American Samoa Model Checks

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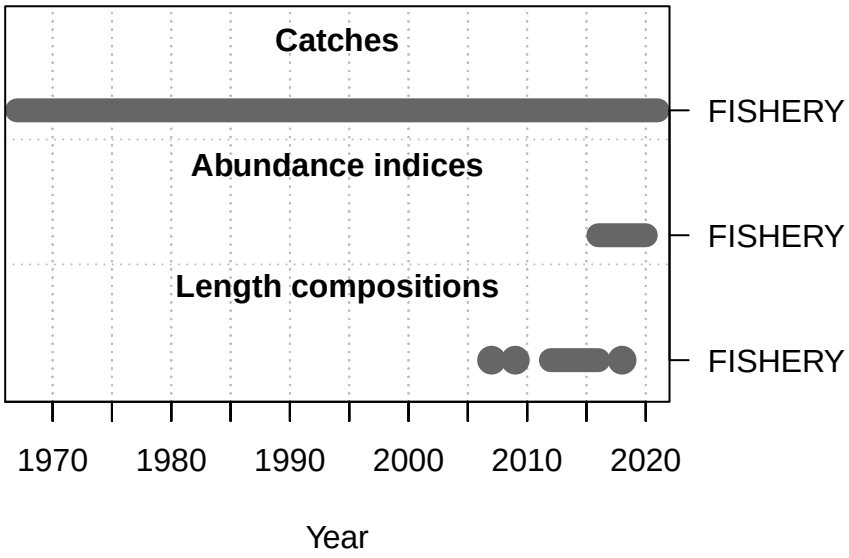
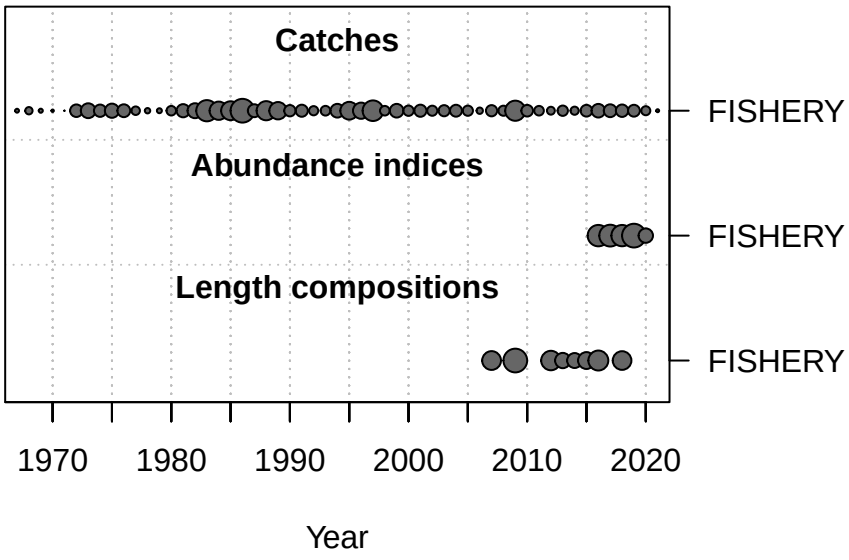
This is a summary report for the CALU base model run.

Model Output

Input Data





Convergence Check

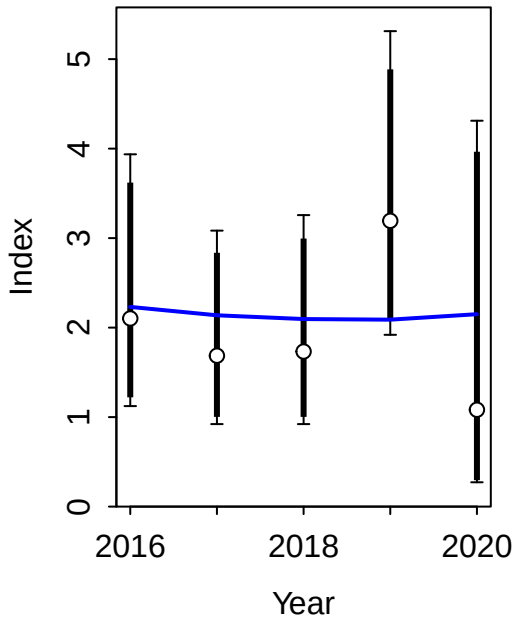
```
  Converged     MaxGrad
1      TRUE 8.01767e-05
```

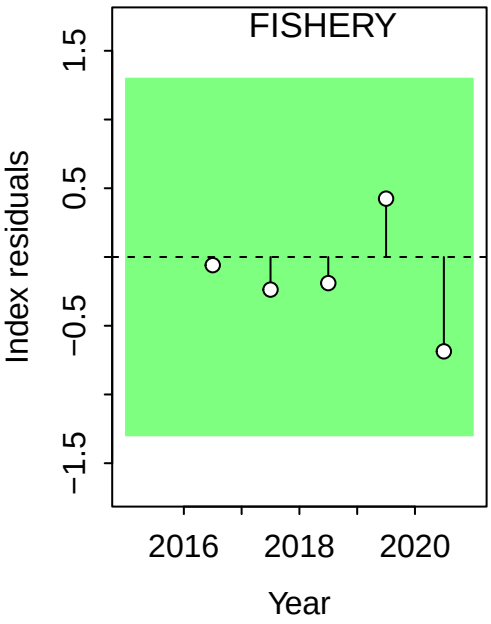
```
[1] "1 NOTE:  Max data length bin: 65  < max pop len bins: 72; so will accumulate larger pop
[2] "N warnings: 1"
```

Fit to Model

CPUE

Fleet	RMSE.perc	Nobs
FISHERY	38.7	5
Combined	38.7	5

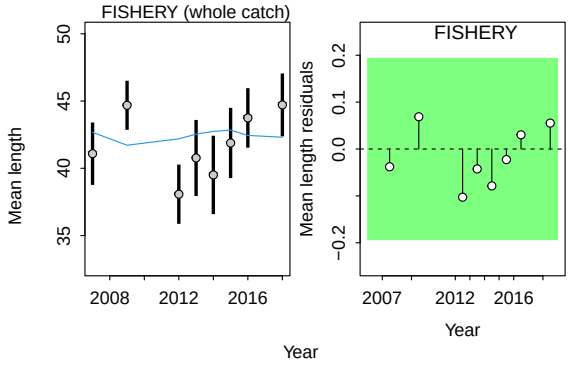


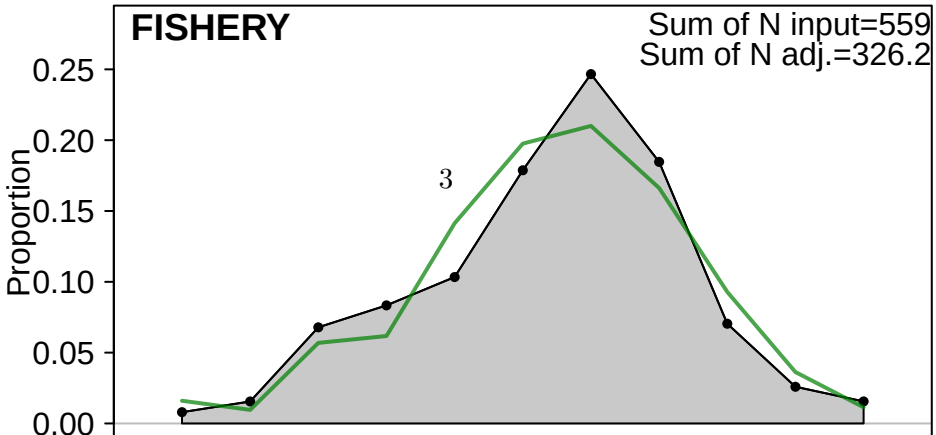


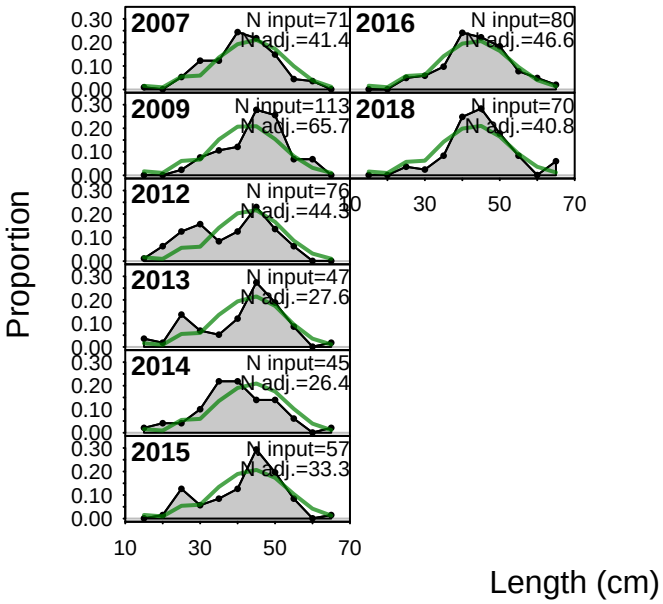
Length Comp

Fleet	RMSE.perc	Nobs
FISHERY	6	8
Combined	6	8

```
          w         lo         hi              Index runs.p   test  sigma3.lo sigma3.hi type
0.1838762 0.1179598 0.7782111             1 FISHERY  0.268 Passed -0.1931399 0.1931399  len
```

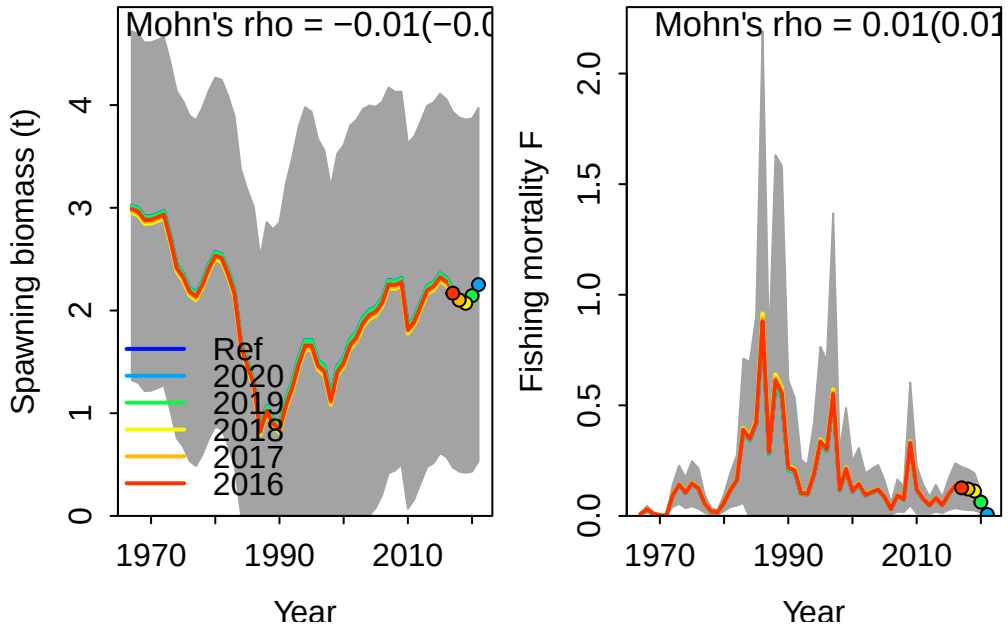






Retrospective

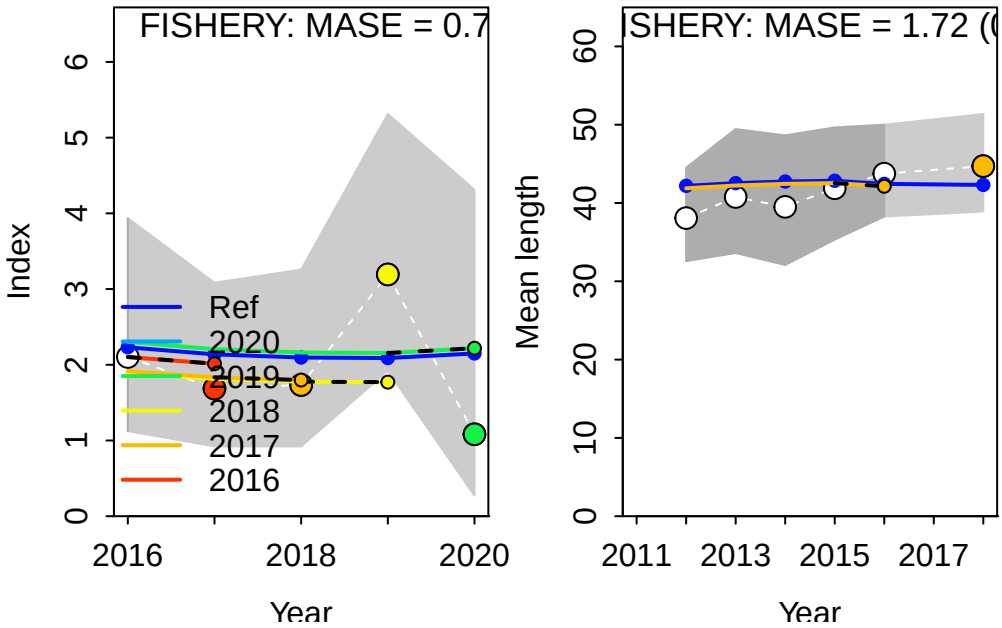
`Mohn's Rho stats, including one step ahead forecasts:`



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

  type     peel         Rho ForecastRho
1    F     2020 0.000000000 0.000000000
2    F     2019 0.002498783 0.002434303
3    F     2018 0.032099346 0.032144268
4    F     2017 0.020467720 0.020781031
5    F     2016 0.011744033 0.012095649
6    F Combined 0.013361976 0.013491050
```

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 1 of 5  prediction residuals for Index FISHERY

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



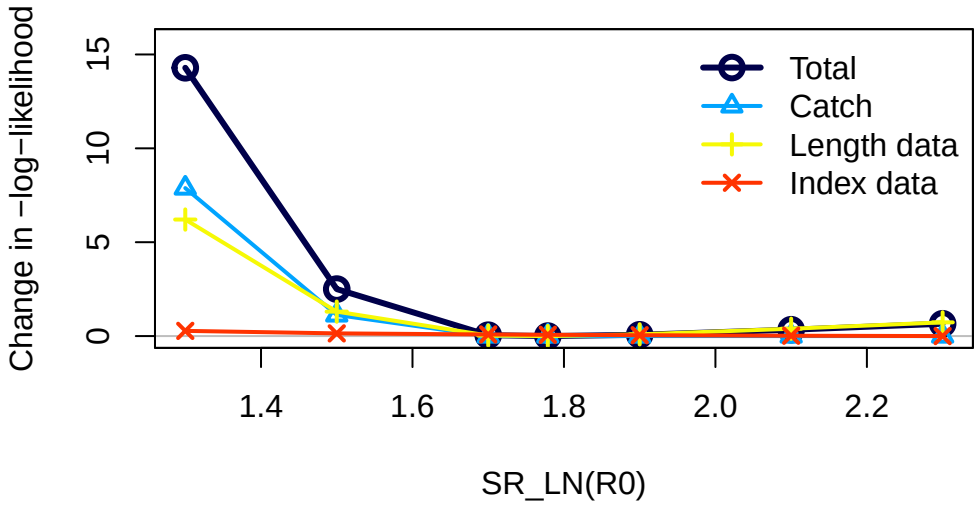

```
MASE stats by Index:

    Index Season     MASE     MAE.PR   MAE.base  MASE.adj n.eval
1 FISHERY      1 1.717632 0.03747402 0.02181726 0.3747402      1
```

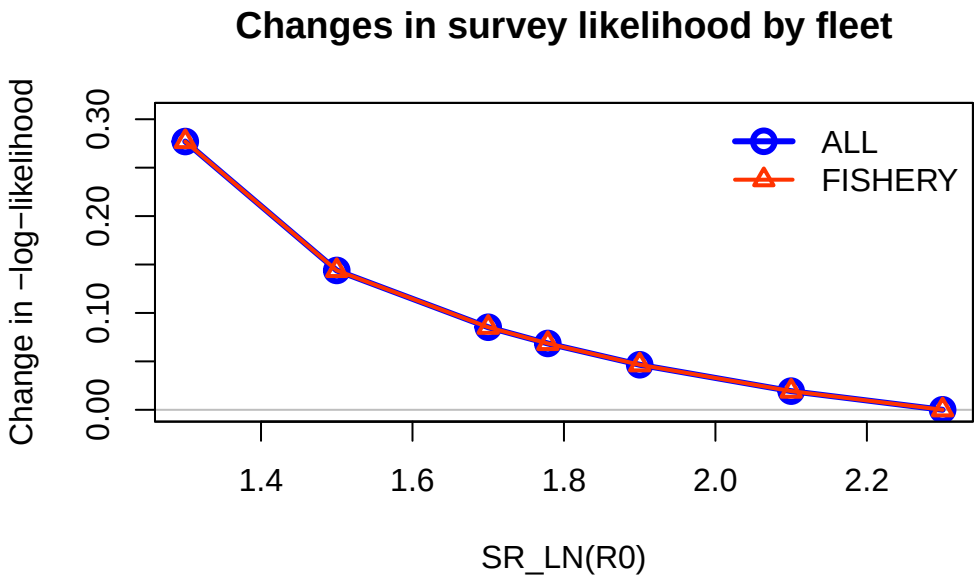
Recruitment Deviations

Likelihood Profile

```
[1] "SR_LN"
                    frac_change include                            label
TOTAL                    1.0000    TRUE                            Total
Catch                    0.5516    TRUE                            Catch
Equil_catch              0.0000   FALSE                Equilibrium catch
Survey                   0.0194    TRUE                       Index data
Length_comp              0.4344    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              0.0007   FALSE                           Priors
```

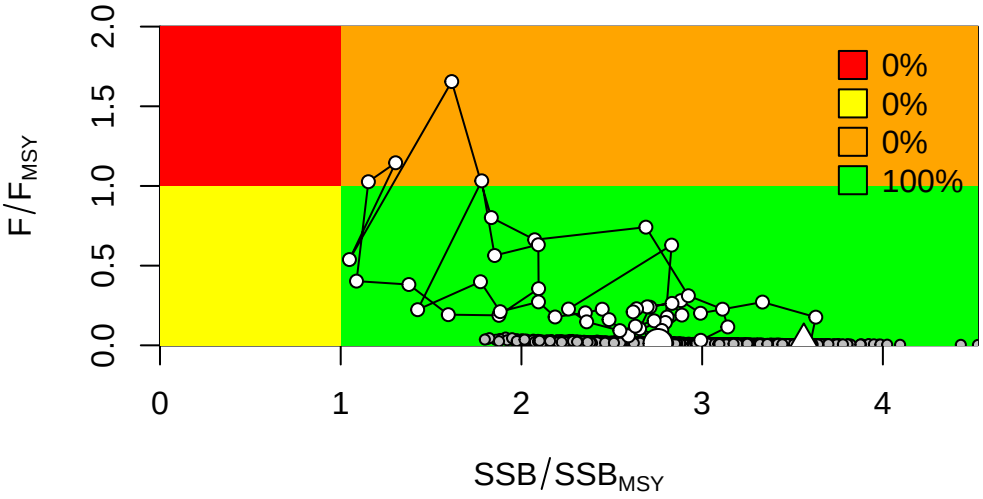
```
Parm_softbounds          0.0000   FALSE                    Soft bounds
Parm_devs                0.0000   FALSE          Parameter deviations
Crash_Pen                0.0000   FALSE                  Crash penalty
```

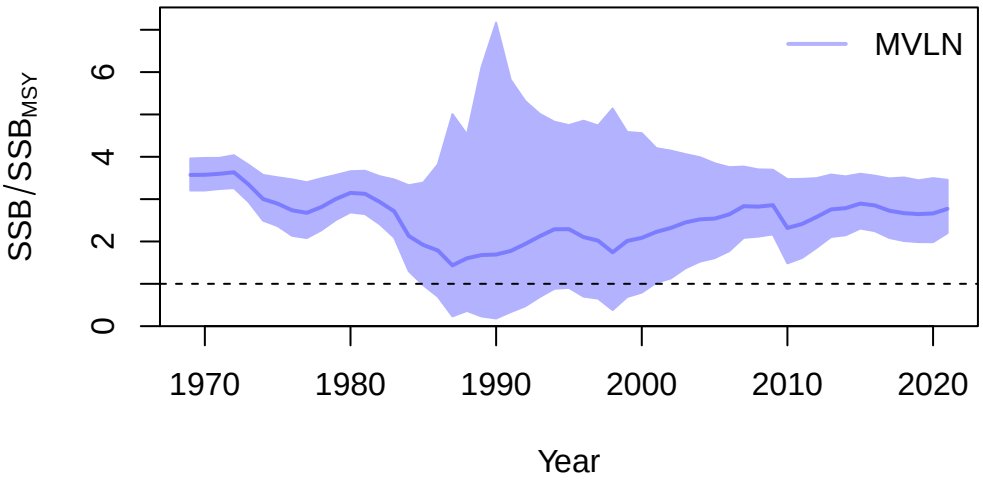


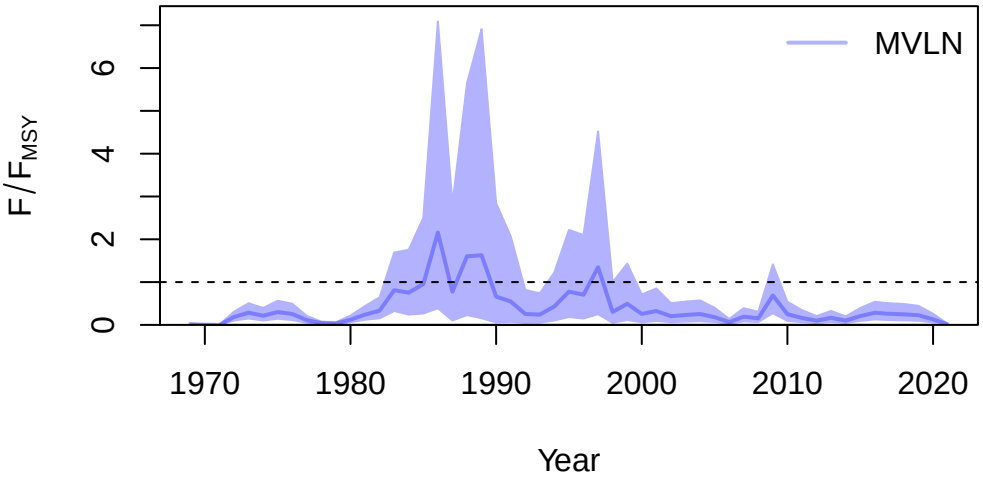


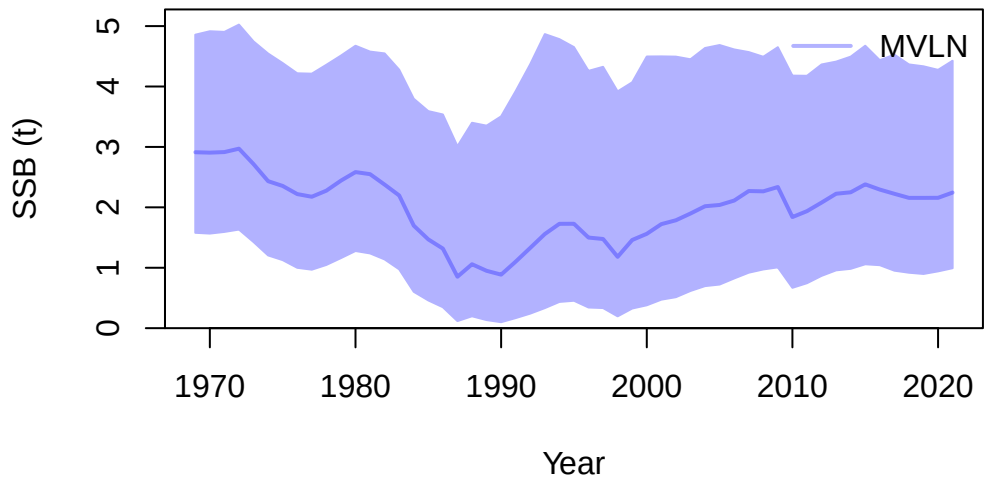
Management Quantities

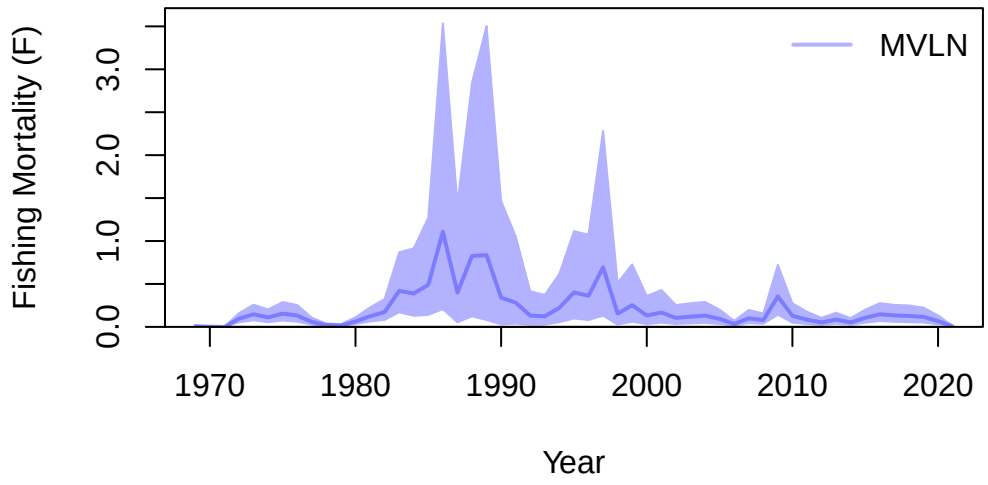
starter.sso with Bratio: SSB/SSBMSY and F: _abs_F




MVLN
SSB/SSB$_{MSY}$
0
2
4
6
1970
1980
1990
2000
2010
2020
Year

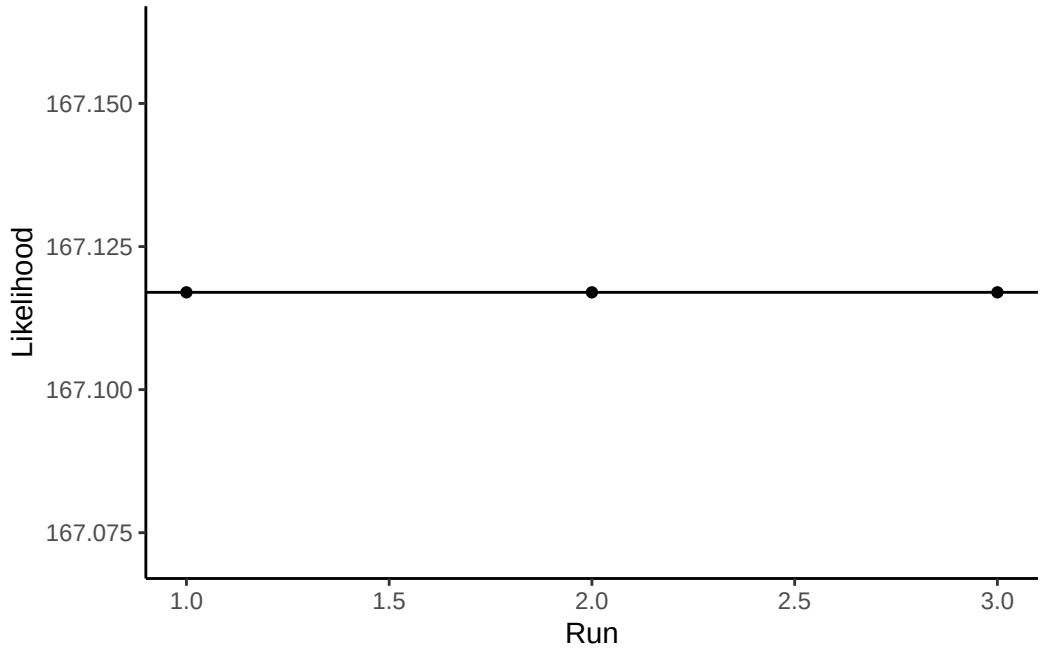

MVLN
F/F$_{MSY}$
0
2
4
6
1970
1980
1990
2000
2010
2020
Year

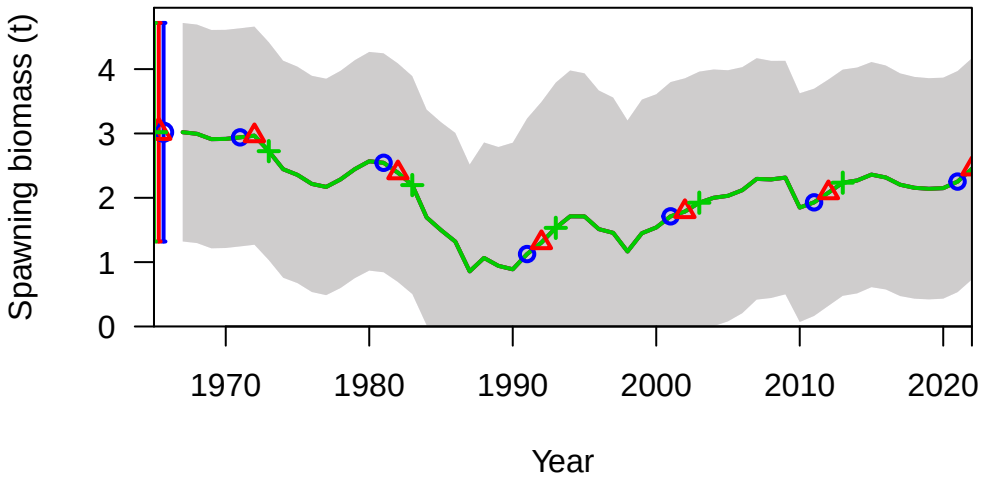


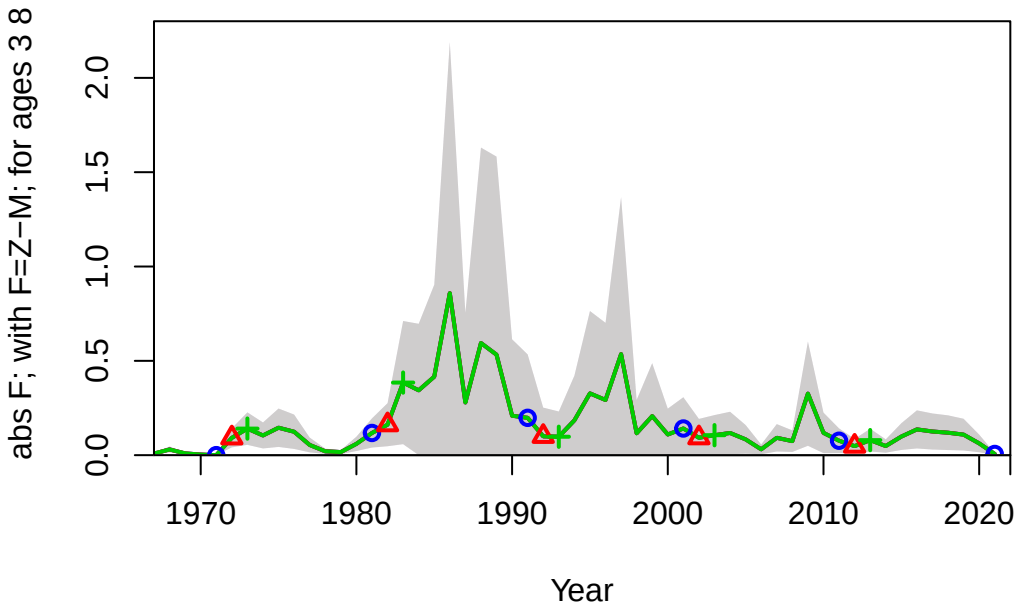


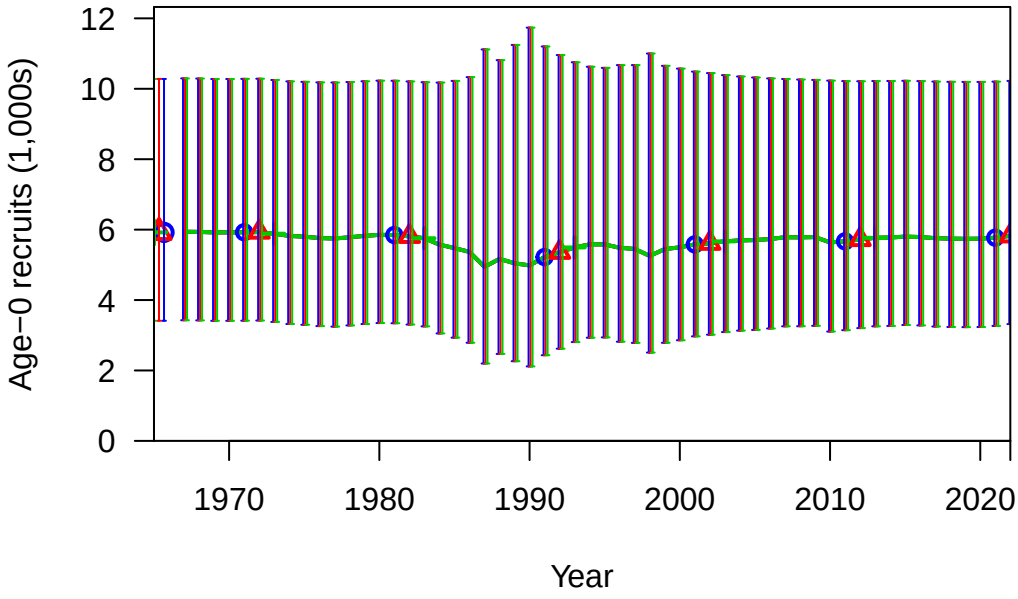

```
null device
          1
```

Jitter

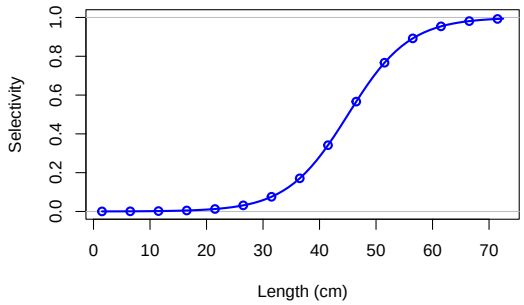

Likelihood
167.150
167.125
167.100
167.075
1.0
1.5
2.0
2.5
3.0
Run

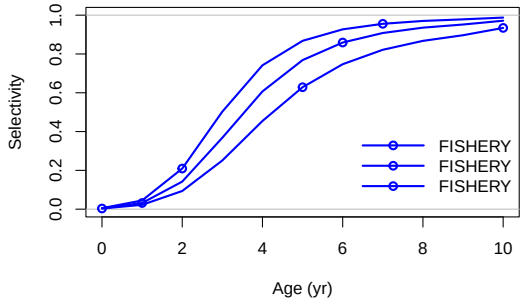

Spawning biomass (t)
0
1
2
3
4
1970
1980
1990
2000
2010
2020
Year

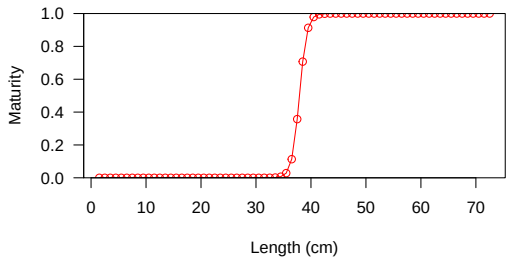


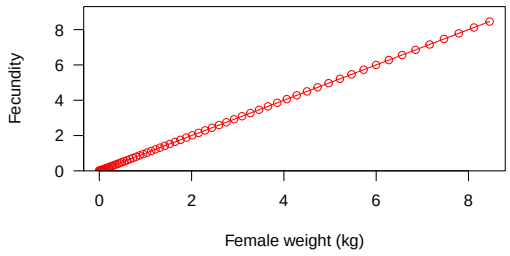


Selectivity and Maturity


Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
10
20
30
40
50
60
70
Length (cm)


Selectivity
0.0
0.2
0.4
0.6
0.8
1.0
0
2
4
6
8
10
Age (yr)
FISHERY
FISHERY
FISHERY


Maturity
0.0
0.2
0.4
0.6
0.8
1.0
0
10
20
30
40
50
60
70
Length (cm)


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