

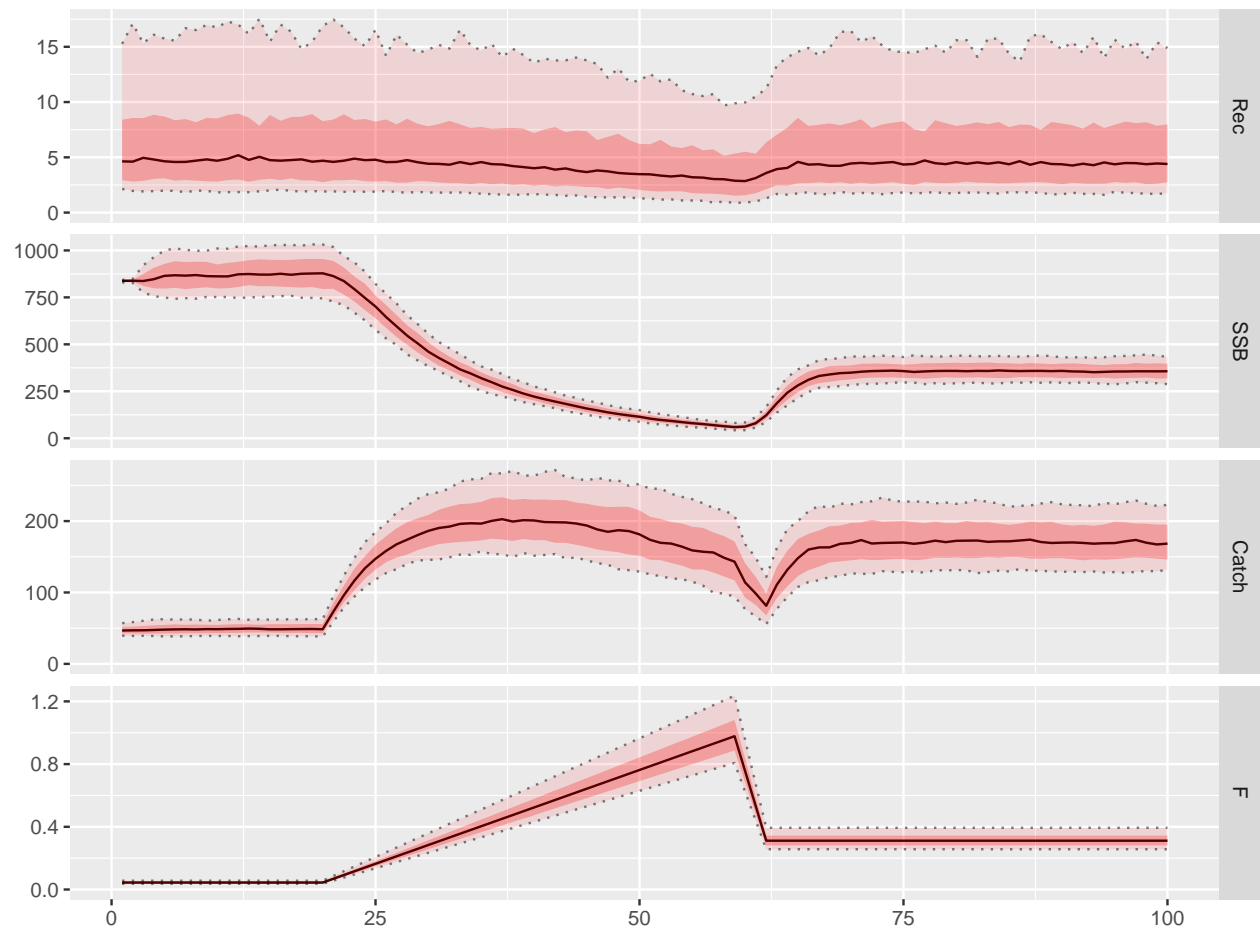
# Cross test using Operating Model based on Life History

LBSPR, length based assessment

*L Kell*

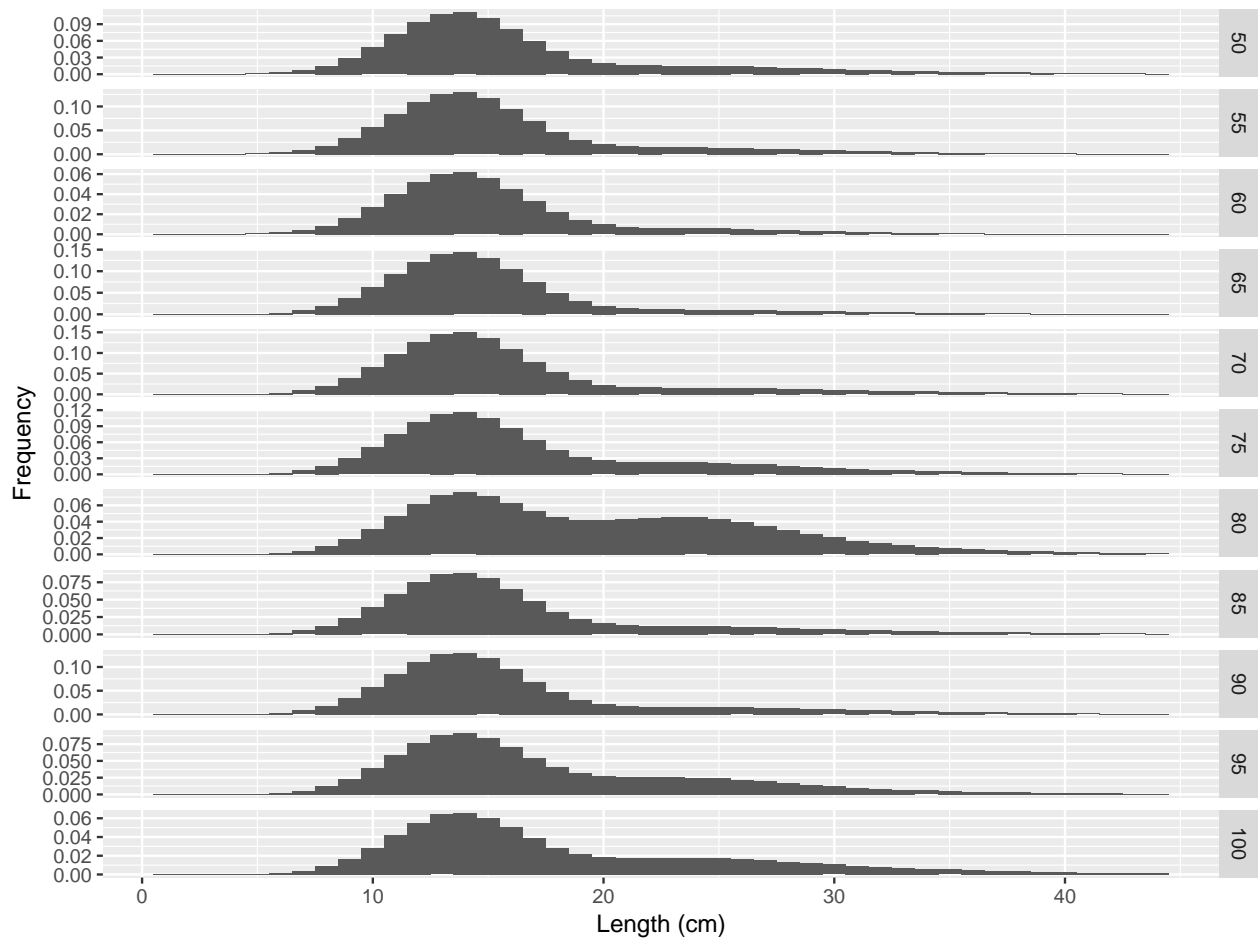
*08 July, 2018*

OM



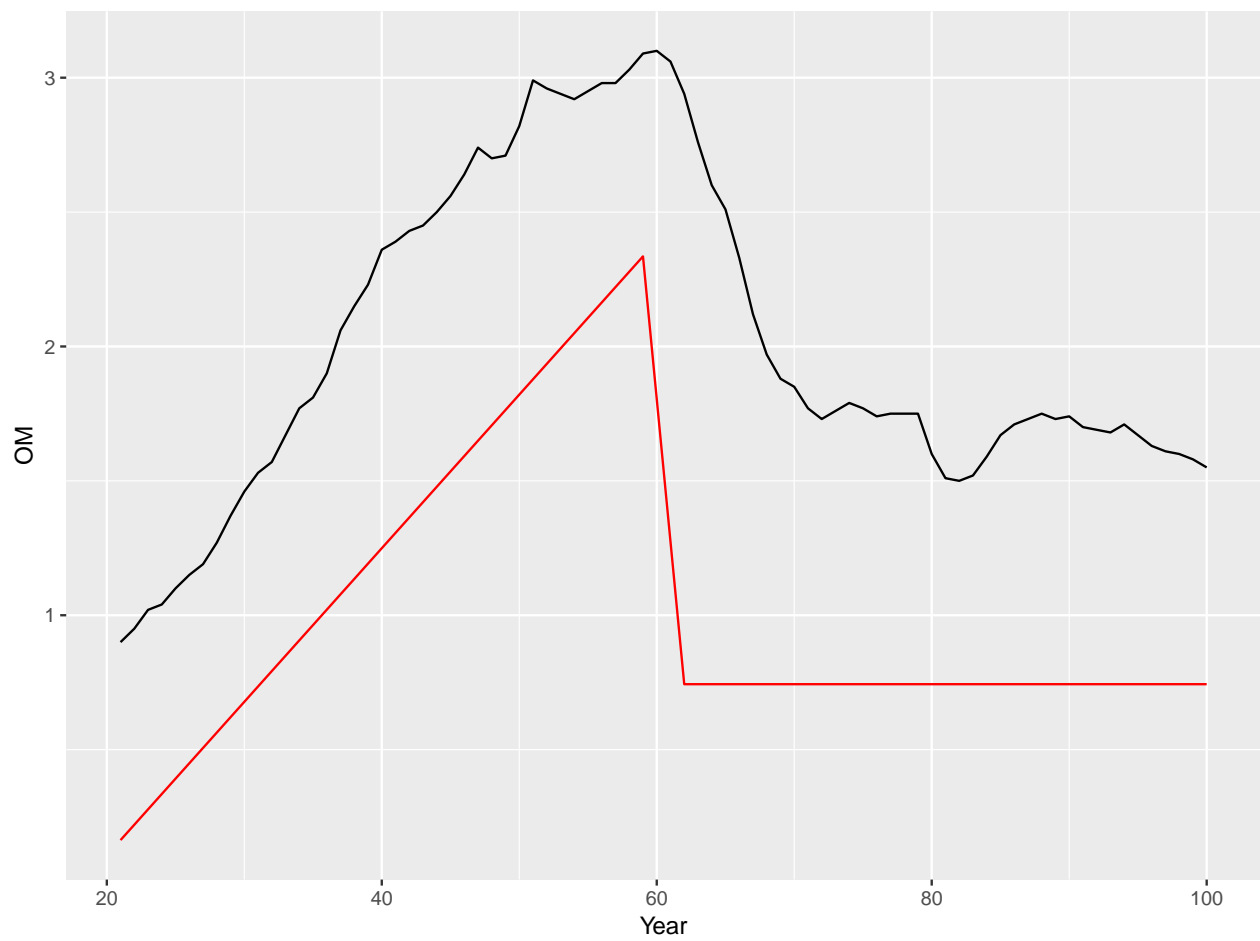
**Figure 1** Operating model for Brill.

## OEM

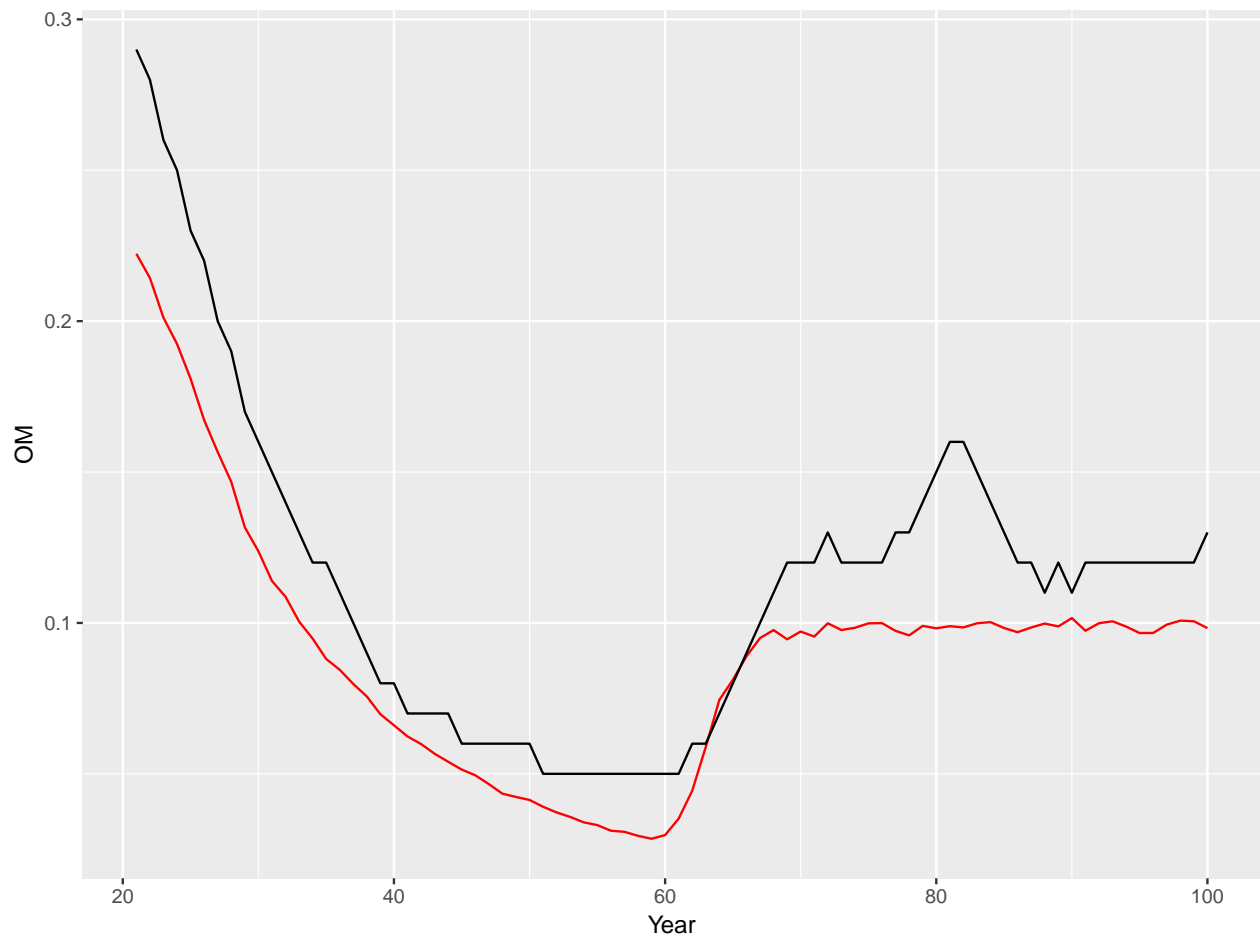


**Figure 2** Catch size data .

MP



**Figure 3** Comparison of estimated and actual  $F/M$  ratios.



**Figure 4** Estimated SPR.

## Session Info

R version 3.4.1 (2017-06-30)  
Platform: x86\_64-pc-linux-gnu (64-bit)  
Running under: Ubuntu 16.04.2 LTS

Matrix products: default  
BLAS: /usr/lib/libblas/libblas.so.3.6.0  
LAPACK: /usr/lib/lapack/liblapack.so.3.6.0

locale:  
[1] LC\_CTYPE=en\_US.UTF-8 LC\_NUMERIC=C  
[3] LC\_TIME=en\_GB.UTF-8 LC\_COLLATE=en\_US.UTF-8  
[5] LC\_MONETARY=en\_GB.UTF-8 LC\_MESSAGES=en\_US.UTF-8  
[7] LC\_PAPER=en\_GB.UTF-8 LC\_NAME=C  
[9] LC\_ADDRESS=C LC\_TELEPHONE=C  
[11] LC\_MEASUREMENT=en\_GB.UTF-8 LC\_IDENTIFICATION=C

attached base packages:  
[1] stats graphics grDevices utils datasets methods base

other attached packages:  
[1] LBSPR\_0.1.2 FLife\_3.2.0 FLRP\_1.0.1.9001 ggplotFL\_2.6.3  
[5] FLCore\_2.6.8 lattice\_0.20-35 dplyr\_0.7.5 ggplot2\_3.0.0  
[9] reshape\_0.8.7 plyr\_1.8.4 knitr\_1.20

loaded via a namespace (and not attached):  
[1] Rcpp\_0.12.17 RColorBrewer\_1.1-2 pillar\_1.1.0  
[4] compiler\_3.4.1 bindr\_0.1.1 tools\_3.4.1  
[7] digest\_0.6.15 evaluate\_0.10.1 tibble\_1.4.2  
[10] gtable\_0.2.0 pkgconfig\_2.0.1 rlang\_0.2.1  
[13] Matrix\_1.2-10 yaml\_2.1.18 bindrcpp\_0.2.2  
[16] gridExtra\_2.3 withr\_2.1.2 stringr\_1.3.1  
[19] stats4\_3.4.1 rprojroot\_1.3-2 grid\_3.4.1  
[22] tidyselect\_0.2.4 glue\_1.2.0 R6\_2.2.2  
[25] plotrix\_3.7 rmarkdown\_1.9 tidyr\_0.7.1  
[28] purrr\_0.2.5 magrittr\_1.5 codetools\_0.2-15  
[31] backports\_1.1.2 scales\_0.5.0 htmltools\_0.3.6  
[34] MASS\_7.3-47 assertthat\_0.2.0 colorspace\_1.3-2  
[37] labeling\_0.3 stringi\_1.2.3 lazyeval\_0.2.1  
[40] munsell\_0.5.0

## Software Versions

- R version 3.4.1 (2017-06-30)
- FLCore: 2.6.8
- FLife: 3.2.0
- FLRP: 1.0.1.9001
- **Compiled:** Sun Jul 8 20:49:36 2018

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## References