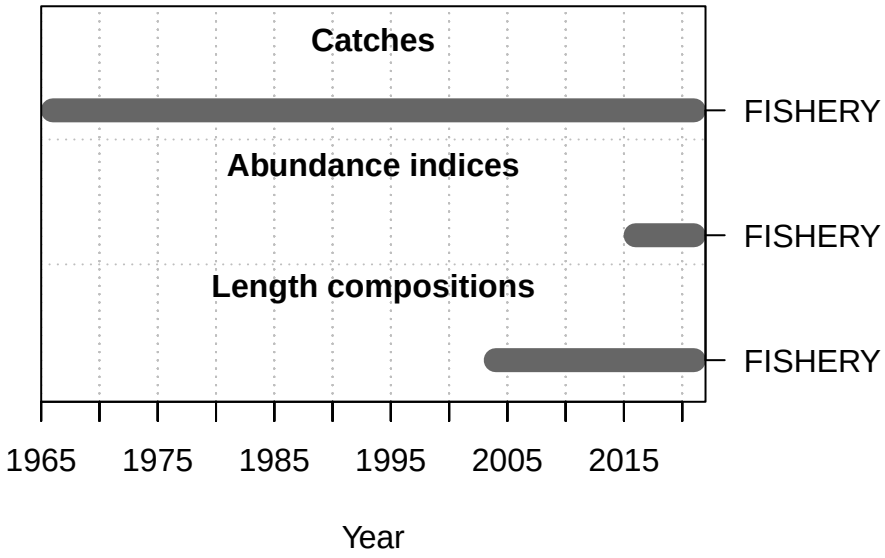
American Samoa Model Checks

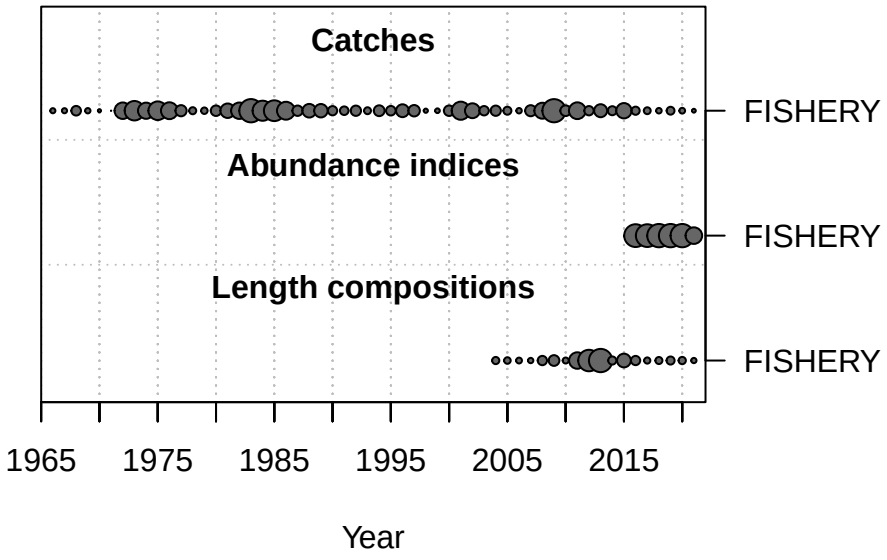
2022-09-22

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

Model Output

Input Data





Convergence Check

```
  Converged    MaxGrad
1      TRUE 1.8084e-05
```

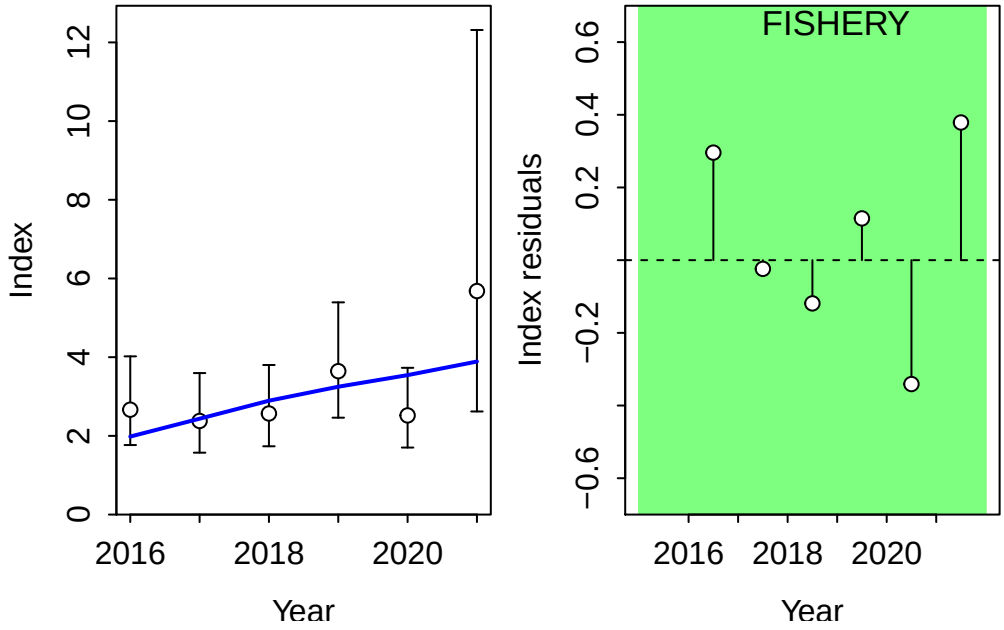
```
[1] "1 NOTE:  Max data length bin: 38.5  < max pop len bins: 43; so will accumulate larger p
[2] "N warnings: 1"
```

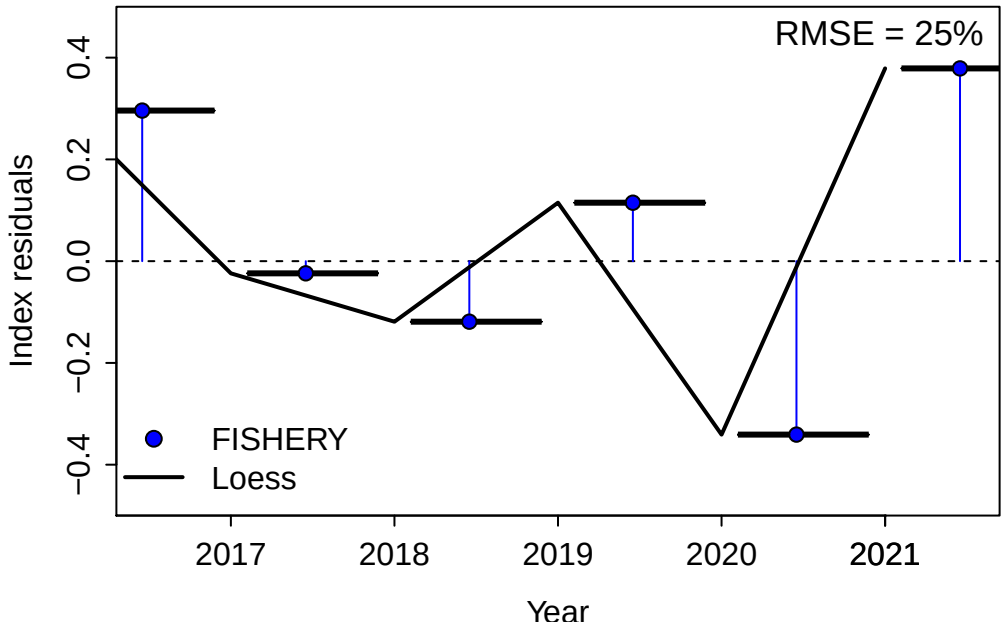
Fit to Model

CPUE

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

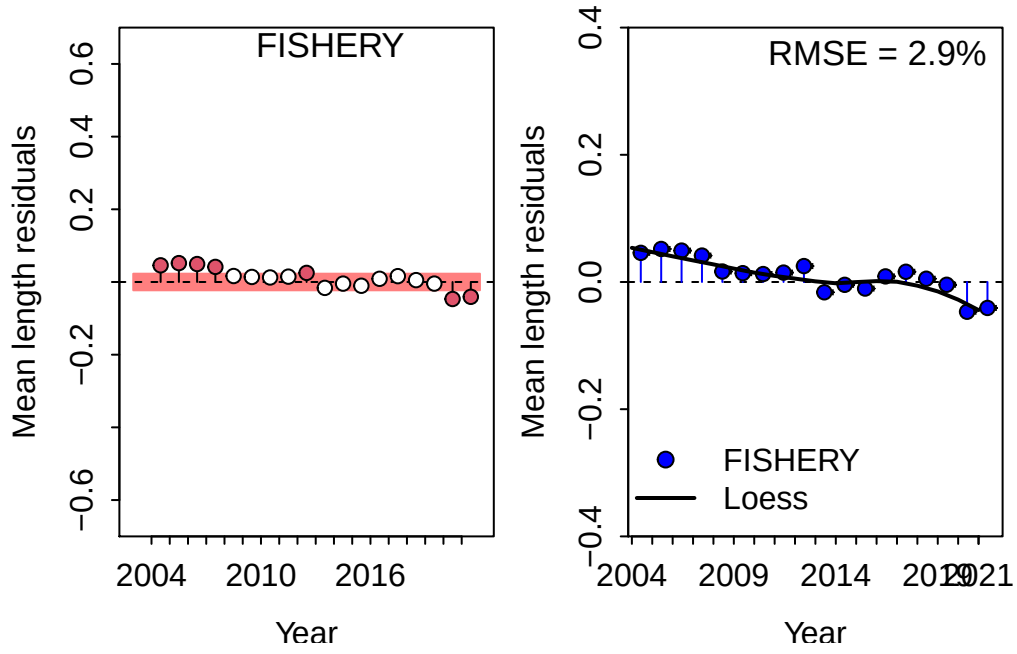
```
RMSE stats by Index:
```


Index
0
2
4
6
8
10
12
2016
2018
2020
Year
Index residuals
FISHERY
−0.6
−0.2
0.2
0.4
0.6
2016
2018
2020
Year

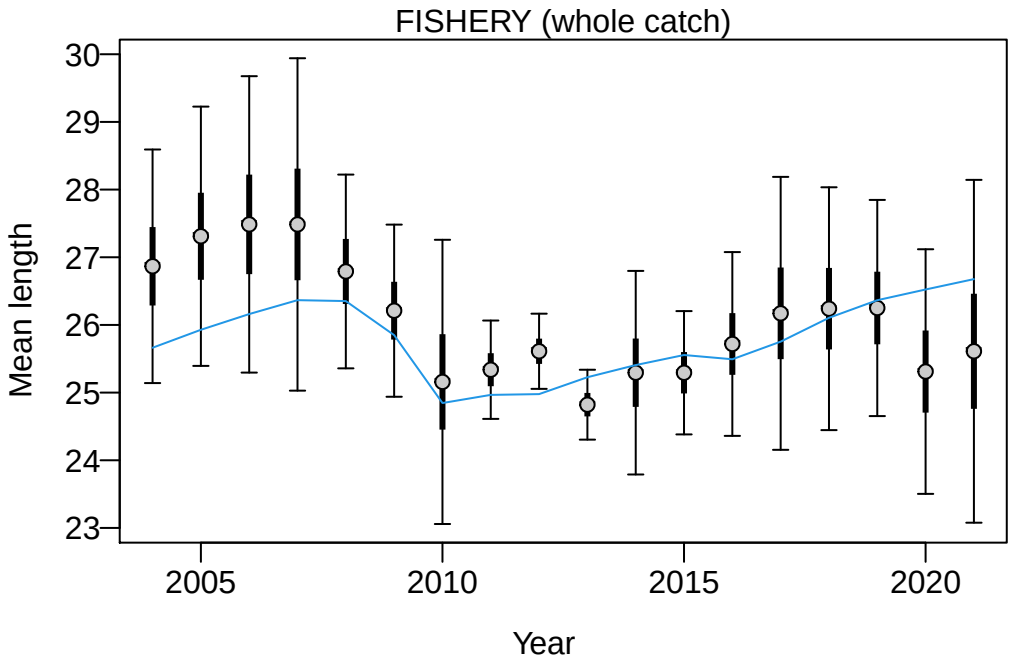

RMSE = 25%
Index residuals
−0.4
−0.2
0.0
0.2
0.4
FISHERY
Loess
2017
2018
2019
2020
2021
Year

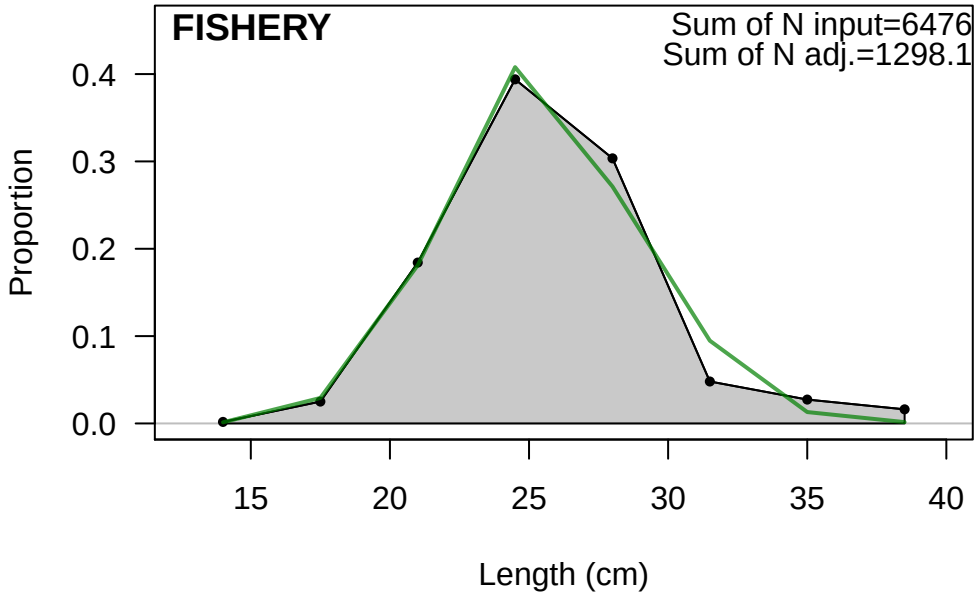
Length Comp

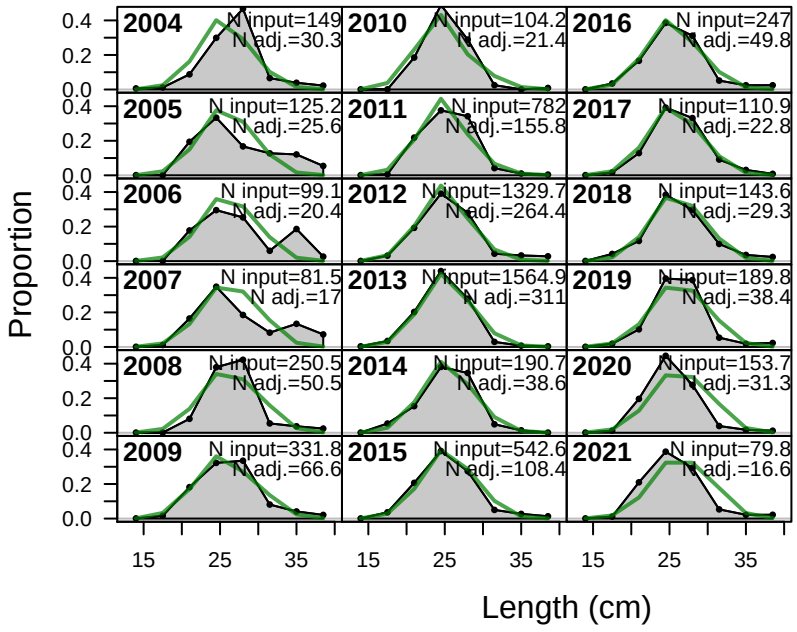
```
Residual Runs Test (/w plot) stats by Mean length:

    Index runs.p   test   sigma3.lo  sigma3.hi type
1 FISHERY  0.003 Failed -0.02280628 0.02280628  len

RMSE stats by Index:

# A tibble: 2 x 3
  Fleet    RMSE.perc  Nobs
  <chr>        <dbl> <int>
1 FISHERY        2.9    18
2 Combined       2.9    18
```



Retrospective and Hindcasting

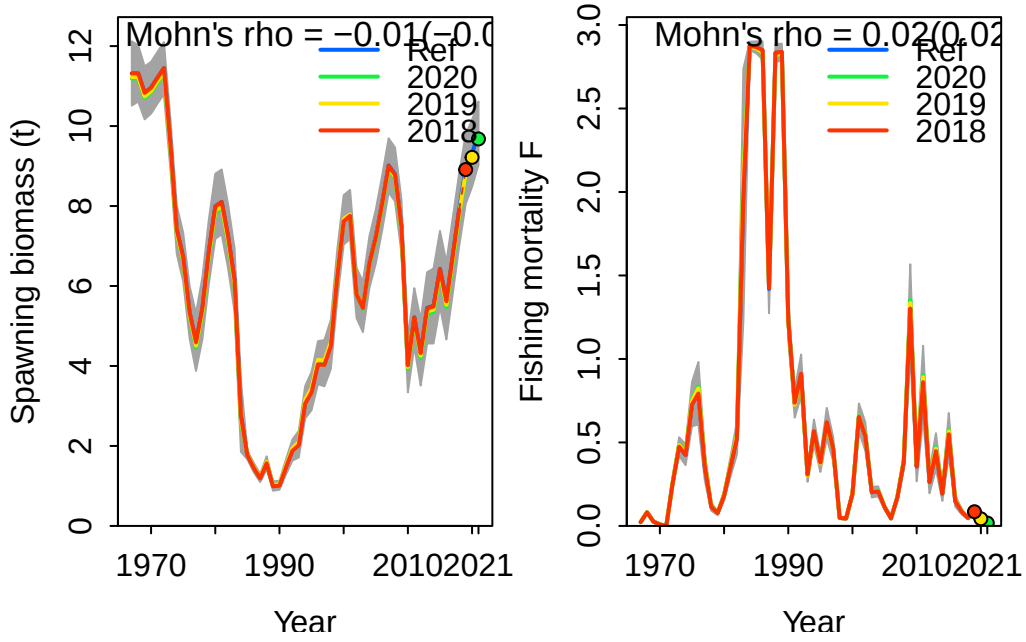

FISHERY (whole catch)
Mean length
30
29
28
27
26
25
24
23
2005
2010
2015
2020
Year


FISHERY
Sum of N input=6476
Sum of N adj.=1298.1
Proportion
0.4
0.3
0.2
0.1
0.0
15
20
25
30
35
40
Length (cm)



Retrospective

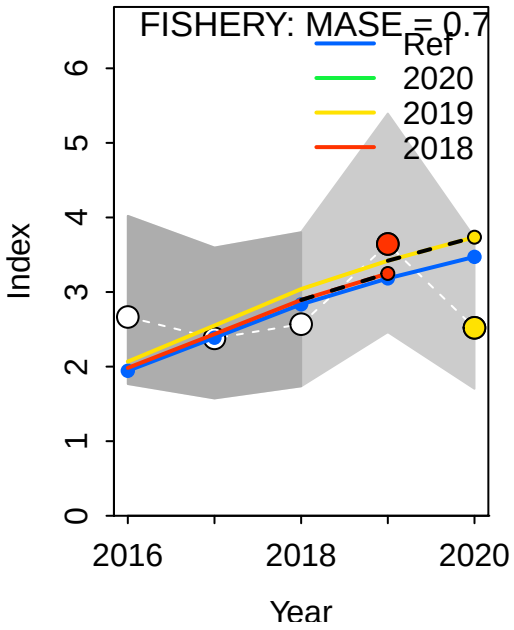
```
Mohn's Rho stats, including one step ahead forecasts:
```



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

  type     peel           Rho   ForecastRho
1    F     2020  0.0280924742  0.0256728457
2    F     2019  0.0214358234  0.0200101625
3    F     2018 -0.0004001449 -0.0005633902
4    F Combined  0.0163760509  0.0150398727
```

Hindcasting

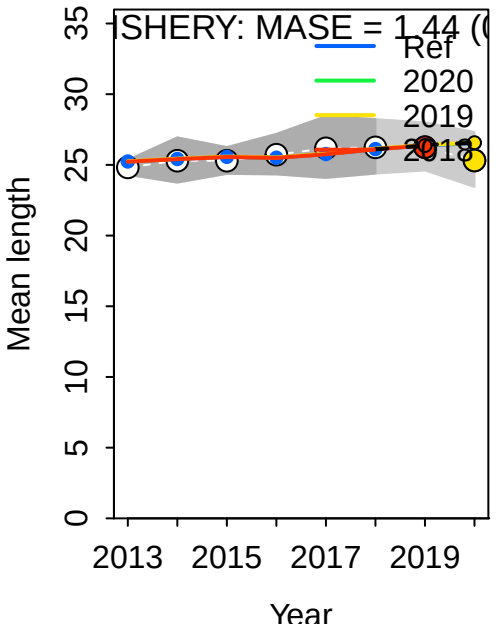
```
Plotting Hindcast Cross-Validation (one-step-ahead)

 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)

 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:
```



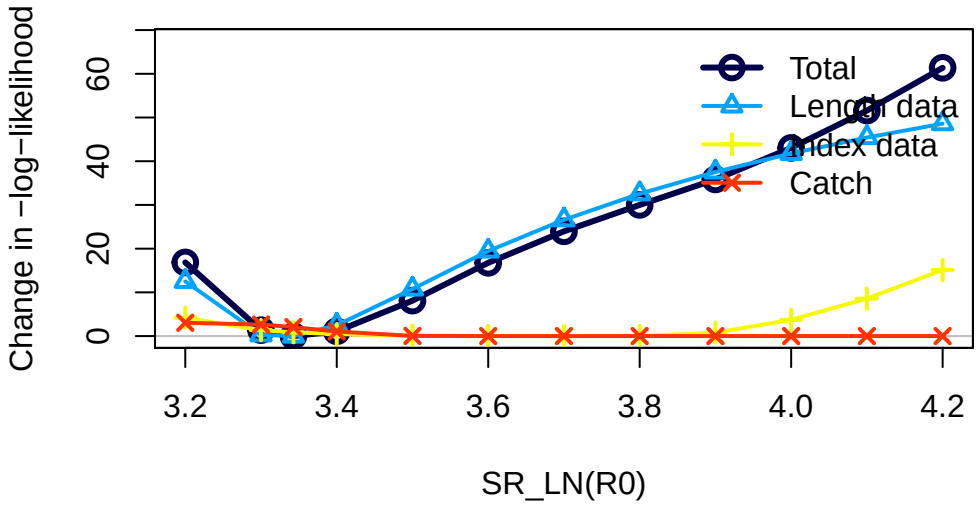
Recruitment Deviations

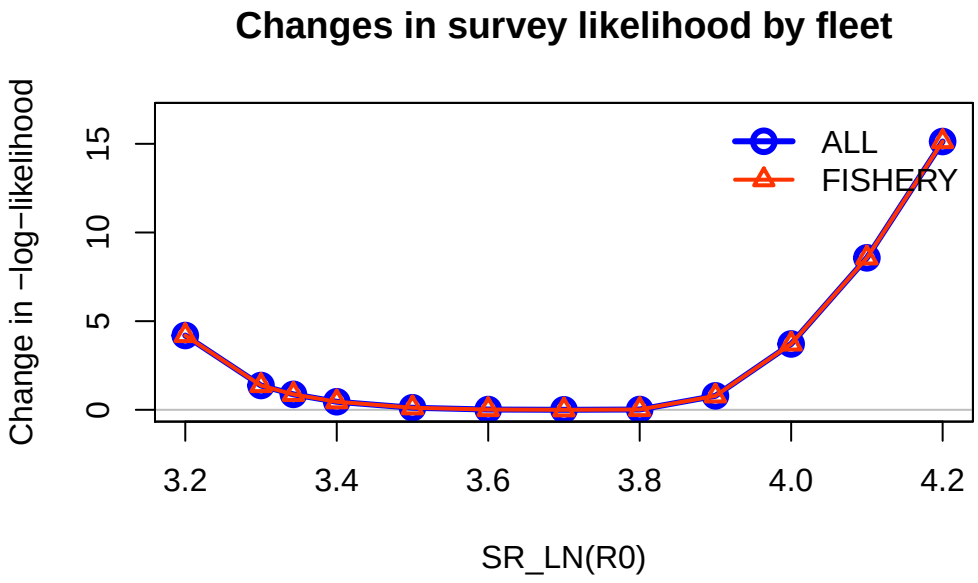
Likelihood Profile

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

	frac_change	include	label
TOTAL	1.0000	TRUE	Total
Catch	0.0495	TRUE	Catch
Equil_catch	0.0000	FALSE	Equilibrium catch
Survey	0.2465	TRUE	Index data
Length_comp	0.7917	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	0.0096	FALSE	Priors

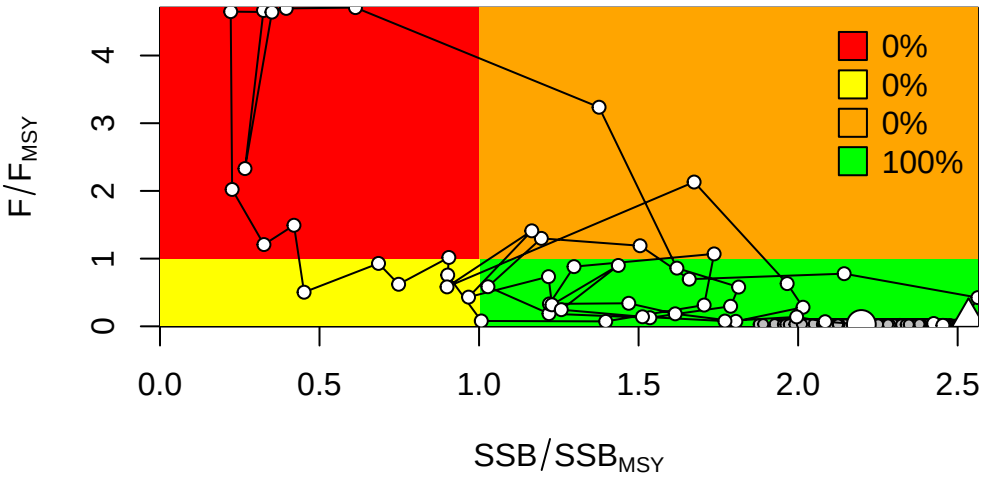
```
Parm_softbounds          0.0002   FALSE                  Soft bounds
Parm_devs                0.0000   FALSE        Parameter deviations
Crash_Pen                0.0000   FALSE                Crash penalty
```

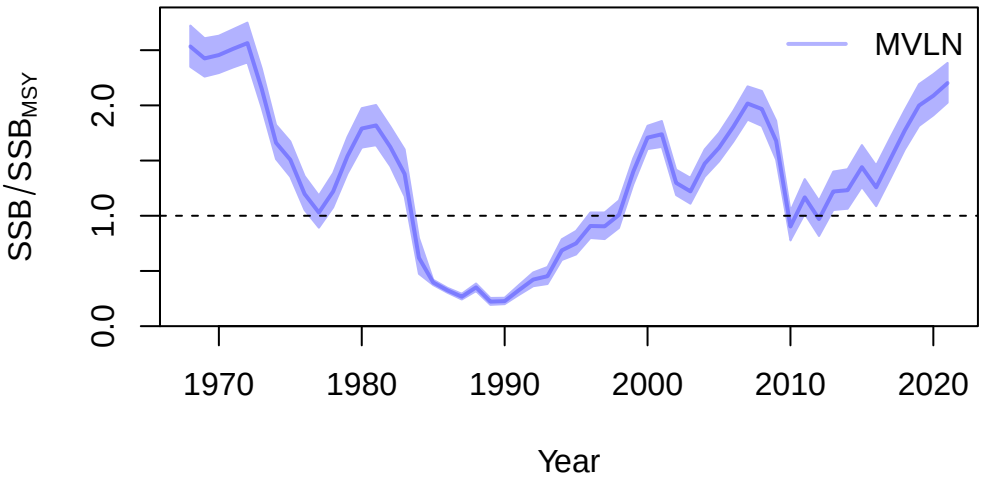


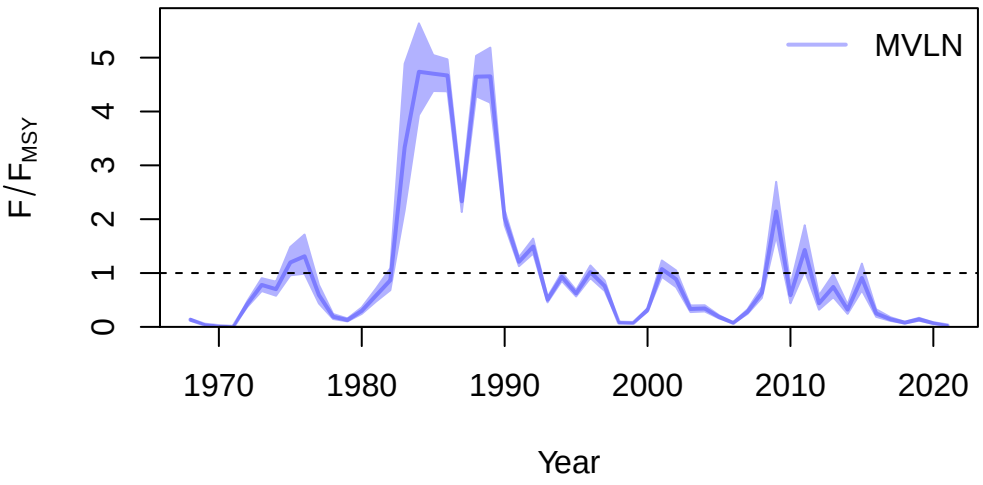


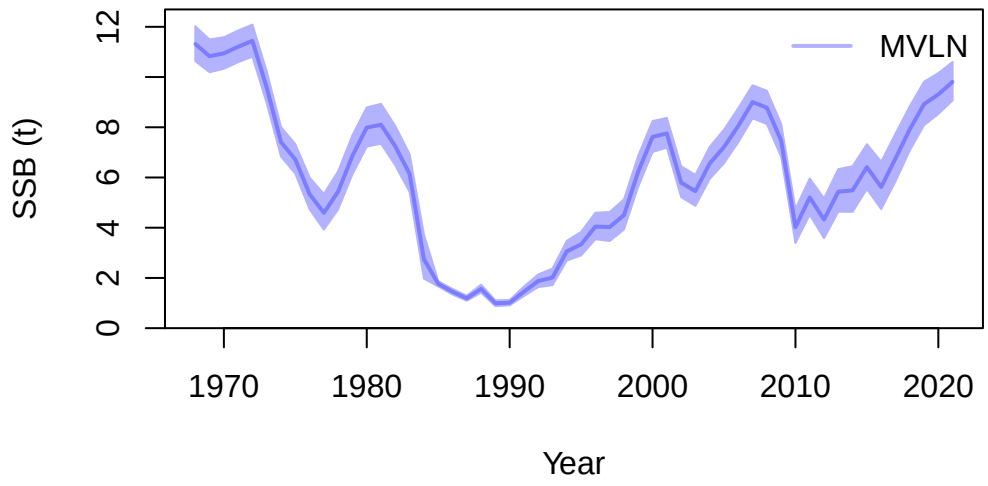
Management Quantities

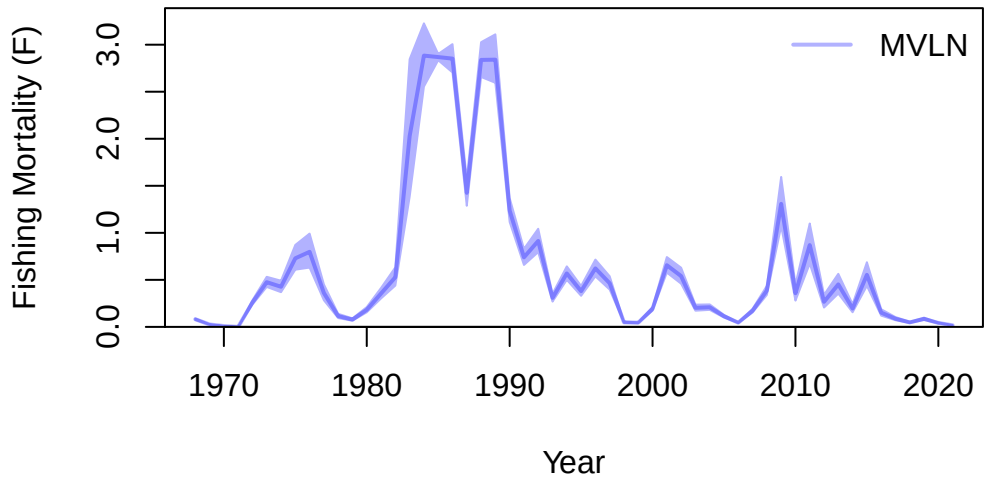
starter.sso with Bratio: SSB/SSBMSY and F: _abs_F



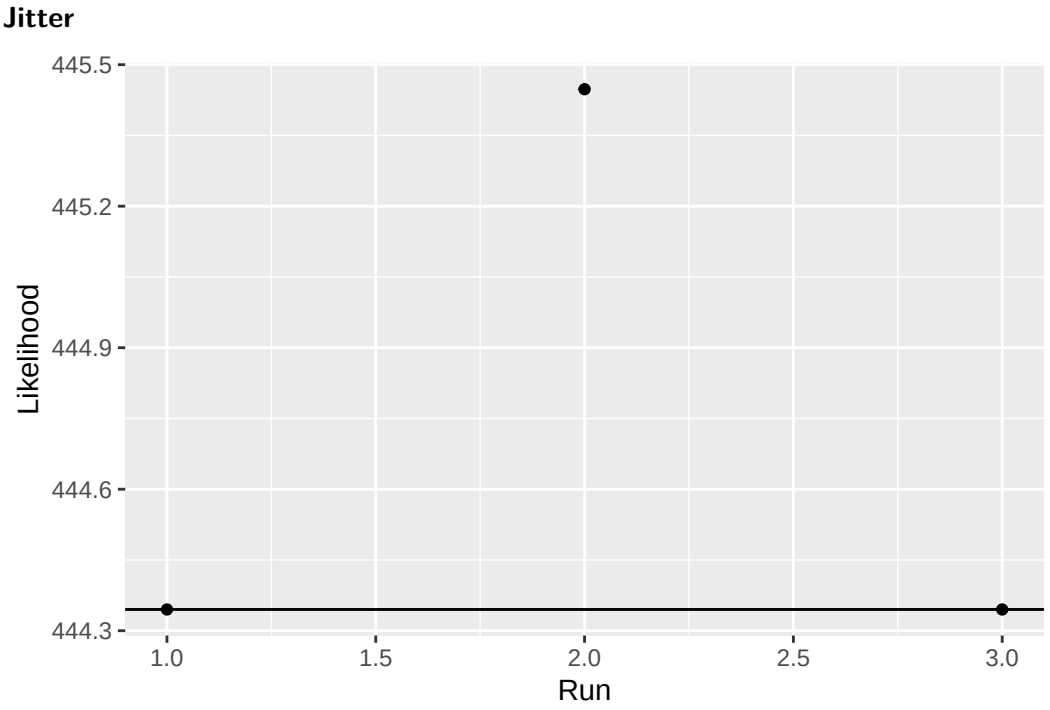

MVLN
SSB/SSB$_{MSY}$
0.0
1.0
2.0
1970
1980
1990
2000
2010
2020
Year

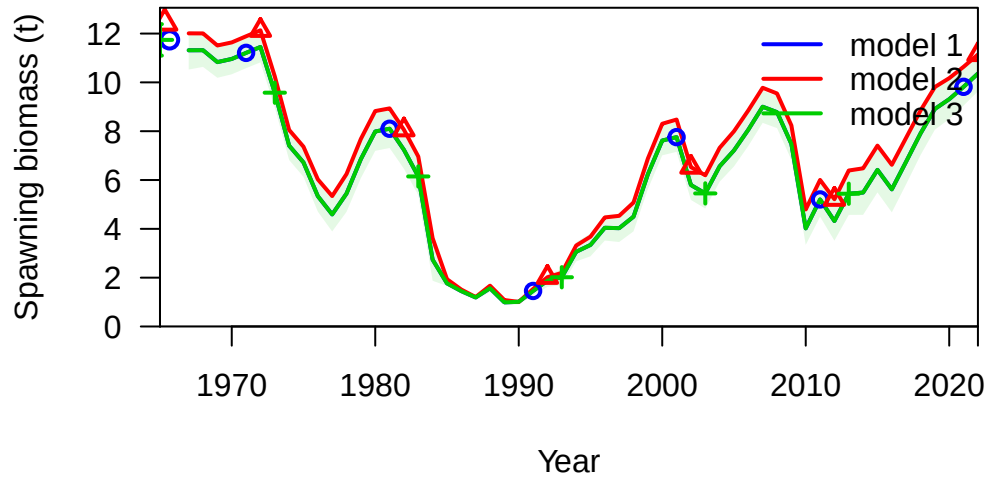

MVLN
F/F$_{MSY}$
0
1
2
3
4
5
1970
1980
1990
2000
2010
2020
Year

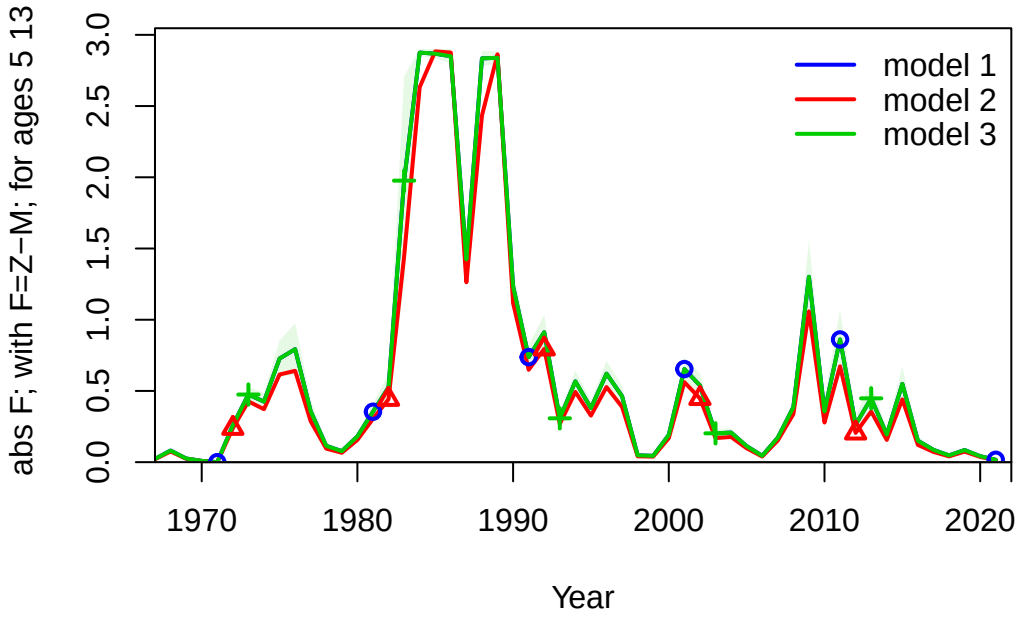


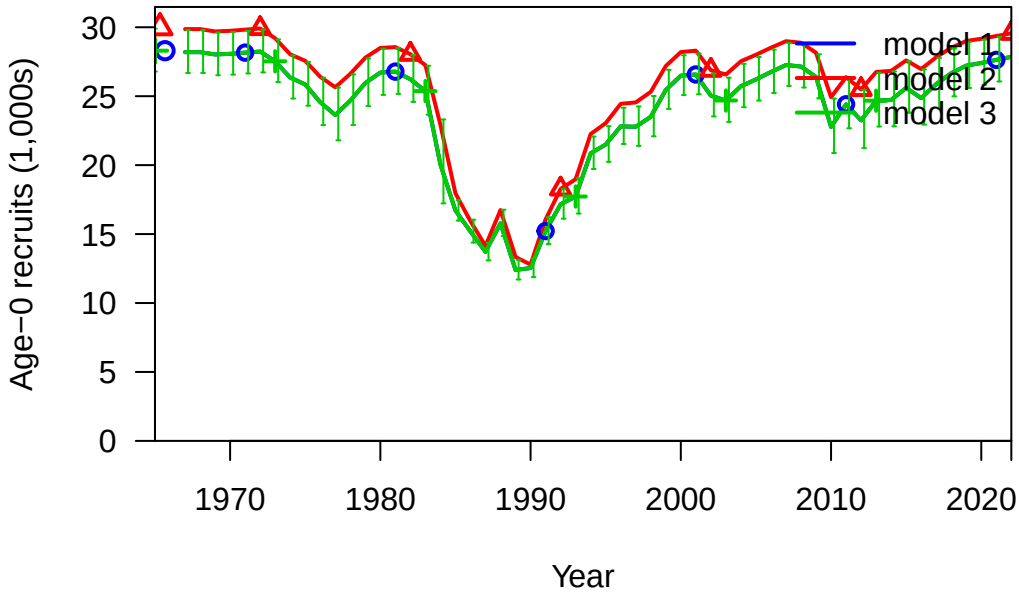



```
null device
          1
```


Jitter
445.5
445.2
444.9
444.6
444.3
Likelihood
1.0
1.5
2.0
2.5
3.0
Run


Spawning biomass (t)
0
2
4
6
8
10
12
1970
1980
1990
2000
2010
2020
Year
model 1
model 2
model 3


abs F; with F=Z−M; for ages 5 13
0.0
0.5
1.0
1.5
2.0
2.5
3.0
1970
1980
1990
2000
2010
2020
Year
model 1
model 2
model 3


Age−0 recruits (1,000s)
0
5
10
15
20
25
30
1970
1980
1990
2000
2010
2020
Year
model 1
model 2
model 3