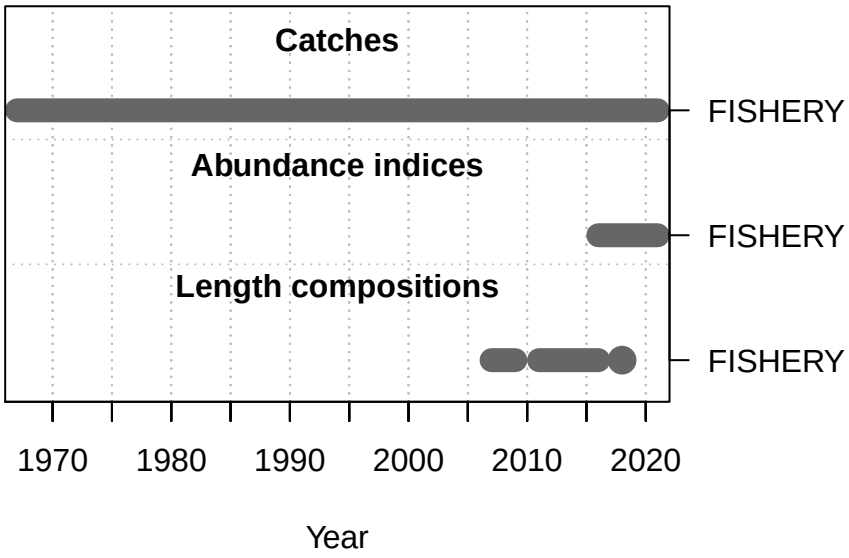
American Samoa Model Checks

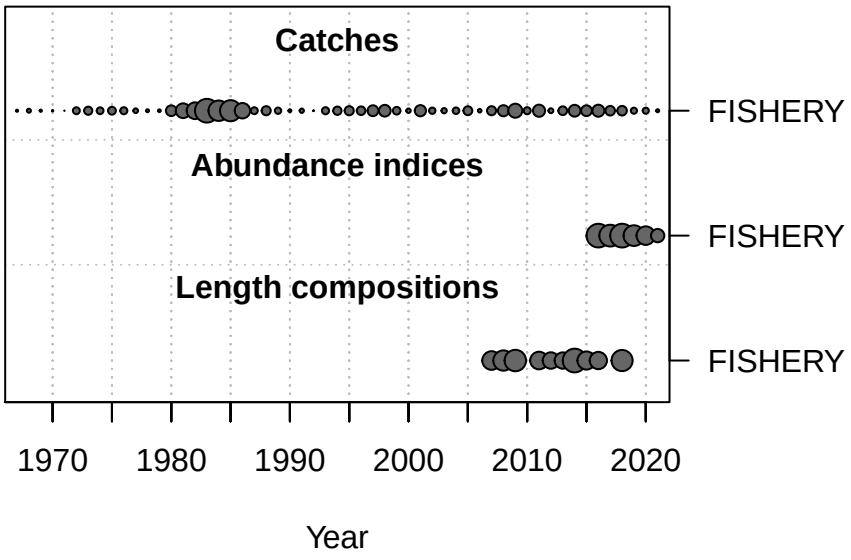
2022-08-26

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

Model Output

Input Data





Convergence Check

```
  Converged    MaxGrad
1      TRUE 7.7022e-05
```

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

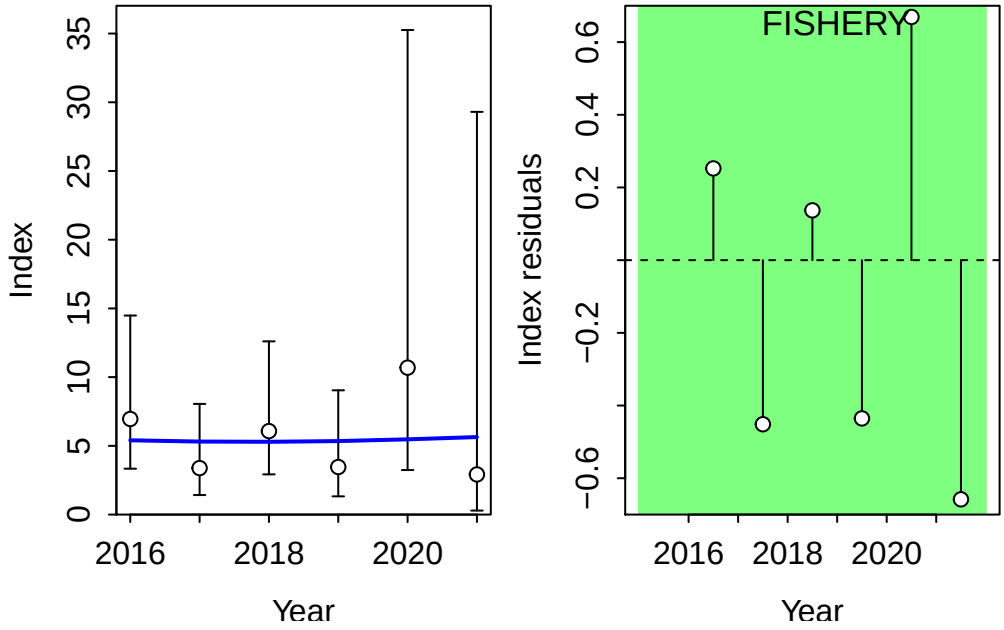
Fit to Model

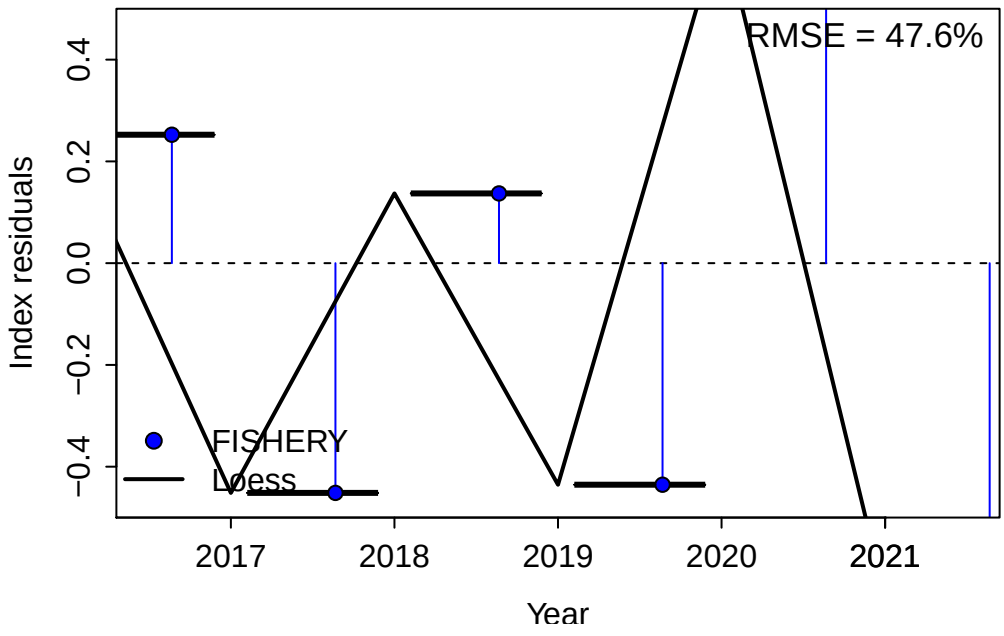
CPUE

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

```
RMSE stats by Index:
```

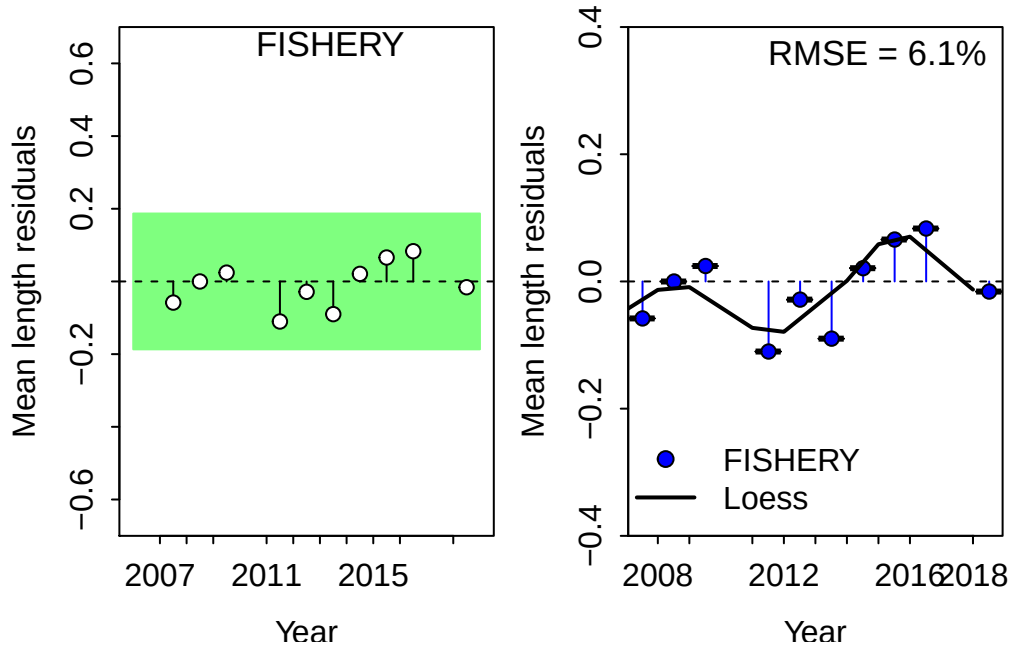
Length Comp


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

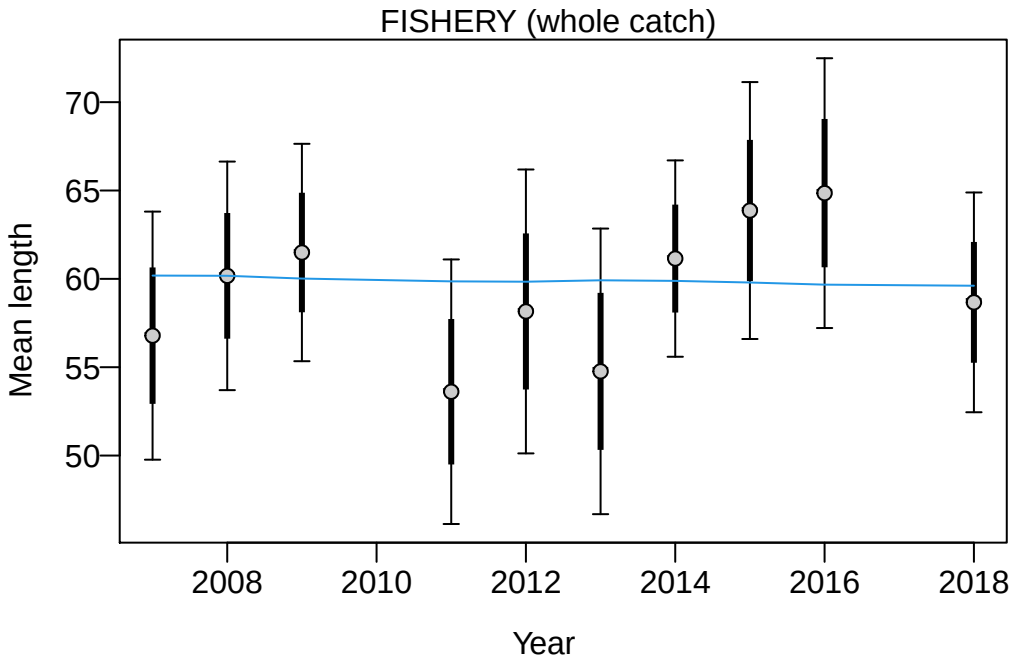

Index residuals
−0.4
−0.2
0.0
0.2
0.4
RMSE = 47.6%
FISHERY
Loess
2017
2018
2019
2020
2021
Year

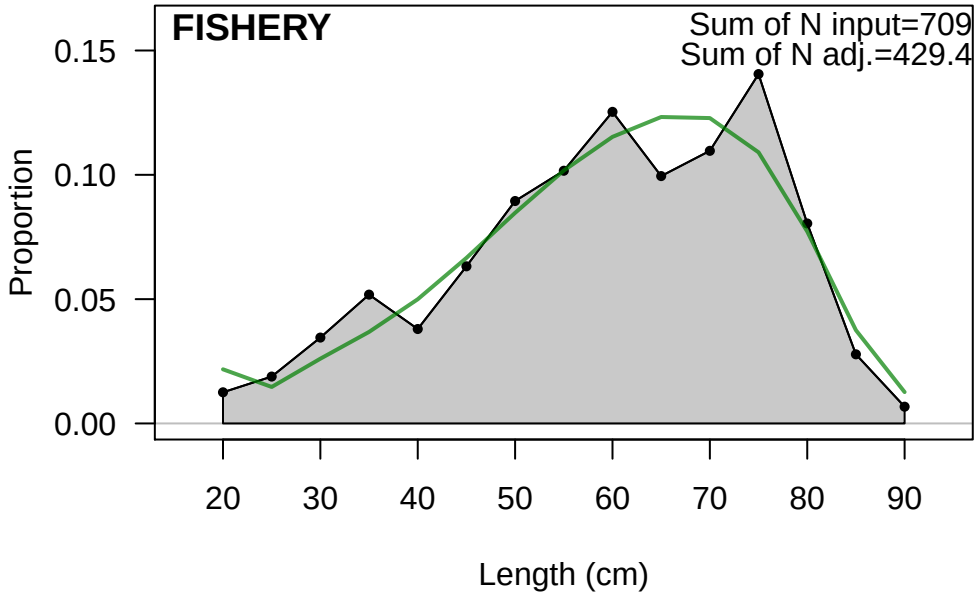
#Factor	Fleet	New_Var_adj	Type	Name
4	1	0.302251	len	FISHERY

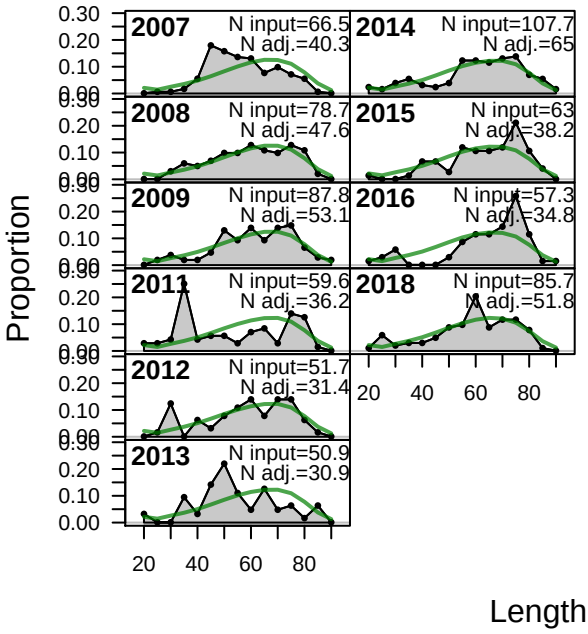
```
Residual Runs Test (/w plot) stats by Mean length:

    Index runs.p   test  sigma3.lo sigma3.hi type
1 FISHERY  0.287 Passed -0.1868367 0.1868367  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

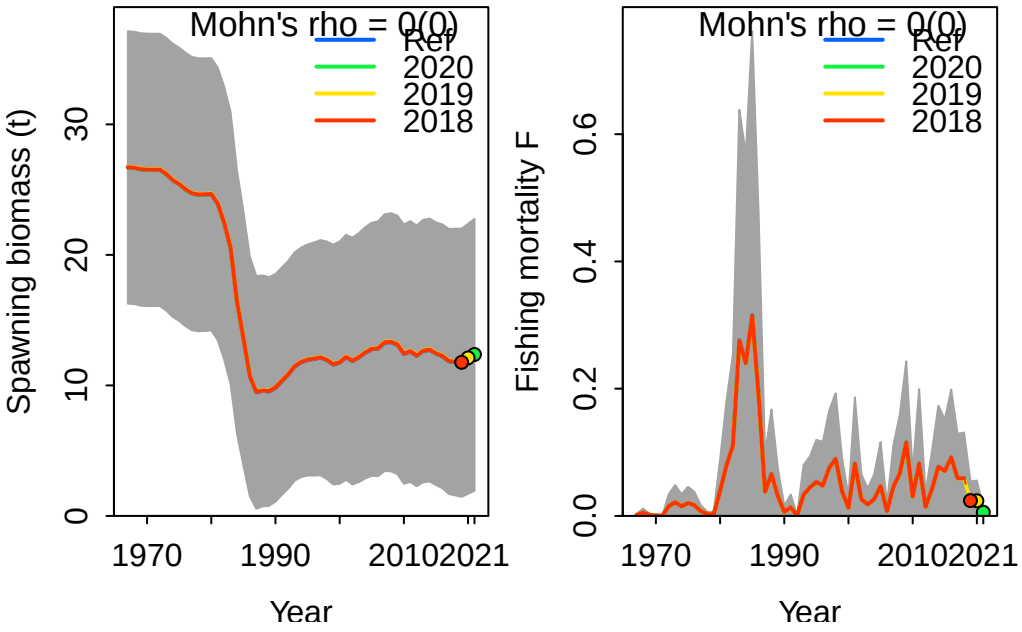

FISHERY (whole catch)
Mean length
70
65
60
55
50
2008
2010
2012
2014
2016
2018
Year


FISHERY
Sum of N input=709
Sum of N adj.=429.4
Proportion
0.15
0.10
0.05
0.00
20
30
40
50
60
70
80
90
Length (cm)



Retrospective

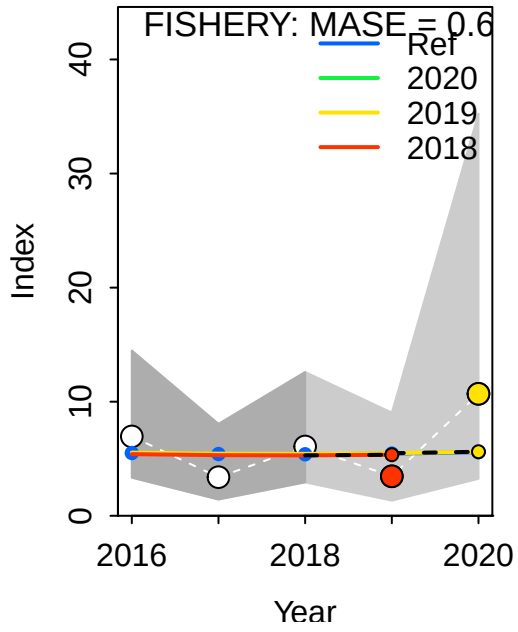
`Mohn's Rho stats, including one step ahead forecasts:`



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

  type     peel          Rho  ForecastRho
1    F     2020 -0.001136701 -0.003472902
2    F     2019 -0.006022077 -0.004847695
3    F     2018 -0.002875304 -0.002864108
4    F Combined -0.003344694 -0.003728235
```

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
```



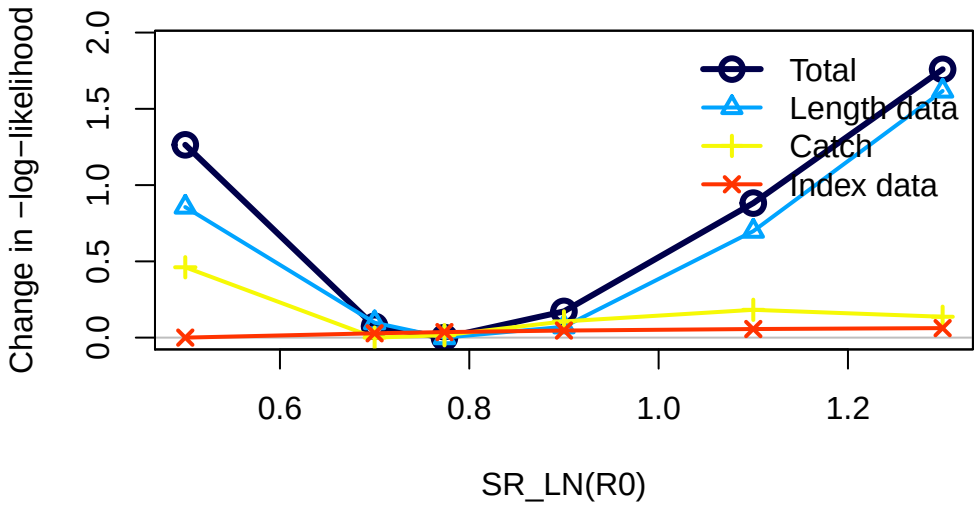

```
MASE stats by Index:
Plotting Hindcast Cross-Validation (one-step-ahead)

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

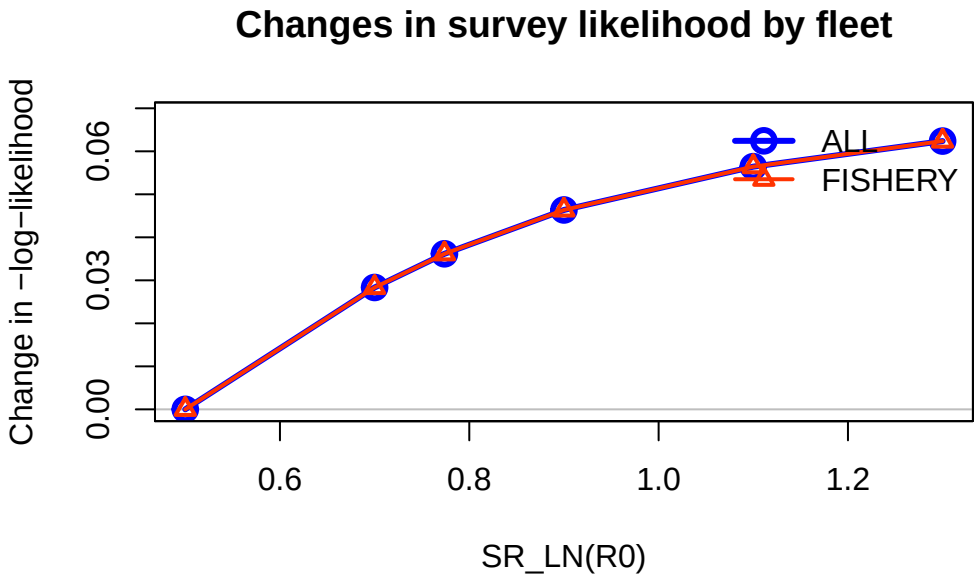
MASE stats by Index:

Recruitment Deviations

Likelihood Profile

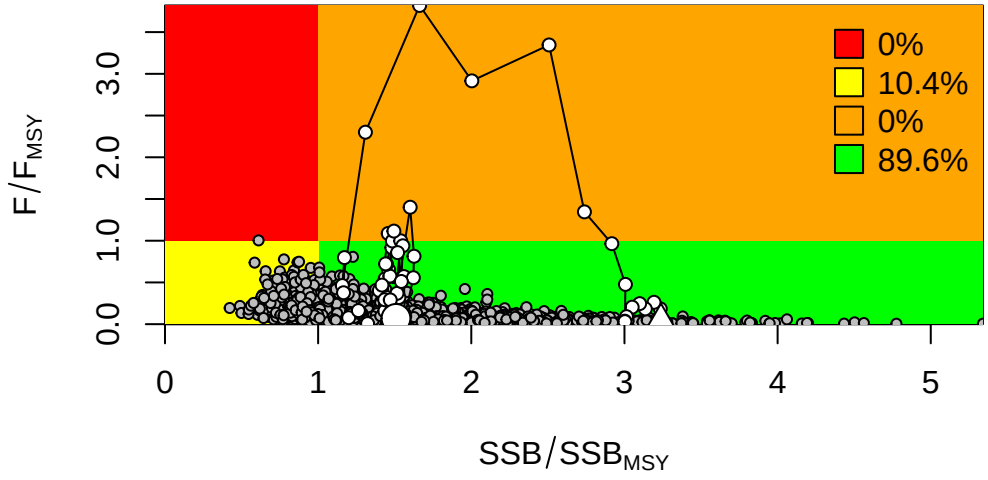
```
[1] "SR_LN"
                     frac_change include                          label
TOTAL                     1.0000    TRUE                          Total
Catch                     0.2622    TRUE                          Catch
Equil_catch               0.0000   FALSE              Equilibrium catch
Survey                    0.0355    TRUE                     Index data
Length_comp               0.9193    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               0.0035   FALSE                         Priors
Parm_softbounds           0.0001   FALSE                   Soft bounds
Parm_devs                 0.0000   FALSE          Parameter deviations
Crash_Pen                 0.0000   FALSE                 Crash penalty
```

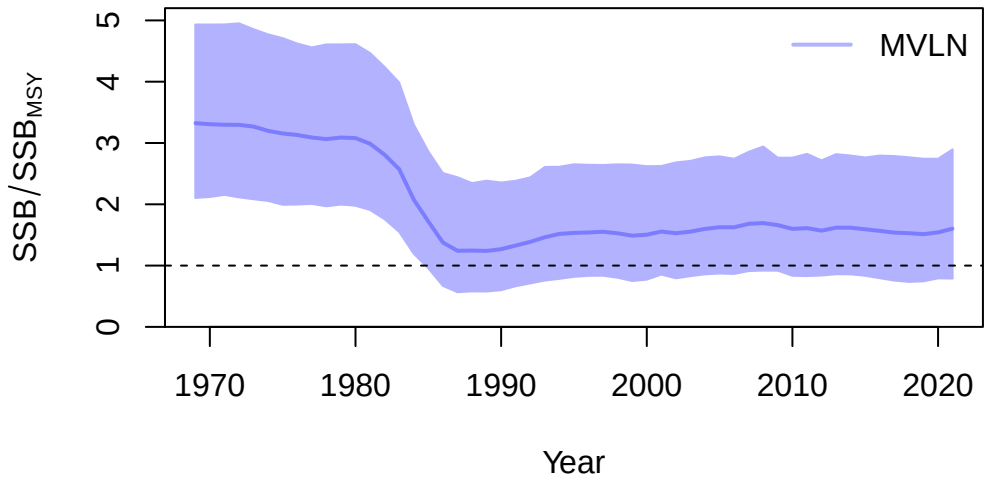


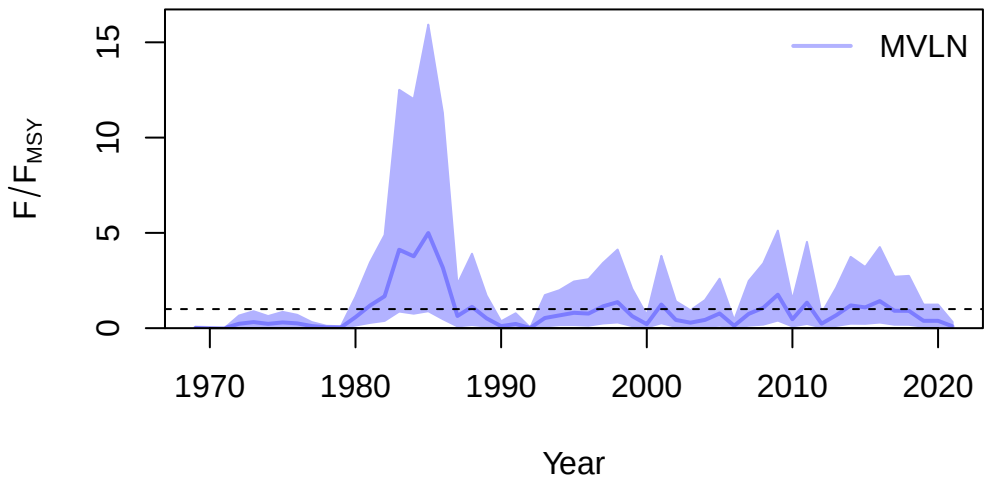


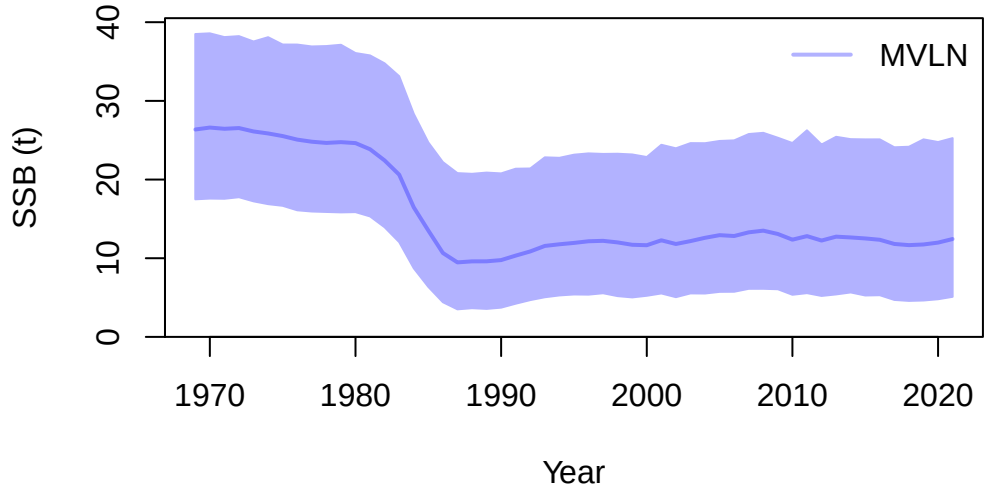
Management Quantities

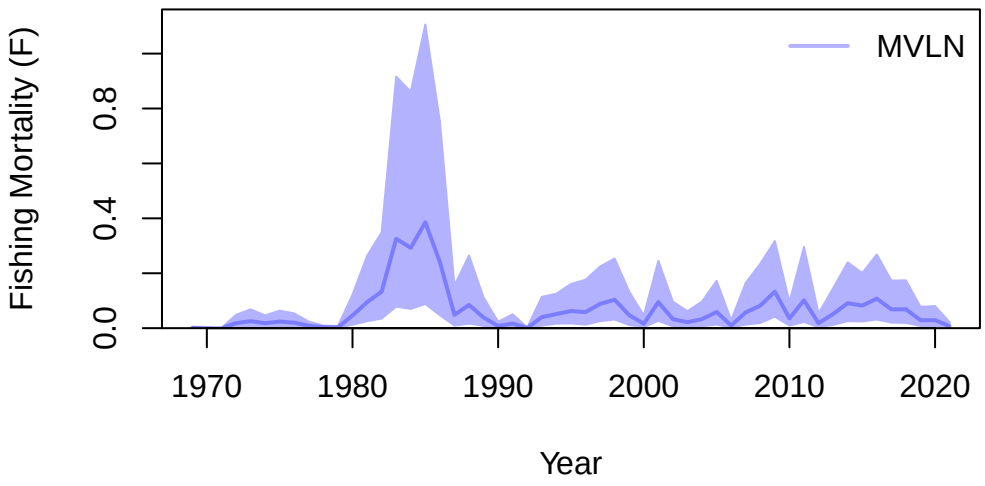
```
starter.sso with Bratio: SSB/SSBMSY and F: _abs_F
```


0%
10.4%
0%
89.6%
F/F_MSY
SSB/SSB_MSY
0.0
1.0
2.0
3.0
0
1
2
3
4
5


MVLN
SSB/SSB_MSY
Year
0
1
2
3
4
5
1970
1980
1990
2000
2010
2020

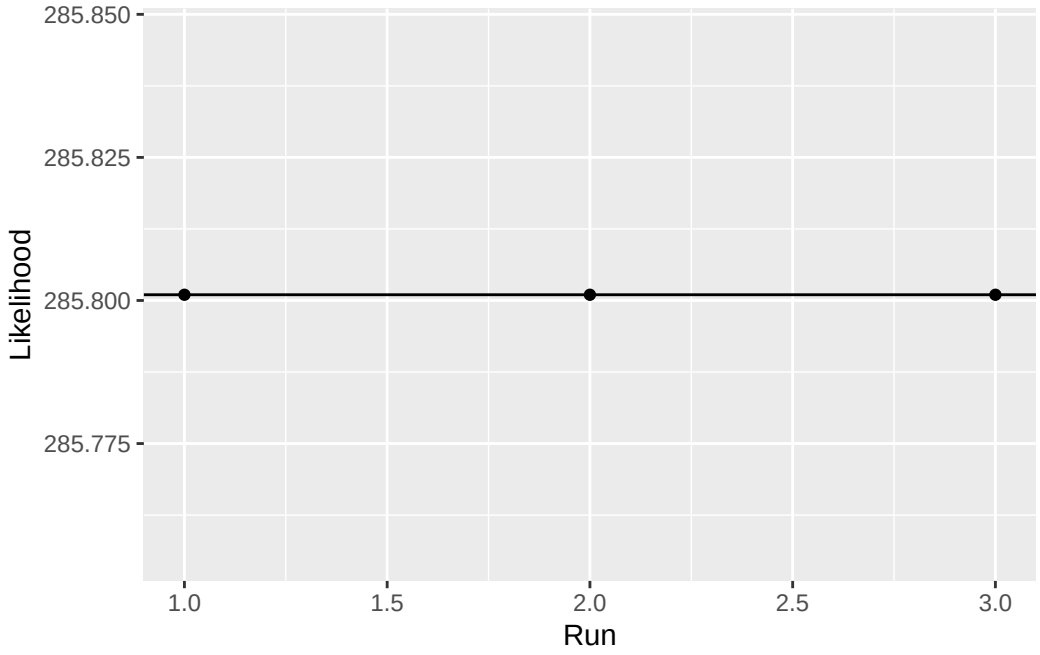

MVLN
F/F_MSY
0
5
10
15
1970
1980
1990
2000
2010
2020
Year

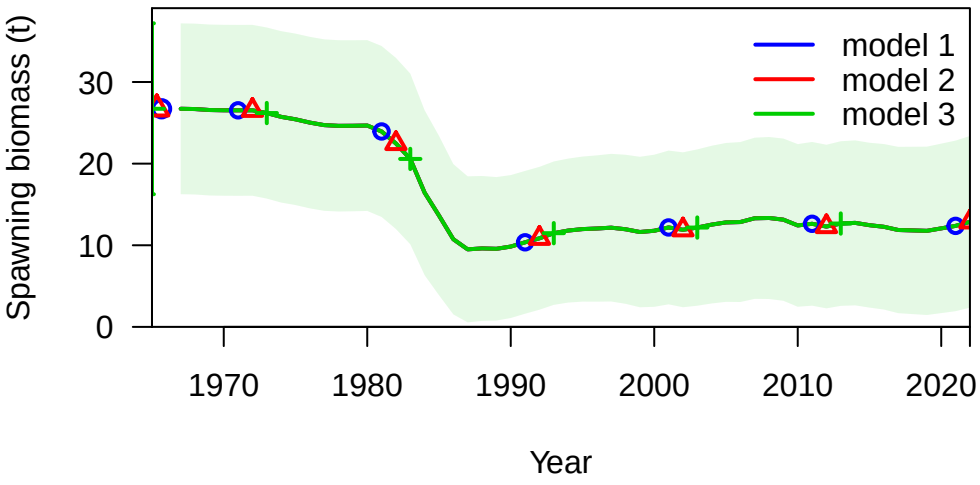

MVLN
SSB (t)
0
10
20
30
40
1970
1980
1990
2000
2010
2020
Year

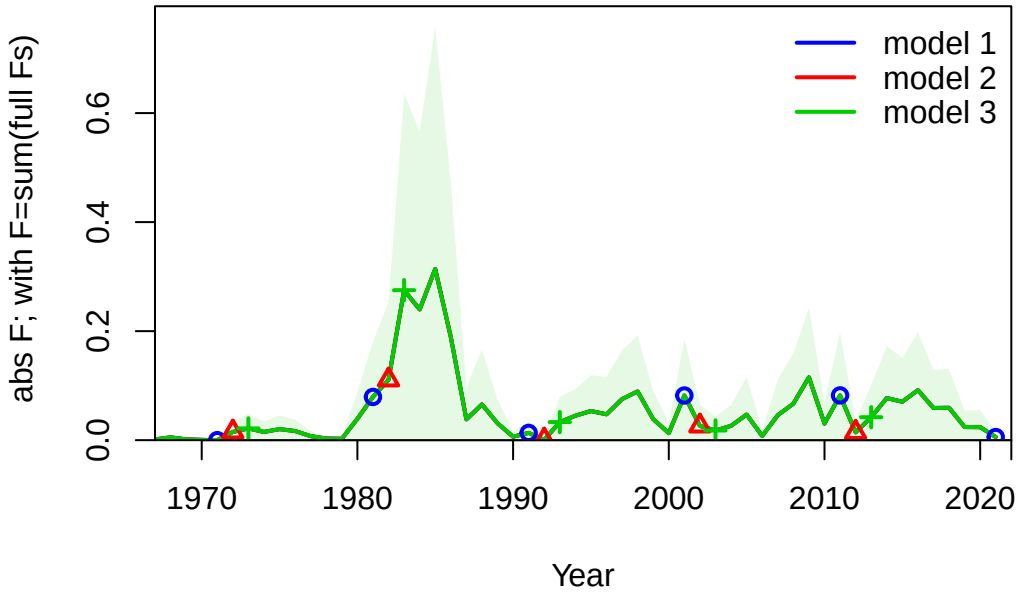


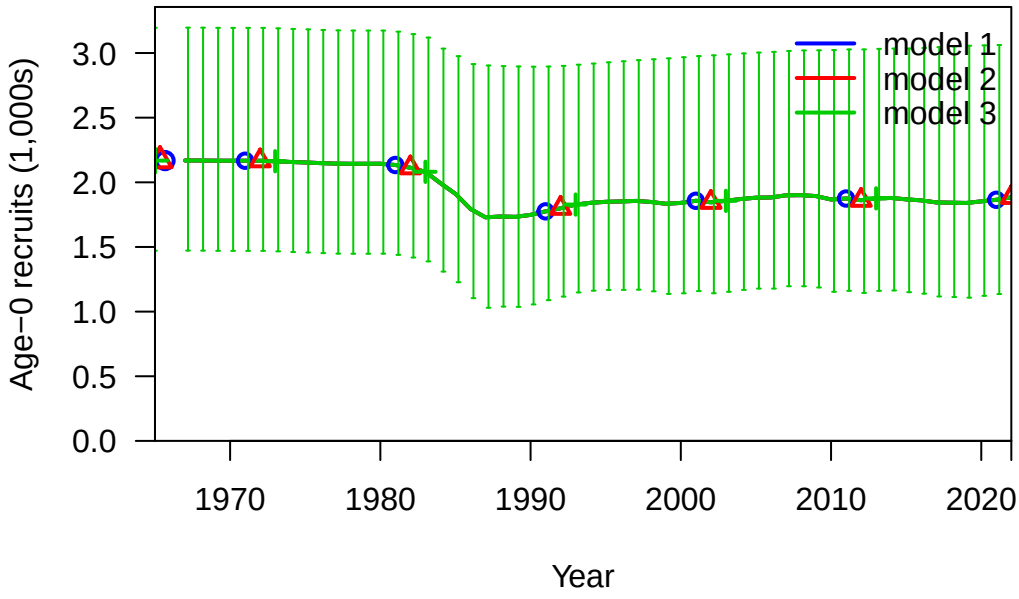

```
null device
          1
```

Jitter


285.850
285.825
285.800
285.775
Likelihood
1.0
1.5
2.0
2.5
3.0
Run


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


model 1
model 2
model 3
abs F; with F=sum(full Fs)
0.0
0.2
0.4
0.6
1970
1980
1990
2000
2010
2020
Year


model 1
model 2
model 3
Age−0 recruits (1,000s)
0.0
0.5
1.0
1.5
2.0
2.5
3.0
1970
1980
1990
2000
2010
2020
Year