American Samoa Model Checks

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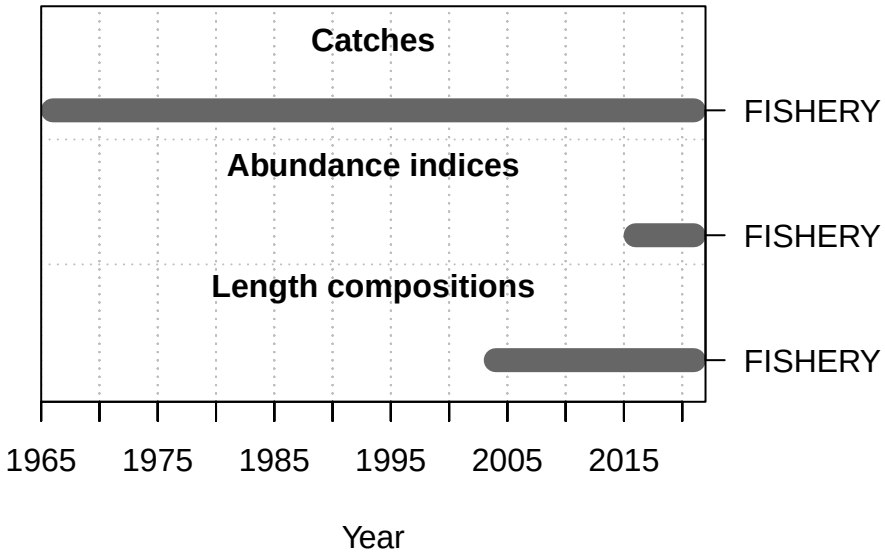
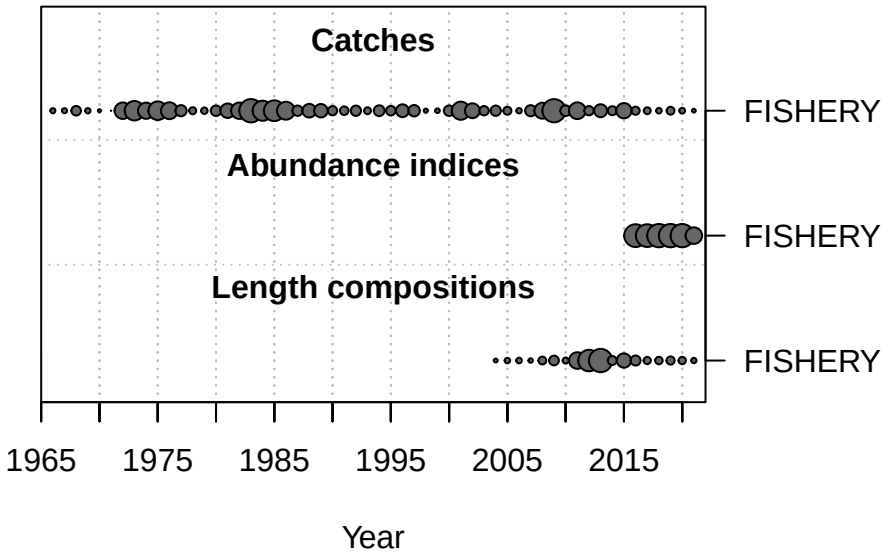
This is a summary report for the LERU base model run.

Model Output

Input Data





Convergence Check

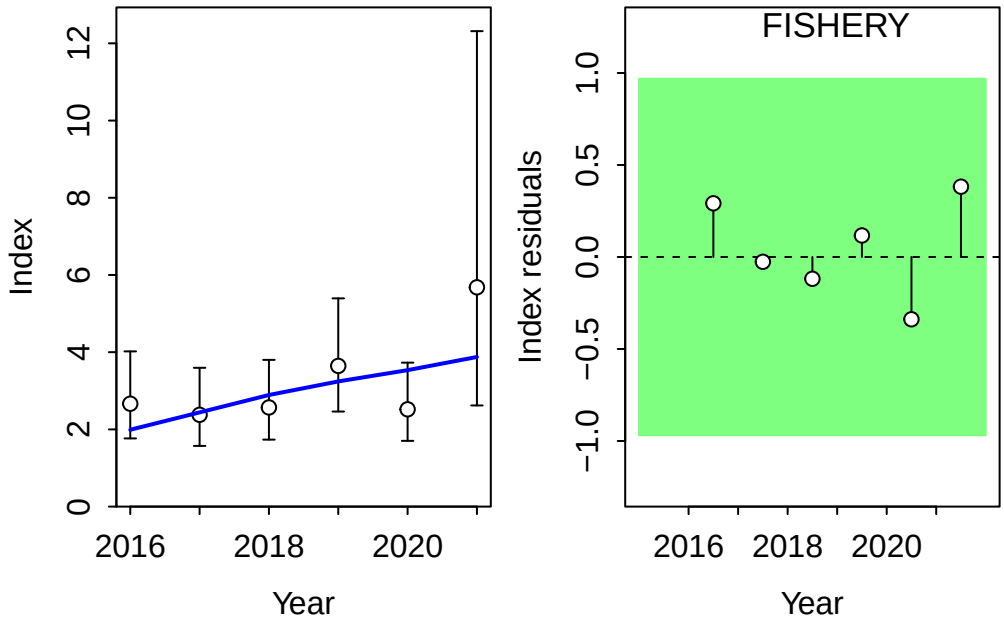
```
  Converged     MaxGrad
1      TRUE 1.25354e-05
```

```
[1] "1 NOTE:  Max data length bin: 38.5  < max pop len bins: 43; so will accumulate larger p
[2] "N warnings: 1"
```

Fit to Model

CPUE

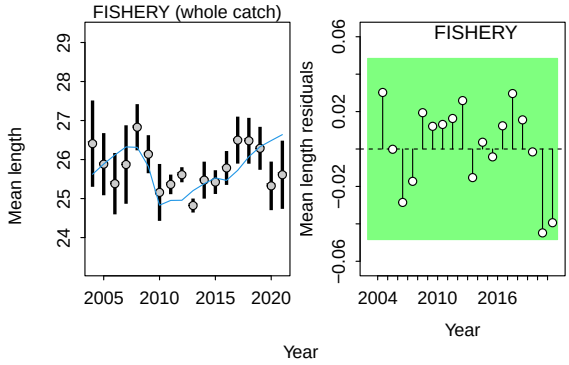
Fleet	RMSE.perc	Nobs
FISHERY	25	6
Combined	25	6

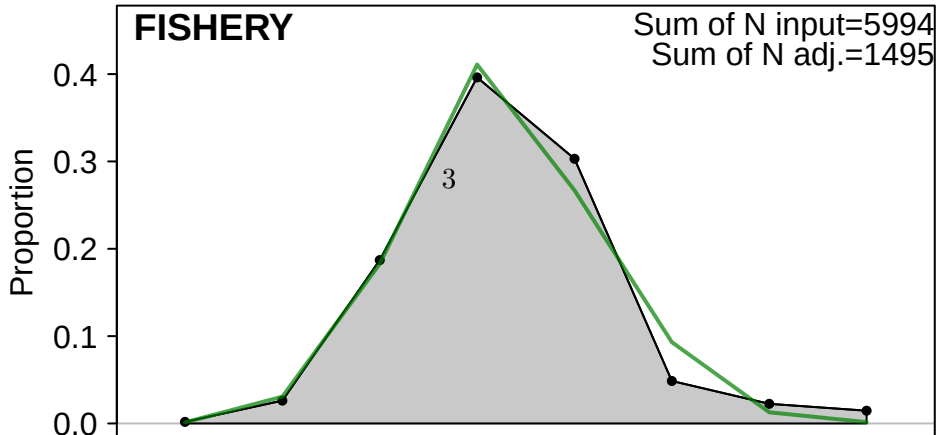


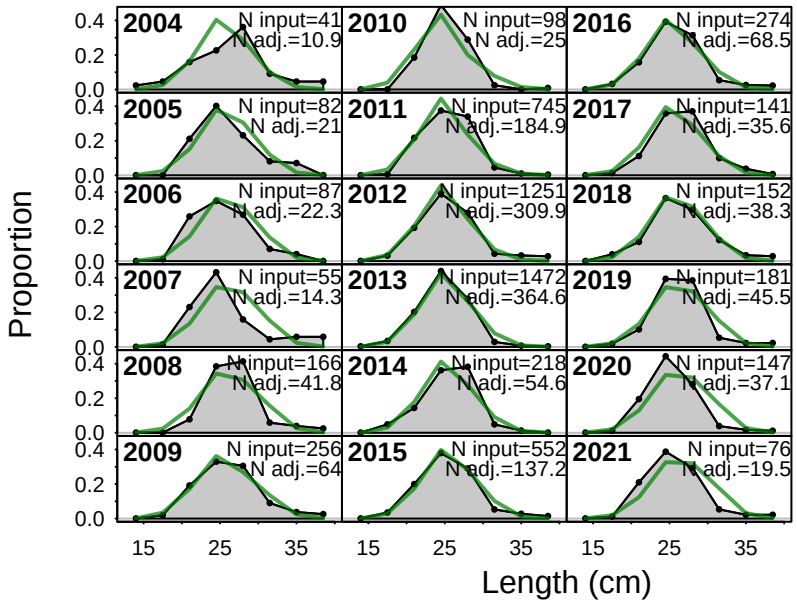
Length Comp

Fleet	RMSE.perc	Nobs
FISHERY	2.2	18
Combined	2.2	18

```
          w          lo          hi           Index runs.p   test   sigma3.lo  sigma3.hi type
0.14838870 0.08465929 0.40964451       1 FISHERY  0.176 Passed -0.04839996 0.04839996  len
```

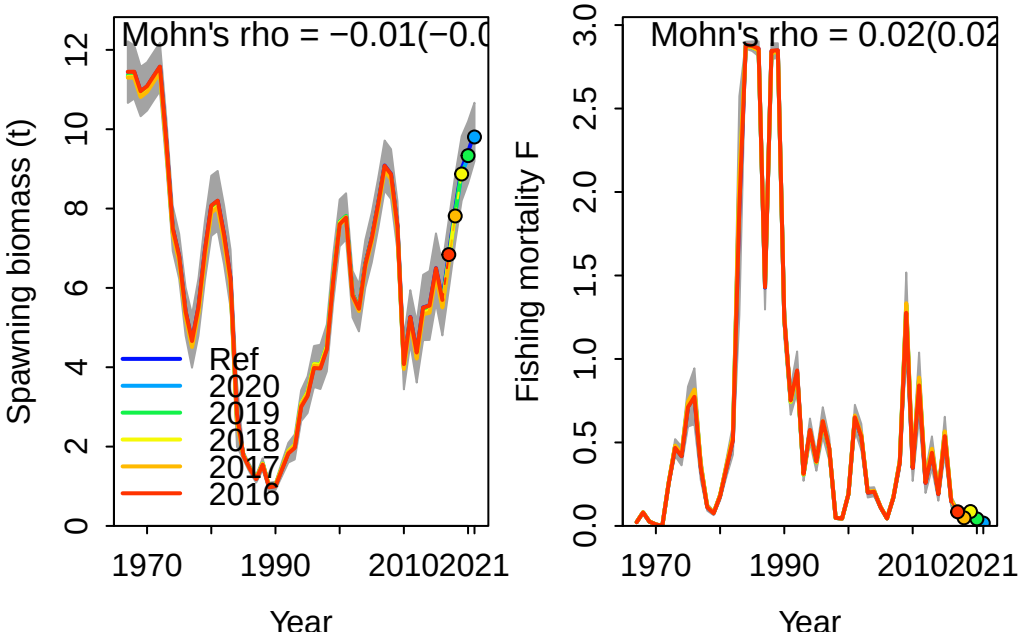






Retrospective

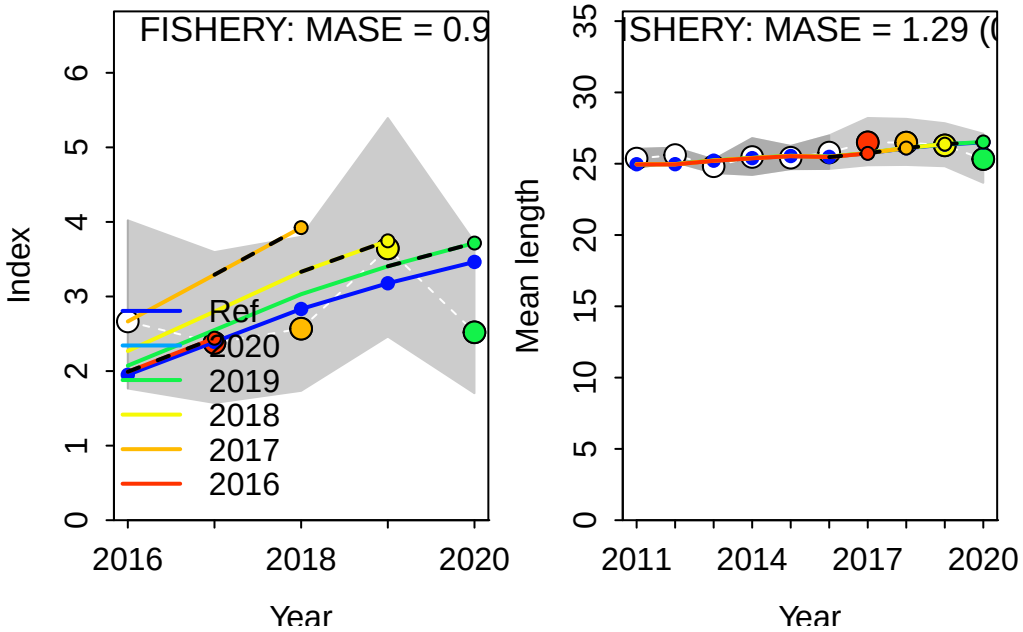
`Mohn's Rho stats, including one step ahead forecasts:`



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

  type     peel          Rho  ForecastRho
1    F     2020  0.024855335  0.022794691
2    F     2019  0.018317363  0.017144694
3    F     2018  0.029783879  0.026989437
4    F     2017  0.041466312  0.035391991
5    F     2016 -0.002556192 -0.002509146
6    F Combined  0.022373339  0.019962334
```

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 4 of 5  prediction residuals for Index FISHERY

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



MASE stats by Index:

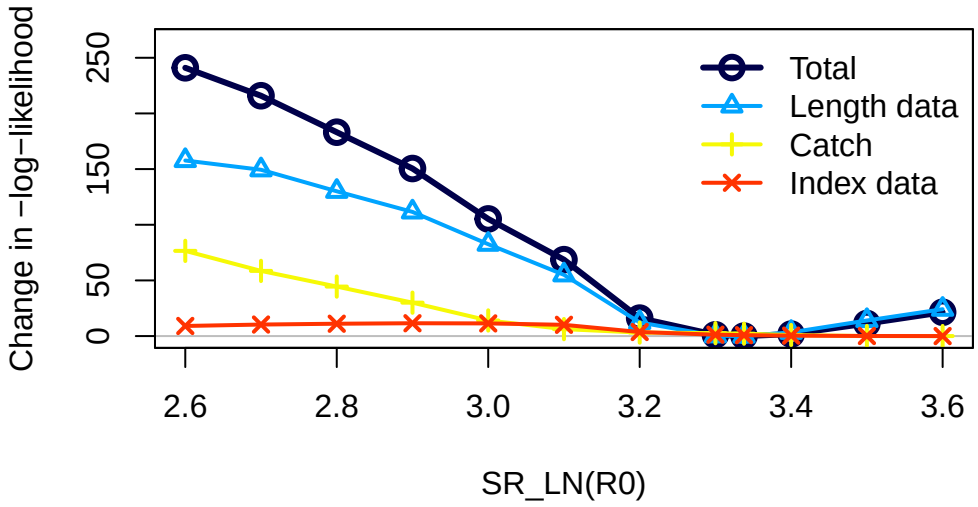
```
    Index Season     MASE     MAE.PR   MAE.base  MASE.adj n.eval
1 FISHERY      1 1.292899 0.02345373 0.01814042 0.2345373      4
```

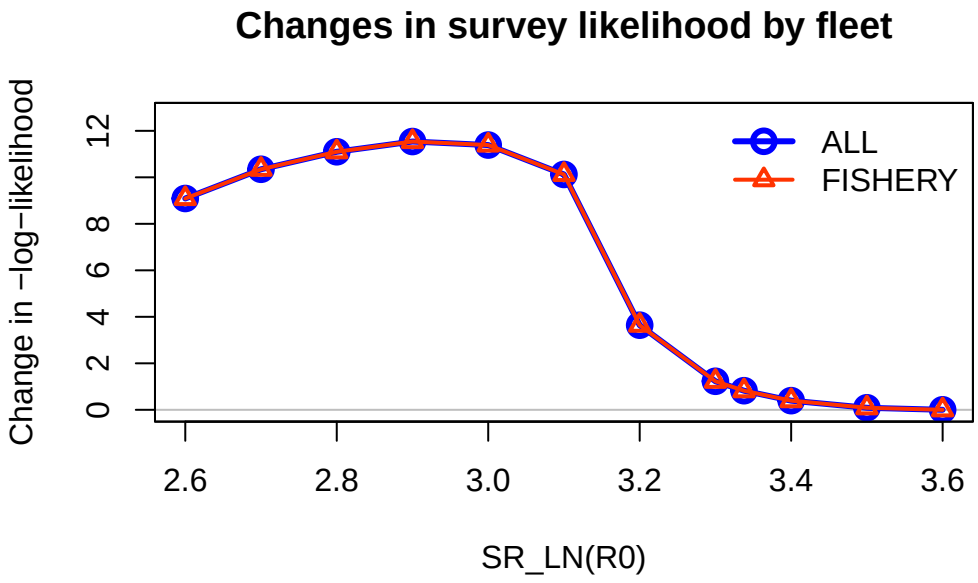
Recruitment Deviations

Likelihood Profile

```
[1] "SR_LN"
                     frac_change include                          label
TOTAL                     1.0000    TRUE                          Total
Catch                     0.3176    TRUE                          Catch
Equil_catch               0.0000   FALSE              Equilibrium catch
Survey                    0.0479    TRUE                     Index data
Length_comp               0.6545    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               0.0025   FALSE                        Priors
```

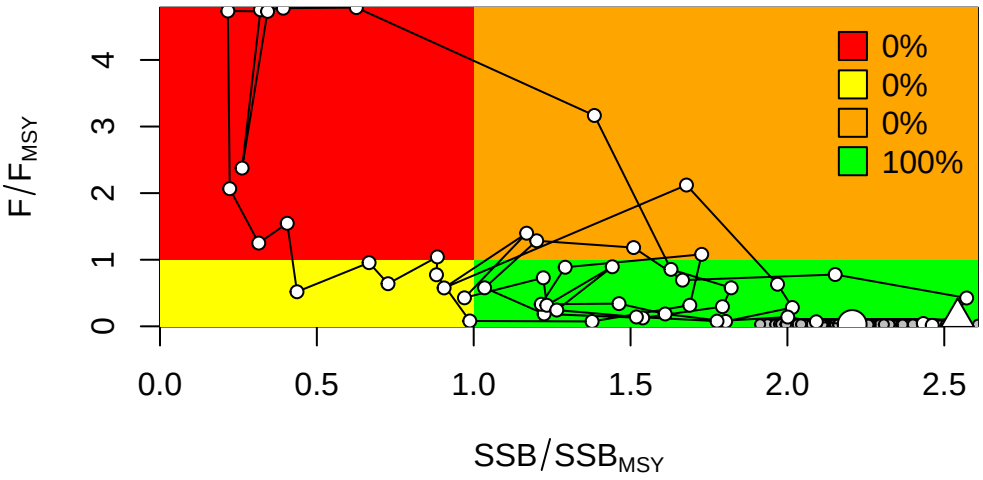
```
Parm_softbounds          0.0000   FALSE                  Soft bounds
Parm_devs                0.0000   FALSE        Parameter deviations
Crash_Pen                0.0000   FALSE                Crash penalty
```

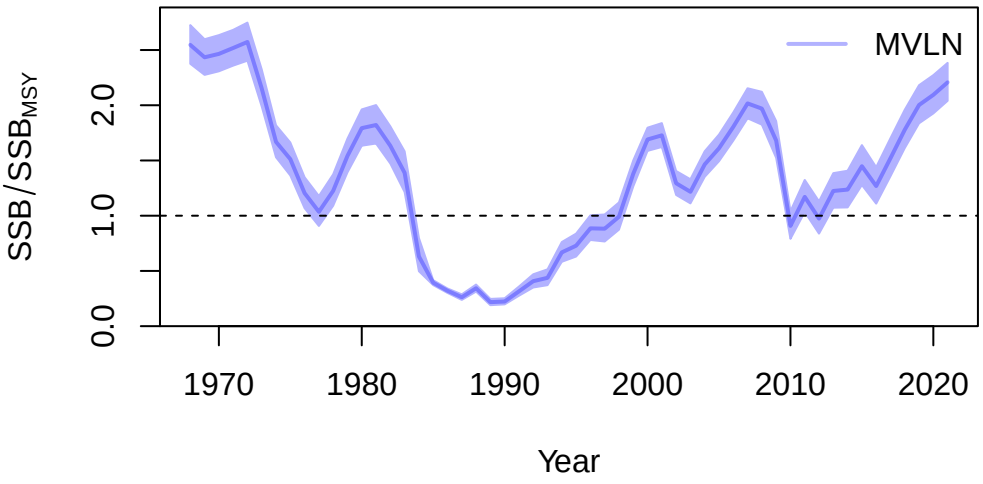


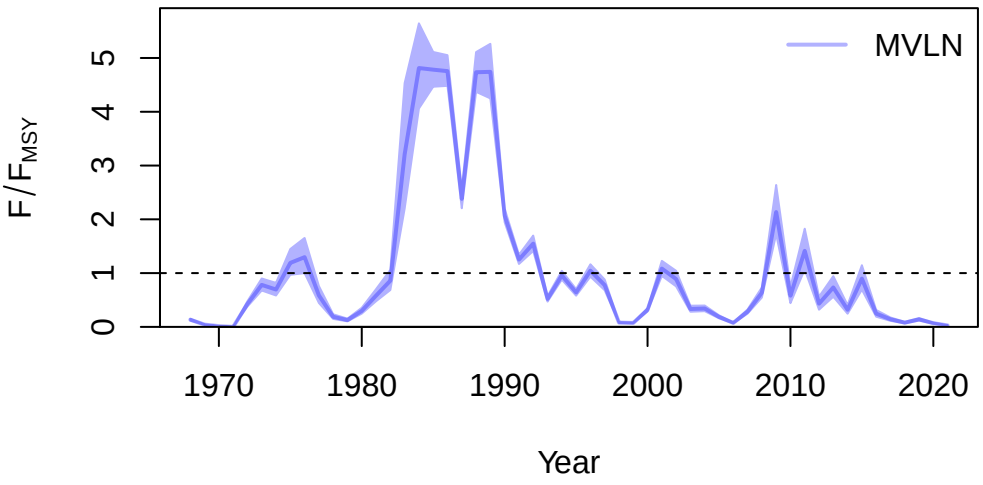


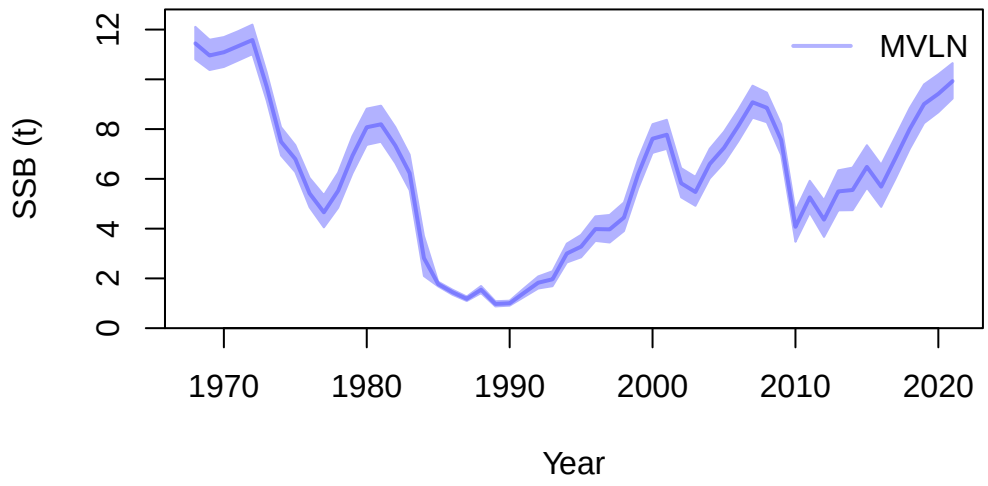
Management Quantities

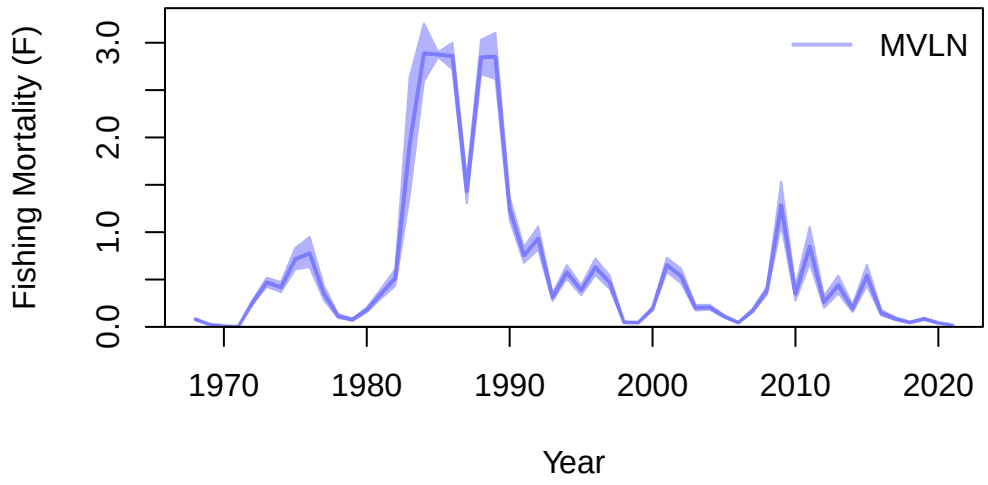
`starter.sso with Bratio: SSB/SSBMSY and F: _abs_F`




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

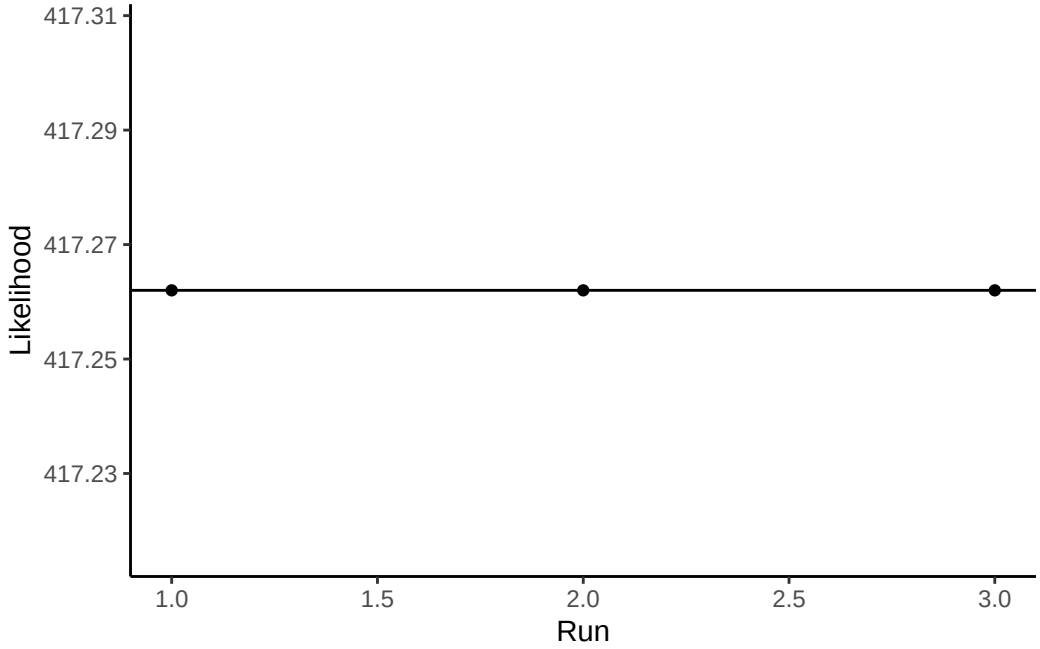

MVLN
F/F$_{MSY}$
0
1
2
3
4
5
1970
1980
1990
2000
2010
2020
Year

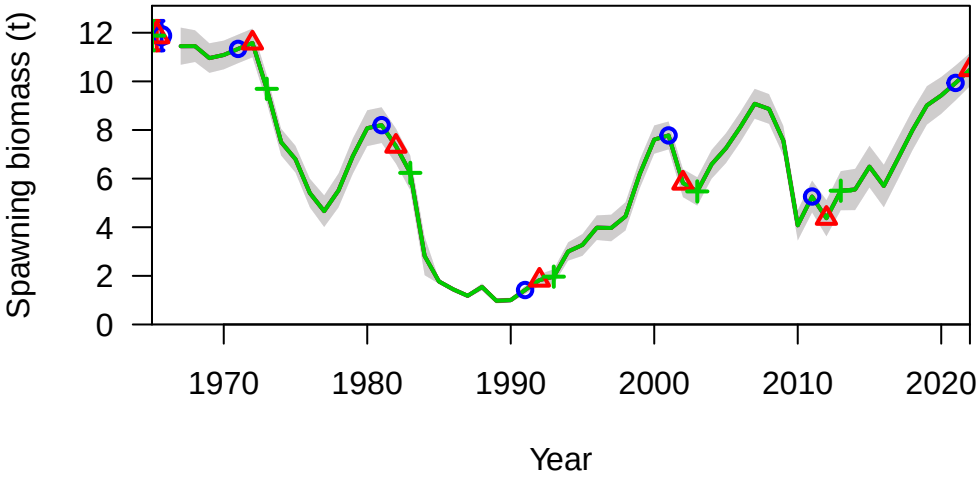


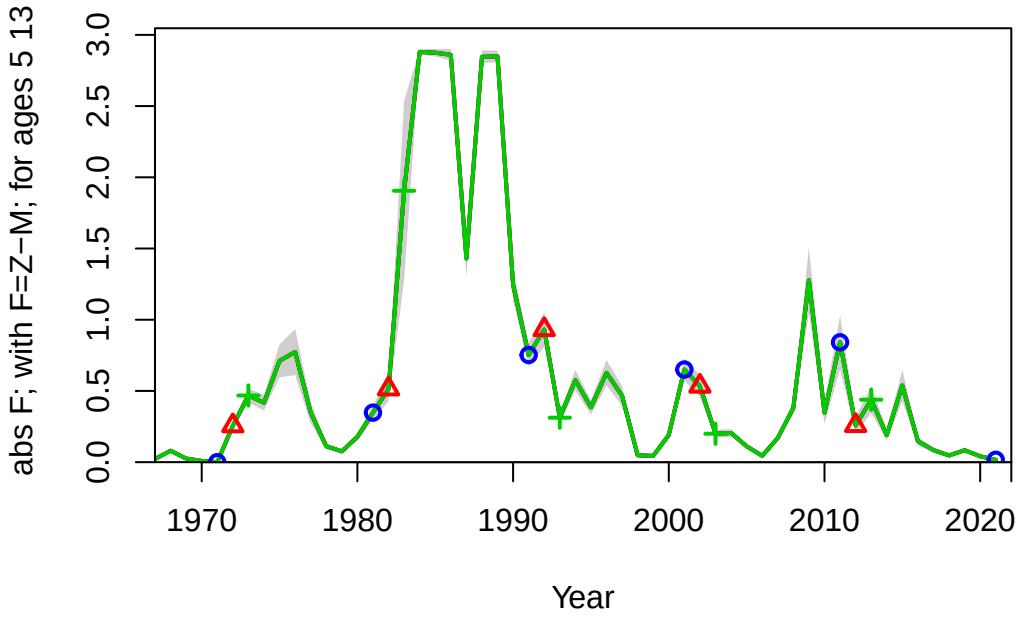


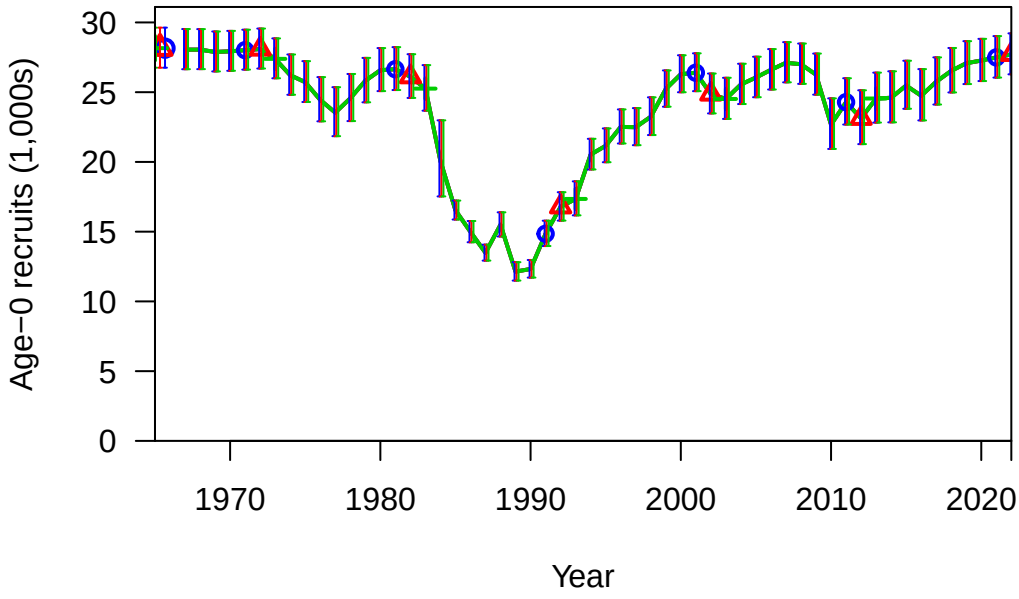

```
null device
          1
```

Jitter

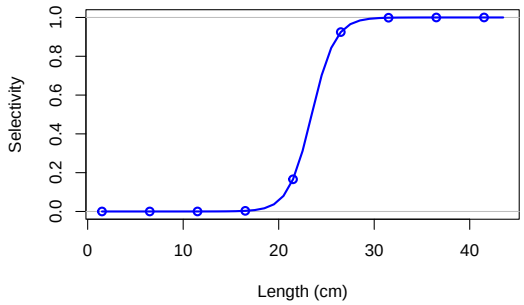

417.31
417.29
417.27
417.25
417.23
Likelihood
1.0
1.5
2.0
2.5
3.0
Run

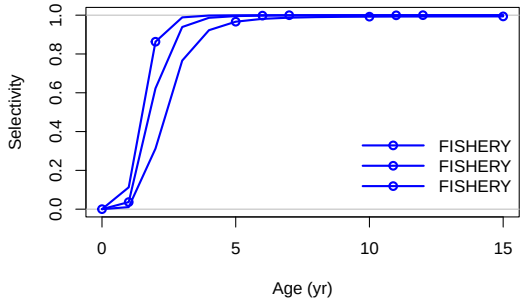

Spawning biomass (t)
12
10
8
6
4
2
0
1970
1980
1990
2000
2010
2020
Year

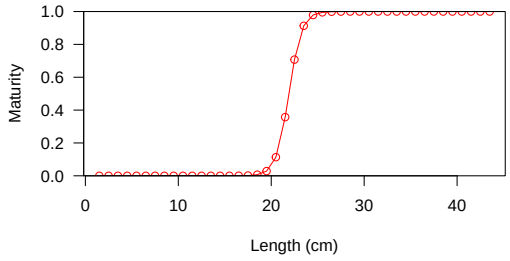


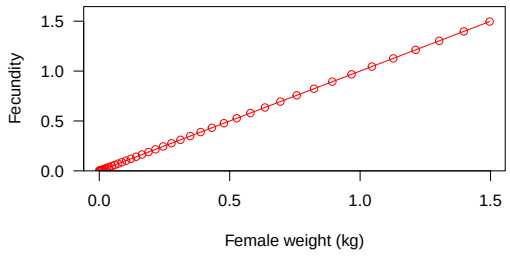


Selectivity and Maturity


Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
10
20
30
40
Length (cm)


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


Maturity
0.0
0.2
0.4
0.6
0.8
1.0
0
10
20
30
40
Length (cm)


Fecundity
0.0
0.5
1.0
1.5
0.0
0.5
1.0
1.5
Female weight (kg)