American Samoa Model Checks

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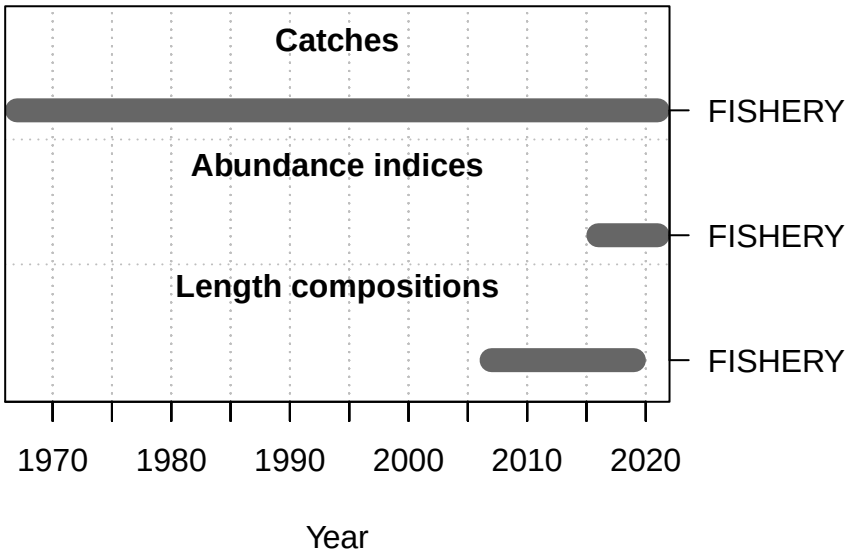
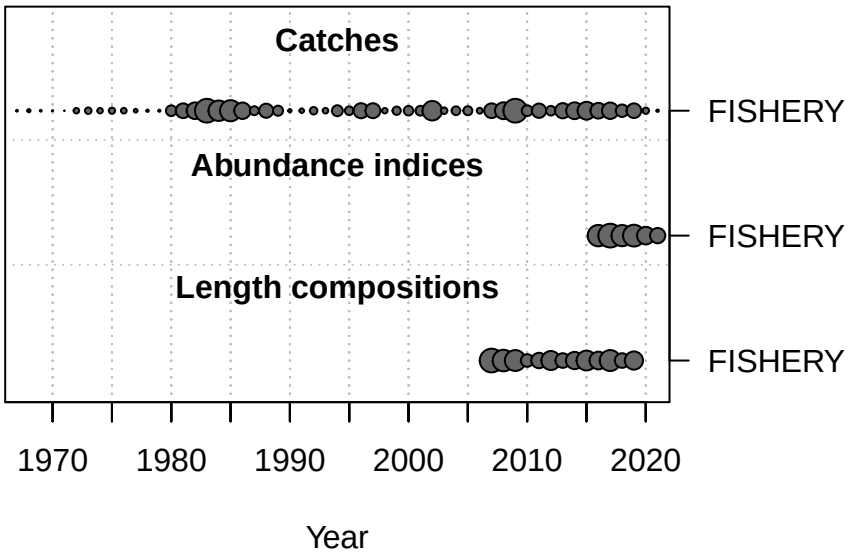
2023-01-09

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

Model Output

Input Data





Convergence Check

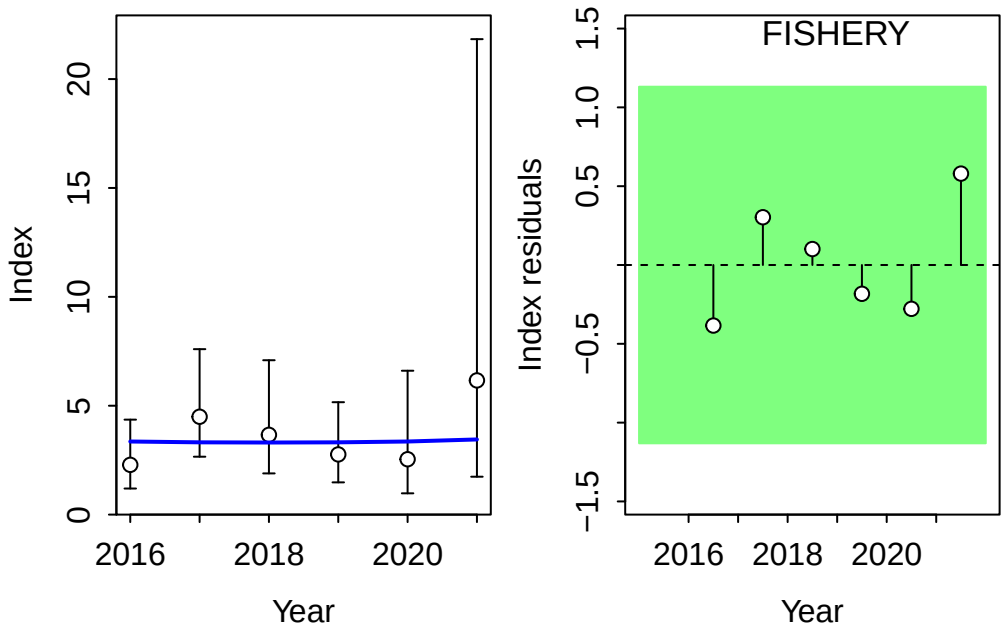
```
  Converged     MaxGrad
1      TRUE 7.37979e-05
```

```
[1] "1 NOTE:  Max data length bin: 90  < max pop len bins: 100; so will accumulate larger po
[2] "N warnings: 1"
```

Fit to Model

CPUE

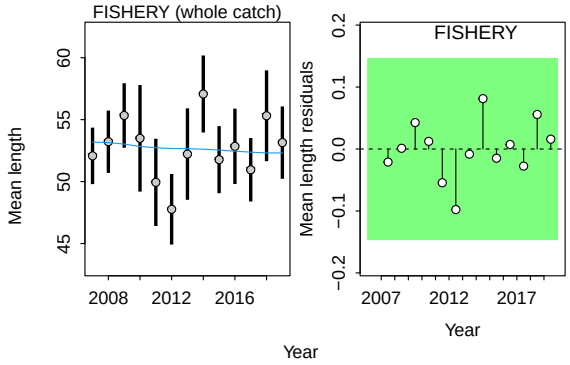
Fleet	RMSE.perc	Nobs
FISHERY	34.1	6
Combined	34.1	6

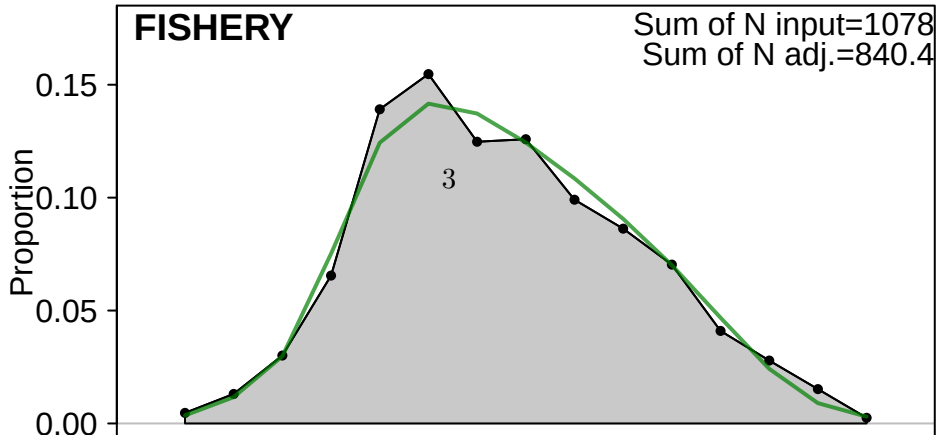


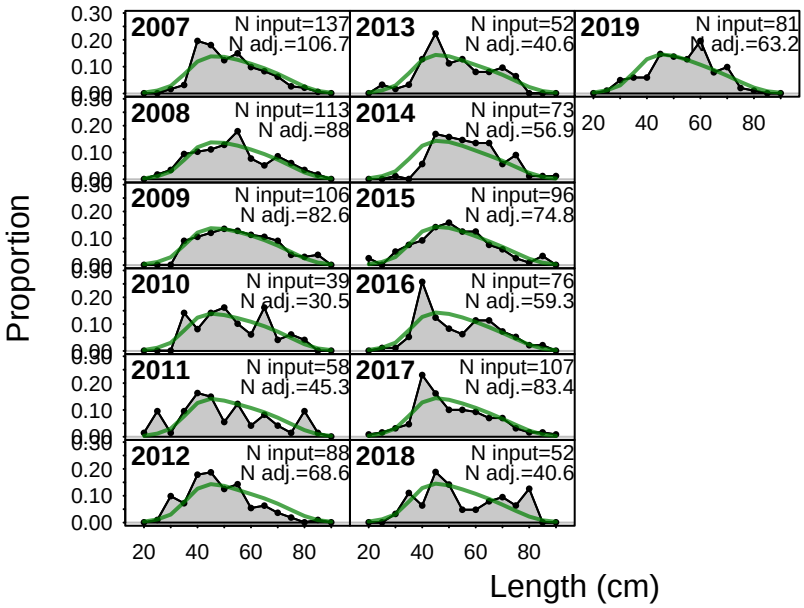
Length Comp

Fleet	RMSE.perc	Nobs
FISHERY	4.5	13
Combined	4.5	13

```
        w         lo         hi              Index runs.p   test  sigma3.lo sigma3.hi type
0.3811937 0.2212523 1.1701914          1 FISHERY  0.623 Passed -0.1461822 0.1461822  len
```

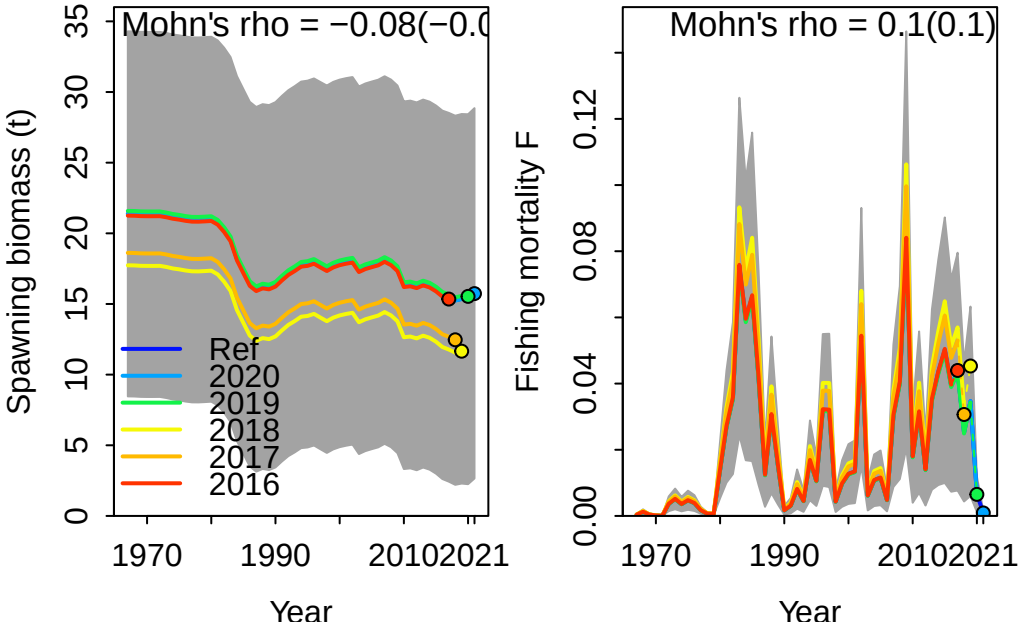






Retrospective

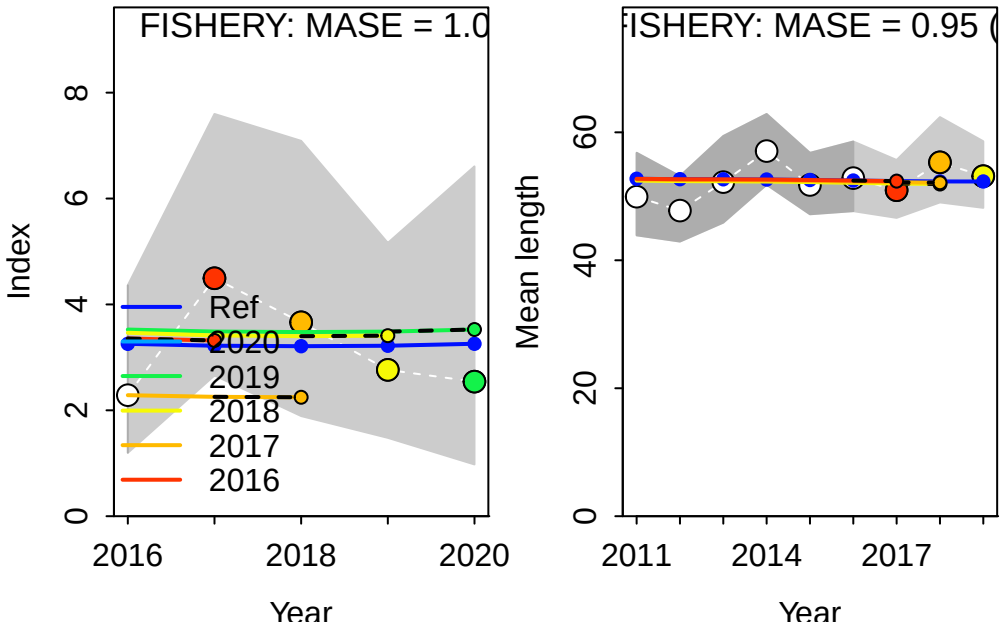
`Mohn's Rho stats, including one step ahead forecasts:`



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

  type     peel          Rho  ForecastRho
1    F     2020  0.001263198  0.001230586
2    F     2019 -0.011612174 -0.011470502
3    F     2018  0.307844576  0.307343221
4    F     2017  0.215469867  0.216403197
5    F     2016  0.007958428  0.008051777
6    F Combined  0.104184779  0.104311656
```

Hindcasting

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

 Computing MASE with only 3 of 5  prediction residuals for Index FISHERY

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



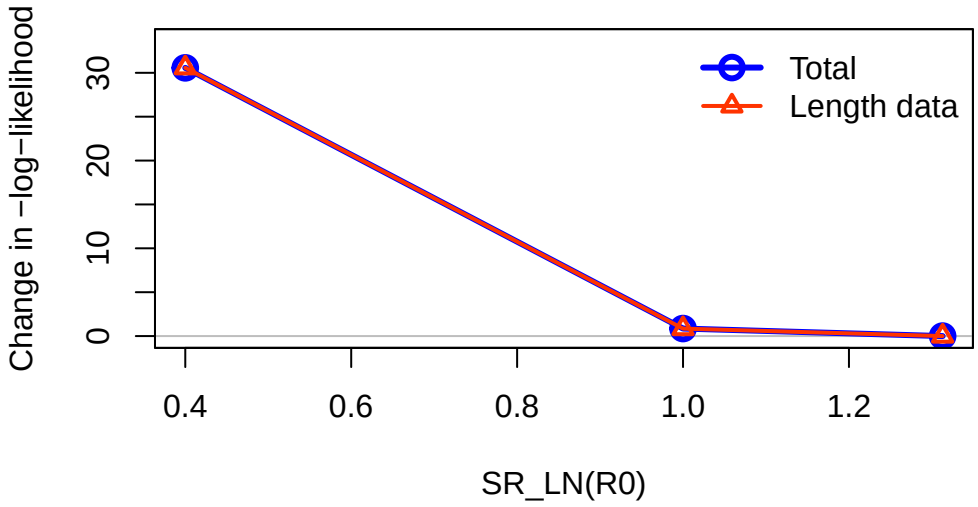

```
MASE stats by Index:

    Index Season      MASE      MAE.PR   MAE.base  MASE.adj n.eval
1 FISHERY      1 0.948331 0.05011563 0.05284614 0.5011563      3
```

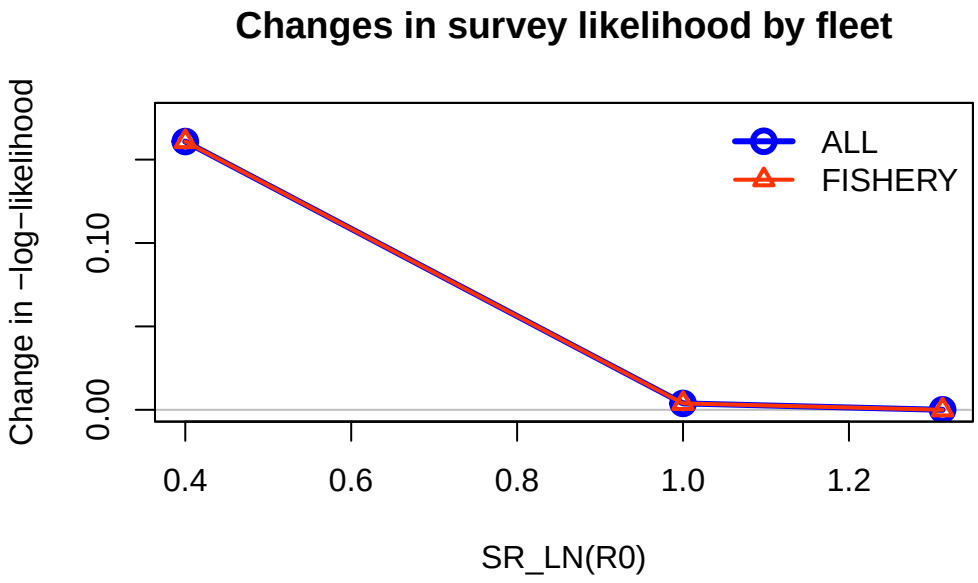
Recruitment Deviations

Likelihood Profile

```
[1] "SR_LN"
                     frac_change include                          label
TOTAL                     1.0000    TRUE                          Total
Catch                     0.0000   FALSE                          Catch
Equil_catch               0.0000   FALSE              Equilibrium catch
Survey                    0.0053   FALSE                     Index data
Length_comp               1.0002    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               0.0055   FALSE                        Priors
```

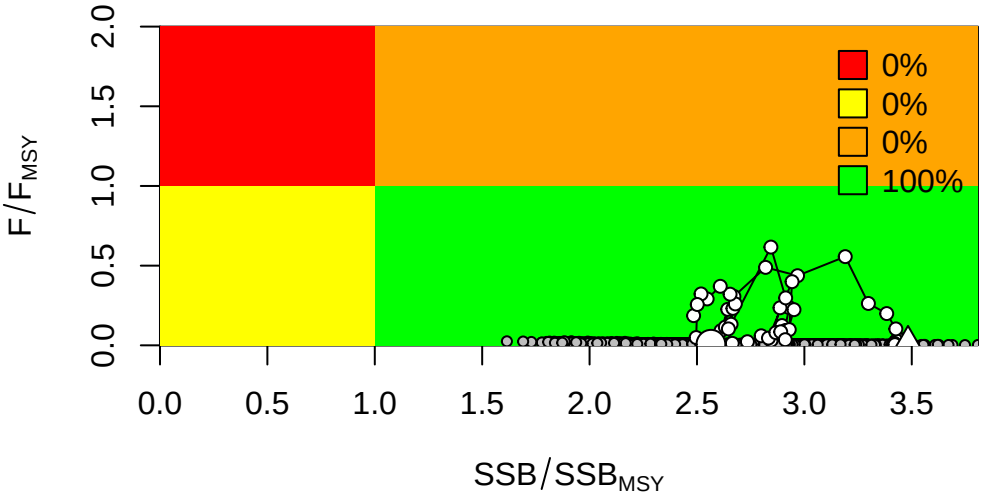
```
Parm_softbounds          0.0000   FALSE                  Soft bounds
Parm_devs                0.0000   FALSE          Parameter deviations
Crash_Pen                0.0000   FALSE                  Crash penalty
```

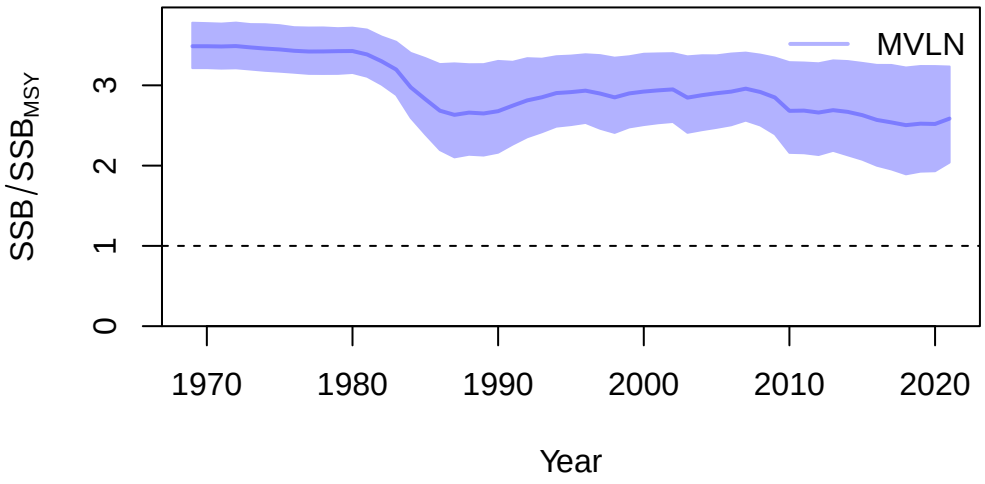


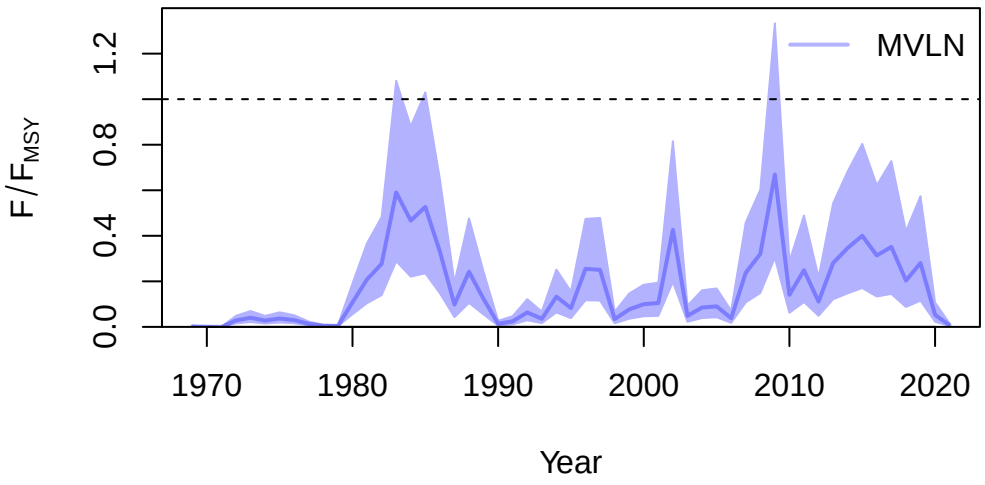


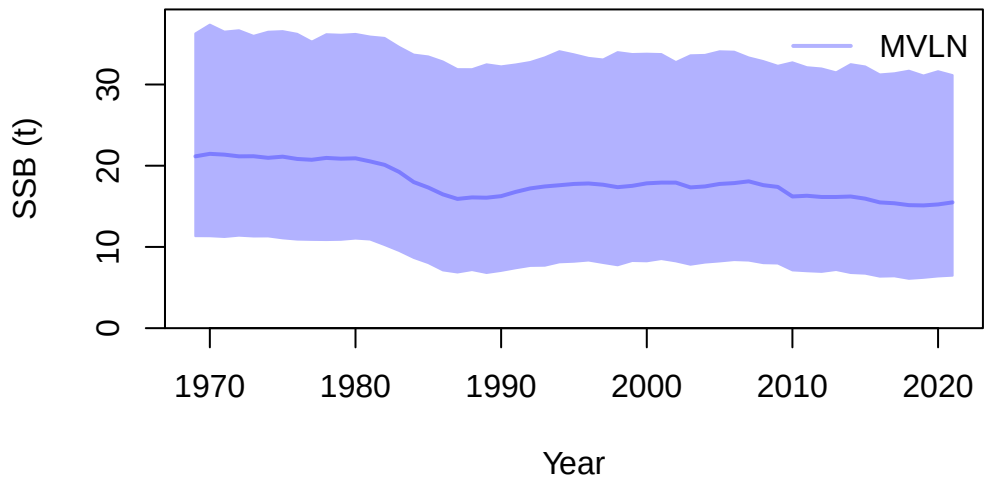
Management Quantities

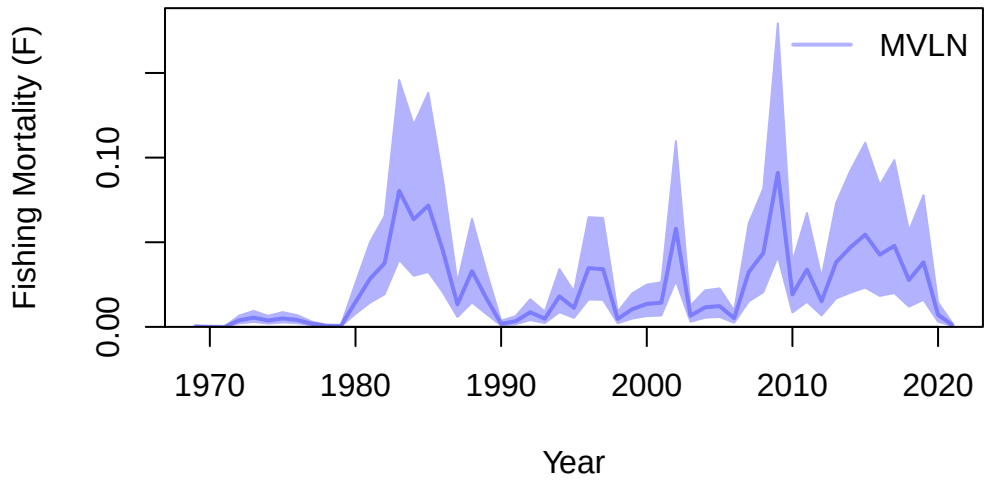
`starter.sso with Bratio: SSB/SSBMSY and F: _abs_F`




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

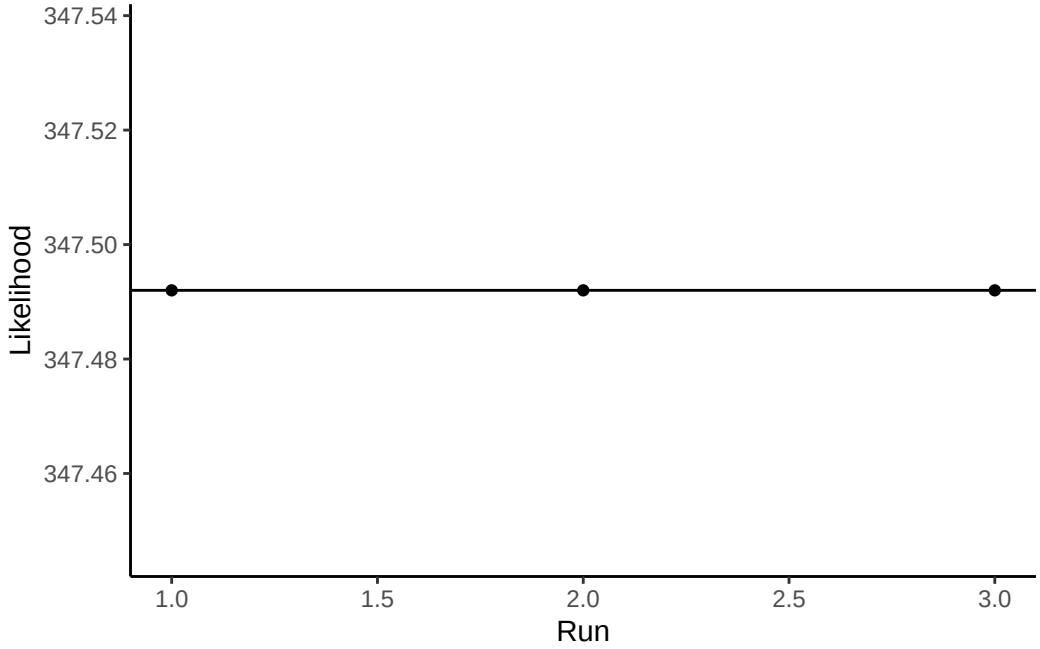

MVLN
F/F$_{MSY}$
0.0
0.4
0.8
1.2
1970
1980
1990
2000
2010
2020
Year

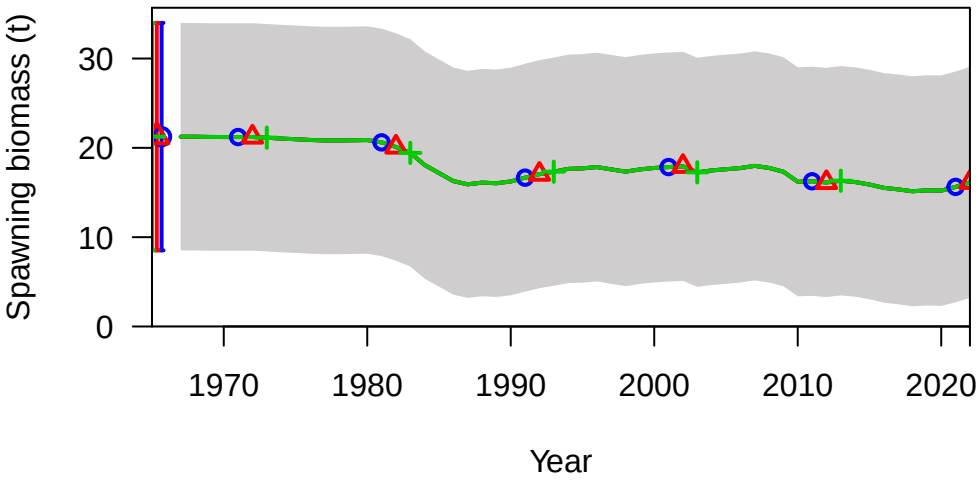


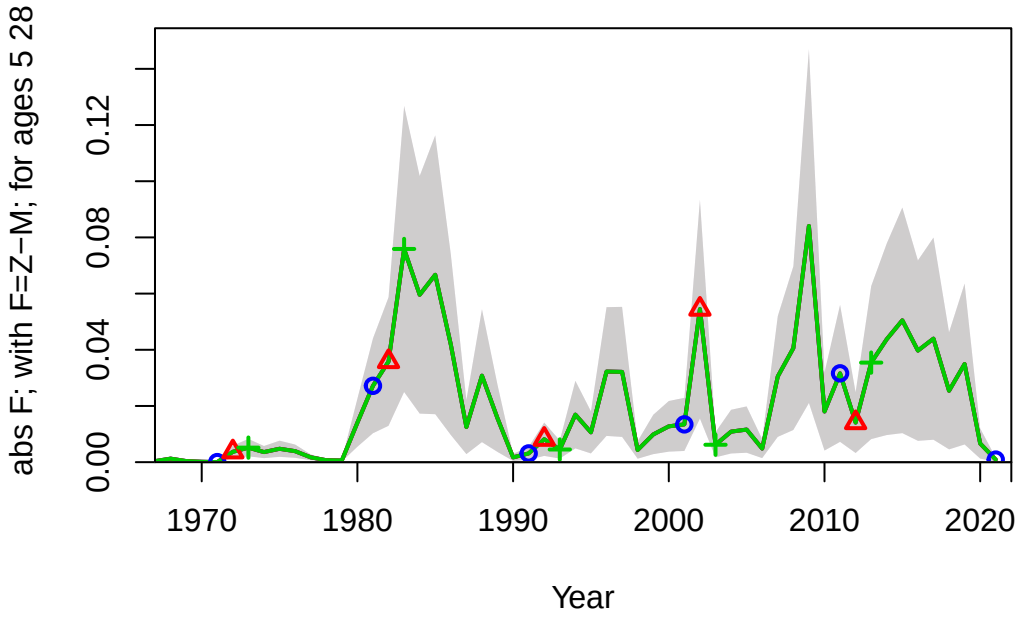


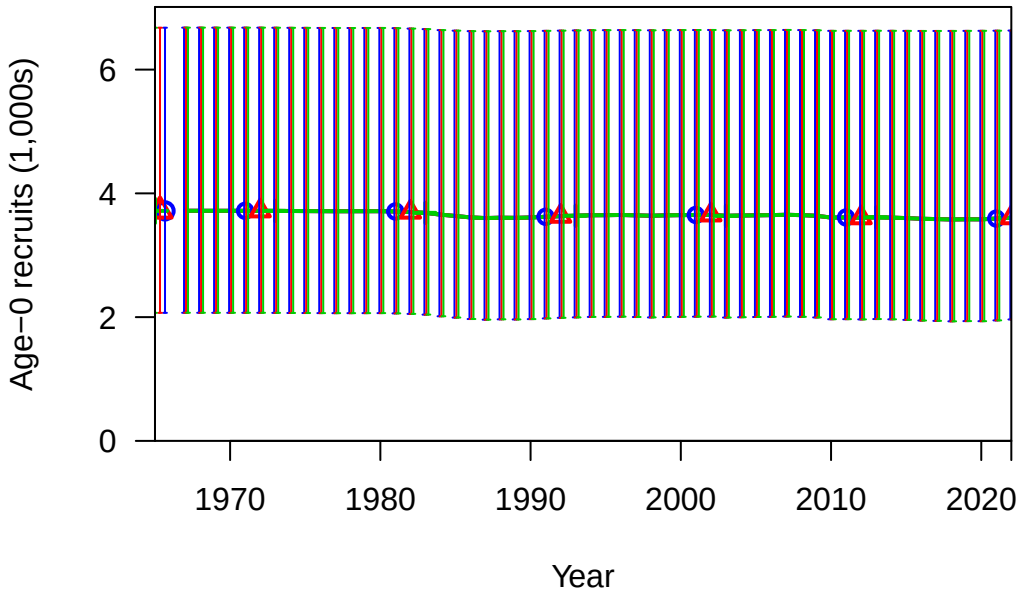

```
null device
          1
```

Jitter

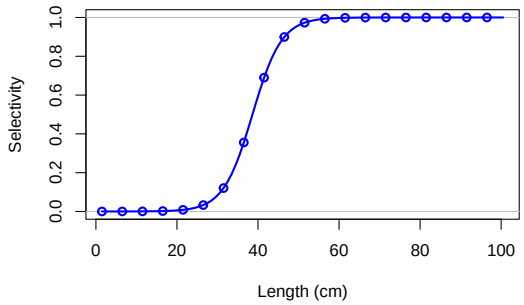

347.54
347.52
347.50
347.48
347.46
Likelihood
1.0
1.5
2.0
2.5
3.0
Run

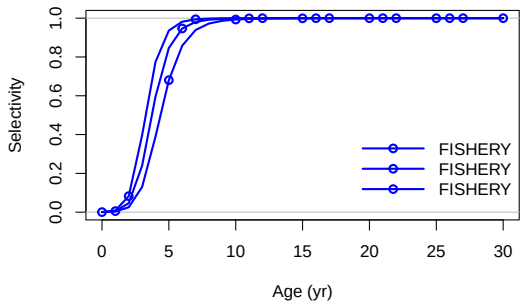

Spawning biomass (t)
30
20
10
0
1970
1980
1990
2000
2010
2020
Year

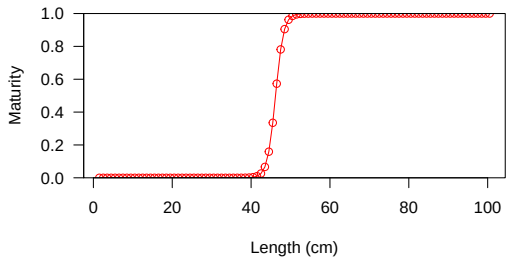


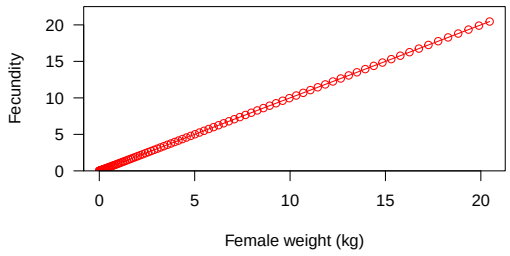


Selectivity and Maturity


Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
20
40
60
80
100
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
100
Length (cm)


Fecundity
0
5
10
15
20
0
5
10
15
20
Female weight (kg)