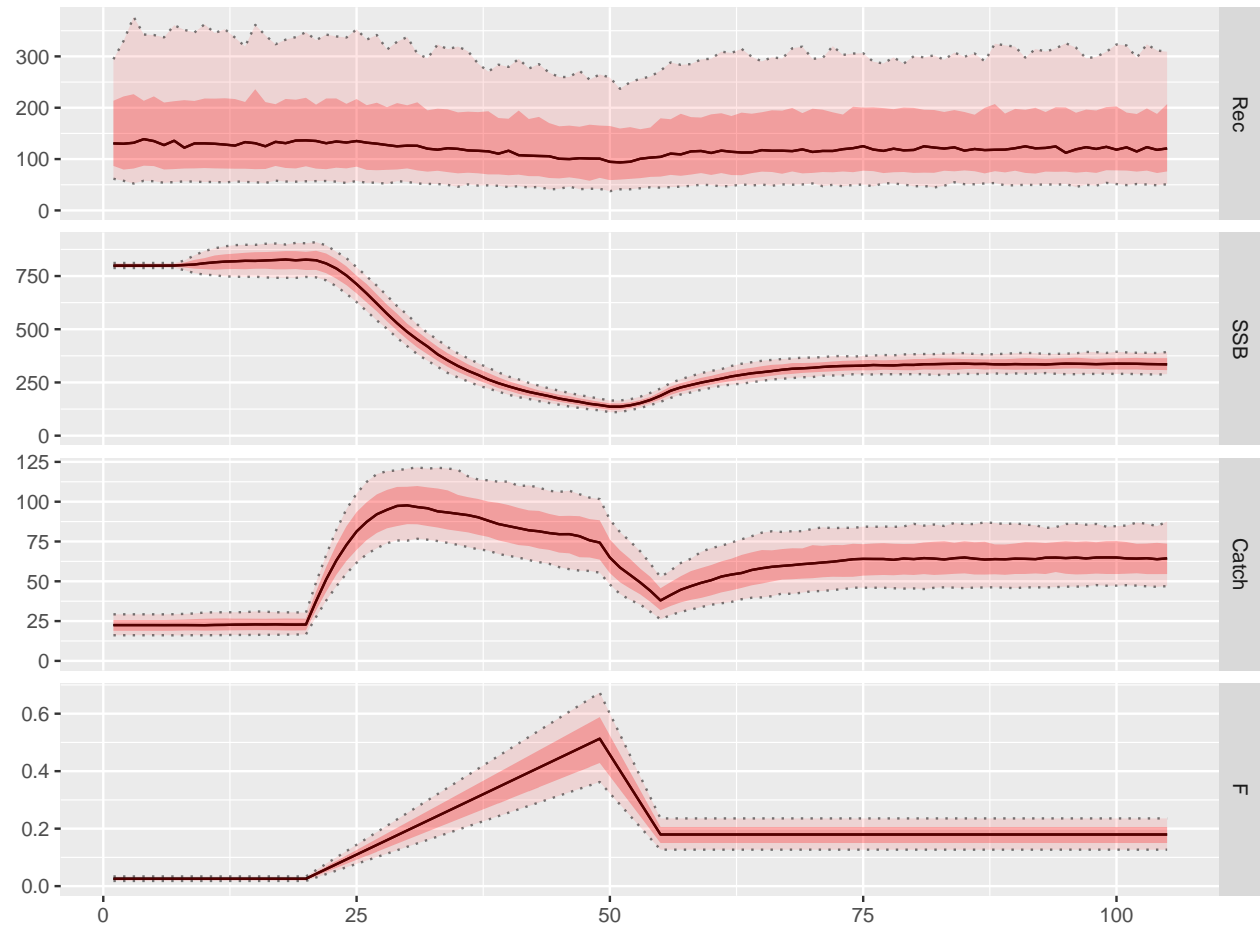# Cross test using Operating Model based on Life History

MLZ, Estimate Z from Mean Length
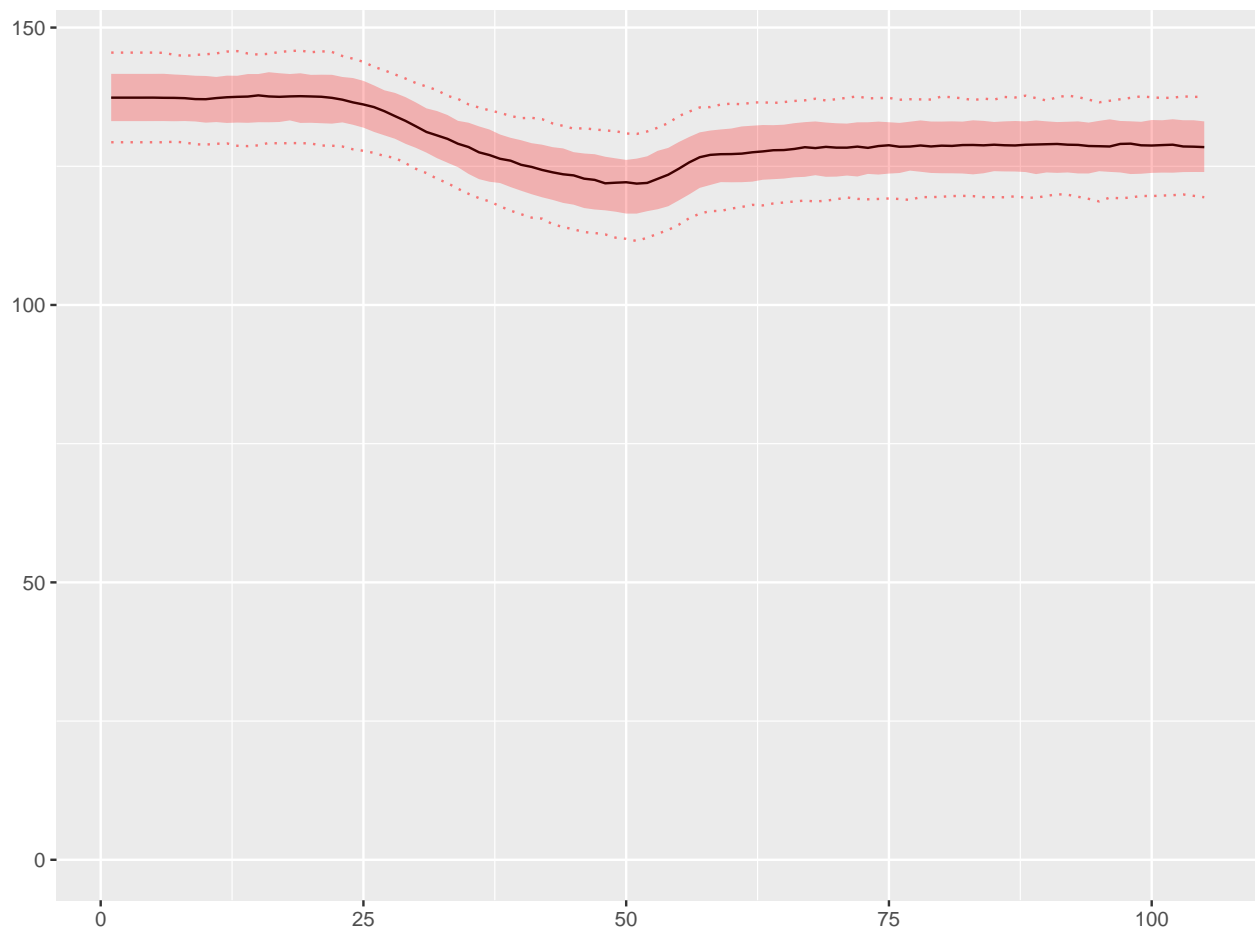
L Kell

18 August, 2018
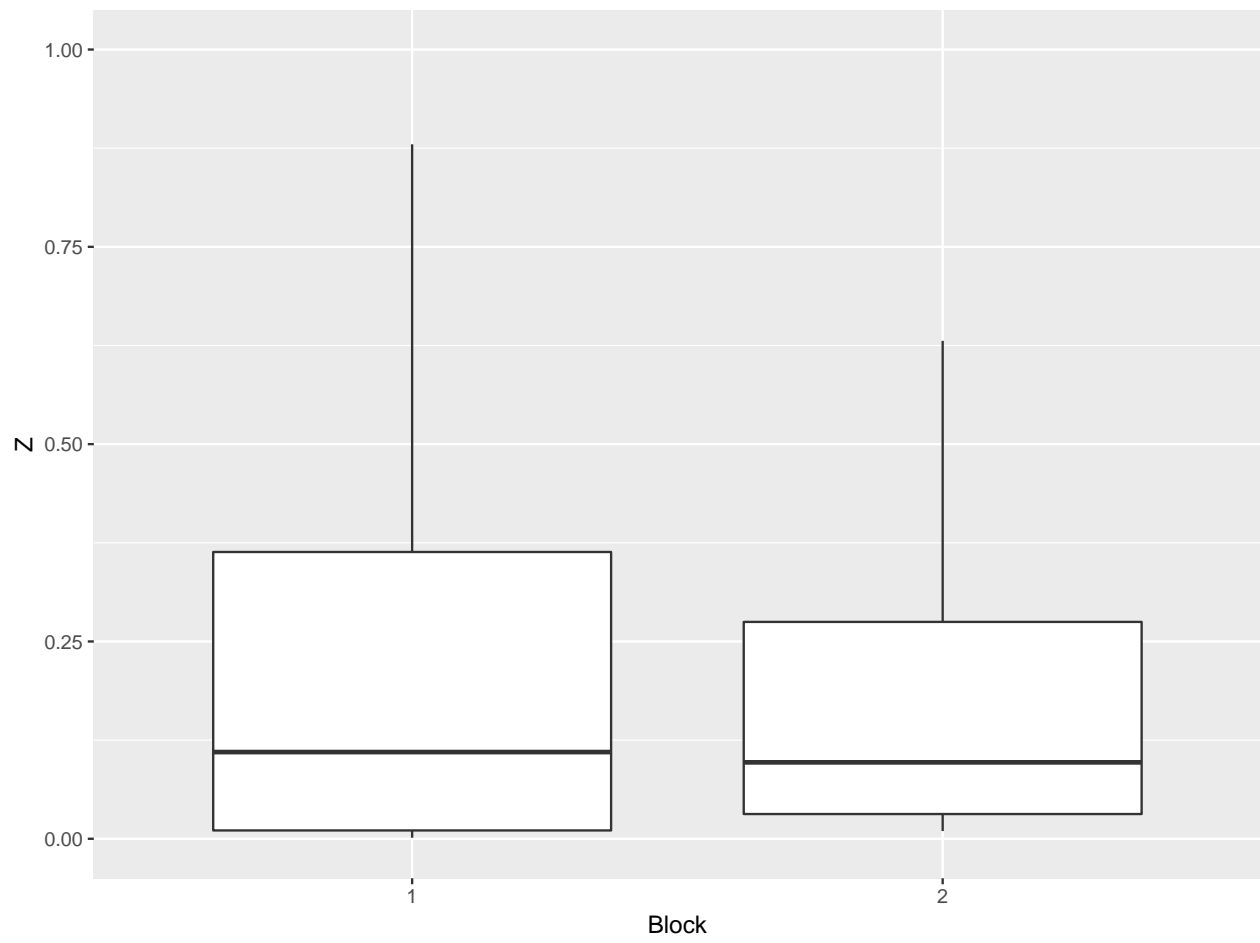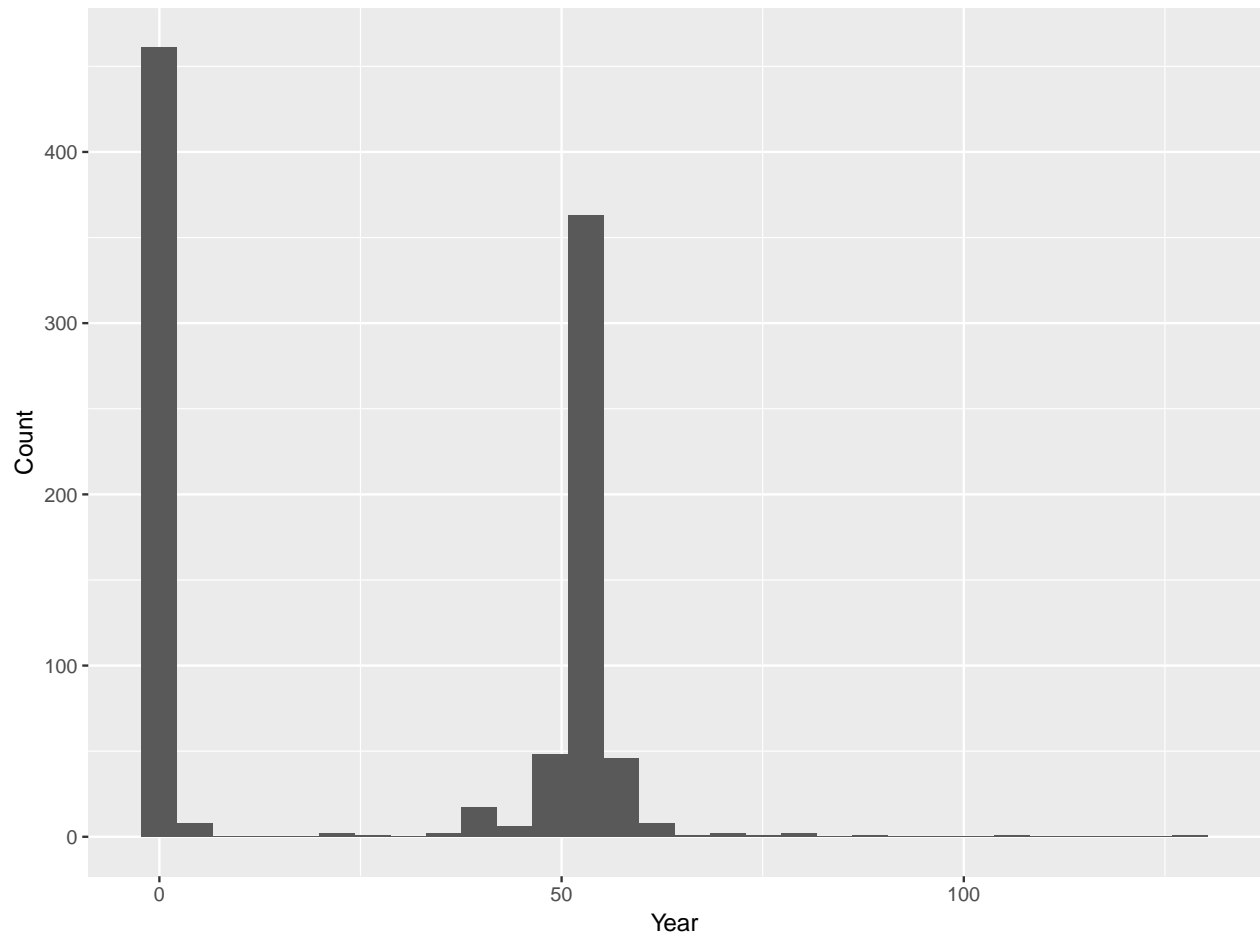
ray

Figure 1 Operating model for ray.

Figure 2 Mean length of catch ray.

Figure 3 Zs

Figure 4 Break

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] MLZ_0.1.1        mydas_0.0.0.9000  FLife_3.2.1.9001
 [4] FLBRP_2.5.3      ggplotFL_2.6.4    FLCore_2.6.9.9001
 [7] lattice_0.20-35  dplyr_0.7.6       ggplot2_3.0.0
[10] reshape_0.8.7    plyr_1.8.4        knitr_1.20

loaded via a namespace (and not attached):
 [1] Rcpp_0.12.18      TMB_1.7.14       pillar_1.1.0
 [4] compiler_3.4.1    bindr_0.1.1      bitops_1.0-6
 [7] tools_3.4.1       digest_0.6.15    evaluate_0.10.1
[10] tibble_1.4.2      gtable_0.2.0     pkgconfig_2.0.1
[13] rlang_0.2.1       Matrix_1.2-10    parallel_3.4.1
[16] yaml_2.1.18       bindrcpp_0.2.2   gridExtra_2.3
[19] withr_2.1.2       stringr_1.3.1    caTools_1.17.1
[22] gtools_3.8.1      stats4_3.4.1     rprojroot_1.3-2
[25] grid_3.4.1        tidyselect_0.2.4 glue_1.2.0
[28] R6_2.2.2          rmarkdown_1.9    gdata_2.18.0
[31] reshape2_1.4.3    purrr_0.2.5      magrittr_1.5
[34] codetools_0.2-15  gplots_3.0.1     backports_1.1.2
[37] scales_0.5.0      htmltools_0.3.6  MASS_7.3-47
[40] assertthat_0.2.0  colorspace_1.3-2 labeling_0.3
[43] KernSmooth_2.23-15 stringi_1.2.3   lazyeval_0.2.1
[46] munsell_0.5.0
```

Software Versions

- R version 3.4.1 (2017-06-30)
- FLCore: 2.6.9.9001
- FLife: 3.2.1.9001
- FLBRP: 2.5.3
- **Compiled**: Sat Aug 18 12:10:22 2018

Author information

Laurence Kell. laurie@seaplusplus.es

Acknowledgements

References