Science, Service, Stewardship

SEDAR 31 Gulf of Mexico Red Snapper: Review workshop

April 30, 2013

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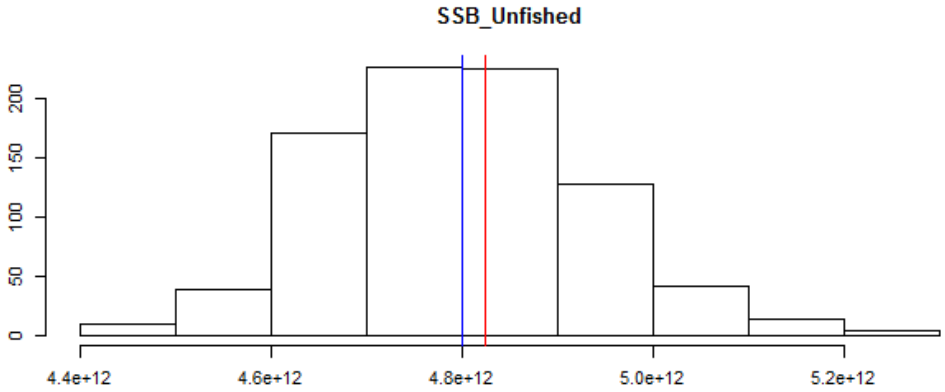
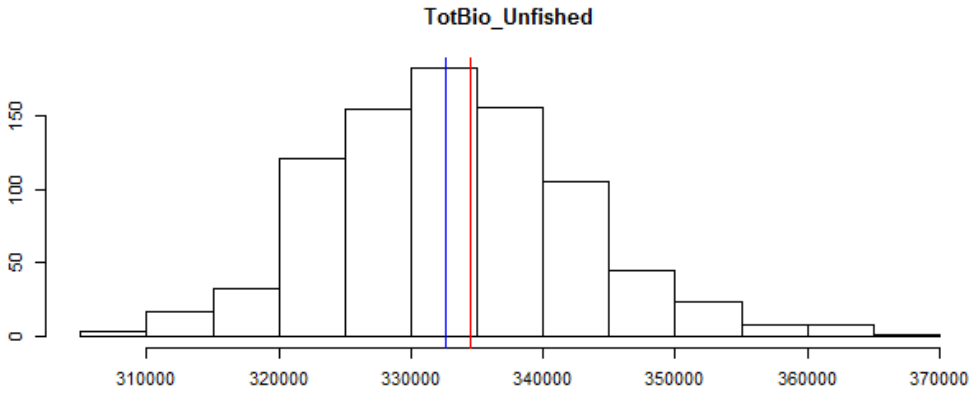
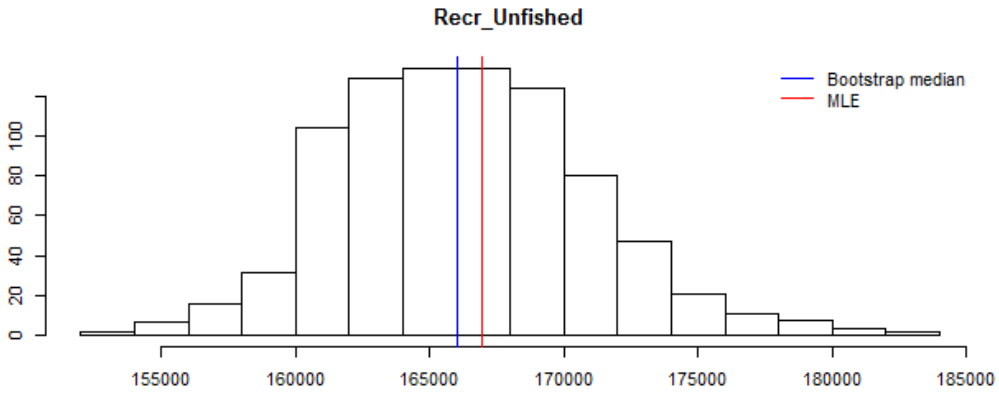
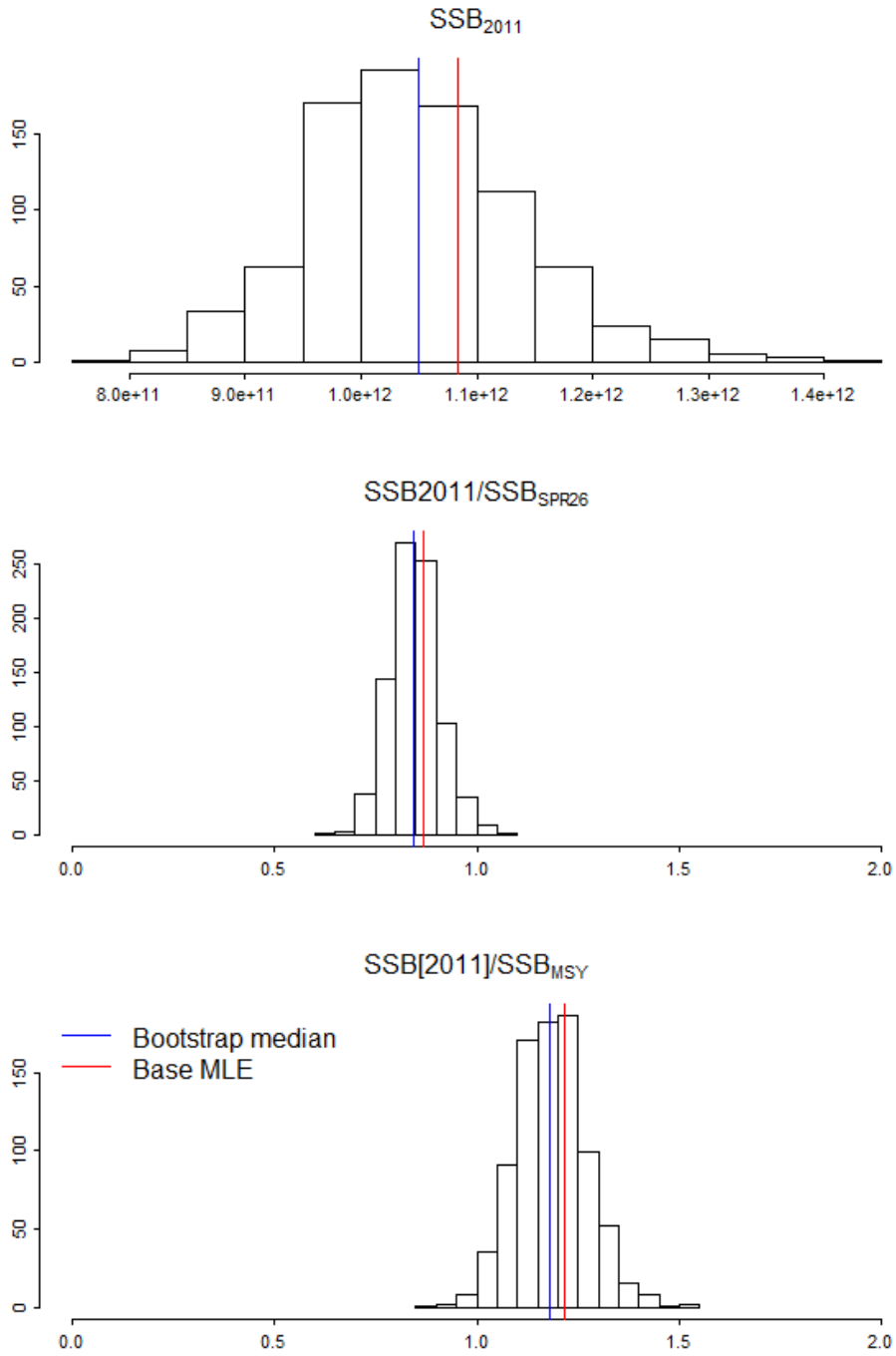
Model uncertainty - Bootstrapping

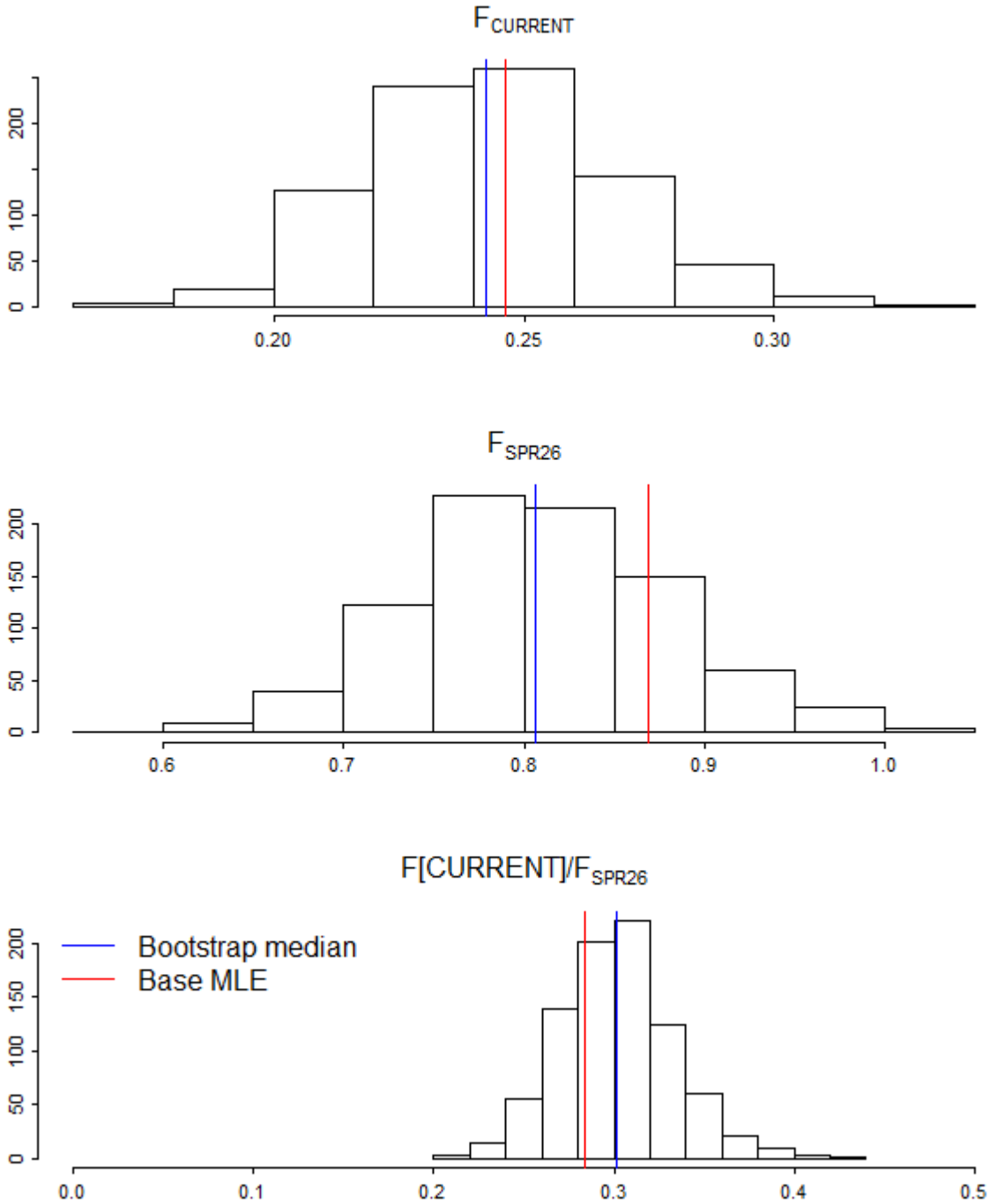
- Uncertainty in parameter estimates is being investigated using a parametric bootstrap approach
- Stock synthesis uses the error assumptions and sample sizes from the input data to generate new data sets
- The model is refit to 1000 bootstrapped data-sets and the distribution of the parameter estimates is used to represent the uncertainty in the parameters and derived quantities of interest

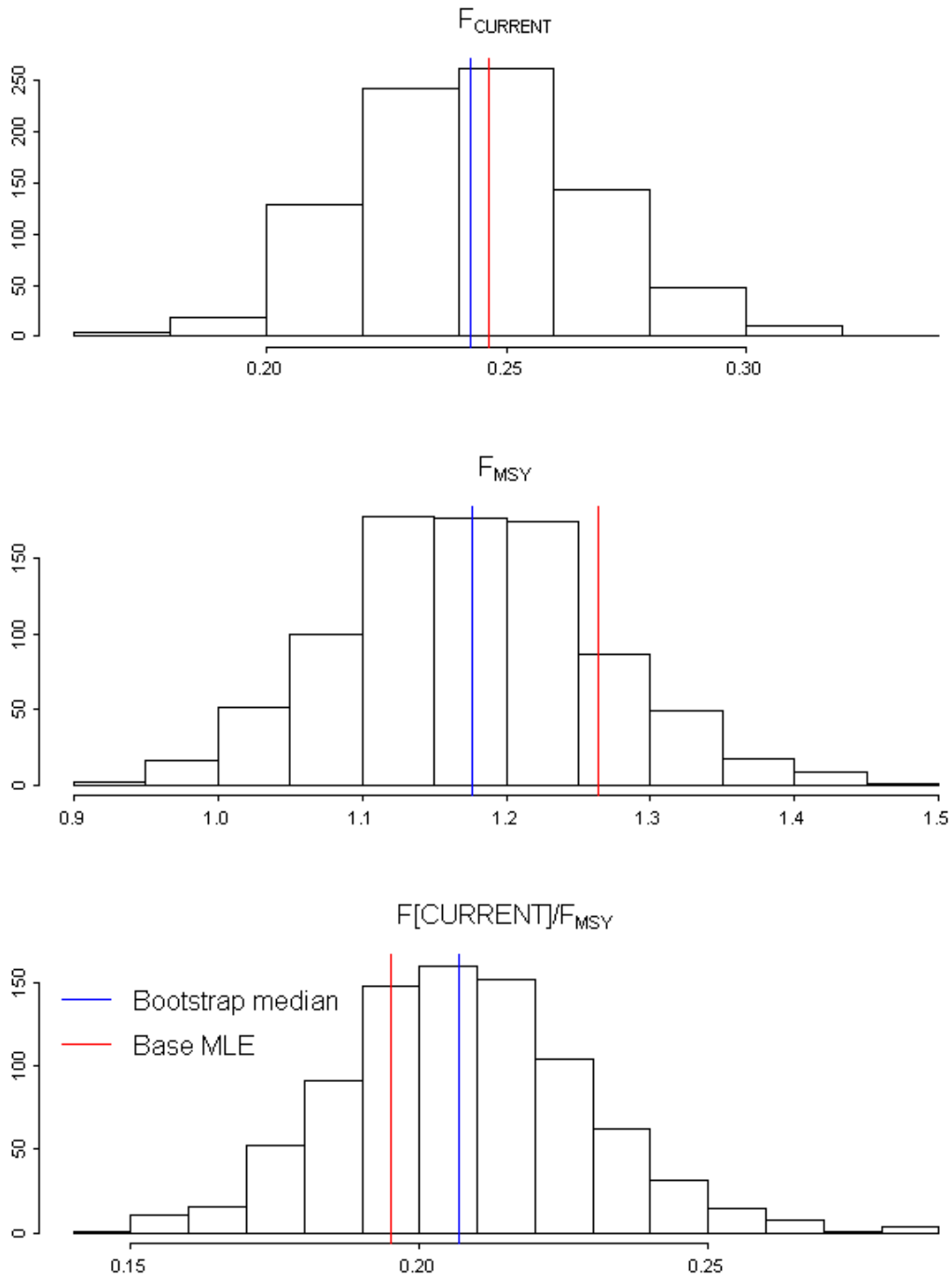

SSB_Unfished
0
50
100
150
200
4.4e+12
4.6e+12
4.8e+12
5.0e+12
5.2e+12


TotBio_Unfished
0
50
100
150
310000
320000
330000
340000
350000
360000
370000


Recr_Unfished
Bootstrap median
MLE
0
20
40
60
80
100
155000
160000
165000
170000
175000
180000
185000


SSB2011
0
50
100
150
8.0e+11
9.0e+11
1.0e+12
1.1e+12
1.2e+12
1.3e+12
1.4e+12
SSB2011/SSBSPR26
0
50
100
150
200
250
0.0
0.5
1.0
1.5
2.0
SSB[2011]/SSBMSY
Bootstrap median
Base MLE
0
50
100
150
0.0
0.5
1.0
1.5
2.0


F CURRENT
0
50
100
200
0.20
0.25
0.30
F SPR26
0
50
100
150
200
0.6
0.7
0.8
0.9
1.0
F[CURRENT]/F SPR26
Bootstrap median
Base MLE
0
50
100
150
200
0.0
0.1
0.2
0.3
0.4
0.5


F CURRENT
0
50
100
150
200
250
0.20
0.25
0.30
F MSY
0
50
100
150
0.9
1.0
1.1
1.2
1.3
1.4
1.5
F[CURRENT]/F MSY
Bootstrap median
Base MLE
0
50
100
150
0.15
0.20
0.25

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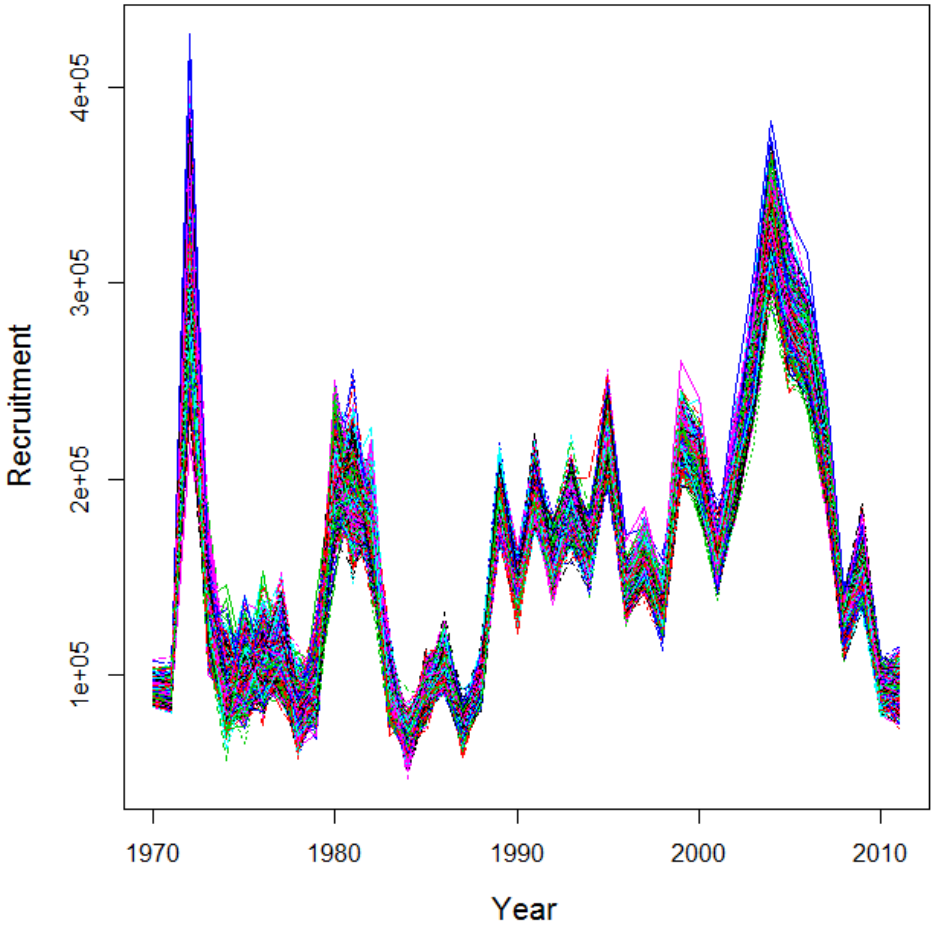
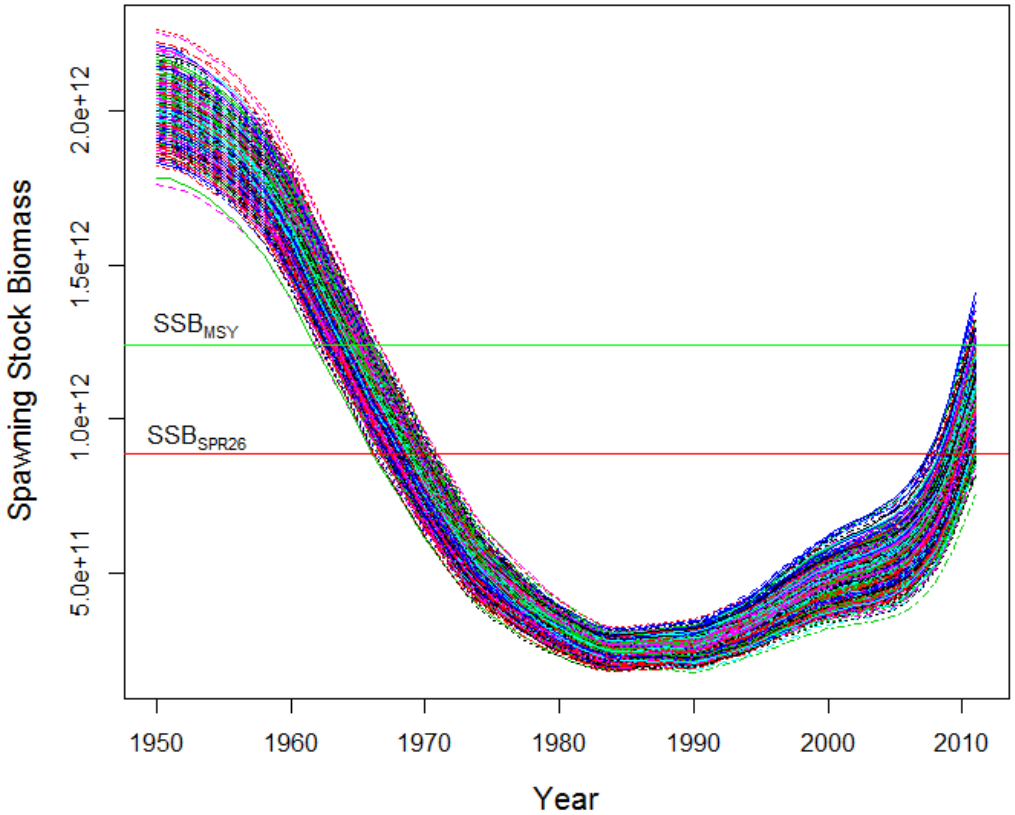
Model uncertainty - Bootstrapping



Model uncertainty - Bootstrapping



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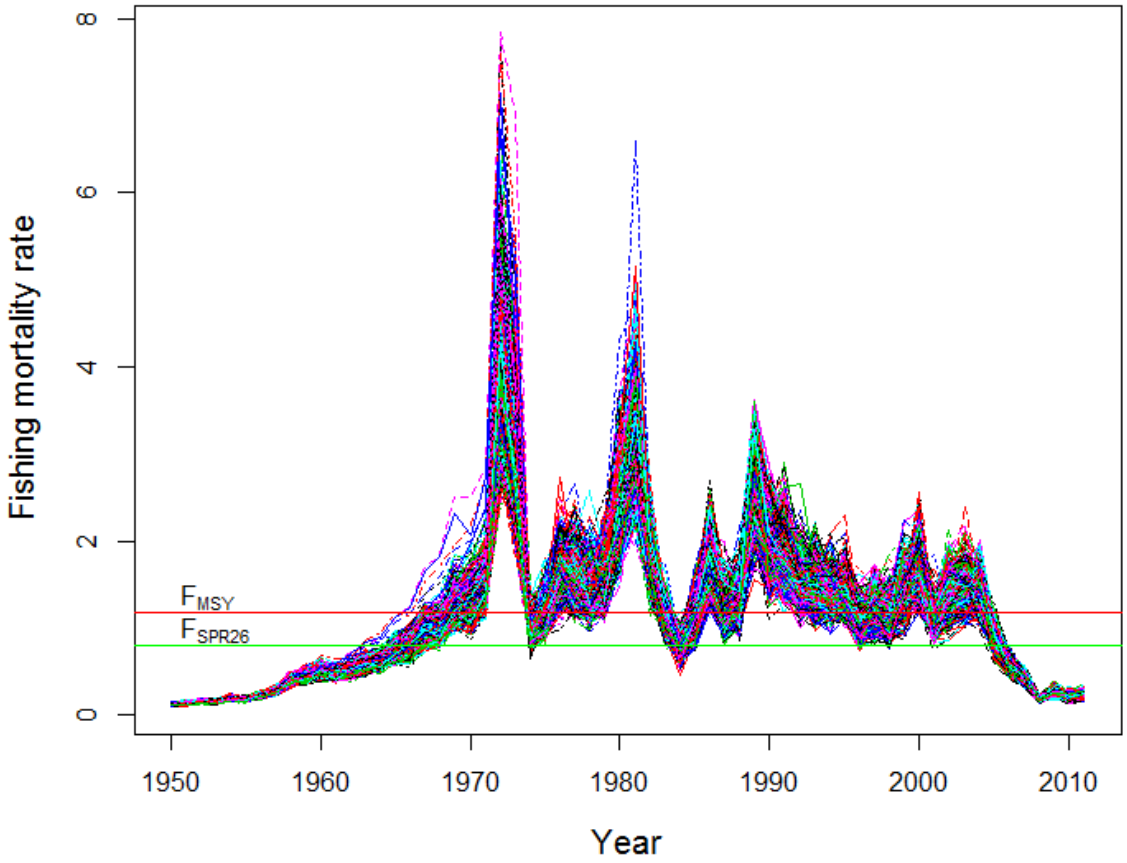
Model uncertainty - Bootstrapping



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Model uncertainty - Bootstrapping