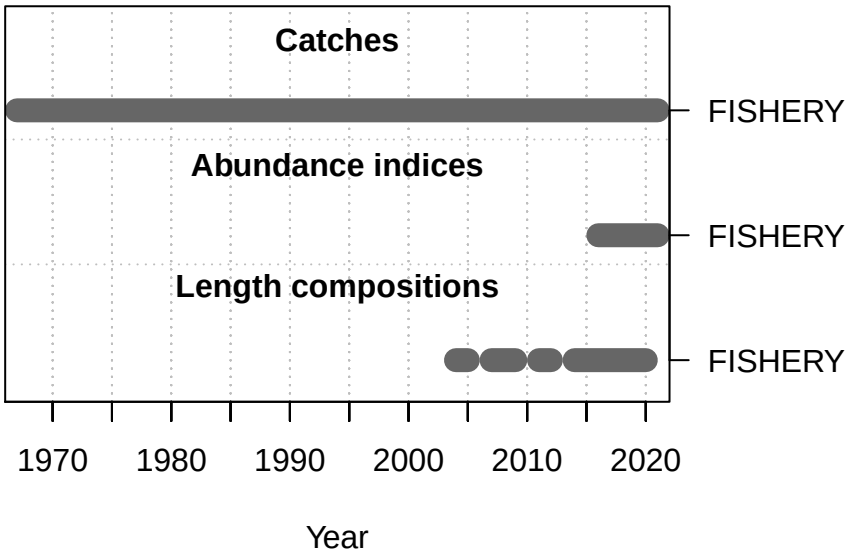
American Samoa Model Checks

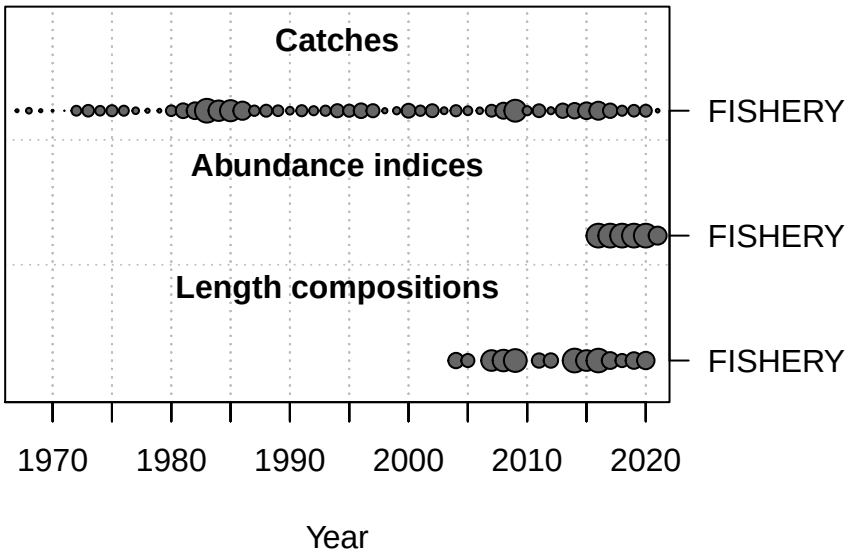
2022-08-28

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

Model Output

Input Data





Convergence Check

```
  Converged     MaxGrad
1      TRUE 7.98377e-06
```

```
[1] "1 NOTE:  Max data length bin: 85  < max pop len bins: 94; so will accumulate larger pop
[2] "N warnings: 1"
```

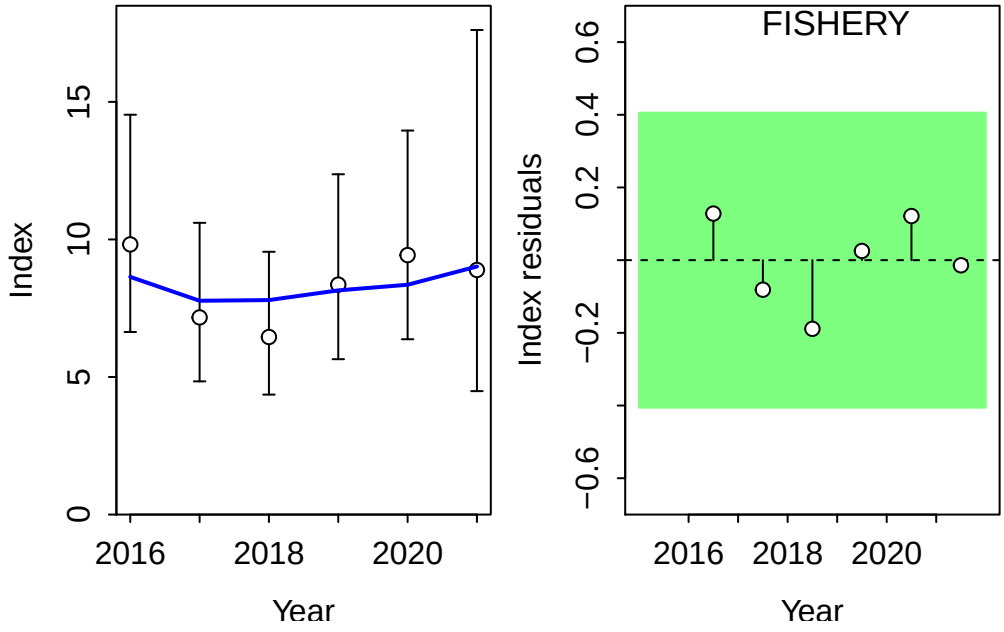
Fit to Model

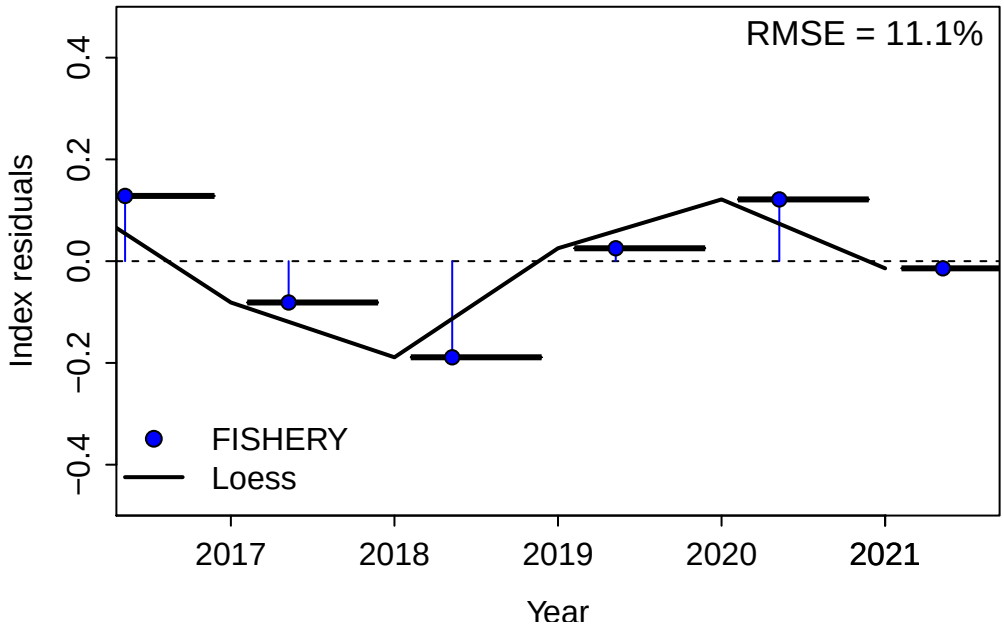
CPUE

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

```
RMSE stats by Index:
```

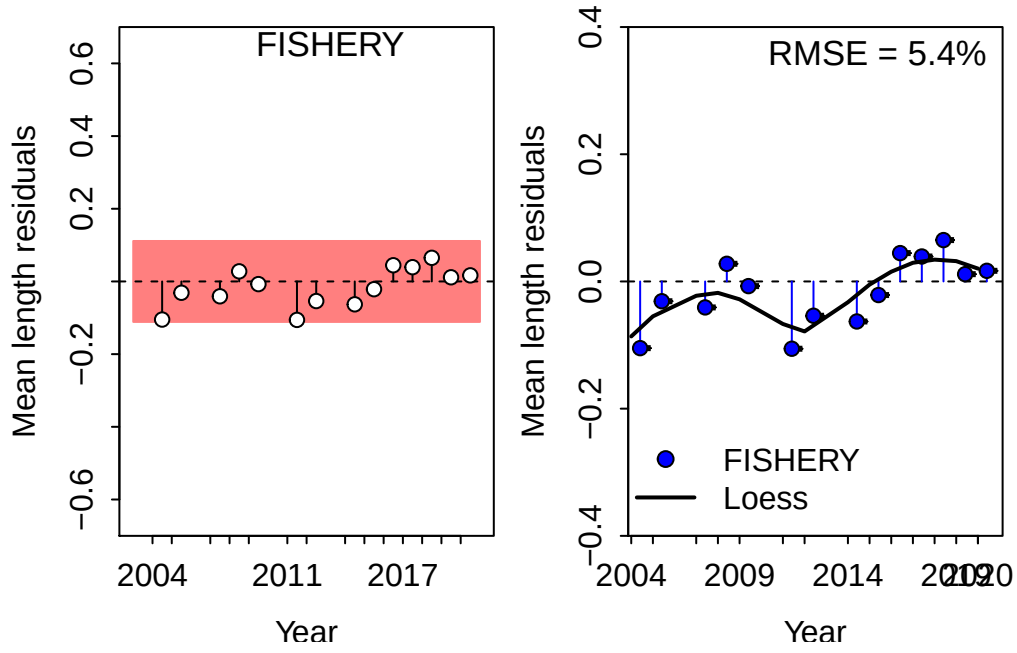
Length Comp


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

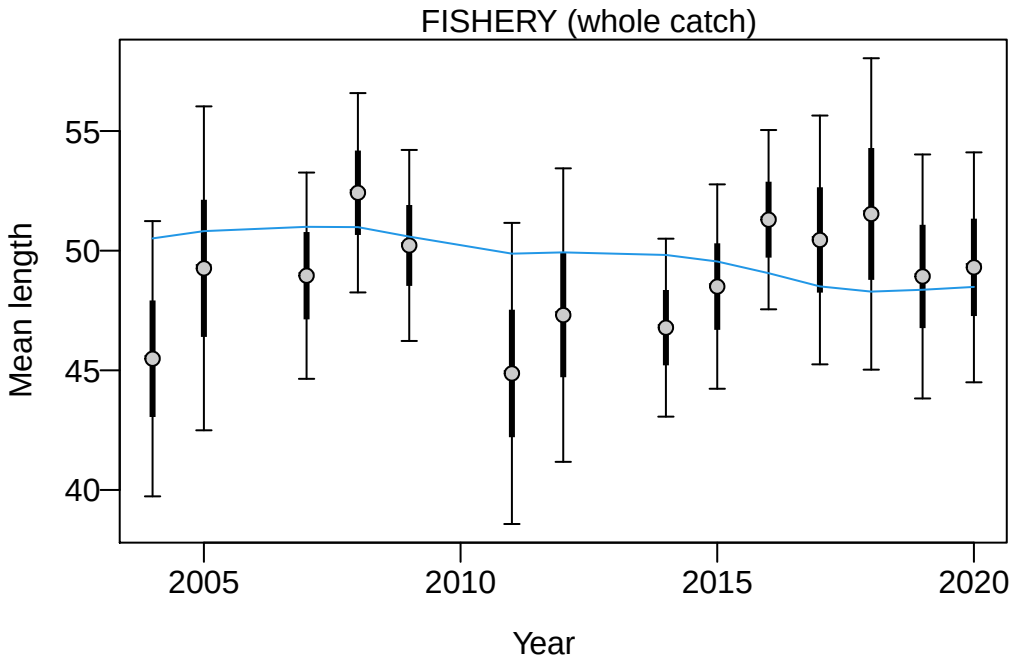

RMSE = 11.1%
Index residuals
0.4
0.2
0.0
−0.2
−0.4
FISHERY
Loess
2017
2018
2019
2020
2021
Year

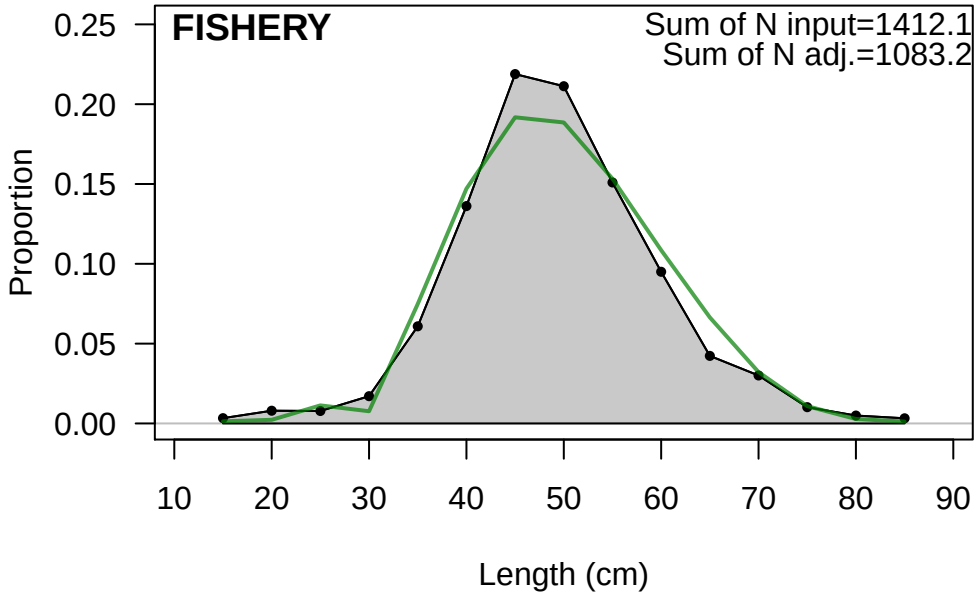
#Factor	Fleet	New_Var_adj	Type	Name
4	1	0.179271	len	FISHERY

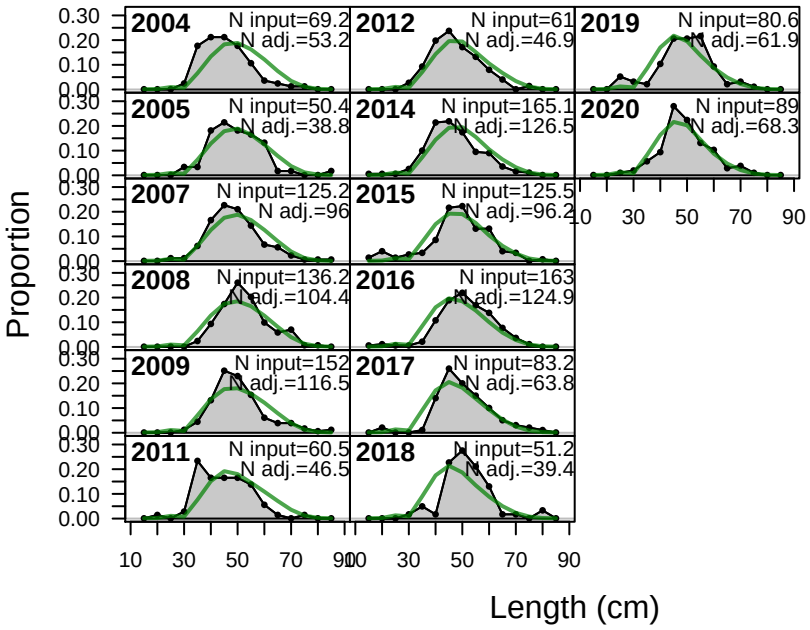
```
Residual Runs Test (/w plot) stats by Mean length:

    Index runs.p   test  sigma3.lo sigma3.hi type
1 FISHERY  0.014 Failed -0.1113023 0.1113023  len

RMSE stats by Index:

# A tibble: 2 x 3
  Fleet    RMSE.perc  Nobs
  <chr>        <dbl> <int>
1 FISHERY        5.4    14
2 Combined       5.4    14
```



Retrospective and Hindcasting

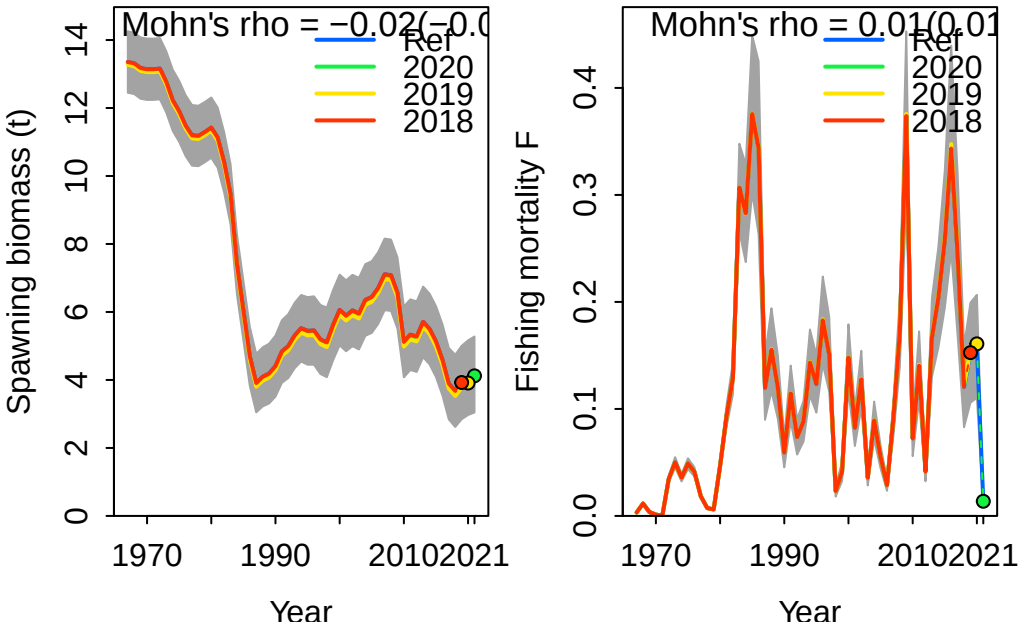

FISHERY (whole catch)
Mean length
55
50
45
40
2005
2010
2015
2020
Year


FISHERY
Sum of N input=1412.1
Sum of N adj.=1083.2
Proportion
0.25
0.20
0.15
0.10
0.05
0.00
10
20
30
40
50
60
70
80
90
Length (cm)



Retrospective

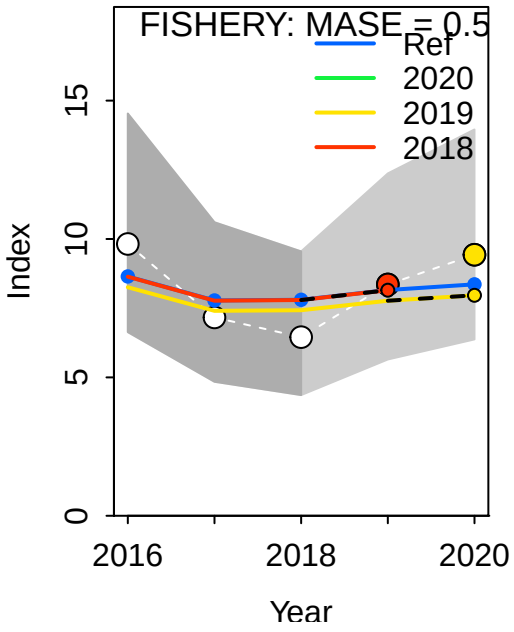
`Mohn's Rho stats, including one step ahead forecasts:`



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

  type     peel           Rho   ForecastRho
1    F     2020  0.0071949711  0.0069168074
2    F     2019  0.0150181830  0.0150021459
3    F     2018 -0.0001242462 -0.0001310487
4    F Combined  0.0073629693  0.0072626349
```

Hindcasting

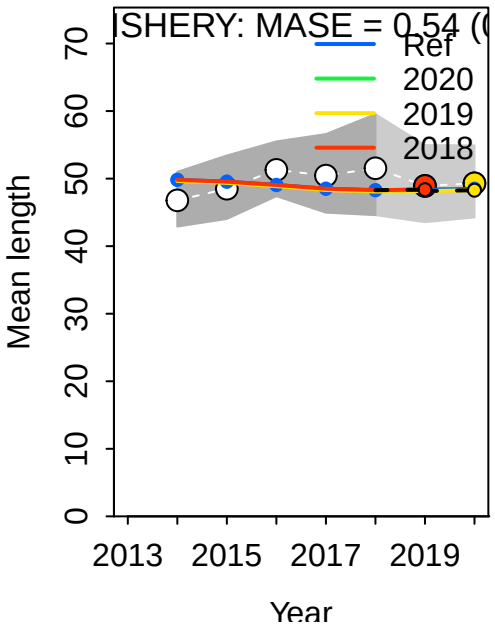
```
Plotting Hindcast Cross-Validation (one-step-ahead)

 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:
```



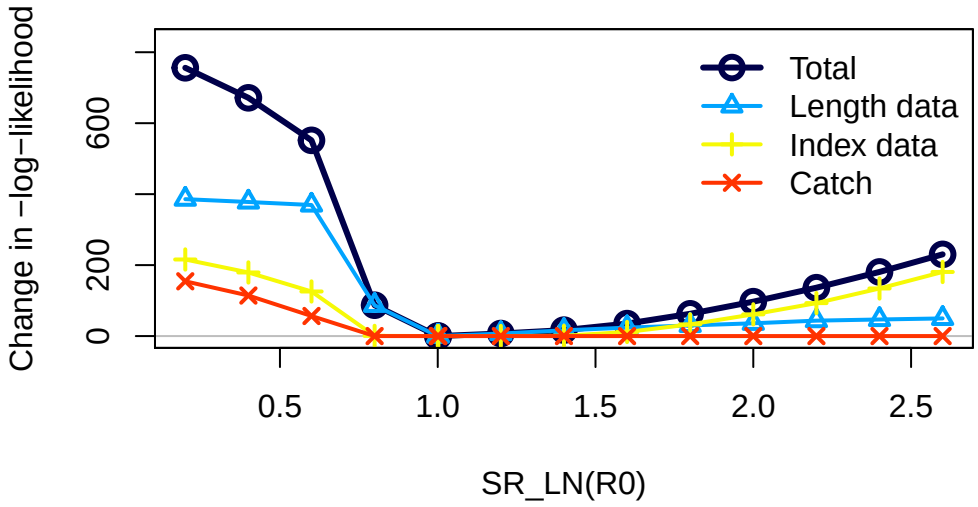
Recruitment Deviations

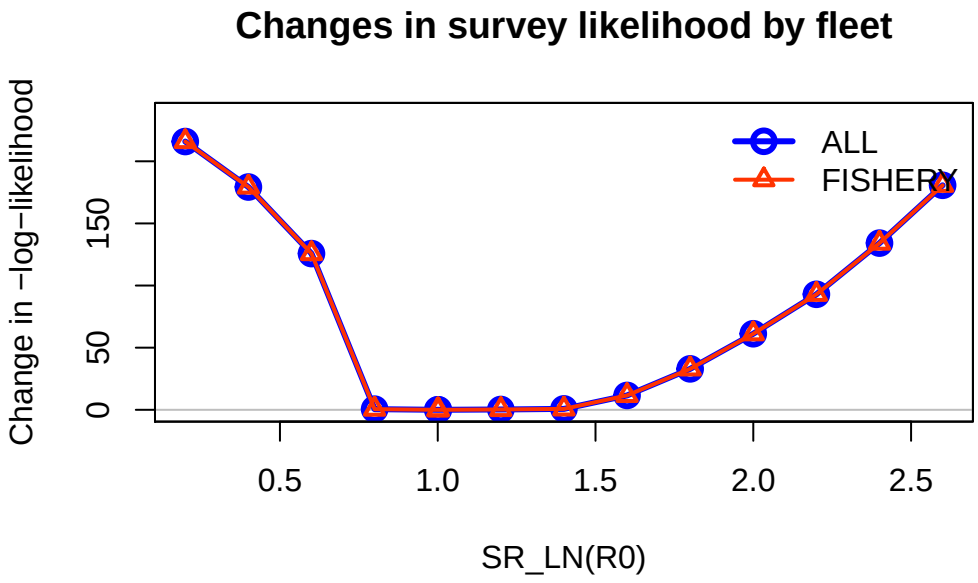
Likelihood Profile

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

	frac_change	include	label
TOTAL	1.0000	TRUE	Total
Catch	0.2042	TRUE	Catch
Equil_catch	0.0000	FALSE	Equilibrium catch
Survey	0.2855	TRUE	Index data
Length_comp	0.5103	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	0.0003	FALSE	Priors

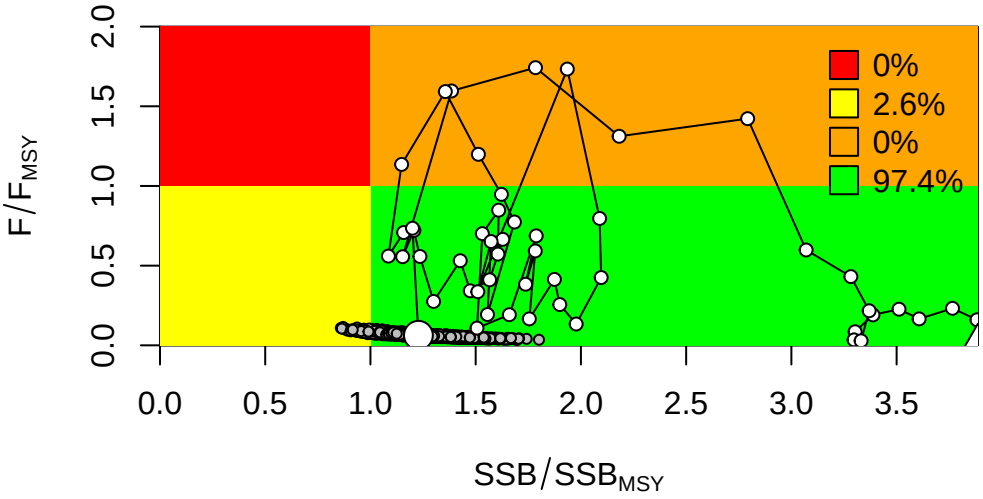
```
Parm_softbounds          0.0000   FALSE                  Soft bounds
Parm_devs                0.0000   FALSE        Parameter deviations
Crash_Pen                0.0000   FALSE                Crash penalty
```

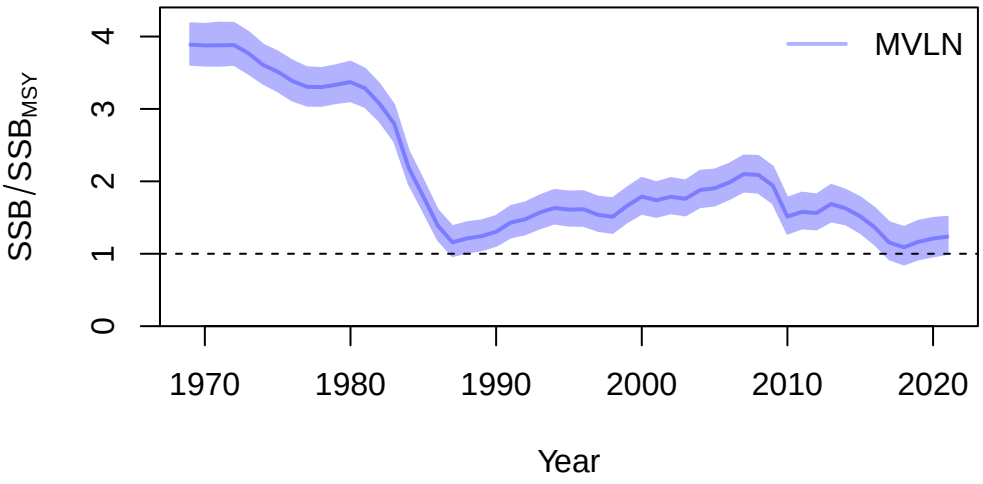


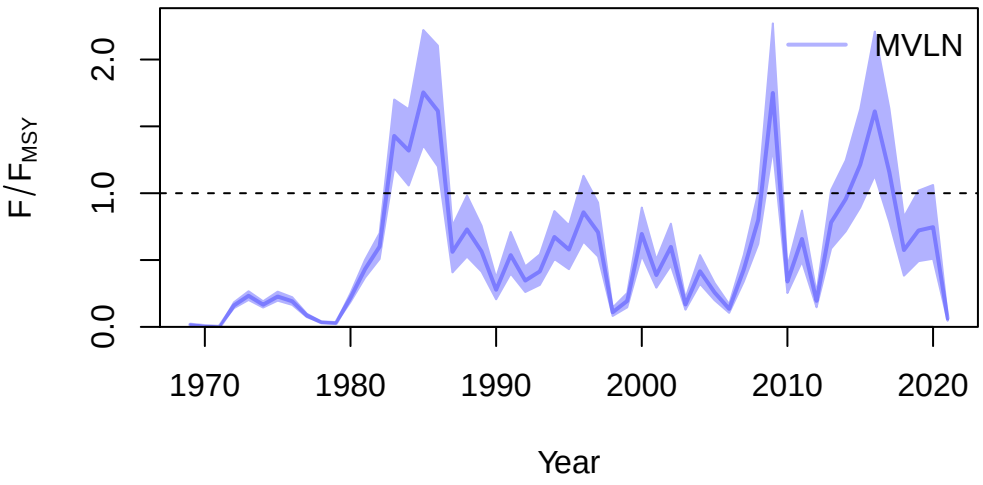


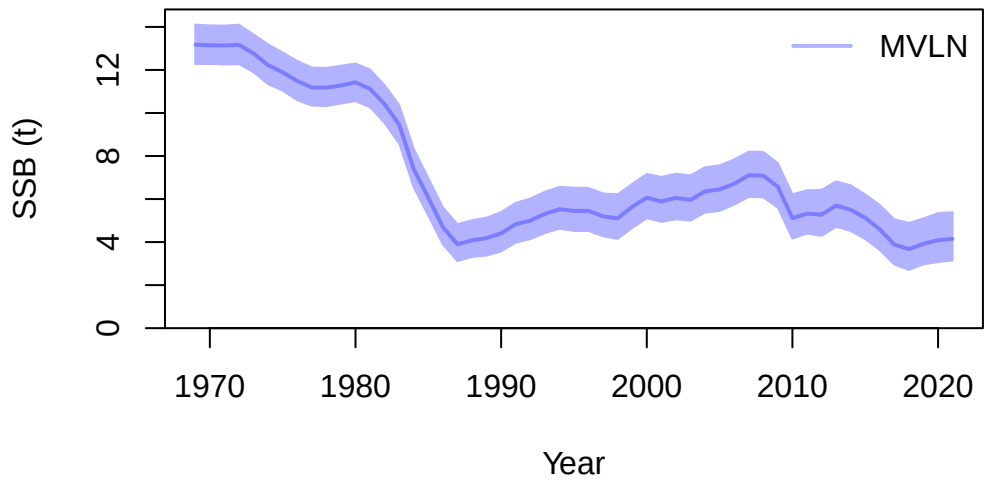
Management Quantities

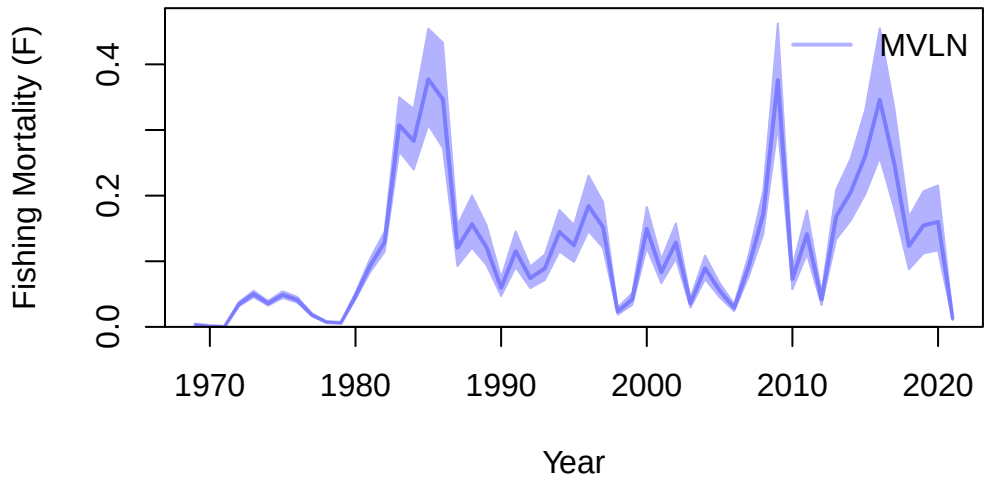
`starter.sso with Bratio: SSB/SSBMSY and F: _abs_F`




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

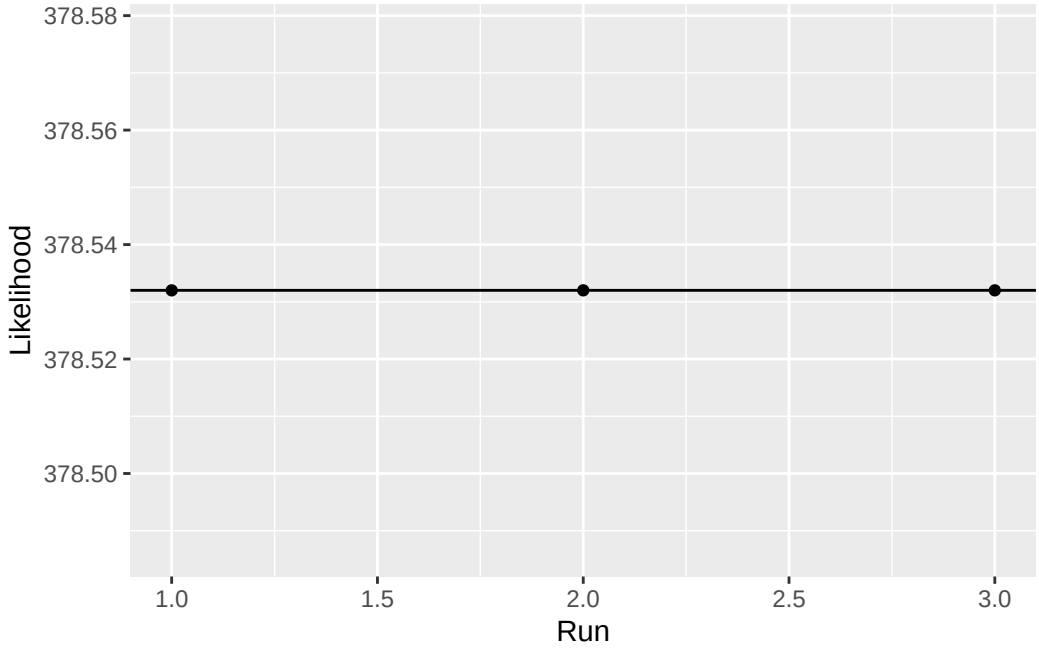

F/F$_{MSY}$
0.0
1.0
2.0
MVLN
1970
1980
1990
2000
2010
2020
Year

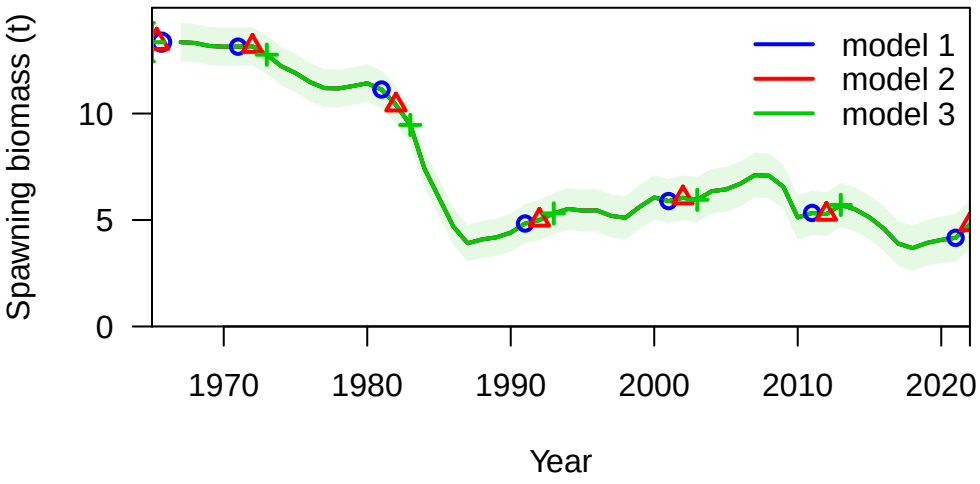


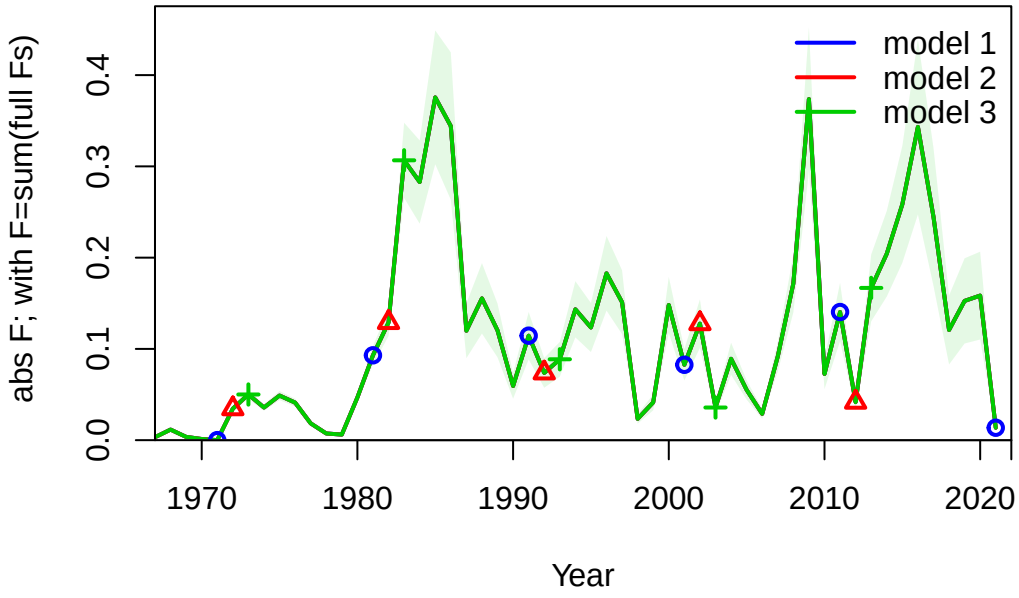


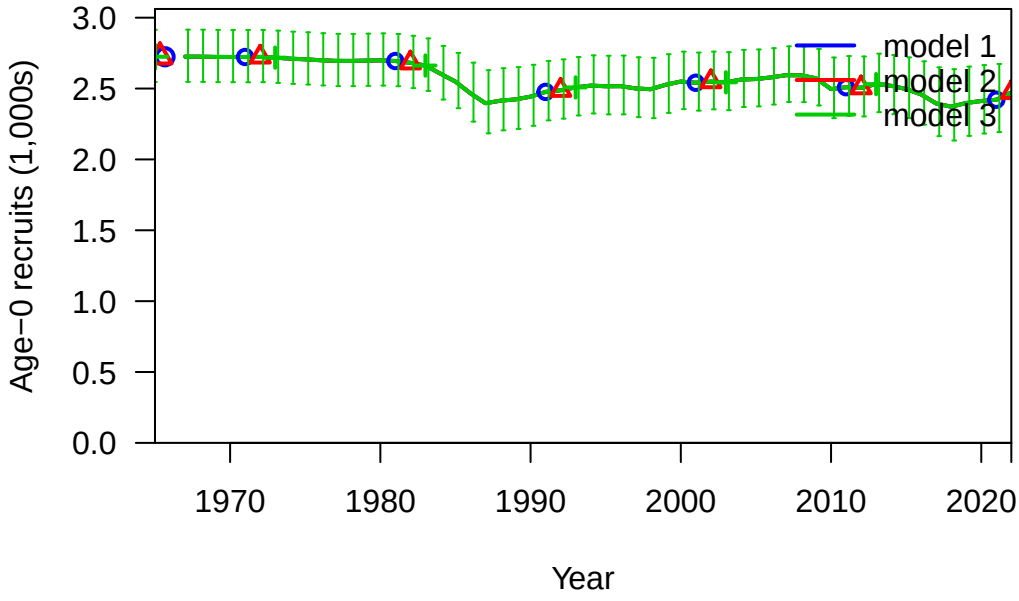

```
null device
          1
```

Jitter


Likelihood
378.58
378.56
378.54
378.52
378.50
1.0
1.5
2.0
2.5
3.0
Run


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


abs F; with F=sum(full Fs)
0.0
0.1
0.2
0.3
0.4
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
model 1
model 2
model 3