American Samoa Model Checks

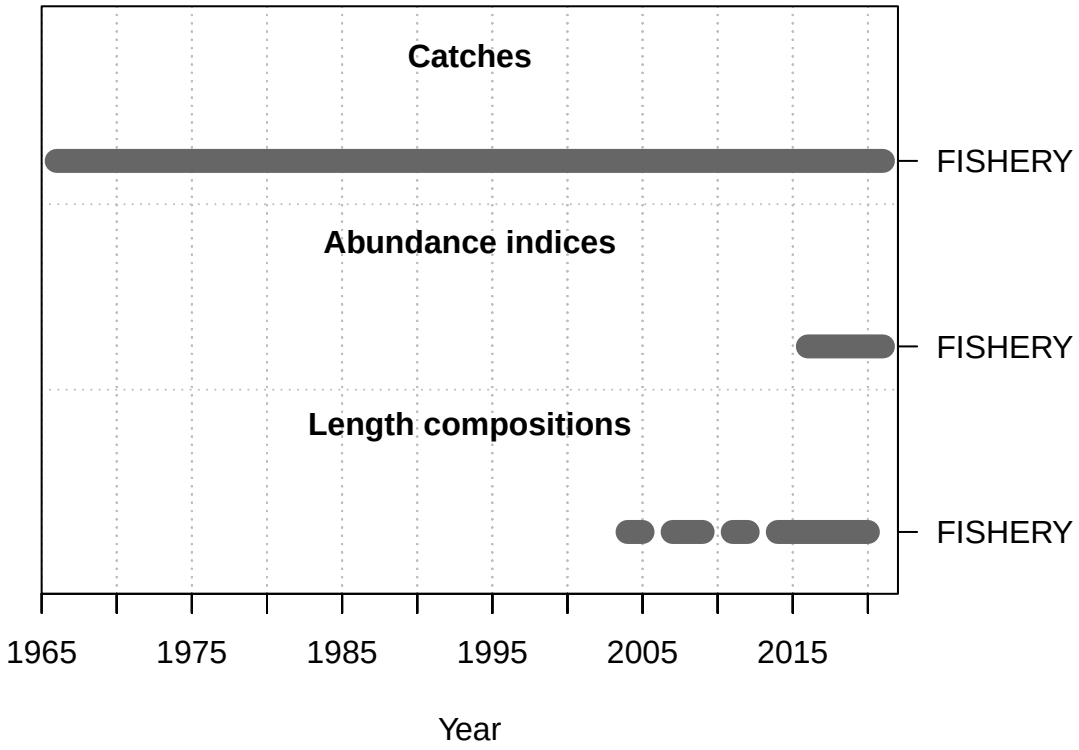
Meg Oshima

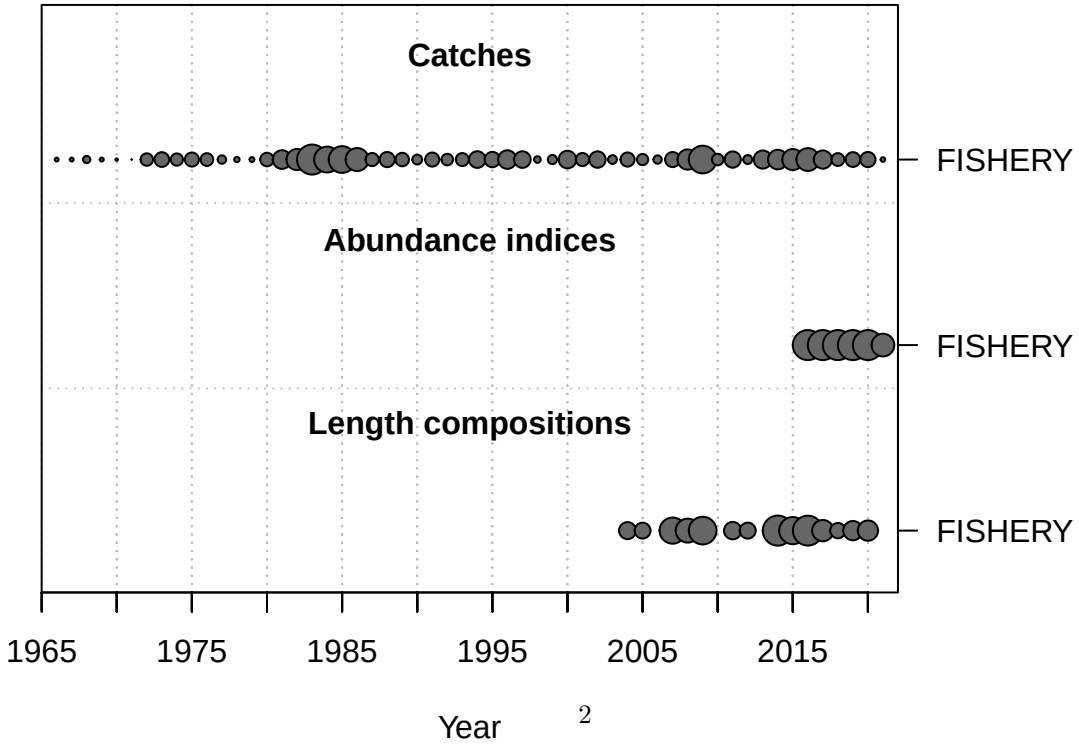
2022-08-15

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

Model Output

Input Data





Convergence Check

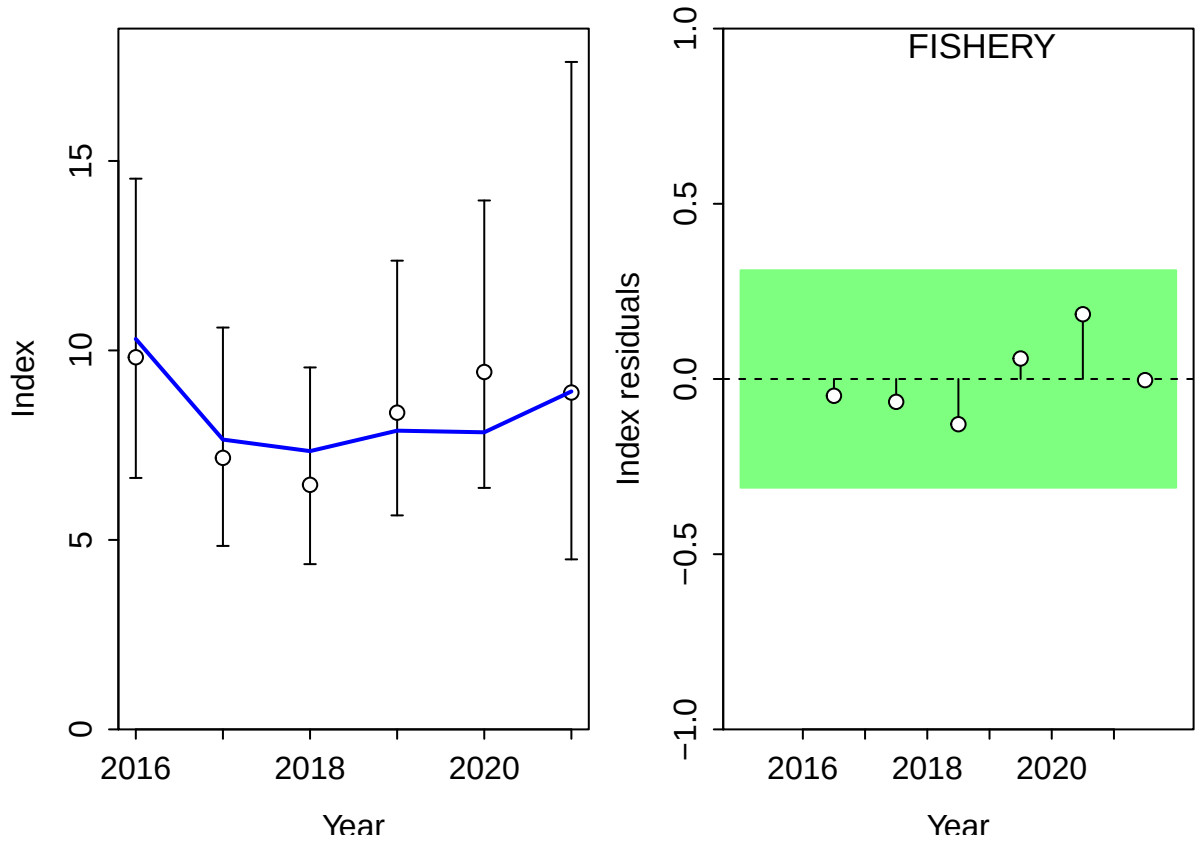
```
##   Converged     MaxGrad
## 1      TRUE 4.87836e-05
```

```
## [1] "1 NOTE:  Max data length bin: 85  < max pop len bins: 94; so will accumulate larger pop len bins
## [2] "2 Minimum pop size bin:_1; is > L at Amin for sex: 1; Gpat: 1; L= 0"
## [3] "3 warning: poor convergence in Fmsy, final dy/dy2= -0.00814914"
## [4] " N parameters are on or within 1% of min-max bound: 1; check results, variance may be suspect"
## [5] "N warnings: 3"
```

Fit to Model

CPUE

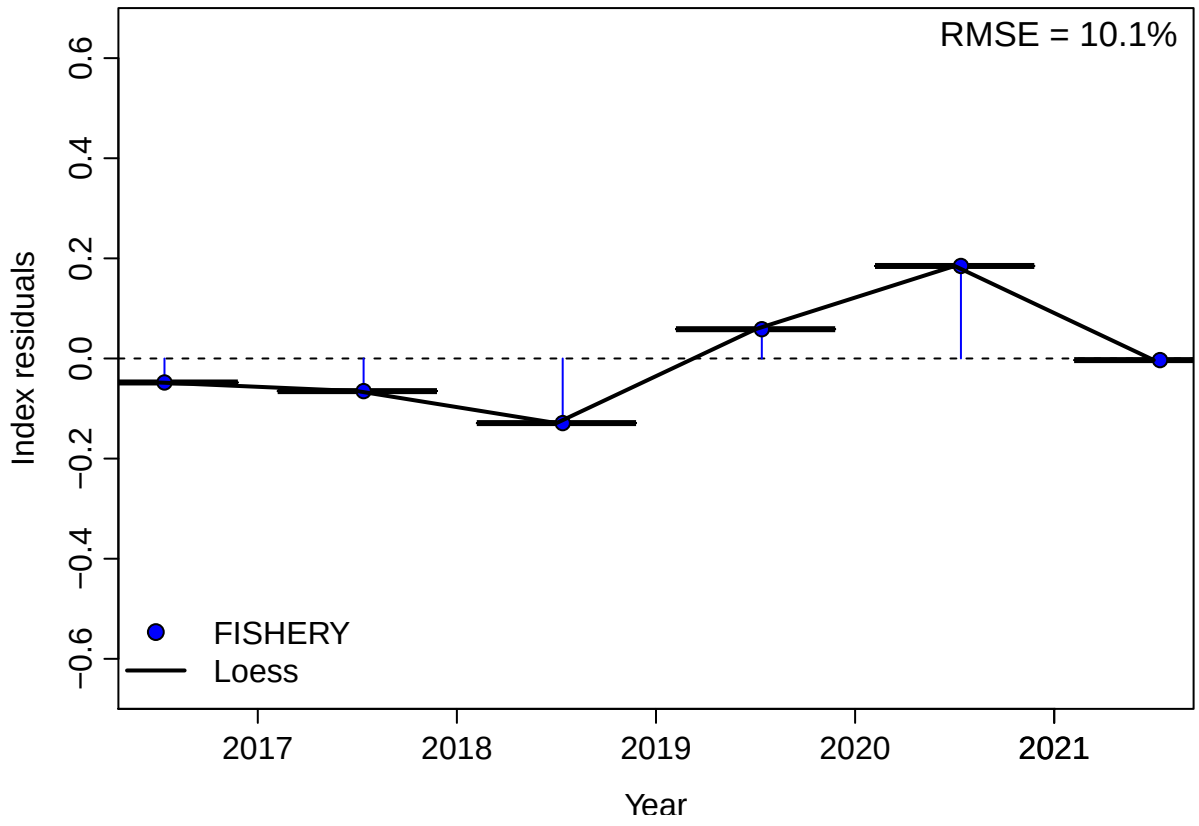
```
##
##  Running Runs Test Diagnosics for Index
## Plotting Residual Runs Tests
```




```
##
## Runs Test stats by Index:
## Plotting JABBA residual plot
```

```
## Warning in simpleLoess(y, x, w, span, degree = degree, parametric = parametric, : Chernobyl! trL>n 6
```

```
## Warning in simpleLoess(y, x, w, span, degree = degree, parametric = parametric, : Chernobyl! trL>n 6

## Warning in sqrt(sum.squares/one.delta): NaNs produced
```



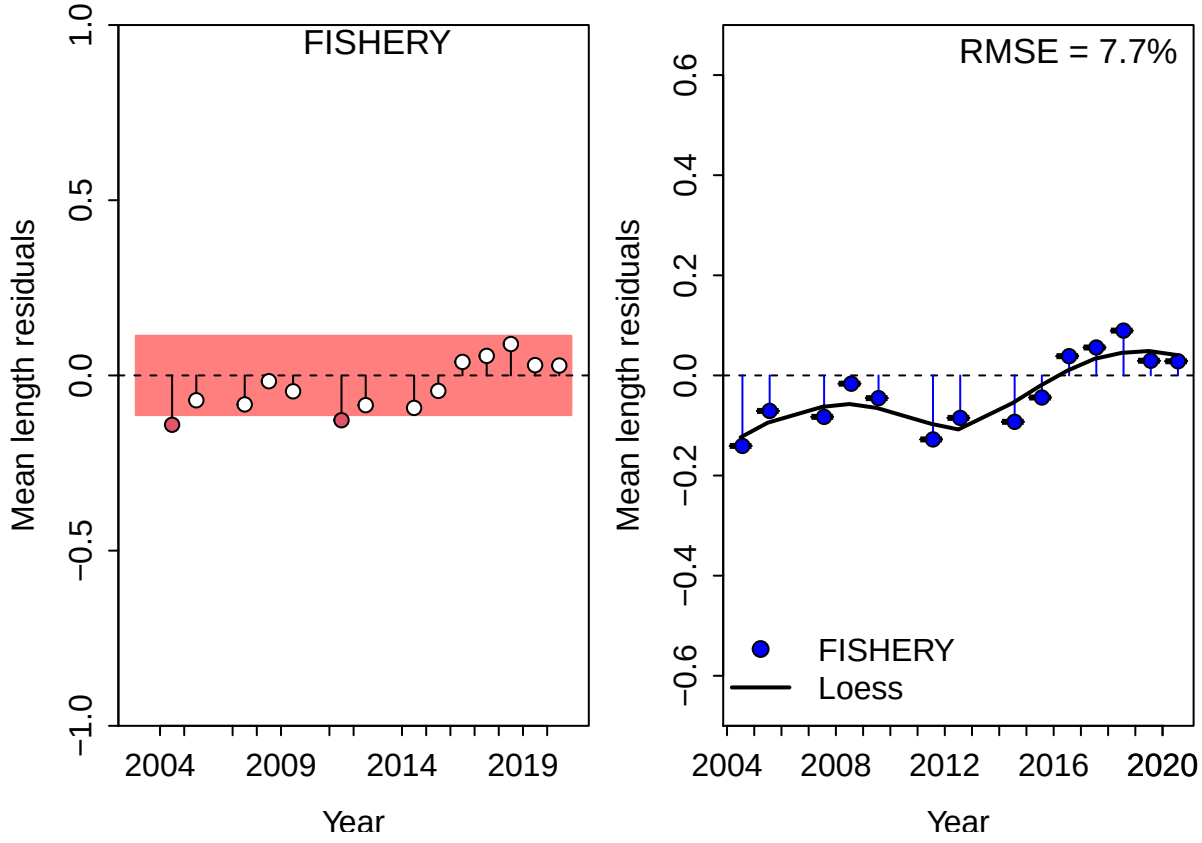

```
##
## RMSE stats by Index:
```

Length Comp

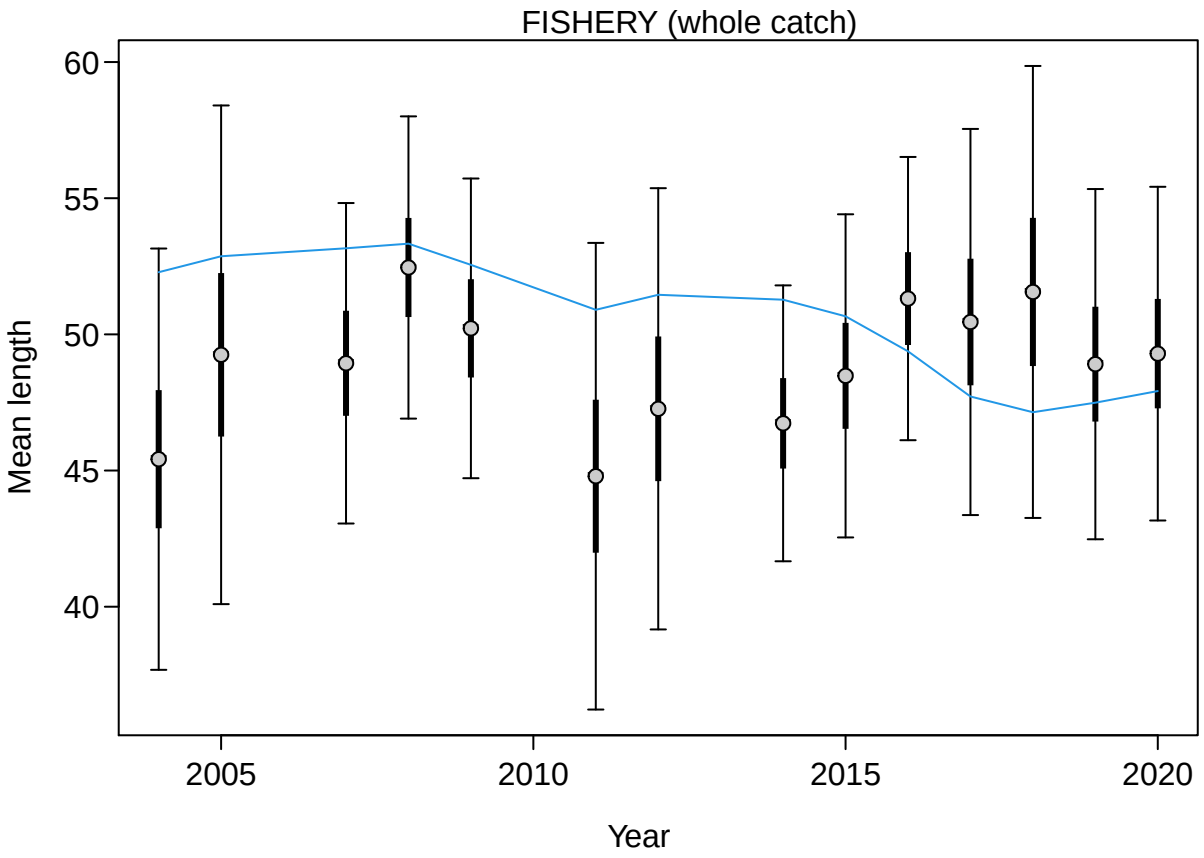
#Factor	Fleet	New_Var_adj	Type	Name
4	1	0.107485	len	FISHERY

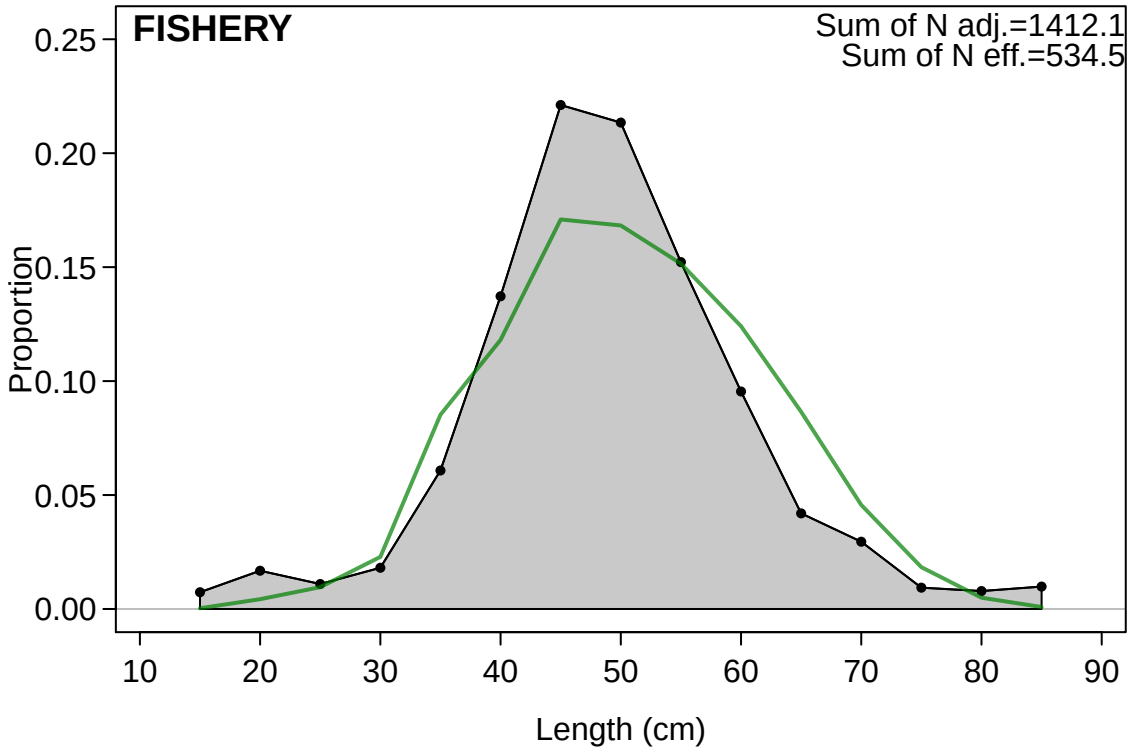
```
##
##  Running Runs Test Diagnosics for Mean length
## Plotting Residual Runs Tests

##
## Runs Test stats by Mean length:

##     Index runs.p   test  sigma3.lo sigma3.hi type
## 1 FISHERY      0 Failed -0.1132764 0.1132764  len
```

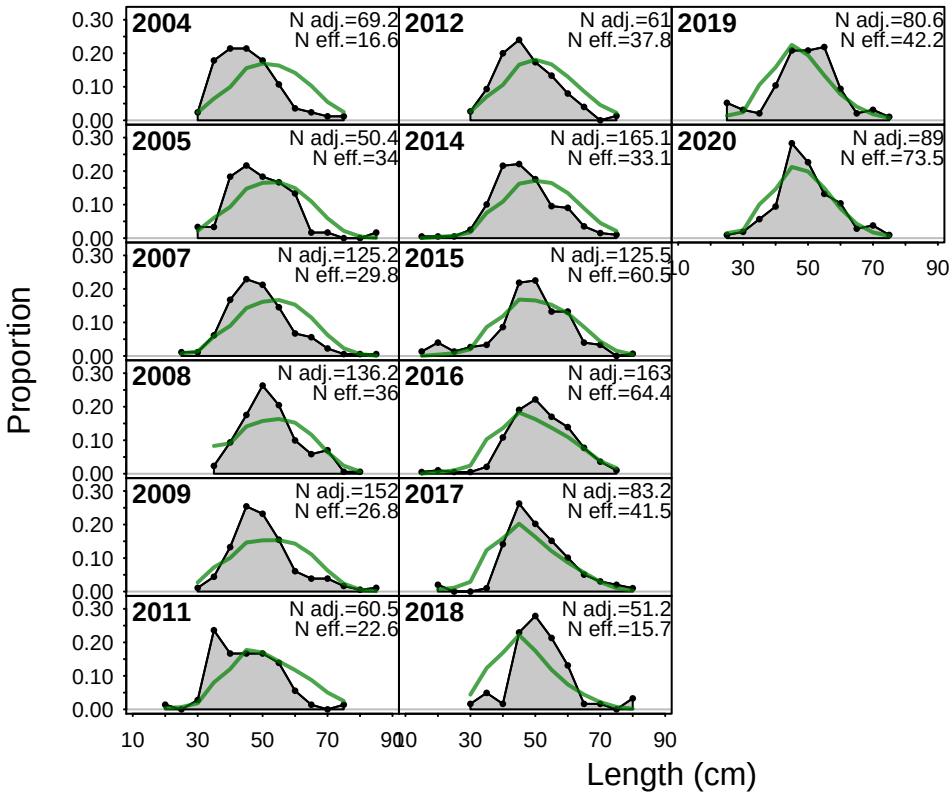
```
## Plotting JABBA residual plot
```




```
##
## RMSE stats by Index:

##    indices RMSE.perc nobs
## 1  FISHERY       7.7   14
## 2 Combined       7.7   14
```


FISHERY (whole catch)
Mean length
60
55
50
45
40
2005
2010
2015
2020
Year


FISHERY
Sum of N adj.=1412.1
Sum of N eff.=534.5
Proportion
0.25
0.20
0.15
0.10
0.05
0.00
10
20
30
40
50
60
70
80
90
Length (cm)

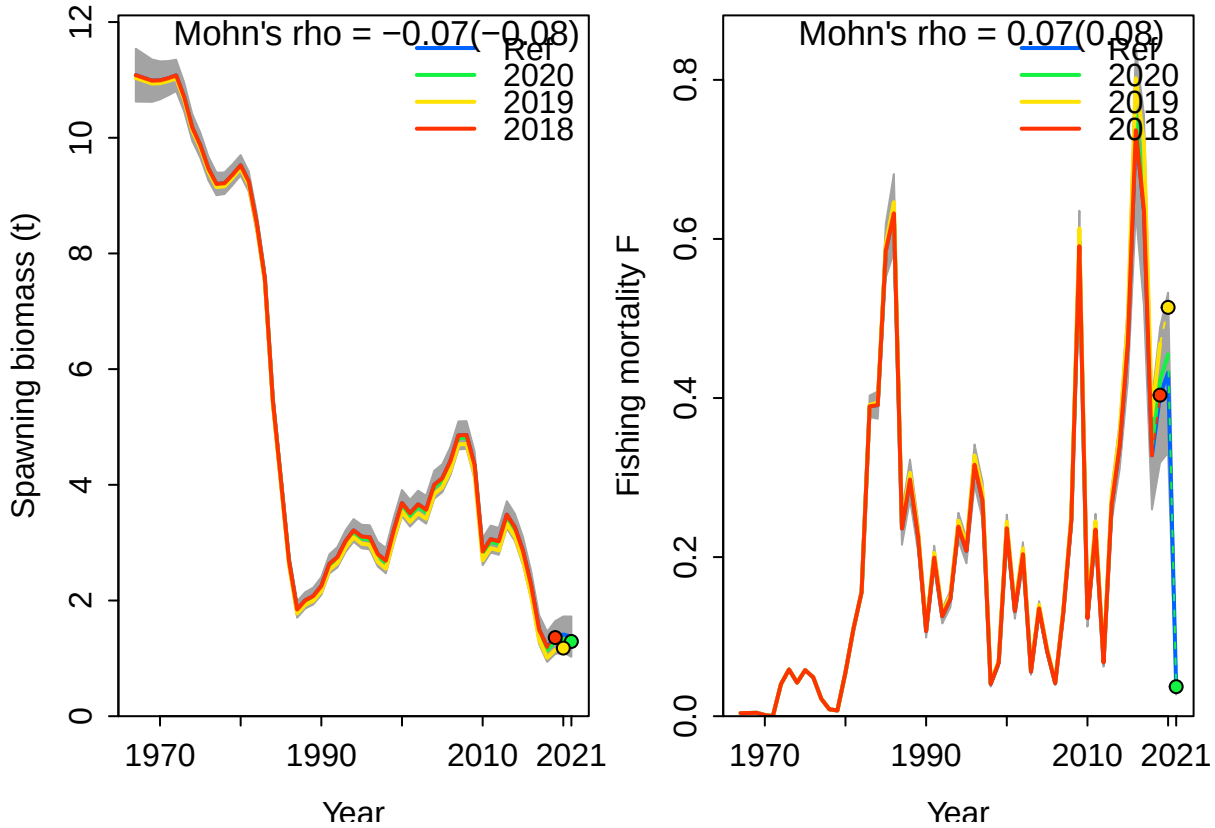


Retrospective and Hindcasting

Retrospective

```
## Plotting Retrospective pattern
```

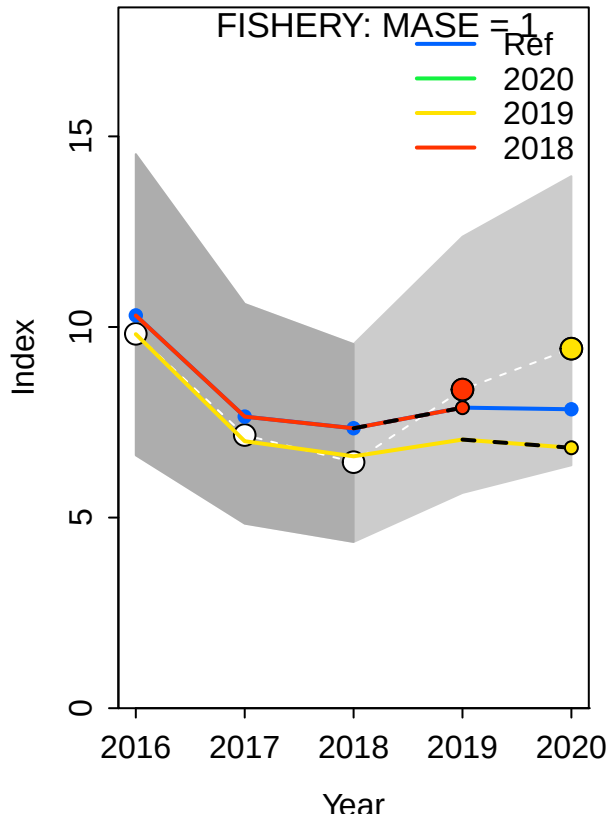
```
##
## Mohn's Rho stats, including one step ahead forecasts:
## Plotting Retrospective pattern
```



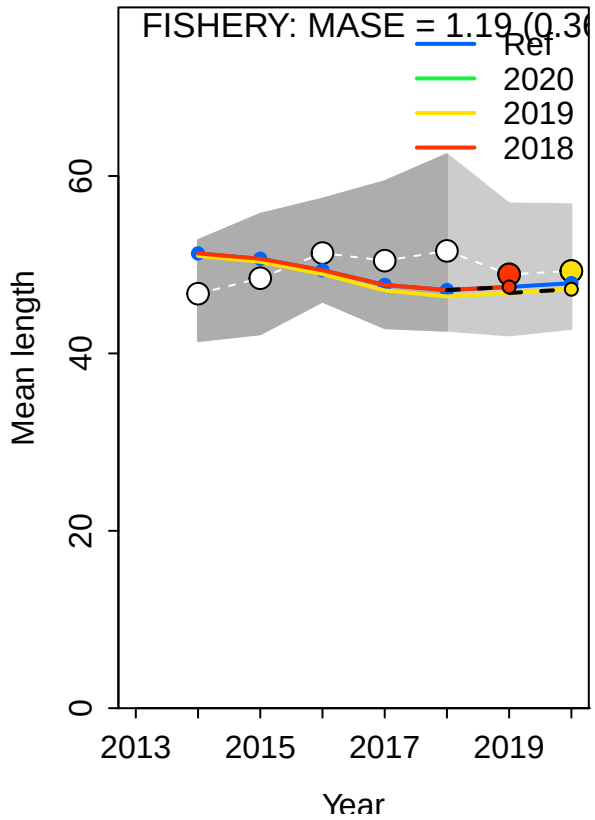

```
##
## Mohn's Rho stats, including one step ahead forecasts:

##   type     peel          Rho  ForecastRho
## 1    F     2020 5.277963e-02 5.322655e-02
## 2    F     2019 1.600620e-01 1.899576e-01
## 3    F     2018 4.879001e-05 4.955021e-05
## 4    F Combined 7.096349e-02 8.107790e-02
```

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 of MASE
```




```
##
## 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 of MASE

##
## MASE stats by Index:
```



Recruitment Deviations

```
## Skipped SSplotrecdevs - no rec devs estimated
```

Likelihood Profile

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

```
## Parameter matching profile.string=SR_LN: SR_LN(R0)
```

```
## Parameter values (after subsetting based on input 'models'): 0.5, 0.7, 0.9, 1.1, 1.3, 0.602176
```

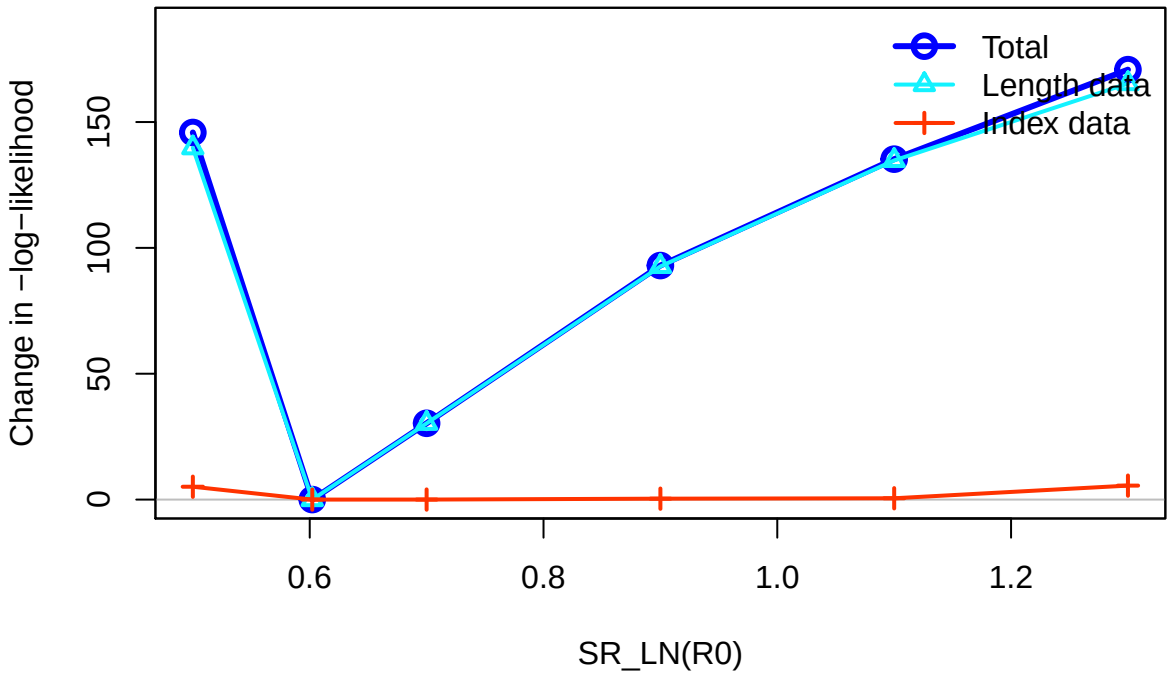
```
##
## Likelihood components showing max change as fraction of total change.
## To change which components are included, change input 'minfraction'.
```

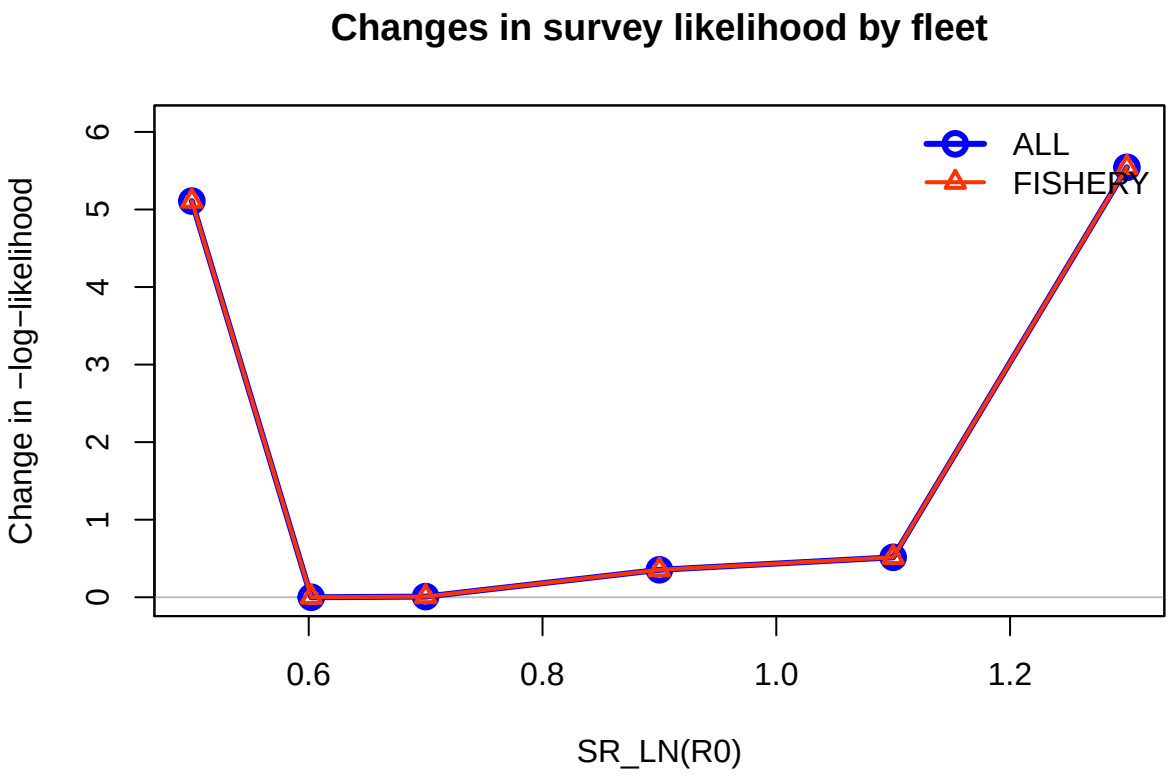
```
##                      frac_change include                          label
## TOTAL                     1.0000    TRUE                          Total
## Catch                     0.0000   FALSE                          Catch
## Equil_catch               0.0056   FALSE              Equilibrium catch
## Survey                    0.0325    TRUE                     Index data
## Length_comp               0.9676    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           0.0001   FALSE                      Soft bounds
## Parm_devs                 0.0000   FALSE             Parameter deviations
## Crash_Pen                 0.0000   FALSE                    Crash penalty
```

```
## Parameter matching profile.string = 'SR_LN': 'SR_LN(R0)
## Parameter values (after subsetting based on input 'models'): 0.5, 0.7, 0.9, 1.1, 1.3, 0.602176,
```

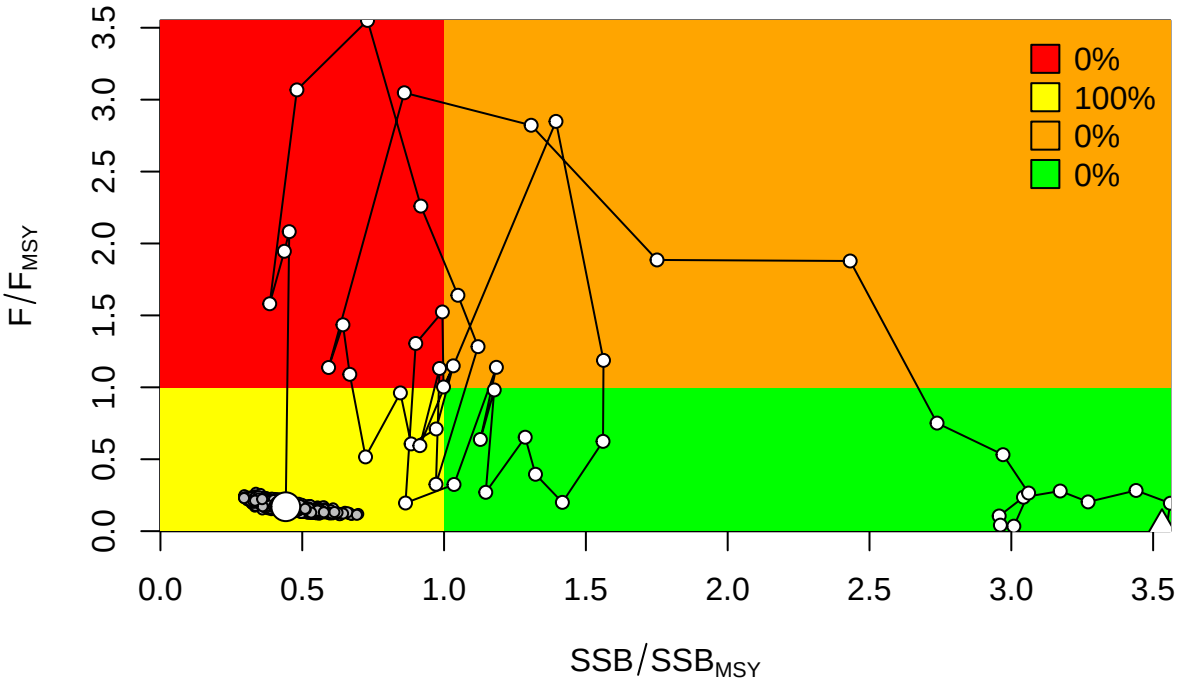
```
## Fleet-specific likelihoods showing max change as fraction of total change.
## To change which components are included, change input 'minfraction'.
##                         frac_change include
## prof.table....c.1.3..             1    TRUE
```



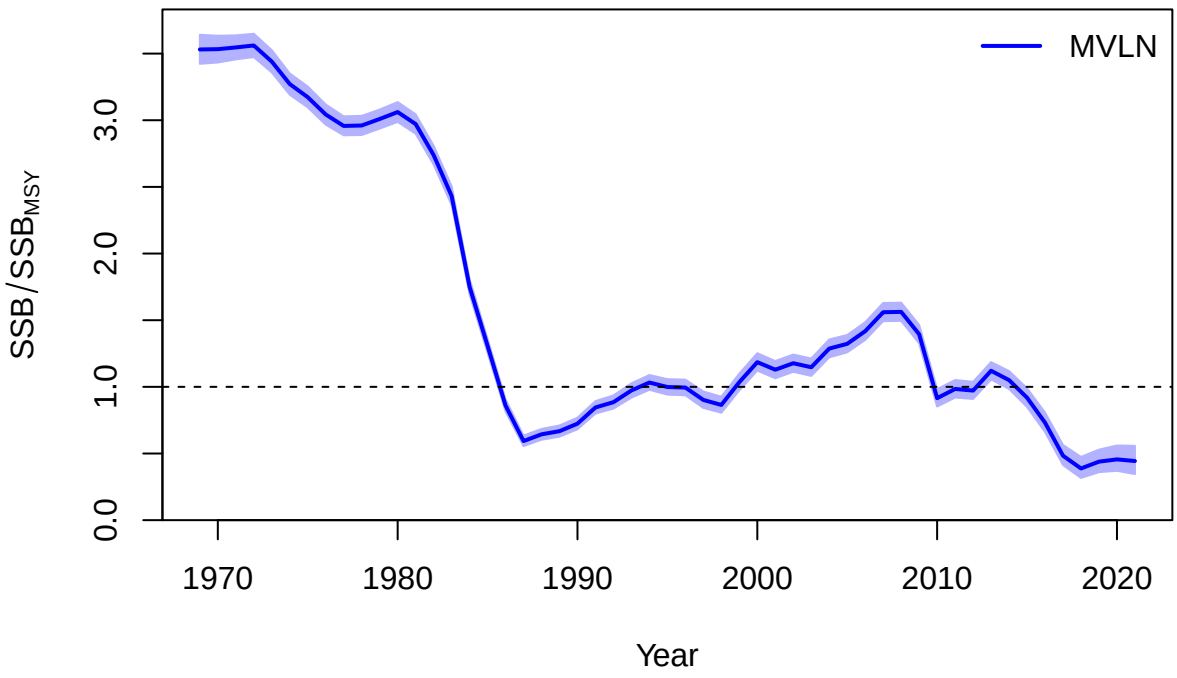


Management Quantities

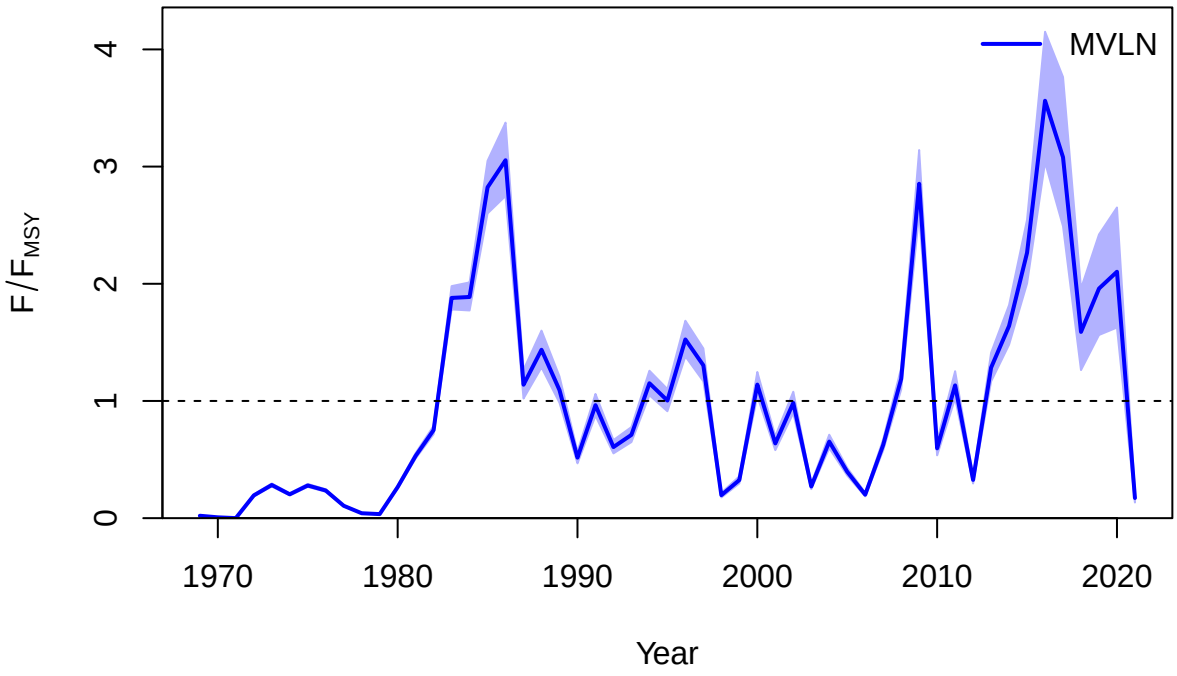
```
##
##  starter.sso with Bratio: SSB/SSBMSY and F: _abs_F
##
```



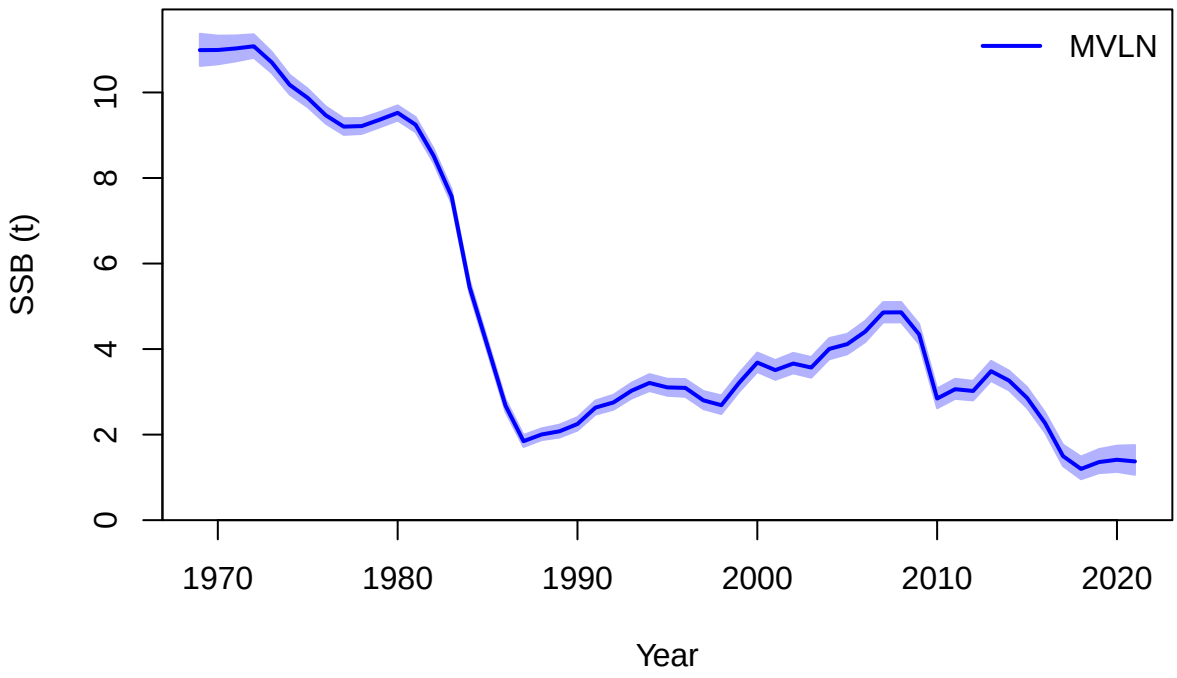

```
##
## Plot Comparison of stock
```



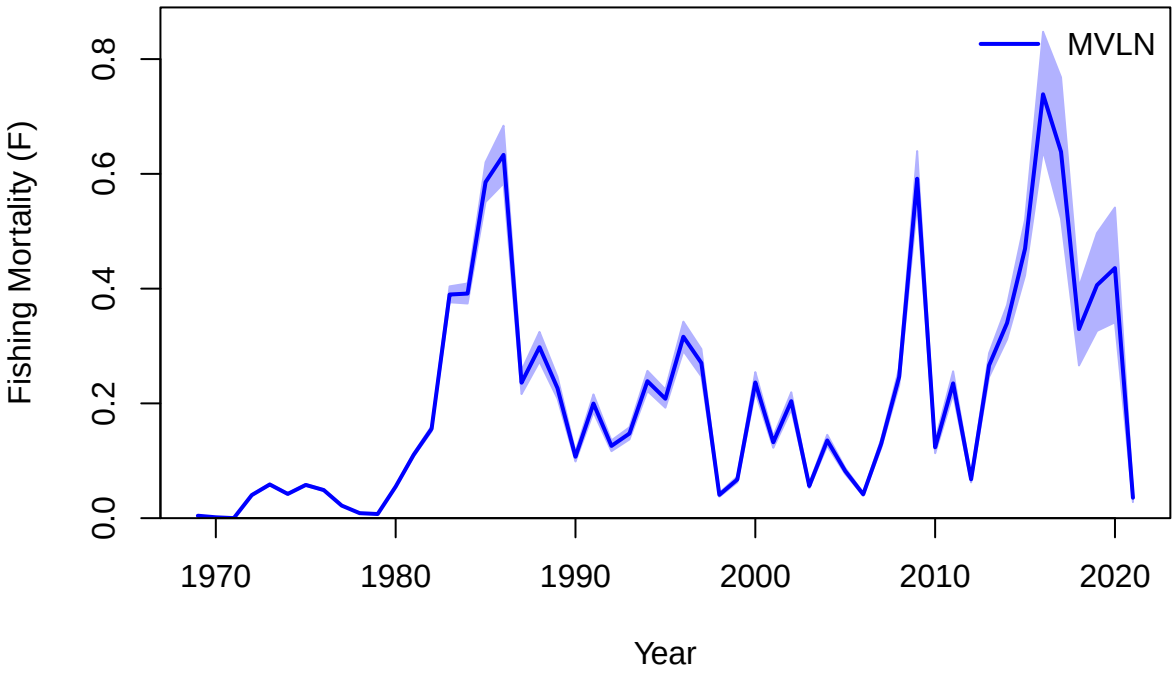

```
##
## Plot Comparison of harvest
```




```
##
## Plot Comparison of SSB
```

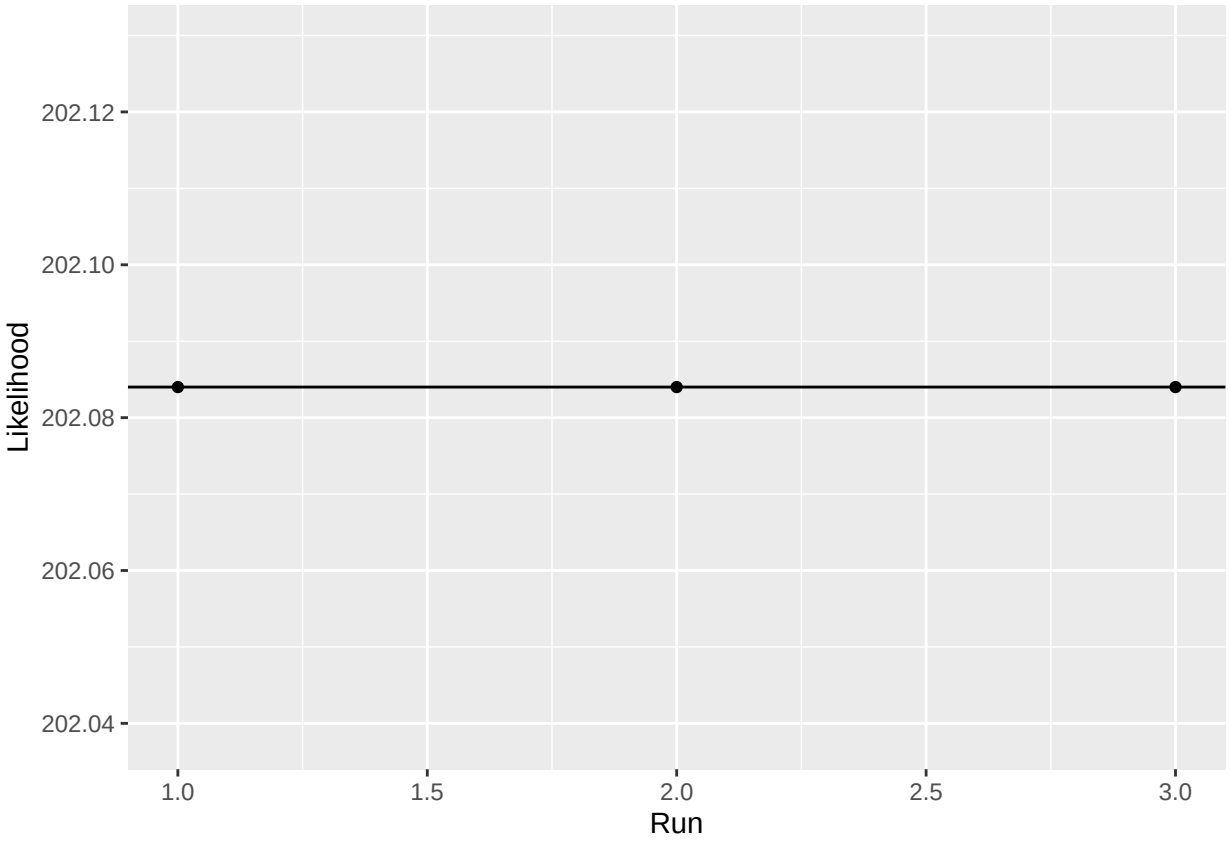


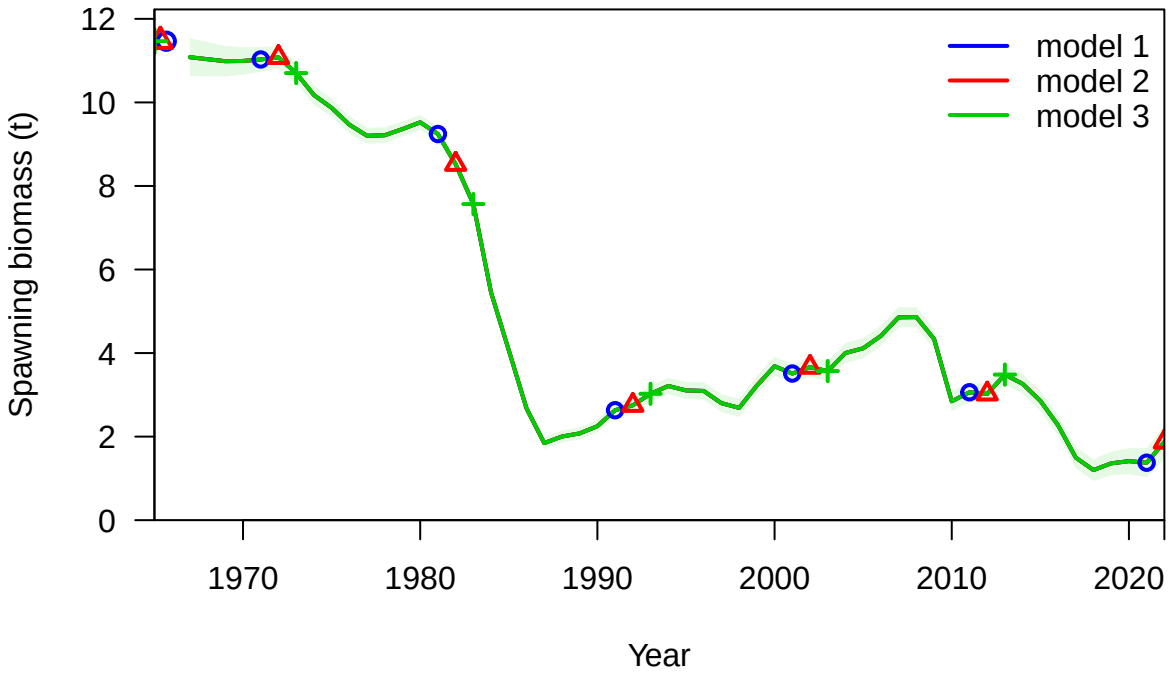

```
##
## Plot Comparison of F
```

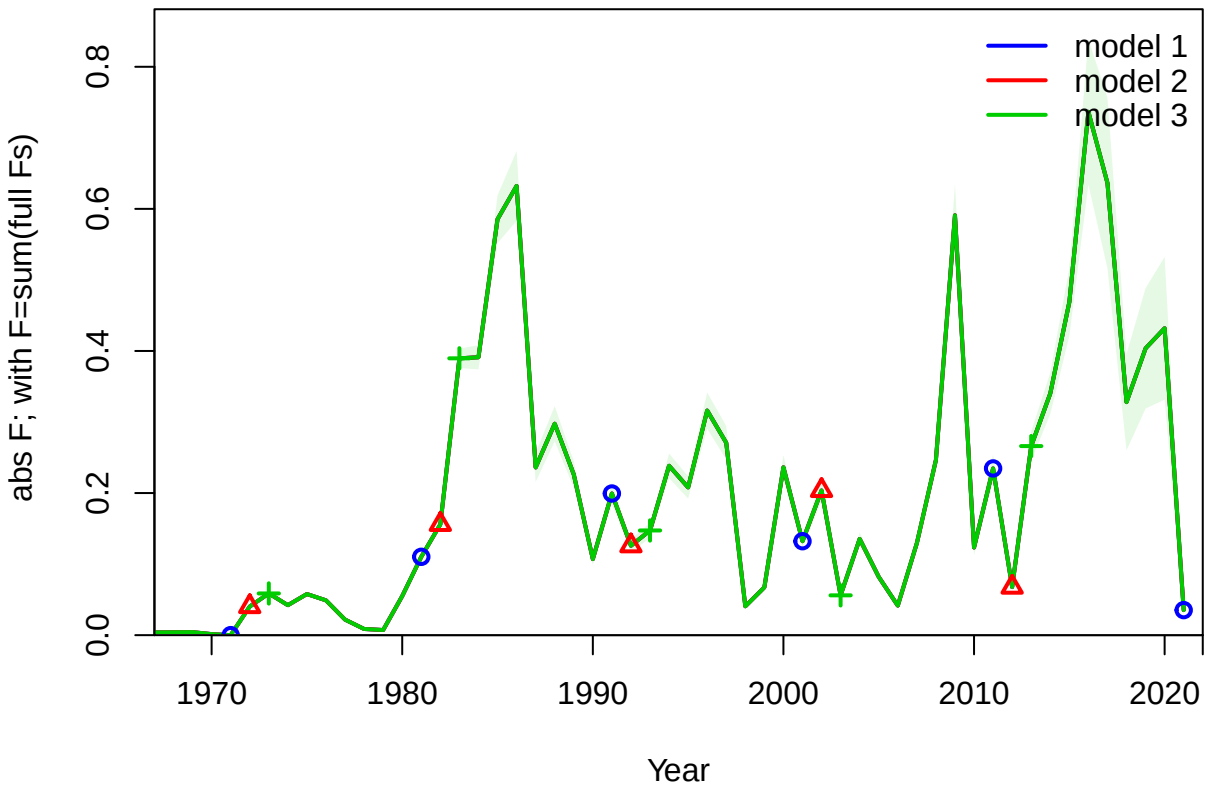

MVLN
Fishing Mortality (F)
0.0
0.2
0.4
0.6
0.8
1970
1980
1990
2000
2010
2020
Year

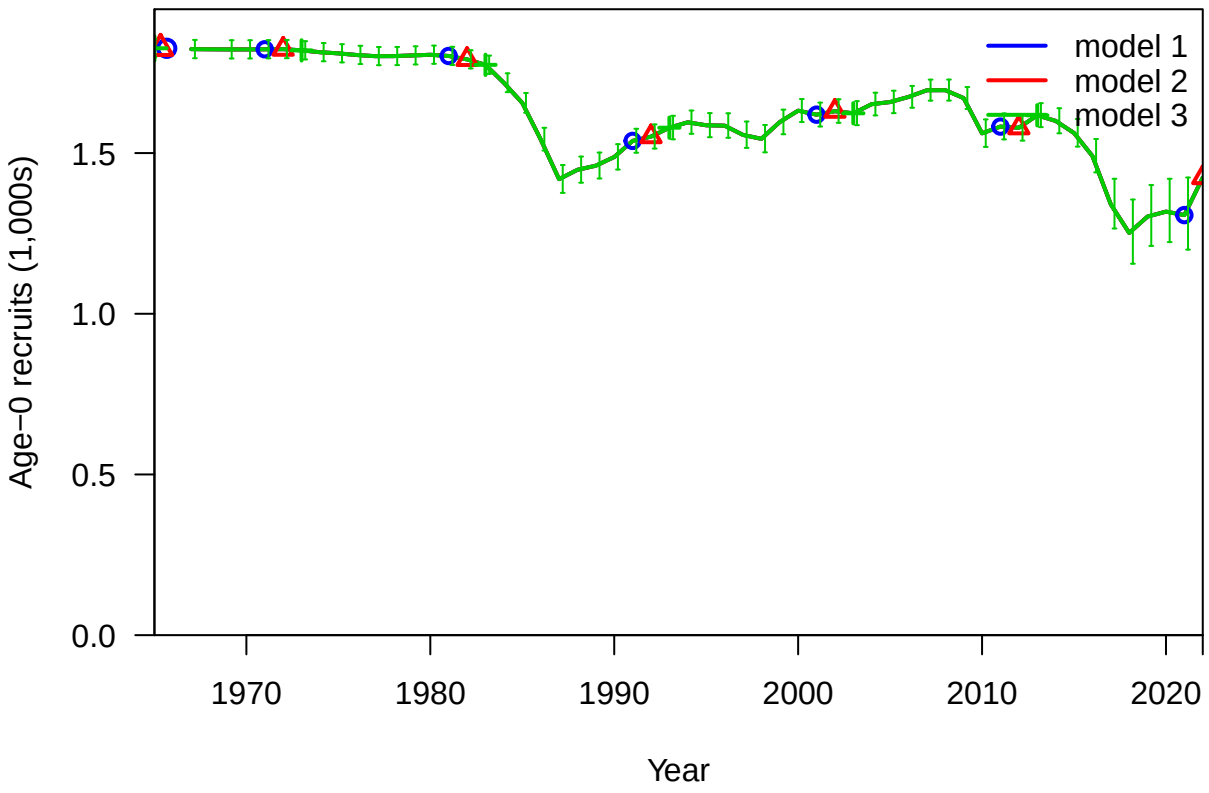
```
## RStudioGD
##         2
```

Jitter




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


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