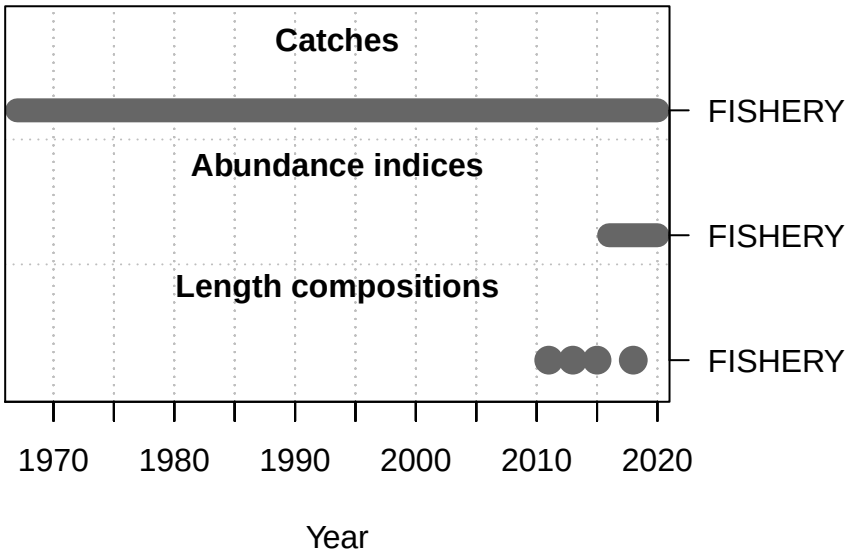
American Samoa Model Checks

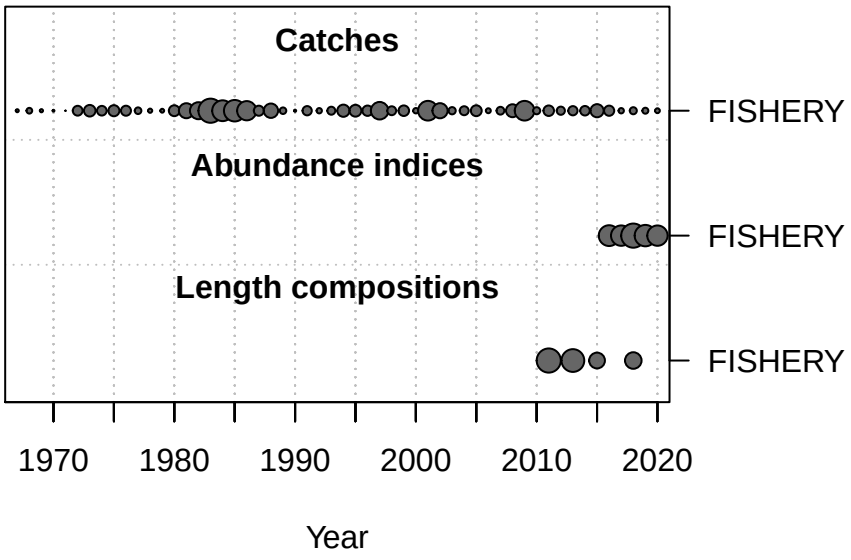
2022-08-30

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

Model Output

Input Data





Convergence Check

```
  Converged     MaxGrad
1      TRUE 9.67986e-06
```

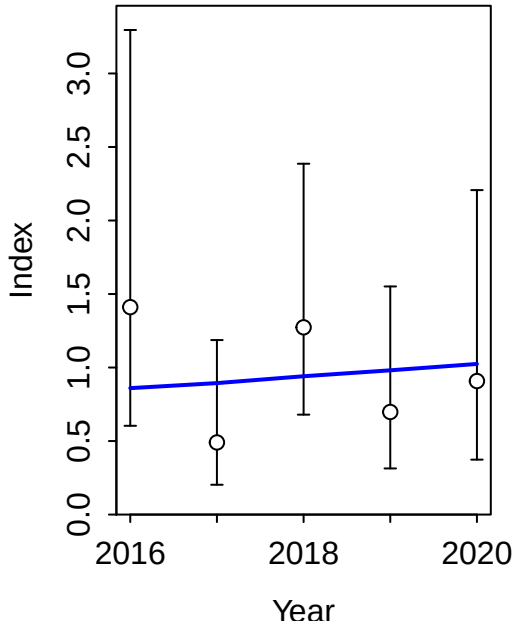
```
[1] "1 catch is 0.0 in endyr; this can cause problem in the benchmark and forecast calculatio
[2] "2 NOTE:  Max data length bin: 48  < max pop len bins: 53; so will accumulate larger pop
[3] "3 warning: poor convergence in Fmsy, final dy/dy2= -0.00189344"
[4] "N warnings: 3"
```

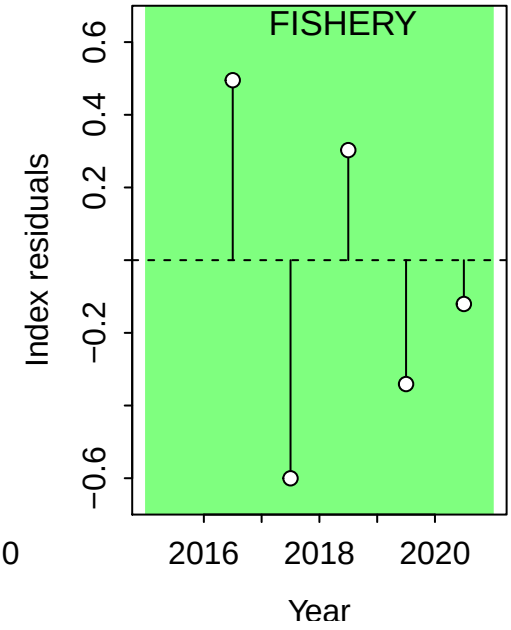
Fit to Model

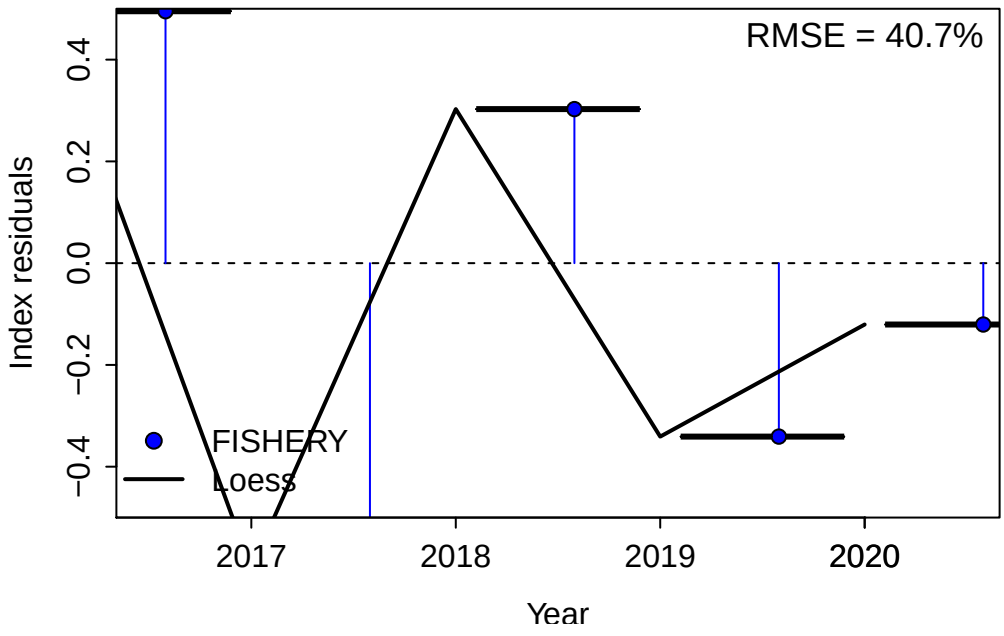
CPUE

```
Residual Runs Test (/w plot) stats by Index:
```

```
RMSE stats by Index:
```


Index
0.0
0.5
1.0
1.5
2.0
2.5
3.0
2016
2018
2020
Year


FISHERY
Index residuals
−0.6
−0.2
0.2
0.4
0.6
2016
2018
2020
Year

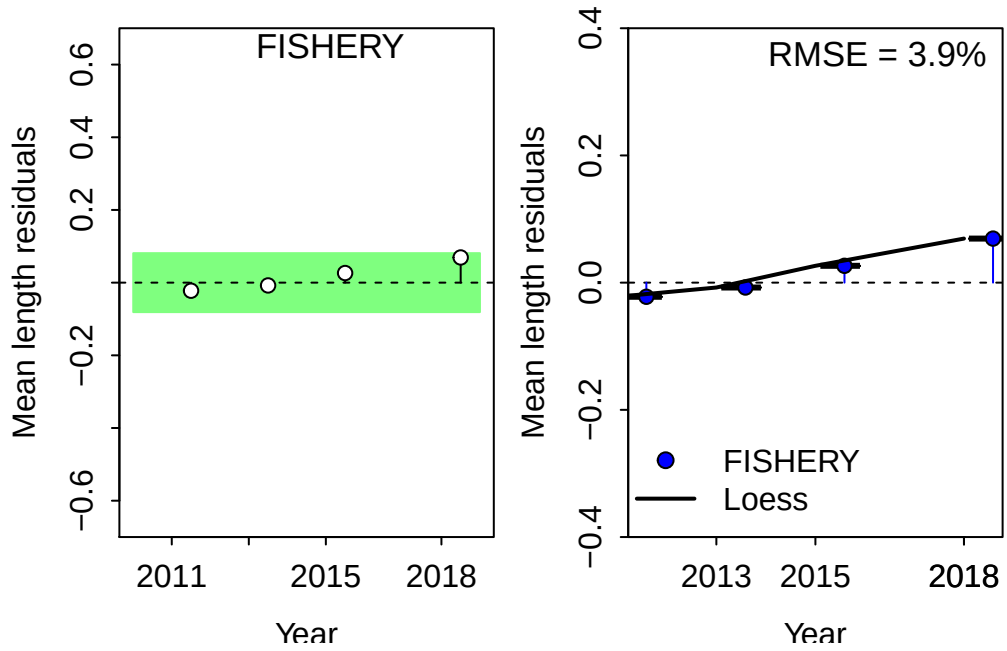

RMSE = 40.7%
Index residuals
−0.4
−0.2
0.0
0.2
0.4
FISHERY
Loess
2017
2018
2019
2020
Year

Length Comp

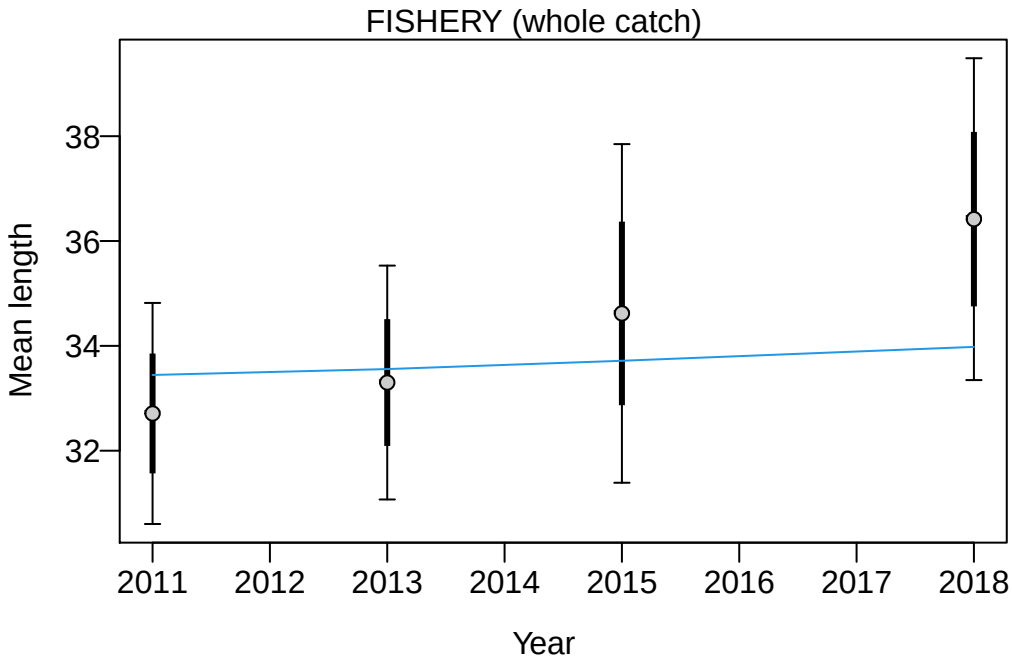
#Factor	Fleet	New_Var_adj	Type	Name
4	1	0.293827	len	FISHERY

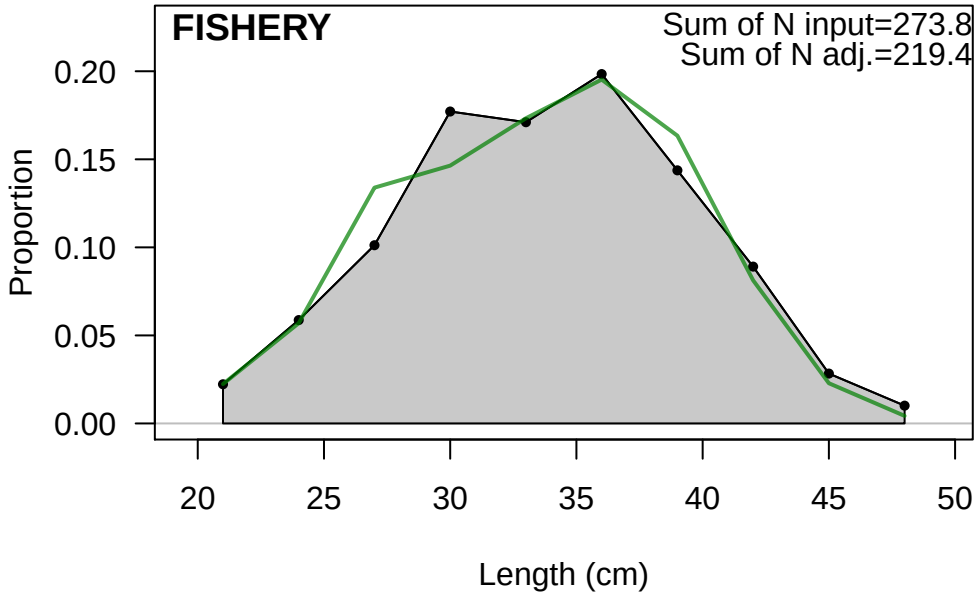
```
Residual Runs Test (/w plot) stats by Mean length:

    Index runs.p   test   sigma3.lo  sigma3.hi type
1 FISHERY   0.11 Passed -0.08109129 0.08109129  len
```

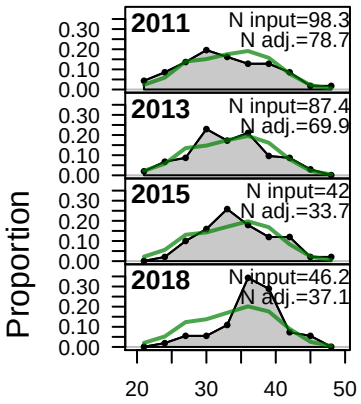
```
RMSE stats by Index:

# A tibble: 2 x 3
  Fleet    RMSE.perc  Nobs
  <chr>        <dbl> <int>
1 FISHERY        3.9     4
2 Combined       3.9     4
```



Retrospective and Hindcasting


FISHERY (whole catch)
Mean length
38
36
34
32
2011
2012
2013
2014
2015
2016
2017
2018
Year

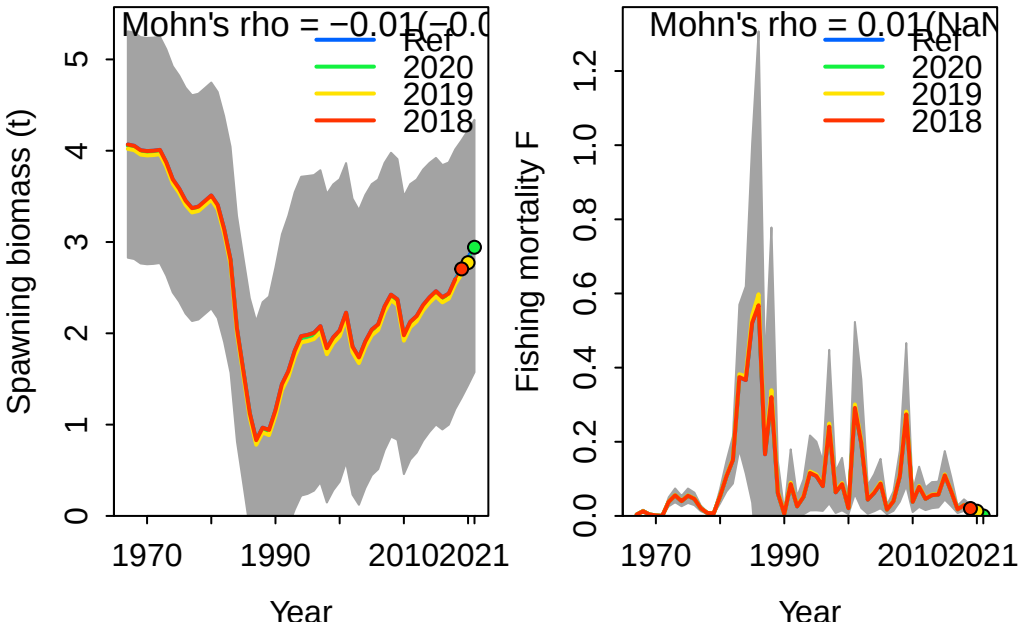

FISHERY
Sum of N input=273.8
Sum of N adj.=219.4
Proportion
0.20
0.15
0.10
0.05
0.00
20
25
30
35
40
45
50
Length (cm)



Length (cm)

Retrospective

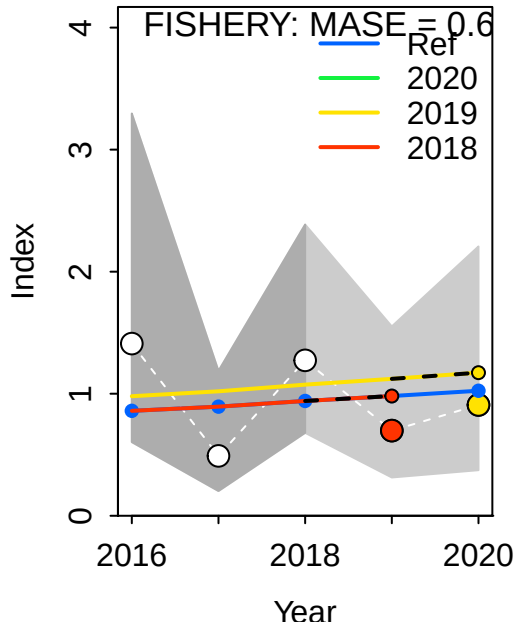
`Mohn's Rho stats, including one step ahead forecasts:`



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

  type     peel         Rho ForecastRho
1    F     2020 0.004826878         NaN
2    F     2019 0.019906698  0.01886146
3    F     2018 0.000000000  0.00000000
4    F Combined 0.008244525         NaN
```

Hindcasting

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

 Computing MASE with only 2 of 3  prediction residuals for Index FISHERY

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



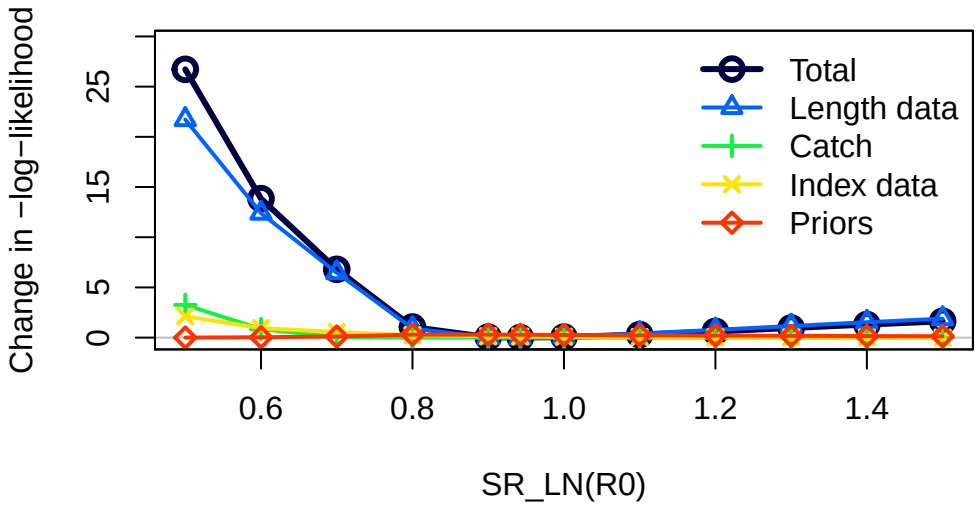

```
MASE stats by Index:
Plotting Hindcast Cross-Validation (one-step-ahead)

No observations in evaluation years to compute prediction residuals for Index FISHERY
```

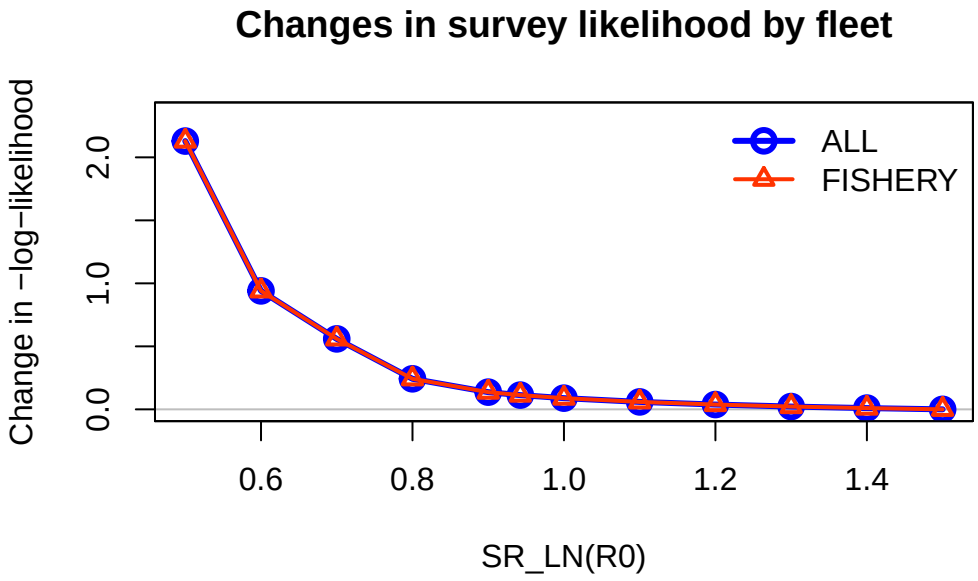
MASE stats by Index:

Recruitment Deviations

Likelihood Profile

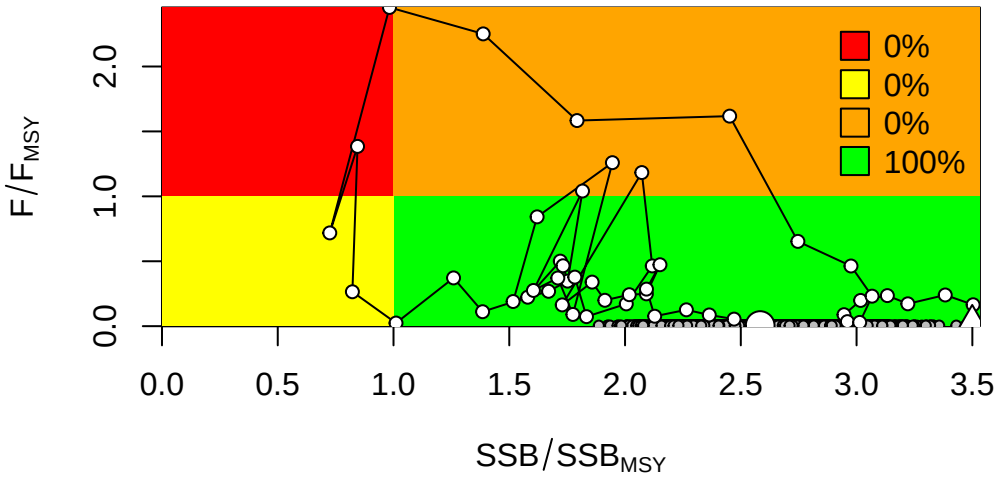
```
[1] "SR_LN"
                     frac_change include                          label
TOTAL                     1.0000    TRUE                          Total
Catch                     0.1221    TRUE                          Catch
Equil_catch               0.0000   FALSE              Equilibrium catch
Survey                    0.0797    TRUE                     Index data
Length_comp               0.8129    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               0.0112    TRUE                         Priors
Parm_softbounds           0.0004   FALSE                   Soft bounds
Parm_devs                 0.0000   FALSE          Parameter deviations
Crash_Pen                 0.0000   FALSE                 Crash penalty
```

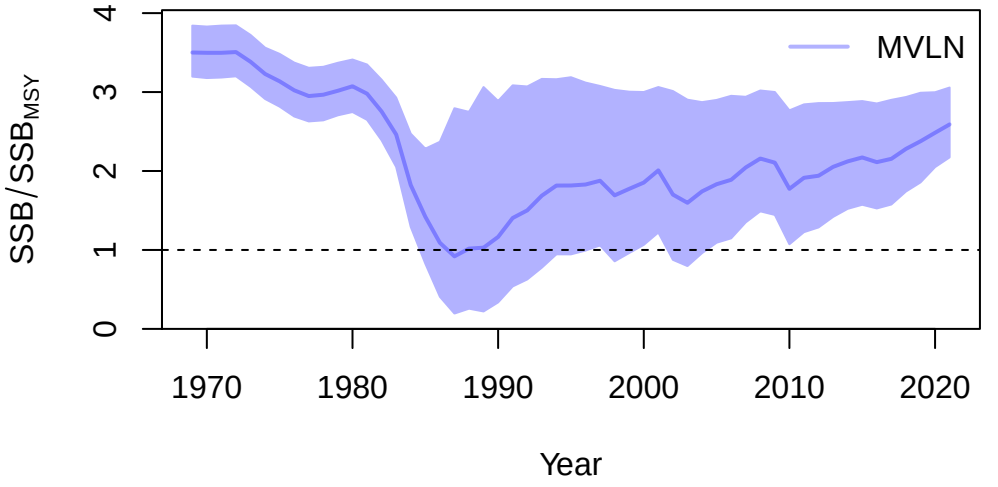


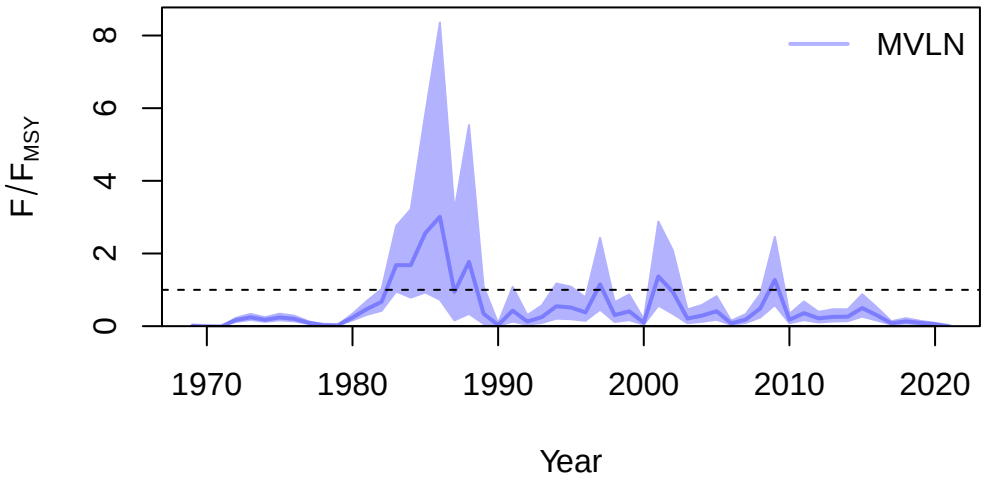


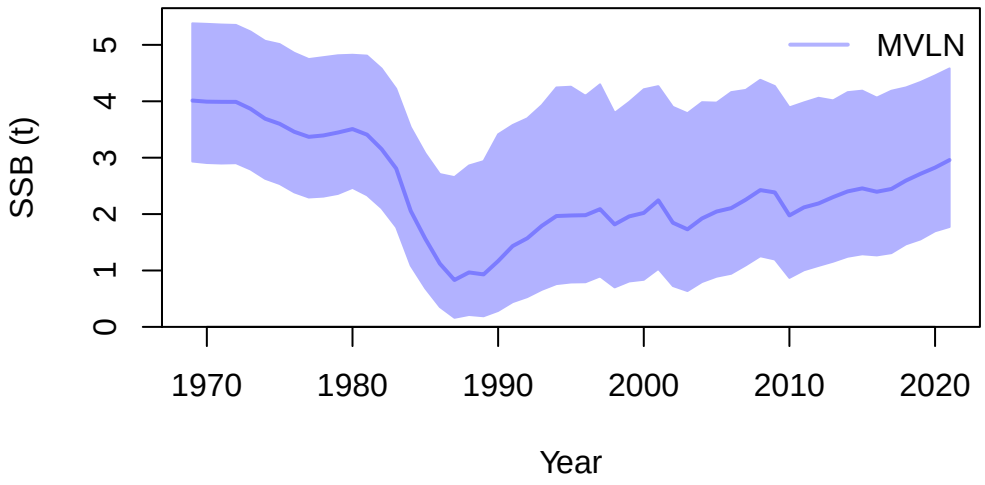
Management Quantities

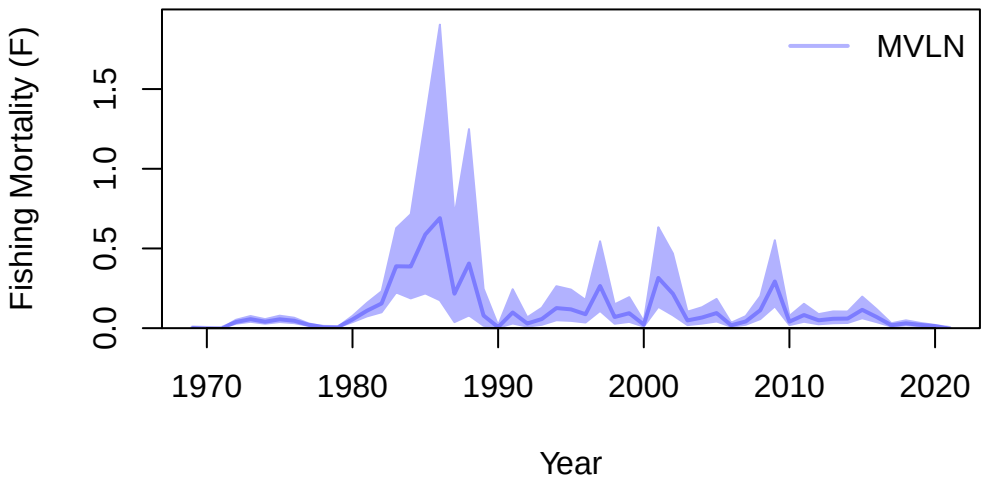
`starter.sso with Bratio: SSB/SSBMSY and F: _abs_F`


0%
0%
0%
100%
F/F_MSY
SSB/SSB_MSY
0.0
1.0
2.0
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5


MVLN
SSB/SSB_MSY
Year
0
1
2
3
4
1970
1980
1990
2000
2010
2020

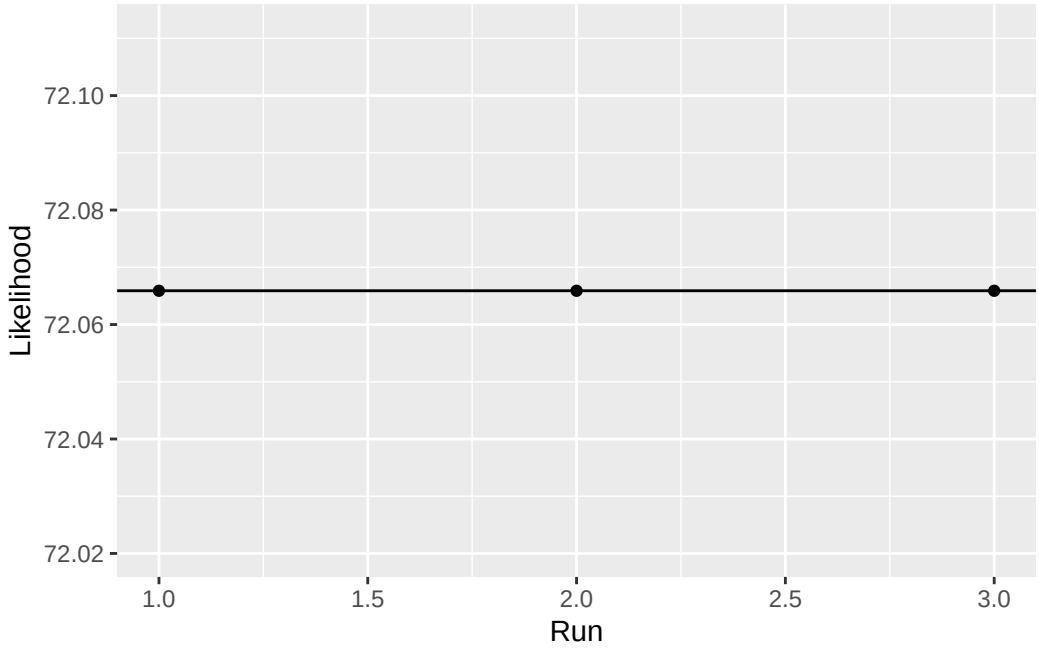

MVLN
F/F_MSY
0
2
4
6
8
1970
1980
1990
2000
2010
2020
Year

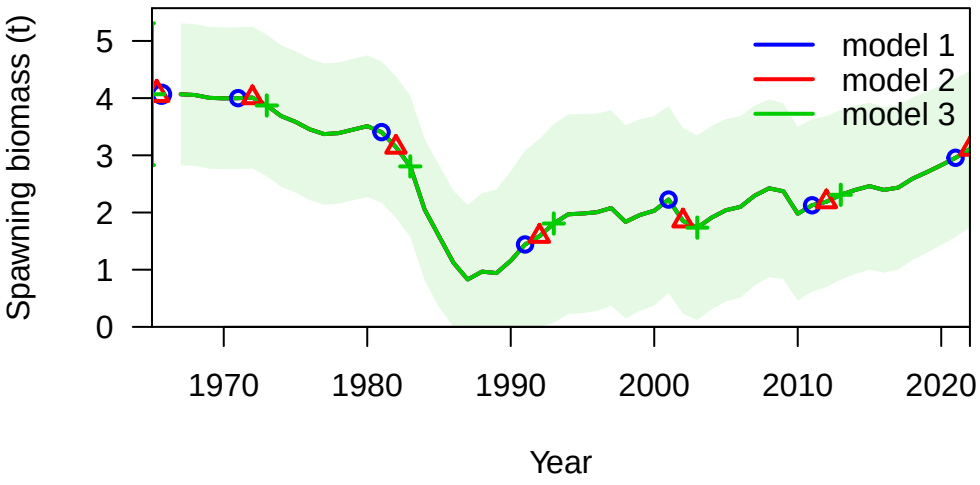

MVLN
SSB (t)
0
1
2
3
4
5
1970
1980
1990
2000
2010
2020
Year

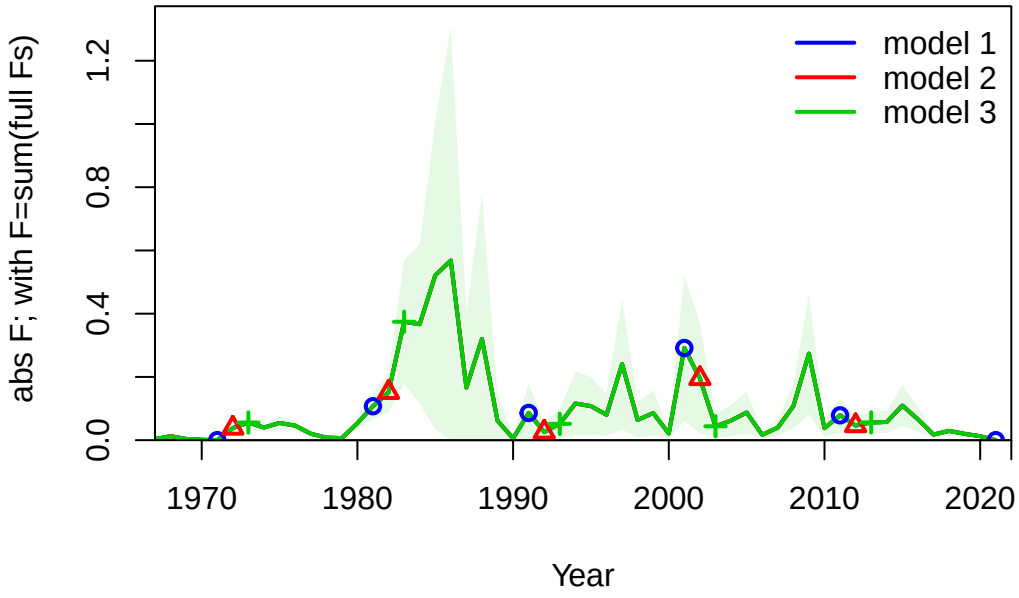


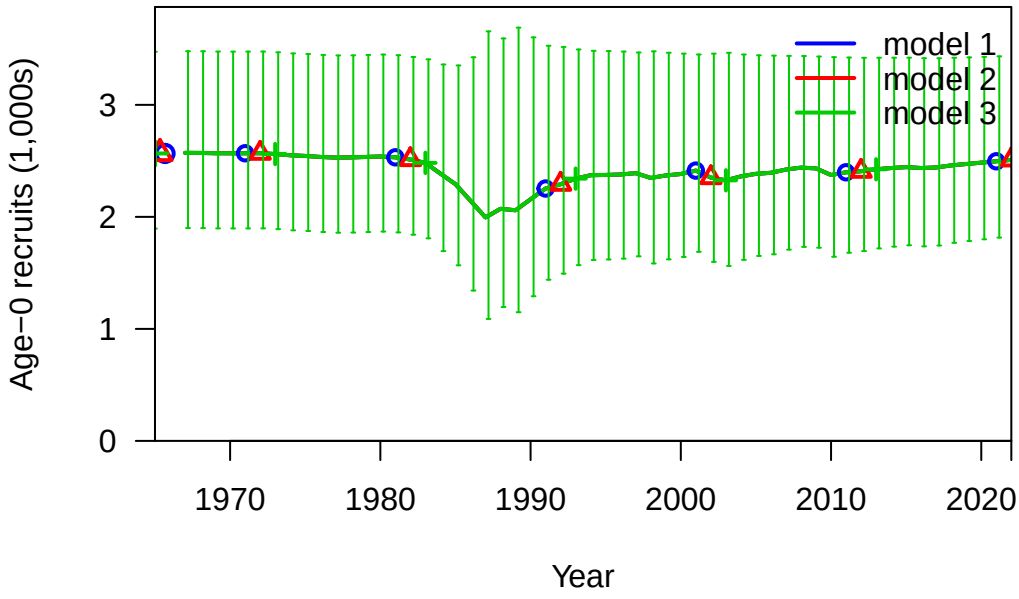

```
null device
          1
```

Jitter


72.10
72.08
72.06
72.04
72.02
Likelihood
1.0
1.5
2.0
2.5
3.0
Run


Spawning biomass (t)
0
1
2
3
4
5
1970
1980
1990
2000
2010
2020
Year
model 1
model 2
model 3


abs F; with F=sum(full Fs)
0.0
0.4
0.8
1.2
1970
1980
1990
2000
2010
2020
Year
model 1
model 2
model 3


Age−0 recruits (1,000s)
0
1
2
3
1970
1980
1990
2000
2010
2020
Year
model 1
model 2
model 3