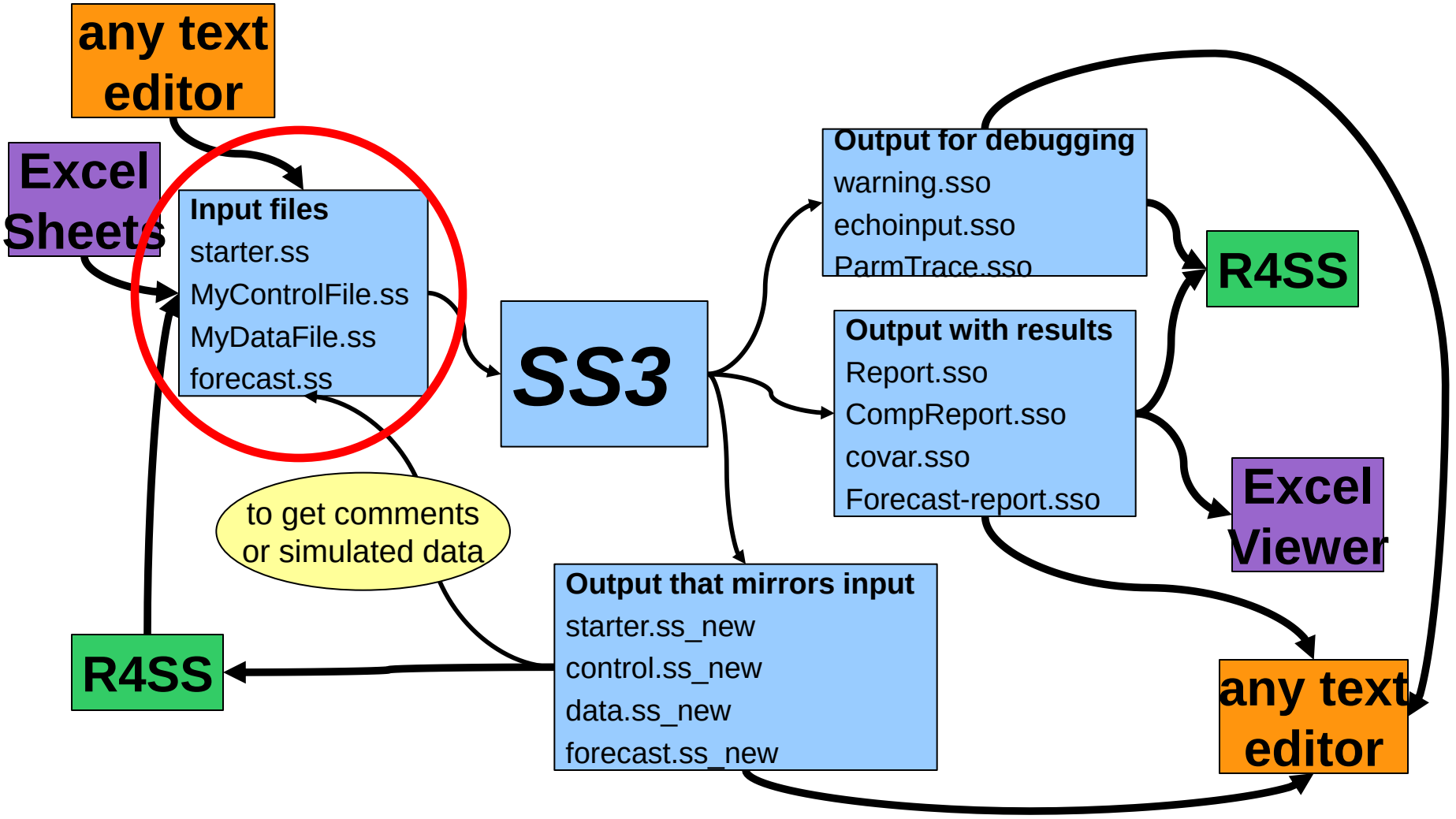
Stock Synthesis INPUT files

SS I/O & Associated Tools



Files needed to run Stock Synthesis

- Directory must contain 4 files
  - Starter.ss
  - Control File (must match name in Starter.ss)
  - Data File (must match name in Starter.ss)
  - Forecast.ss
- Additional files needed depending on options
  - wtatage.ss (needed for empirical weights)
- Directory must include ss3.exe or ss3.exe must already be in the system path

SS STARTER file

Species-specific files 

#C 2013 Assessent of Petrale (Haltuch, Ono, Valero)
petrale13.dat
petrale13.ctl
0 # 0=use init values in control file; 1=use ss3.par
0 # run display detail (0,1,2)
1 # detailed age-structured reports in REPORT.SSO (0,1)
0 # write detailed checkup.sso file (0,1)
4 # write all active parm values to ParmTrace.sso
0 # write to cumreport.sso (1=like&timeseries)
0 # Include prior_like for non-estimated parameters
1 # Use Soft Boundaries to aid convergence
1 # Number of bootstrap datafiles to produce
10 # Turn off estimation for parms after this phase
1 # MCeval burn interval
1 # MCeval thin interval

SS STARTER file (cont.)

Based on selectivity

0 # jitter initial parm value by this fraction
-1 # min yr for sdreport outputs (-1 for styr)
-2 # max yr for sdreport outputs (-2: endyr+Nforecastyrs)
0 # N STD years
0.0001 # final convergence criteria (e.g. 1.0e-04)
0 # retrospective year relative to end year (e.g. -4)
3 # min age for calc of summary biomass
1 # Depletion basis (denominator): X*B0
1 # Fraction (X) for Depletion denominator
(e.g. 0.4 SSBy / (0.40*SSB0))
1 # SPR_report_basis: 1=(1-SPR)/(1-SPR_tgt)
1 # F_report_units: 1=exploitation(Bio)
0 # F_report_basis: 0=raw
999 # check value for end of file

SS FORECAST file

#C
1 # Benchmarks: 0=skip; 1=calc F_spr,F_btgt,F_msy
2 #F Forecast method: 2=F(MSY)
0.3 # SPR target (e.g. 0.40)
0.25 # Biomass target (e.g. 0.40)
#Bmark_years: begbio, endbio, begselex, endselex, begrelF, endrelF
0 0 0 0 0 0
2 #Bmark_relF_Basis: 2=set relF = forecast below
1 # Forecast: 0=none; 1=F(SPR)
12 # N forecast years
1 # F scalar (only used for Do_Forecast==5)
#_Fcast_years: beg_selex, end_selex, beg_relF, end_relF (enter actual year, or values of 0 or -integer to be rel. endyr)
 0 0 0 0

SS FORECAST file

1 # Control rule method (1=catch=f(SSB) west coast; 2=F=f(SSB))
0.25 # Control rule Biomass level for constant F (as frac of Bzero, e.g. 0.40)
0.05 # Control rule Biomass level for no F (as frac of Bzero, e.g. 0.10)
0.956 # Buffer - Control rule target as fraction of Flimit (e.g. 0.75)
3 #_N forecast loops (1-3) (fixed at 3 for now)
3 #_First forecast loop with stochastic recruitment
0 #_Forecast loop control #3 (reserved for future bells&whistles)
0 #_Forecast loop control #4 (reserved for future bells&whistles)
0 #_Forecast loop control #5 (reserved for future bells&whistles)
2014 #FirstYear for caps and allocations (after years with fixed inputs)
0.0 # Implementation Error: value>0.0 to cause active impl_error
0 # Do West Coast gfish rebuilder output (0/1)
2011 # Rebuilder: first year catch could have been set to zero
-1 # Rebuilder: year for current age structure (Yinit) (-1 to set to endyear+1)

SS FORECAST file

1 # fleet relative F: 1=use first-last alloc year; 2=read seas(row) x fleet(col)
2 # basis for max forecast catch; 2=deadbio; 3=retbio; 5=deadnum; 6=retnum
Conditional input F choice = 2; max totalcatch by fleet; -1=no max
must enter value for each fleet, seas(row) x fleet(col)
 -1 -1 -1 -1
max totalcatch by area (-1 to have no max)
 -1
fleet assignment to allocation group: 0 = no alloc group
 0 0 0 0
0 # N input forecast catch levels to input (else calc catch from forecast F)
2 # basis for Forecast catch: 2=dead; 3=retained; 99=input Hrate(F)
999 # verify end of input

SS .DAT file: model dimensions

#C
#_observed data:
1876 #_styr ⟸ Model start year based on catch
2012 #_endyr
1 #_nseas
12 #_months/season
1 #_spawn_seas
4 #_Nfleet
3 #_Nsurveys
1 #_N_areas
WinterN%SummerN%WinterS%SummerS%TriEarly%TriLate%NWFSC
0.16 0.67 0.16 0.67 0.73 0.67 0.67 #_surveytiming_in_season
1 1 1 1 1 1 1 #_area_assignments_for_each_fishery_and_survey
1 1 1 1 #_units of catch: 1=bio; 2=num
0.01 0.01 0.01 0.01 #_se of log(catch)
2 #_Ngenders
40 #_Nages ⟸ Species-specific longevity

SS .DAT file: Catch and abundance index

```
0 #_init_equil_catch
137 #_N_lines_of_catch_to_read
#_catch(mt): fishery catch, year, season
  0  0  0  1      1916     1
.
.
.
  406  477  124  107      2012     1
65        #nobs cpue + survey indices
#_Fleet/Survey; Units (0=num;1=bio;2=F); Error dist(-1=normal;0=lognorm;>0=df_T)
1    1    0
.
.
7   1     0
65 #_N_cpue_and_surveyabundance_obs
#_year seas index obs se(logB)
1987   1    1    1.09    0.275  # WinterN
.
.
2012     1   7   36852   0.15 # NWFSC
```

Number of removal years

Removal history

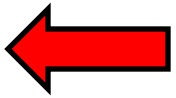
SS .DAT file: discards

```
4 # N fleets with discard
#Fleet, Units#(1=biomass,2=fraction), Error
1 2 -1
.
.
4 2 -1

48 #_N_discard_obs
#Year    Seas     Fleet     Ratio     stdev
1985     1        1         0.0222  0.1103
.
.

42 #_N_meanbodywt_obs
30       #Degrees of freedom for Student's T distribution
#must be in kilograms
#Year    Season  Fleet     Partition  W_kg CV
2002   1   1   1    0.411    0.47
.
.
```

SS .DAT file: length compositions

#Population length bins
2 # length bin method: 1=use databins; 2=binwidth,min,max; 3=read vector
2 # binwidth for population size comp
4 # minimum size (lower edge of first bin and size at age 0.00)
78 # maximum size in the population (lower edge of last bin)

#length data
-1 #_comp_tail_compression
0.001 #constant_add_to_comp
0 #_combine males into females < this bin #
26 #_N_LengthBins
12 14 . . . 62
237 #_N_Length_obs
#Year Season Fleet Gender Partition nSamps data(females, males)



Species-specific length bins

Length compositions here

SS .DAT file: age compositions

17 #_N_age_bins
1 2 . . . 17
0 #_N_ageerror_definitions
534 #_N_Agecomp_obs

534 #nobsa
3 #bin range method for Lbin_lo and Lbin_hi: 1=pop; 2=data; 3=lengths
1 #_combine males into females at or below this bin number
#Year Season Fleet Gender Partition ageErr LbinLo LbinHi nSamps data

Add age compositions here

0 #_N_MeanSize-at-Age_obs
0 #_N_environ_variables
0 #_N_environ_obs
0 # N sizefreq methods to read
0 # no tag data
0 # no morphcomp data
999
ENDDATA

Species-specific length bins

SS .CTL file: Biological dimensions

```
1        #_N_Growth_Patterns
1        #_N_Morphs_in_Growth_Pattern
0        #_Nblock_Patterns
0.5      #_fracfemale
0        #_natM_type:_0=1Parm;
1        # GrowthModel: 1=vonBert
1        #_Growth_Age_for_L1  (minimum age for growth calcs)
999      #_Growth_Age_for_L2   (999 = L∞)
0        #_SD_add_to_LAA
0        #_CV_Growth_Pattern
1        #_maturity_option:      1=length logistic; 2= age logistic
3        #_First_Mature_Age                    ⟸ Species-specific
1        #_fecundity Wt*(a+b*Wt)
0        #_hermaphroditism option: 0=none
1        #_parameter_offset_approach 1=none, 2= M, G, CV_G as offset from female-GP1
1        #_env/block/dev_adjust_method 1=standard; 2=with logistic trans to keep
                                       within base parm bounds
```

SS .CTL file: Biological parameters

Species-specific female biological parameters

Male values

#LO	HI	INIT	PRIOR	TYPE	SD	PHASE	
0.01	0.5	0.15	-1.88	3	0.33	2	#M_Female
10	45	16.3	17.2	-1	10	-2	#L_Amin
35	80	47.9	58.7	-1	10	-4	#L_Amax
0.04	0.5	0.27	0.13	-1	0.8	-4	#VBGF_k
0.01	1	0.08	3	-1	0.8	-3	#CV_young
0.01	1	0.08	0	-1	1	-3	#CV_old
-3	3	2.08E-06	2.08E-06	0	0.8	-3	#Wtlen_1 F
1	5	3.47	3.47	0	0.8	-3	#Wtlen_2 M
10	50	33.1	33.1	0	0.8	-3	#Mat50%
-3	3	-0.74	-0.74	0	0.8	-3	#Mat_slope
-3	3	1	1	0	1	-3	#Eggs/kg_intercept
-3	3	0	0	0	1	-3	#Eggs/kg_slope
-3	3	3.05E-06	3.05E-06	0	0.8	-3	#WL_intercept_male
-3	5	3.36	3.36	0	0.8	-3	#WL_slope_slope_male

SS .CTL file: Productivity inputs

Scale Productivity

3 #_SR_function: Beverton –Holt

#_LO	HI	INIT	PRIOR	PR_type	SD	PHASE		
5	20	9.7	9	-1	10	1	#	SR_LN(R0)
0.2	1	0.86	0.8	0	0.09	5	#	SR_BH_steep
0	2	0.4	0.9	0	5	-99	#	SR_sigmaR
-5	5	0	0	0	1	-99	#	SR_envlink
-5	5	0	0	0	0.2	-2	#	SR_R1_offset
0	0	0	0	-1	0	-99	#	SR_autocorr

```
0       #env_link
0       #env_target_0=none
0       #do_recdev:      0=none;
1959    #first year recr_devs
2009    #last year recr_devs
2       #recdev phase
1       #1: read 13 advanced options
```

SS .CTL file: Fishing mortality

```
#Fishing Mortality info
0.3 # F ballpark for tuning early phases
-2001 # F ballpark year (neg value to disable)
1 # F_Method:  1=Pope; 2=instan. F; 3=hybrid (recommended)
0.9 # max F or harvest rate

#_initial_F_parms, one for each fleet
#_LO HI INIT PRIOR TYPE SD PHASE
     0   1    0     0.01    0     99      -1         #InitF
```

SS .CTL file: q

#_Q_setup

Q_type options: <0=mirror, 0=float_nobiasadj, 1=float_biasadj, 2=parm_nobiasadj, 3=parm_w_random_dev, 4=parm_w_randwalk, 5=mean_unbiased_float_assign_to_parm

#_Den-dep	env-var	extra_se	Q_type	
1	0	0	4	#Fishery1
0	0	1	0	#Survey1

#_Q_parms(if_any);Qunits_are_ln(q)

#_LO	HI	INIT	PRIOR	PR_type	SD	PHASE		
-5	5	-0.22	0	-1	99	3	#	Q_power_Fleet1
0.001	2	0.15	0.22	-1	99	5	#	Q_extraSD_Survey1

SS .CTL file: Selectivity

#_size_selex_types, one for each fleet and survey

#N_sel	Do_retain	Do_male	Special	
24	1	3	0	#Fleet1
24	0	3	0	#Survey1

#_age_selex_types

#N_sel	Do_retain	Do_male	Special	
10	0	0	0	#Fleet1
10	0	0	0	#Survey1

parameter lines for Females, Retention, Males

SS .CTL file: Wrapping Up

2 #logistic bounding (keeps adjusted parameters in bounds)
0 # Tagging data

1 #_Variance_adjustments_to_input_values
0 0 #_add_to_survey_CV
0 0 #_add_to_discard_stddev
0 0 #_add_to_bodywt_CV
1 1 #_mult_by_lencomp_N
1 1 #_mult_by_agecomp_N
1 1 #_mult_by_size-at-age_N

15 #_maxlambdaphase
1 #_sd_offset

1 # number of changes to make to default Lambdas (default =1)
Like_comp codes: 1=surv; 2=disc; 3=mnwt; 4=length; 5=age; 6=SizeFreq; 7=sizeage; 8=catch; 9=init_equ_catch; 10=recrdev; 11=parm_prior; 12=parm_dev; 13=CrashPen; 14=Morphcomp; 15=Tag-comp; 16=Tag-negbin; 17=F_ballpark

0 # (0/1) read specs for more stddev reporting
999 # End of file