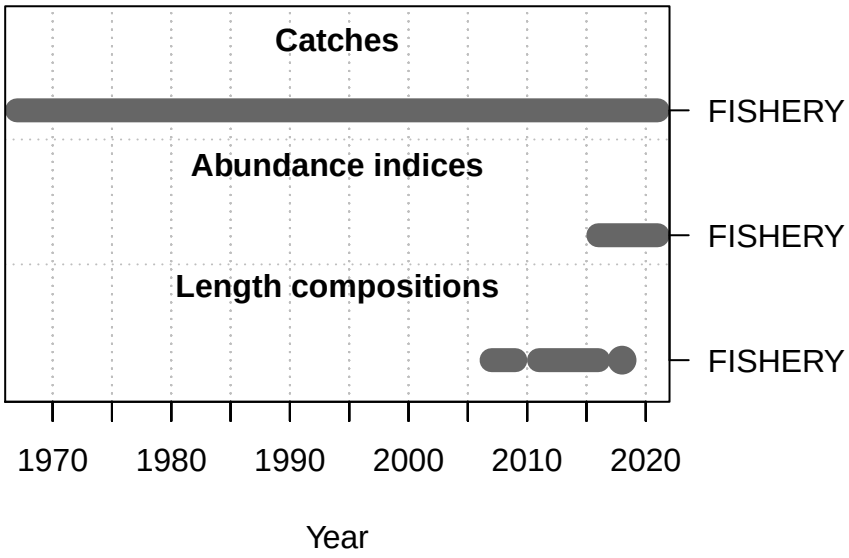
# American Samoa Model Checks

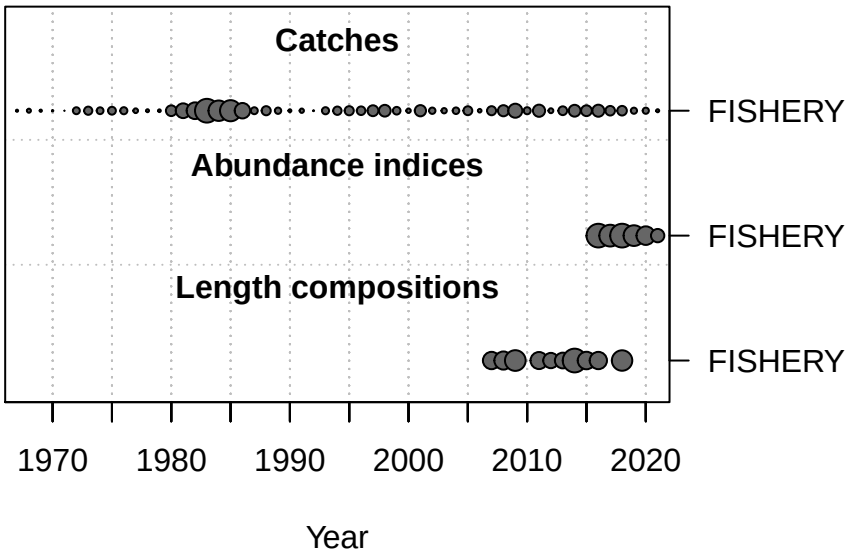
2022-08-24

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

## Model Output

### Input Data






### Convergence Check

```
  Converged     MaxGrad
1      TRUE 6.53033e-05
```

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

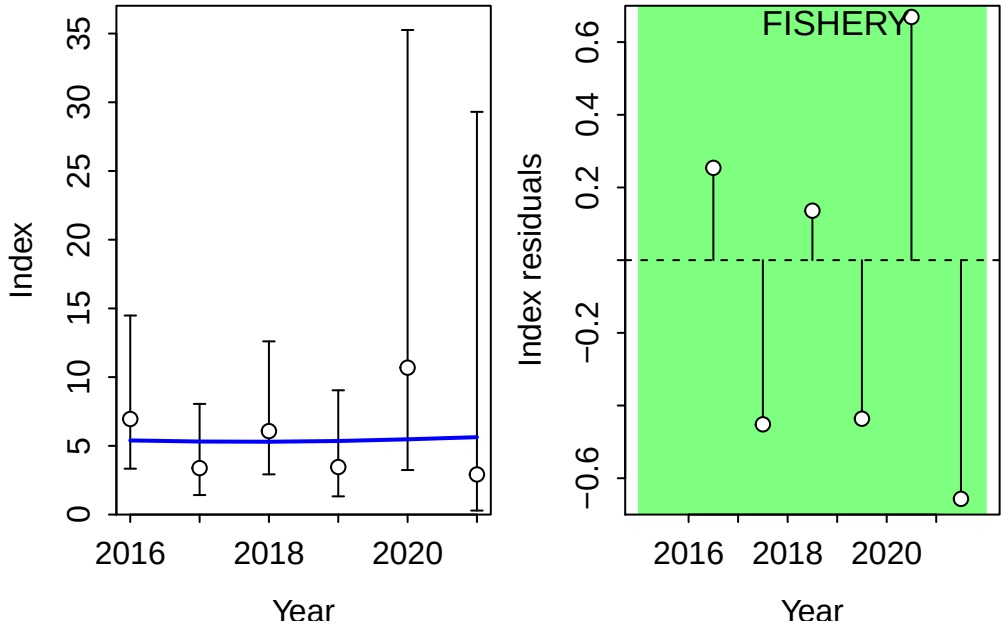
### Fit to Model

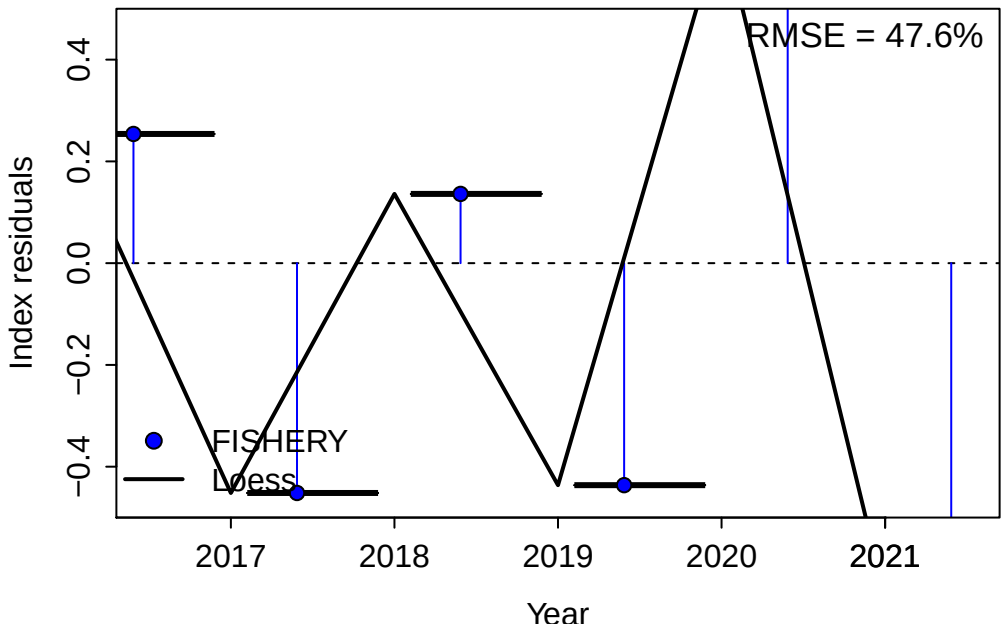
### CPUE

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

```
RMSE stats by Index:
```

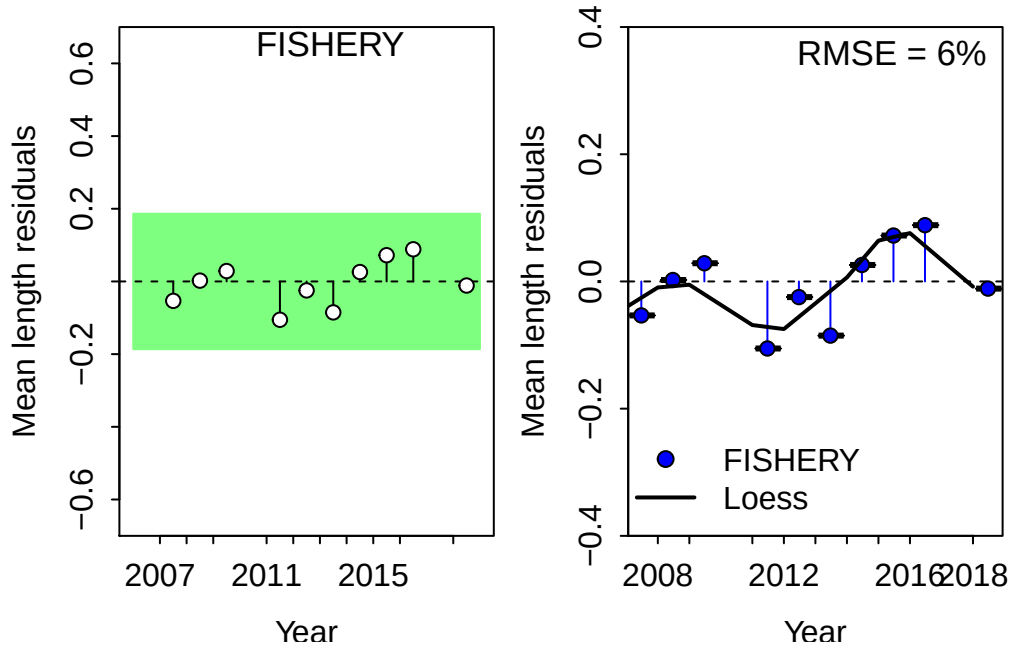
### Length Comp


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

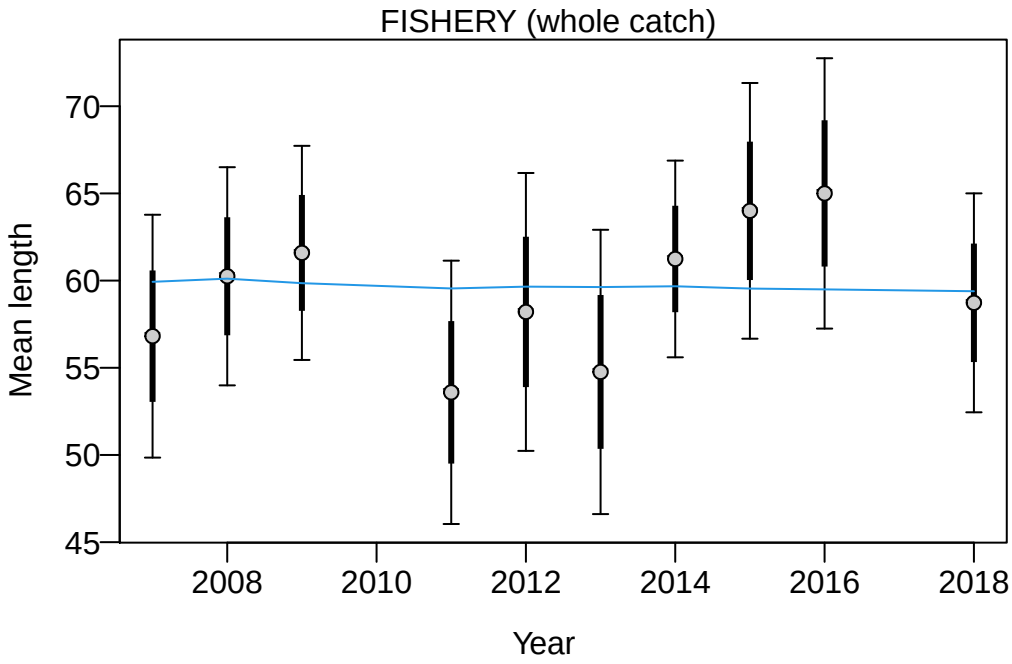

Index residuals
−0.4
−0.2
0.0
0.2
0.4
RMSE = 47.6%
FISHERY
Loess
2017
2018
2019
2020
2021
Year

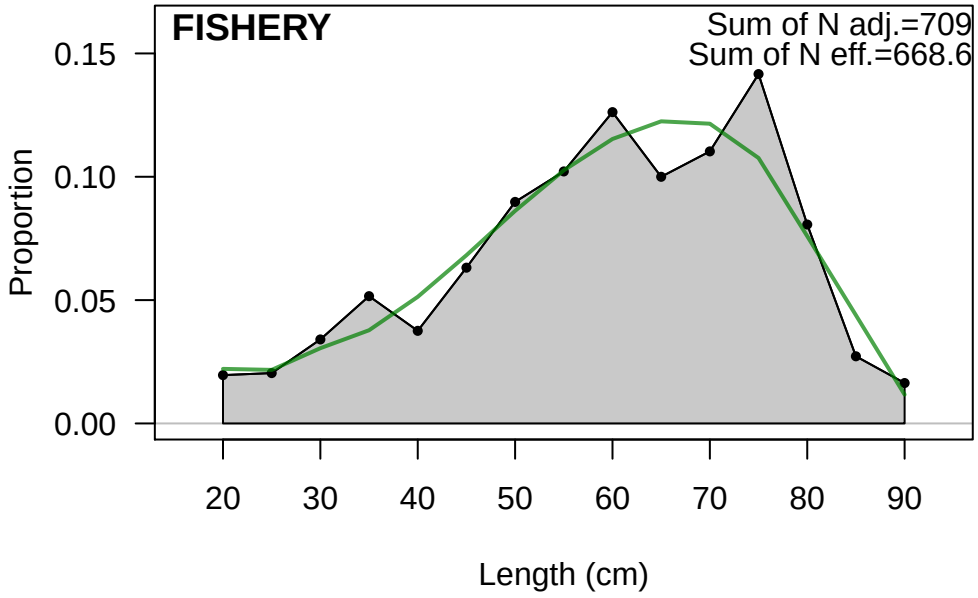
| #Factor | Fleet | New_Var_adj | Type | Name |
|---|---|---|---|---|
| 4 | 1 | 0.292752 | len | FISHERY |

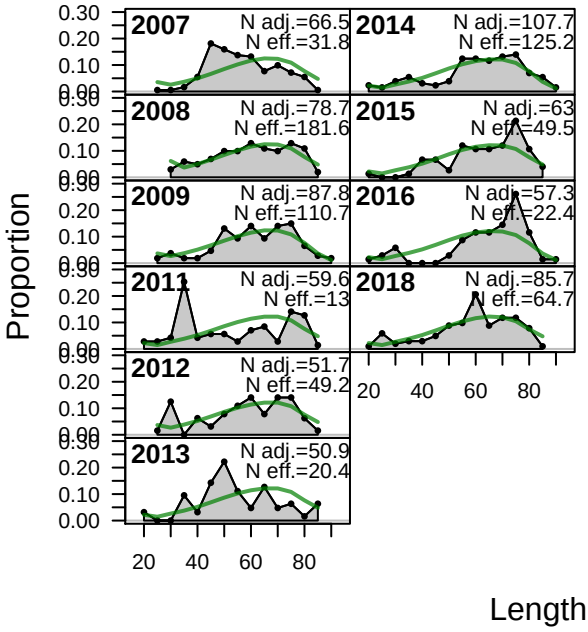
```
Residual Runs Test (/w plot) stats by Mean length:

    Index runs.p   test  sigma3.lo sigma3.hi type
1 FISHERY  0.251 Passed -0.1863846 0.1863846  len

RMSE stats by Index:

# A tibble: 2 x 3
  Fleet    RMSE.perc  Nobs
  <chr>        <dbl> <int>
1 FISHERY          6    10
2 Combined         6    10
```




**Retrospective and Hindcasting**

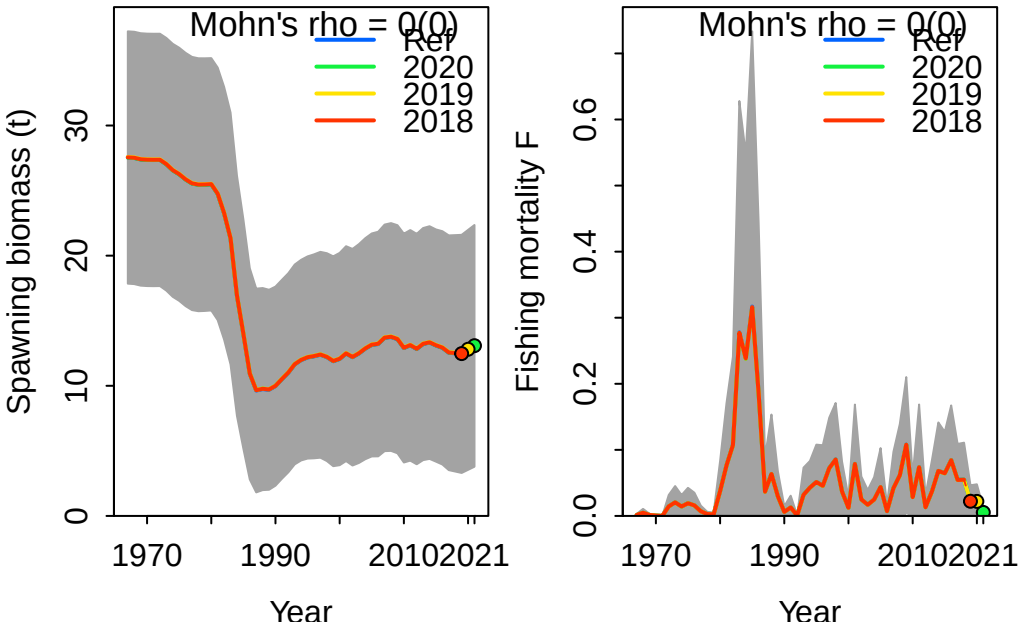

FISHERY (whole catch)
Mean length
70
65
60
55
50
45
2008
2010
2012
2014
2016
2018
Year


FISHERY
Sum of N adj.=709
Sum of N eff.=668.6
Proportion
0.15
0.10
0.05
0.00
20
30
40
50
60
70
80
90
Length (cm)




**Retrospective**

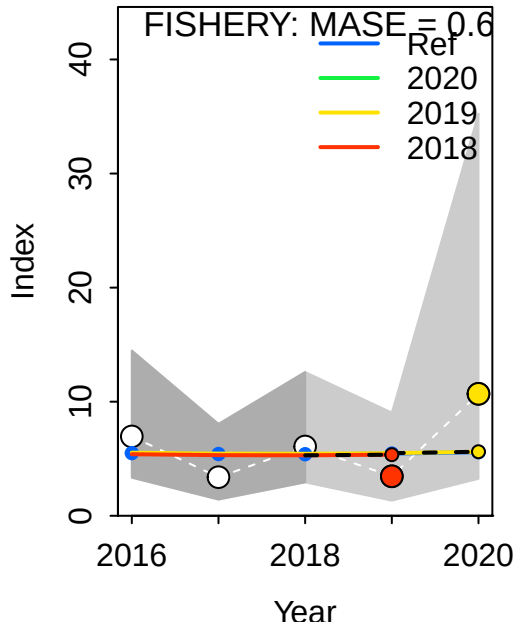
`Mohn's Rho stats, including one step ahead forecasts:`



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

  type     peel           Rho  ForecastRho
1    F     2020  0.0003308977 -0.001901180
2    F     2019 -0.0034063129 -0.002329882
3    F     2018 -0.0015607991 -0.001554861
4    F Combined -0.0015454048 -0.001928641
```

### 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
```



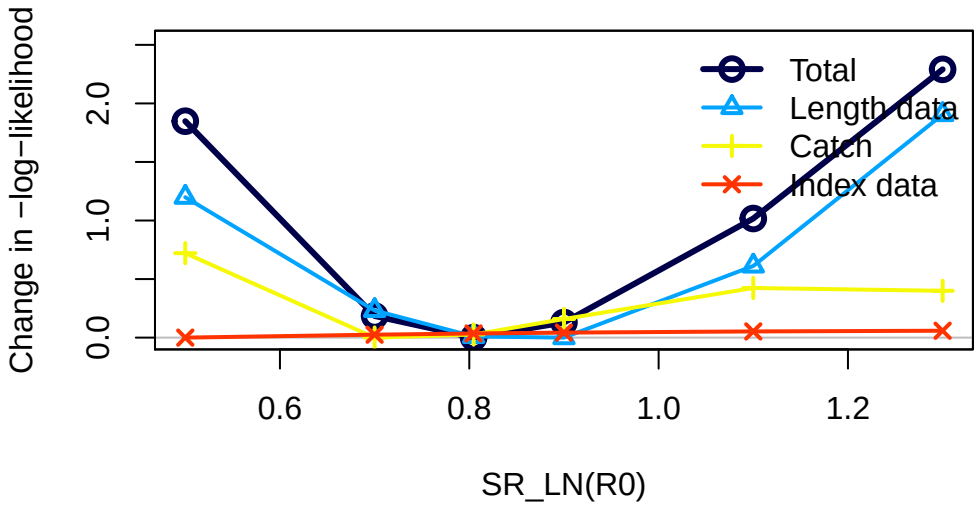

```
MASE stats by Index:
Plotting Hindcast Cross-Validation (one-step-ahead)

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

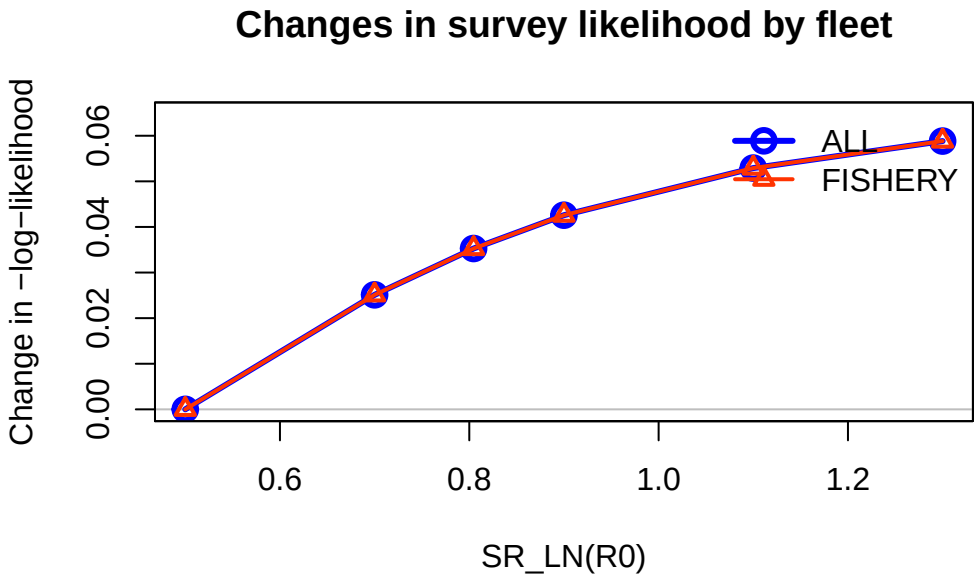
MASE stats by Index:

### Recruitment Deviations

### Likelihood Profile

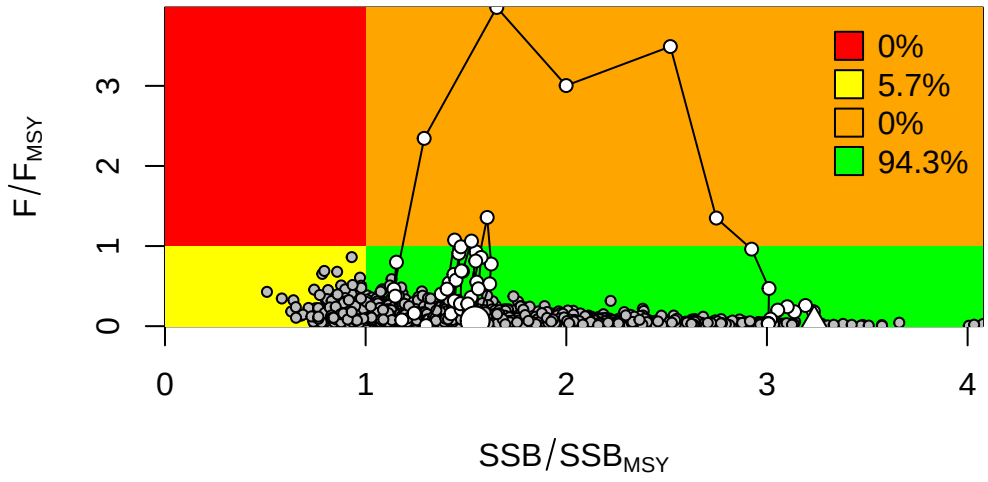
```
[1] "SR_LN"
                     frac_change include                          label
TOTAL                     1.0000    TRUE                          Total
Catch                     0.3149    TRUE                          Catch
Equil_catch               0.0000   FALSE                Equilibrium catch
Survey                    0.0257    TRUE                       Index data
Length_comp               0.8315    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               0.0000   FALSE                           Priors
Parm_softbounds           0.0001   FALSE                      Soft bounds
Parm_devs                 0.0000   FALSE             Parameter deviations
Crash_Pen                 0.0000   FALSE                    Crash penalty
```

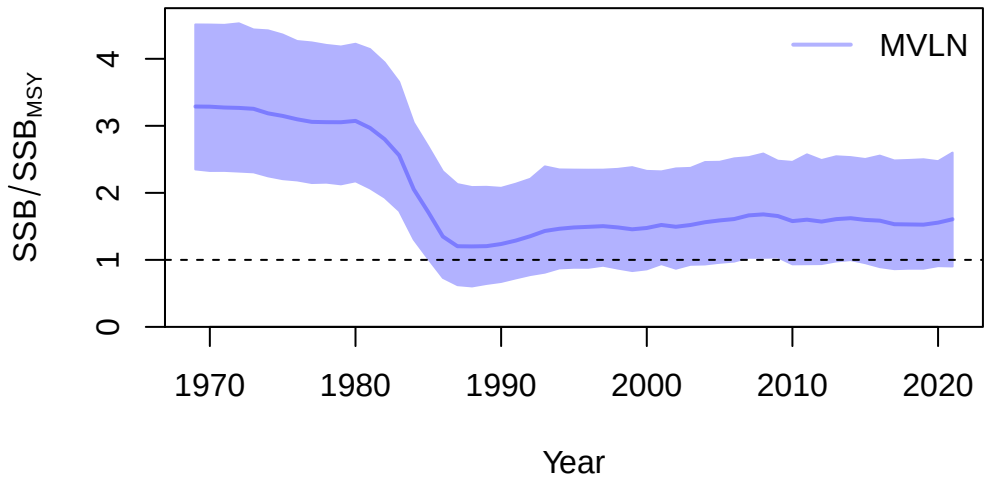


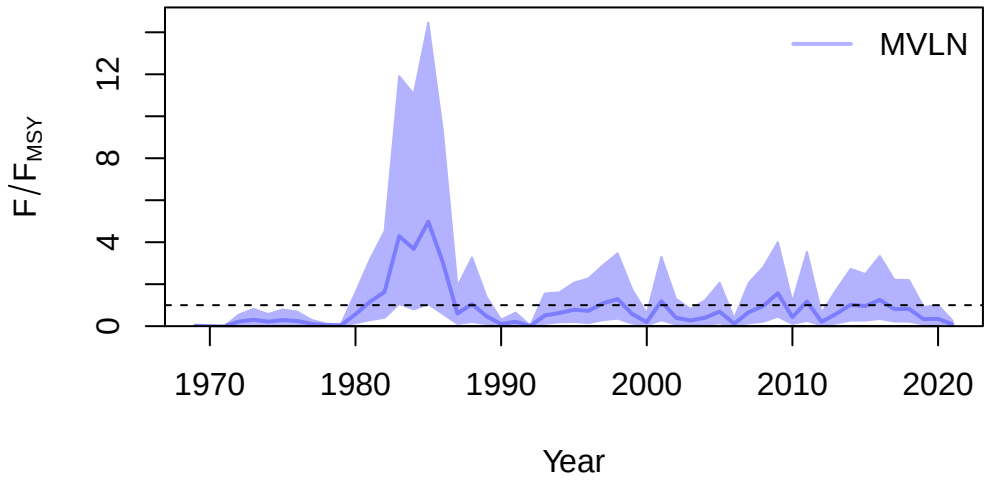


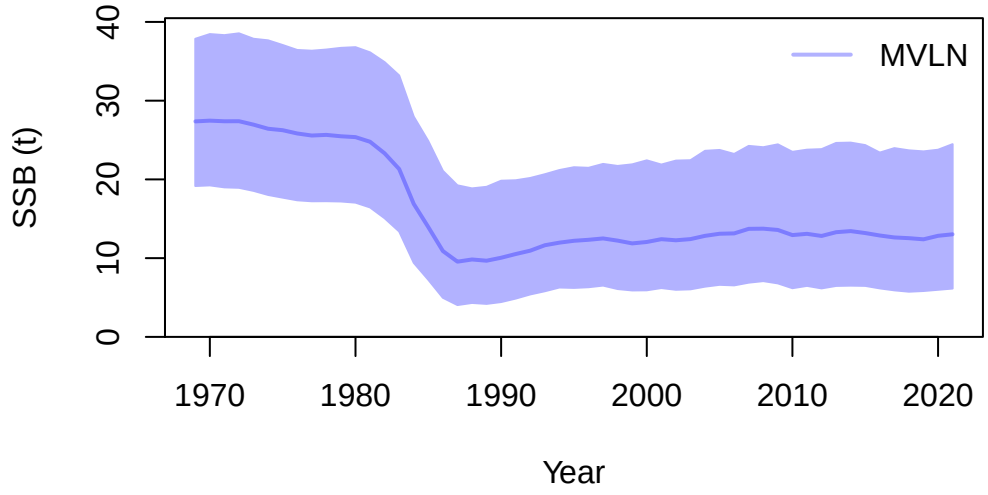

**Management Quantities**

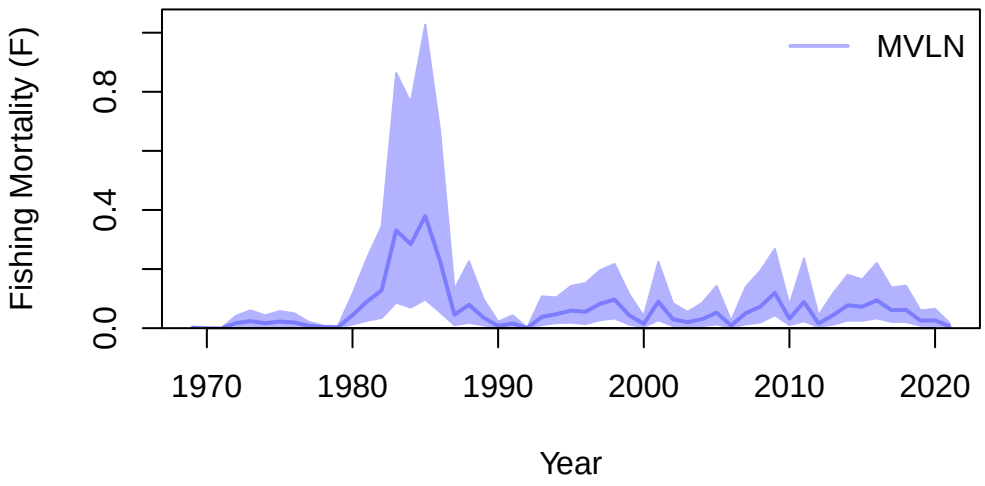
```
starter.sso with Bratio: SSB/SSBMSY and F: _abs_F
```


0%
5.7%
0%
94.3%
F/F_MSY
SSB/SSB_MSY
0
1
2
3
4


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

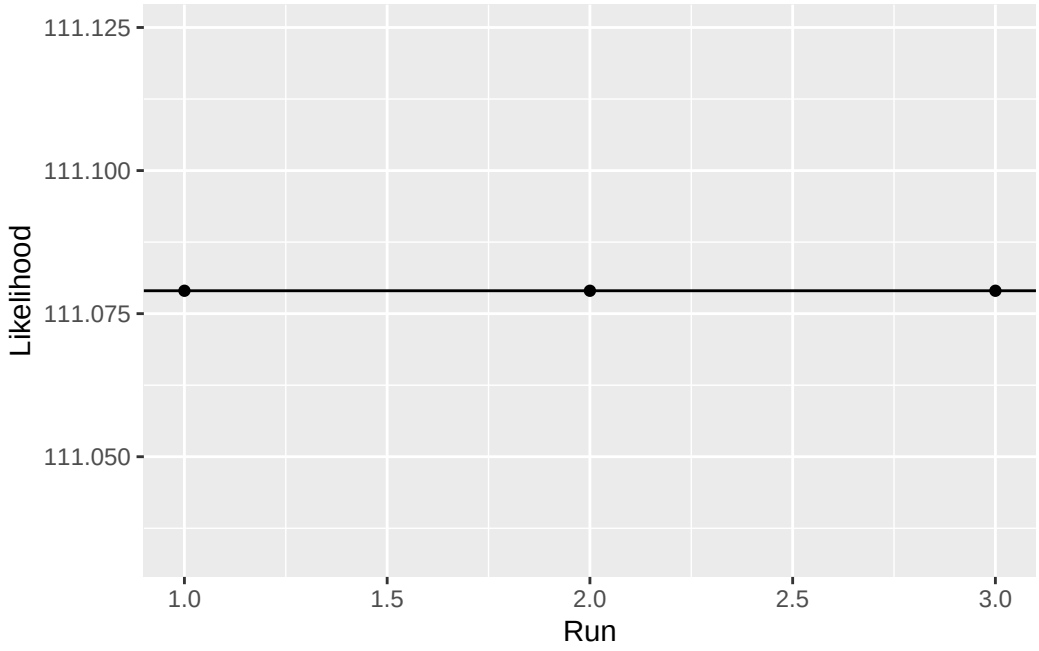

MVLN
F/F_MSY
0
4
8
12
1970
1980
1990
2000
2010
2020
Year

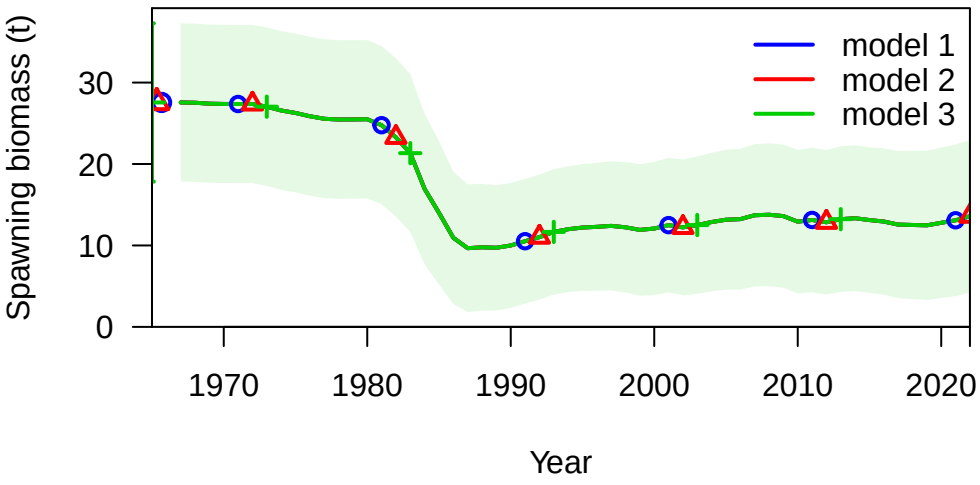

MVLN
SSB (t)
0
10
20
30
40
1970
1980
1990
2000
2010
2020
Year

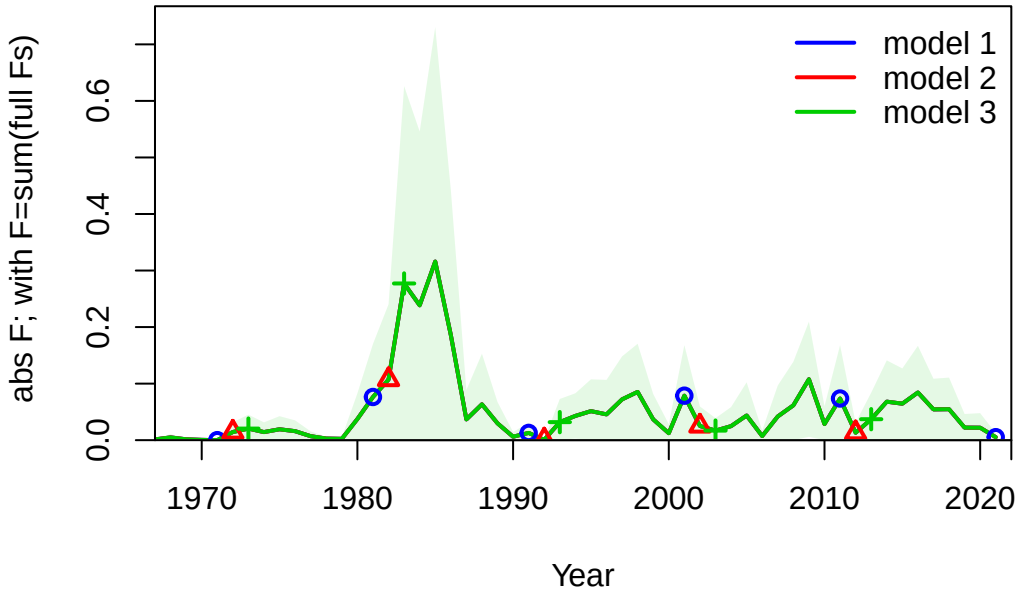


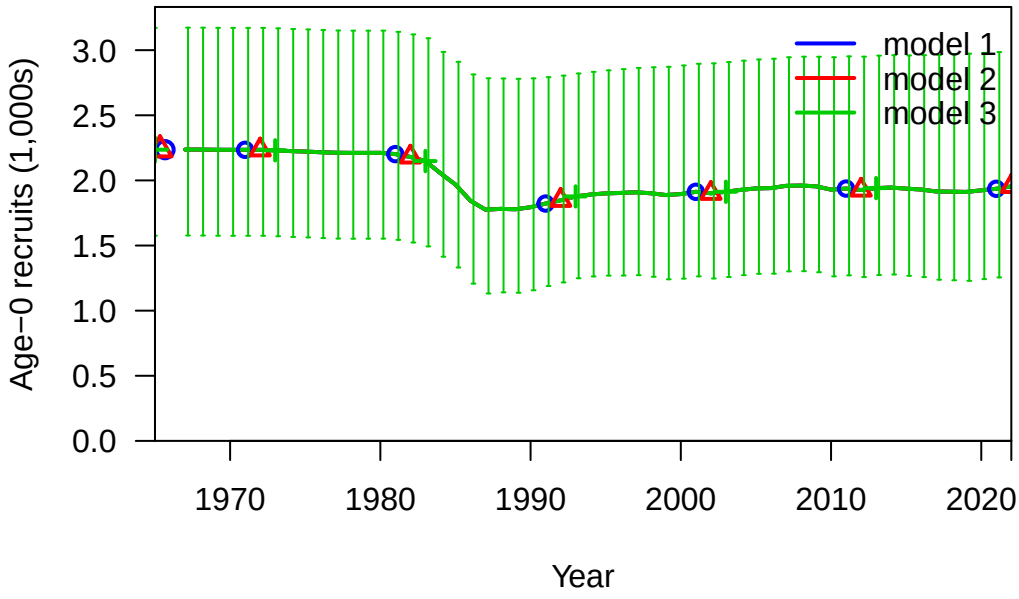

```
null device
          1
```

**Jitter**


111.125
111.100
111.075
111.050
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