	1978	1625	0	2449	2449
2034	2434	2439	2257	1976	1631	0	2439	2439
2035	2438	2457	2259	1971	1627	0	2457	2457

Figures

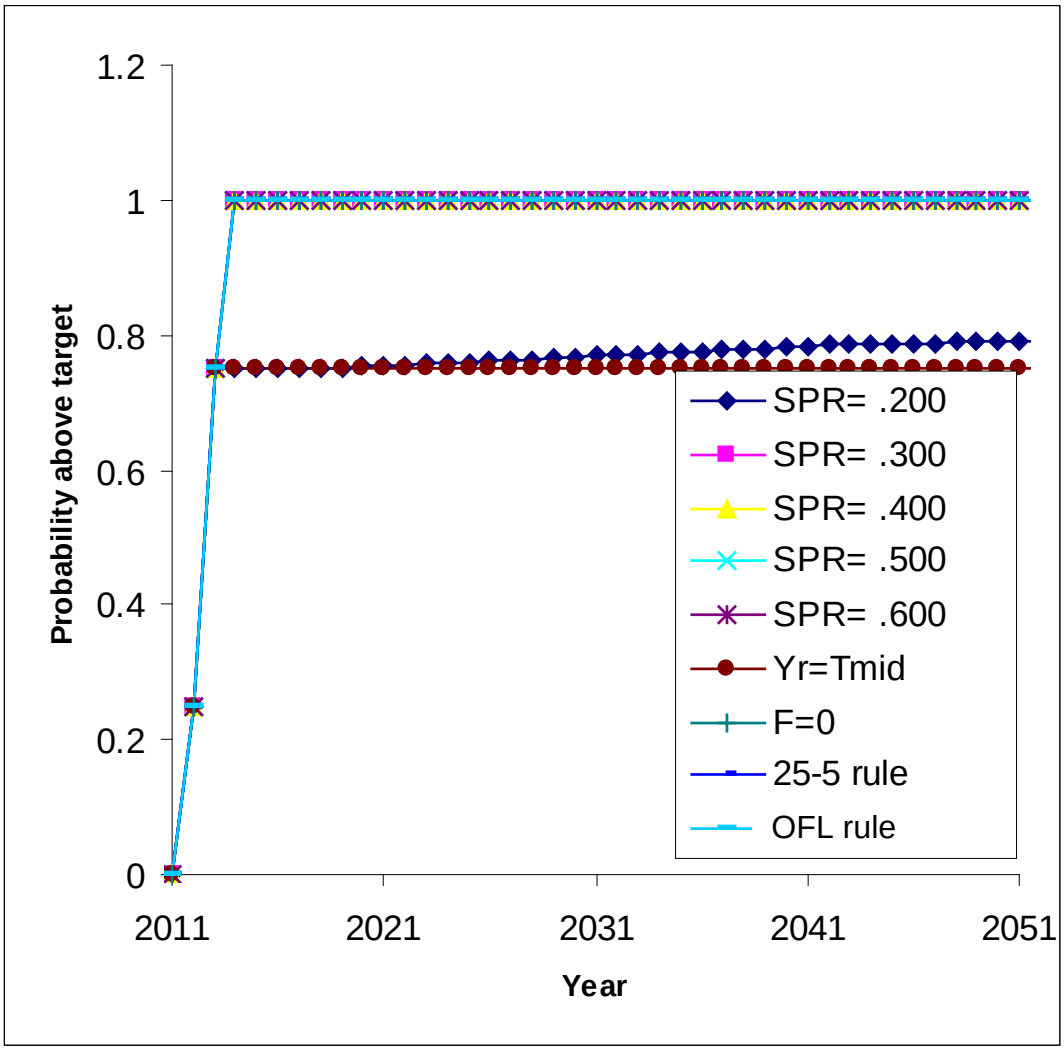

Figure 1. Probability of recovery for rebuilding alternatives.

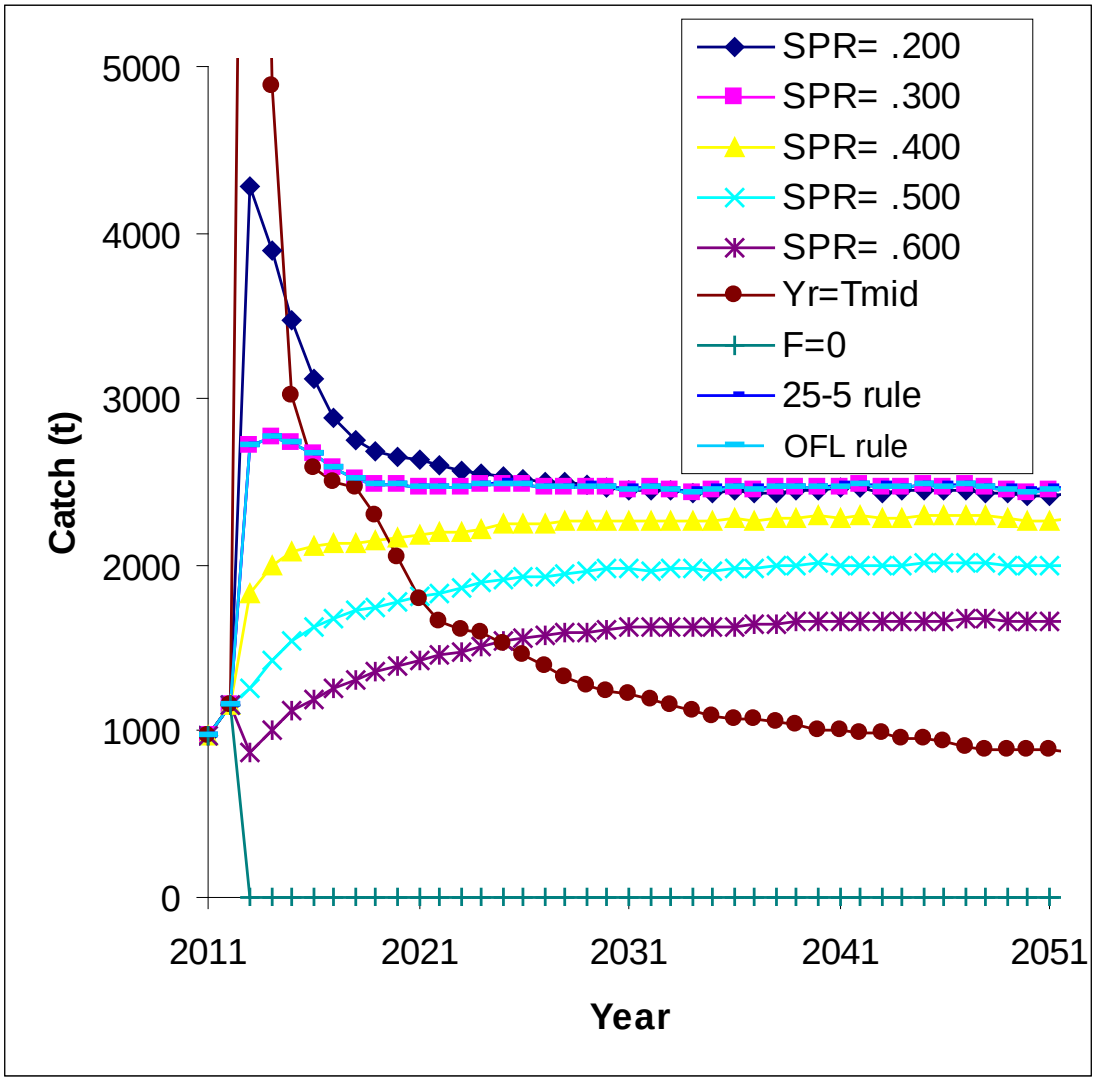

Figure 2. Projected median catch (mt) for rebuilding alternatives.

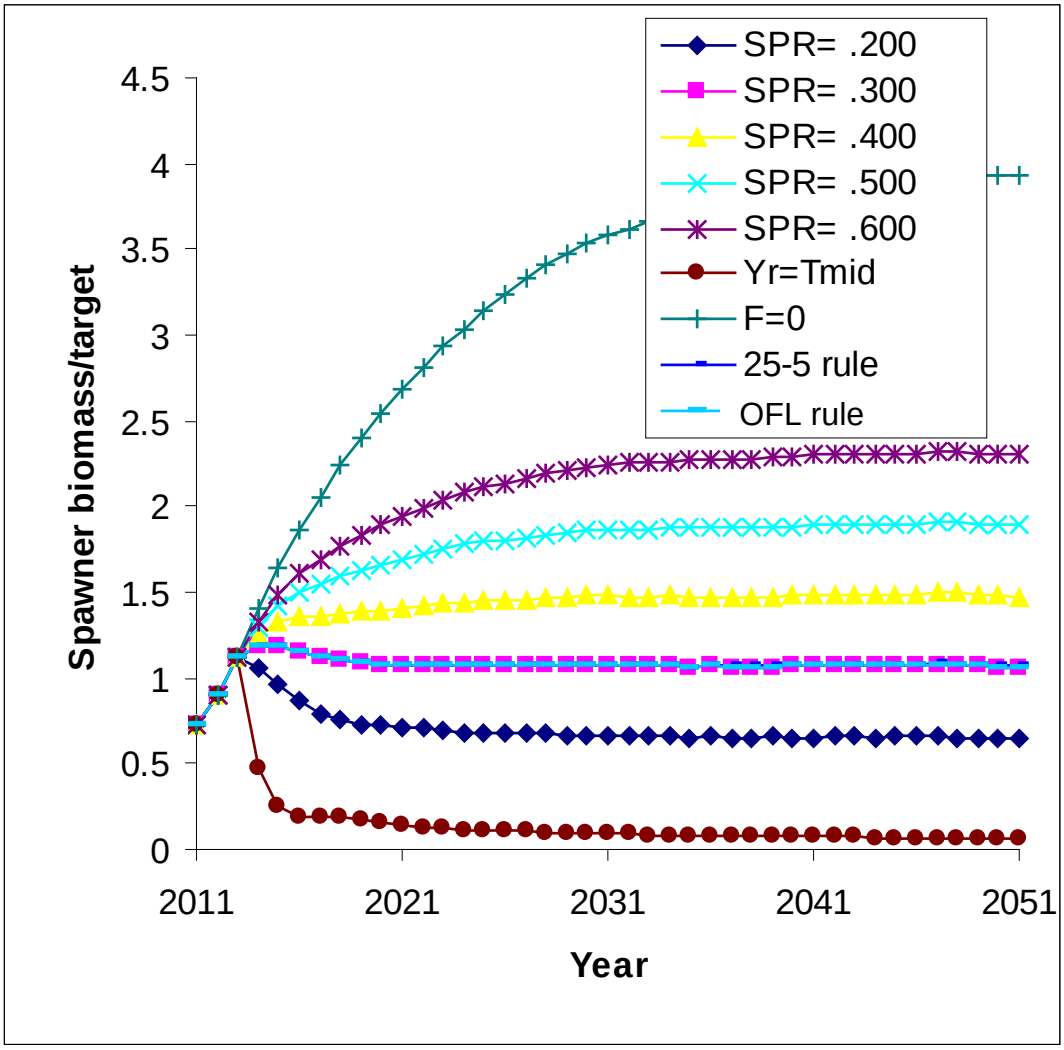

Figure 3. Projected median spawning biomass (mt) for rebuilding alternatives.

Appendix A. Basic input file for rebuilding analyses.

Rebuild.dat for 2011 petrale rebuiding

Petrale.SSv3.21d

Number of sexes

2

Age range to consider (minimum age; maximum age)

0 40

Number of fleets to consider

6

First year of projection (Yinit)

2011

First year the OY could have been zero under a rebuilding plan (Ydecl)

2011

Number of simulations

1000

Maximum number of years

200

Conduct projections for multiple starting values (0=No;else yes)

1

Number of parameter vectors

4

Is the maximum age a plus-group (1=Yes;2=No)

1

Generate future recruitments using historical recruitments (1), historical recruits/spawner (2), or a stock-recruitment (3)

3

Constant fishing mortality (1) or constant Catch (2) projections

1

Fishing mortality based on SPR (1) or actual rate (2)

1

Pre-specify the year of recovery (or -1) to ignore

-1

Fecundity-at-age

A blank comment line - needed for the program to run

0 0 0 0.000404698 0.0142813 0.110109 0.323594 0.568753 0.787322 0.978911 1.1519 1.30951 1.45221 1.58006 1.69342 1.79303 1.87988 1.95515 2.02003 2.07573 2.12337 2.16399 2.19856 2.22791 2.25278 2.27383 2.29163 2.30666 2.31935 2.33004 2.33906 2.34665 2.35305 2.35843 2.36296 2.36677 2.36998 2.37267 2.37494 2.37684 2.3794 #female fecundity; weighted by N in year Y_init across morphs and areas

wgt and sel by gender/fleet

#wt and selex for gender,fleet: 1 1

0.0165014 0.0615514 0.124015 0.230992 0.375638 0.539983 0.713506 0.887565 1.05579 1.214 1.35991 1.49264 1.61219 1.71903 1.81382 1.89738 1.97054 2.03424 2.08941 2.13695 2.17777 2.21268 2.24247 2.26782 2.28934 2.30759 2.32303 2.33609 2.34712 2.35643 2.36428 2.37089 2.37647 2.38116 2.38511 2.38843 2.39123 2.39358 2.39556 2.39723 2.39945 #bodywt for gender,fleet: 1 / 1

0 2.46475e-005 0.000267763 0.00278136 0.0166333 0.0579419 0.138145 0.252507 0.383229 0.51083 0.622187 0.712081 0.780978 0.832126 0.869472 0.896593 0.916333 0.930807 0.941529 0.949565 0.955663 0.960345 0.963981 0.966833 0.969093 0.970897 0.972348 0.973524 0.97448 0.975263 0.975905 0.976435 0.976873 0.977236 0.977537 0.977788 0.977997 0.978172 0.978317 0.978439 0.978601 #selex for gender,fleet: 1 / 1

#wt and selex for gender,fleet: 1 2

0.0374549 0.0546126 0.0935754 0.180345 0.3106 0.46605 0.63511 0.808165 0.977947 1.13959 1.29031 1.42878 1.5545 1.66745 1.76795 1.85658 1.93413 2.00152 2.05976 2.10984 2.15274 2.18936 2.22054 2.24704 2.2695 2.28853 2.30461 2.3182 2.32967 2.33935 2.3475 2.35437 2.36016 2.36502 2.36912 2.37257 2.37547 2.37791 2.37996 2.38169 2.38399 #bodywt for gender,fleet: 1 / 2

0 0.00113364 0.00800745 0.0374882 0.111084 0.230855 0.378656 0.528148 0.659047 0.762174 0.837401 0.889422 0.924231 0.947159 0.962232 0.972218 0.978931 0.983526 0.986735 0.989023 0.990686 0.991917 0.992843 0.993552 0.994101 0.994531 0.994871 0.995143 0.995362 0.99554 0.995685 0.995803 0.9959 0.995981 0.996047 0.996102 0.996148 0.996186 0.996218 0.996244 0.996279 #selex for gender,fleet: 1 / 2

#wt and selex for gender,fleet: 1 3

0.00729218 0.0214877 0.117408 0.316548 0.450389 0.583696 0.717019 0.850322 0.986007 1.12501 1.2647 1.40041 1.52779 1.6441 1.74819 1.84003 1.92022 1.98973 2.04961 2.10098 2.14488 2.18229 2.21409 2.24108 2.26394 2.28328 2.29962 2.31342 2.32506 2.33487 2.34314 2.3501 2.35597 2.3609 2.36505 2.36855 2.37149 2.37396 2.37603 2.37778 2.38012 #bodywt for gender,fleet: 1 / 3

0 3.43954e-005 7.66638e-005 0.00150953 0.0217232 0.116884 0.320272 0.565608 0.762718 0.883058 0.945064 0.974278 0.987609 0.993735 0.996638 0.998078 0.998828 0.999241 0.99948 0.999625 0.999717 0.999778 0.999819 0.999848 0.999869 0.999885 0.999896 0.999905 0.999912 0.999918 0.999922 0.999926 0.999928

0.999931 0.999933 0.999934 0.999935 0.999936 0.999937 0.999938 0.999939 #selex for gender,fleet: 1 / 3

#wt and selex for gender,fleet: 1 4

0.00947379 0.0377057 0.0960571 0.193374 0.322882 0.470994 0.628695 0.789002 0.948079 1.10377 1.25367 1.39492 1.5251 1.64277 1.74751 1.83967 1.92003 1.98962 2.04955 2.10094 2.14485 2.18227 2.21408 2.24107 2.26393 2.28328 2.29962 2.31342 2.32506 2.33487 2.34314 2.35011 2.35597 2.3609 2.36506 2.36855 2.37149 2.37396 2.37603 2.37778 2.38012 #bodywt for gender,fleet: 1 / 4

0 0.00158801 0.00743421 0.0407599 0.1444 0.325372 0.53736 0.721552 0.848988 0.923481 0.962375 0.981445 0.990591 0.995011 0.997207 0.998343 0.998958 0.999307 0.999514 0.999643 0.999726 0.999782 0.99982 0.999848 0.999868 0.999883 0.999894 0.999903 0.99991 0.999915 0.999919 0.999923 0.999926 0.999928 0.99993 0.999931 0.999932 0.999933 0.999934 0.999935 0.999936 #selex for gender,fleet: 1 / 4

#wt and selex for gender,fleet: 1 5

0.0364557 0.0703322 0.123728 0.221597 0.352868 0.500398 0.655164 0.810941 0.964856 1.11568 1.26162 1.40003 1.52833 1.64483 1.74886 1.84058 1.92066 1.99007 2.04989 2.1012 2.14507 2.18245 2.21423 2.2412 2.26405 2.28338 2.29972 2.31351 2.32514 2.33495 2.34322 2.35018 2.35604 2.36097 2.36513 2.36862 2.37155 2.37402 2.3761 2.37785 2.38018 #bodywt for gender,fleet: 1 / 5

0 0.000127587 0.00162748 0.0159113 0.0809651 0.229492 0.438146 0.643129 0.797517 0.893474 0.945955 0.972639 0.985815 0.992336 0.995641 0.997379 0.998332 0.998879 0.999208 0.999414 0.999547 0.999638 0.9997 0.999745 0.999778 0.999803 0.999821 0.999836 0.999847 0.999856 0.999863 0.999869 0.999873 0.999877 0.99988 0.999883 0.999885 0.999886 0.999888 0.999889 0.999891 #selex for gender,fleet: 1 / 5

#wt and selex for gender,fleet: 1 6

0.0208179 0.0662438 0.122389 0.21613 0.339256 0.476562 0.621591 0.772387 0.928526 1.08671 1.24116 1.3866 1.5198 1.63942 1.74537 1.83825 1.91906 1.98892 2.04903 2.10054 2.14454 2.18201 2.21386 2.24088 2.26377 2.28312 2.29948 2.31329 2.32494 2.33476 2.34303 2.35 2.35587 2.3608 2.36496 2.36845 2.37139 2.37387 2.37594 2.37769 2.38003 #bodywt for gender,fleet: 1 / 6

0 0.000302998 0.00358601 0.0334551 0.154387 0.384696 0.639476 0.826322 0.927427 0.971959 0.989383 0.995882 0.998314 0.999259 0.999647 0.999817 0.999898 0.999939 0.99996 0.999973 0.99998 0.999985 0.999988 0.99999 0.999992 0.999993 0.999994 0.999994 0.999995 0.999995 0.999996 0.999996 0.999996 0.999996 0.999996 0.999996 0.999996 0.999996 0.999997 0.999997 0.999997 #selex for gender,fleet: 1 / 6

#wt and selex for gender,fleet: 2 1

0.00565496 0.0182929 0.112606 0.243147 0.352646 0.449335 0.529924 0.595395 0.647829 0.689101 0.720945 0.745063 0.763053 0.776319 0.786018 0.793066 0.798164 0.801841 0.804487 0.806387 0.807751 0.808729 0.809429 0.809931 0.81029 0.810548 0.810732 0.810863 0.810958 0.811025 0.811073 0.811108 0.811133 0.81115 0.811163 0.811172 0.811179 0.811183 0.811186 0.811189 0.811191 #bodywt for gender,fleet: 2 / 1

0 4.46774e-006 1.81516e-005 0.00174253 0.0367481 0.172414 0.376848 0.561294 0.690896 0.773209 0.824213 0.856119 0.876518 0.889868 0.89879 0.904855 0.909034 0.911943 0.913983 0.915421 0.91644 0.917163 0.917677 0.918044 0.918306 0.918493 0.918626 0.918722 0.91879 0.918839 0.918874 0.918898 0.918916 0.918929 0.918938 0.918945 0.918949 0.918953 0.918955 0.918957 0.918958 #selex for gender,fleet: 2 / 1

#wt and selex for gender,fleet: 2 2

0.0316389 0.0536701 0.0904868 0.17214 0.275011 0.372303 0.459105 0.534204 0.596476 0.645915 0.683881 0.712379 0.73345 0.748872 0.760082 0.768193 0.774042 0.77825 0.781273 0.783442 0.784997 0.786111 0.786909 0.78748 0.787889 0.788182 0.788391 0.788541 0.788648 0.788725 0.78878 0.788819 0.788847 0.788868 0.788882 0.788892 0.7889 0.788905 0.788909 0.788911 0.788914 #bodywt for gender,fleet: 2 / 2

0 0.00018455 0.00378204 0.0643947 0.313899 0.624683 0.825335 0.919604 0.959785 0.977322 0.985563
0.989778 0.992107 0.993479 0.99433 0.994878 0.995241 0.995487 0.995656 0.995773 0.995855 0.995913
0.995955 0.995984 0.996004 0.996019 0.99603 0.996037 0.996043 0.996047 0.996049 0.996051 0.996053
0.996054 0.996054 0.996055 0.996055 0.996056 0.996056 0.996056 0.996056 #selex for gender,fleet: 2 / 2

#wt and selex for gender,fleet: 2 3

0.00564638 0.0166484 0.0654793 0.264711 0.349351 0.422715 0.4904 0.55308 0.608148 0.653589 0.689322
0.716532 0.736829 0.751768 0.762666 0.770571 0.77628 0.780392 0.783348 0.785471 0.786993 0.788084
0.788865 0.789425 0.789825 0.790112 0.790317 0.790464 0.790569 0.790644 0.790698 0.790737 0.790764
0.790784 0.790798 0.790808 0.790815 0.79082 0.790824 0.790827 0.790829 #bodywt for gender,fleet: 2 / 3

0 3.29879e-005 5.42951e-005 0.00345134 0.0907147 0.37391 0.665005 0.834485 0.914297 0.950847 0.968445
0.977562 0.982636 0.985638 0.987504 0.988707 0.989505 0.990046 0.990418 0.990677 0.990858 0.990986
0.991076 0.99114 0.991186 0.991219 0.991242 0.991259 0.99127 0.991279 0.991285 0.991289 0.991292
0.991295 0.991296 0.991297 0.991298 0.991299 0.991299 0.991299 0.9913 #selex for gender,fleet: 2 / 3

#wt and selex for gender,fleet: 2 4

0.00564671 0.0166624 0.0499908 0.214538 0.312547 0.394664 0.470411 0.539511 0.598965 0.647141 0.684528
0.712747 0.733674 0.749017 0.760182 0.768264 0.774095 0.778292 0.781307 0.783471 0.785022 0.786133
0.786929 0.787499 0.787907 0.7882 0.788409 0.788558 0.788665 0.788742 0.788797 0.788836 0.788864
0.788884 0.788898 0.788909 0.788916 0.788921 0.788925 0.788928 0.78893 #bodywt for gender,fleet: 2 / 4

0 0.000870445 0.00131472 0.0151975 0.180048 0.517531 0.776638 0.901486 0.953214 0.974862 0.984632
0.989461 0.992058 0.993558 0.994473 0.995056 0.995439 0.995697 0.995874 0.995996 0.996082 0.996142
0.996184 0.996215 0.996236 0.996251 0.996262 0.99627 0.996276 0.99628 0.996283 0.996285 0.996286
0.996287 0.996288 0.996288 0.996289 0.996289 0.996289 0.996289 0.996289 #selex for gender,fleet: 2 / 4

#wt and selex for gender,fleet: 2 5

0.0056514 0.0226429 0.179793 0.245534 0.308238 0.376193 0.451982 0.526248 0.590275 0.641361 0.68045
0.709664 0.731189 0.746904 0.758308 0.766549 0.772487 0.776756 0.779822 0.782021 0.783597 0.784726
0.785535 0.786114 0.786528 0.786825 0.787037 0.787189 0.787298 0.787375 0.787431 0.787471 0.787499
0.78752 0.787534 0.787545 0.787552 0.787557 0.787561 0.787564 0.787566 #bodywt for gender,fleet: 2 / 5

0 2.69375e-006 6.30126e-005 0.0171875 0.269533 0.685677 0.899666 0.968133 0.988321 0.994837 0.997266
0.998312 0.998821 0.999094 0.999253 0.99935 0.999413 0.999454 0.999482 0.999501 0.999514 0.999523
0.99953 0.999534 0.999538 0.99954 0.999542 0.999543 0.999544 0.999544 0.999545 0.999545 0.999545
0.999546 0.999546 0.999546 0.999546 0.999546 0.999546 0.999546 0.999546 #selex for gender,fleet: 2 / 5

#wt and selex for gender,fleet: 2 6

0.00565706 0.0196928 0.127106 0.221972 0.303462 0.380976 0.457861 0.530384 0.592838 0.642979 0.681545
0.710466 0.731821 0.747432 0.758771 0.766969 0.772878 0.777129 0.780181 0.78237 0.78394 0.785065 0.78587
0.786446 0.786859 0.787155 0.787366 0.787517 0.787626 0.787703 0.787758 0.787798 0.787826 0.787847
0.787861 0.787872 0.787879 0.787884 0.787888 0.787891 0.787893 #bodywt for gender,fleet: 2 / 6

0 3.47532e-005 0.000232369 0.0213744 0.248884 0.630027 0.85988 0.948104 0.97848 0.989539 0.99405
0.996125 0.997186 0.997776 0.998128 0.998347 0.99849 0.998585 0.99865 0.998694 0.998725 0.998747
0.998763 0.998773 0.998781 0.998787 0.998791 0.998793 0.998795 0.998797 0.998798 0.998799 0.998799
0.9988 0.9988 0.9988 0.9988 0.9988 0.9988 0.9988 0.9988 #selex for gender,fleet: 2 / 6

Age specific information (Females then males), natural mortality and numbers at age

Females

0.158961 #mean M for year Yinit: 2011 sex: 1

7001.74 5736.2 4528.5 4348.55 7203.2 4132.39 1874.51 1472.83 847.909 651.903 335.175 284.616 164.236 171.649 41.9956 17.8925 11.107 5.37741 2.32556 0.625539 0.361331 0.220257 0.0751811 0.028713 0.00789175 0.00215176 0.0012059 0.00080711 0.00018254 5.42428e-005 2.04172e-005 9.44949e-006 3.72474e-006 1.30399e-006 8.80726e-007 3.90856e-007 1.16194e-007 5.26539e-008 1.89834e-008 9.8574e-009 1.49472e-008 #numbers for year Yinit: 2011 sex: 1

Males

0.177193 #mean M for year Yinit: 2011 sex: 2

7001.74 5632.57 4366.56 4119.1 6704.57 3723.11 1536.5 1024.26 498.531 337.813 158.624 125.01 67.3646 64.6723 14.3195 5.53776 3.1574 1.42678 0.580891 0.147231 0.0814257 0.0481957 0.0155985 0.00530539 0.00129193 0.000326721 0.000177564 0.0001171 2.65534e-005 8.26561e-006 3.38958e-006 1.70565e-006 7.01421e-007 2.67979e-007 2.03457e-007 9.77908e-008 3.0593e-008 1.43202e-008 5.30949e-009 2.83445e-009 4.63691e-009 #numbers for year Yinit: 2011 sex: 2

Age-structure at the start of year Yinit^0

7001.74 5736.2 4528.5 4348.55 7203.2 4132.39 1874.51 1472.83 847.909 651.903 335.175 284.616 164.236 171.649 41.9956 17.8925 11.107 5.37741 2.32556 0.625539 0.361331 0.220257 0.0751811 0.028713 0.00789175 0.00215176 0.0012059 0.00080711 0.00018254 5.42428e-005 2.04172e-005 9.44949e-006 3.72474e-006 1.30399e-006 8.80726e-007 3.90856e-007 1.16194e-007 5.26539e-008 1.89834e-008 9.8574e-009 1.49472e-008 #numbers for year Ydeclare: 2011 sex: 1

7001.74 5632.57 4366.56 4119.1 6704.57 3723.11 1536.5 1024.26 498.531 337.813 158.624 125.01 67.3646 64.6723 14.3195 5.53776 3.1574 1.42678 0.580891 0.147231 0.0814257 0.0481957 0.0155985 0.00530539 0.00129193 0.000326721 0.000177564 0.0001171 2.65534e-005 8.26561e-006 3.38958e-006 1.70565e-006 7.01421e-007 2.67979e-007 2.03457e-007 9.77908e-008 3.0593e-008 1.43202e-008 5.30949e-009 2.83445e-009 4.63691e-009 #numbers for year Ydeclare: 2011 sex: 2

Year Yinit^0 (used to compute the stock size at the start of year Ydecl)

2011

Recruitment and Spanwer biomasses

Number of historical assessment years

137

Historical data: Year, Recruitment, Spawner biomass, Used to compute B0, Used to project based

on R, Used to project based on R/S

1875 1876 1877 1878 1879 1880 1881 1882 1883 1884 1885 1886 1887 1888 1889 1890 1891 1892 1893 1894 1895 1896 1897 1898 1899

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	1900	1901	1902	1903	1904	1905	1906	1907	1908	1909	1910	1911
	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923
	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935
	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947
	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959
	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971
	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	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	2007
	2008	2009	2010	2011	#years	(with	first	value	representing	R0)

16511.5	16511.5	16511.5	16511.5	16511.5	16511.5	16511.3	16510.9	16510.4	16509.8	16509.1	16508.2
	16507.2	16506.2	16505	16503.8	16502.5	16501.2	16499.8	16498.4	16496.9	16495.4	16493.8
	16492.2	16490.6	16489	16487.3	16485.6	16483.9	16482.2	16480.4	16478.6	16476.8	16475
	16473.2	16471.4	16469.5	16467.6	16465.7	16463.8	16461.9	16459.9	16458.1	16453.7	16451.7
	16451.5	16453.5	16454.2	16452.5	16450.7	16447.1	16443.7	16440.7	16435.7	16431.4	16425.6
	16421.2	16417	16410.5	16404	16381.2	16359.4	16345.7	16318.8	19579.1	18766.1	17043.9
	15070.7	13676.8	13465.8	14491	15328.5	14700.7	13851.8	13067.4	12610.2	12574.1	12957.8
	13216.5	13474.6	13513.9	12568.4	10767.8	10581.5	12569.9	17318.3	14827.2	8135.68	11100.7	12985
	12836.1	33392.3	10064.2	14327.3	13834.3	13990.5	13916.6	8984.52	8169.25	10387.6	10190.5
	14945.6	14541.6	9212.86	11086.8	11491.7	9682.95	9565.49	11555.7	17995.8	9420.96	5939.98
	7919.03	10961.5	11484.2	13995	9757.15	7289.35	11955.1	12610.8	12369.3	9871.99	11986.8
	26404.8	14070.2	13877.7	9474.25	11027.5	9103.74	10918	10492.1	18697.9	27329.6	14021.1
	12447.7	13449	14003.5	#Recruits

26278.1	26278.1	26277.5	26276.8	26276.3	26275.7	26268.3	26254.5	26234.5	26209.1	26178.8	26143.9
	26105.1	26062.8	26017.4	25969.2	25918.6	25865.8	25811.2	25755	25697.3	25638.4	25578.3
	25517.3	25455.4	25392.8	25329.5	25265.7	25201.3	25136.5	25071.2	25005.6	24939.7	24873.5
	24807.1	24740.4	24672.8	24605.1	24537.3	24469.4	24401.4	24333.3	24268.3	24118.6	24047
	24042.5	24109.8	24135.1	24074.4	24014.9	23890.4	23776.8	23676.7	23514	23371.8	23185.1
	23046.3	22913.1	22713	22514.2	21846.6	21242.5	20878.1	20197.4	19415.6	18560.1	17755.3
	17175.5	15911.5	14714.6	14242.1	14023.1	12955.1	12254.4	10739.4	9411.54	7856.18	7343.97
	7030.41	7048.1	6655.78	6227.03	6150.37	5759.6	5659.62	5509.08	5346.98	4833.97	4481.44
	4113.26	4129.8	4253.03	4432.53	4408.85	4443.89	4634.52	4873.71	5471.82	5678.77	5839.39
	5506.78	4989.91	4638.37	4403.87	3775.38	3038.85	2830.35	2933.68	2860.32	2590.69	2562.95
	2622.68	2609.32	2290.78	2235.42	2264.97	2203.93	1828.47	1672.94	1729.83	2033.43	2317.41
	2336.51	2188.7	2290.92	2562.43	2747.44	2925.14	3402.98	4287.99	4876.82	4753.99	4704.1
	4367.87	4118.59	3860.6	4720.24	#SpawnBio

 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 # in Bzero

 0 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 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 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 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 1 1 1 1 1 0 0 0 # in R project

 0 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 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 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 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 1 1 1 1 1 0 0 0 # in R/S project

# Number of years with pre-specified catches

2

# Catches for years with pre-specified catches

2011 976
```

2012 1160

Number of future recruitments to override

2

Process for overiding (-1 for average otherwise index in data list)

2010 1 2010

2011 1 2011

Which probability to product detailed results for (1=0.5,2=0.6,etc.)

1

Steepness and sigma-R and auto-correlations

0.864405 0.4 0 # spawn-recr steepness, sigmaR, autocorr

Target SPR rate (FMSY Proxy)

0.300000

Discount rate (for cumulative catch)

0.100000

Truncate the series when 0.4B0 is reached (1=Yes)

0

Set F to FMSY once 0.4B0 is reached (1=Yes; 2=Apply 40:10 rule after recovery)

0

Maximum possible F for projection (-1 to set to FMSY)

-1

Defintion of recovery (1=now only;2=now or before)

2

Projection type (1,2,3 or 4)

11

Definition of the 40-10 rule

5 25

Calculate coefficients of variation (1=Yes)

0

Number of replicates to use

10

First Random number seed

-89102

File with multiple parameter vectors

rebuild.uncert.dat

User-specific projection (1=Yes); Output replaced (1->6)

0 5

Catches and Fs (Year; 1/2 (F or C); value); Final row is -1

2013 1 1 # Forecast in F #2013 4 999 #Forecast at F in previous year

-1 -1 -1

Fixed catch project (1=Yes); Output replaced (1-9); Approach (-1=Real)

0 2 -1

Split of Fs

2011 0.102438927 0.182368687 0.236566602 0.166563441 0.157243723 0.154818621

-1 1 1 1 1 1 1

Five pre-specified years (used to define Ttarget for option 4)

0.20 0.30 0.40 0.50 0.60

Year for which a probability of recovery is needed

2014 2015 2016 2017 2018 2019 2020 2021

Time varying weight-at-age (1=Yes;0=No)

0

File with time series of weight-at-age data

PetWgt.Csv

Use bisection (0) or linear interpolation (1)

1

Target Depletion

0.25

CV of implementation error

0

Appendix B. Parameter vector input file for rebuilding analyses.

base model in maximization mode, StartTime: Thu Jun 23 21:04:59 2011
0 0 0 0.000404698 0.0142813 0.110109 0.323594 0.568753 0.787322 0.978911 1.1519 1.30951 1.45221 1.58006 1.69342 1.79303 1.87988 1.95515 2.02003 2.07573 2.12337 2.16399 2.19856 2.22791 2.25278 2.27383 2.29163 2.30666 2.31935 2.33004 2.33906 2.34665 2.35305 2.35843 2.36296 2.36677 2.36998 2.37267 2.37494 2.37684 2.3794 #female fecundity; weighted by N in year Y_init across morphs and areas
0.0165014 0.0615514 0.124015 0.230992 0.375638 0.539983 0.713506 0.887565 1.05579 1.214 1.35991 1.49264 1.61219 1.71903 1.81382 1.89738 1.97054 2.03424 2.08941 2.13695 2.17777 2.21268 2.24247 2.26782 2.28934 2.30759 2.32303 2.33609 2.34712 2.35643 2.36428 2.37089 2.37647 2.38116 2.38511 2.38843 2.39123 2.39358 2.39556 2.39723 2.39945 #bodywt for gender,fleet: 1 / 1
0 2.46475e-005 0.000267763 0.00278136 0.0166333 0.0579419 0.138145 0.252507 0.383229 0.51083 0.622187 0.712081 0.780978 0.832126 0.869472 0.896593 0.916333 0.930807 0.941529 0.949565 0.955663 0.960345 0.963981 0.966833 0.969093 0.970897 0.972348 0.973524 0.97448 0.975263 0.975905 0.976435 0.976873 0.977236 0.977537 0.977788 0.977997 0.978172 0.978317 0.978439 0.978601 #selex for gender,fleet: 1 / 1
0.0374549 0.0546126 0.0935754 0.180345 0.3106 0.46605 0.63511 0.808165 0.977947 1.13959 1.29031 1.42878 1.5545 1.66745 1.76795 1.85658 1.93413 2.00152 2.05976 2.10984 2.15274 2.18936 2.22054 2.24704 2.2695 2.28853 2.30461 2.3182 2.32967 2.33935 2.3475 2.35437 2.36016 2.36502 2.36912 2.37257 2.37547 2.37791 2.37996 2.38169 2.38399 #bodywt for gender,fleet: 1 / 2
0 0.00113364 0.00800745 0.0374882 0.111084 0.230855 0.378656 0.528148 0.659047 0.762174 0.837401 0.889422 0.924231 0.947159 0.962232 0.972218 0.978931 0.983526 0.986735 0.989023 0.990686 0.991917 0.992843 0.993552 0.994101 0.994531 0.994871 0.995143 0.995362 0.99554 0.995685 0.995803 0.9959 0.995981 0.996047 0.996102 0.996148 0.996186 0.996218 0.996244 0.996279 #selex for gender,fleet: 1 / 2
0.00729218 0.0214877 0.117408 0.316548 0.450389 0.583696 0.717019 0.850322 0.986007 1.12501 1.2647 1.40041 1.52779 1.6441 1.74819 1.84003 1.92022 1.98973 2.04961 2.10098 2.14488 2.18229 2.21409 2.24108 2.26394 2.28328 2.29962 2.31342 2.32506 2.33487 2.34314 2.3501 2.35597 2.3609 2.36505 2.36855 2.37149 2.37396 2.37603 2.37778 2.38012 #bodywt for gender,fleet: 1 / 3
0 3.43954e-005 7.66638e-005 0.00150953 0.0217232 0.116884 0.320272 0.565608 0.762718 0.883058 0.945064 0.974278 0.987609 0.993735 0.996638 0.998078 0.998828 0.999241 0.99948 0.999625 0.999717 0.999778 0.999819 0.999848 0.999869 0.999885 0.999896 0.999905 0.999912 0.999918 0.999922 0.999926 0.999928 0.999931 0.999933 0.999934 0.999935 0.999936 0.999937 0.999938 0.999939 #selex for gender,fleet: 1 / 3
0.00947379 0.0377057 0.0960571 0.193374 0.322882 0.470994 0.628695 0.789002 0.948079 1.10377 1.25367 1.39492 1.5251 1.64277 1.74751 1.83967 1.92003 1.98962 2.04955 2.10094 2.14485 2.18227 2.21408 2.24107 2.26393 2.28328 2.29962 2.31342 2.32506 2.33487 2.34314 2.35011 2.35597 2.3609 2.36506 2.36855 2.37149 2.37396 2.37603 2.37778 2.38012 #bodywt for gender,fleet: 1 / 4
0 0.00158801 0.00743421 0.0407599 0.1444 0.325372 0.53736 0.721552 0.848988 0.923481 0.962375 0.981445 0.990591 0.995011 0.997207 0.998343 0.998958 0.999307 0.999514 0.999643 0.999726 0.999782 0.99982 0.999848 0.999868 0.999883 0.999894 0.999903 0.99991 0.999915 0.999919 0.999923 0.999926 0.999928 0.99993 0.999931 0.999932 0.999933 0.999934 0.999935 0.999936 #selex for gender,fleet: 1 / 4
0.0364557 0.0703322 0.123728 0.221597 0.352868 0.500398 0.655164 0.810941 0.964856 1.11568 1.26162 1.40003 1.52833 1.64483 1.74886 1.84058 1.92066 1.99007 2.04989 2.1012 2.14507 2.18245 2.21423 2.2412 2.26405 2.28338 2.29972 2.31351 2.32514 2.33495 2.34322 2.35018 2.35604 2.36097 2.36513 2.36862 2.37155 2.37402 2.3761 2.37785 2.38018 #bodywt for gender,fleet: 1 / 5
0 0.000127587 0.00162748 0.0159113 0.0809651 0.229492 0.438146 0.643129 0.797517 0.893474 0.945955 0.972639 0.985815 0.992336 0.995641 0.997379 0.998332 0.998879 0.999208 0.999414 0.999547 0.999638 0.9997 0.999745 0.999778 0.999803 0.999821 0.999836 0.999847 0.999856 0.999863 0.999869 0.999873 0.999877 0.99988 0.999883 0.999885 0.999886 0.999888 0.999889 0.999891 #selex for gender,fleet: 1 / 5
0.0208179 0.0662438 0.122389 0.21613 0.339256 0.476562 0.621591 0.772387 0.928526 1.08671 1.24116 1.3866 1.5198 1.63942 1.74537 1.83825 1.91906 1.98892 2.04903 2.10054 2.14454 2.18201 2.21386 2.24088 2.26377 2.28312 2.29948 2.31329 2.32494 2.33476 2.34303 2.35 2.35587 2.3608 2.36496 2.36845 2.37139 2.37387 2.37594 2.37769 2.38003 #bodywt for gender,fleet: 1 / 6
0 0.000302998 0.00358601 0.0334551 0.154387 0.384696 0.639476 0.826322 0.927427 0.971959 0.989383 0.995882 0.998314 0.999259 0.999647 0.999817 0.999898 0.999939 0.99996 0.999973 0.99998 0.999985 0.999988 0.99999 0.999992 0.999993 0.999994 0.999994 0.999995 0.999995 0.999996 0.999996 0.999996 0.999996 0.999996 0.999996 0.999996 0.999996 0.999997 0.999997 0.999997 #selex for gender,fleet: 1 / 6
0.00565496 0.0182929 0.112606 0.243147 0.352646 0.449335 0.529924 0.595395 0.647829 0.689101 0.720945 0.745063 0.763053 0.776319 0.786018 0.793066 0.798164 0.801841 0.804487 0.806387 0.807751 0.808729 0.809429 0.809931 0.81029 0.810548 0.810732 0.810863 0.810958 0.811025 0.811073 0.811108 0.811133 0.81115 0.811163 0.811172 0.811179 0.811183 0.811186 0.811189 0.811191 #bodywt for gender,fleet: 2 / 1
0 4.46774e-006 1.81516e-005 0.00174253 0.0367481 0.172414 0.376848 0.561294 0.690896 0.773209 0.824213 0.856119 0.876518 0.889868 0.89879 0.904855 0.909034 0.911943 0.913983 0.915421 0.91644 0.917163

0.917677 0.918044 0.918306 0.918493 0.918626 0.918722 0.91879 0.918839 0.918874 0.918898 0.918916
0.918929 0.918938 0.918945 0.918949 0.918953 0.918955 0.918957 0.918958 #selex for gender,fleet: 2 / 1
0.0316389 0.0536701 0.0904868 0.17214 0.275011 0.372303 0.459105 0.534204 0.596476 0.645915 0.683881
0.712379 0.73345 0.748872 0.760082 0.768193 0.774042 0.77825 0.781273 0.783442 0.784997 0.786111
0.786909 0.78748 0.787889 0.788182 0.788391 0.788541 0.788648 0.788725 0.78878 0.788819 0.788847
0.788868 0.788882 0.788892 0.7889 0.788905 0.788909 0.788911 0.788914 #bodywt for gender,fleet: 2 / 2
0 0.00018455 0.00378204 0.0643947 0.313899 0.624683 0.825335 0.919604 0.959785 0.977322 0.985563
0.989778 0.992107 0.993479 0.99433 0.994878 0.995241 0.995487 0.995656 0.995773 0.995855 0.995913
0.995955 0.995984 0.996004 0.996019 0.99603 0.996037 0.996043 0.996047 0.996049 0.996051 0.996053
0.996054 0.996054 0.996055 0.996055 0.996056 0.996056 0.996056 0.996056 #selex for gender,fleet: 2 / 2
0.00564638 0.0166484 0.0654793 0.264711 0.349351 0.422715 0.4904 0.55308 0.608148 0.653589 0.689322
0.716532 0.736829 0.751768 0.762666 0.770571 0.77628 0.780392 0.783348 0.785471 0.786993 0.788084
0.788865 0.789425 0.789825 0.790112 0.790317 0.790464 0.790569 0.790644 0.790698 0.790737 0.790764
0.790784 0.790798 0.790808 0.790815 0.79082 0.790824 0.790827 0.790829 #bodywt for gender,fleet: 2 / 3
0 3.29879e-005 5.42951e-005 0.00345134 0.0907147 0.37391 0.665005 0.834485 0.914297 0.950847 0.968445
0.977562 0.982636 0.985638 0.987504 0.988707 0.989505 0.990046 0.990418 0.990677 0.990858 0.990986
0.991076 0.99114 0.991186 0.991219 0.991242 0.991259 0.99127 0.991279 0.991285 0.991289 0.991292
0.991295 0.991296 0.991297 0.991298 0.991299 0.991299 0.991299 0.9913 #selex for gender,fleet: 2 / 3
0.00564671 0.0166624 0.0499908 0.214538 0.312547 0.394664 0.470411 0.539511 0.598965 0.647141 0.684528
0.712747 0.733674 0.749017 0.760182 0.768264 0.774095 0.778292 0.781307 0.783471 0.785022 0.786133
0.786929 0.787499 0.787907 0.7882 0.788409 0.788558 0.788665 0.788742 0.788797 0.788836 0.788864
0.788884 0.788898 0.788909 0.788916 0.788921 0.788925 0.788928 0.78893 #bodywt for gender,fleet: 2 / 4
0 0.000870445 0.00131472 0.0151975 0.180048 0.517531 0.776638 0.901486 0.953214 0.974862 0.984632
0.989461 0.992058 0.993558 0.994473 0.995056 0.995439 0.995697 0.995874 0.995996 0.996082 0.996142
0.996184 0.996215 0.996236 0.996251 0.996262 0.99627 0.996276 0.99628 0.996283 0.996285 0.996286
0.996287 0.996288 0.996288 0.996289 0.996289 0.996289 0.996289 0.996289 #selex for gender,fleet: 2 / 4
0.0056514 0.0226429 0.179793 0.245534 0.308238 0.376193 0.451982 0.526248 0.590275 0.641361 0.68045
0.709664 0.731189 0.746904 0.758308 0.766549 0.772487 0.776756 0.779822 0.782021 0.783597 0.784726
0.785535 0.786114 0.786528 0.786825 0.787037 0.787189 0.787298 0.787375 0.787431 0.787471 0.787499
0.78752 0.787534 0.787545 0.787552 0.787557 0.787561 0.787564 0.787566 #bodywt for gender,fleet: 2 / 5
0 2.69375e-006 6.30126e-005 0.0171875 0.269533 0.685677 0.899666 0.968133 0.988321 0.994837 0.997266
0.998312 0.998821 0.999094 0.999253 0.99935 0.999413 0.999454 0.999482 0.999501 0.999514 0.999523
0.99953 0.999534 0.999538 0.99954 0.999542 0.999543 0.999544 0.999544 0.999545 0.999545 0.999545
0.999546 0.999546 0.999546 0.999546 0.999546 0.999546 0.999546 0.999546 #selex for gender,fleet: 2 / 5
0.00565706 0.0196928 0.127106 0.221972 0.303462 0.380976 0.457861 0.530384 0.592838 0.642979 0.681545
0.710466 0.731821 0.747432 0.758771 0.766969 0.772878 0.777129 0.780181 0.78237 0.78394 0.785065 0.78587
0.786446 0.786859 0.787155 0.787366 0.787517 0.787626 0.787703 0.787758 0.787798 0.787826 0.787847
0.787861 0.787872 0.787879 0.787884 0.787888 0.787891 0.787893 #bodywt for gender,fleet: 2 / 6
0 3.47532e-005 0.000232369 0.0213744 0.248884 0.630027 0.85988 0.948104 0.97848 0.989539 0.99405
0.996125 0.997186 0.997776 0.998128 0.998347 0.99849 0.998585 0.99865 0.998694 0.998725 0.998747
0.998763 0.998773 0.998781 0.998787 0.998791 0.998793 0.998795 0.998797 0.998798 0.998799 0.998799
0.9988 0.9988 0.9988 0.9988 0.9988 0.9988 0.9988 0.9988 #selex for gender,fleet: 2 / 6
0.158961 0.158961 0.158961 0.158961 0.158961 0.158961 0.158961 0.158961 0.158961 0.158961 0.158961
0.158961 0.158961 0.158961 0.158961 0.158961 0.158961 0.158961 0.158961 0.158961 0.158961 0.158961
0.158961 0.158961 0.158961 0.158961 0.158961 0.158961 0.158961 0.158961 0.158961 0.158961 0.158961
0.158961 0.158961 0.158961 0.158961 0.158961 0.158961 0.158961 0.158961 #mean M for year Yinit: 2011 sex:
1
7001.74 5736.2 4528.5 4348.55 7203.2 4132.39 1874.51 1472.83 847.909 651.903 335.175 284.616 164.236
171.649 41.9956 17.8925 11.107 5.37741 2.32556 0.625539 0.361331 0.220257 0.0751811 0.028713 0.00789175
0.00215176 0.0012059 0.00080711 0.00018254 5.42428e-005 2.04172e-005 9.44949e-006 3.72474e-006
1.30399e-006 8.80726e-007 3.90856e-007 1.16194e-007 5.26539e-008 1.89834e-008 9.8574e-009 1.49472e-008
#numbers for year Yinit: 2011 sex: 1
0.177193 0.177193 0.177193 0.177193 0.177193 0.177193 0.177193 0.177193 0.177193 0.177193 0.177193
0.177193 0.177193 0.177193 0.177193 0.177193 0.177193 0.177193 0.177193 0.177193 0.177193 0.177193
0.177193 0.177193 0.177193 0.177193 0.177193 0.177193 0.177193 0.177193 0.177193 0.177193 0.177193
0.177193 0.177193 0.177193 0.177193 0.177193 0.177193 0.177193 0.177193 #mean M for year Yinit: 2011 sex:
2
7001.74 5632.57 4366.56 4119.1 6704.57 3723.11 1536.5 1024.26 498.531 337.813 158.624 125.01 67.3646
64.6723 14.3195 5.53776 3.1574 1.42678 0.580891 0.147231 0.0814257 0.0481957 0.0155985 0.00530539
0.00129193 0.000326721 0.000177564 0.0001171 2.65534e-005 8.26561e-006 3.38958e-006 1.70565e-006
7.01421e-007 2.67979e-007 2.03457e-007 9.77908e-008 3.0593e-008 1.43202e-008 5.30949e-009 2.83445e-009

4.63691e-009 #numbers for year Yinit: 2011 sex: 2
7001.74 5736.2 4528.5 4348.55 7203.2 4132.39 1874.51 1472.83 847.909 651.903 335.175 284.616 164.236
171.649 41.9956 17.8925 11.107 5.37741 2.32556 0.625539 0.361331 0.220257 0.0751811 0.028713 0.00789175
0.00215176 0.0012059 0.00080711 0.00018254 5.42428e-005 2.04172e-005 9.44949e-006 3.72474e-006
1.30399e-006 8.80726e-007 3.90856e-007 1.16194e-007 5.26539e-008 1.89834e-008 9.8574e-009 1.49472e-008
#numbers for year Ydeclare: 2011 sex: 1
7001.74 5632.57 4366.56 4119.1 6704.57 3723.11 1536.5 1024.26 498.531 337.813 158.624 125.01 67.3646
64.6723 14.3195 5.53776 3.1574 1.42678 0.580891 0.147231 0.0814257 0.0481957 0.0155985 0.00530539
0.00129193 0.000326721 0.000177564 0.0001171 2.65534e-005 8.26561e-006 3.38958e-006 1.70565e-006
7.01421e-007 2.67979e-007 2.03457e-007 9.77908e-008 3.0593e-008 1.43202e-008 5.30949e-009 2.83445e-009
4.63691e-009 #numbers for year Ydeclare: 2011 sex: 2
#R0 1876 1877 1878 1879 1880 1881 1882 1883 1884 1885 1886 1887 1888 1889 1890 1891 1892 1893 1894
1895 1896 1897 1898 1899 1900 1901 1902 1903 1904 1905 1906 1907 1908 1909 1910 1911 1912 1913 1914
1915 1916 1917 1918 1919 1920 1921 1922 1923 1924 1925 1926 1927 1928 1929 1930 1931 1932 1933 1934
1935 1936 1937 1938 1939 1940 1941 1942 1943 1944 1945 1946 1947 1948 1949 1950 1951 1952 1953 1954
1955 1956 1957 1958 1959 1960 1961 1962 1963 1964 1965 1966 1967 1968 1969 1970 1971 1972 1973 1974
1975 1976 1977 1978 1979 1980 1981 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 2007 2008 2009 2010 #years
16511.5 16511.5 16511.5 16511.5 16511.5 16511.5 16511.3 16510.9 16510.4 16509.8 16509.1 16508.2 16507.2
16506.2 16505 16503.8 16502.5 16501.2 16499.8 16498.4 16496.9 16495.4 16493.8 16492.2 16490.6 16489
16487.3 16485.6 16483.9 16482.2 16480.4 16478.6 16476.8 16475 16473.2 16471.4 16469.5 16467.6 16465.7
16463.8 16461.9 16459.9 16458.1 16453.7 16451.7 16451.5 16453.5 16454.2 16452.5 16450.7 16447.1 16443.7
16440.7 16435.7 16431.4 16425.6 16421.2 16417 16410.5 16404 16381.2 16359.4 16345.7 16318.8 19579.1
18766.1 17043.9 15070.7 13676.8 13465.8 14491 15328.5 14700.7 13851.8 13067.4 12610.2 12574.1 12957.8
13216.5 13474.6 13513.9 12568.4 10767.8 10581.5 12569.9 17318.3 14827.2 8135.68 11100.7 12985 12836.1
33392.3 10064.2 14327.3 13834.3 13990.5 13916.6 8984.52 8169.25 10387.6 10190.5 14945.6 14541.6 9212.86
11086.8 11491.7 9682.95 9565.49 11555.7 17995.8 9420.96 5939.98 7919.03 10961.5 11484.2 13995 9757.15
7289.35 11955.1 12610.8 12369.3 9871.99 11986.8 26404.8 14070.2 13877.7 9474.25 11027.5 9103.74 10918
10492.1 18697.9 27329.6 14021.1 12447.7 13449 14003.5 #Recruits
26278.1 26278.1 26277.5 26276.8 26276.3 26275.7 26268.3 26254.5 26234.5 26209.1 26178.8 26143.9 26105.1
26062.8 26017.4 25969.2 25918.6 25865.8 25811.2 25755 25697.3 25638.4 25578.3 25517.3 25455.4 25392.8
25329.5 25265.7 25201.3 25136.5 25071.2 25005.6 24939.7 24873.5 24807.1 24740.4 24672.8 24605.1 24537.3
24469.4 24401.4 24333.3 24268.3 24118.6 24047 24042.5 24109.8 24135.1 24074.4 24014.9 23890.4 23776.8
23676.7 23514 23371.8 23185.1 23046.3 22913.1 22713 22514.2 21846.6 21242.5 20878.1 20197.4 19415.6
18560.1 17755.3 17175.5 15911.5 14714.6 14242.1 14023.1 12955.1 12254.4 10739.4 9411.54 7856.18 7343.97
7030.41 7048.1 6655.78 6227.03 6150.37 5759.6 5659.62 5509.08 5346.98 4833.97 4481.44 4113.26 4129.8
4253.03 4432.53 4408.85 4443.89 4634.52 4873.71 5471.82 5678.77 5839.39 5506.78 4989.91 4638.37 4403.87
3775.38 3038.85 2830.35 2933.68 2860.32 2590.69 2562.95 2622.68 2609.32 2290.78 2235.42 2264.97 2203.93
1828.47 1672.94 1729.83 2033.43 2317.41 2336.51 2188.7 2290.92 2562.43 2747.44 2925.14 3402.98 4287.99
4876.82 4753.99 4704.1 4367.87 4118.59 3860.6 4720.24 #SpawnBio
0.864405 0.4 0 # spawn-recr steepness, sigmaR, autocorr
base model in maximization mode, StartTime: Thu Jun 23 21:04:59 2011
0 0 0 0.000404698 0.0142813 0.110109 0.323594 0.568753 0.787322 0.978911 1.1519 1.30951 1.45221 1.58006
1.69342 1.79303 1.87988 1.95515 2.02003 2.07573 2.12337 2.16399 2.19856 2.22791 2.25278 2.27383 2.29163
2.30666 2.31935 2.33004 2.33906 2.34665 2.35305 2.35843 2.36296 2.36677 2.36998 2.37267 2.37494 2.37684
2.3794 #female fecundity; weighted by N in year Y_init across morphs and areas
0.0165014 0.0615514 0.124015 0.230992 0.375638 0.539983 0.713506 0.887565 1.05579 1.214 1.35991 1.49264
1.61219 1.71903 1.81382 1.89738 1.97054 2.03424 2.08941 2.13695 2.17777 2.21268 2.24247 2.26782 2.28934
2.30759 2.32303 2.33609 2.34712 2.35643 2.36428 2.37089 2.37647 2.38116 2.38511 2.38843 2.39123 2.39358
2.39556 2.39723 2.39945 #bodywt for gender,fleet: 1 / 1
0 2.46475e-005 0.000267763 0.00278136 0.0166333 0.0579419 0.138145 0.252507 0.383229 0.51083 0.622187
0.712081 0.780978 0.832126 0.869472 0.896593 0.916333 0.930807 0.941529 0.949565 0.955663 0.960345
0.963981 0.966833 0.969093 0.970897 0.972348 0.973524 0.97448 0.975263 0.975905 0.976435 0.976873
0.977236 0.977537 0.977788 0.977997 0.978172 0.978317 0.978439 0.978601 #selex for gender,fleet: 1 / 1
0.0374549 0.0546126 0.0935754 0.180345 0.3106 0.46605 0.63511 0.808165 0.977947 1.13959 1.29031 1.42878
1.5545 1.66745 1.76795 1.85658 1.93413 2.00152 2.05976 2.10984 2.15274 2.18936 2.22054 2.24704 2.2695
2.28853 2.30461 2.3182 2.32967 2.33935 2.3475 2.35437 2.36016 2.36502 2.36912 2.37257 2.37547 2.37791
2.37996 2.38169 2.38399 #bodywt for gender,fleet: 1 / 2
0 0.00113364 0.00800745 0.0374882 0.111084 0.230855 0.378656 0.528148 0.659047 0.762174 0.837401
0.889422 0.924231 0.947159 0.962232 0.972218 0.978931 0.983526 0.986735 0.989023 0.990686 0.991917
0.992843 0.993552 0.994101 0.994531 0.994871 0.995143 0.995362 0.99554 0.995685 0.995803 0.9959 0.995981

0.996047 0.996102 0.996148 0.996186 0.996218 0.996244 0.996279 #selex for gender,fleet: 1 / 2
0.00729218 0.0214877 0.117408 0.316548 0.450389 0.583696 0.717019 0.850322 0.986007 1.12501 1.2647
1.40041 1.52779 1.6441 1.74819 1.84003 1.92022 1.98973 2.04961 2.10098 2.14488 2.18229 2.21409 2.24108
2.26394 2.28328 2.29962 2.31342 2.32506 2.33487 2.34314 2.3501 2.35597 2.3609 2.36505 2.36855 2.37149
2.37396 2.37603 2.37778 2.38012 #bodywt for gender,fleet: 1 / 3
0 3.43954e-005 7.66638e-005 0.00150953 0.0217232 0.116884 0.320272 0.565608 0.762718 0.883058 0.945064
0.974278 0.987609 0.993735 0.996638 0.998078 0.998828 0.999241 0.99948 0.999625 0.999717 0.999778
0.999819 0.999848 0.999869 0.999885 0.999896 0.999905 0.999912 0.999918 0.999922 0.999926 0.999928
0.999931 0.999933 0.999934 0.999935 0.999936 0.999937 0.999938 0.999939 #selex for gender,fleet: 1 / 3
0.00947379 0.0377057 0.0960571 0.193374 0.322882 0.470994 0.628695 0.789002 0.948079 1.10377 1.25367
1.39492 1.5251 1.64277 1.74751 1.83967 1.92003 1.98962 2.04955 2.10094 2.14485 2.18227 2.21408 2.24107
2.26393 2.28328 2.29962 2.31342 2.32506 2.33487 2.34314 2.35011 2.35597 2.3609 2.36506 2.36855 2.37149
2.37396 2.37603 2.37778 2.38012 #bodywt for gender,fleet: 1 / 4
0 0.00158801 0.00743421 0.0407599 0.1444 0.325372 0.53736 0.721552 0.848988 0.923481 0.962375 0.981445
0.990591 0.995011 0.997207 0.998343 0.998958 0.999307 0.999514 0.999643 0.999726 0.999782 0.99982
0.999848 0.999868 0.999883 0.999894 0.999903 0.99991 0.999915 0.999919 0.999923 0.999926 0.999928
0.99993 0.999931 0.999932 0.999933 0.999934 0.999935 0.999936 #selex for gender,fleet: 1 / 4
0.0364557 0.0703322 0.123728 0.221597 0.352868 0.500398 0.655164 0.810941 0.964856 1.11568 1.26162
1.40003 1.52833 1.64483 1.74886 1.84058 1.92066 1.99007 2.04989 2.1012 2.14507 2.18245 2.21423 2.2412
2.26405 2.28338 2.29972 2.31351 2.32514 2.33495 2.34322 2.35018 2.35604 2.36097 2.36513 2.36862 2.37155
2.37402 2.3761 2.37785 2.38018 #bodywt for gender,fleet: 1 / 5
0 0.000127587 0.00162748 0.0159113 0.0809651 0.229492 0.438146 0.643129 0.797517 0.893474 0.945955
0.972639 0.985815 0.992336 0.995641 0.997379 0.998332 0.998879 0.999208 0.999414 0.999547 0.999638
0.9997 0.999745 0.999778 0.999803 0.999821 0.999836 0.999847 0.999856 0.999863 0.999869 0.999873
0.999877 0.99988 0.999883 0.999885 0.999886 0.999888 0.999889 0.999891 #selex for gender,fleet: 1 / 5
0.0208179 0.0662438 0.122389 0.21613 0.339256 0.476562 0.621591 0.772387 0.928526 1.08671 1.24116
1.3866 1.5198 1.63942 1.74537 1.83825 1.91906 1.98892 2.04903 2.10054 2.14454 2.18201 2.21386 2.24088
2.26377 2.28312 2.29948 2.31329 2.32494 2.33476 2.34303 2.35 2.35587 2.3608 2.36496 2.36845 2.37139
2.37387 2.37594 2.37769 2.38003 #bodywt for gender,fleet: 1 / 6
0 0.000302998 0.00358601 0.0334551 0.154387 0.384696 0.639476 0.826322 0.927427 0.971959 0.989383
0.995882 0.998314 0.999259 0.999647 0.999817 0.999898 0.999939 0.99996 0.999973 0.99998 0.999985
0.999988 0.99999 0.999992 0.999993 0.999994 0.999994 0.999995 0.999995 0.999996 0.999996 0.999996
0.999996 0.999996 0.999996 0.999996 0.999996 0.999997 0.999997 0.999997 #selex for gender,fleet: 1 / 6
0.00565496 0.0182929 0.112606 0.243147 0.352646 0.449335 0.529924 0.595395 0.647829 0.689101 0.720945
0.745063 0.763053 0.776319 0.786018 0.793066 0.798164 0.801841 0.804487 0.806387 0.807751 0.808729
0.809429 0.809931 0.81029 0.810548 0.810732 0.810863 0.810958 0.811025 0.811073 0.811108 0.811133
0.81115 0.811163 0.811172 0.811179 0.811183 0.811186 0.811189 0.811191 #bodywt for gender,fleet: 2 / 1
0 4.46774e-006 1.81516e-005 0.00174253 0.0367481 0.172414 0.376848 0.561294 0.690896 0.773209 0.824213
0.856119 0.876518 0.889868 0.89879 0.904855 0.909034 0.911943 0.913983 0.915421 0.91644 0.917163
0.917677 0.918044 0.918306 0.918493 0.918626 0.918722 0.91879 0.918839 0.918874 0.918898 0.918916
0.918929 0.918938 0.918945 0.918949 0.918953 0.918955 0.918957 0.918958 #selex for gender,fleet: 2 / 1
0.0316389 0.0536701 0.0904868 0.17214 0.275011 0.372303 0.459105 0.534204 0.596476 0.645915 0.683881
0.712379 0.73345 0.748872 0.760082 0.768193 0.774042 0.77825 0.781273 0.783442 0.784997 0.786111
0.786909 0.78748 0.787889 0.788182 0.788391 0.788541 0.788648 0.788725 0.78878 0.788819 0.788847
0.788868 0.788882 0.788892 0.7889 0.788905 0.788909 0.788911 0.788914 #bodywt for gender,fleet: 2 / 2
0 0.00018455 0.00378204 0.0643947 0.313899 0.624683 0.825335 0.919604 0.959785 0.977322 0.985563
0.989778 0.992107 0.993479 0.99433 0.994878 0.995241 0.995487 0.995656 0.995773 0.995855 0.995913
0.995955 0.995984 0.996004 0.996019 0.99603 0.996037 0.996043 0.996047 0.996049 0.996051 0.996053
0.996054 0.996054 0.996055 0.996055 0.996056 0.996056 0.996056 0.996056 #selex for gender,fleet: 2 / 2
0.00564638 0.0166484 0.0654793 0.264711 0.349351 0.422715 0.4904 0.55308 0.608148 0.653589 0.689322
0.716532 0.736829 0.751768 0.762666 0.770571 0.77628 0.780392 0.783348 0.785471 0.786993 0.788084
0.788865 0.789425 0.789825 0.790112 0.790317 0.790464 0.790569 0.790644 0.790698 0.790737 0.790764
0.790784 0.790798 0.790808 0.790815 0.79082 0.790824 0.790827 0.790829 #bodywt for gender,fleet: 2 / 3
0 3.29879e-005 5.42951e-005 0.00345134 0.0907147 0.37391 0.665005 0.834485 0.914297 0.950847 0.968445
0.977562 0.982636 0.985638 0.987504 0.988707 0.989505 0.990046 0.990418 0.990677 0.990858 0.990986
0.991076 0.99114 0.991186 0.991219 0.991242 0.991259 0.99127 0.991279 0.991285 0.991289 0.991292
0.991295 0.991296 0.991297 0.991298 0.991299 0.991299 0.991299 0.9913 #selex for gender,fleet: 2 / 3
0.00564671 0.0166624 0.0499908 0.214538 0.312547 0.394664 0.470411 0.539511 0.598965 0.647141 0.684528
0.712747 0.733674 0.749017 0.760182 0.768264 0.774095 0.778292 0.781307 0.783471 0.785022 0.786133
0.786929 0.787499 0.787907 0.7882 0.788409 0.788558 0.788665 0.788742 0.788797 0.788836 0.788864
0.788884 0.788898 0.788909 0.788916 0.788921 0.788925 0.788928 0.78893 #bodywt for gender,fleet: 2 / 4

0 0.000870445 0.00131472 0.0151975 0.180048 0.517531 0.776638 0.901486 0.953214 0.974862 0.984632
0.989461 0.992058 0.993558 0.994473 0.995056 0.995439 0.995697 0.995874 0.995996 0.996082 0.996142
0.996184 0.996215 0.996236 0.996251 0.996262 0.99627 0.996276 0.99628 0.996283 0.996285 0.996286
0.996287 0.996288 0.996288 0.996289 0.996289 0.996289 0.996289 0.996289 #selex for gender,fleet: 2 / 4
0.0056514 0.0226429 0.179793 0.245534 0.308238 0.376193 0.451982 0.526248 0.590275 0.641361 0.68045
0.709664 0.731189 0.746904 0.758308 0.766549 0.772487 0.776756 0.779822 0.782021 0.783597 0.784726
0.785535 0.786114 0.786528 0.786825 0.787037 0.787189 0.787298 0.787375 0.787431 0.787471 0.787499
0.78752 0.787534 0.787545 0.787552 0.787557 0.787561 0.787564 0.787566 #bodywt for gender,fleet: 2 / 5
0 2.69375e-006 6.30126e-005 0.0171875 0.269533 0.685677 0.899666 0.968133 0.988321 0.994837 0.997266
0.998312 0.998821 0.999094 0.999253 0.99935 0.999413 0.999454 0.999482 0.999501 0.999514 0.999523
0.99953 0.999534 0.999538 0.99954 0.999542 0.999543 0.999544 0.999544 0.999545 0.999545 0.999545
0.999546 0.999546 0.999546 0.999546 0.999546 0.999546 0.999546 0.999546 #selex for gender,fleet: 2 / 5
0.00565706 0.0196928 0.127106 0.221972 0.303462 0.380976 0.457861 0.530384 0.592838 0.642979 0.681545
0.710466 0.731821 0.747432 0.758771 0.766969 0.772878 0.777129 0.780181 0.78237 0.78394 0.785065 0.78587
0.786446 0.786859 0.787155 0.787366 0.787517 0.787626 0.787703 0.787758 0.787798 0.787826 0.787847
0.787861 0.787872 0.787879 0.787884 0.787888 0.787891 0.787893 #bodywt for gender,fleet: 2 / 6
0 3.47532e-005 0.000232369 0.0213744 0.248884 0.630027 0.85988 0.948104 0.97848 0.989539 0.99405
0.996125 0.997186 0.997776 0.998128 0.998347 0.99849 0.998585 0.99865 0.998694 0.998725 0.998747
0.998763 0.998773 0.998781 0.998787 0.998791 0.998793 0.998795 0.998797 0.998798 0.998799 0.998799
0.9988 0.9988 0.9988 0.9988 0.9988 0.9988 0.9988 0.9988 #selex for gender,fleet: 2 / 6
0.158961 0.158961 0.158961 0.158961 0.158961 0.158961 0.158961 0.158961 0.158961 0.158961 0.158961
0.158961 0.158961 0.158961 0.158961 0.158961 0.158961 0.158961 0.158961 0.158961 0.158961 0.158961
0.158961 0.158961 0.158961 0.158961 0.158961 0.158961 0.158961 0.158961 0.158961 0.158961 0.158961
0.158961 0.158961 0.158961 0.158961 0.158961 0.158961 0.158961 0.158961 #mean M for year Yinit: 2011 sex:
1
7001.74 5736.2 4528.5 4348.55 7203.2 4132.39 1874.51 1472.83 847.909 651.903 335.175 284.616 164.236
171.649 41.9956 17.8925 11.107 5.37741 2.32556 0.625539 0.361331 0.220257 0.0751811 0.028713 0.00789175
0.00215176 0.0012059 0.00080711 0.00018254 5.42428e-005 2.04172e-005 9.44949e-006 3.72474e-006
1.30399e-006 8.80726e-007 3.90856e-007 1.16194e-007 5.26539e-008 1.89834e-008 9.8574e-009 1.49472e-008
#numbers for year Yinit: 2011 sex: 1
0.177193 0.177193 0.177193 0.177193 0.177193 0.177193 0.177193 0.177193 0.177193 0.177193 0.177193
0.177193 0.177193 0.177193 0.177193 0.177193 0.177193 0.177193 0.177193 0.177193 0.177193 0.177193
0.177193 0.177193 0.177193 0.177193 0.177193 0.177193 0.177193 0.177193 0.177193 0.177193 0.177193
0.177193 0.177193 0.177193 0.177193 0.177193 0.177193 0.177193 0.177193 #mean M for year Yinit: 2011 sex:
2
7001.74 5632.57 4366.56 4119.1 6704.57 3723.11 1536.5 1024.26 498.531 337.813 158.624 125.01 67.3646
64.6723 14.3195 5.53776 3.1574 1.42678 0.580891 0.147231 0.0814257 0.0481957 0.0155985 0.00530539
0.00129193 0.000326721 0.000177564 0.0001171 2.65534e-005 8.26561e-006 3.38958e-006 1.70565e-006
7.01421e-007 2.67979e-007 2.03457e-007 9.77908e-008 3.0593e-008 1.43202e-008 5.30949e-009 2.83445e-009
4.63691e-009 #numbers for year Yinit: 2011 sex: 2
7001.74 5736.2 4528.5 4348.55 7203.2 4132.39 1874.51 1472.83 847.909 651.903 335.175 284.616 164.236
171.649 41.9956 17.8925 11.107 5.37741 2.32556 0.625539 0.361331 0.220257 0.0751811 0.028713 0.00789175
0.00215176 0.0012059 0.00080711 0.00018254 5.42428e-005 2.04172e-005 9.44949e-006 3.72474e-006
1.30399e-006 8.80726e-007 3.90856e-007 1.16194e-007 5.26539e-008 1.89834e-008 9.8574e-009 1.49472e-008
#numbers for year Ydeclare: 2011 sex: 1
7001.74 5632.57 4366.56 4119.1 6704.57 3723.11 1536.5 1024.26 498.531 337.813 158.624 125.01 67.3646
64.6723 14.3195 5.53776 3.1574 1.42678 0.580891 0.147231 0.0814257 0.0481957 0.0155985 0.00530539
0.00129193 0.000326721 0.000177564 0.0001171 2.65534e-005 8.26561e-006 3.38958e-006 1.70565e-006
7.01421e-007 2.67979e-007 2.03457e-007 9.77908e-008 3.0593e-008 1.43202e-008 5.30949e-009 2.83445e-009
4.63691e-009 #numbers for year Ydeclare: 2011 sex: 2
#R0 1876 1877 1878 1879 1880 1881 1882 1883 1884 1885 1886 1887 1888 1889 1890 1891 1892 1893 1894
1895 1896 1897 1898 1899 1900 1901 1902 1903 1904 1905 1906 1907 1908 1909 1910 1911 1912 1913 1914
1915 1916 1917 1918 1919 1920 1921 1922 1923 1924 1925 1926 1927 1928 1929 1930 1931 1932 1933 1934
1935 1936 1937 1938 1939 1940 1941 1942 1943 1944 1945 1946 1947 1948 1949 1950 1951 1952 1953 1954
1955 1956 1957 1958 1959 1960 1961 1962 1963 1964 1965 1966 1967 1968 1969 1970 1971 1972 1973 1974
1975 1976 1977 1978 1979 1980 1981 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 2007 2008 2009 2010 #years
16511.5 16511.5 16511.5 16511.5 16511.5 16511.5 16511.3 16510.9 16510.4 16509.8 16509.1 16508.2 16507.2
16506.2 16505 16503.8 16502.5 16501.2 16499.8 16498.4 16496.9 16495.4 16493.8 16492.2 16490.6 16489
16487.3 16485.6 16483.9 16482.2 16480.4 16478.6 16476.8 16475 16473.2 16471.4 16469.5 16467.6 16465.7
16463.8 16461.9 16459.9 16458.1 16453.7 16451.7 16451.5 16453.5 16454.2 16452.5 16450.7 16447.1 16443.7

16440.7 16435.7 16431.4 16425.6 16421.2 16417 16410.5 16404 16381.2 16359.4 16345.7 16318.8 19579.1
18766.1 17043.9 15070.7 13676.8 13465.8 14491 15328.5 14700.7 13851.8 13067.4 12610.2 12574.1 12957.8
13216.5 13474.6 13513.9 12568.4 10767.8 10581.5 12569.9 17318.3 14827.2 8135.68 11100.7 12985 12836.1
33392.3 10064.2 14327.3 13834.3 13990.5 13916.6 8984.52 8169.25 10387.6 10190.5 14945.6 14541.6 9212.86
11086.8 11491.7 9682.95 9565.49 11555.7 17995.8 9420.96 5939.98 7919.03 10961.5 11484.2 13995 9757.15
7289.35 11955.1 12610.8 12369.3 9871.99 11986.8 26404.8 14070.2 13877.7 9474.25 11027.5 9103.74 10918
10492.1 18697.9 27329.6 14021.1 12447.7 13449 14003.5 #Recruits
26278.1 26278.1 26277.5 26276.8 26276.3 26275.7 26268.3 26254.5 26234.5 26209.1 26178.8 26143.9 26105.1
26062.8 26017.4 25969.2 25918.6 25865.8 25811.2 25755 25697.3 25638.4 25578.3 25517.3 25455.4 25392.8
25329.5 25265.7 25201.3 25136.5 25071.2 25005.6 24939.7 24873.5 24807.1 24740.4 24672.8 24605.1 24537.3
24469.4 24401.4 24333.3 24268.3 24118.6 24047 24042.5 24109.8 24135.1 24074.4 24014.9 23890.4 23776.8
23676.7 23514 23371.8 23185.1 23046.3 22913.1 22713 22514.2 21846.6 21242.5 20878.1 20197.4 19415.6
18560.1 17755.3 17175.5 15911.5 14714.6 14242.1 14023.1 12955.1 12254.4 10739.4 9411.54 7856.18 7343.97
7030.41 7048.1 6655.78 6227.03 6150.37 5759.6 5659.62 5509.08 5346.98 4833.97 4481.44 4113.26 4129.8
4253.03 4432.53 4408.85 4443.89 4634.52 4873.71 5471.82 5678.77 5839.39 5506.78 4989.91 4638.37 4403.87
3775.38 3038.85 2830.35 2933.68 2860.32 2590.69 2562.95 2622.68 2609.32 2290.78 2235.42 2264.97 2203.93
1828.47 1672.94 1729.83 2033.43 2317.41 2336.51 2188.7 2290.92 2562.43 2747.44 2925.14 3402.98 4287.99
4876.82 4753.99 4704.1 4367.87 4118.59 3860.6 4720.24 #SpawnBio
0.864405 0.4 0 # spawn-recr steepness, sigmaR, autocorr
state of nature - low - A blank comment line - needed for the program to run # in maximization mode, StartTime: Tue Jul 19 10:38:27 2011
0 0 0 0.000420114 0.0146945 0.112023 0.326555 0.571439 0.78933 0.98015 1.1522 1.30867 1.45009 1.57656
1.6885 1.78668 1.87215 1.9461 2.00975 2.0643 2.11089 2.15056 2.18427 2.21284 2.23703 2.25747 2.27473
2.28929 2.30155 2.31188 2.32058 2.32789 2.33405 2.33922 2.34356 2.34722 2.35028 2.35286 2.35502 2.35684
2.35927 #female fecundity; weighted by N in year Y_init across morphs and areas
0.0163326 0.0608918 0.123223 0.23035 0.375349 0.540067 0.713848 0.887972 1.05604 1.21386 1.35917
1.49111 1.6097 1.71545 1.80906 1.89139 1.96333 2.02584 2.07986 2.12634 2.16617 2.20019 2.22917 2.25379
2.27466 2.29233 2.30727 2.31988 2.33051 2.33948 2.34703 2.35338 2.35873 2.36323 2.36701 2.37018 2.37285
2.3751 2.37698 2.37856 2.38067 #bodywt for gender,fleet: 1 / 1
0 2.86306e-005 0.000301533 0.00303313 0.0176578 0.0602898 0.141662 0.256271 0.386184 0.51235 0.622186
0.710827 0.778857 0.829495 0.866595 0.893642 0.913409 0.92796 0.93878 0.94692 0.953115 0.957886 0.961599
0.964519 0.966835 0.968687 0.970179 0.971388 0.972372 0.973177 0.973839 0.974384 0.974835 0.975208
0.975518 0.975776 0.97599 0.976169 0.976318 0.976443 0.976608 #selex for gender,fleet: 1 / 1
0.037442 0.054545 0.0934767 0.180366 0.310878 0.466555 0.635676 0.808554 0.977909 1.1389 1.28878
1.42626 1.55086 1.6626 1.76185 1.84921 1.92551 1.99171 2.04881 2.09783 2.13976 2.1755 2.20588 2.23166
2.25349 2.27194 2.28753 2.30068 2.31176 2.3211 2.32895 2.33557 2.34113 2.3458 2.34973 2.35303 2.35581
2.35813 2.36009 2.36173 2.36392 #bodywt for gender,fleet: 1 / 2
0 0.00125426 0.00874666 0.0402032 0.117015 0.239719 0.3889 0.53801 0.667356 0.768514 0.841894 0.89244
0.926182 0.948385 0.962983 0.972665 0.979183 0.983654 0.986783 0.989018 0.990646 0.991853 0.992764
0.993461 0.994002 0.994426 0.994762 0.99503 0.995247 0.995422 0.995565 0.995682 0.995778 0.995857
0.995922 0.995977 0.996022 0.996059 0.996091 0.996117 0.996151 #selex for gender,fleet: 1 / 2
0.00732093 0.0215961 0.116417 0.314993 0.449501 0.583303 0.717042 0.850654 0.986439 1.12519 1.26423
1.39892 1.52503 1.63996 1.74262 1.83305 1.91188 1.9801 2.03878 2.08905 2.13194 2.16844 2.19943 2.22568
2.24789 2.26666 2.28249 2.29584 2.30709 2.31656 2.32453 2.33123 2.33687 2.34161 2.34559 2.34893 2.35174
2.3541 2.35609 2.35775 2.35997 #bodywt for gender,fleet: 1 / 3
0 3.99484e-005 8.84628e-005 0.00166566 0.0231508 0.121521 0.327351 0.571894 0.766473 0.884701 0.945581
0.974342 0.987534 0.993636 0.996551 0.998008 0.998774 0.999198 0.999446 0.999597 0.999694 0.999758
0.999802 0.999833 0.999855 0.999872 0.999884 0.999894 0.999902 0.999907 0.999912 0.999916 0.999919
0.999921 0.999923 0.999925 0.999927 0.999928 0.999929 0.999929 0.99993 #selex for gender,fleet: 1 / 3
0.00942627 0.0373238 0.0957337 0.19346 0.323242 0.471428 0.628981 0.788996 0.947746 1.10305 1.25238
1.39279 1.52189 1.63831 1.74173 1.83254 1.91158 1.97991 2.03866 2.08896 2.13188 2.16839 2.19939 2.22565
2.24787 2.26663 2.28247 2.29582 2.30707 2.31655 2.32452 2.33122 2.33686 2.3416 2.34558 2.34892 2.35173
2.35409 2.35608 2.35774 2.35996 #bodywt for gender,fleet: 1 / 4
0 0.00178177 0.00812647 0.0436239 0.151915 0.337435 0.550794 0.732893 0.856744 0.928043 0.964816
0.98269 0.991217 0.99533 0.997375 0.998434 0.999009 0.999337 0.999532 0.999654 0.999733 0.999787
0.999823 0.99985 0.999869 0.999883 0.999894 0.999903 0.999909 0.999915 0.999919 0.999922 0.999925
0.999927 0.999929 0.99993 0.999931 0.999932 0.999933 0.999934 0.999935 #selex for gender,fleet: 1 / 4
0.0362401 0.0702429 0.12373 0.221844 0.353379 0.501038 0.655739 0.811297 0.964902 1.11529 1.26058
1.39808 1.52525 1.64046 1.74313 1.83349 1.91224 1.98039 2.03902 2.08924 2.13211 2.16858 2.19955 2.22579
2.24799 2.26675 2.28258 2.29592 2.30717 2.31663 2.3246 2.3313 2.33694 2.34167 2.34565 2.349 2.35181
2.35417 2.35615 2.35781 2.36003 #bodywt for gender,fleet: 1 / 5

0 0.000139894 0.00176249 0.0169599 0.0849051 0.237313 0.447997 0.65202 0.803789 0.897192 0.947923
0.973615 0.986284 0.992559 0.995746 0.997427 0.998353 0.998887 0.999209 0.999411 0.999543 0.999633
0.999695 0.999739 0.999772 0.999797 0.999815 0.99983 0.999841 0.99985 0.999857 0.999863 0.999868
0.999871 0.999875 0.999877 0.999879 0.999881 0.999882 0.999884 0.999885 #selex for gender,fleet: 1 / 5
0.0159243 0.0640324 0.125071 0.219755 0.342029 0.477511 0.620658 0.770554 0.92681 1.08532 1.23967
1.38448 1.51665 1.63502 1.73962 1.83115 1.91062 1.97922 2.03815 2.08857 2.13156 2.16813 2.19917 2.22546
2.2477 2.26648 2.28233 2.29569 2.30695 2.31643 2.32441 2.33111 2.33675 2.34149 2.34548 2.34883 2.35164
2.354 2.35598 2.35765 2.35987 #bodywt for gender,fleet: 1 / 6
0 0.000305064 0.00352852 0.0344219 0.162288 0.403955 0.66325 0.844879 0.938137 0.977134 0.991683
0.996886 0.998764 0.99947 0.999753 0.999875 0.999931 0.999959 0.999974 0.999982 0.999987 0.99999
0.999992 0.999994 0.999995 0.999996 0.999996 0.999996 0.999997 0.999997 0.999997 0.999997 0.999997
0.999998 0.999998 0.999998 0.999998 0.999998 0.999998 0.999998 0.999998 #selex for gender,fleet: 1 / 6
0.00565065 0.0182809 0.110789 0.242422 0.352165 0.449009 0.529645 0.595049 0.647322 0.688381 0.719998
0.7439 0.761701 0.774809 0.784379 0.791324 0.796343 0.799958 0.802557 0.804421 0.805758 0.806715 0.8074
0.807891 0.808241 0.808492 0.808672 0.8088 0.808891 0.808957 0.809004 0.809037 0.809061 0.809078
0.809091 0.809099 0.809106 0.80911 0.809113 0.809115 0.809118 #bodywt for gender,fleet: 2 / 1
0 5.36712e-006 2.09599e-005 0.0018923 0.0384029 0.176457 0.381439 0.564876 0.693243 0.774626 0.825022
0.856546 0.8767 0.88989 0.898704 0.904694 0.90882 0.91169 0.913702 0.915119 0.916122 0.916833 0.917339
0.917699 0.917956 0.918139 0.91827 0.918363 0.91843 0.918478 0.918512 0.918536 0.918553 0.918566
0.918575 0.918581 0.918586 0.918589 0.918591 0.918593 0.918594 #selex for gender,fleet: 2 / 1
0.031437 0.0534572 0.0905473 0.172468 0.275355 0.372576 0.45929 0.534244 0.596285 0.645442 0.683119
0.711353 0.732197 0.747433 0.758494 0.766488 0.772245 0.776383 0.779353 0.781481 0.783005 0.784096
0.784877 0.785435 0.785835 0.78612 0.786324 0.78647 0.786574 0.786649 0.786702 0.78674 0.786768 0.786787
0.786801 0.786811 0.786818 0.786823 0.786827 0.786829 0.786832 #bodywt for gender,fleet: 2 / 2
0 0.000199435 0.00410499 0.0681349 0.323956 0.635093 0.832187 0.92344 0.961929 0.978606 0.986406
0.990383 0.992576 0.993866 0.994665 0.995179 0.995519 0.99575 0.995908 0.996018 0.996094 0.996149
0.996187 0.996214 0.996233 0.996247 0.996257 0.996264 0.996269 0.996273 0.996275 0.996277 0.996278
0.996279 0.99628 0.99628 0.996281 0.996281 0.996281 0.996281 0.996281 #selex for gender,fleet: 2 / 2
0.00564274 0.0167507 0.064755 0.264188 0.349016 0.42245 0.4902 0.552858 0.607784 0.653 0.68848 0.715448
0.735532 0.750293 0.761048 0.768839 0.77446 0.778504 0.781408 0.783491 0.784983 0.786051 0.786816
0.787363 0.787754 0.788034 0.788234 0.788377 0.788479 0.788552 0.788604 0.788641 0.788668 0.788687
0.788701 0.788711 0.788718 0.788723 0.788726 0.788729 0.788731 #bodywt for gender,fleet: 2 / 3
0 3.84673e-005 6.25361e-005 0.00372463 0.0946492 0.382315 0.672437 0.839152 0.917006 0.952477 0.969504
0.978309 0.983204 0.986099 0.987896 0.989055 0.989824 0.990344 0.990701 0.99095 0.991124 0.991246
0.991333 0.991395 0.991438 0.991469 0.991492 0.991507 0.991519 0.991527 0.991533 0.991537 0.99154
0.991542 0.991543 0.991544 0.991545 0.991546 0.991546 0.991546 0.991547 #selex for gender,fleet: 2 / 3
0.00564303 0.0167633 0.049926 0.214161 0.312637 0.39477 0.470536 0.539566 0.598823 0.646725 0.683822
0.711773 0.732469 0.747623 0.758636 0.766599 0.772338 0.776463 0.779424 0.781547 0.783067 0.784155
0.784934 0.785491 0.785889 0.786174 0.786377 0.786523 0.786627 0.786702 0.786755 0.786793 0.78682
0.786839 0.786853 0.786863 0.78687 0.786875 0.786879 0.786881 0.786884 #bodywt for gender,fleet: 2 / 4
0 0.00099917 0.00149497 0.0162184 0.18623 0.52636 0.782797 0.904791 0.954932 0.975818 0.985218 0.989858
0.992352 0.993792 0.99467 0.995229 0.995596 0.995843 0.996012 0.996129 0.996211 0.996268 0.996309
0.996338 0.996358 0.996373 0.996383 0.99639 0.996396 0.996399 0.996402 0.996404 0.996405 0.996406
0.996407 0.996408 0.996408 0.996408 0.996408 0.996409 0.996409 #selex for gender,fleet: 2 / 4
0.00564616 0.02162 0.181197 0.246746 0.308287 0.375939 0.451954 0.526344 0.590233 0.641042 0.679826
0.708756 0.73004 0.745558 0.756805 0.764923 0.770765 0.774962 0.777972 0.780129 0.781674 0.782779
0.78357 0.784135 0.78454 0.784829 0.785036 0.785183 0.785289 0.785365 0.785419 0.785457 0.785485
0.785504 0.785519 0.785529 0.785536 0.785541 0.785545 0.785547 0.78555 #bodywt for gender,fleet: 2 / 5
0 3.04822e-006 6.44687e-005 0.0181454 0.280143 0.698738 0.906427 0.970874 0.989463 0.995377 0.997562
0.998497 0.998951 0.999195 0.999335 0.999422 0.999477 0.999514 0.999538 0.999555 0.999567 0.999575
0.999581 0.999585 0.999588 0.99959 0.999591 0.999593 0.999593 0.999594 0.999594 0.999594 0.999595
0.999595 0.999595 0.999595 0.999595 0.999595 0.999595 0.999595 0.999595 #selex for gender,fleet: 2 / 5
0.00564697 0.0182204 0.117483 0.224691 0.304825 0.381399 0.45799 0.530401 0.59267 0.642546 0.680827
0.709483 0.730608 0.74603 0.757217 0.765296 0.771113 0.775292 0.77829 0.780439 0.781977 0.783078
0.783866 0.78443 0.784833 0.785121 0.785327 0.785474 0.785579 0.785655 0.785708 0.785747 0.785774
0.785794 0.785808 0.785818 0.785825 0.78583 0.785834 0.785837 0.785839 #bodywt for gender,fleet: 2 / 6
0 5.8407e-005 0.000251073 0.0215907 0.254792 0.640247 0.866949 0.951757 0.980328 0.990554 0.994674
0.996552 0.997506 0.998034 0.998348 0.998543 0.99867 0.998754 0.998811 0.99885 0.998878 0.998897
0.998911 0.99892 0.998927 0.998932 0.998935 0.998938 0.99894 0.998941 0.998942 0.998942 0.998943
0.998943 0.998943 0.998944 0.998944 0.998944 0.998944 0.998944 0.998944 #selex for gender,fleet: 2 / 6
0.13 0.13 0.13 0.13 0.13 0.13 0.13 0.13 0.13 0.13 0.13 0.13 0.13 0.13 0.13 0.13 0.13 0.13 0.13 0.13 0.13 0.13

0.13 0.13 0.13 0.13 0.13 0.13 0.13 0.13 0.13 0.13 0.13 0.13 0.13 0.13 0.13 0.13 0.13 #mean M for year Yinit: 2011 sex: 1
5374.23 4599.39 3730.63 3695.18 6322.82 3716.61 1723.46 1376.65 799.867 617.67 318.504 271.088 156.663 163.783 40.2151 17.133 10.6236 5.14211 2.21424 0.59072 0.337673 0.203439 0.0686606 0.0258394 0.00704564 0.00189633 0.00104878 0.000691878 0.000153155 4.4799e-005 1.65176e-005 7.52421e-006 2.92409e-006 9.9452e-007 6.62745e-007 2.89265e-007 8.44077e-008 3.79865e-008 1.35291e-008 6.9985e-009 1.05531e-008 #numbers for year Yinit: 2011 sex: 1
0.144909 #mean M for year Yinit: 2011 sex: 2
5374.23 4531.33 3621.24 3535.52 5965.07 3401.46 1431 963.472 471.122 320.354 150.946 119.323 64.4424 61.8585 13.7226 5.29799 3.01425 1.36232 0.553035 0.139344 0.0765185 0.0449084 0.0144037 0.00482993 0.00116691 0.000291914 0.000157004 0.000102282 2.27472e-005 6.9925e-006 2.82493e-006 1.40636e-006 5.70525e-007 2.13424e-007 1.61347e-007 7.75326e-008 2.41795e-008 1.13723e-008 4.20075e-009 2.25583e-009 3.72317e-009 #numbers for year Yinit: 2011 sex: 2
5374.23 4599.39 3730.63 3695.18 6322.82 3716.61 1723.46 1376.65 799.867 617.67 318.504 271.088 156.663 163.783 40.2151 17.133 10.6236 5.14211 2.21424 0.59072 0.337673 0.203439 0.0686606 0.0258394 0.00704564 0.00189633 0.00104878 0.000691878 0.000153155 4.4799e-005 1.65176e-005 7.52421e-006 2.92409e-006 9.9452e-007 6.62745e-007 2.89265e-007 8.44077e-008 3.79865e-008 1.35291e-008 6.9985e-009 1.05531e-008 #numbers for year Ydeclare: 2011 sex: 1
5374.23 4531.33 3621.24 3535.52 5965.07 3401.46 1431 963.472 471.122 320.354 150.946 119.323 64.4424 61.8585 13.7226 5.29799 3.01425 1.36232 0.553035 0.139344 0.0765185 0.0449084 0.0144037 0.00482993 0.00116691 0.000291914 0.000157004 0.000102282 2.27472e-005 6.9925e-006 2.82493e-006 1.40636e-006 5.70525e-007 2.13424e-007 1.61347e-007 7.75326e-008 2.41795e-008 1.13723e-008 4.20075e-009 2.25583e-009 3.72317e-009 #numbers for year Ydeclare: 2011 sex: 2
#R0 1876 1877 1878 1879 1880 1881 1882 1883 1884 1885 1886 1887 1888 1889 1890 1891 1892 1893 1894 1895 1896 1897 1898 1899 1900 1901 1902 1903 1904 1905 1906 1907 1908 1909 1910 1911 1912 1913 1914 1915 1916 1917 1918 1919 1920 1921 1922 1923 1924 1925 1926 1927 1928 1929 1930 1931 1932 1933 1934 1935 1936 1937 1938 1939 1940 1941 1942 1943 1944 1945 1946 1947 1948 1949 1950 1951 1952 1953 1954 1955 1956 1957 1958 1959 1960 1961 1962 1963 1964 1965 1966 1967 1968 1969 1970 1971 1972 1973 1974 1975 1976 1977 1978 1979 1980 1981 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 2007 2008 2009 2010 #years
11838.1 11838.1 11838 11838 11838 11838 11838 11837.9 11837.7 11837.5 11837.3 11837 11836.7 11836.4 11836 11835.6 11835.2 11834.8 11834.3 11833.8 11833.3 11832.8 11832.3 11831.7 11831.2 11830.6 11830.1 11829.5 11828.9 11828.3 11827.7 11827.1 11826.5 11825.8 11825.2 11824.5 11823.9 11823.2 11822.6 11821.9 11821.2 11820.5 11819.9 11818.5 11817.7 11817.6 11818.1 11818.2 11817.6 11817 11815.8 11814.7 11813.7 11812.1 11810.7 11808.8 11807.3 11805.8 11803.7 11801.4 11794.2 11787.1 11782.5 11773.6 12948.3 12554.1 11694 10633.9 9850.43 9741.79 10319 10750.3 10405.2 9949.24 9556.49 9358.55 9446.27 9766.96 9986.39 10225.4 10366.8 9727.45 8340.03 8240.58 9703.65 13443.2 11459.1 6268.17 8585.93 10084.8 9956.26 25965.4 7784.4 11183.4 10866.2 11043.5 11053.1 7150.66 6512.77 8336.34 8150.12 12000.9 11671 7362.66 8966.34 9277.49 7818.6 7757.76 9361.15 14643.8 7650.33 4810.09 6398.73 8807.15 9252.76 11280.1 7872.93 5877.56 9605.22 10065.1 9788.74 7771.3 9397.51 20589.9 10973 10823.9 7384.77 8589.87 7093.56 8511.32 8179.62 14589.1 21378.1 10924.1 9677.6 10475.8 10748.5 #Recruits
29388.9 29388.9 29388.2 29387.6 29387 29386.4 29378.7 29364.3 29343.5 29316.8 29284.5 29247.2 29205.4 29159.3 29109.6 29056.4 29000.3 28941.4 28880.1 28816.6 28751.2 28684 28615.4 28545.3 28474.1 28401.7 28328.4 28254.3 28179.3 28103.7 28027.4 27950.6 27873.3 27795.6 27717.5 27638.9 27559.4 27479.6 27399.6 27319.4 27239.1 27158.5 27081.1 26916.5 26831.1 26814.6 26872.6 26889.3 26819.1 26750.7 26615.6 26490.8 26378.8 26201.3 26043.1 25837.8 25679.6 25525.7 25301.4 25075.9 24364.7 23710.7 23295.6 22549.5 21690.3 20746 19845.2 19168.7 17775.8 16396.4 15688.2 15212.6 13885 12997.2 11324.3 9864.89 8158.72 7502.01 7048.15 6958.9 6482.85 5999.06 5892.19 5477.08 5358.79 5195.2 5030.27 4522.85 4181.72 3817.62 3819.93 3918.06 4083.72 4063.18 4105.45 4294.83 4501.45 5057.19 5253.8 5435.34 5136.34 4652.98 4338.54 4151.48 3570 2862.32 2660.74 2760.91 2685.36 2421.33 2400.96 2472.71 2477.24 2172.01 2118.4 2149.32 2099.4 1734.87 1578.51 1623.37 1910.31 2183.76 2202.7 2053.82 2145.17 2400.04 2567.92 2722.62 3153.54 3983.39 4542.69 4414.89 4378.99 4062.59 3831.02 3580.27 4439.65 #SpawnBio
0.932699 0.4 0 # spawn-recr steepness, sigmaR, autocorr
state of nature - high - A blank comment line - needed for the program to run # in maximization mode, StartTime: Tue Jul 19 10:37:11 2011
0 0 0 0.000386532 0.0138424 0.108168 0.32066 0.566123 0.785341 0.977605 1.15136 1.30987 1.45357 1.58247 1.69691 1.79758 1.88547 1.96171 2.0275 2.08404 2.13245 2.17377 2.20897 2.23887 2.26425 2.28574 2.30393

2.31931 2.33229 2.34326 2.3525 2.3603 2.36687 2.3724 2.37706 2.38099 2.38429 2.38707 2.38941 2.39138 2.39403 #female fecundity; weighted by N in year Y_init across morphs and areas
0.0164508 0.0620352 0.124834 0.231786 0.37626 0.54037 0.713698 0.887665 1.05593 1.21433 1.36057 1.49379 1.61398 1.72157 1.8172 1.90163 1.97569 2.04026 2.09625 2.14458 2.18611 2.22169 2.25207 2.27795 2.29994 2.31861 2.33443 2.34781 2.35913 2.36868 2.37675 2.38356 2.38929 2.39413 2.3982 2.40164 2.40453 2.40696 2.409 2.41073 2.41304 #bodywt for gender,fleet: 1 / 1
0 2.08862e-005 0.000232992 0.00251522 0.0155472 0.0554527 0.134417 0.248501 0.380024 0.509045 0.621885 0.712978 0.782682 0.834292 0.87185 0.899024 0.918728 0.933122 0.943747 0.951686 0.957692 0.962292 0.965856 0.968647 0.970854 0.972614 0.974029 0.975173 0.976105 0.976866 0.977491 0.978006 0.978432 0.978785 0.979078 0.979322 0.979526 0.979696 0.979838 0.979957 0.980115 #selex for gender,fleet: 1 / 1
0.0374963 0.0547026 0.0936234 0.180279 0.310414 0.465777 0.634868 0.808115 0.978257 1.14041 1.29175 1.43093 1.55744 1.67125 1.77264 1.86217 1.94061 2.00886 2.06791 2.11874 2.16233 2.19959 2.23134 2.25835 2.28127 2.3007 2.31715 2.33105 2.3428 2.35271 2.36108 2.36813 2.37408 2.37909 2.3833 2.38686 2.38985 2.39236 2.39448 2.39627 2.39866 #bodywt for gender,fleet: 1 / 2
0 0.00101121 0.00723364 0.0346322 0.10484 0.221478 0.367732 0.517502 0.649918 0.755036 0.832171 0.885752 0.921717 0.945453 0.961071 0.971422 0.978377 0.983134 0.986454 0.988818 0.990534 0.991803 0.992758 0.993487 0.994051 0.994493 0.994843 0.995123 0.995348 0.99553 0.995679 0.9958 0.9959 0.995983 0.996051 0.996108 0.996155 0.996194 0.996227 0.996254 0.99629 #selex for gender,fleet: 1 / 2
0.00726432 0.0213635 0.118296 0.318147 0.451443 0.584347 0.717293 0.850275 0.985781 1.12487 1.26499 1.40141 1.5297 1.64704 1.75219 1.84507 1.92628 1.99673 2.05749 2.10967 2.1543 2.19238 2.22478 2.25229 2.27562 2.29538 2.31209 2.32621 2.33813 2.34819 2.35668 2.36383 2.36986 2.37493 2.37921 2.38281 2.38584 2.38839 2.39053 2.39234 2.39476 #bodywt for gender,fleet: 1 / 3
0 2.92391e-005 6.56028e-005 0.00135617 0.0203026 0.112211 0.313004 0.558961 0.758535 0.881034 0.944261 0.974019 0.987556 0.993749 0.996669 0.998109 0.998855 0.999263 0.999498 0.99964 0.99973 0.999789 0.999829 0.999857 0.999877 0.999892 0.999903 0.999912 0.999918 0.999924 0.999928 0.999931 0.999934 0.999936 0.999938 0.999939 0.999941 0.999942 0.999942 0.999943 0.999944 #selex for gender,fleet: 1 / 3
0.00954769 0.038143 0.0962969 0.193191 0.322564 0.470751 0.628718 0.789371 0.948737 1.10467 1.25489 1.39665 1.52754 1.64607 1.75177 1.84489 1.92621 1.99671 2.0575 2.10968 2.15432 2.1924 2.2248 2.25231 2.27564 2.2954 2.31211 2.32623 2.33815 2.34821 2.3567 2.36385 2.36987 2.37495 2.37922 2.38282 2.38585 2.3884 2.39055 2.39235 2.39478 #bodywt for gender,fleet: 1 / 4
0 0.0013974 0.0067222 0.0377586 0.136472 0.312459 0.52266 0.70878 0.839943 0.917941 0.959272 0.979778 0.989699 0.994524 0.996932 0.99818 0.998856 0.99924 0.999468 0.99961 0.999701 0.999763 0.999805 0.999835 0.999857 0.999873 0.999886 0.999895 0.999903 0.999909 0.999913 0.999917 0.99992 0.999923 0.999925 0.999926 0.999928 0.999929 0.99993 0.99993 0.999932 #selex for gender,fleet: 1 / 4
0.0366388 0.0703668 0.123544 0.22116 0.352304 0.499854 0.654802 0.810855 0.965052 1.11617 1.26254 1.40156 1.53064 1.64805 1.75305 1.84575 1.92681 1.99714 2.05782 2.10993 2.15452 2.19257 2.22494 2.25244 2.27576 2.2955 2.3122 2.32631 2.33823 2.34829 2.35677 2.36392 2.36994 2.37502 2.37929 2.38289 2.38592 2.38846 2.39061 2.39241 2.39484 #bodywt for gender,fleet: 1 / 5
0 0.00011613 0.00149354 0.0148548 0.0769737 0.221442 0.427752 0.633439 0.790397 0.889039 0.94346 0.971305 0.985109 0.991958 0.995432 0.997258 0.998259 0.998834 0.999178 0.999393 0.999533 0.999627 0.999692 0.999739 0.999773 0.999798 0.999818 0.999832 0.999844 0.999853 0.999861 0.999867 0.999871 0.999875 0.999879 0.999881 0.999883 0.999885 0.999887 0.999888 0.99989 #selex for gender,fleet: 1 / 5
0.0284948 0.067246 0.119332 0.212231 0.336286 0.475551 0.62272 0.774745 0.930922 1.08863 1.24281 1.38844 1.52223 1.64267 1.74956 1.84343 1.9252 1.99599 2.05696 2.10927 2.15399 2.19213 2.22457 2.25212 2.27547 2.29524 2.31197 2.3261 2.33803 2.34809 2.35658 2.36374 2.36977 2.37485 2.37912 2.38272 2.38576 2.38831 2.39045 2.39226 2.39469 #bodywt for gender,fleet: 1 / 6
0 0.000308512 0.00363521 0.0323572 0.146143 0.364364 0.613153 0.80436 0.913791 0.964892 0.986043 0.994347 0.997598 0.99891 0.999467 0.999719 0.99984 0.999902 0.999936 0.999956 0.999968 0.999976 0.999981 0.999984 0.999987 0.999988 0.99999 0.999991 0.999991 0.999992 0.999993 0.999993 0.999993 0.999993 0.999994 0.999994 0.999994 0.999994 0.999994 0.999994 0.999994 #selex for gender,fleet: 1 / 6
0.00566207 0.0182835 0.114042 0.243936 0.353126 0.449623 0.530164 0.59573 0.648373 0.689921 0.722061 0.746461 0.764702 0.77818 0.788052 0.795239 0.800446 0.804208 0.806919 0.80887 0.810271 0.811278 0.812 0.812518 0.812889 0.813156 0.813347 0.813483 0.813581 0.813652 0.813702 0.813738 0.813764 0.813782 0.813796 0.813805 0.813812 0.813817 0.81382 0.813823 0.813825 #bodywt for gender,fleet: 2 / 1
0 3.7726e-006 1.57446e-005 0.00159283 0.0349358 0.167681 0.371189 0.556686 0.687755 0.771231 0.823019 0.855432 0.87616 0.889728 0.8988 0.90497 0.909224 0.912188 0.914268 0.915736 0.916777 0.917517 0.918045 0.918421 0.91869 0.918882 0.919019 0.919118 0.919188 0.919239 0.919275 0.919301 0.919319 0.919333 0.919342 0.919349 0.919354 0.919357 0.91936 0.919362 0.919363 #selex for gender,fleet: 2 / 1
0.0318624 0.0539619 0.0905358 0.171875 0.274644 0.371948 0.458813 0.534068 0.596617 0.646411 0.684747 0.713589 0.734958 0.750628 0.76204 0.77031 0.776283 0.780588 0.783685 0.78591 0.787508 0.788655 0.789477 0.790067 0.790489 0.790792 0.791009 0.791165 0.791276 0.791356 0.791414 0.791455 0.791484 0.791505

0.79152 0.791531 0.791539 0.791544 0.791548 0.791551 0.791554 #bodywt for gender,fleet: 2 / 2
0 0.000168868 0.00344935 0.0603734 0.302564 0.612601 0.817253 0.91505 0.957244 0.975809 0.984579
0.989078 0.99157 0.99304 0.993953 0.994541 0.994931 0.995196 0.995378 0.995504 0.995593 0.995656 0.9957
0.995732 0.995755 0.995771 0.995782 0.99579 0.995796 0.9958 0.995803 0.995806 0.995807 0.995808 0.995809
0.99581 0.99581 0.99581 0.995811 0.995811 0.995811 #selex for gender,fleet: 2 / 2
0.00565289 0.0165486 0.066531 0.265233 0.349662 0.422945 0.490555 0.553258 0.608502 0.654228 0.690286
0.717813 0.738391 0.753567 0.764659 0.772718 0.778548 0.782754 0.785782 0.78796 0.789524 0.790646
0.791452 0.792029 0.792443 0.79274 0.792953 0.793105 0.793214 0.793293 0.793349 0.793389 0.793418
0.793438 0.793453 0.793464 0.793471 0.793477 0.793481 0.793484 0.793486 #bodywt for gender,fleet: 2 / 3
0 2.79495e-005 4.67015e-005 0.00318051 0.0864393 0.364254 0.656196 0.828873 0.911031 0.948891 0.967186
0.976683 0.981975 0.985109 0.987058 0.988316 0.989151 0.989717 0.990107 0.990378 0.990568 0.990703
0.990798 0.990866 0.990914 0.990948 0.990973 0.990991 0.991003 0.991012 0.991019 0.991023 0.991027
0.991029 0.991031 0.991032 0.991033 0.991033 0.991034 0.991034 0.991034 #selex for gender,fleet: 2 / 3
0.00565328 0.0165635 0.0501722 0.215019 0.312471 0.394518 0.470209 0.539372 0.59906 0.647577 0.685334
0.713901 0.735131 0.750725 0.762093 0.770337 0.776294 0.780588 0.783678 0.785899 0.787493 0.788637
0.789458 0.790047 0.790469 0.790771 0.790988 0.791143 0.791254 0.791334 0.791391 0.791432 0.791461
0.791482 0.791498 0.791508 0.791516 0.791522 0.791526 0.791528 0.791531 #bodywt for gender,fleet: 2 / 4
0 0.000746815 0.00114009 0.014128 0.173065 0.507134 0.769212 0.897455 0.951114 0.973699 0.983923
0.988985 0.99171 0.993284 0.994246 0.994858 0.995261 0.995532 0.995718 0.995847 0.995937 0.996001
0.996046 0.996078 0.996101 0.996117 0.996128 0.996137 0.996143 0.996147 0.99615 0.996152 0.996154
0.996155 0.996156 0.996156 0.996157 0.996157 0.996157 0.996157 0.996157 #selex for gender,fleet: 2 / 4
0.00565962 0.0235222 0.179087 0.244934 0.308314 0.376298 0.451769 0.525934 0.590177 0.641638 0.681132
0.710719 0.732565 0.748544 0.76016 0.768568 0.774636 0.779006 0.782148 0.784406 0.786026 0.787189
0.788023 0.788621 0.789049 0.789356 0.789576 0.789734 0.789847 0.789928 0.789986 0.790028 0.790058
0.790079 0.790094 0.790105 0.790113 0.790119 0.790123 0.790126 0.790128 #bodywt for gender,fleet: 2 / 5
0 2.40102e-006 5.98942e-005 0.0160904 0.258402 0.672258 0.892797 0.965385 0.987196 0.994316 0.996986
0.998139 0.998702 0.999004 0.99918 0.999288 0.999357 0.999402 0.999433 0.999454 0.999469 0.999479
0.999487 0.999492 0.999496 0.999498 0.9995 0.999501 0.999502 0.999503 0.999503 0.999504 0.999504
0.999504 0.999504 0.999504 0.999505 0.999505 0.999505 0.999505 0.999505 #selex for gender,fleet: 2 / 5
0.00568624 0.0240174 0.134513 0.219133 0.301978 0.380445 0.45763 0.530274 0.592956 0.64343 0.682362
0.711629 0.733286 0.749149 0.760692 0.769051 0.775087 0.779435 0.782562 0.784809 0.786422 0.787579
0.788409 0.789004 0.789431 0.789736 0.789956 0.790113 0.790225 0.790306 0.790364 0.790405 0.790435
0.790456 0.790471 0.790482 0.79049 0.790495 0.790499 0.790502 0.790505 #bodywt for gender,fleet: 2 / 6
0 1.73635e-005 0.000223241 0.0210974 0.242104 0.61819 0.851557 0.943759 0.976276 0.988331 0.993312
0.995623 0.996812 0.997477 0.997874 0.998123 0.998284 0.998392 0.998466 0.998517 0.998552 0.998577
0.998595 0.998607 0.998616 0.998623 0.998627 0.99863 0.998633 0.998634 0.998636 0.998636 0.998637
0.998637 0.998638 0.998638 0.998638 0.998638 0.998638 0.998638 0.998638 #selex for gender,fleet: 2 / 6
0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19
0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19 #mean M for year Yinit:
2011 sex: 1
9228.5 7271.37 5567.2 5171.67 8311.35 4647.01 2057.65 1587.76 904.671 691.818 354.417 300.046 172.797
180.438 43.9462 18.7171 11.6299 5.63103 2.44339 0.66366 0.386748 0.238726 0.0824753 0.0319544 0.00884358
0.00244908 0.00138966 0.00094339 0.000218504 6.5932e-005 2.53902e-005 1.19494e-005 4.7837e-006
1.72181e-006 1.18126e-006 5.32567e-007 1.61166e-007 7.35587e-008 2.68476e-008 1.39831e-008 2.13377e-008
#numbers for year Yinit: 2011 sex: 1
0.21179 0.21179 0.21179 0.21179 0.21179 0.21179 0.21179 0.21179 0.21179 0.21179 0.21179 0.21179 0.21179
0.21179 0.21179 0.21179 0.21179 0.21179 0.21179 0.21179 0.21179 0.21179 0.21179 0.21179 0.21179 0.21179
0.21179 0.21179 0.21179 0.21179 0.21179 0.21179 0.21179 0.21179 0.21179 0.21179 0.21179 0.21179 0.21179
0.21179 0.21179 #mean M for year Yinit: 2011 sex: 2
9228.5 7114.64 5330.02 4846.45 7625.26 4117.09 1663.2 1096.29 530.758 358.186 167.529 131.541 70.6936
67.8532 14.9855 5.80351 3.31486 1.49686 0.610376 0.155791 0.0865731 0.0516855 0.0168864 0.00582333
0.00142788 0.000366029 0.000200821 0.000133991 3.10397e-005 9.77241e-006 4.07288e-006 2.07129e-006
8.63789e-007 3.36563e-007 2.56821e-007 1.23415e-007 3.86786e-008 1.80075e-008 6.69637e-009 3.55125e-009
5.75581e-009 #numbers for year Yinit: 2011 sex: 2
9228.5 7271.37 5567.2 5171.67 8311.35 4647.01 2057.65 1587.76 904.671 691.818 354.417 300.046 172.797
180.438 43.9462 18.7171 11.6299 5.63103 2.44339 0.66366 0.386748 0.238726 0.0824753 0.0319544 0.00884358
0.00244908 0.00138966 0.00094339 0.000218504 6.5932e-005 2.53902e-005 1.19494e-005 4.7837e-006
1.72181e-006 1.18126e-006 5.32567e-007 1.61166e-007 7.35587e-008 2.68476e-008 1.39831e-008 2.13377e-008
#numbers for year Ydeclare: 2011 sex: 1
9228.5 7114.64 5330.02 4846.45 7625.26 4117.09 1663.2 1096.29 530.758 358.186 167.529 131.541 70.6936
67.8532 14.9855 5.80351 3.31486 1.49686 0.610376 0.155791 0.0865731 0.0516855 0.0168864 0.00582333

0.00142788 0.000366029 0.000200821 0.000133991 3.10397e-005 9.77241e-006 4.07288e-006 2.07129e-006 8.63789e-007 3.36563e-007 2.56821e-007 1.23415e-007 3.86786e-008 1.80075e-008 6.69637e-009 3.55125e-009 5.75581e-009 #numbers for year Ydeclare: 2011 sex: 2
#R0 1876 1877 1878 1879 1880 1881 1882 1883 1884 1885 1886 1887 1888 1889 1890 1891 1892 1893 1894 1895 1896 1897 1898 1899 1900 1901 1902 1903 1904 1905 1906 1907 1908 1909 1910 1911 1912 1913 1914 1915 1916 1917 1918 1919 1920 1921 1922 1923 1924 1925 1926 1927 1928 1929 1930 1931 1932 1933 1934 1935 1936 1937 1938 1939 1940 1941 1942 1943 1944 1945 1946 1947 1948 1949 1950 1951 1952 1953 1954 1955 1956 1957 1958 1959 1960 1961 1962 1963 1964 1965 1966 1967 1968 1969 1970 1971 1972 1973 1974 1975 1976 1977 1978 1979 1980 1981 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 2007 2008 2009 2010 #years
22790.7 22790.7 22790.7 22790.7 22790.6 22790.6 22790.1 22789.3 22788.1 22786.7 22784.9 22782.9 22780.6 22778.2 22775.6 22772.9 22770 22767 22763.9 22760.7 22757.5 22754.1 22750.7 22747.2 22743.7 22740.1 22736.5 22732.8 22729.1 22725.3 22721.5 22717.7 22713.9 22710 22706.1 22702.1 22698.1 22694 22689.9 22685.8 22681.7 22677.6 22673.6 22663.7 22659.3 22659.7 22665 22667.2 22663.2 22659.3 22650.8 22643.1 22636.3 22625 22615.3 22602.2 22592.6 22583.6 22569.2 22555 22502 22452.3 22422.7 22362.2 29437.1 27976 24737.6 21240.2 18864.4 18475.9 20232.3 21851.5 20847.4 19409.1 18017.6 17166.1 16952.8 17461.2 17818.5 18133.1 18045.9 16656.8 14236.3 13920.4 16709.6 22899.3 19682.3 10820.6 14713.5 17136.2 16952.8 44013.3 13313.4 18790.5 18014.8 18131.4 17926 11534.5 10473.2 13224.4 13013.9 19024.6 18531.6 11761.7 14000.1 14518.2 12225.4 12006.1 14538.7 22506.1 11819.8 7485.36 9981.5 13917.4 14553.9 17723.3 12339.6 9246.21 15204.6 16167 15999.7 12840.9 15659.9 34700.6 18488.5 18231.4 12453 14498.3 11959 14323.7 13756.1 24491.8 35681.7 18300.6 16282.7 17585.8 18457 #Recruits
23586.1 23586.1 23585.4 23584.8 23584.3 23583.8 23576.7 23563.3 23544.4 23520.4 23492 23459.7 23424 23385.3 23344.1 23300.7 23255.3 23208.3 23159.8 23110.1 23059.3 23007.6 22955 22901.7 22847.8 22793.4 22738.4 22683.1 22627.4 22571.3 22515 22458.5 22401.7 22344.7 22287.5 22230.1 22172 22113.8 22055.5 21997.2 21938.8 21880.4 21825.1 21687.6 21626.8 21631.5 21704.7 21735.2 21680.6 21626.8 21510.1 21405.1 21314.5 21164.5 21036.2 20866.3 20744.4 20629.3 20450.5 20275.1 19647.7 19090 18771.7 18151.3 17440.7 16666.7 15948.6 15454.1 14309.3 13300.6 13089.3 13152.3 12350.5 11817.2 10422.8 9186.51 7750.91 7366.01 7179.16 7289.06 6961.46 6568.21 6504.38 6124.51 6034.96 5893.5 5732.97 5213.84 4848.5 4476.83 4512.7 4668.09 4863.77 4834.17 4858.64 5050.16 5330.15 5979.35 6195.52 6327.02 5951.23 5391.96 4993.64 4700.98 4017.02 3247.34 3031.45 3139.86 3069.91 2793.49 2756.25 2801.02 2766.21 2431.89 2374.38 2402.01 2327.81 1939.79 1785.44 1856.94 2180.71 2477.36 2496.92 2351.23 2467.49 2760.29 2967.01 3173.35 3709.47 4662.47 5286.81 5168.17 5098.99 4736.5 4463.35 4193.6 5052.13 #SpawnBio
0.796164 0.4 0 # spawn-recr steepness, sigmaR, autocorr