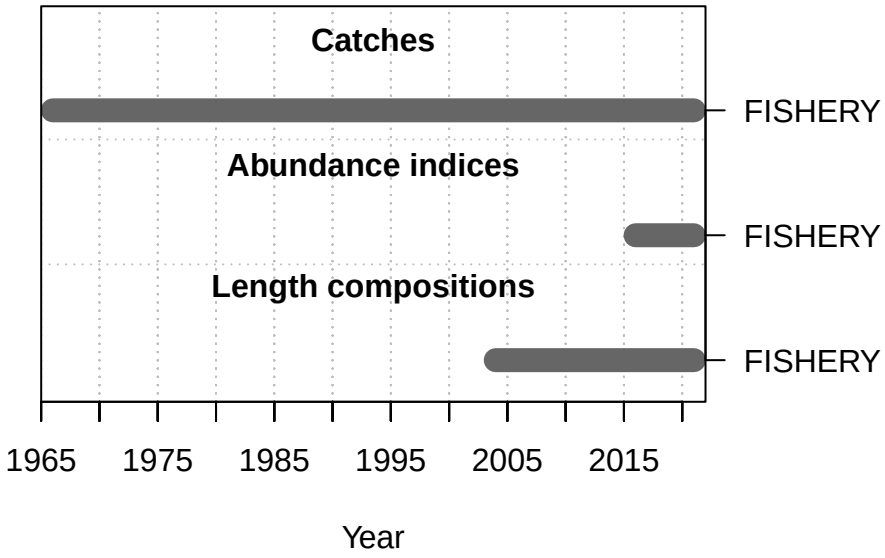
American Samoa Model Checks

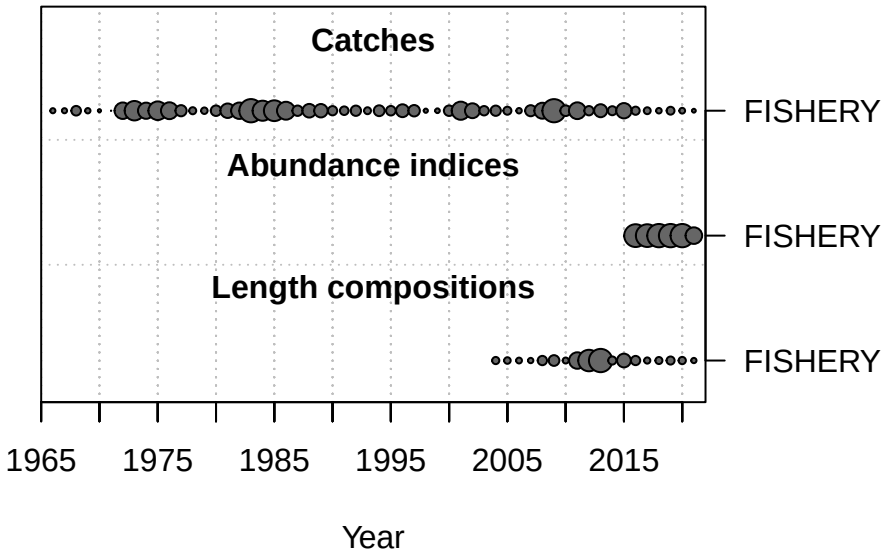
2022-09-02

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

Model Output

Input Data





Convergence Check

```
  Converged     MaxGrad
1      TRUE 0.000375432
```

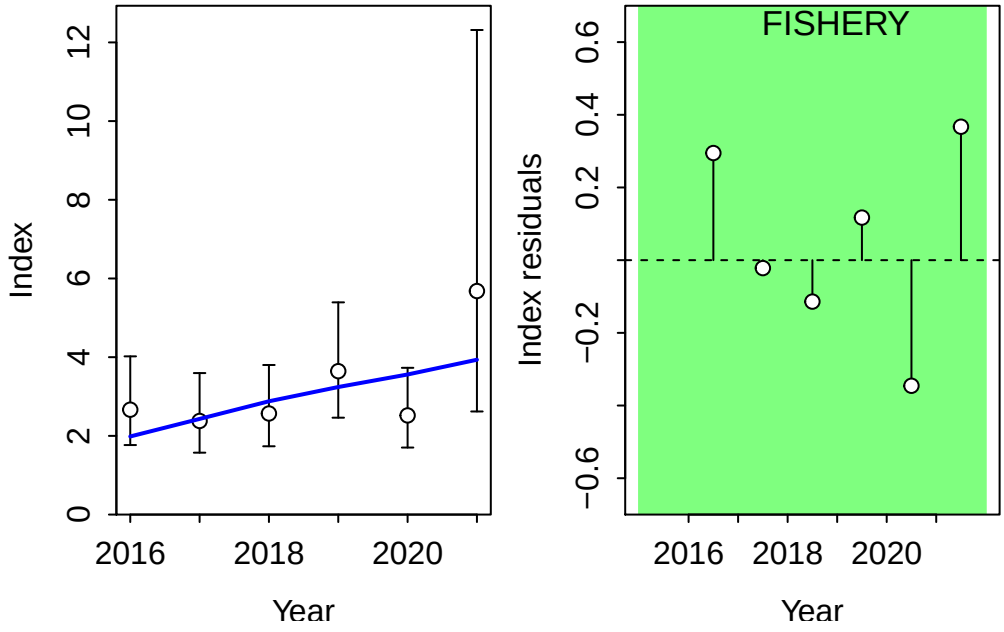
```
[1] "1 NOTE:  Max data length bin: 38.5  < max pop len bins: 43; so will accumulate larger p
[2] "2 Final gradient: 0.000375432 is larger than final_conv: 0.0001"
[3] "N warnings: 2"
```

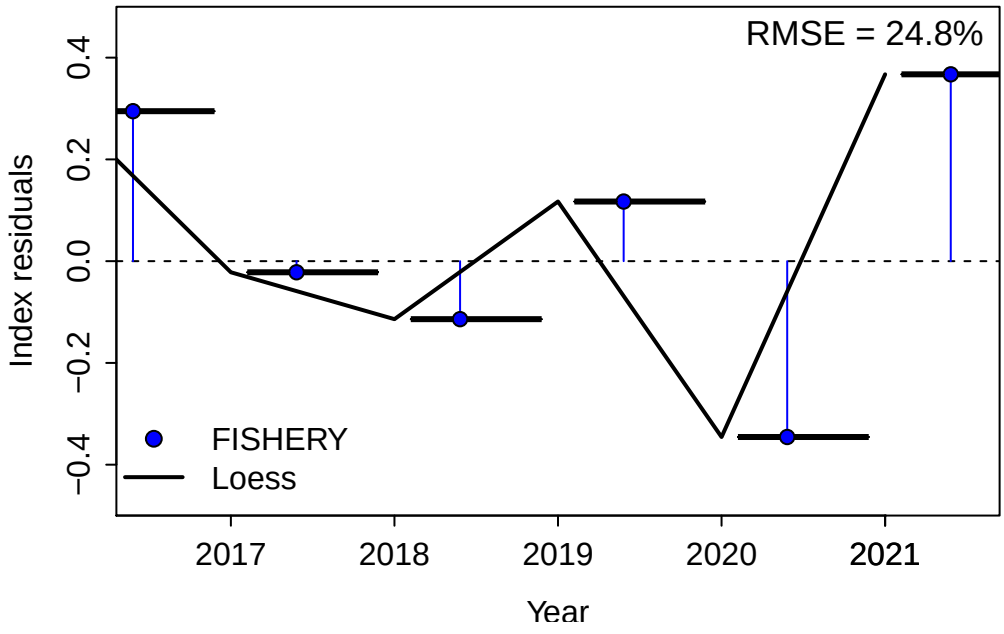
Fit to Model

CPUE

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

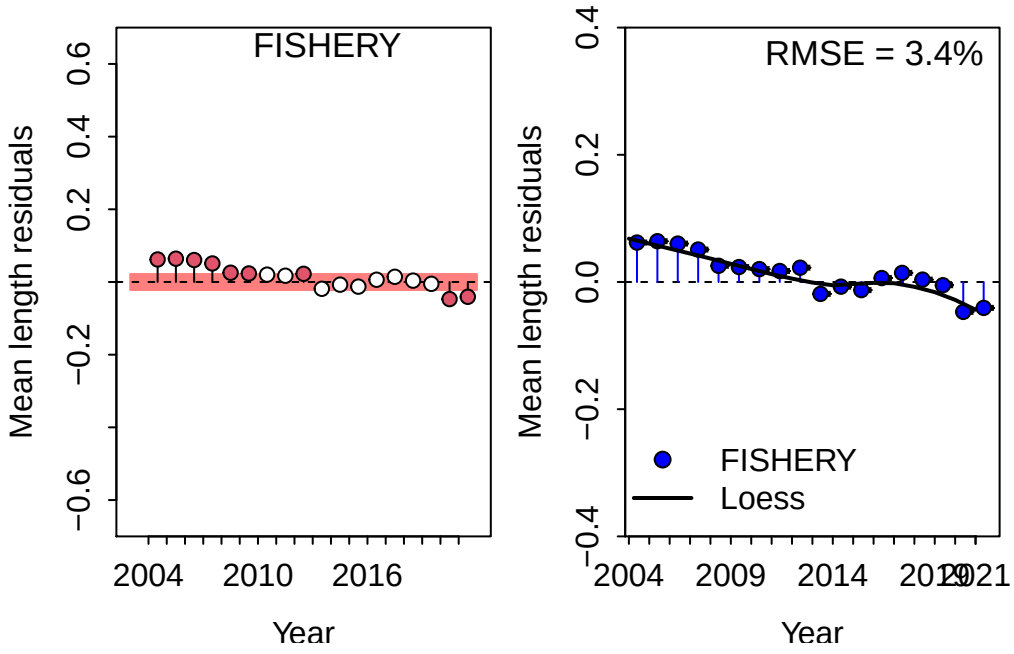
```
RMSE stats by Index:
```


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

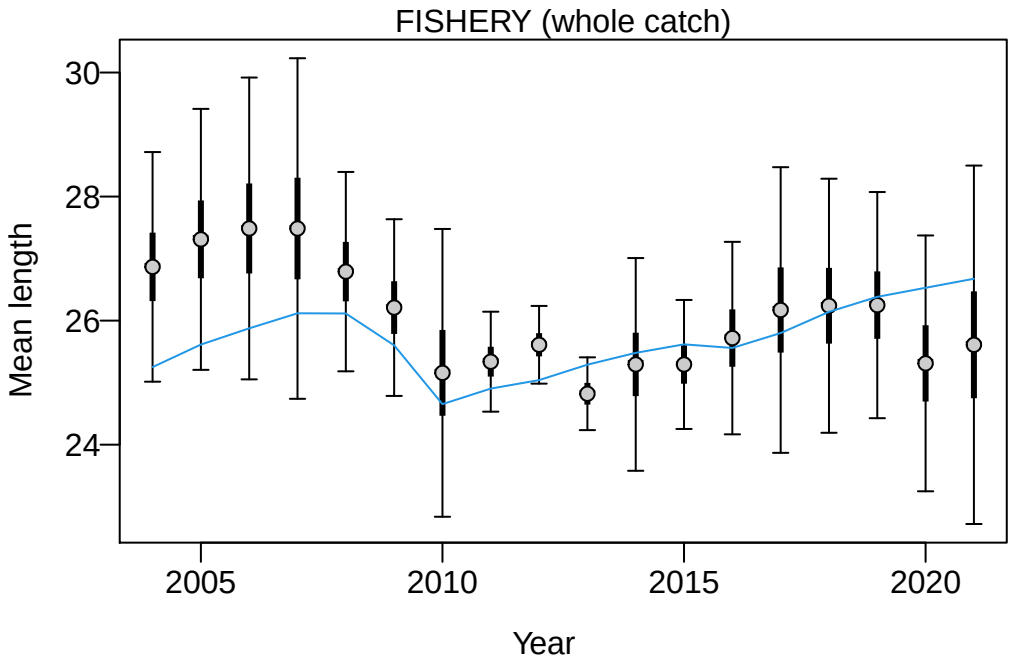

RMSE = 24.8%
Index residuals
−0.4
−0.2
0.0
0.2
0.4
FISHERY
Loess
2017
2018
2019
2020
2021
Year

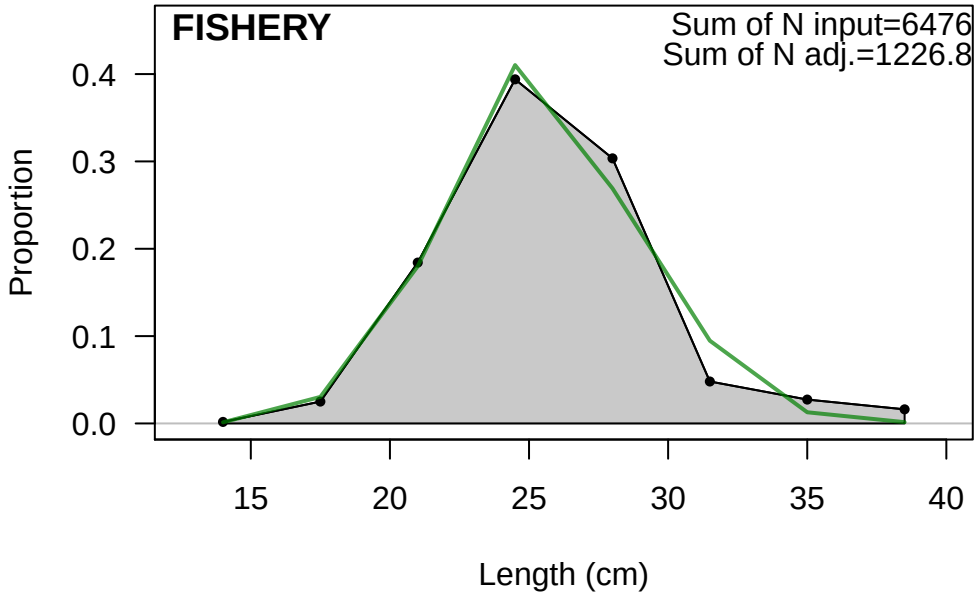
Length Comp

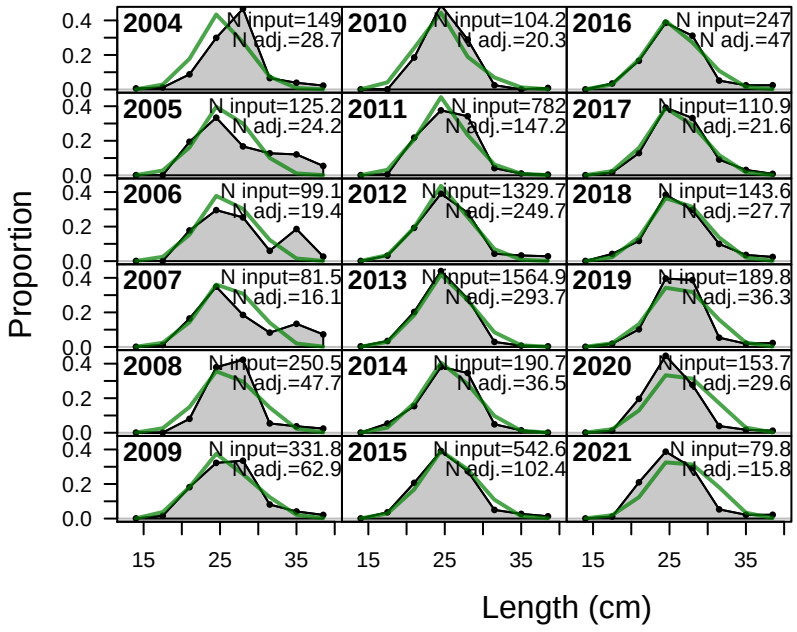
```
Residual Runs Test (/w plot) stats by Mean length:

    Index runs.p   test   sigma3.lo  sigma3.hi type
1 FISHERY  0.003 Failed -0.02190422 0.02190422  len

RMSE stats by Index:

# A tibble: 2 x 3
  Fleet    RMSE.perc  Nobs
  <chr>        <dbl> <int>
1 FISHERY        3.4    18
2 Combined       3.4    18
```



Retrospective and Hindcasting

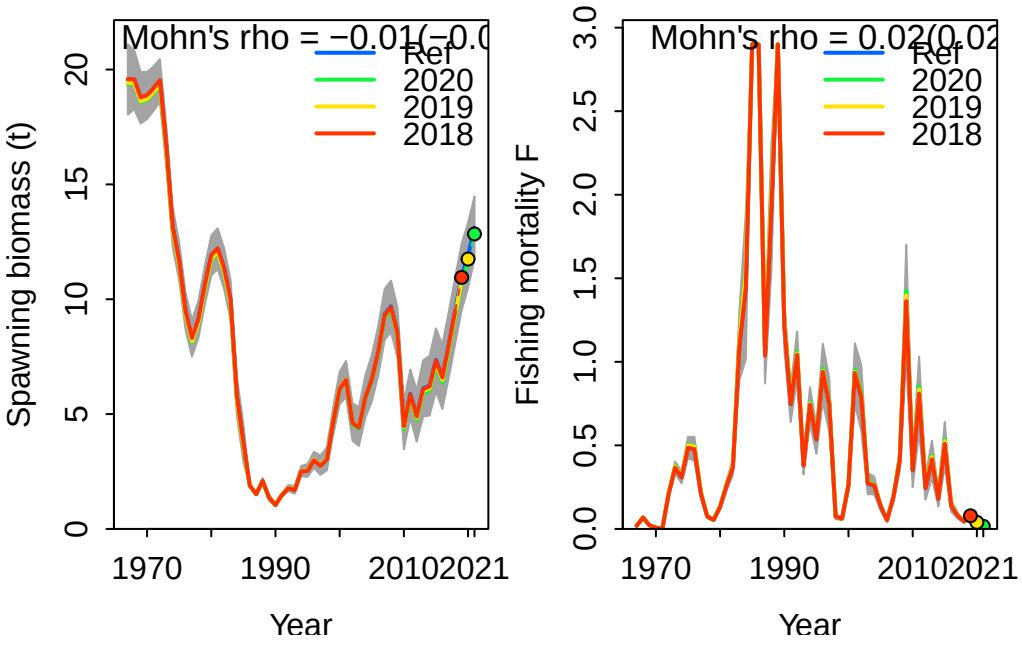

FISHERY (whole catch)
Mean length
30
28
26
24
2005
2010
2015
2020
Year


FISHERY
Sum of N input=6476
Sum of N adj.=1226.8
Proportion
0.4
0.3
0.2
0.1
0.0
15
20
25
30
35
40
Length (cm)



Retrospective

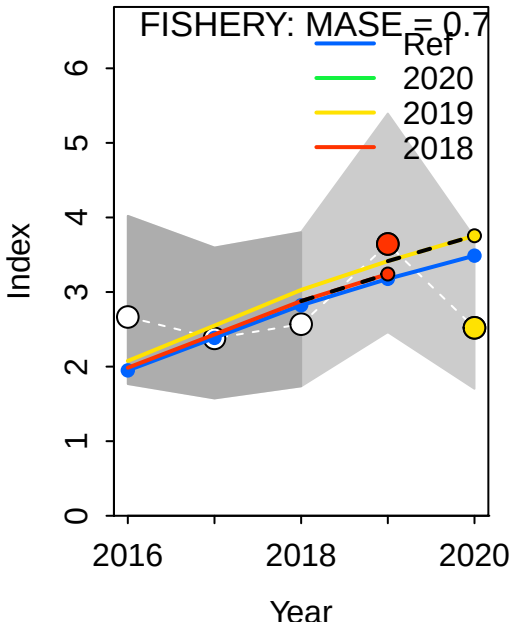
`Mohn's Rho stats, including one step ahead forecasts:`



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

  type     peel          Rho ForecastRho
1    F     2020 0.0337938109 0.030635535
2    F     2019 0.0237397592 0.022210709
3    F     2018 0.0009966732 0.000529048
4    F Combined 0.0195100811 0.017791764
```

Hindcasting

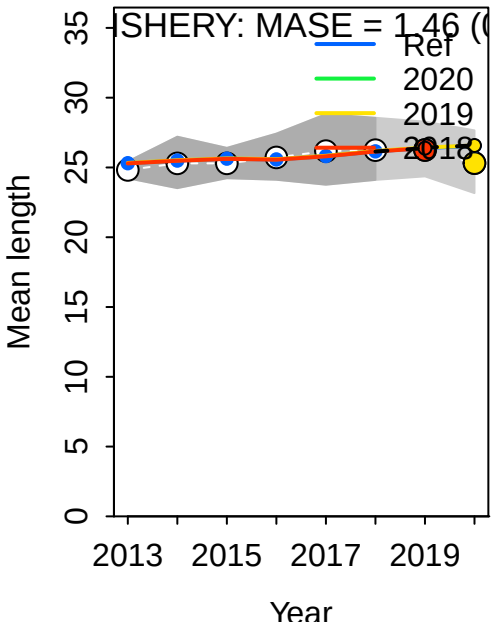
```
Plotting Hindcast Cross-Validation (one-step-ahead)

 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:
```



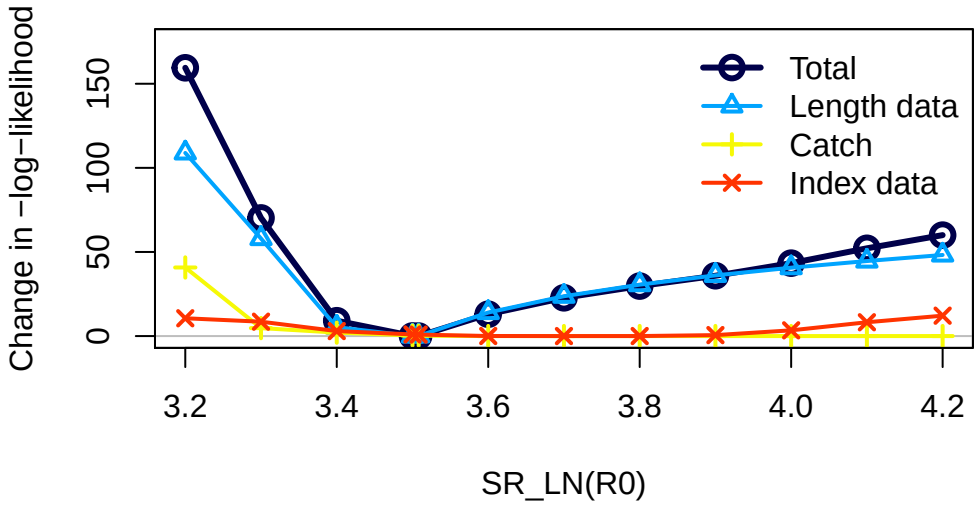
Recruitment Deviations

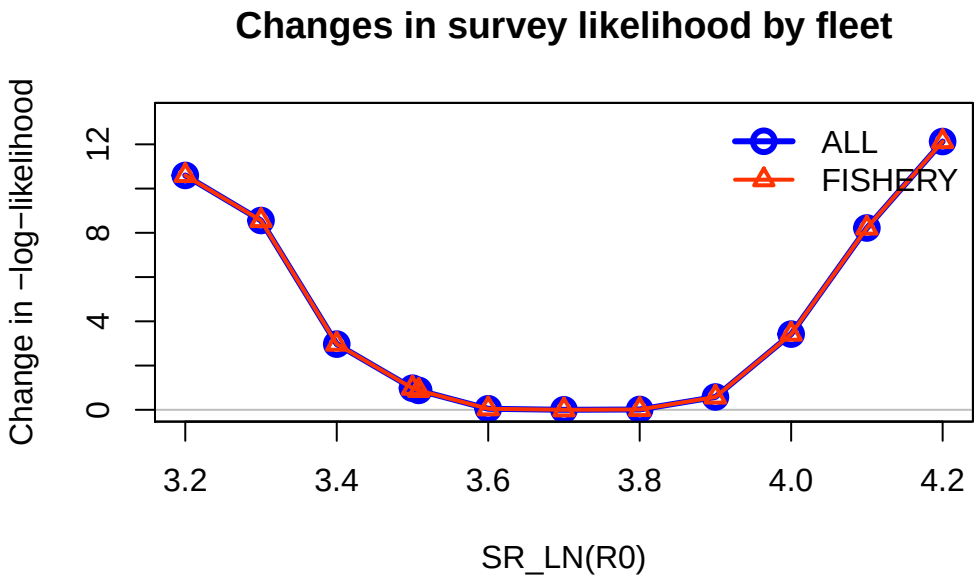
Likelihood Profile

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

	frac_change	include	label
TOTAL	1.0000	TRUE	Total
Catch	0.2557	TRUE	Catch
Equil_catch	0.0006	FALSE	Equilibrium catch
Survey	0.0760	TRUE	Index data
Length_comp	0.6827	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	0.0056	FALSE	Priors

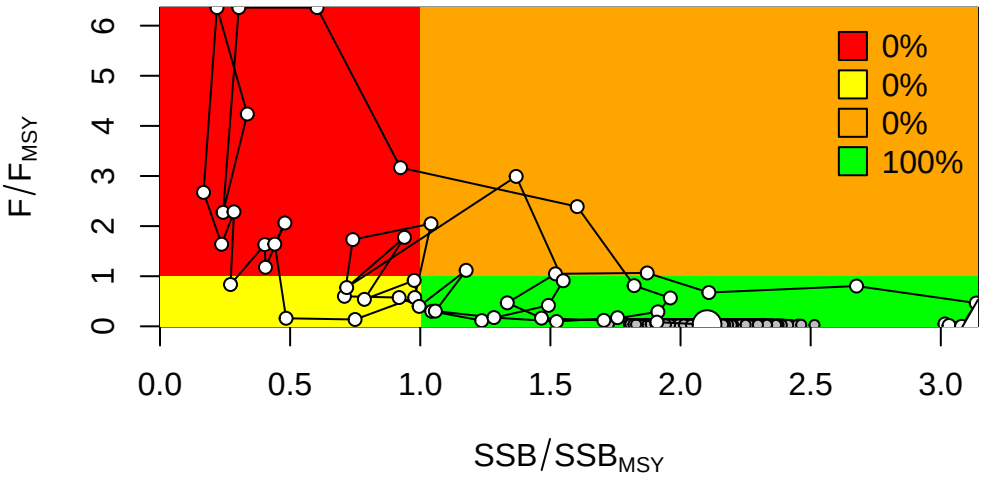
```
Parm_softbounds          0.0001   FALSE                    Soft bounds
Parm_devs                0.0000   FALSE          Parameter deviations
Crash_Pen                0.0000   FALSE                  Crash penalty
```

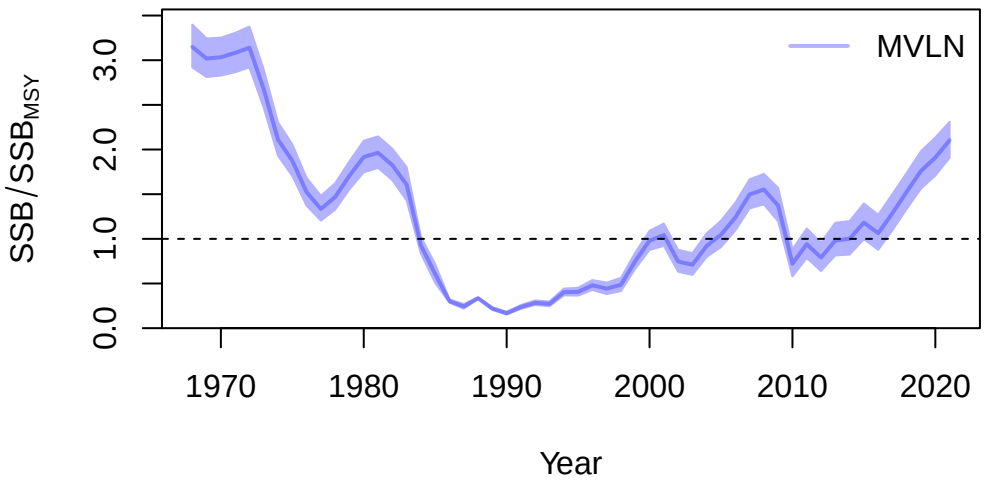


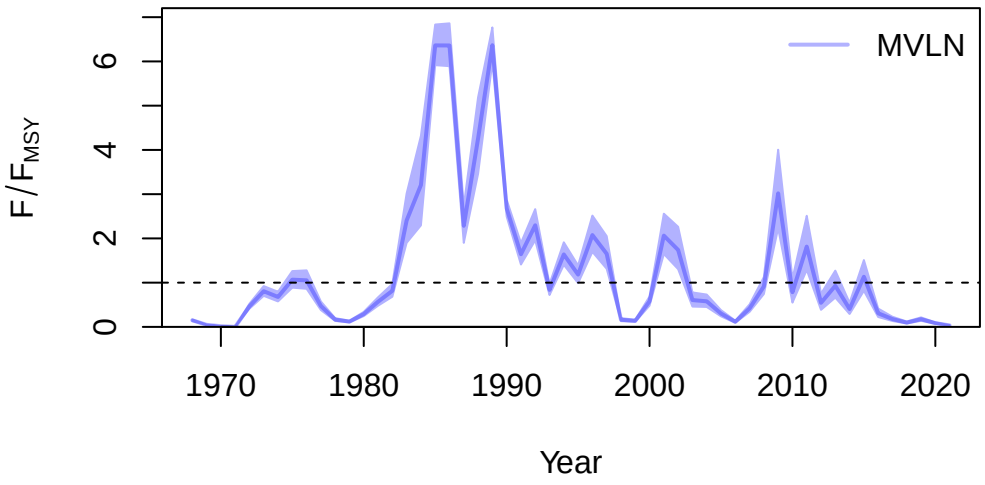


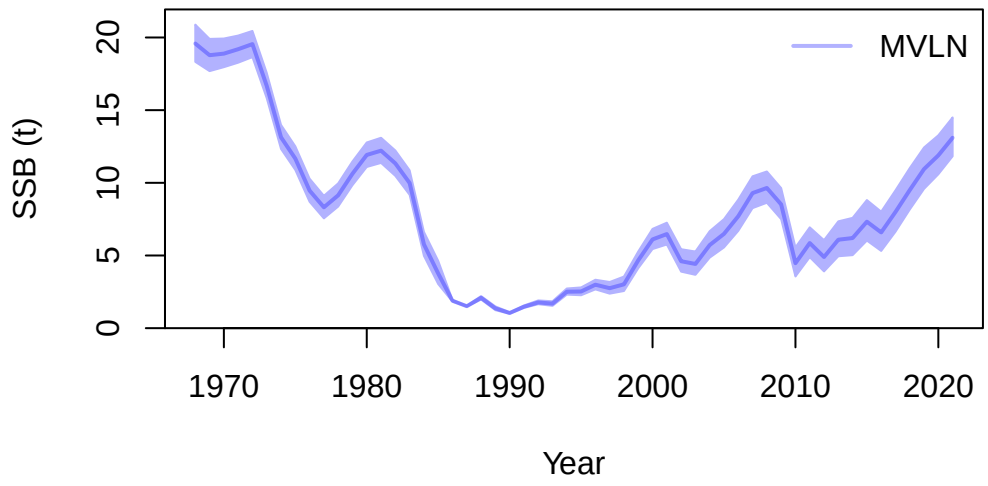
Management Quantities

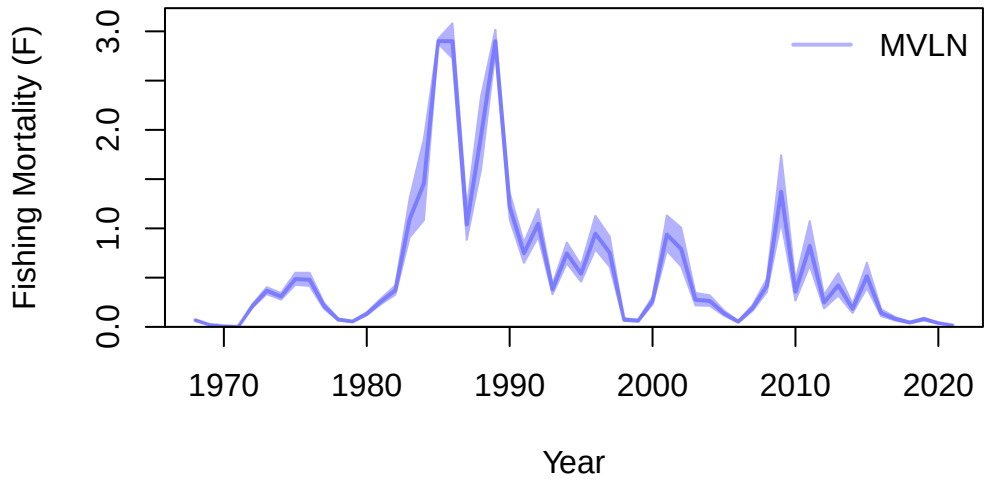
`starter.sso with Bratio: SSB/SSBMSY and F: _abs_F`




MVLN
SSB/SSB$_{MSY}$
0.0
1.0
2.0
3.0
1970
1980
1990
2000
2010
2020
Year

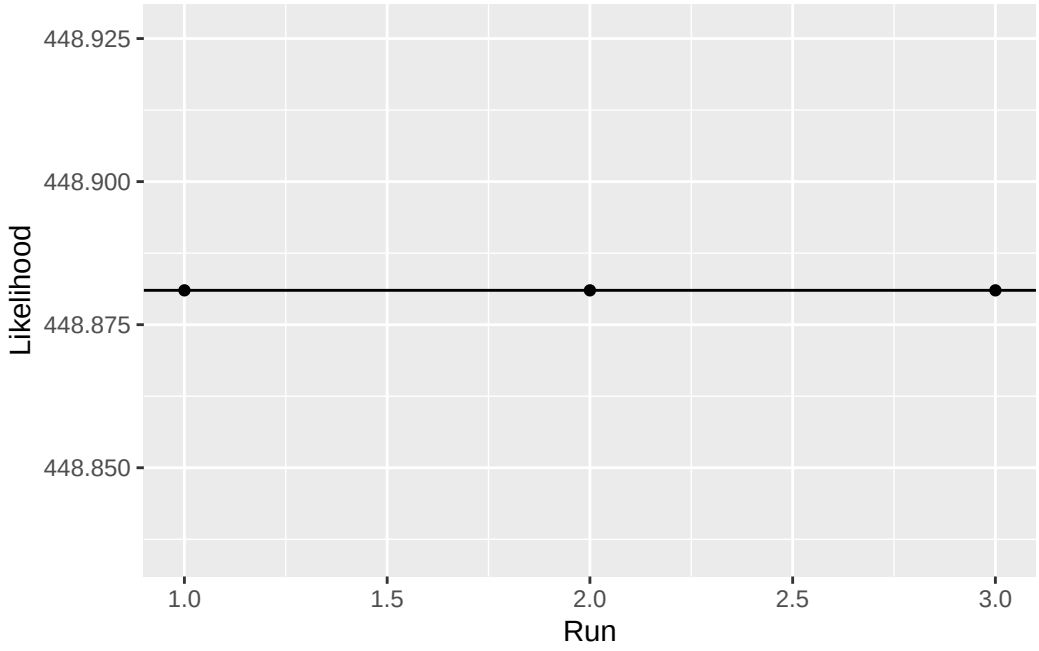

MVLN
F/F$_{MSY}$
0
2
4
6
1970
1980
1990
2000
2010
2020
Year

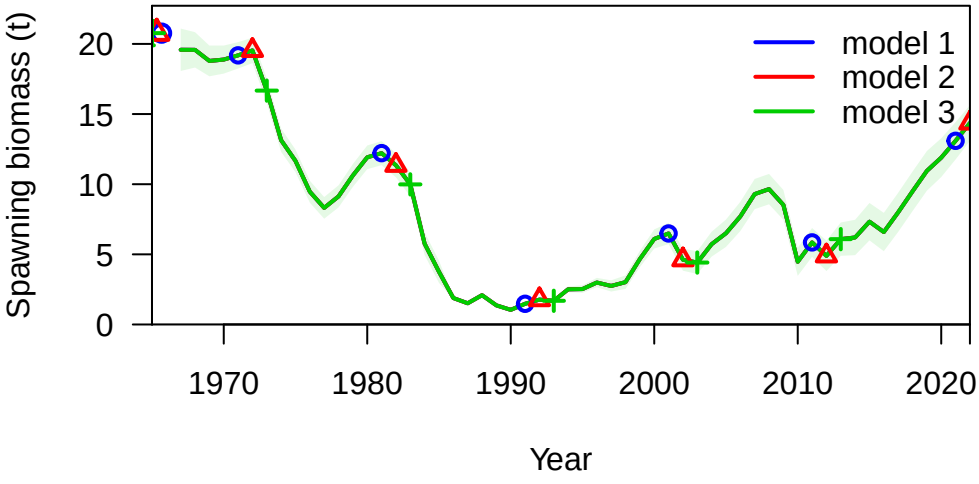


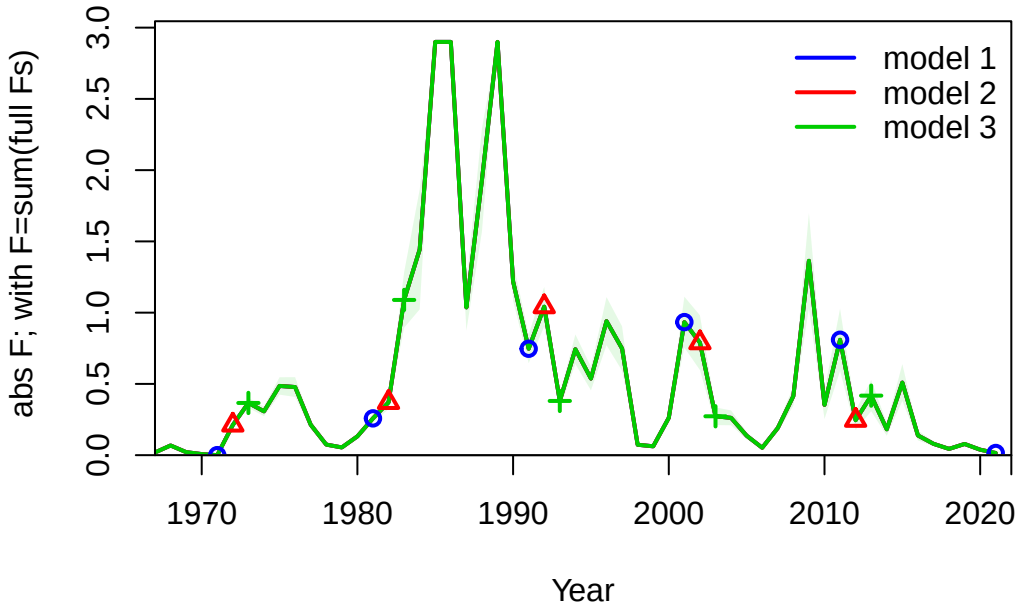


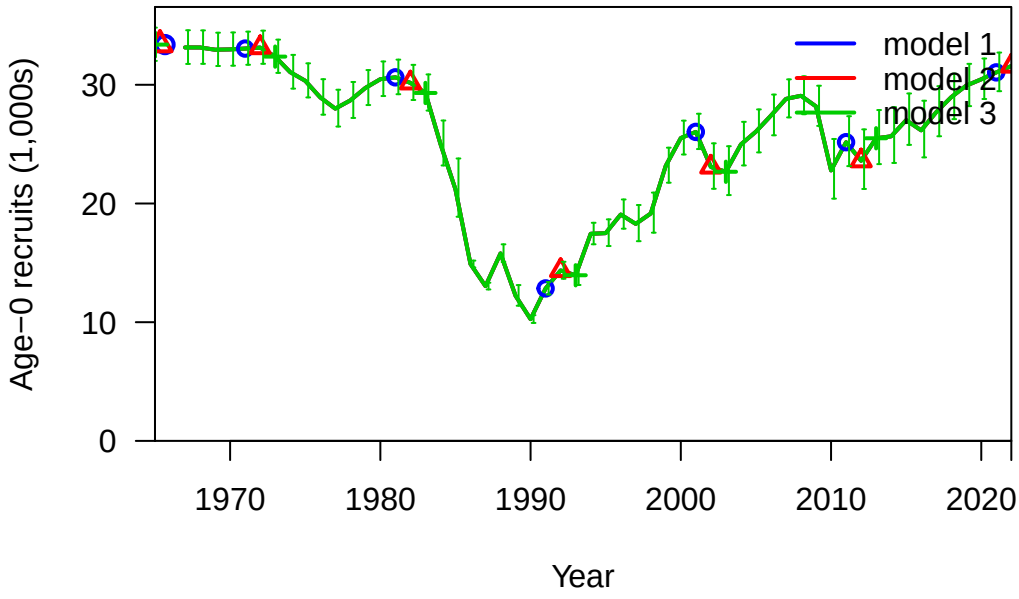

```
null device
          1
```

Jitter


448.925
448.900
448.875
448.850
Likelihood
1.0
1.5
2.0
2.5
3.0
Run


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


abs F; with F=sum(full Fs)
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
10
20
30
1970
1980
1990
2000
2010
2020
Year
model 1
model 2
model 3