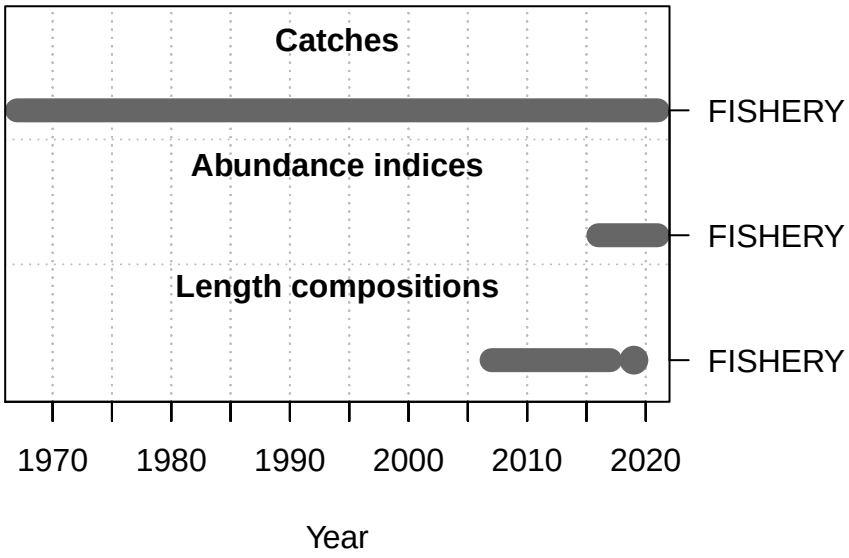
American Samoa Model Checks

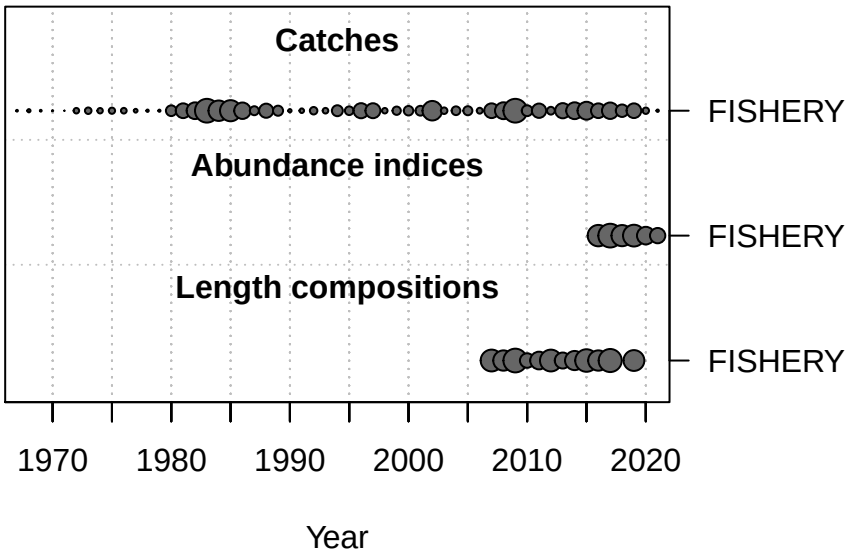
2022-08-29

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

Model Output

Input Data





Convergence Check

```
  Converged     MaxGrad
1      TRUE 8.48144e-07
```

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

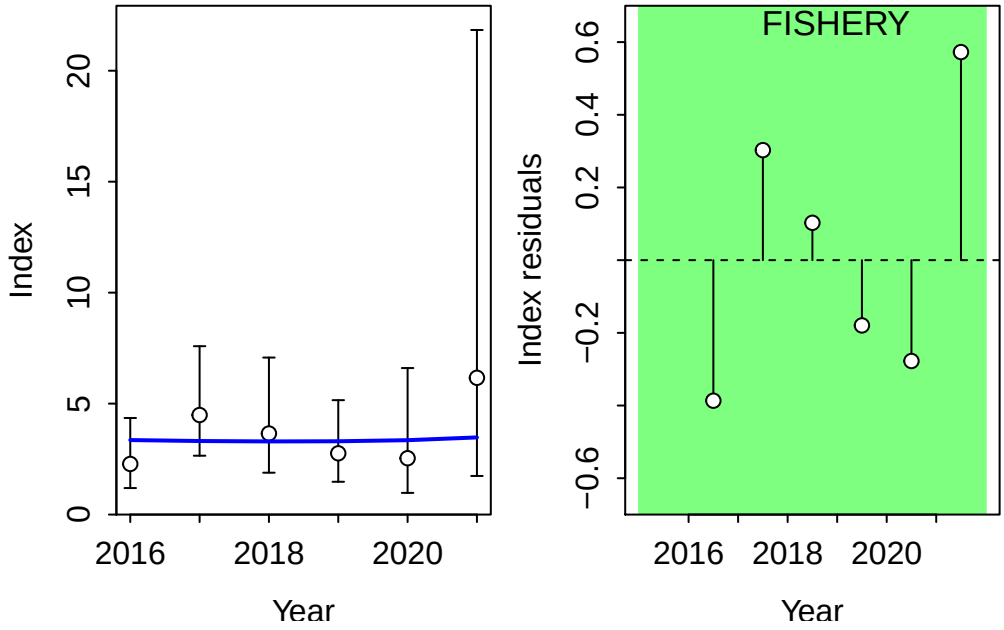
Fit to Model

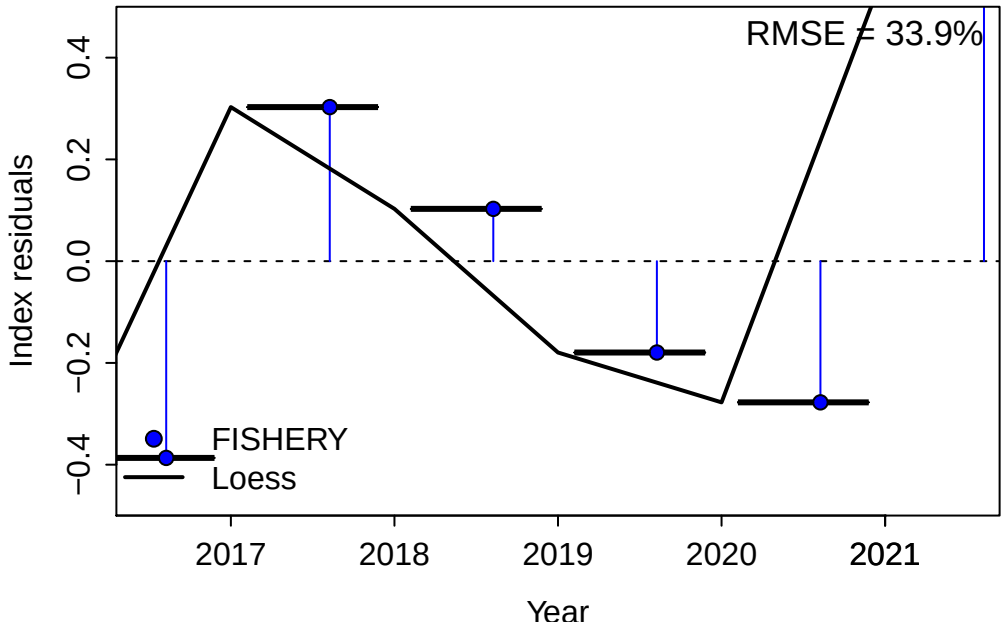
CPUE

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

```
RMSE stats by Index:
```

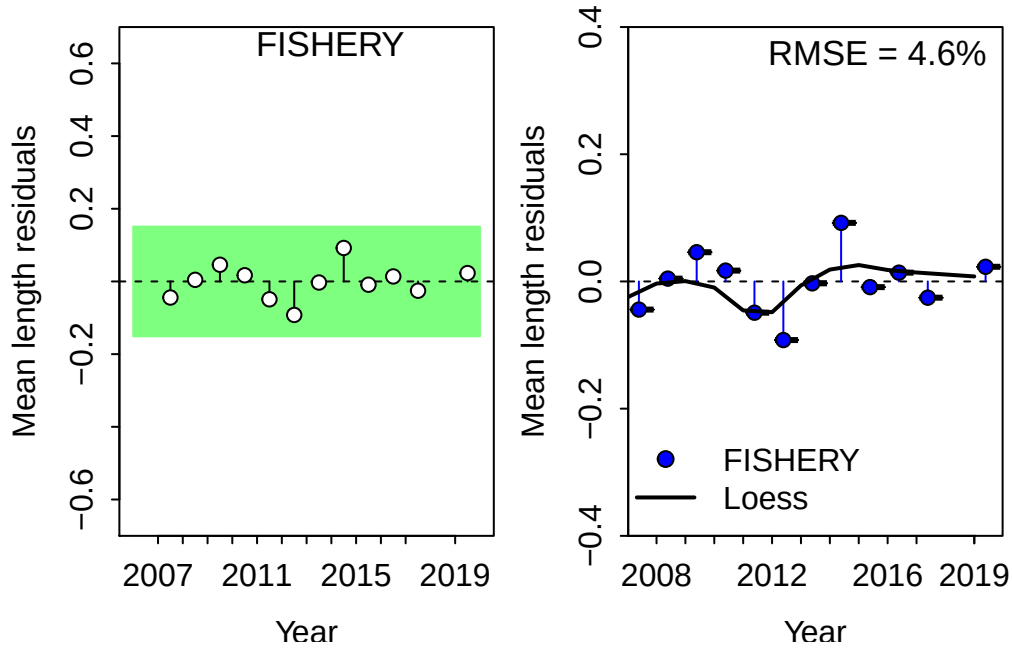
Length Comp


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

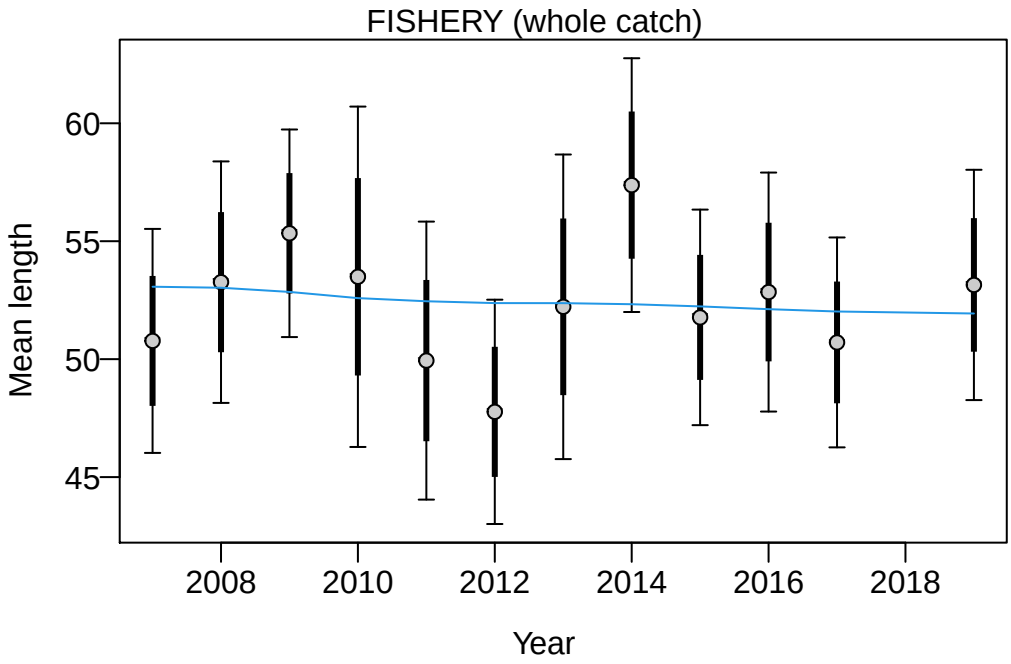

Index residuals
−0.4
−0.2
0.0
0.2
0.4
RMSE = 33.9%
FISHERY
Loess
2017
2018
2019
2020
2021
Year

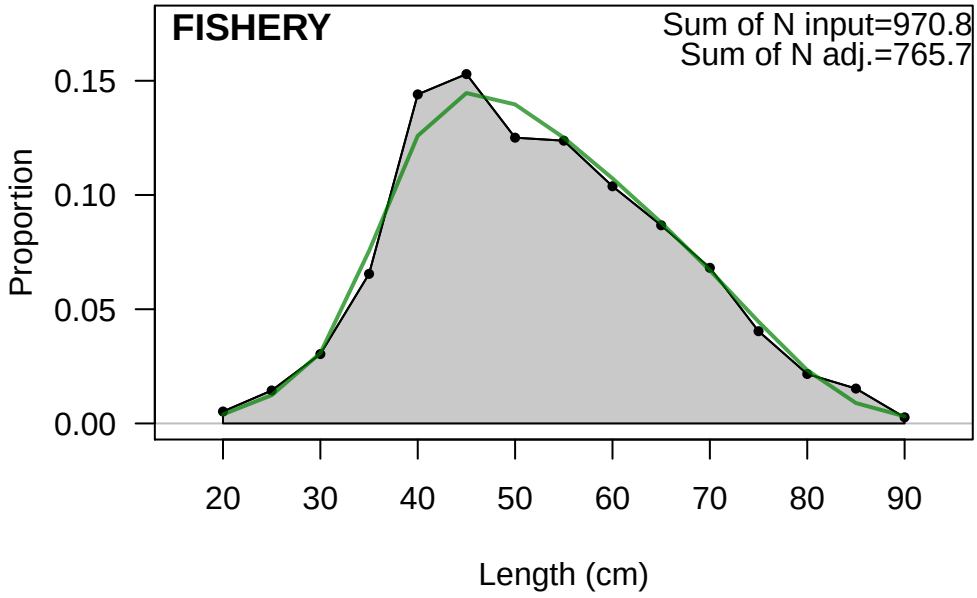
#Factor	Fleet	New_Var_adj	Type	Name
4	1	0.336412	len	FISHERY

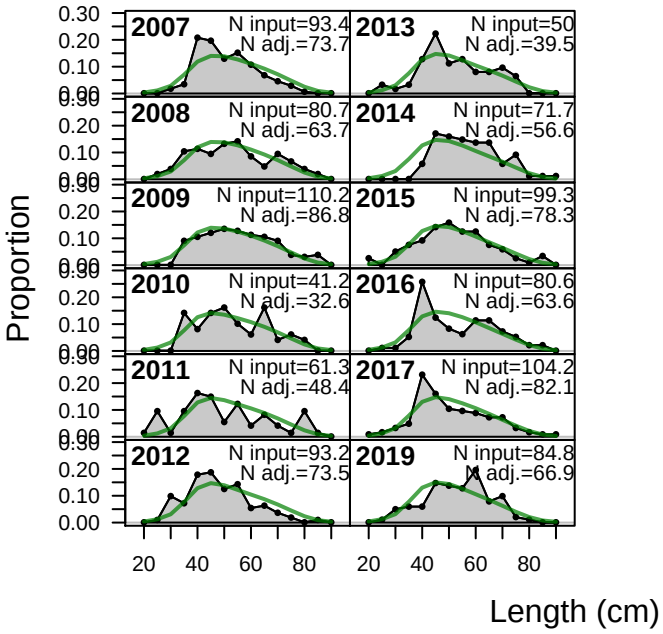
```
Residual Runs Test (/w plot) stats by Mean length:

    Index runs.p   test  sigma3.lo sigma3.hi type
1 FISHERY  0.728 Passed -0.1509452 0.1509452  len

RMSE stats by Index:

# A tibble: 2 x 3
  Fleet    RMSE.perc  Nobs
  <chr>        <dbl> <int>
1 FISHERY        4.6    12
2 Combined       4.6    12
```



Retrospective and Hindcasting

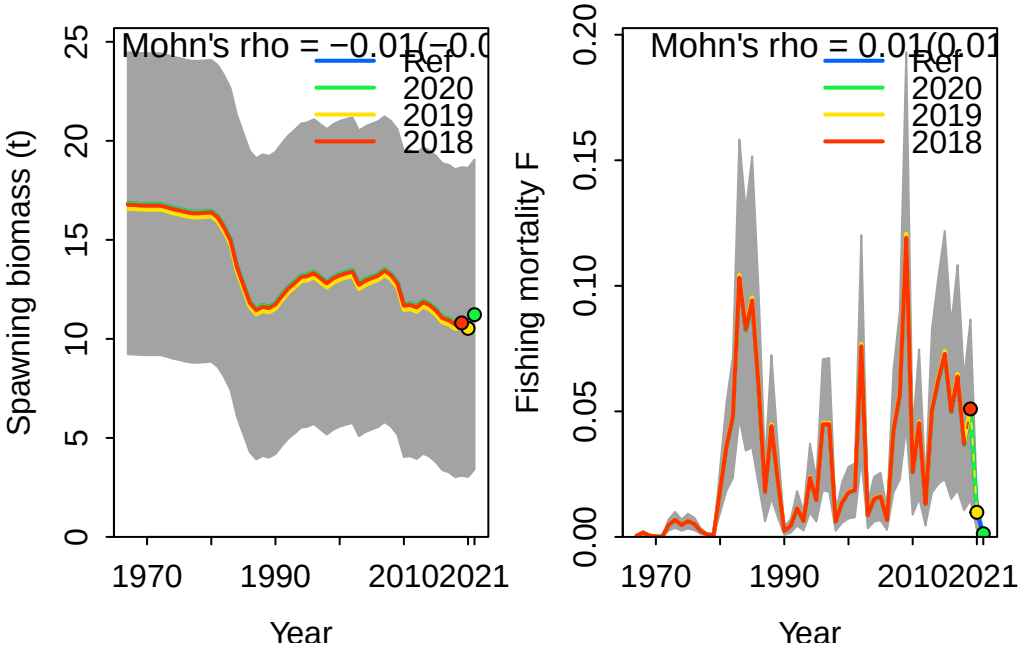

FISHERY (whole catch)
Mean length
60
55
50
45
2008
2010
2012
2014
2016
2018
Year


FISHERY
Sum of N input=970.8
Sum of N adj.=765.7
Proportion
0.15
0.10
0.05
0.00
20
30
40
50
60
70
80
90
Length (cm)



Retrospective

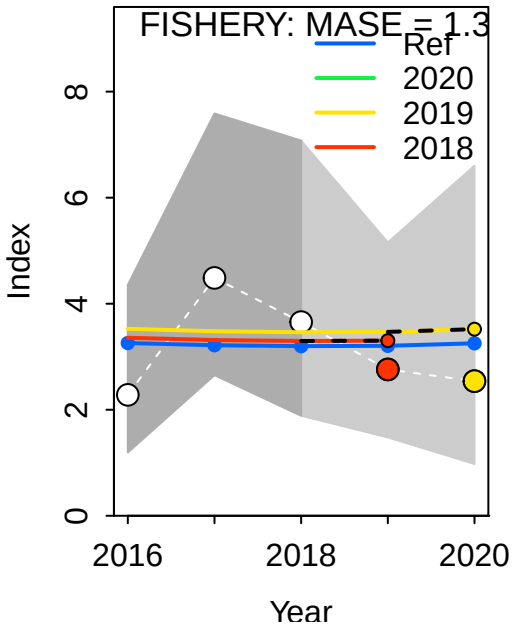
`Mohn's Rho stats, including one step ahead forecasts:`



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

  type     peel          Rho ForecastRho
1    F     2020 0.0007321461 0.000708619
2    F     2019 0.0229430661 0.022641254
3    F     2018 0.0069257574 0.006924606
4    F Combined 0.0102003232 0.010091493
```

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
```

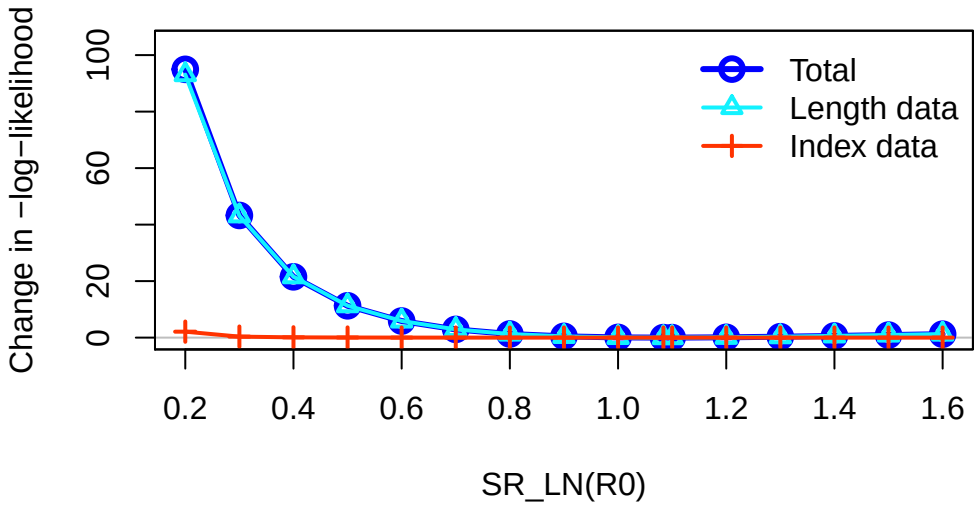
MASE stats by Index:

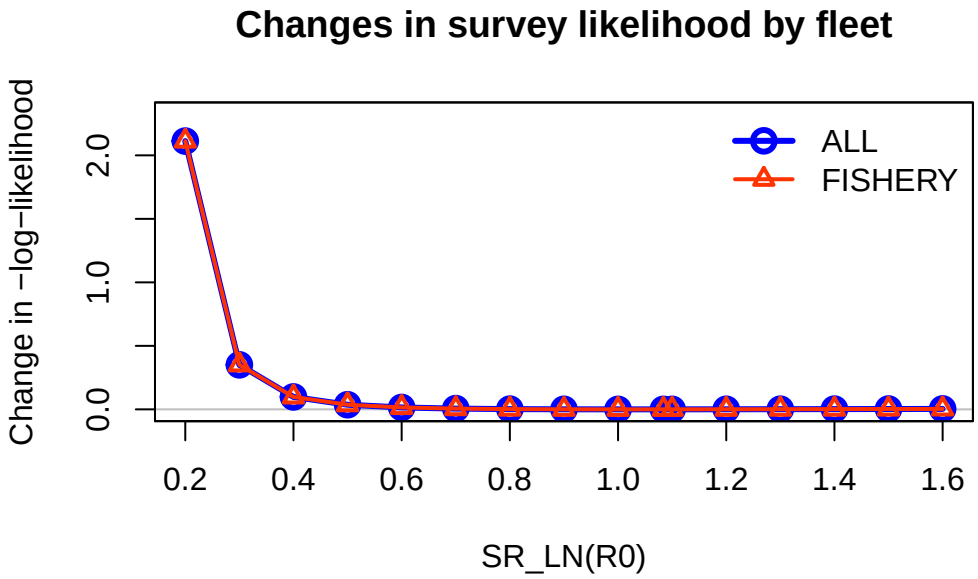
Recruitment Deviations

Likelihood Profile

```
[1] "SR_LN"
```

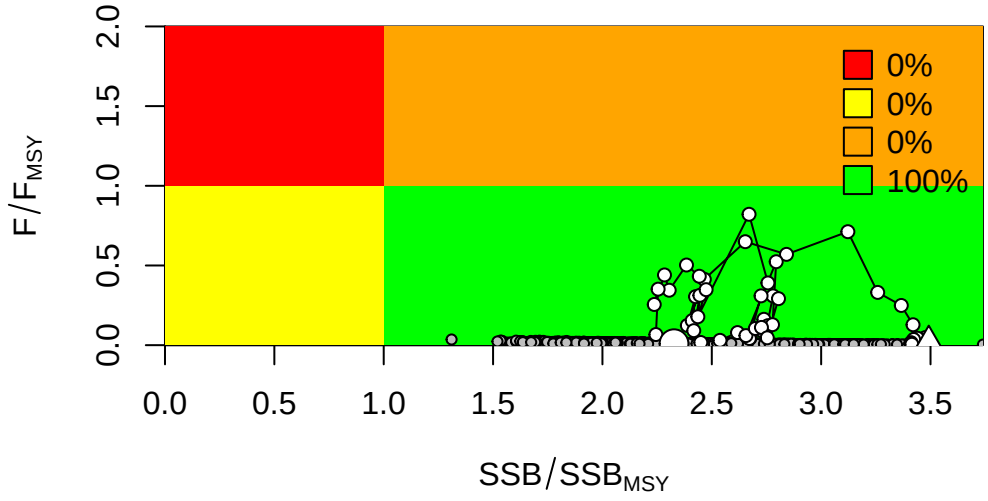
	frac_change	include	label
TOTAL	1.0000	TRUE	Total
Catch	0.0000	FALSE	Catch
Equil_catch	0.0000	FALSE	Equilibrium catch
Survey	0.0222	TRUE	Index data
Length_comp	0.9803	TRUE	Length data
Recruitment	0.0000	FALSE	Recruitment
InitEQ_Regime	0.0000	FALSE	Initital equilibrium recruitment
Forecast_Recruitment	0.0000	FALSE	Forecast recruitment
Parm_priors	0.0027	FALSE	Priors
Parm_softbounds	0.0001	FALSE	Soft bounds
Parm_devs	0.0000	FALSE	Parameter deviations
Crash_Pen	0.0000	FALSE	Crash penalty

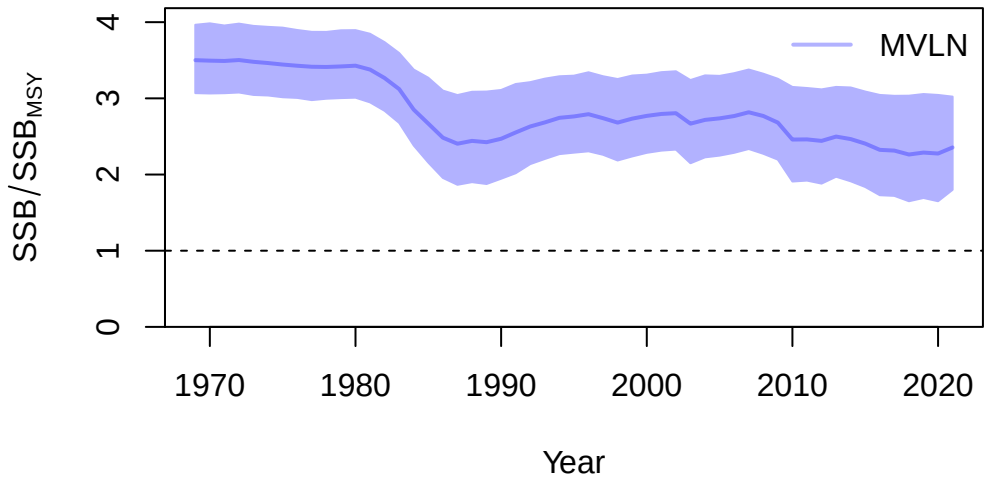


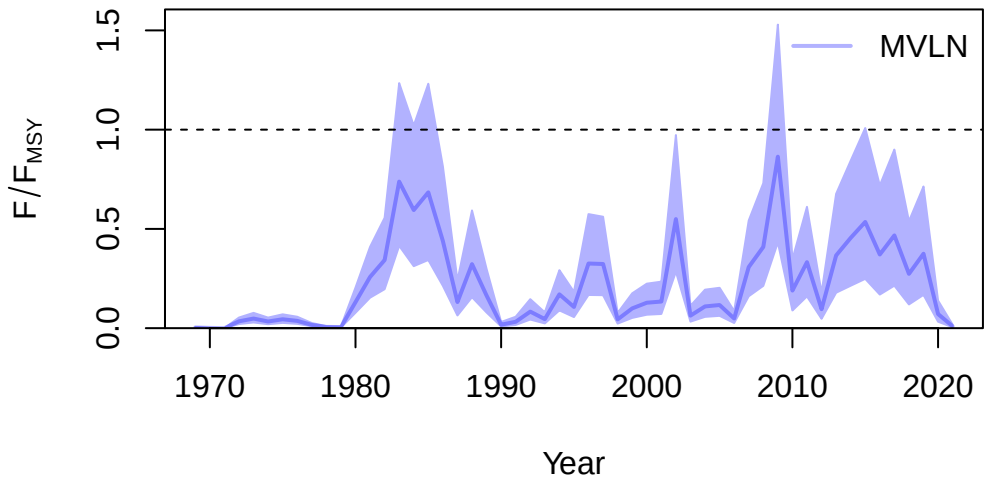


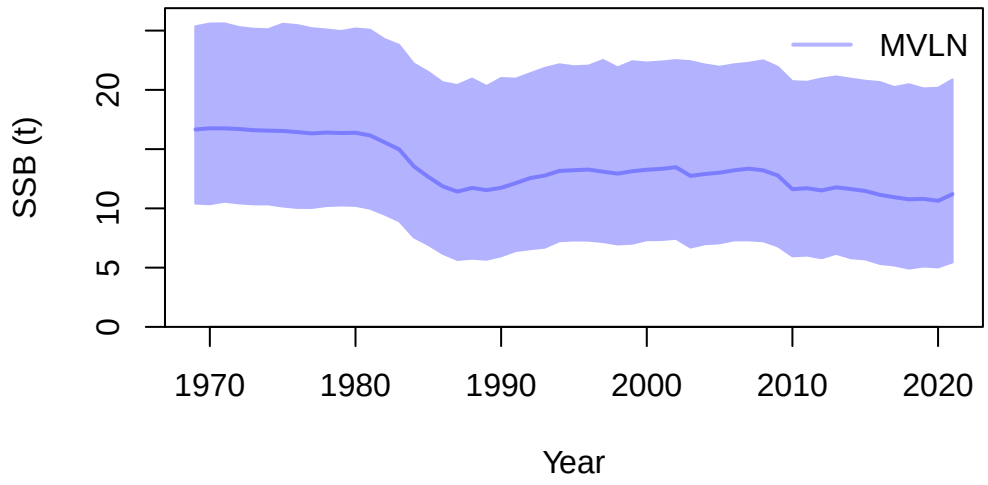
Management Quantities

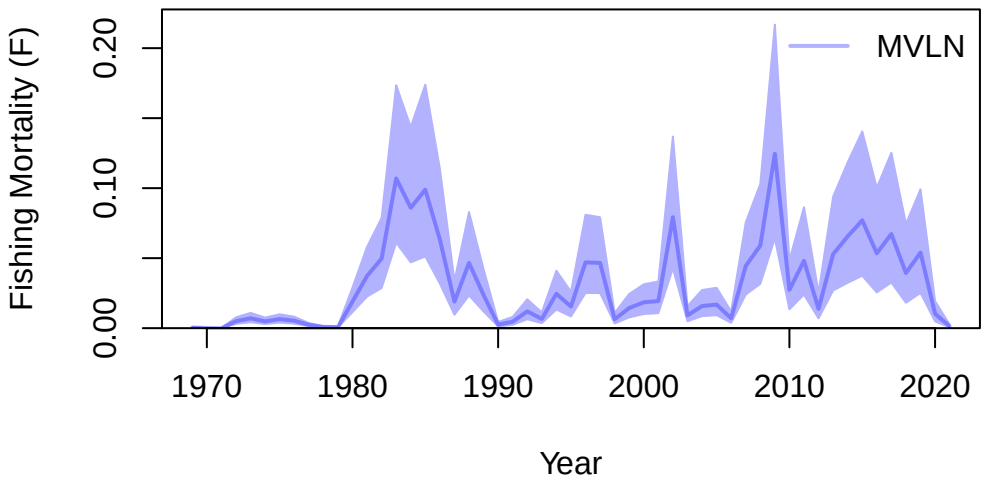
```
starter.sso with Bratio: SSB/SSBMSY and F: _abs_F
```


0%
0%
0%
100%
F/F_MSY
SSB/SSB_MSY
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

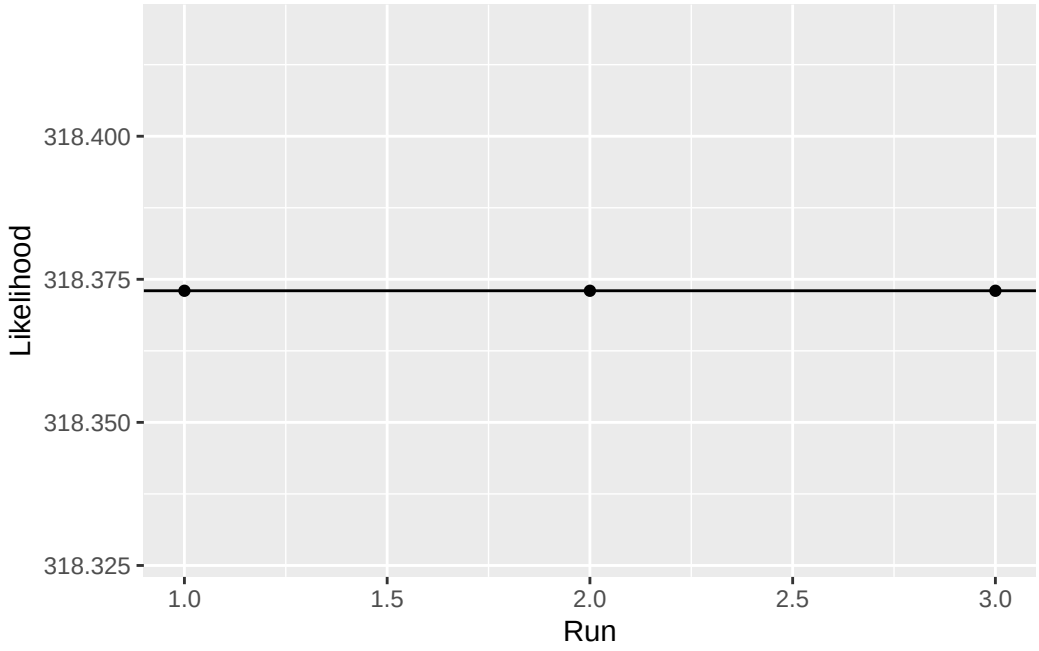

MVLN
F/F_MSY
0.0
0.5
1.0
1.5
1970
1980
1990
2000
2010
2020
Year

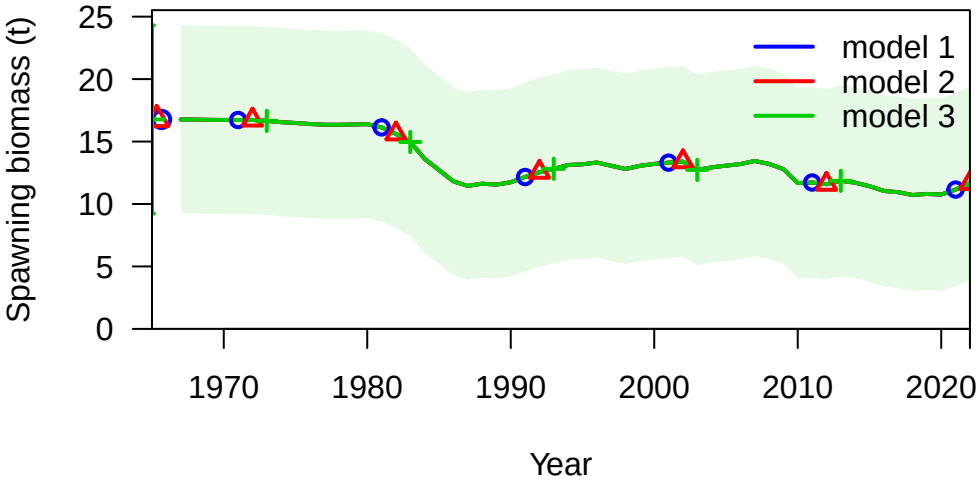

MVLN
SSB (t)
0
5
10
20
1970
1980
1990
2000
2010
2020
Year

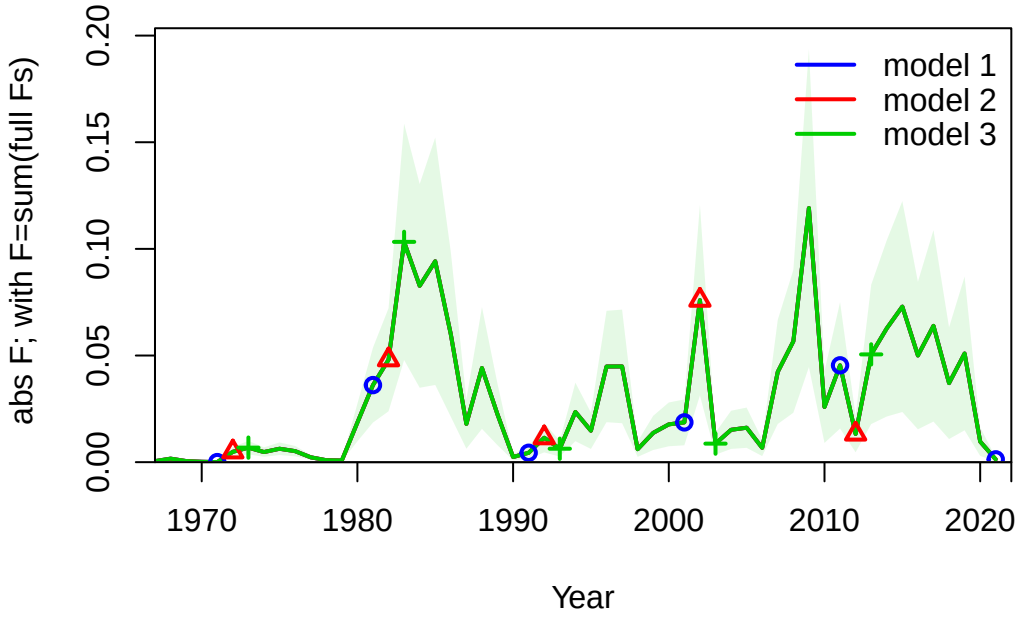


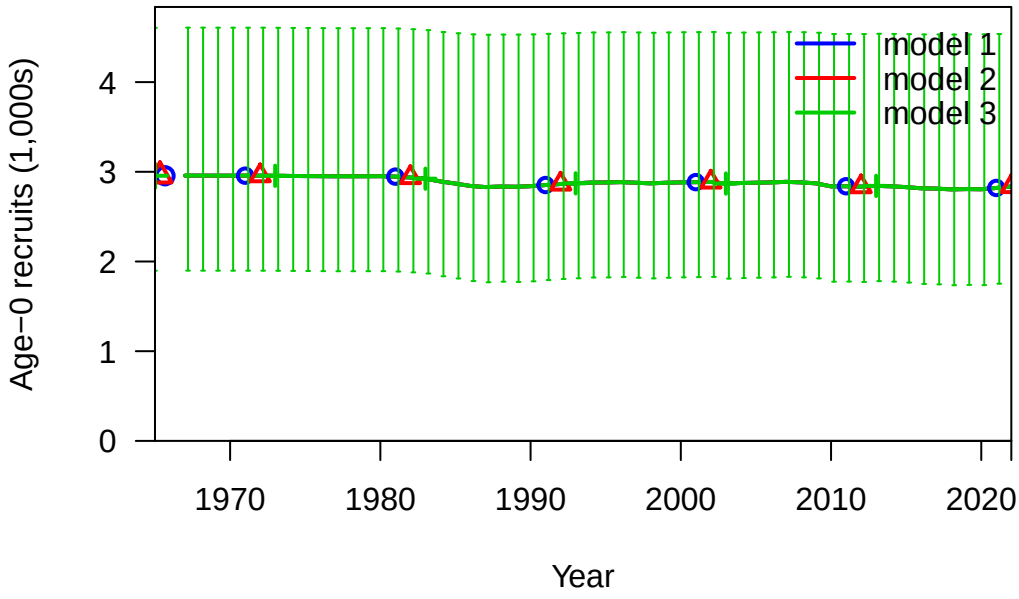

```
null device
          1
```

Jitter


318.400
318.375
318.350
318.325
Likelihood
1.0
1.5
2.0
2.5
3.0
Run


25
20
15
10
5
0
Spawning biomass (t)
model 1
model 2
model 3
1970
1980
1990
2000
2010
2020
Year


abs F; with F=sum(full Fs)
0.00
0.05
0.10
0.15
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
1970
1980
1990
2000
2010
2020
Year
model 1
model 2
model 3