American Samoa Model Checks

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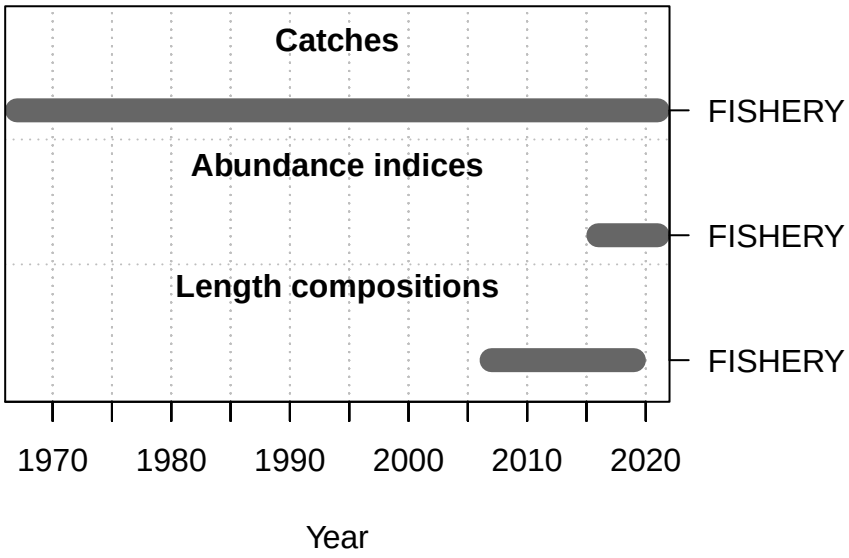
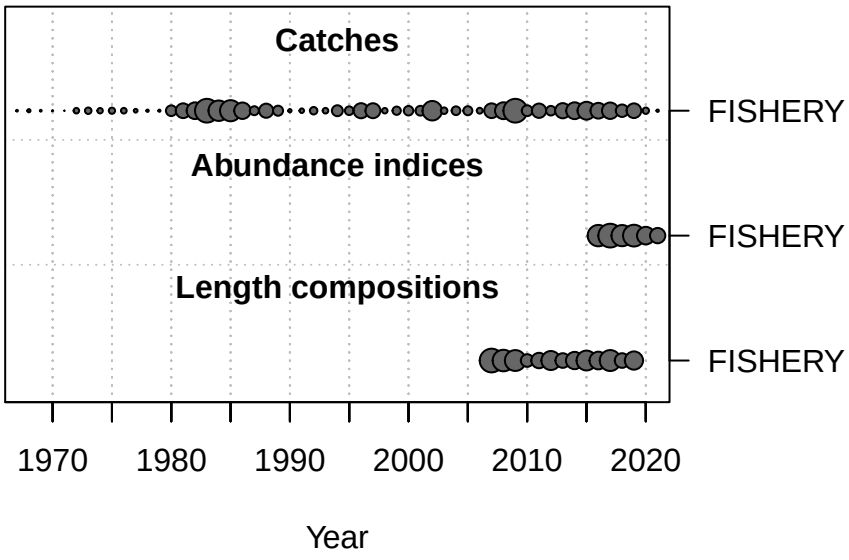
This is a summary report for the APRU base model run.

Model Output

Input Data





Convergence Check

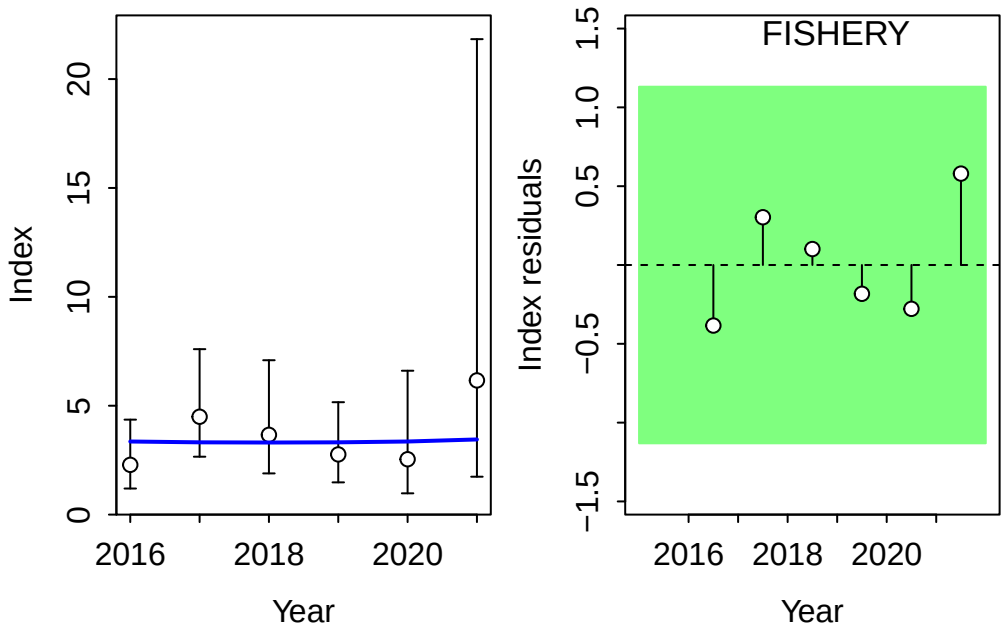
```
  Converged     MaxGrad
1      TRUE 7.37979e-05
```

```
[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

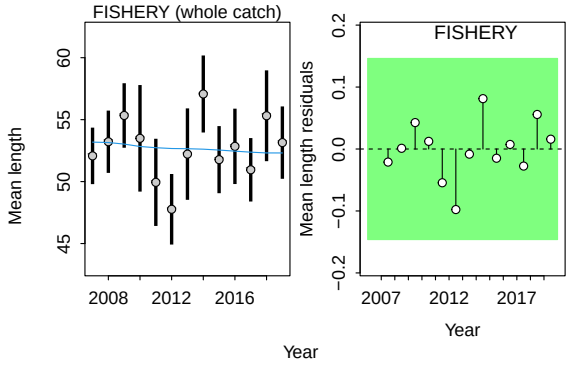
Fleet	RMSE.perc	Nobs
FISHERY	34.1	6
Combined	34.1	6

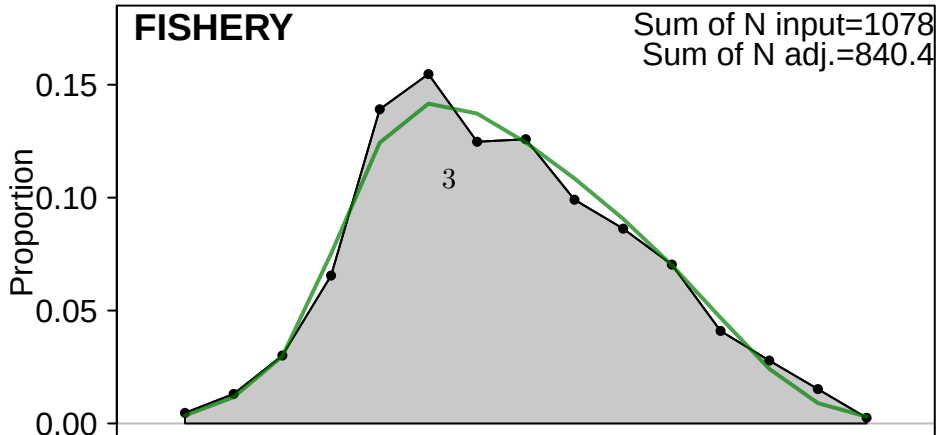


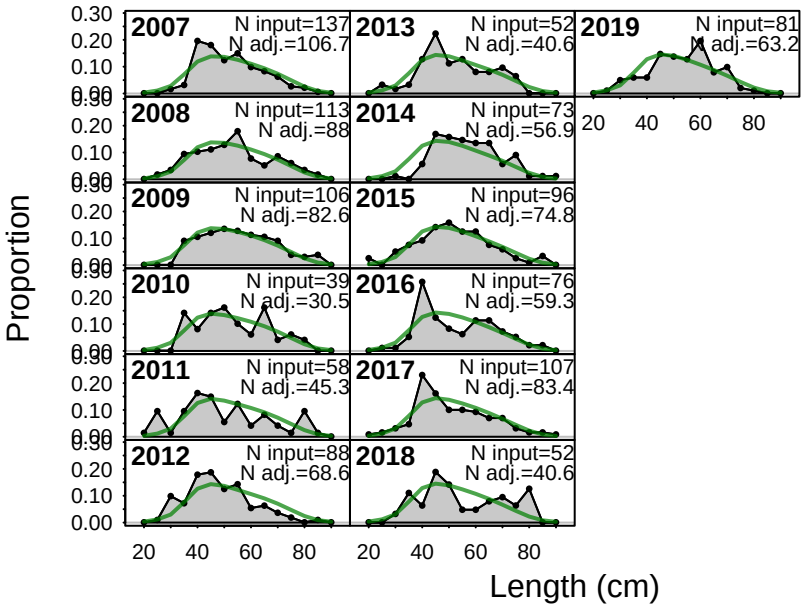
Length Comp

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 0.2142810 1.3601868          1 FISHERY  0.623 Passed -0.1461822 0.1461822  len
```

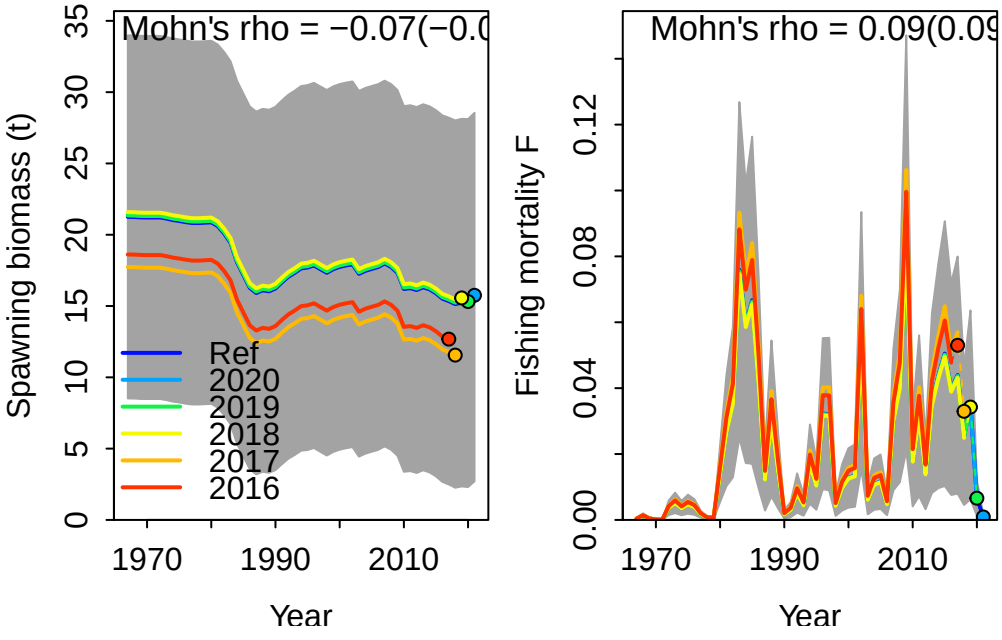






Retrospective

`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 -0.007918325 -0.007713391
2    F     2019 -0.006736975 -0.006665130
3    F     2018 -0.019565483 -0.019521200
4    F     2017  0.295884136  0.297366215
5    F     2016  0.202837376  0.205761345
6    F Combined  0.092900146  0.093845568
```

Hindcasting

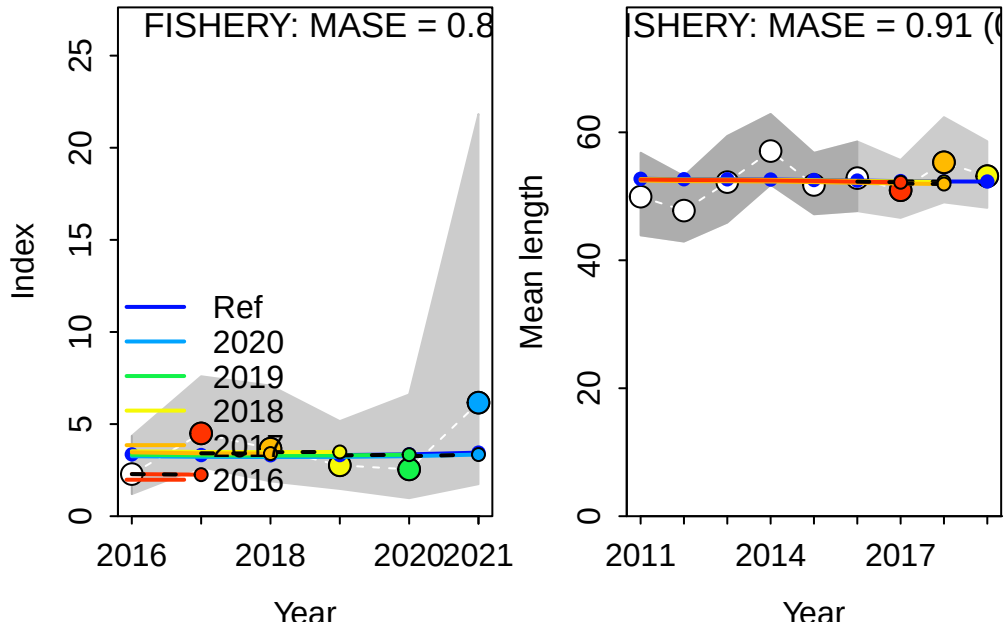
```
Plotting Hindcast Cross-Validation (one-step-ahead)

 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 3 of 5  prediction residuals for Index FISHERY

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



MASE stats by Index:

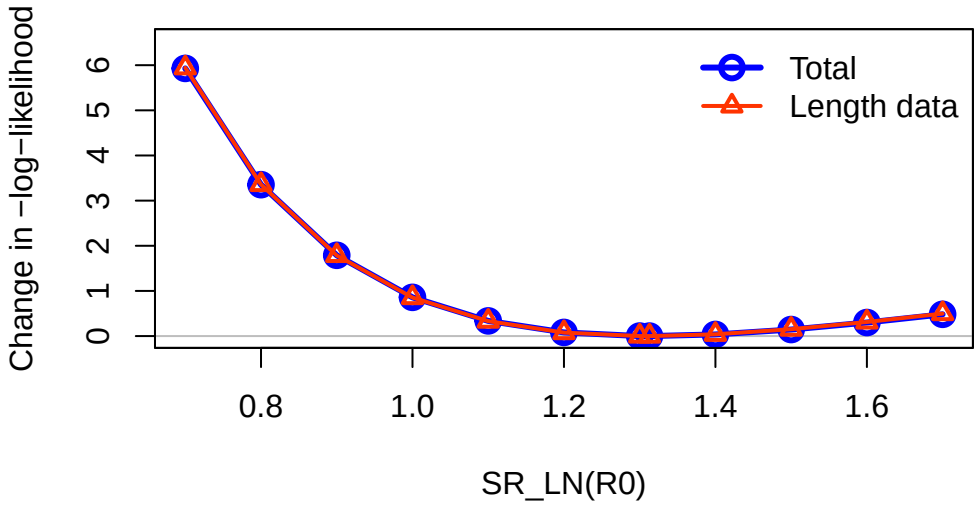
```
    Index Season      MASE     MAE.PR   MAE.base  MASE.adj n.eval
1 FISHERY      1 0.9085497 0.04801334 0.05284614 0.4801334      3
```

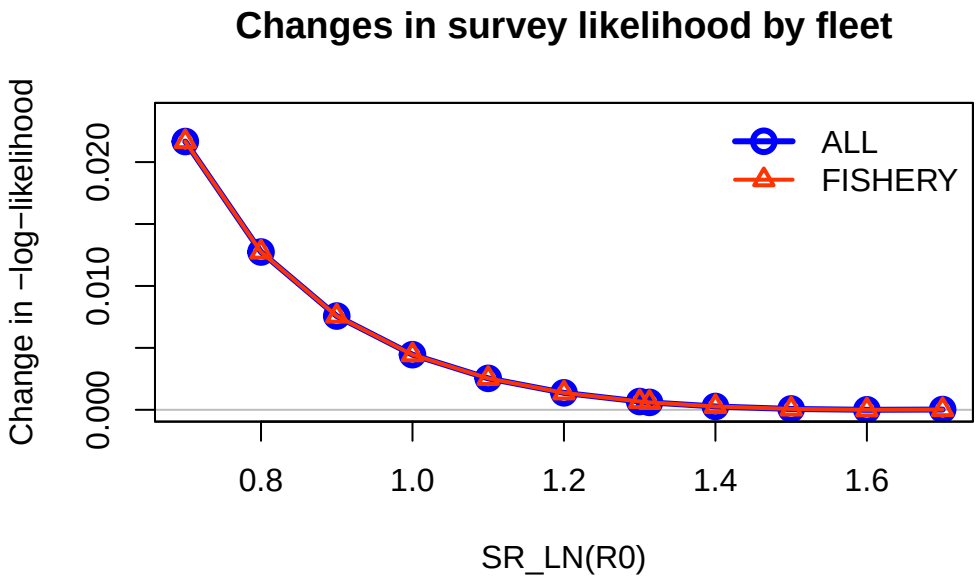
Recruitment Deviations

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                    0.0037   FALSE                     Index data
Length_comp               1.0024    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               0.0066   FALSE                        Priors
```

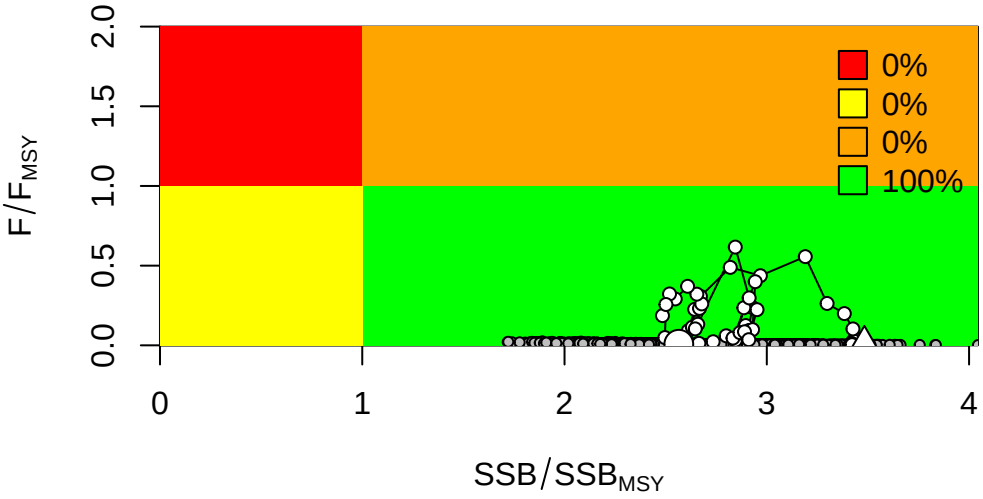
Parm_softbounds	0.0000	FALSE	Soft bounds
Parm_devs	0.0000	FALSE	Parameter deviations
Crash_Pen	0.0000	FALSE	Crash penalty

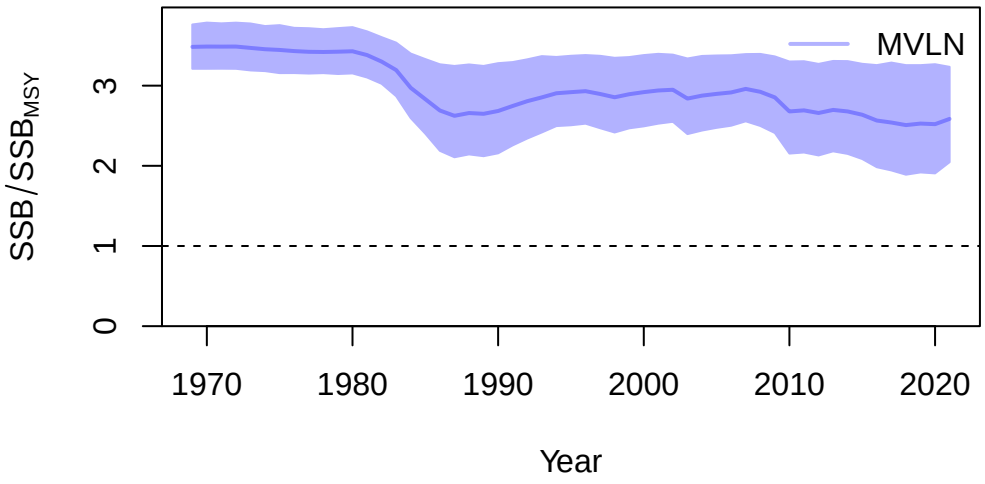


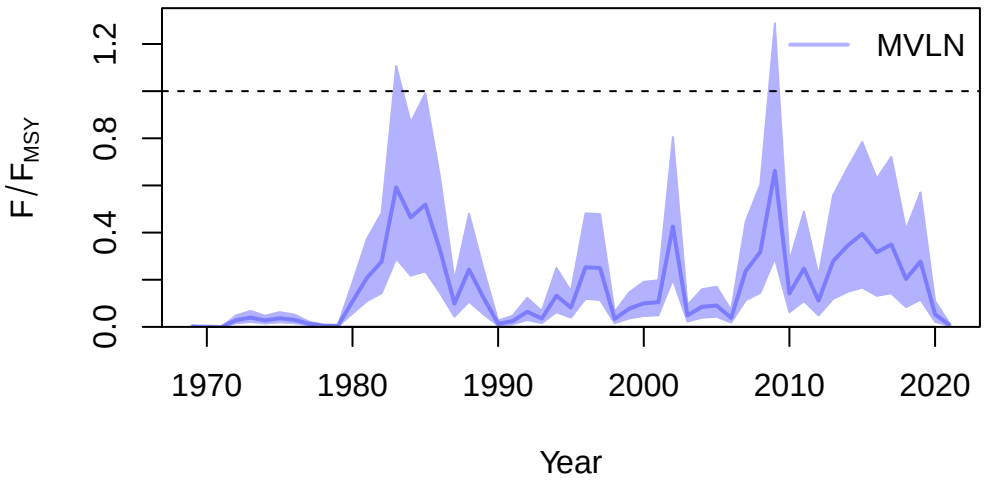


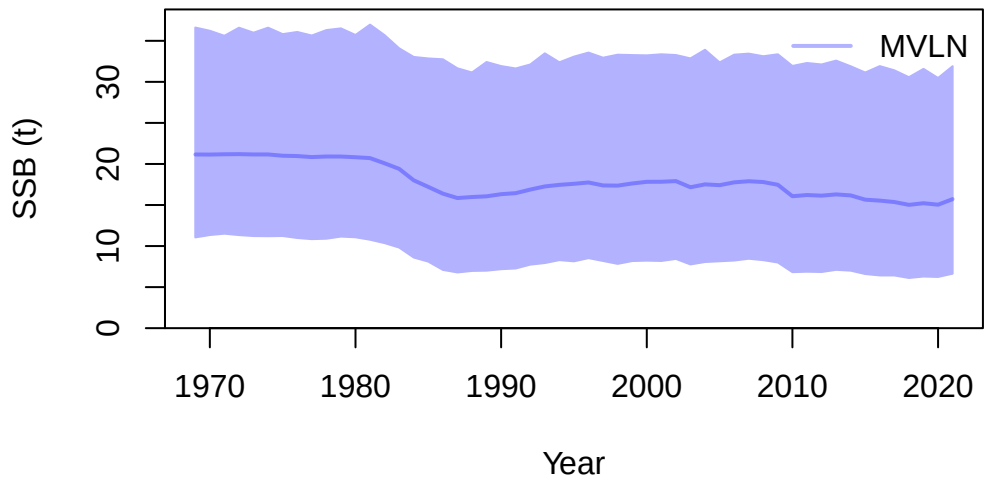
Management Quantities

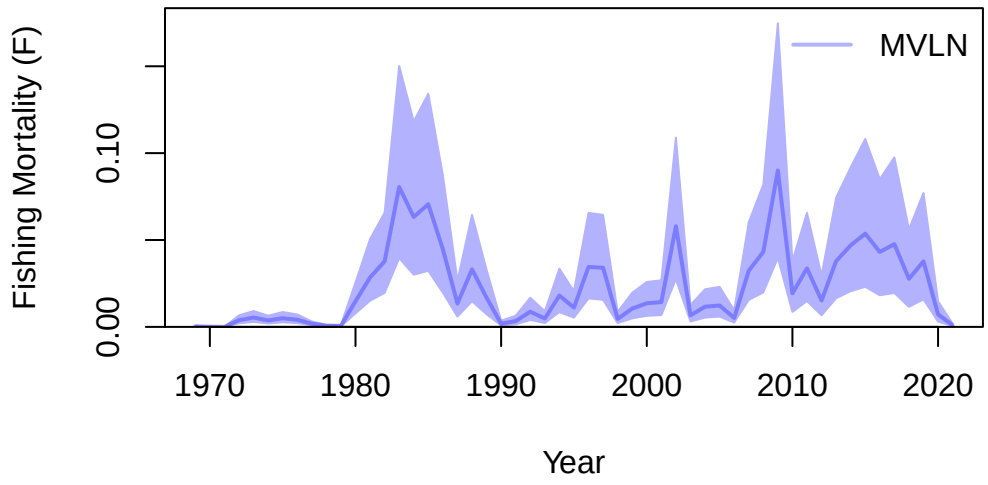
starter.sso with Bratio: SSB/SSBMSY and F: _abs_F




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

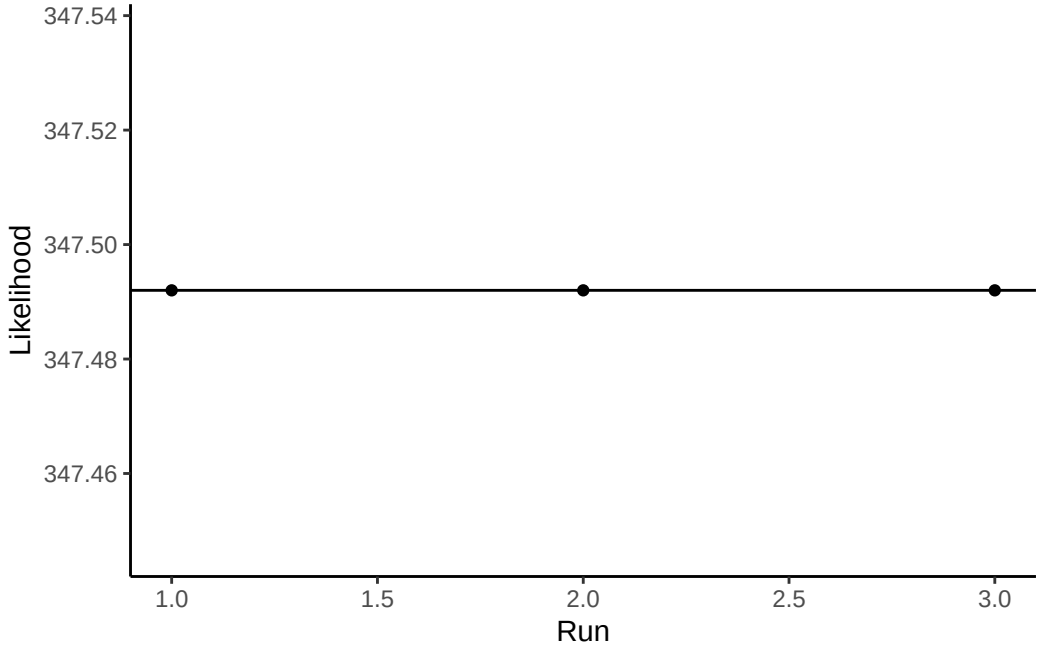

MVLN
F/F$_{MSY}$
0.0
0.4
0.8
1.2
1970
1980
1990
2000
2010
2020
Year

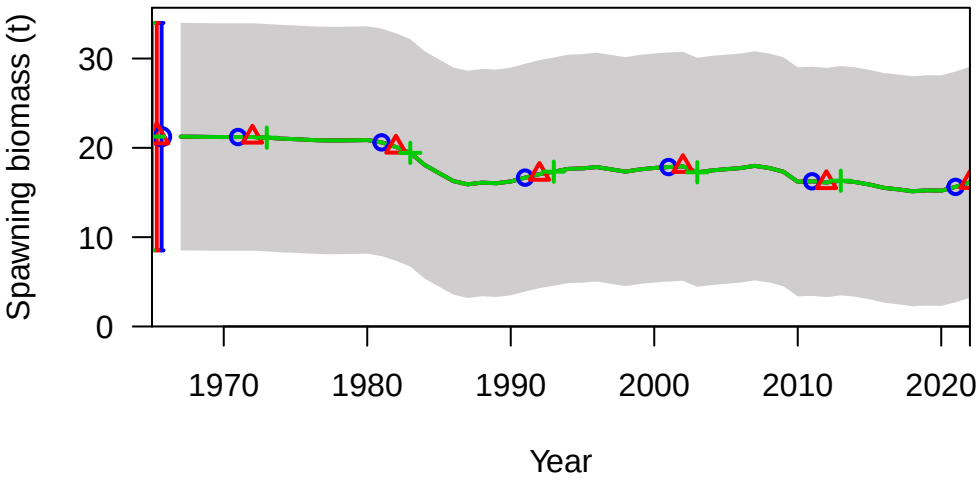


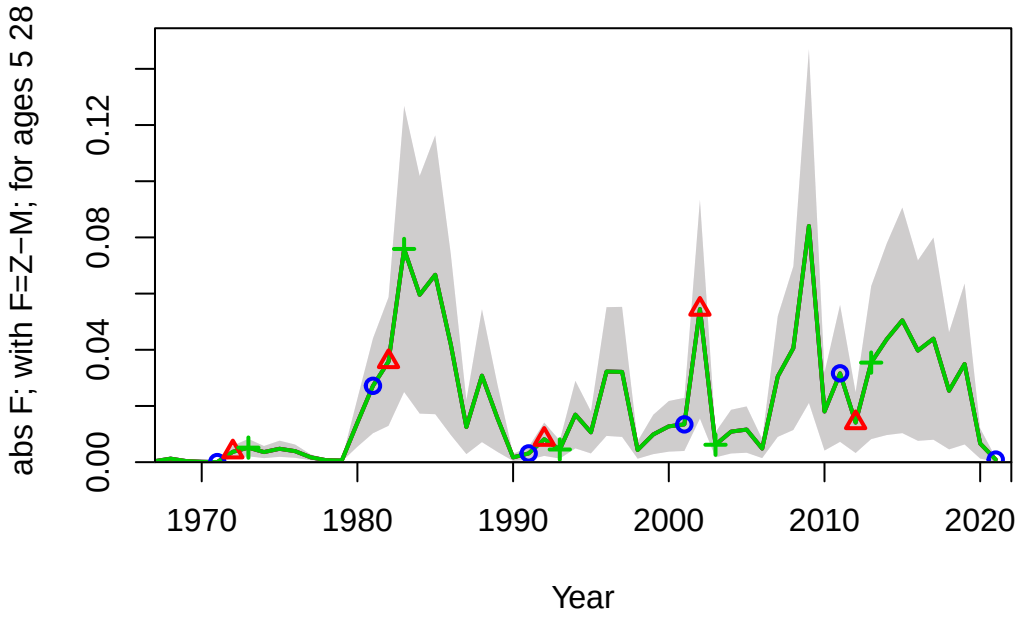


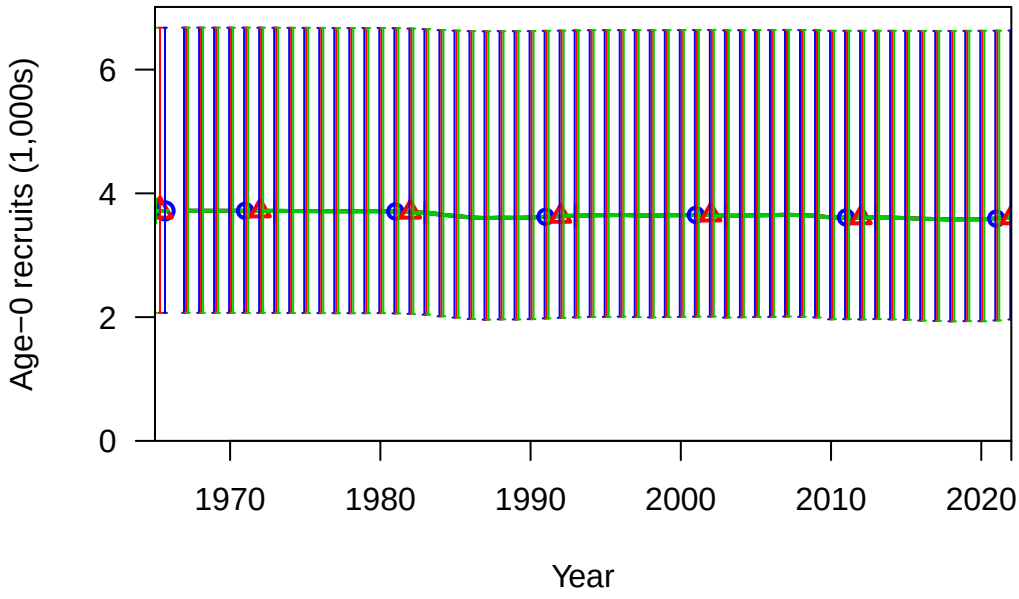

```
null device
          1
```

Jitter

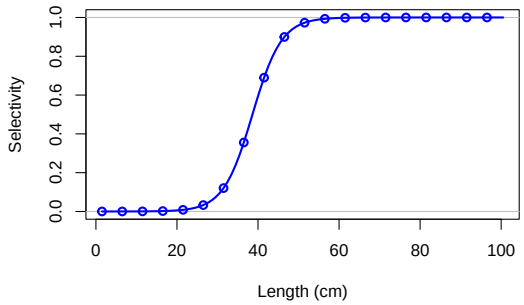

347.54
347.52
347.50
347.48
347.46
Likelihood
1.0
1.5
2.0
2.5
3.0
Run

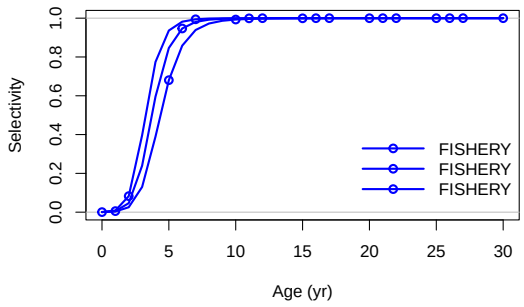

30
20
10
0
Spawning biomass (t)
1970
1980
1990
2000
2010
2020
Year

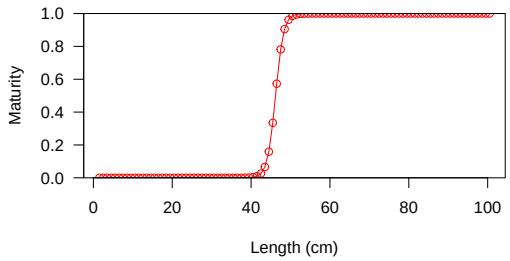


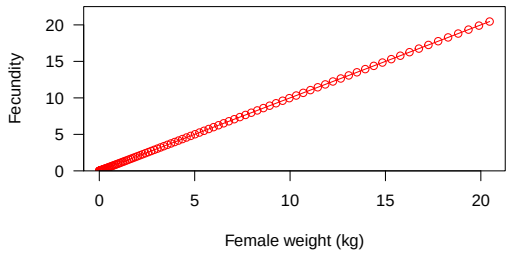


Selectivity and Maturity


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