American Samoa Model Checks

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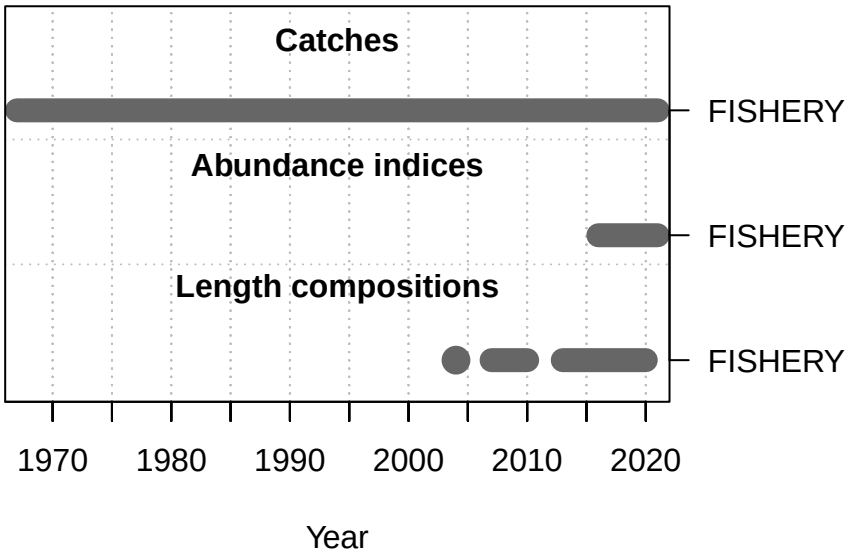
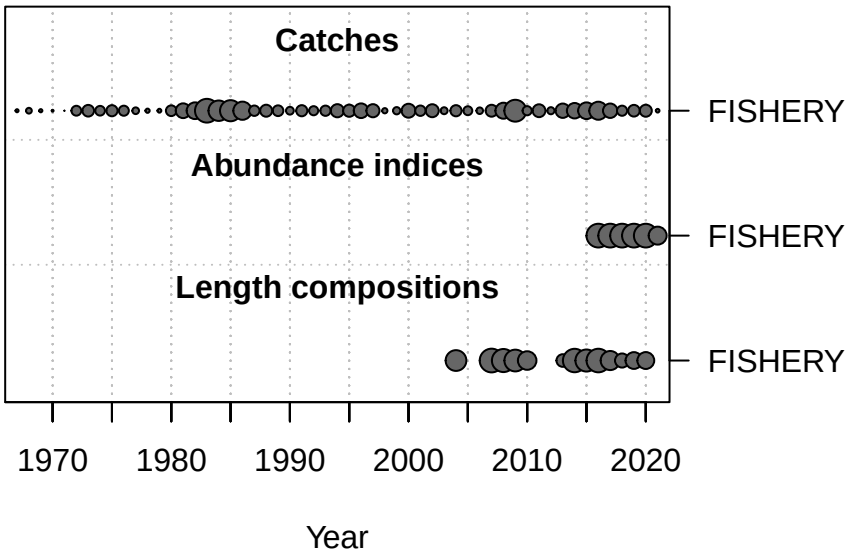
This is a summary report for the APVI base model run.

Model Output

Input Data





Convergence Check

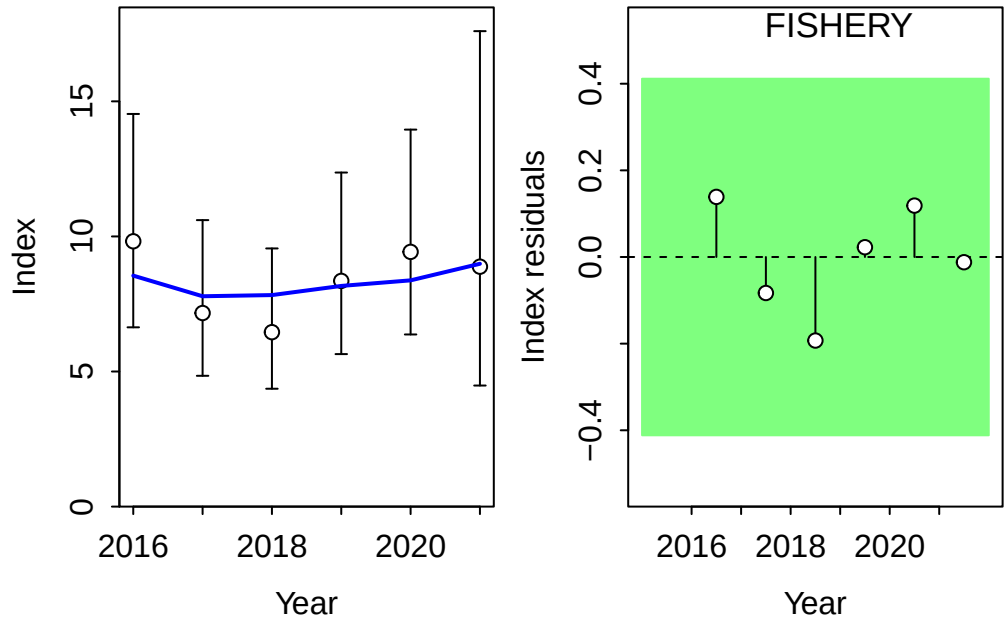
```
  Converged     MaxGrad
1      TRUE 1.70631e-05
```

```
[1] "1 NOTE:  Max data length bin: 85  < max pop len bins: 94; so will accumulate larger pop
[2] "N warnings: 1"
```

Fit to Model

CPUE

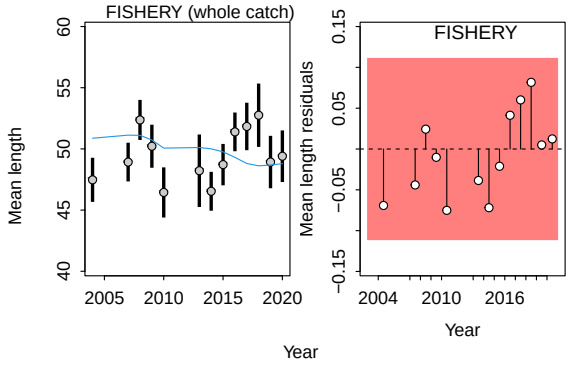
Fleet	RMSE.perc	Nobs
FISHERY	11.4	6
Combined	11.4	6

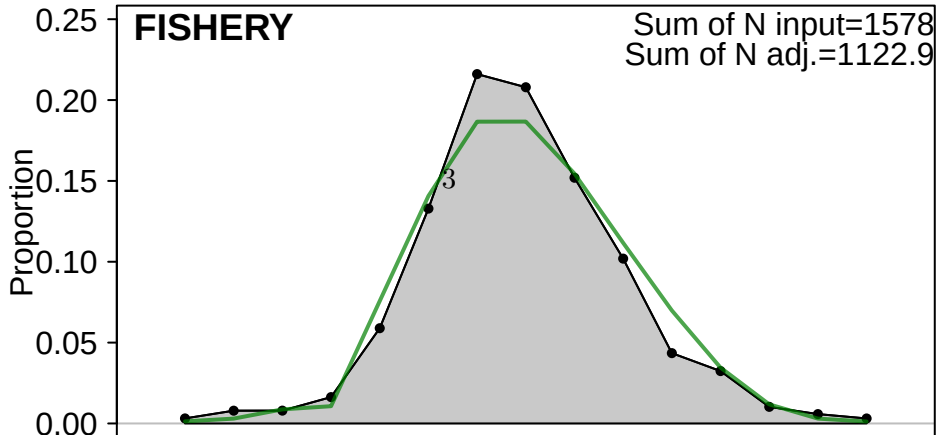


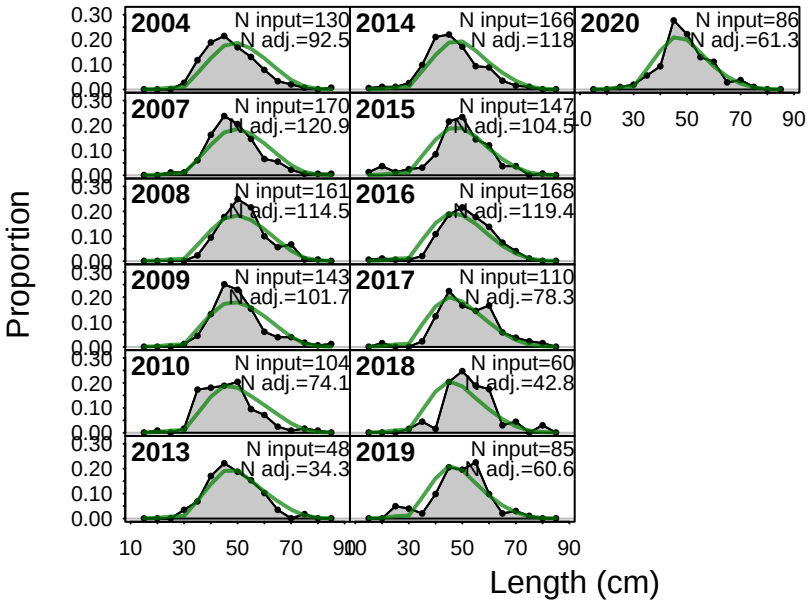
Length Comp

Fleet	RMSE.perc	Nobs
FISHERY	5	13
Combined	5	13

```
          w         lo         hi              Index runs.p   test  sigma3.lo sigma3.hi type
0.1435186 0.1037635 0.3026993             1 FISHERY  0.022 Failed -0.1109282 0.1109282  len
```

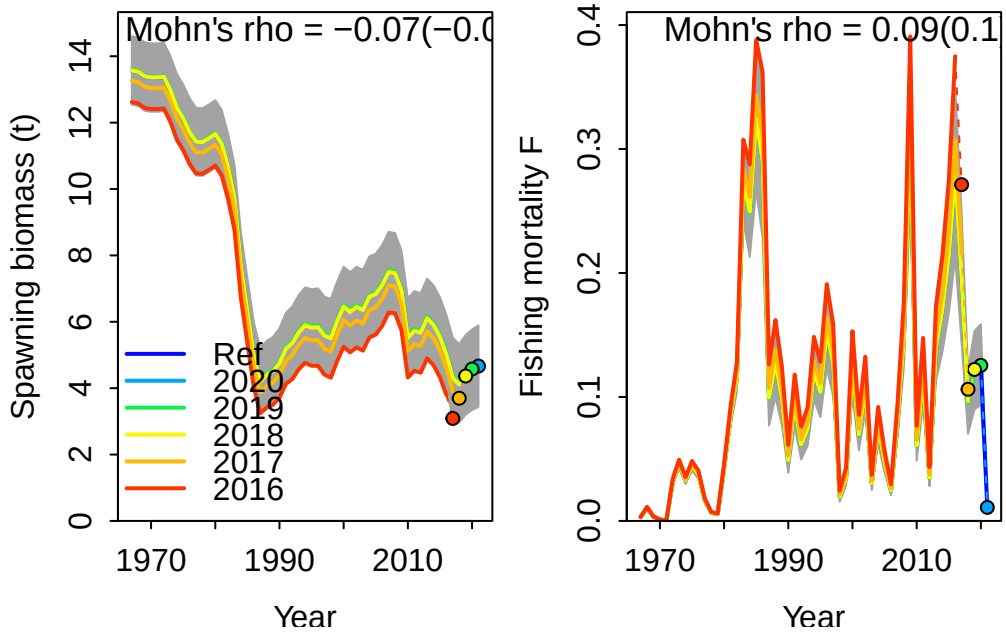






Retrospective

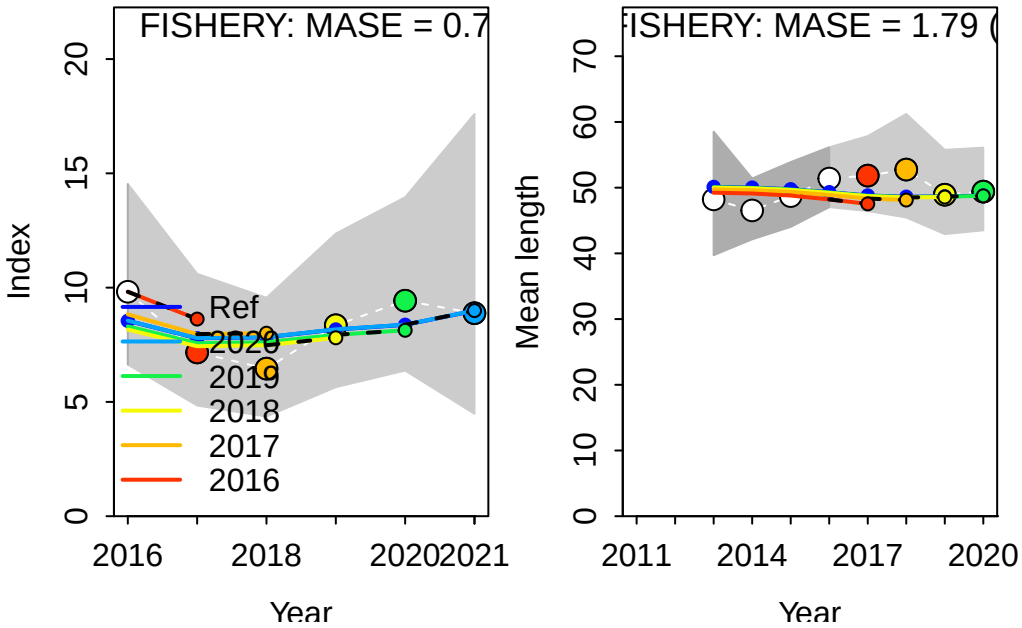
`Mohn's Rho stats, including one step ahead forecasts:`



```
Mohn's Rho stats, including one step ahead forecasts:

  type     peel           Rho   ForecastRho
1    F     2020  0.0001030462  0.0001006773
2    F     2019 -0.0055033645 -0.0053663293
3    F     2018  0.0052316603  0.0051743143
4    F     2017  0.1037040057  0.1046800015
5    F     2016  0.3345462702  0.3826130392
6    F Combined  0.0876163236  0.0974403406
```

Hindcasting

```
Plotting Hindcast Cross-Validation (one-step-ahead)

 Computing MASE with all 5 of 5  prediction residuals for Index FISHERY


MASE stats by Index:
Plotting Hindcast Cross-Validation (one-step-ahead)

 Computing MASE with only 4 of 5  prediction residuals for Index FISHERY

 Warning:  Unequal spacing of naive predictions residuals may influence the interpretation o
```



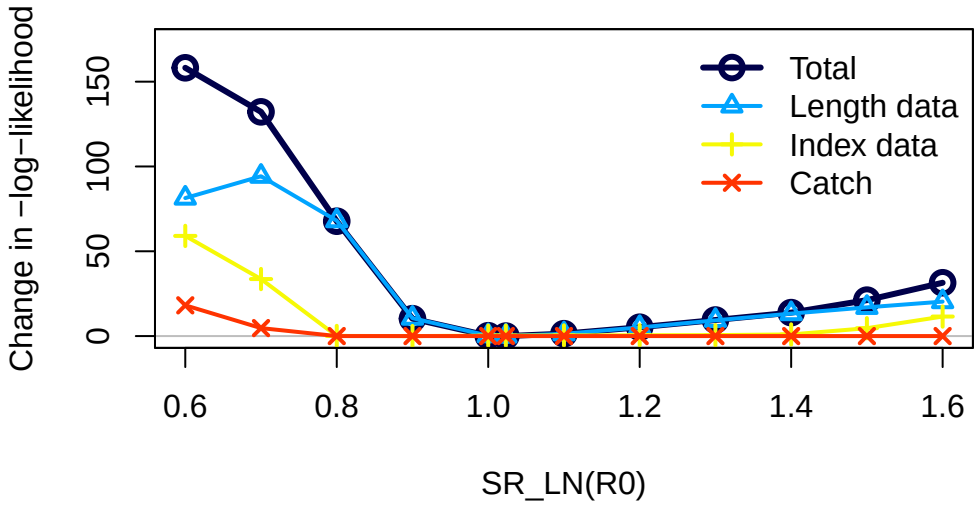

```
MASE stats by Index:

    Index Season     MASE     MAE.PR   MAE.base  MASE.adj n.eval
1 FISHERY      1 1.791823 0.04977354 0.02777815 0.4977354      4
```

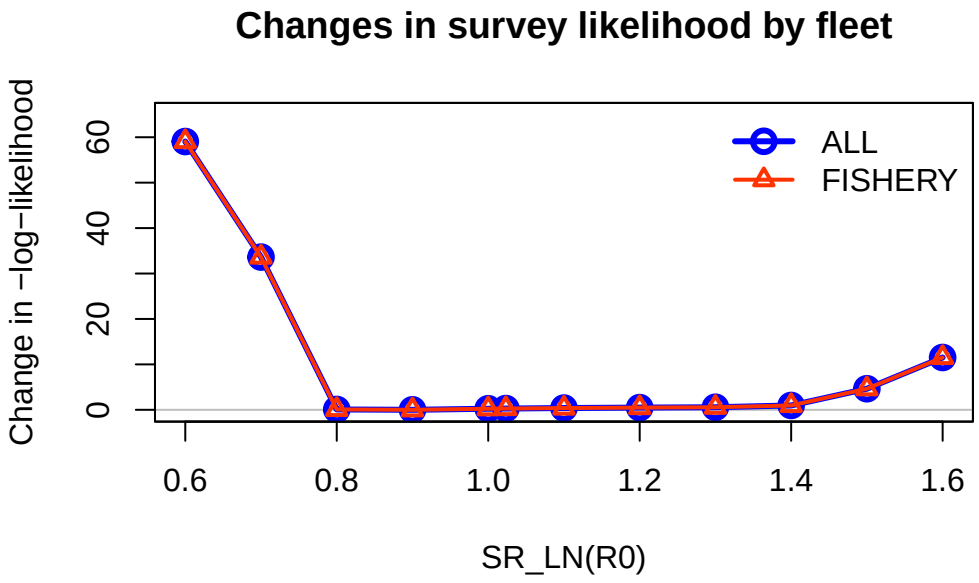
Recruitment Deviations

Likelihood Profile

```
[1] "SR_LN"
                     frac_change include                           label
TOTAL                     1.0000    TRUE                           Total
Catch                     0.1146    TRUE                           Catch
Equil_catch               0.0000   FALSE                Equilibrium catch
Survey                    0.3734    TRUE                       Index data
Length_comp               0.5958    TRUE                     Length data
Recruitment               0.0000   FALSE                     Recruitment
InitEQ_Regime             0.0000   FALSE Initital equilibrium recruitment
Forecast_Recruitment      0.0000   FALSE             Forecast recruitment
Parm_priors               0.0008   FALSE                           Priors
```

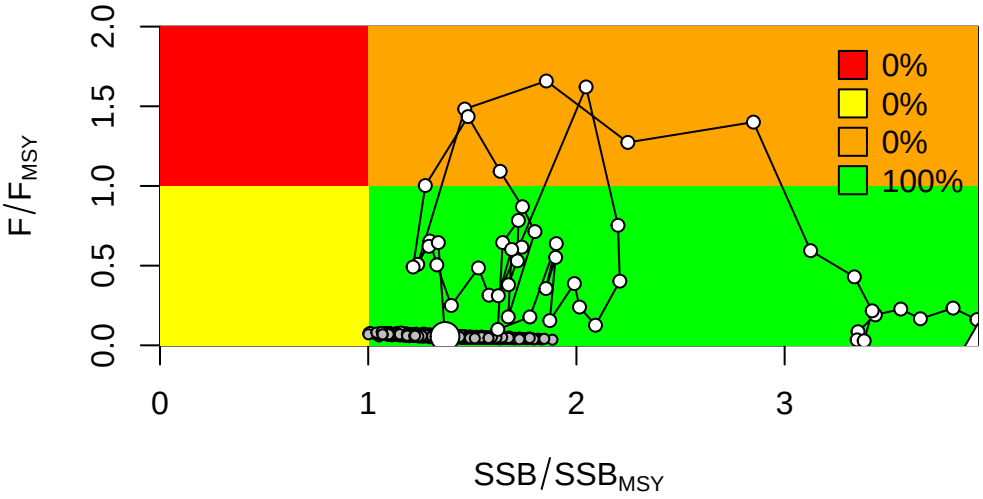
Parm_softbounds	0.0001	FALSE	Soft bounds
Parm_devs	0.0000	FALSE	Parameter deviations
Crash_Pen	0.0000	FALSE	Crash penalty

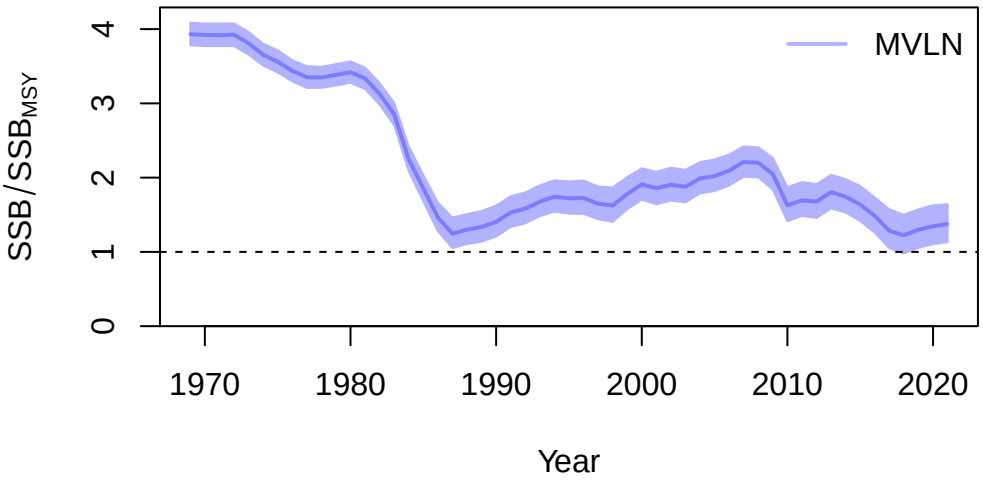


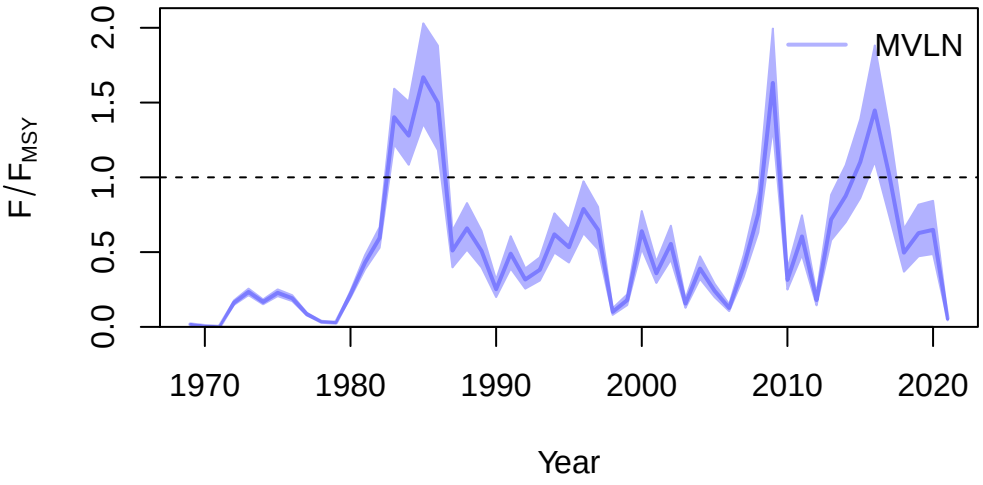


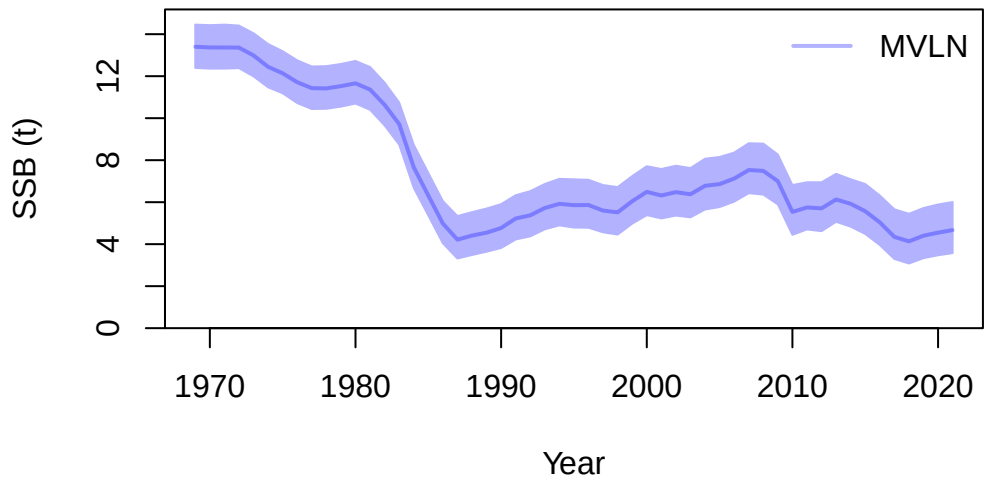
Management Quantities

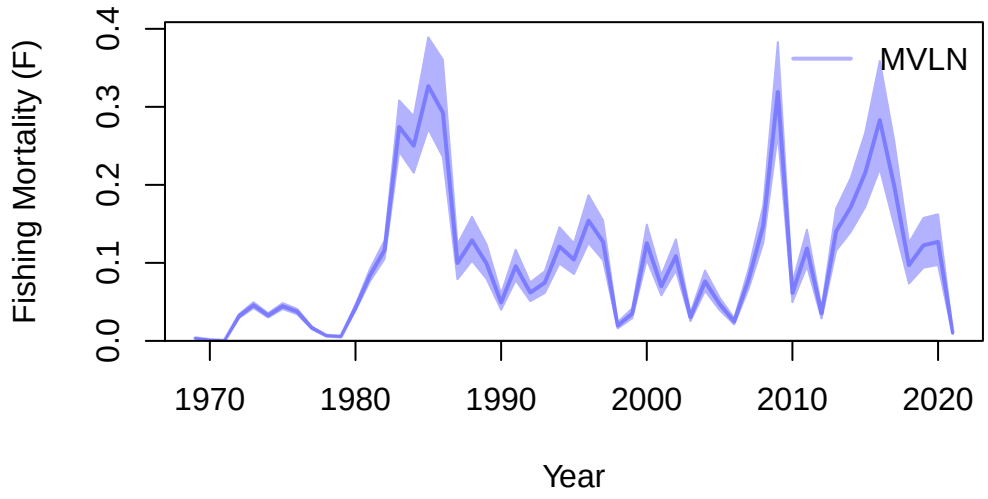
starter.sso with Bratio: SSB/SSBMSY and F: _abs_F




SSB/SSB$_{MSY}$
0
1
2
3
4
MVLN
1970
1980
1990
2000
2010
2020
Year

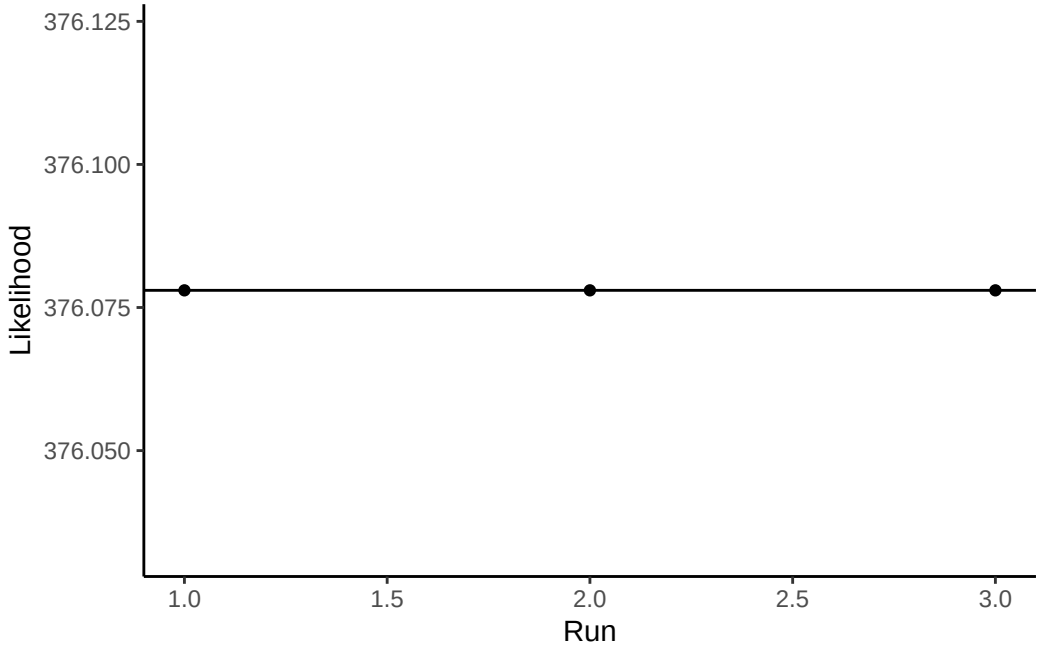

F/F$_{MSY}$
0.0
0.5
1.0
1.5
2.0
MVLN
1970
1980
1990
2000
2010
2020
Year

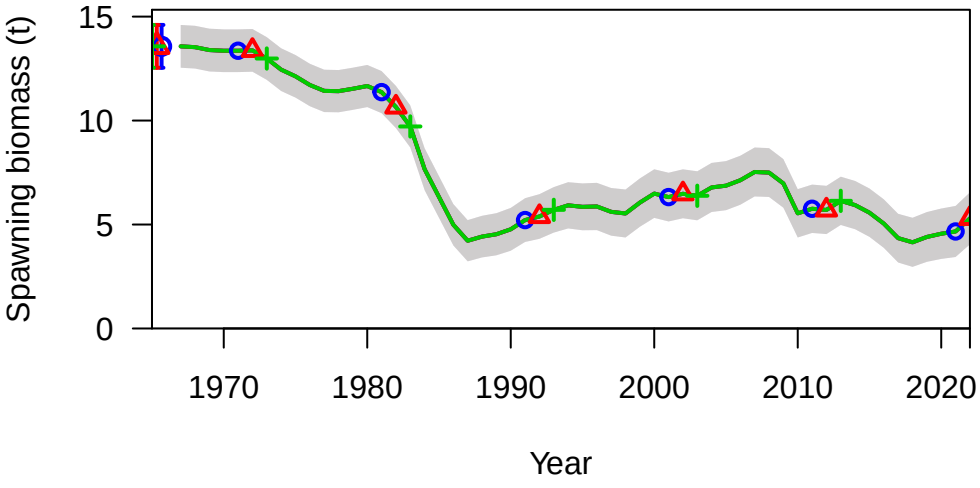


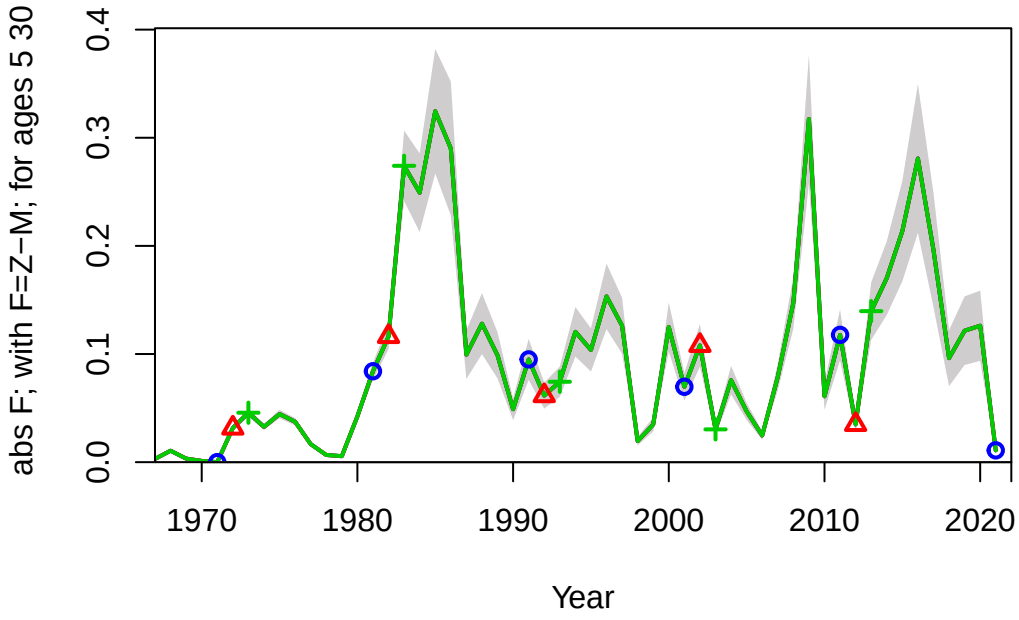


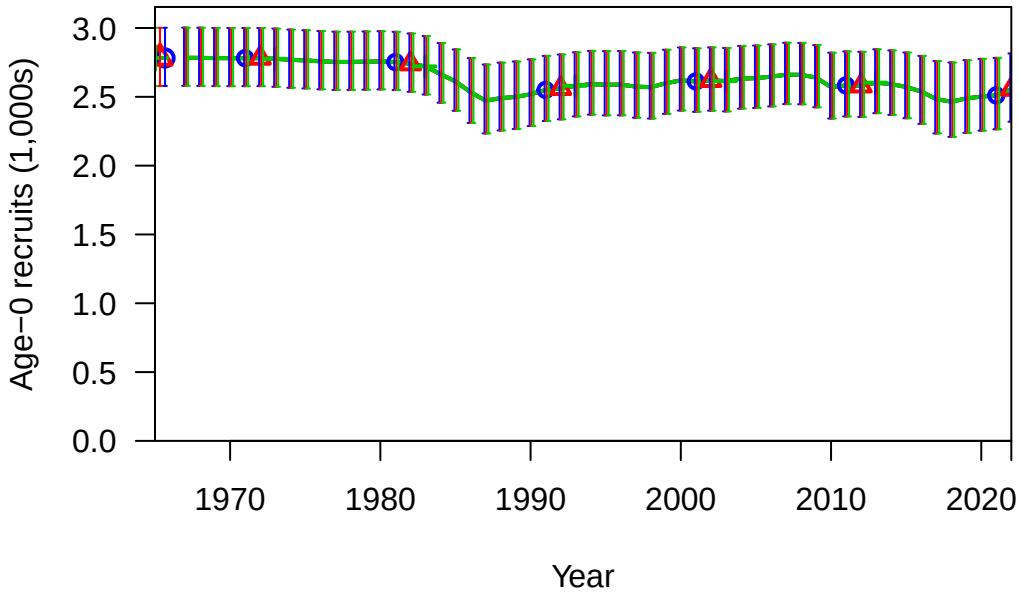

```
null device
          1
```

Jitter

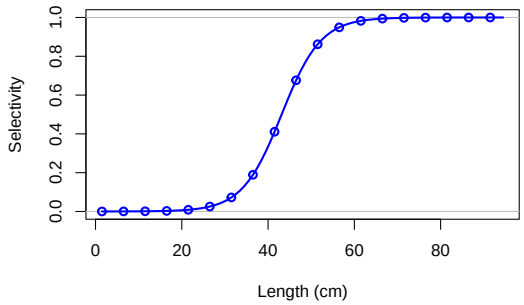

376.125
376.100
376.075
376.050
Likelihood
1.0
1.5
2.0
2.5
3.0
Run

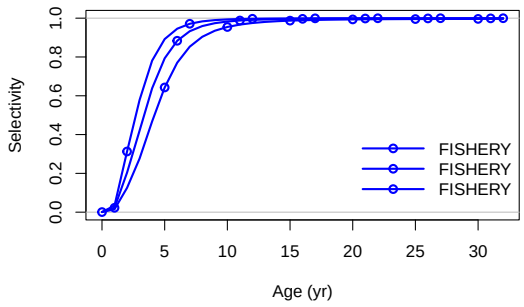

15
10
5
0
Spawning biomass (t)
1970
1980
1990
2000
2010
2020
Year

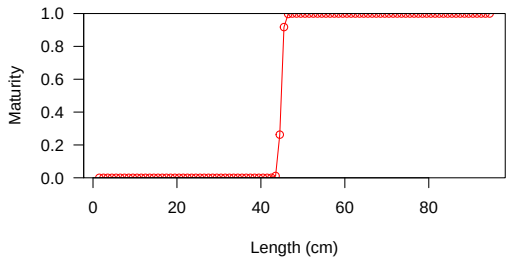


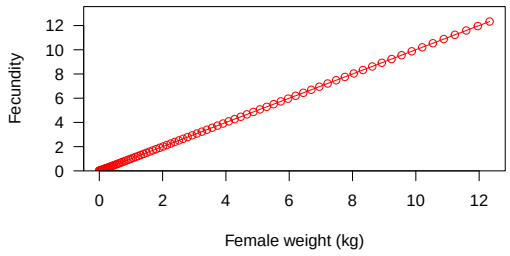


Selectivity and Maturity


Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
20
40
60
80
Length (cm)


Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
5
10
15
20
25
30
Age (yr)
FISHERY
FISHERY
FISHERY


Maturity
0.0
0.2
0.4
0.6
0.8
1.0
0
20
40
60
80
Length (cm)


Fecundity
0
2
4
6
8
10
12
0
2
4
6
8
10
12
Female weight (kg)