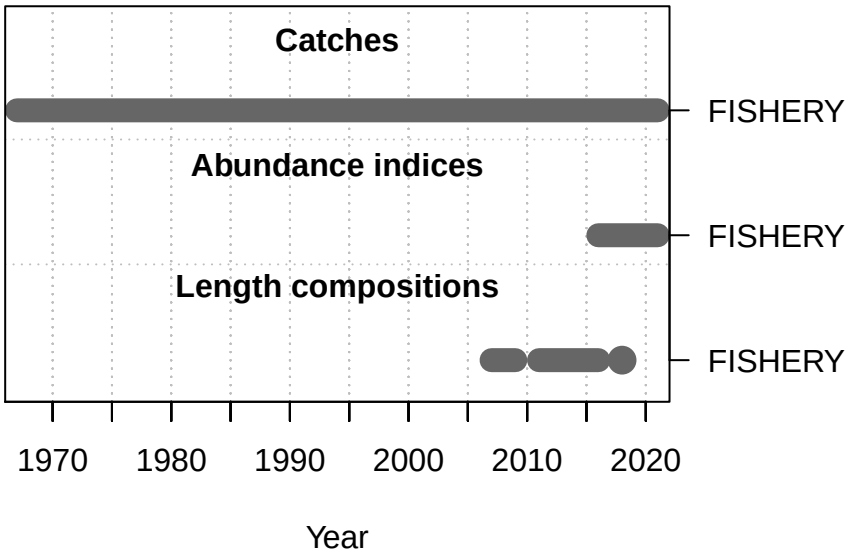
American Samoa Model Checks

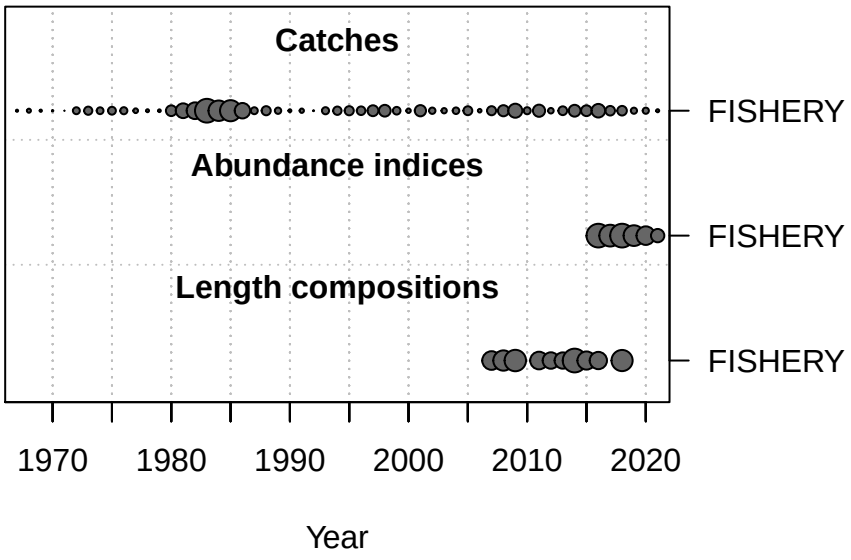
2022-09-26

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

Model Output

Input Data





Convergence Check

```
  Converged     MaxGrad
1      TRUE 5.67368e-05
```

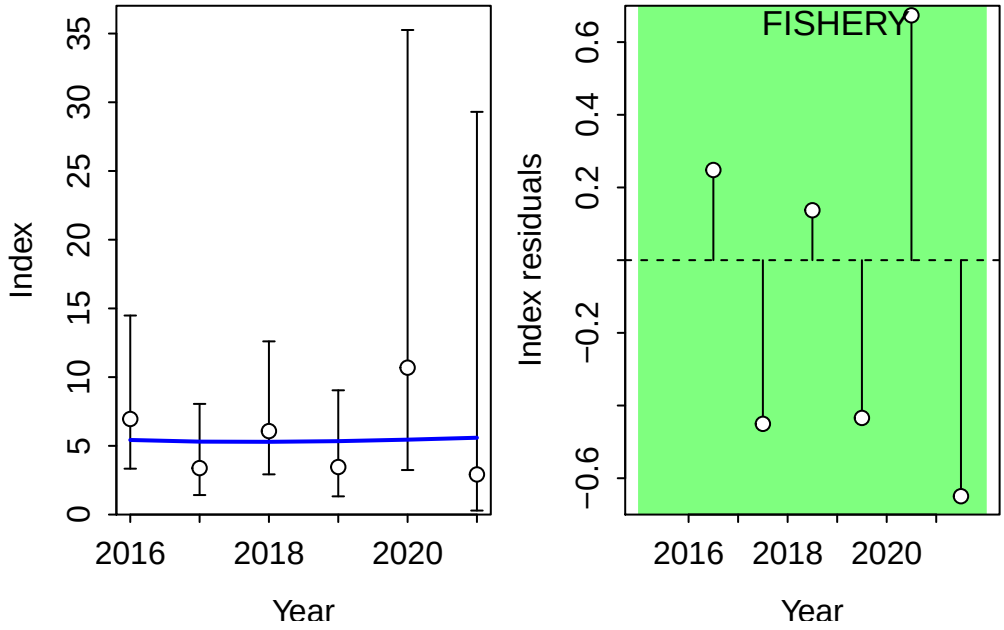
```
[1] "1 NOTE:  Max data length bin: 90  < max pop len bins: 100; so will accumulate larger po
[2] "N warnings: 1"
```

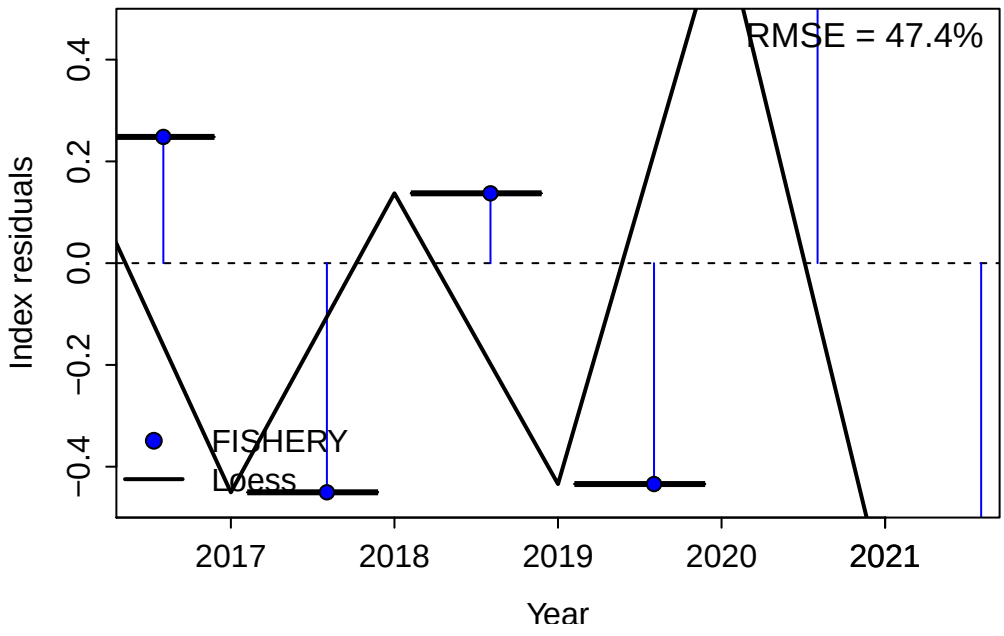
Fit to Model

CPUE

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

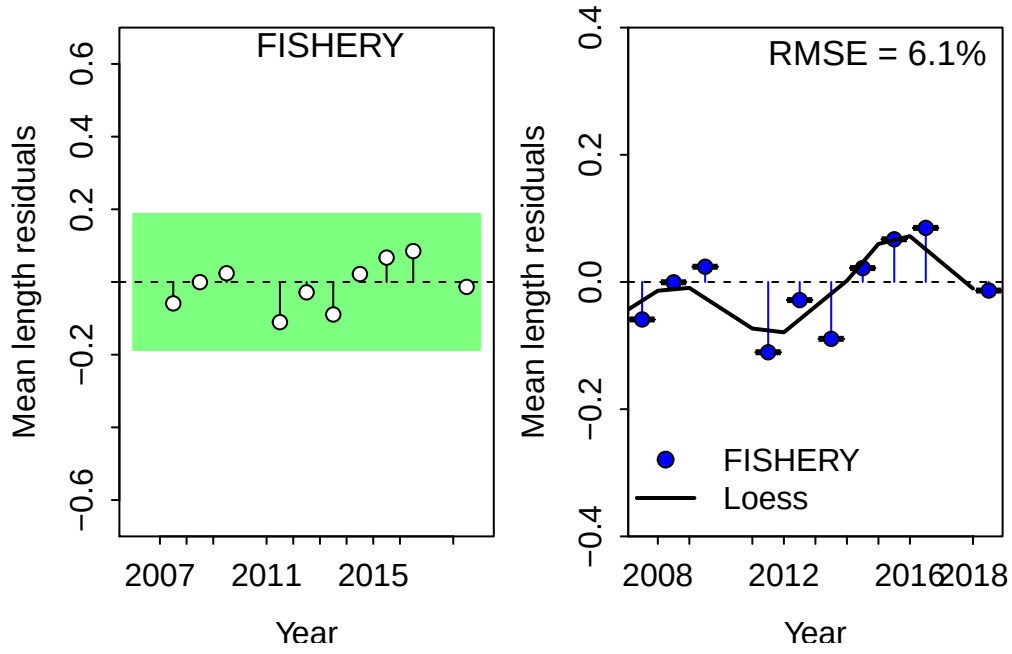
```
RMSE stats by Index:
```


Index
0
5
10
15
20
25
30
35
2016
2018
2020
Year
Index residuals
−0.6
−0.2
0.2
0.4
0.6
FISHERY
2016
2018
2020
Year

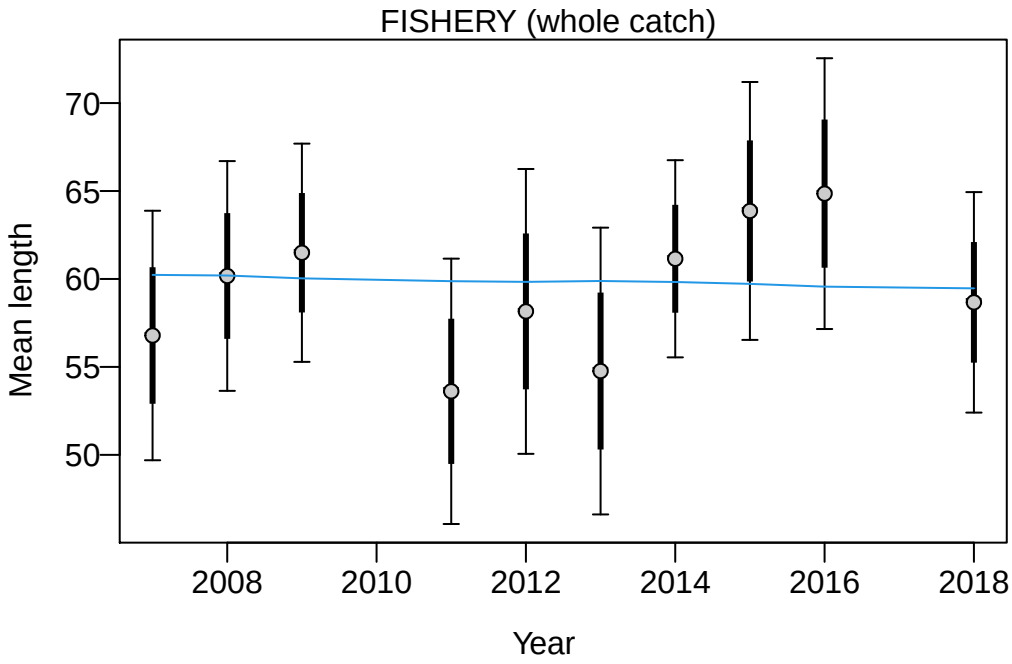

Index residuals
−0.4
−0.2
0.0
0.2
0.4
RMSE = 47.4%
FISHERY
Loess
2017
2018
2019
2020
2021
Year

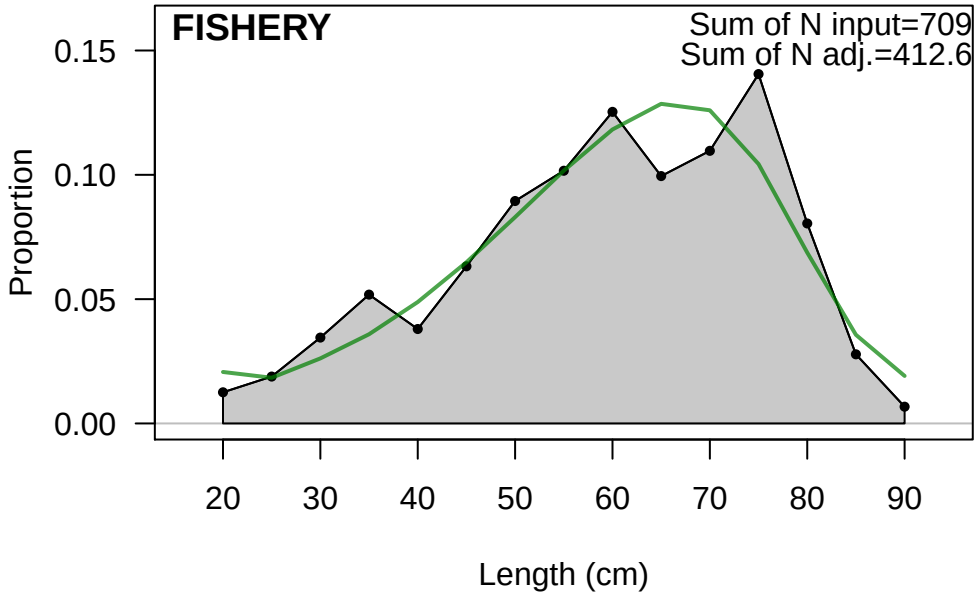
Length Comp

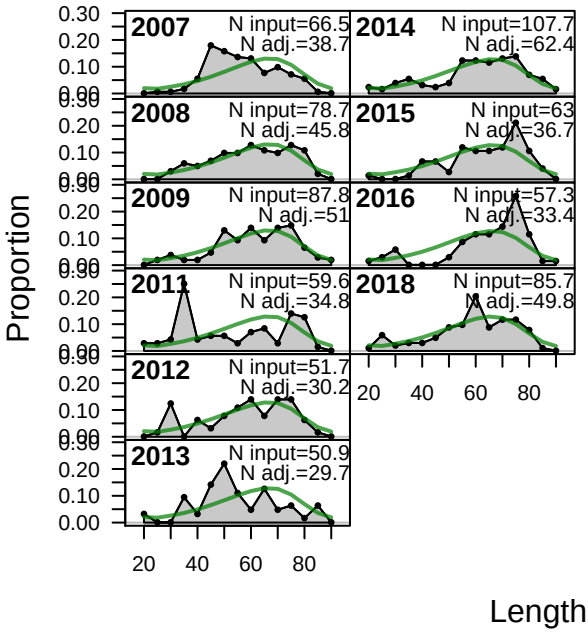
```
Residual Runs Test (/w plot) stats by Mean length:

    Index runs.p   test  sigma3.lo sigma3.hi type
1 FISHERY  0.287 Passed -0.1871156 0.1871156  len

RMSE stats by Index:

# A tibble: 2 x 3
  Fleet    RMSE.perc  Nobs
  <chr>        <dbl> <int>
1 FISHERY        6.1    10
2 Combined       6.1    10
```



Retrospective and Hindcasting

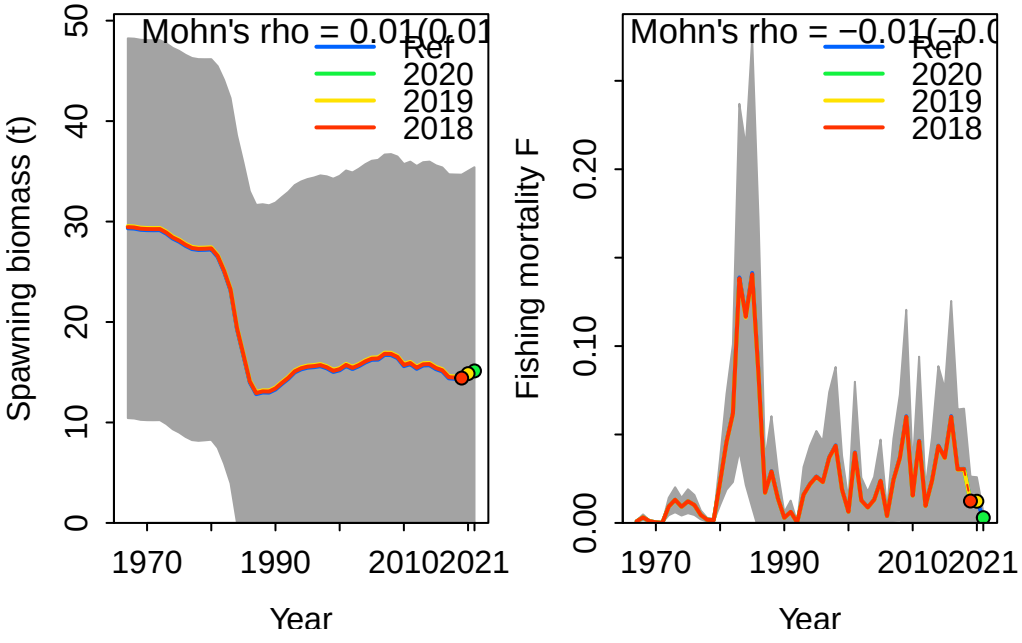

FISHERY (whole catch)
Mean length
70
65
60
55
50
2008
2010
2012
2014
2016
2018
Year


FISHERY
Sum of N input=709
Sum of N adj.=412.6
Proportion
0.15
0.10
0.05
0.00
20
30
40
50
60
70
80
90
Length (cm)



Retrospective

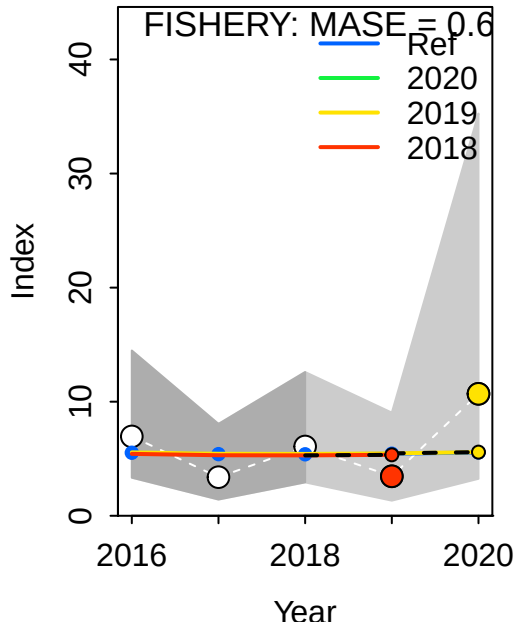
`Mohn's Rho stats, including one step ahead forecasts:`



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

  type     peel          Rho  ForecastRho
1    F     2020 -0.008957628 -0.008766166
2    F     2019 -0.012263977 -0.012058966
3    F     2018 -0.006314043 -0.006264507
4    F Combined -0.009178549 -0.009029880
```

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
```



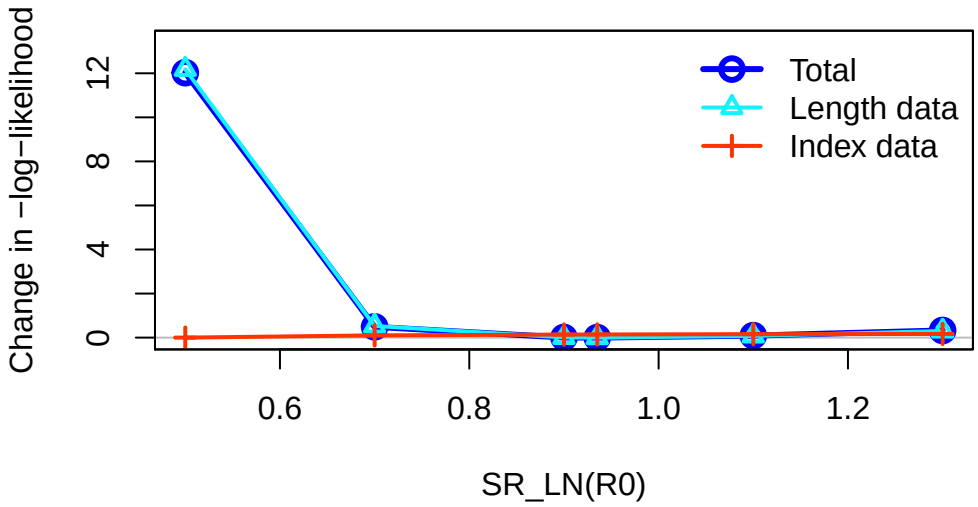

```
MASE stats by Index:
Plotting Hindcast Cross-Validation (one-step-ahead)

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

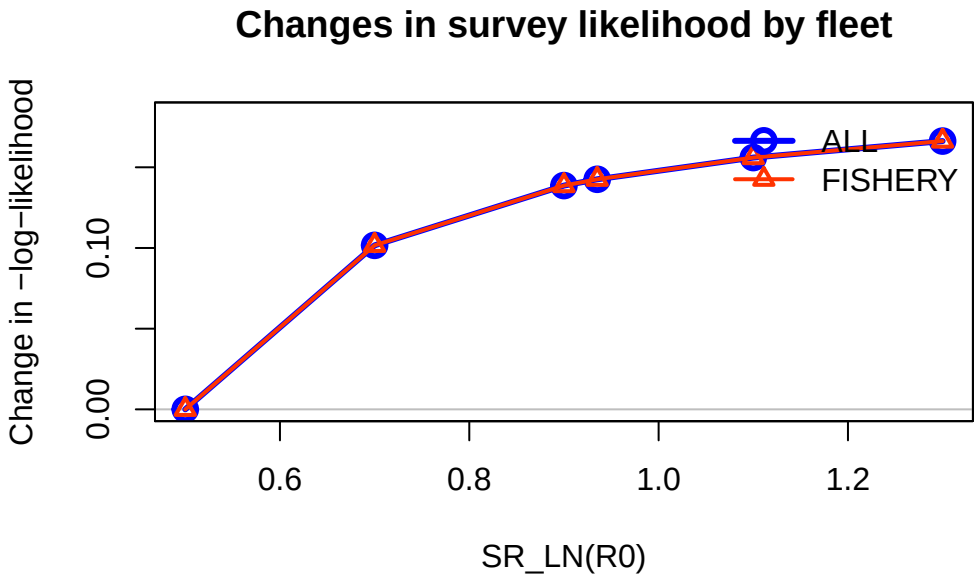
MASE stats by Index:

Recruitment Deviations

Likelihood Profile

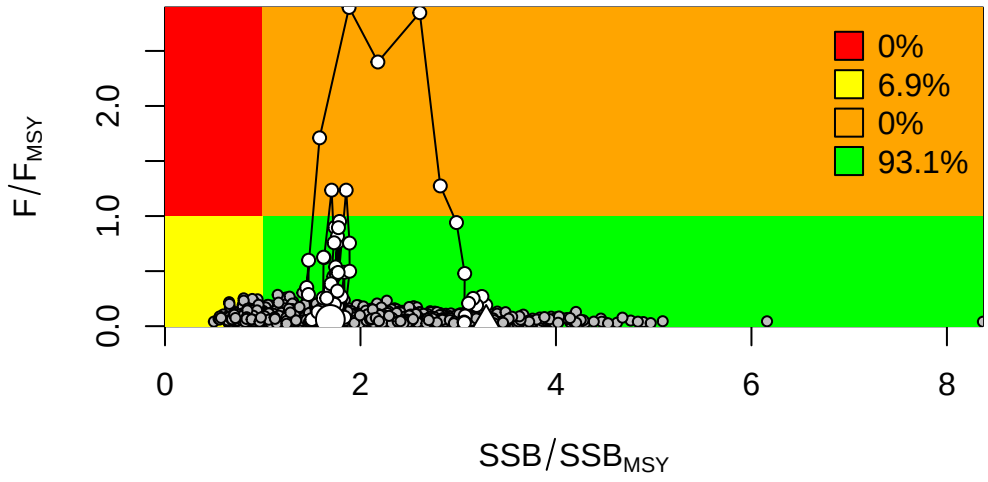
```
[1] "SR_LN"
                     frac_change include                          label
TOTAL                     1.0000    TRUE                          Total
Catch                     0.0000   FALSE                          Catch
Equil_catch               0.0000   FALSE                Equilibrium catch
Survey                    0.0138    TRUE                       Index data
Length_comp               1.0127    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               0.0010   FALSE                           Priors
Parm_softbounds           0.0001   FALSE                      Soft bounds
Parm_devs                 0.0000   FALSE             Parameter deviations
Crash_Pen                 0.0000   FALSE                    Crash penalty
```

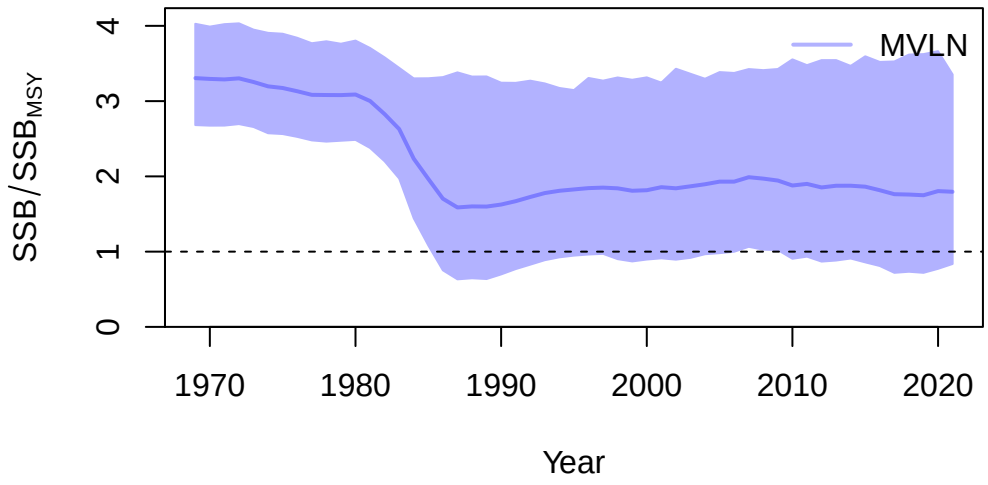


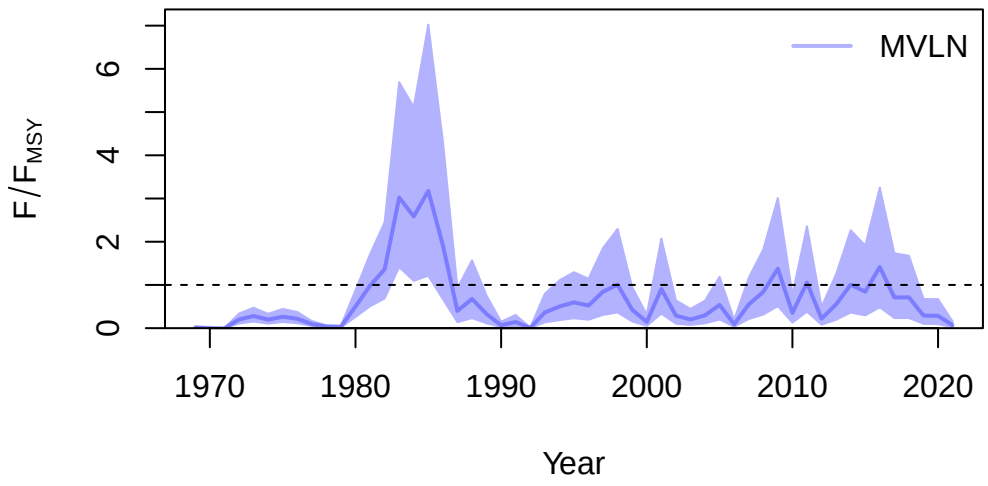


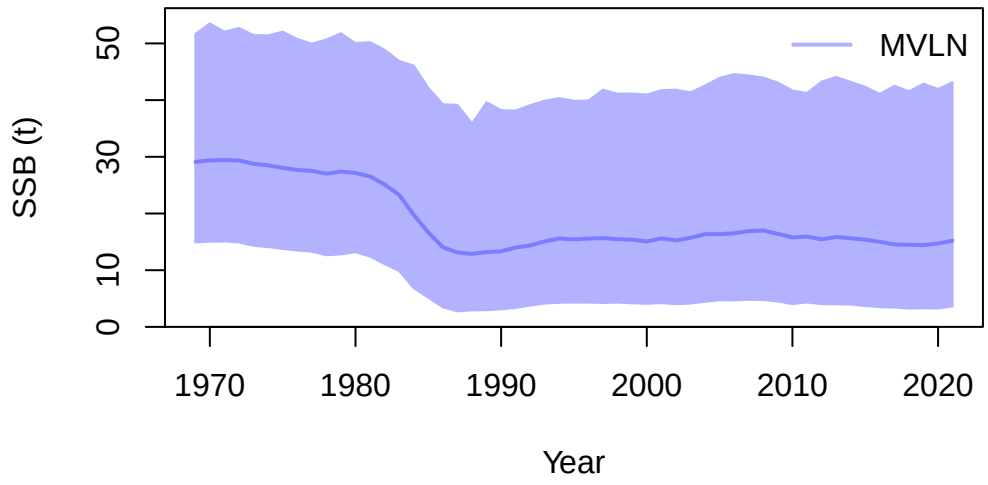
Management Quantities

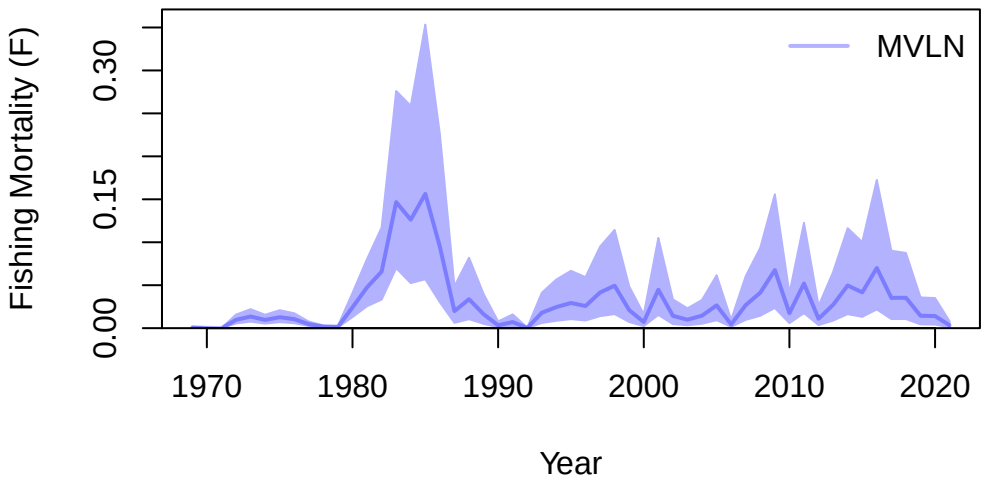
`starter.sso with Bratio: SSB/SSBMSY and F: _abs_F`


0%
6.9%
0%
93.1%
F/F_MSY
0.0
1.0
2.0
0
2
4
6
8
SSB/SSB_MSY


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

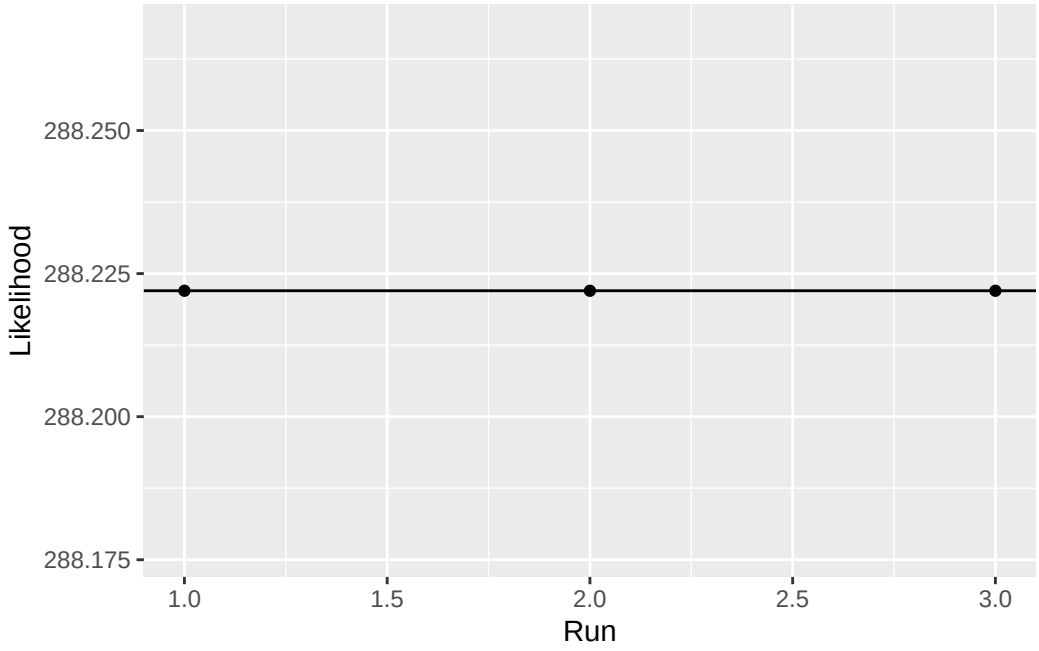

MVLN
F/F_MSY
0
2
4
6
1970
1980
1990
2000
2010
2020
Year

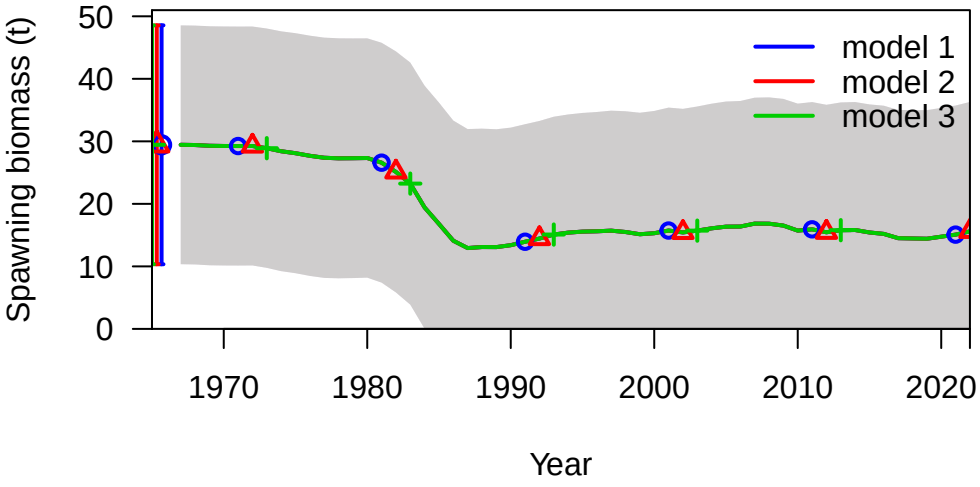

MVLN
SSB (t)
0
10
30
50
1970
1980
1990
2000
2010
2020
Year

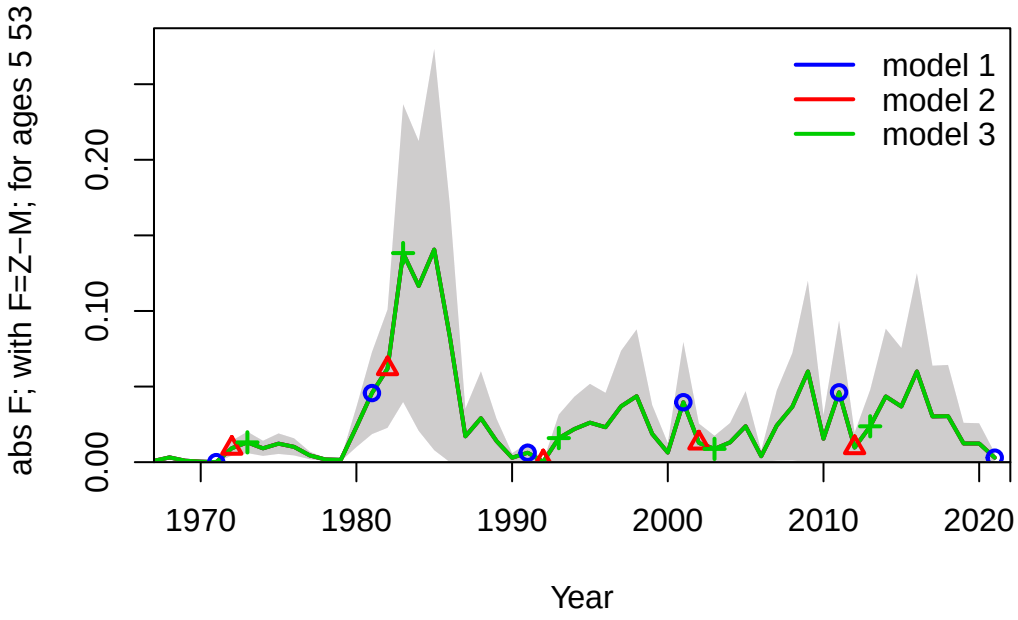


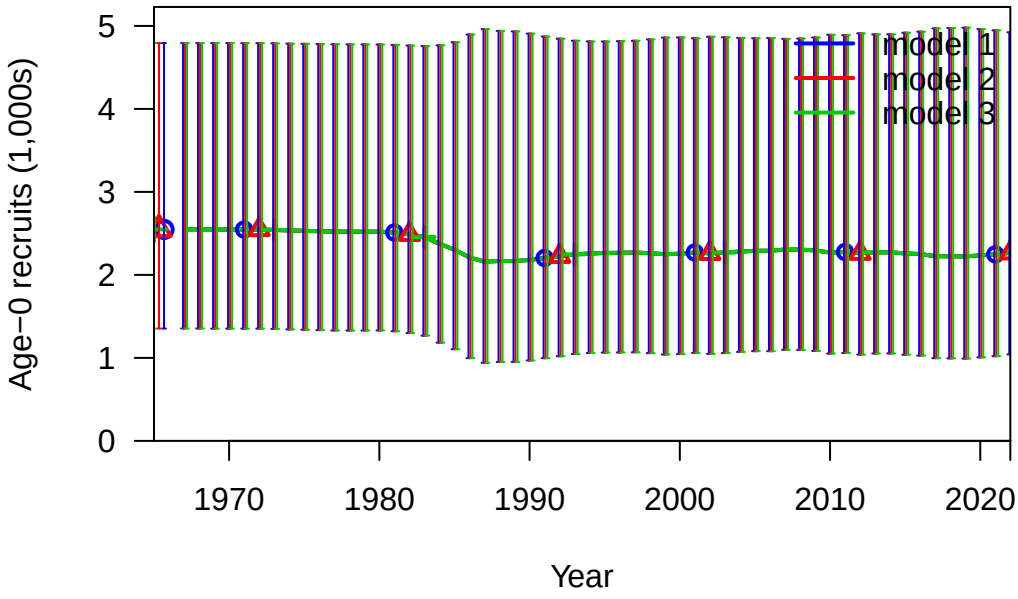

```
null device
          1
```

Jitter


288.250
288.225
288.200
288.175
Likelihood
1.0
1.5
2.0
2.5
3.0
Run


50
40
30
20
10
0
Spawning biomass (t)
model 1
model 2
model 3
1970
1980
1990
2000
2010
2020
Year


abs F; with F=Z−M; for ages 5 53
0.00
0.10
0.20
1970
1980
1990
2000
2010
2020
Year
model 1
model 2
model 3


Age−0 recruits (1,000s)
0
1
2
3
4
5
1970
1980
1990
2000
2010
2020
Year
model 1
model 2
model 3