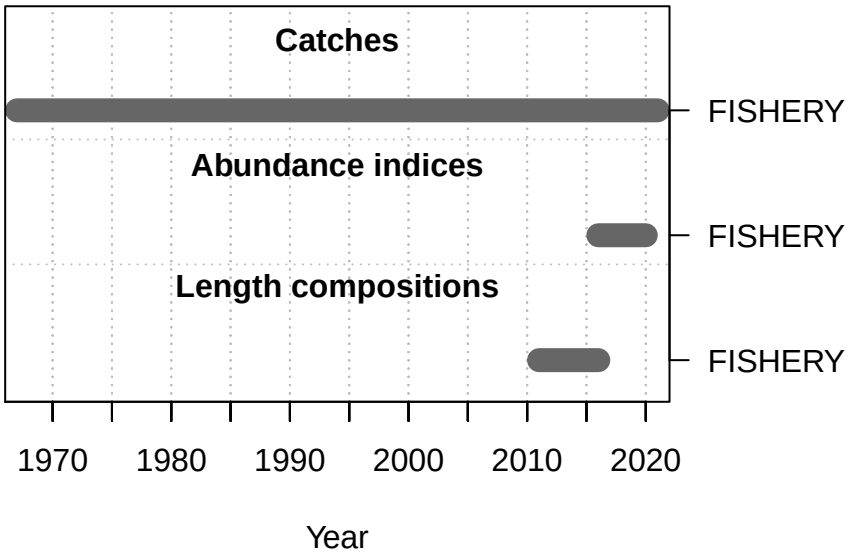
# American Samoa Model Checks

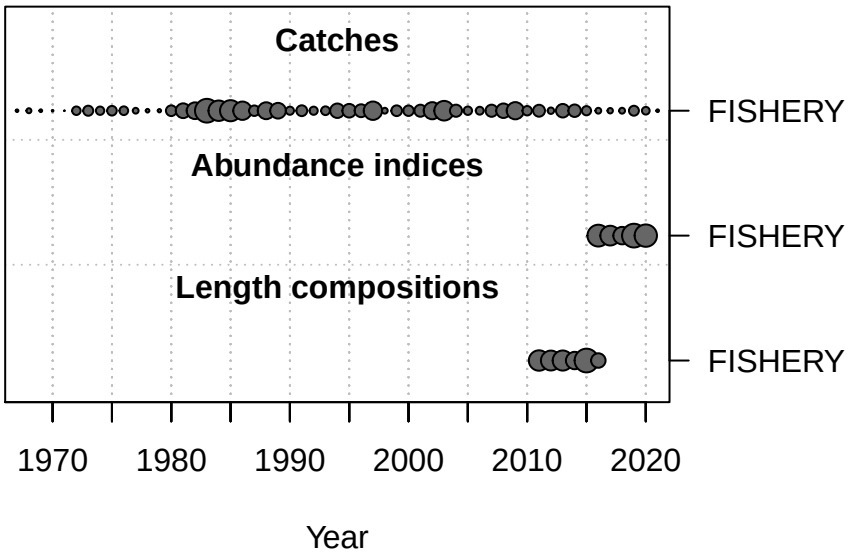
2022-08-24

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

## Model Output

### Input Data






### Convergence Check

```
  Converged     MaxGrad
1      TRUE 9.77807e-05
```

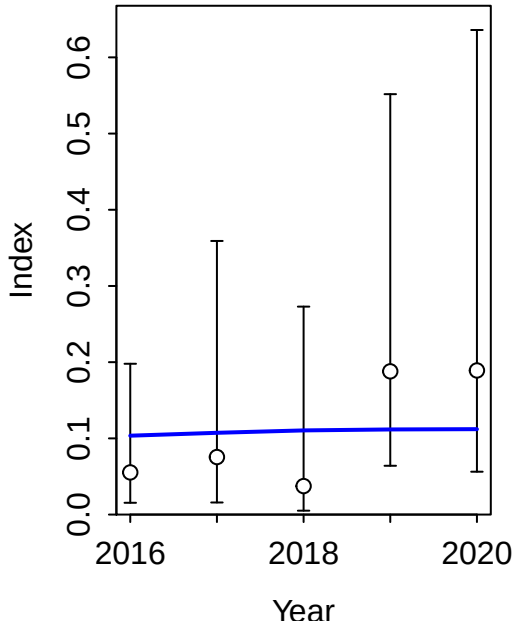
```
[1] "1 NOTE:  Max data length bin: 51  < max pop len bins: 57; so will accumulate larger pop
[2] "2 warning: poor convergence in Fmsy, final dy/dy2= 0.00167722"
[3] "N warnings: 2"
```

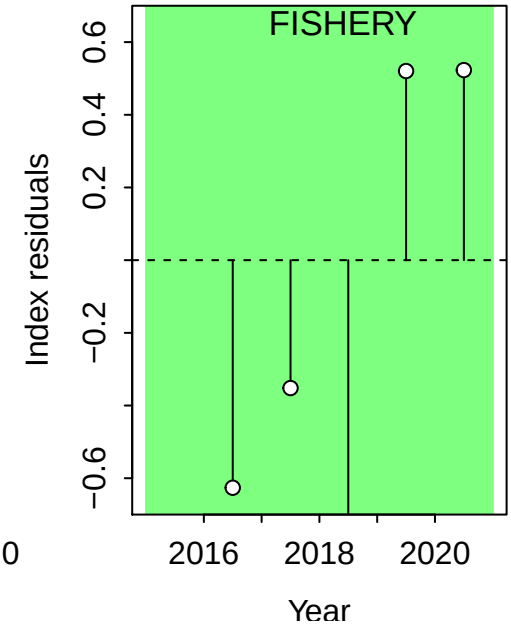
### Fit to Model

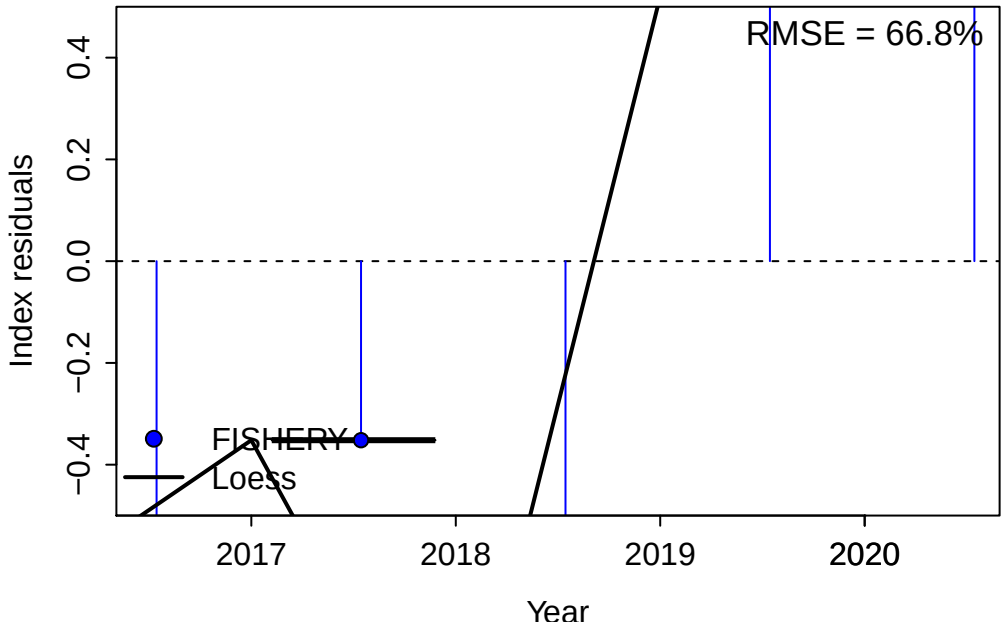
### CPUE

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

```
RMSE stats by Index:
```


Index
0.0
0.1
0.2
0.3
0.4
0.5
0.6
2016
2018
2020
Year

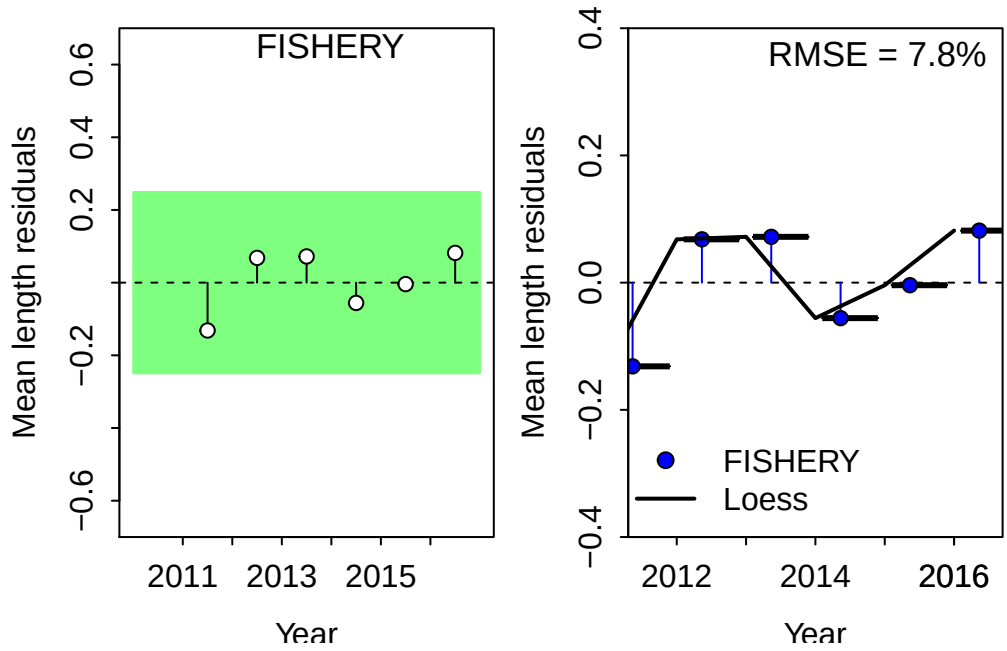

FISHERY
Index residuals
−0.6
−0.2
0.2
0.4
0.6
2016
2018
2020
Year


RMSE = 66.8%
Index residuals
−0.4
−0.2
0.0
0.2
0.4
FISHERY
Loess
2017
2018
2019
2020
Year

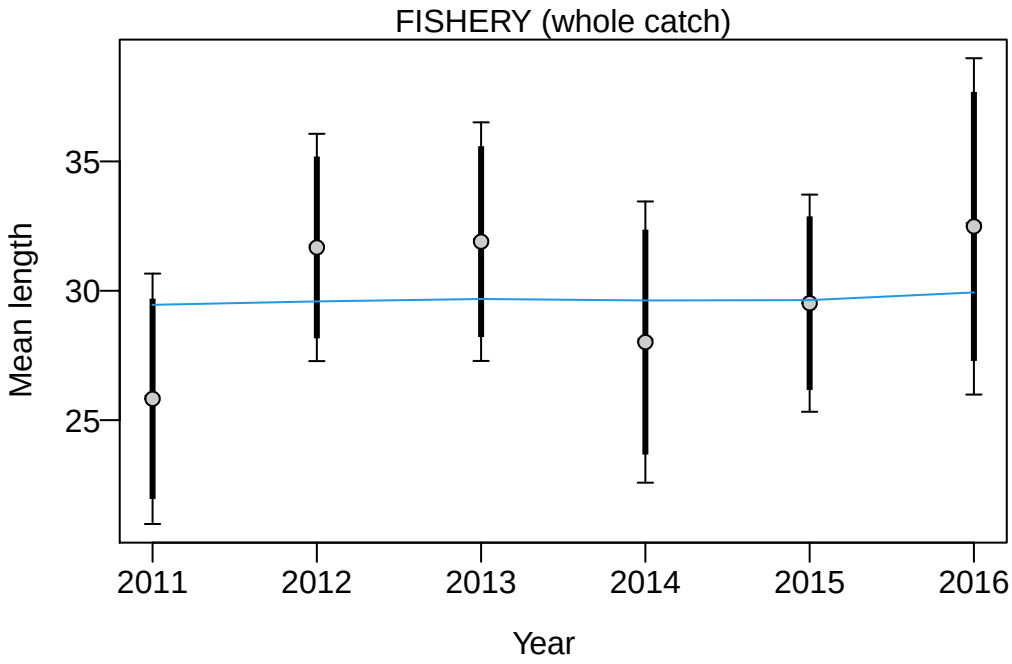
### Length Comp

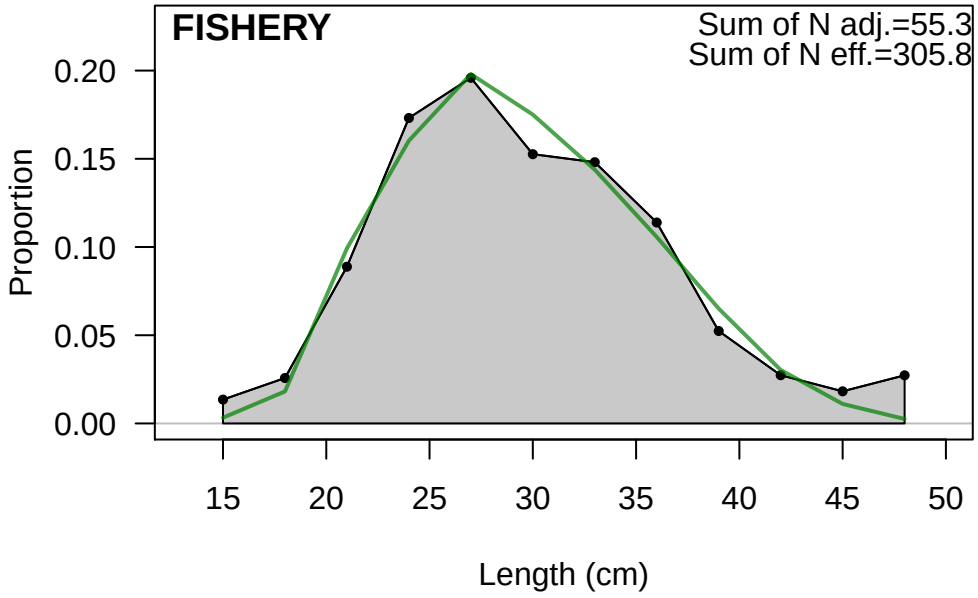
| #Factor | Fleet | New_Var_adj | Type | Name |
|---|---|---|---|---|
| 4 | 1 | 0.095952 | len | FISHERY |

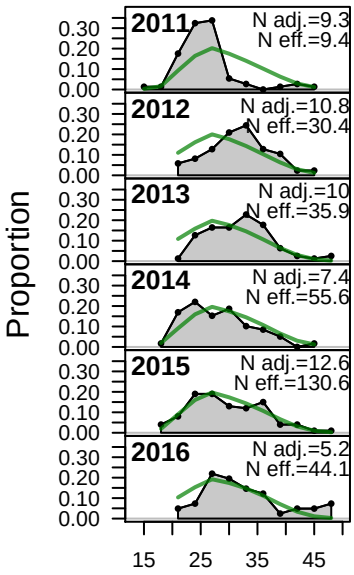
```
Residual Runs Test (/w plot) stats by Mean length:

    Index runs.p   test  sigma3.lo sigma3.hi type
1 FISHERY    0.5 Passed -0.2495175 0.2495175  len

RMSE stats by Index:

# A tibble: 2 x 3
  Fleet    RMSE.perc  Nobs
  <chr>        <dbl> <int>
1 FISHERY        7.8     6
2 Combined       7.8     6
```




### Retrospective and Hindcasting

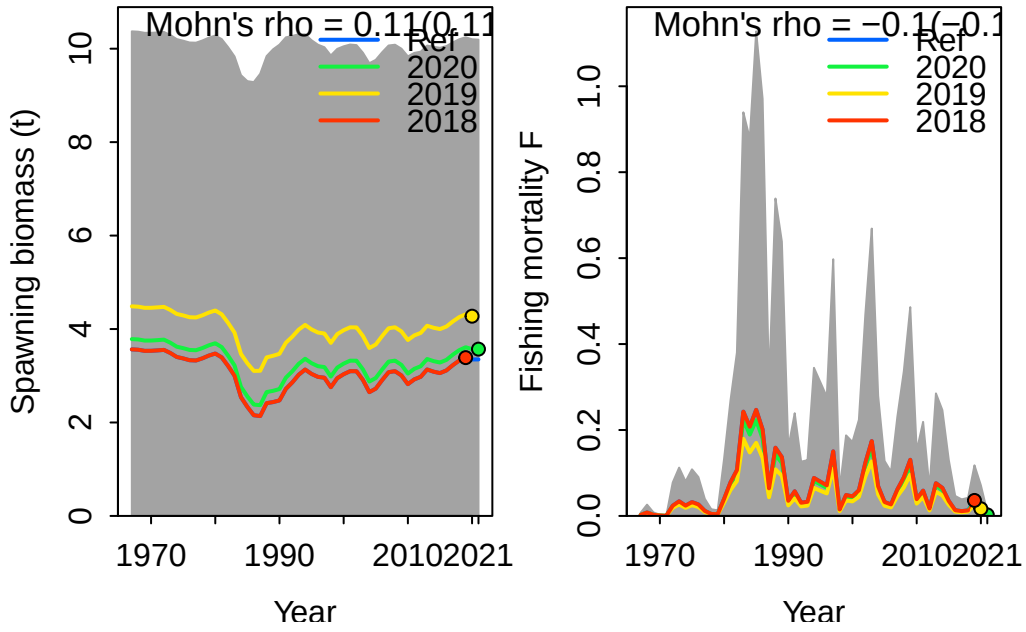

FISHERY (whole catch)
Mean length
35
30
25
2011
2012
2013
2014
2015
2016
Year


FISHERY
Sum of N adj.=55.3
Sum of N eff.=305.8
Proportion
0.20
0.15
0.10
0.05
0.00
15
20
25
30
35
40
45
50
Length (cm)




**Retrospective**

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

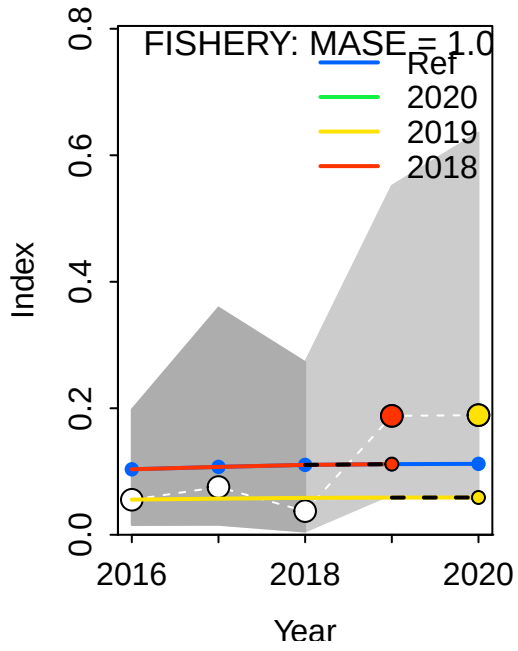


Mohn's Rho stats, including one step ahead forecasts:

```
  type     peel         Rho ForecastRho
1    F     2020 -0.06614322 -0.06589407
2    F     2019 -0.22896819 -0.22991481
3    F     2018  0.00000000  0.00000000
4    F Combined -0.09837047 -0.09860296
```

### 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
```



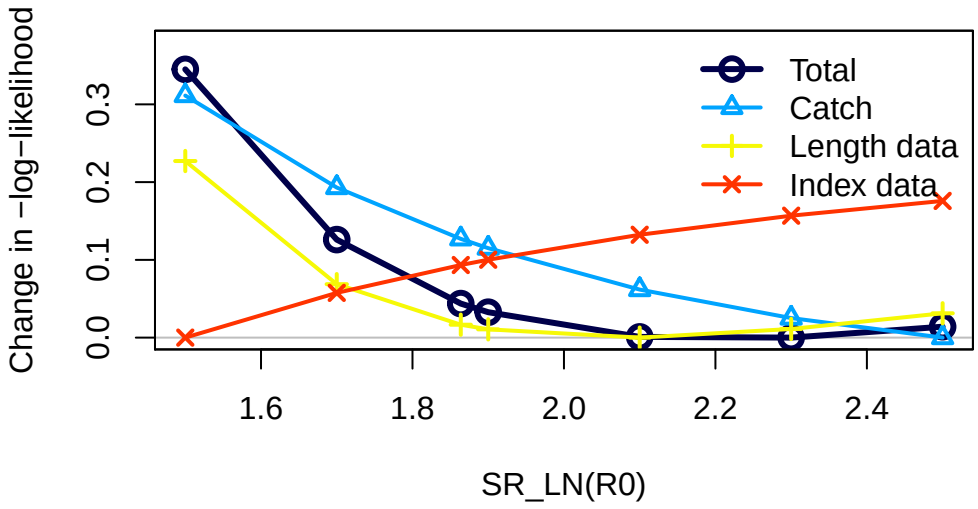

```
MASE stats by Index:
Plotting Hindcast Cross-Validation (one-step-ahead)

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

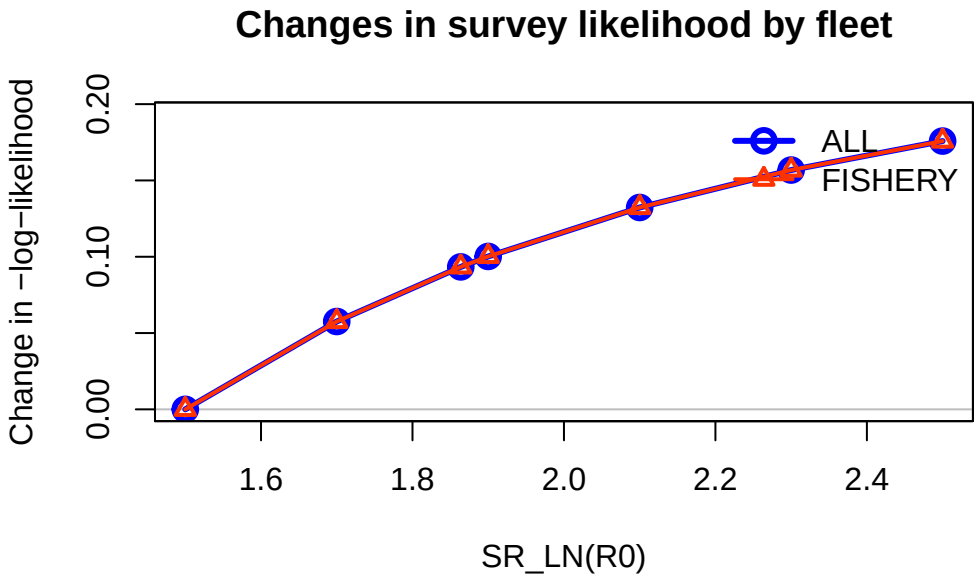
MASE stats by Index:

### Recruitment Deviations

### Likelihood Profile

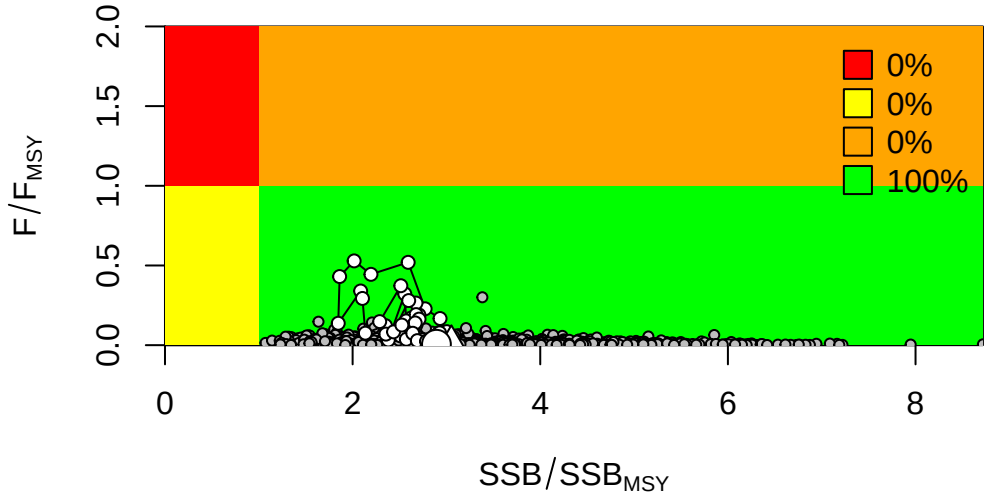
```
[1] "SR_LN"
                     frac_change include                          label
TOTAL                     1.0000    TRUE                          Total
Catch                     0.9022    TRUE                          Catch
Equil_catch               0.0000   FALSE              Equilibrium catch
Survey                    0.5095    TRUE                     Index data
Length_comp               0.6582    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           0.0009   FALSE                   Soft bounds
Parm_devs                 0.0000   FALSE          Parameter deviations
Crash_Pen                 0.0000   FALSE                 Crash penalty
```

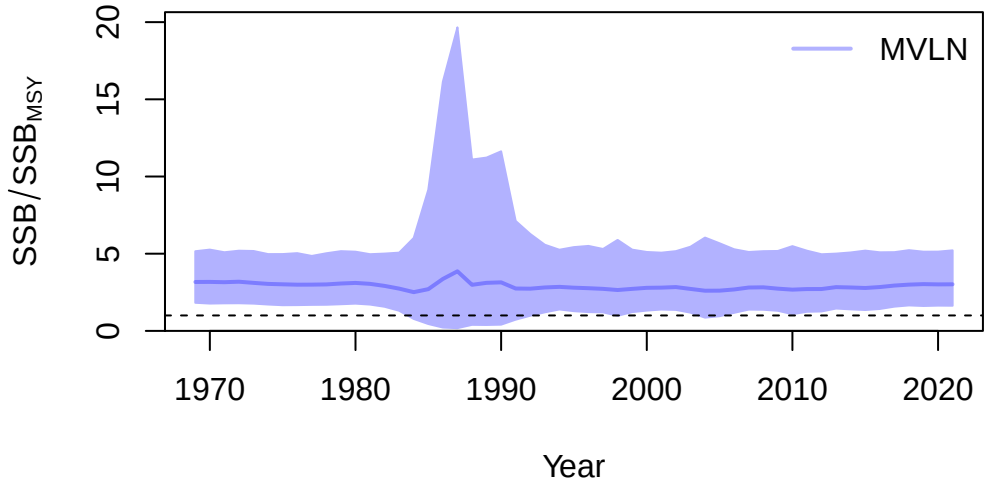


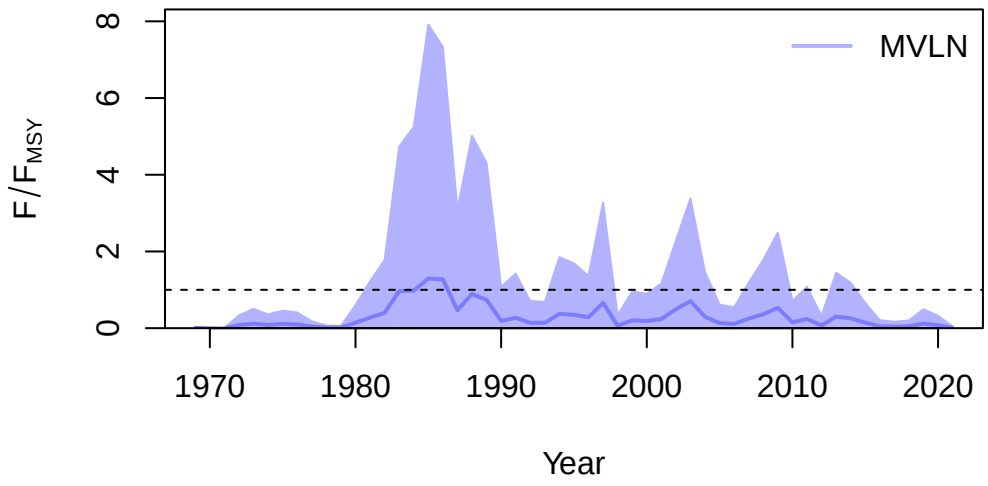


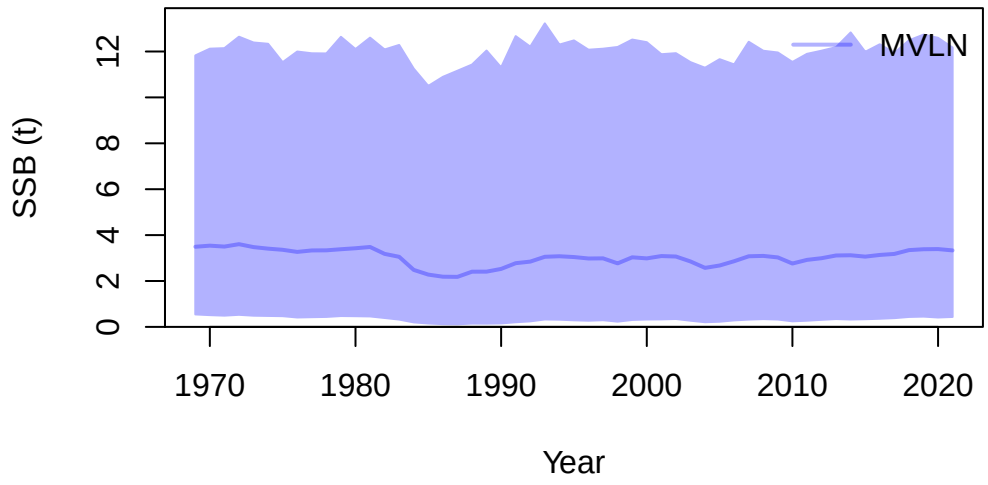

**Management Quantities**

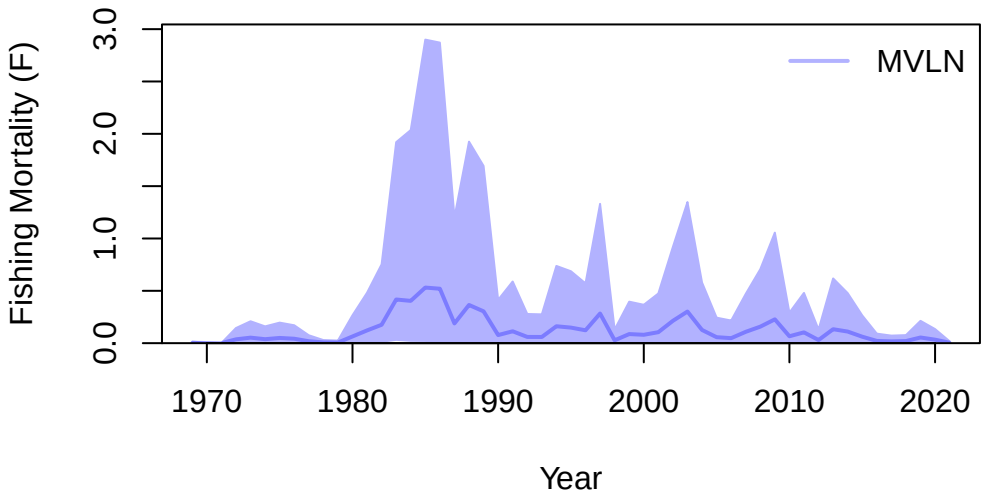
```
starter.sso with Bratio: SSB/SSBMSY and F: _abs_F
```


0%
0%
0%
100%
F/F_MSY
SSB/SSB_MSY
0.0
0.5
1.0
1.5
2.0
0
2
4
6
8


MVLN
SSB/SSB_MSY
Year
0
5
10
15
20
1970
1980
1990
2000
2010
2020

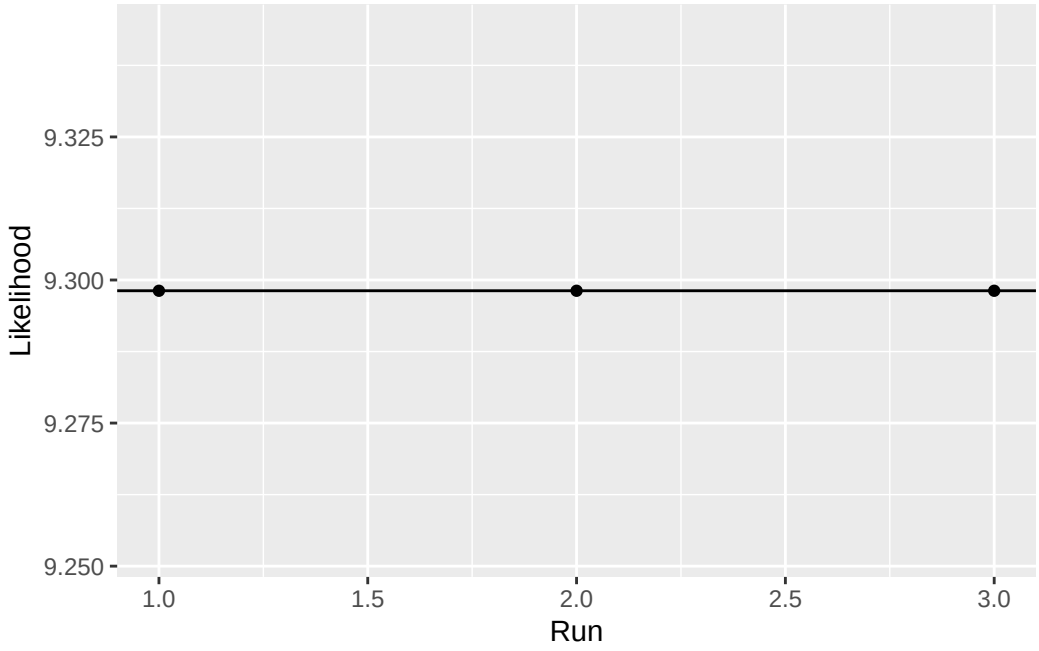

MVLN
F/F_MSY
0
2
4
6
8
1970
1980
1990
2000
2010
2020
Year

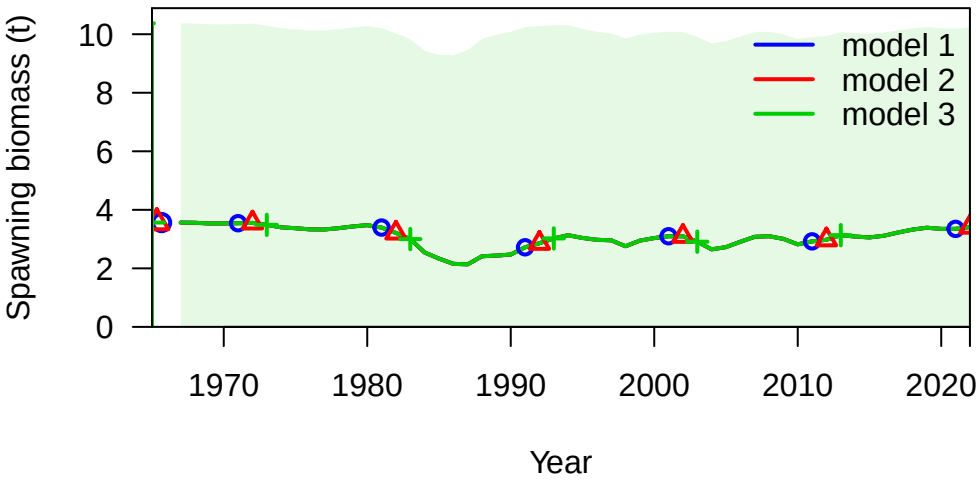

MVLN
SSB (t)
0
2
4
6
8
12
1970
1980
1990
2000
2010
2020
Year

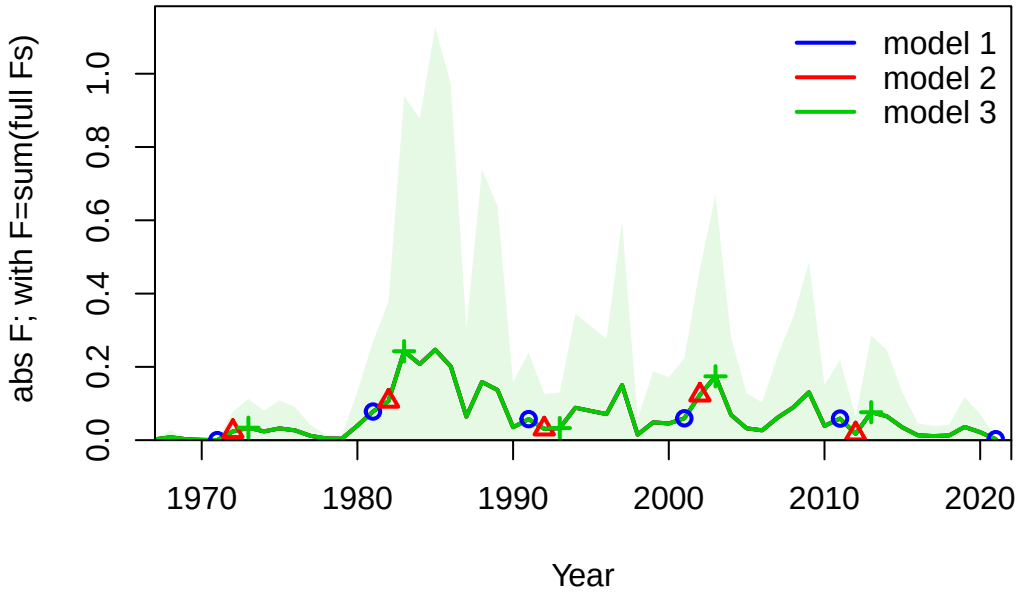


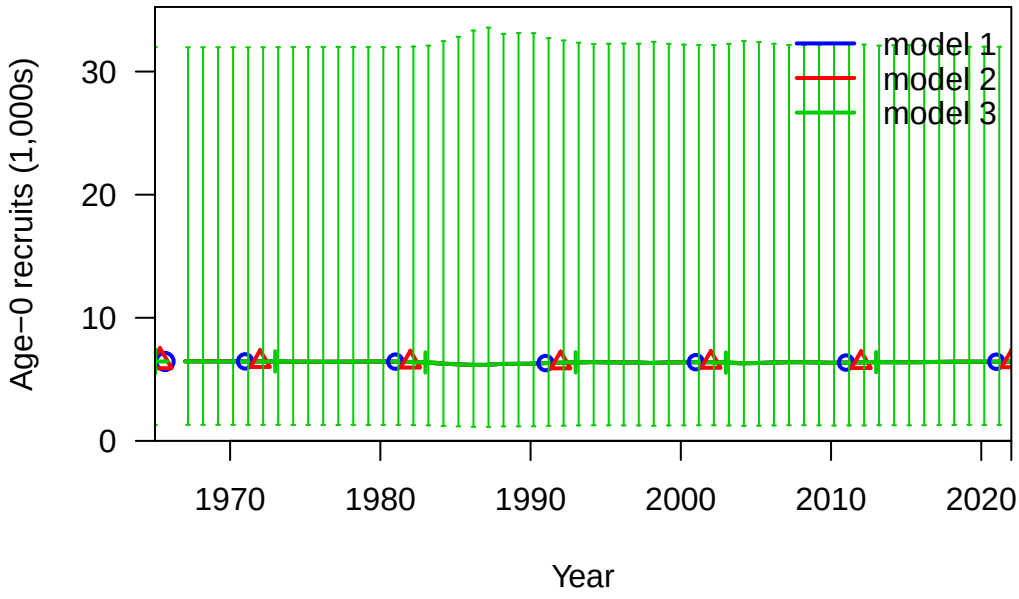

```
null device
          1
```

**Jitter**


Likelihood
9.325
9.300
9.275
9.250
1.0
1.5
2.0
2.5
3.0
Run


Spawning biomass (t)
10
8
6
4
2
0
1970
1980
1990
2000
2010
2020
Year
model 1
model 2
model 3


abs F; with F=sum(full Fs)
0.0
0.2
0.4
0.6
0.8
1.0
1970
1980
1990
2000
2010
2020
Year
model 1
model 2
model 3


Age−0 recruits (1,000s)
0
10
20
30
1970
1980
1990
2000
2010
2020
Year
model 1
model 2
model 3