

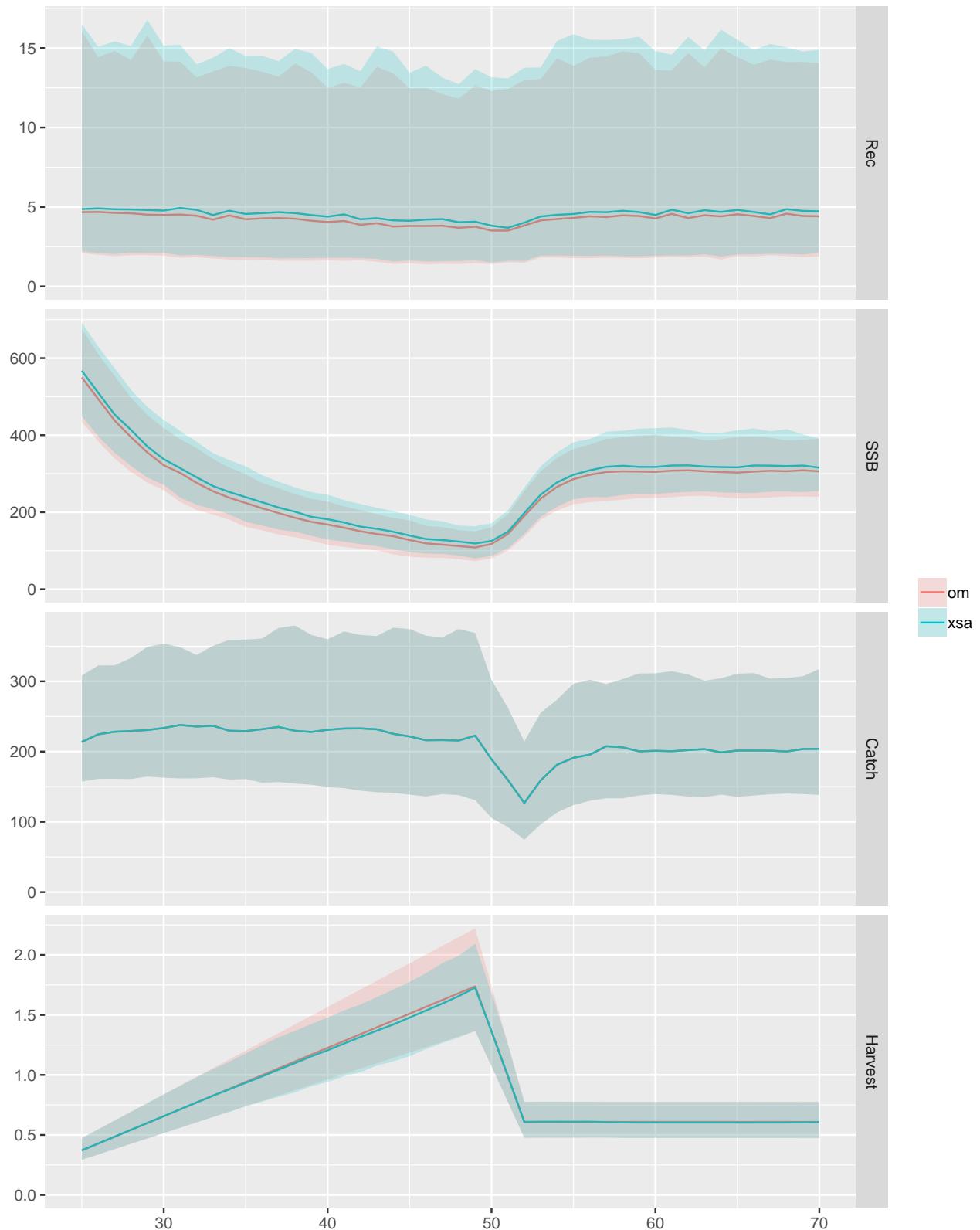
# Cross test using Operating Model based on Life History

VPA

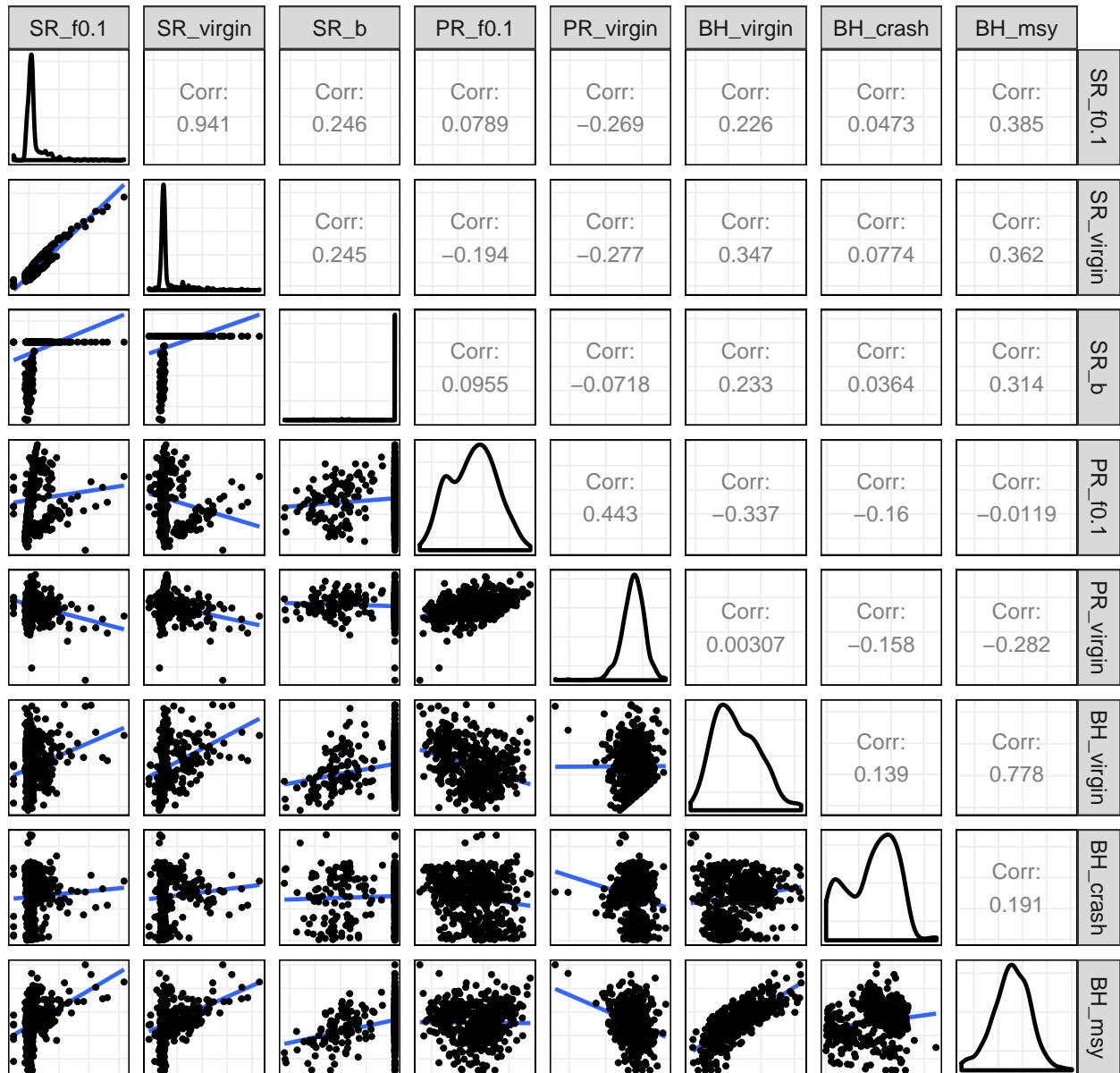
*L Kell*

*23 July, 2018*

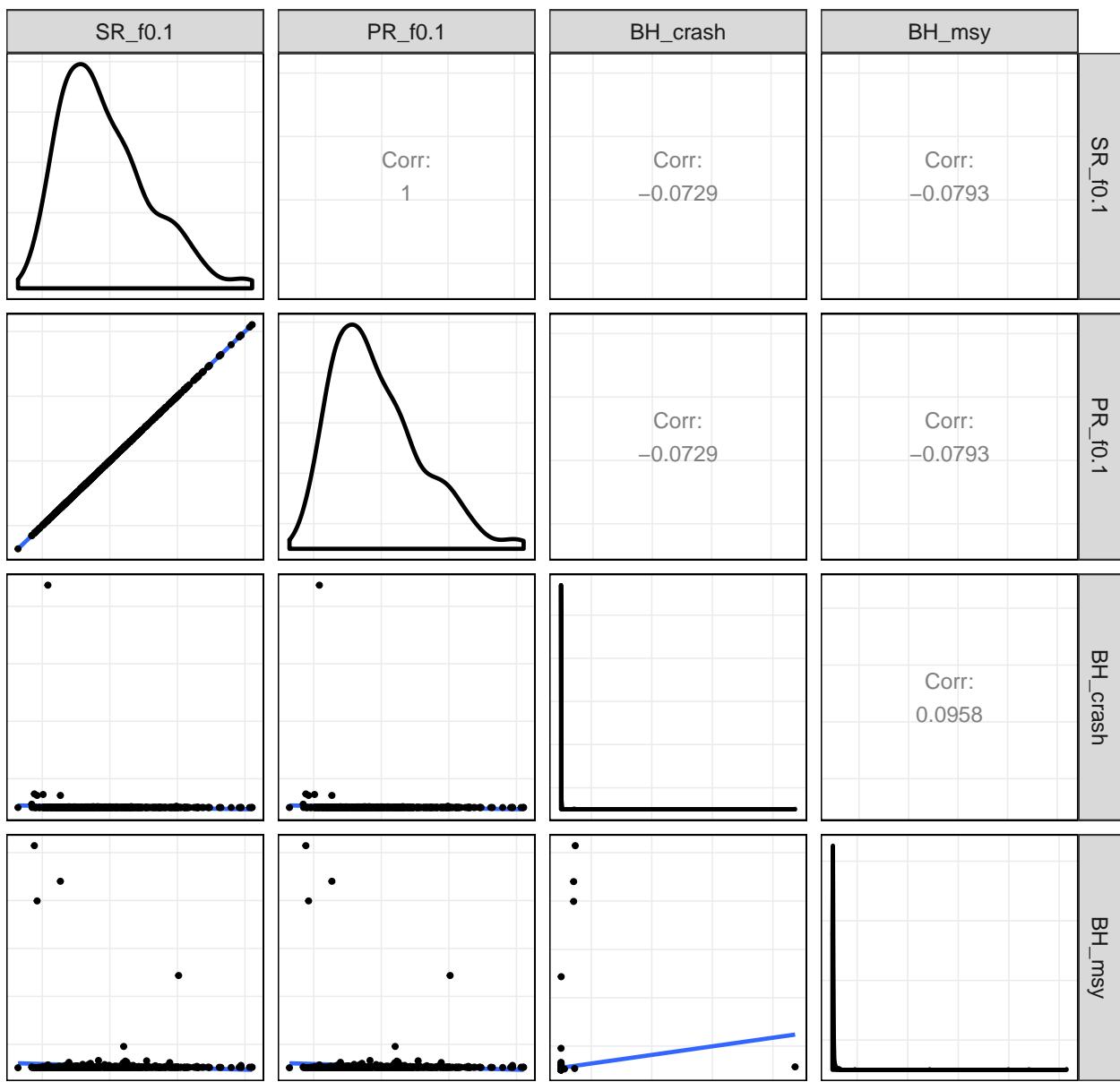
## Brill



**Figure 1.** Cross test for brill.

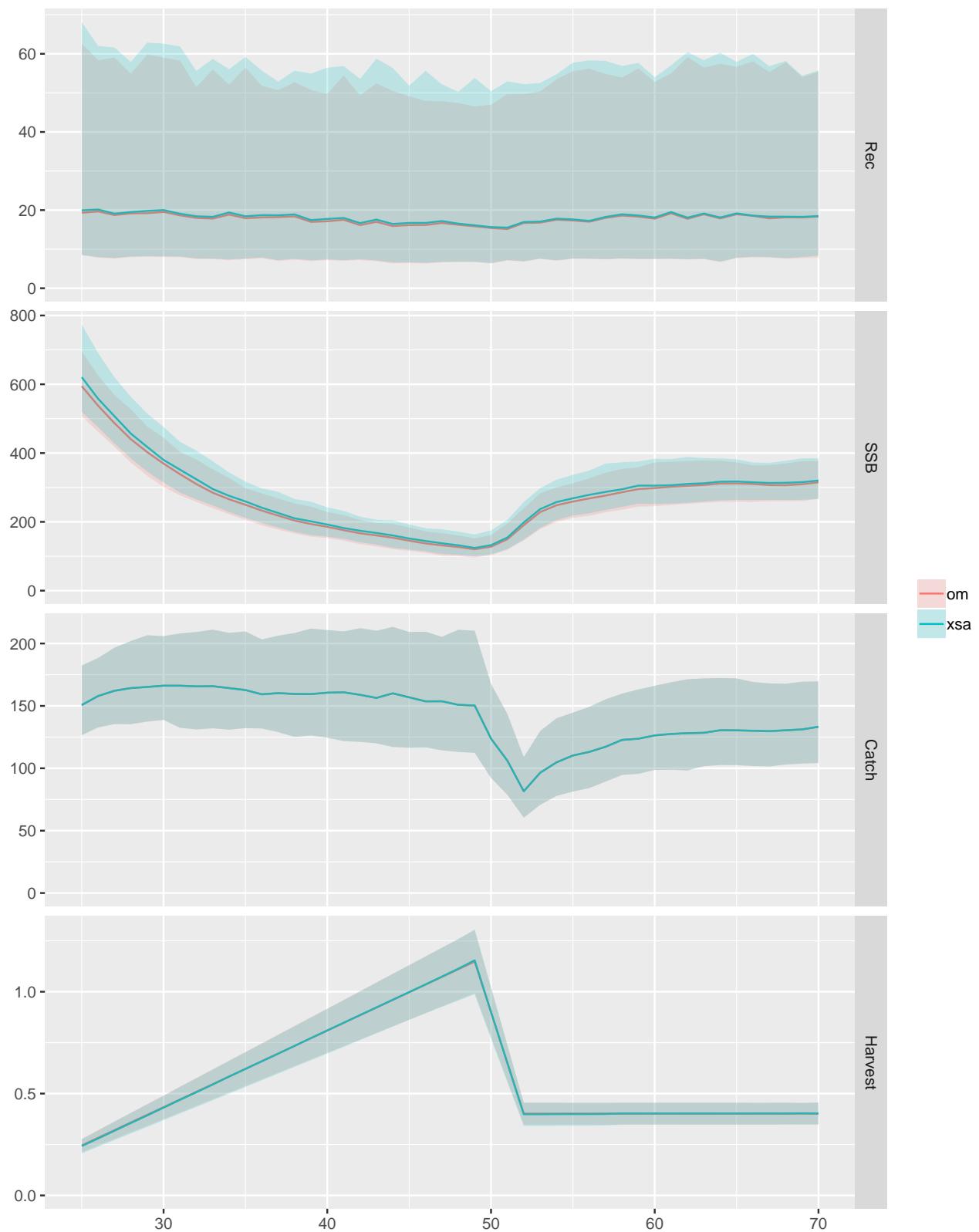


**Figure 2.** Cross test SSB reference points for brill.

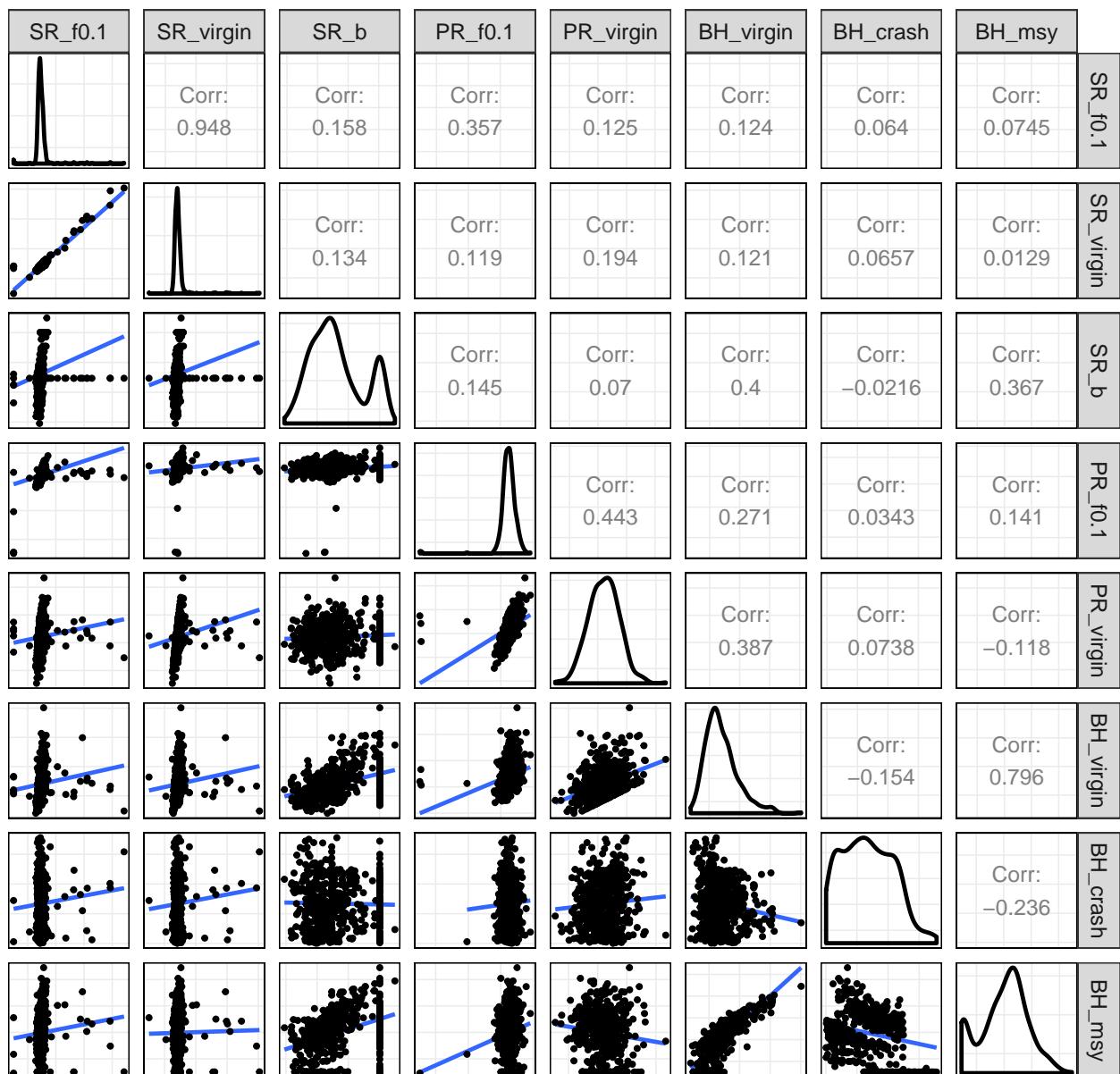


**Figure 3.** Cross test F reference points for brill.

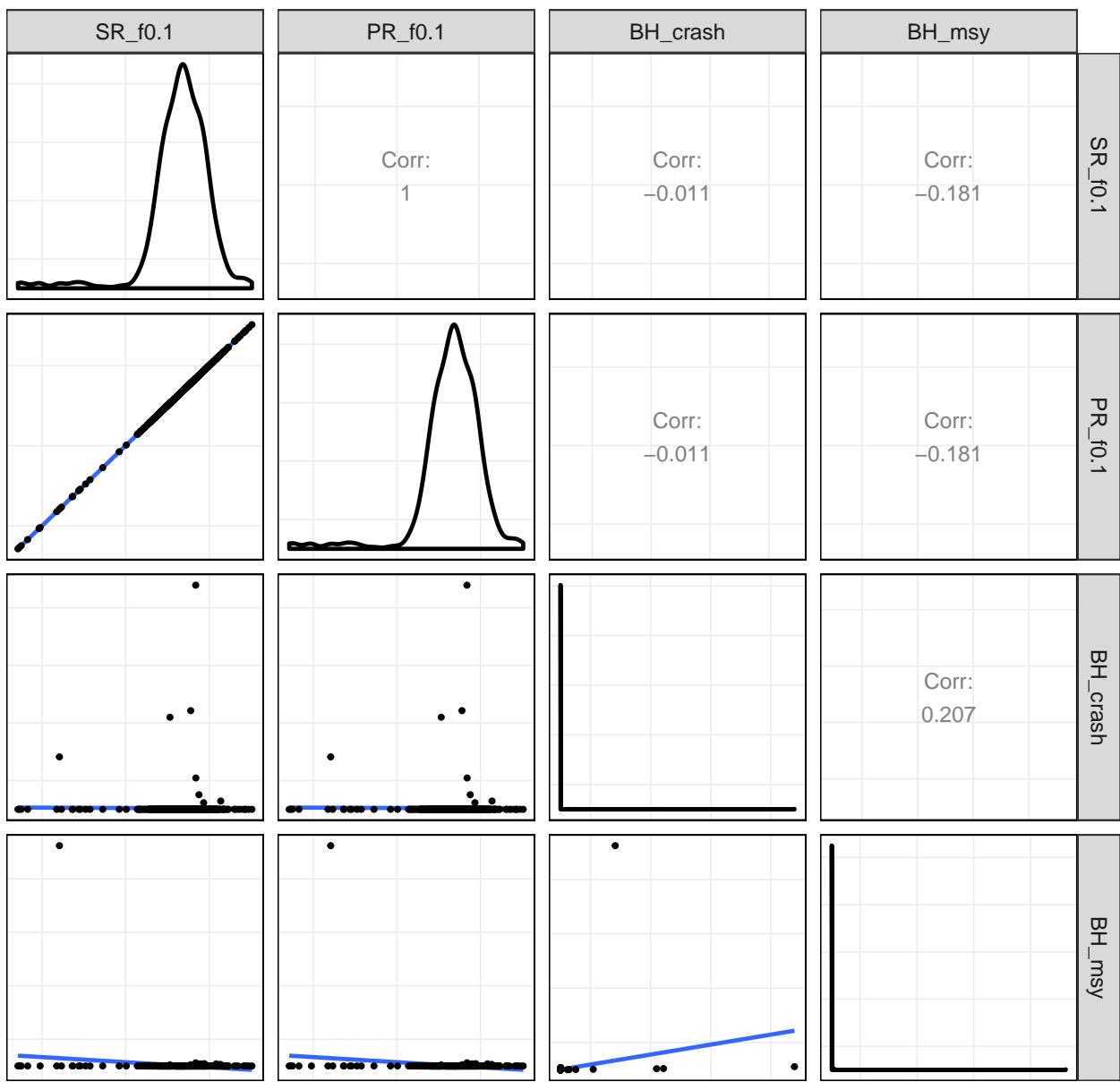
## Turbot



**Figure 4.** Simulation test for turbot.

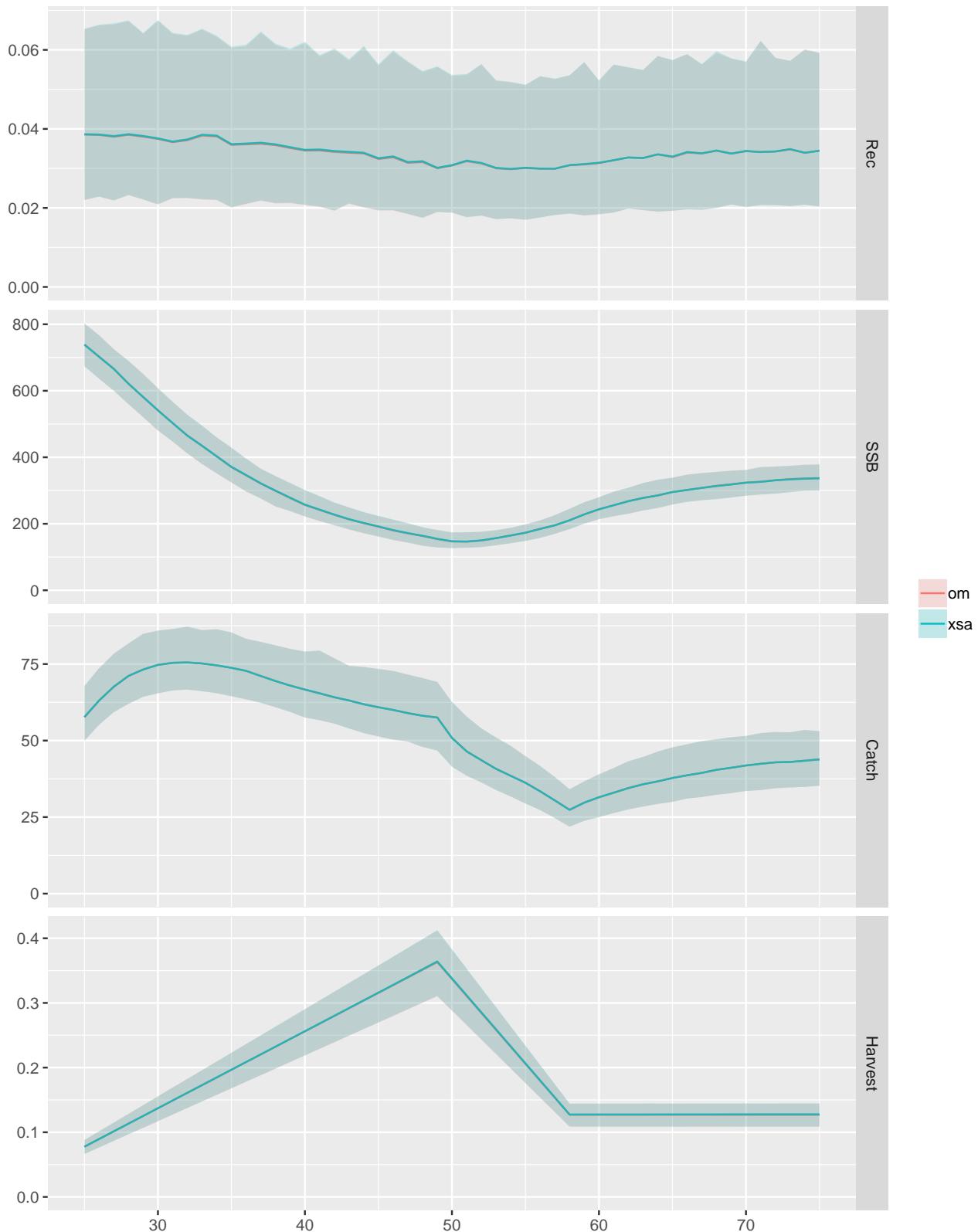


**Figure 5.** Cross test SSB reference points for turbot.

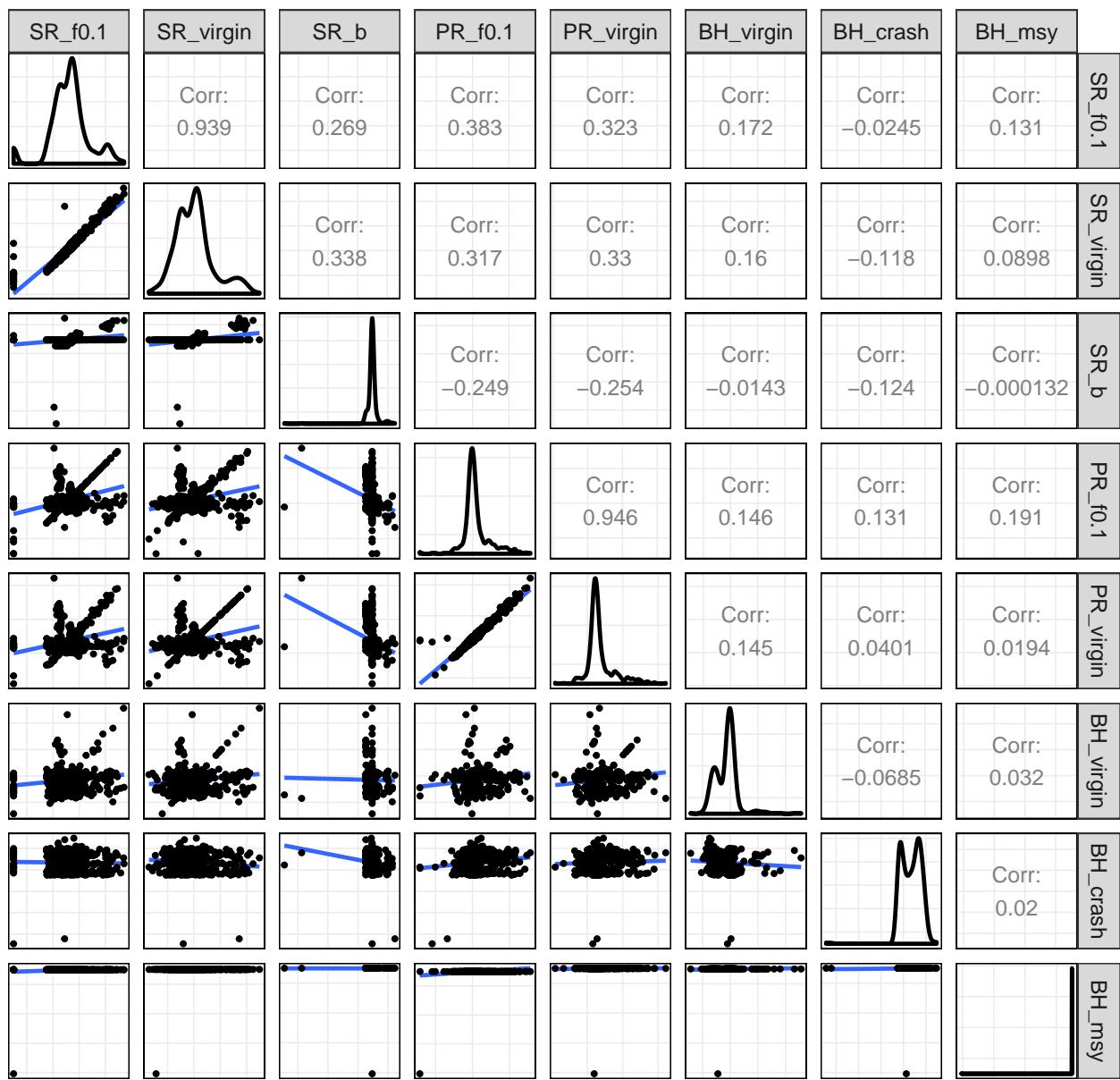


**Figure 6.** Cross test F reference points for turbot.

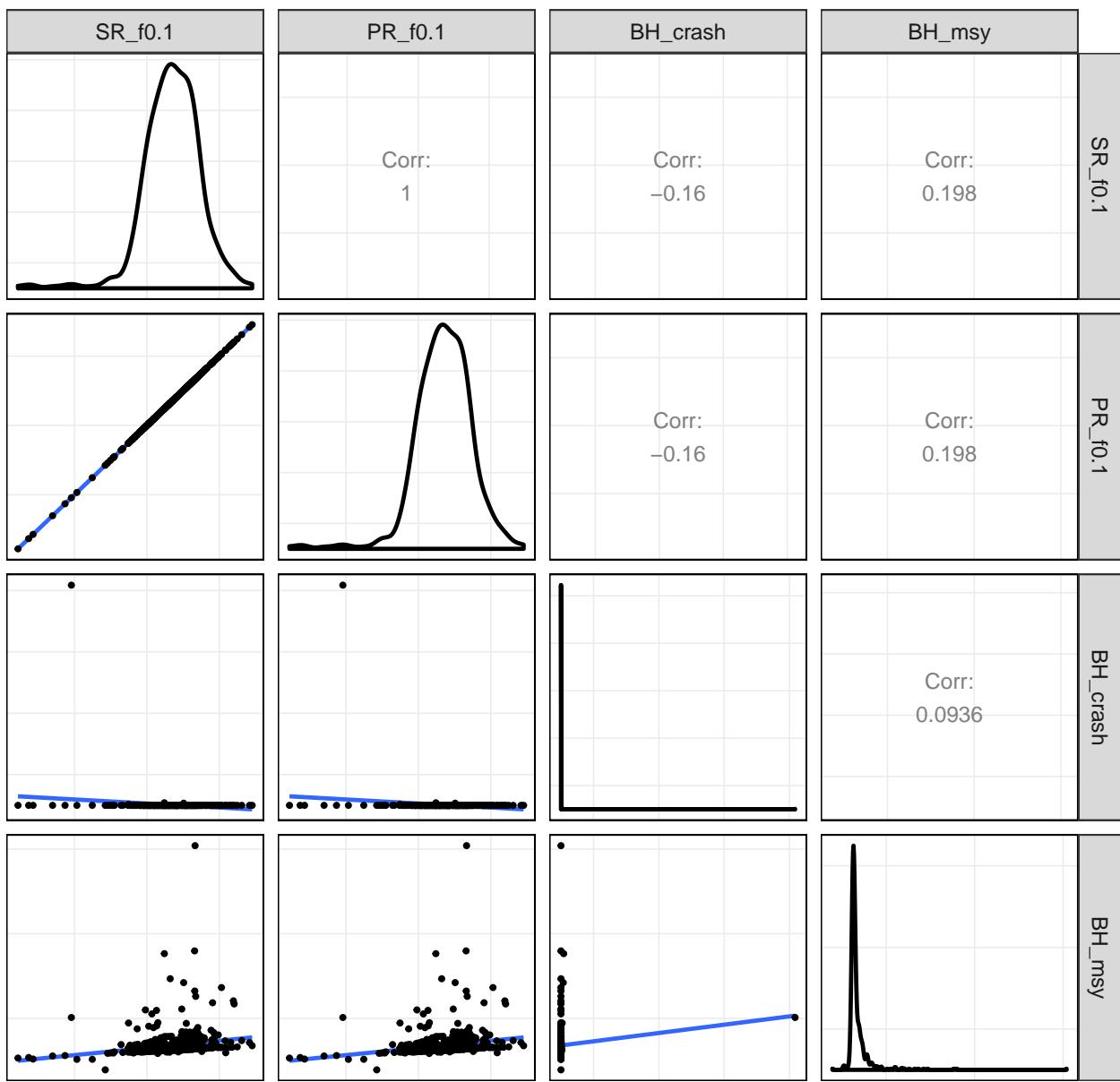
## Ray



**Figure 7.** Simulation test for ray.

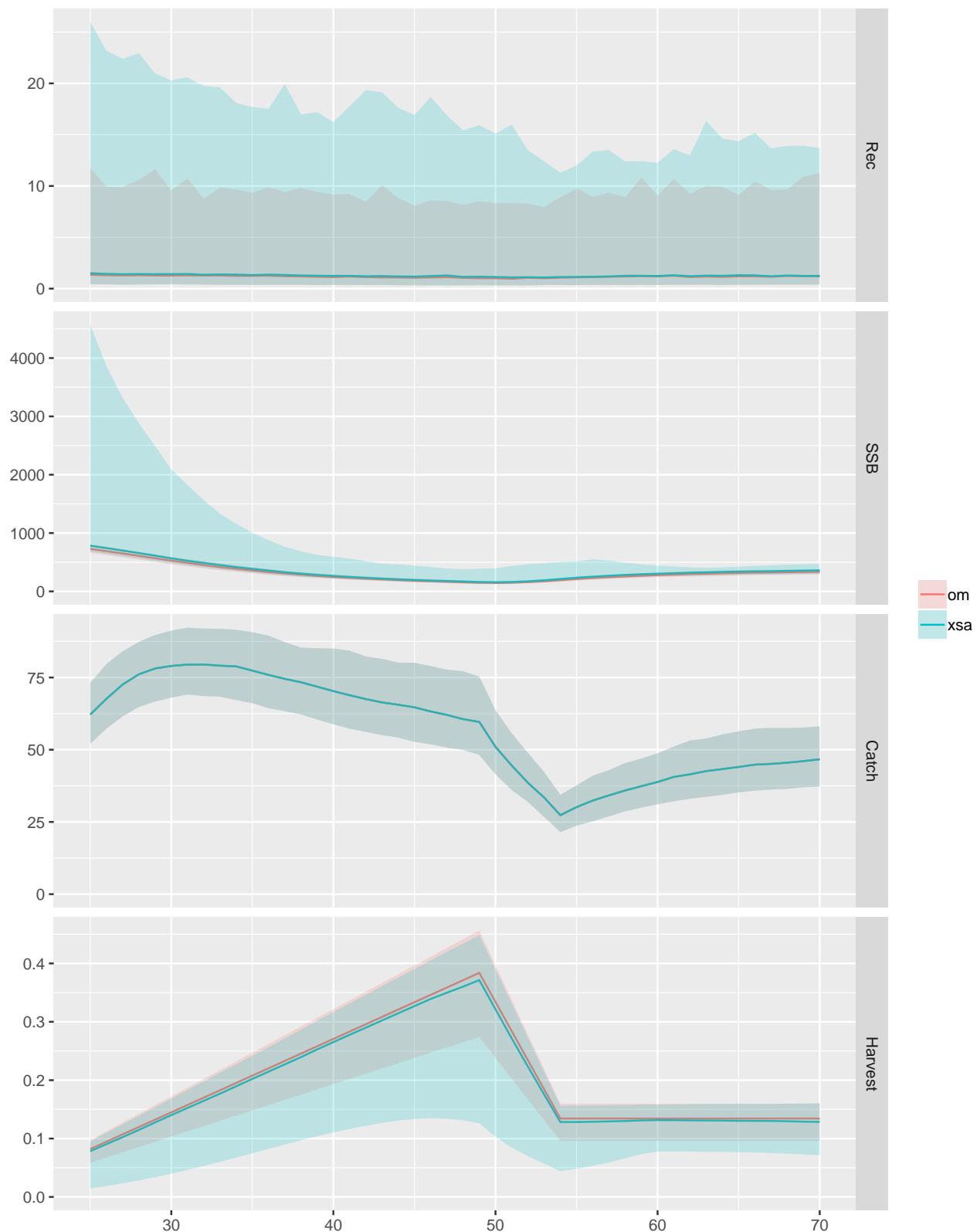


**Figure 8.** Cross test SSB reference points for ray.

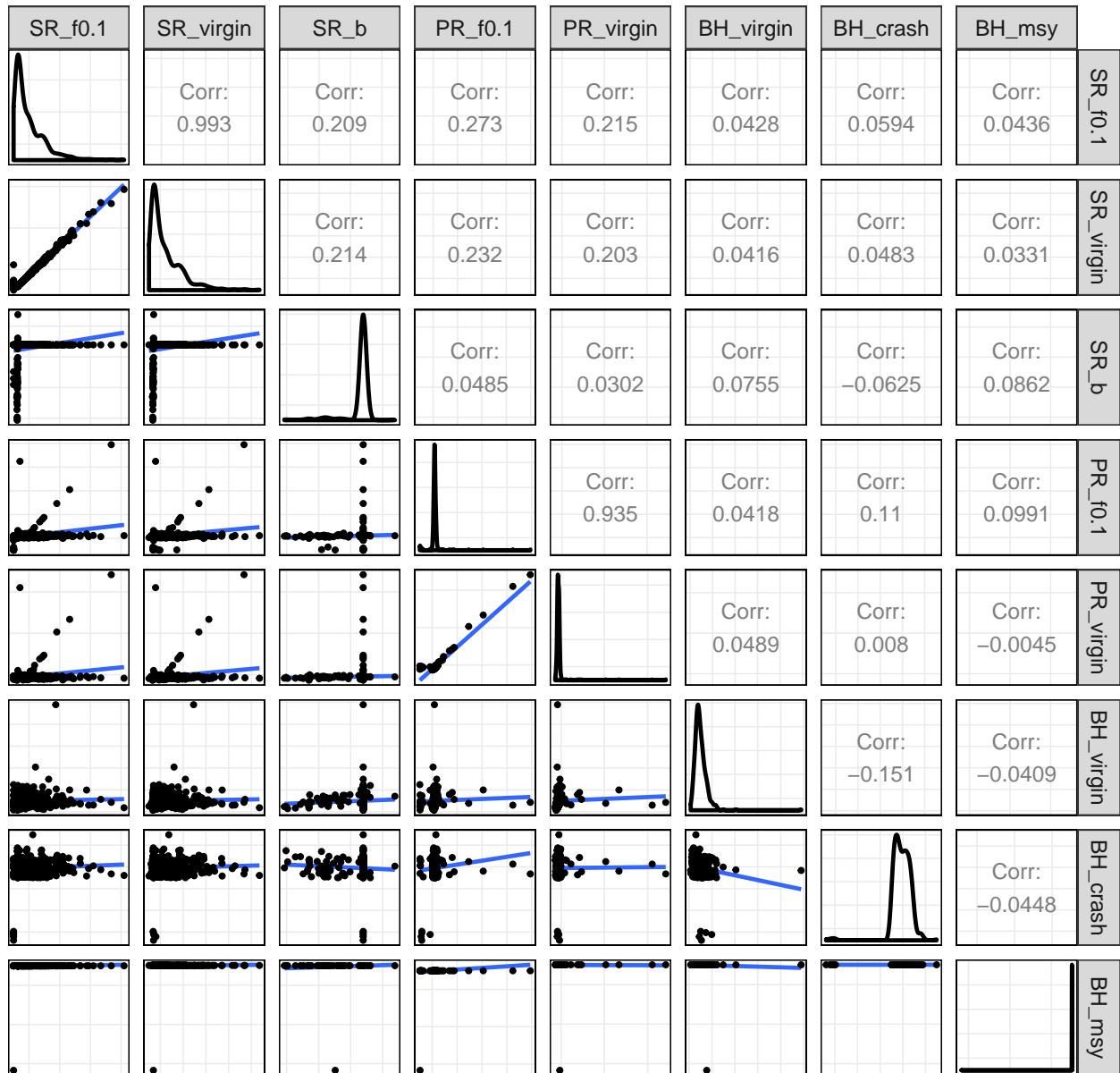


**Figure 9.** Cross test F reference points for ray.

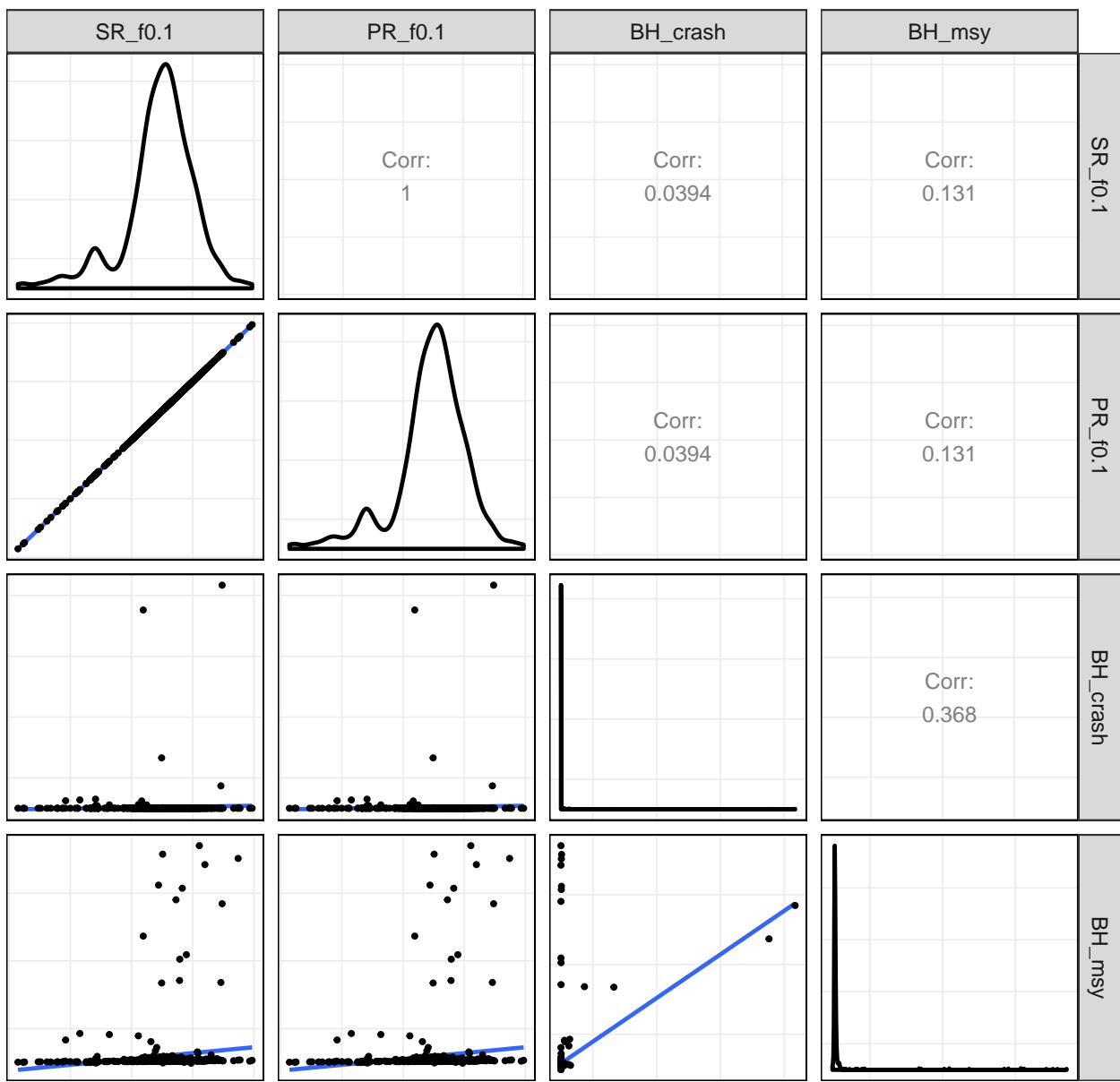
## Pollack



**Figure 10.** Simulation test for pollack.

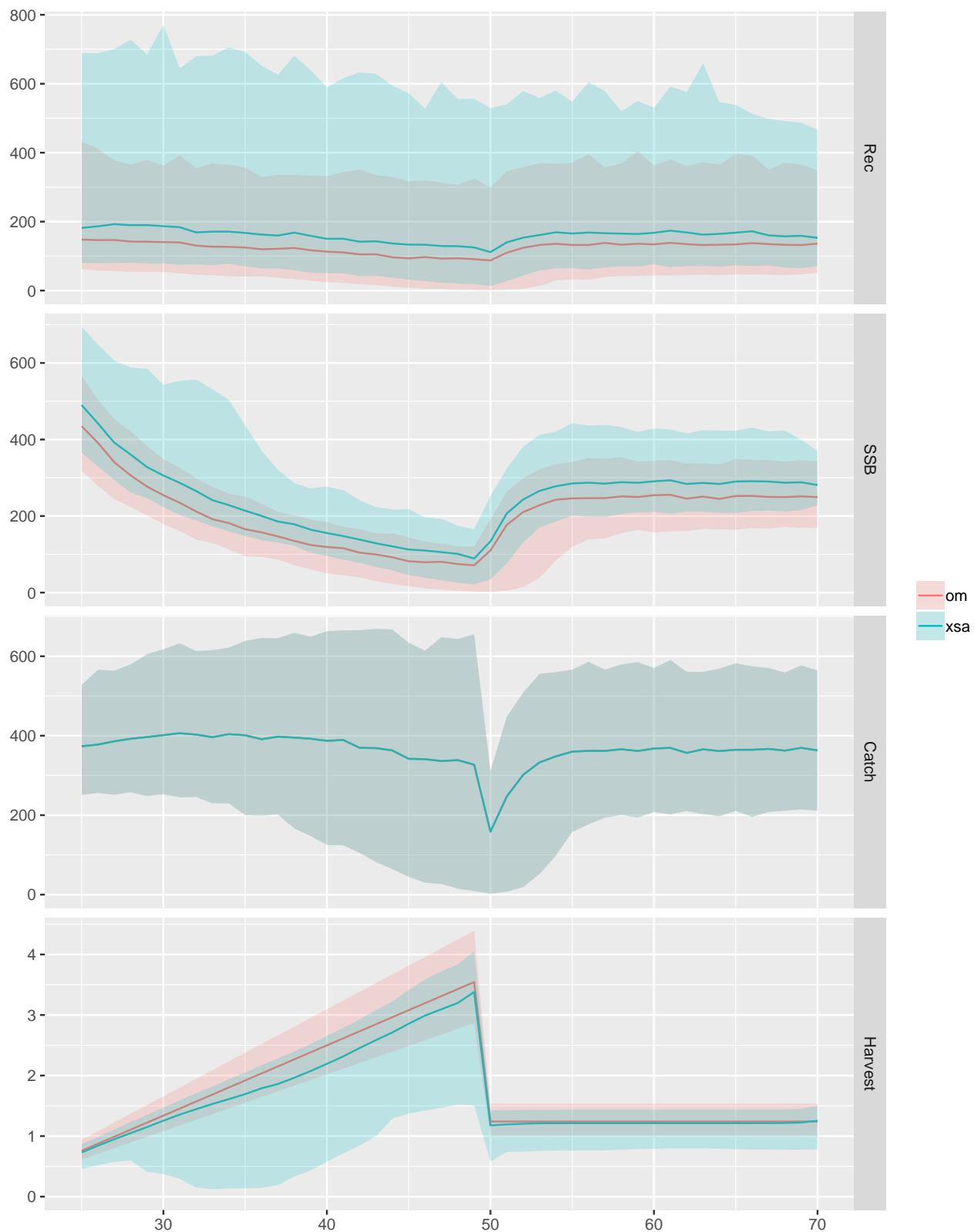


**Figure 11.** Cross test SSB reference points for pollack.



**Figure 12.** Cross test F reference points for pollack.

## Sprat



**Figure 13.** Simulation test for sprat.

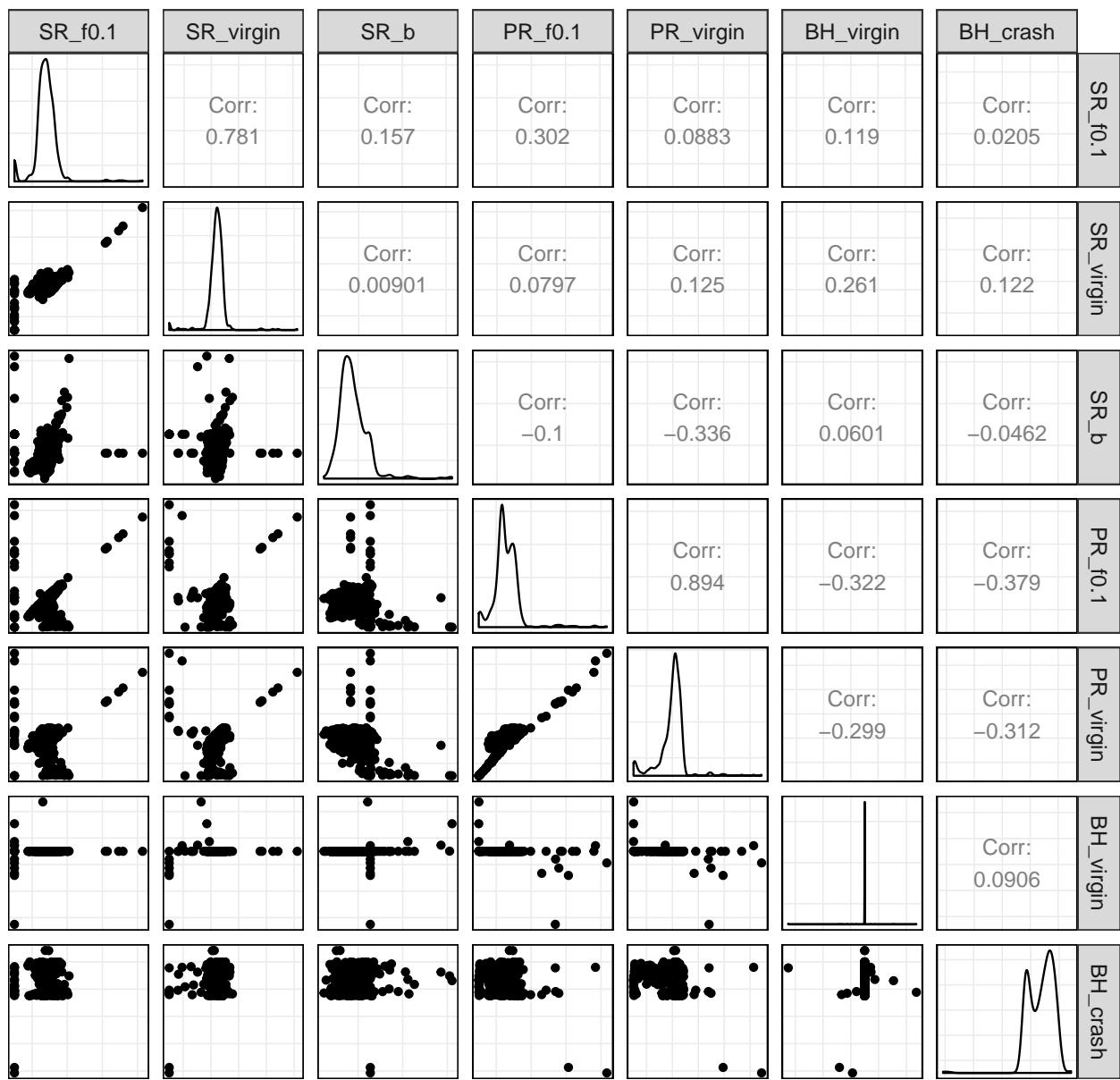
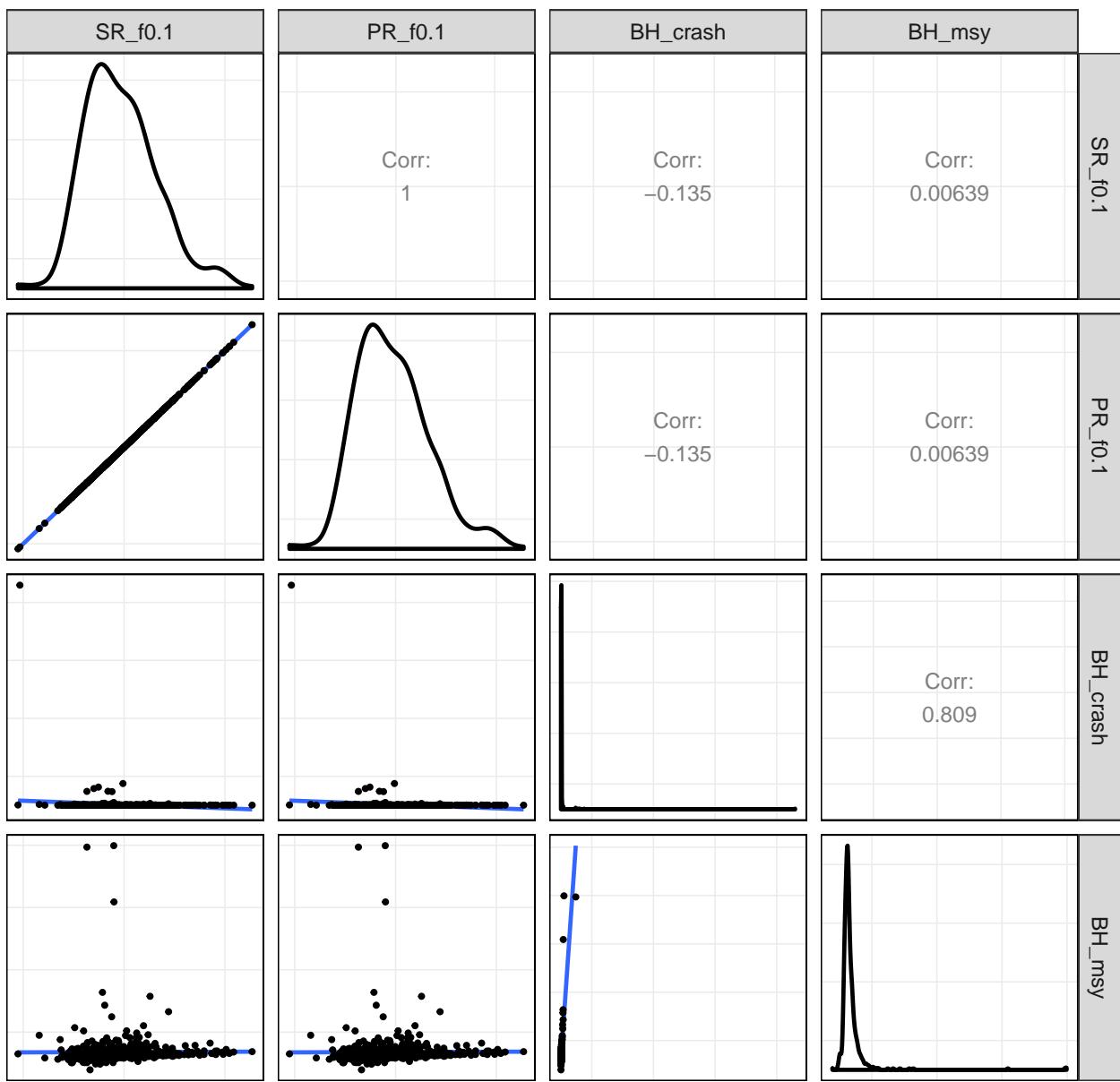
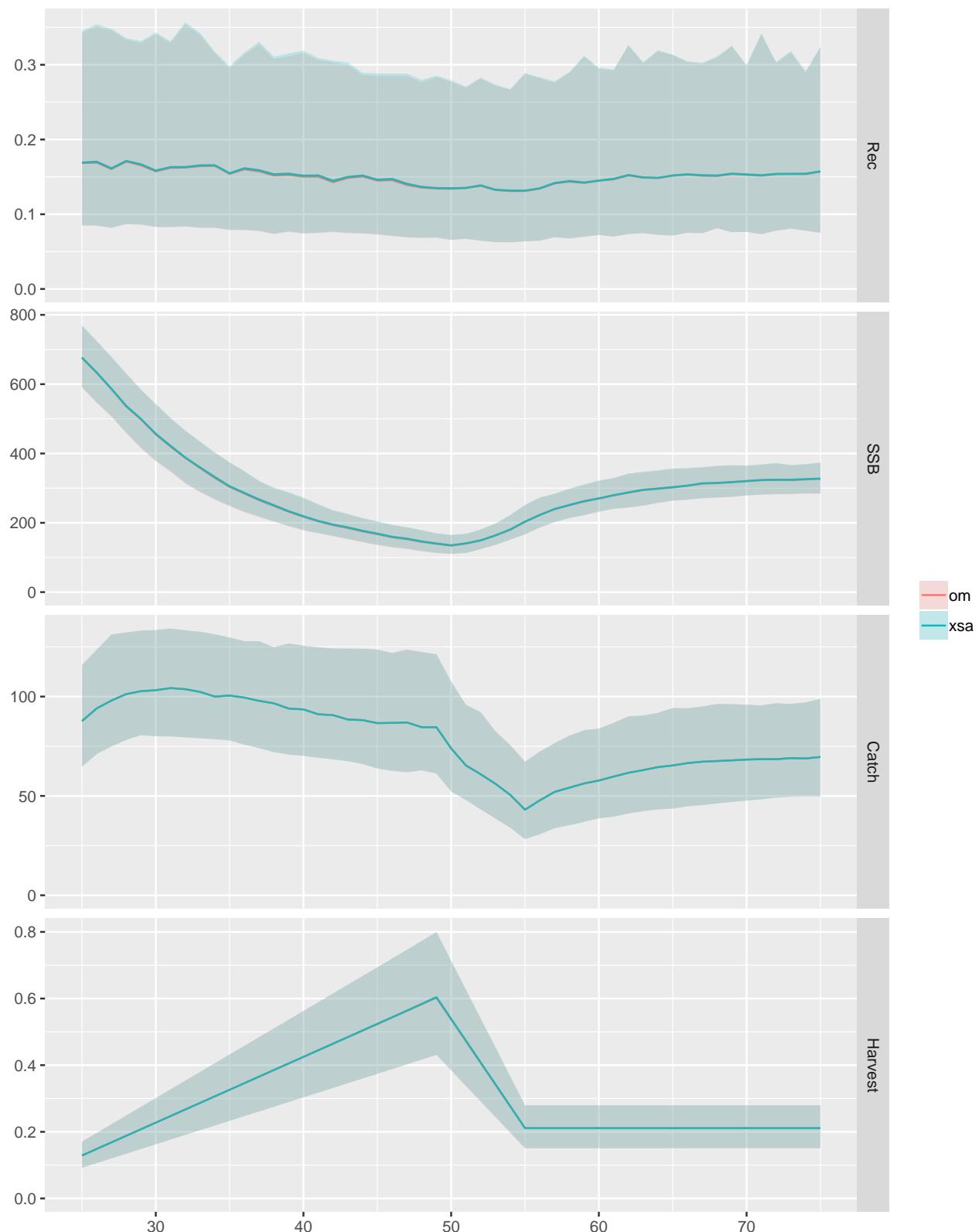


Figure 14. Cross test SSB reference points for sprat.



**Figure 15.** Cross test F reference points for sprat.

## Lobster



**Figure 16.** Simulation test for lobster.

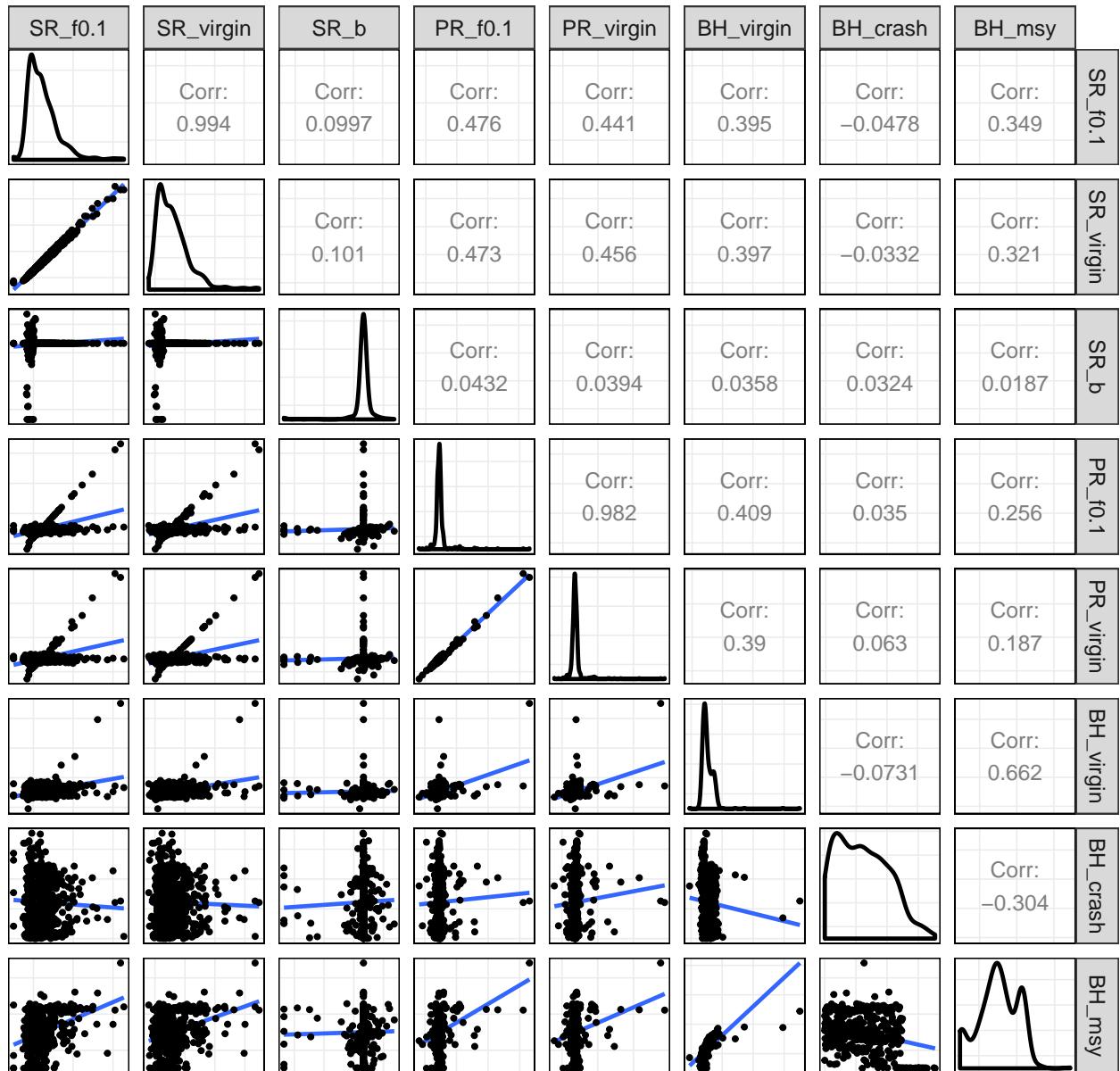
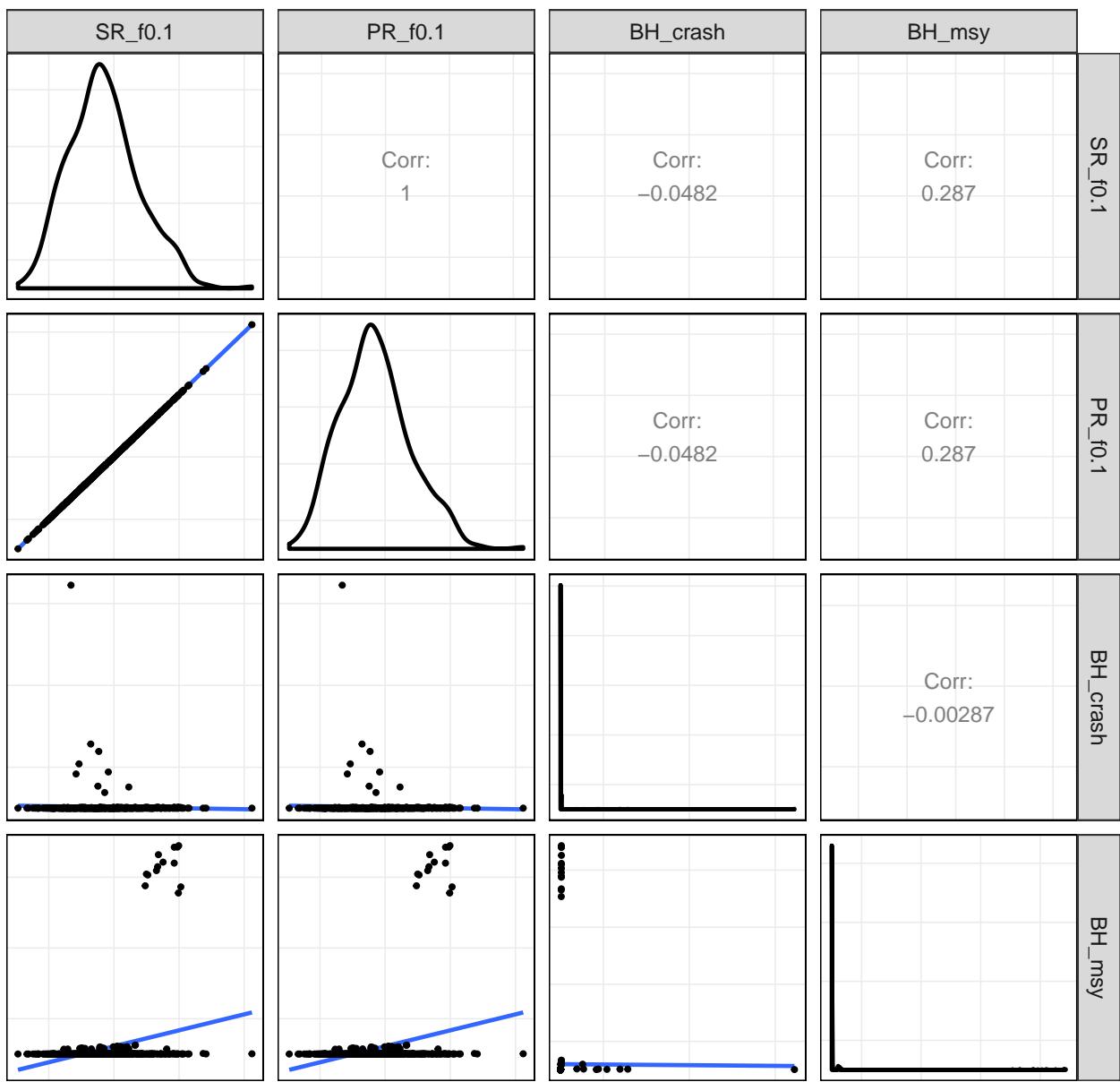
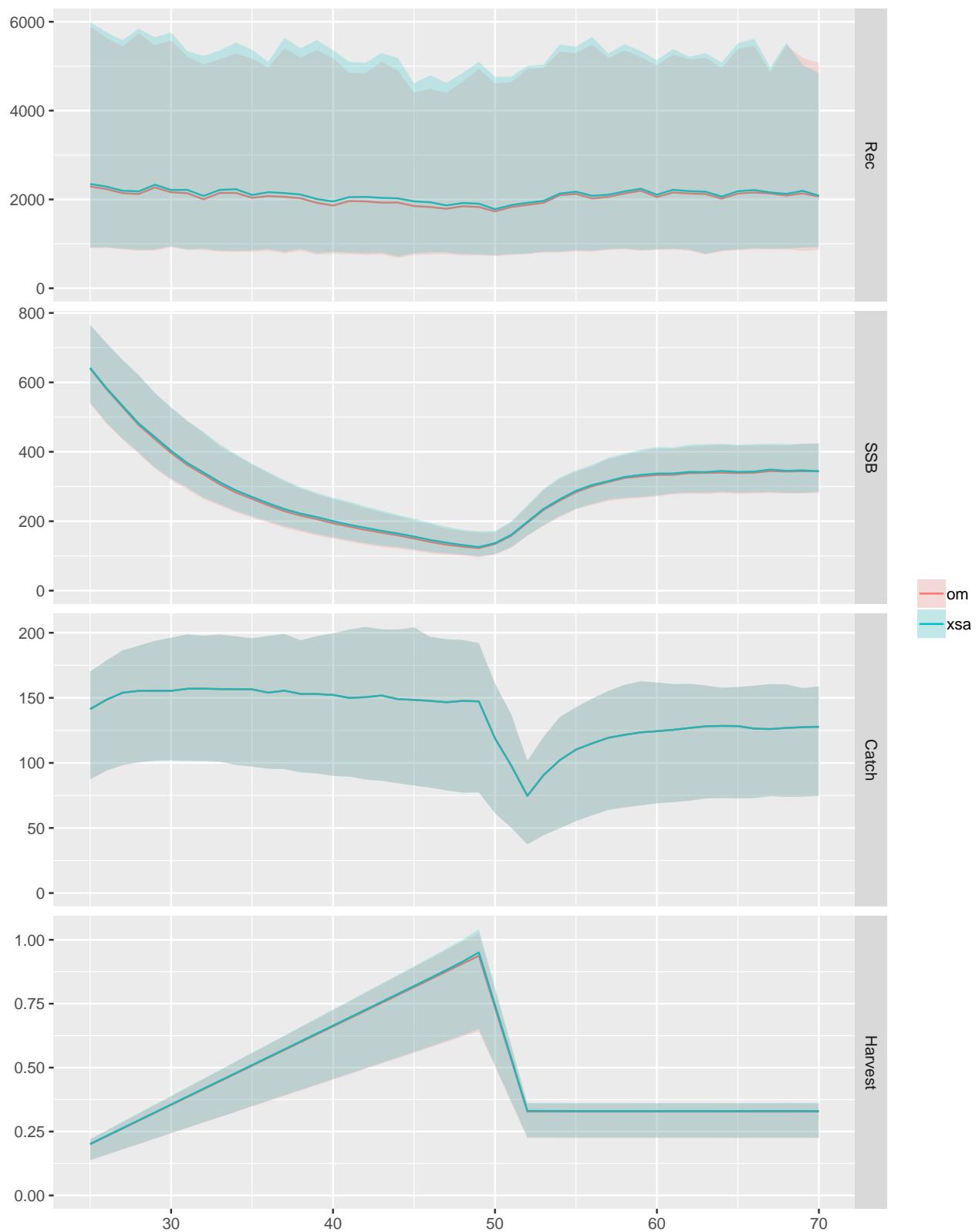


Figure 17. Cross test SSB reference points for lobster.

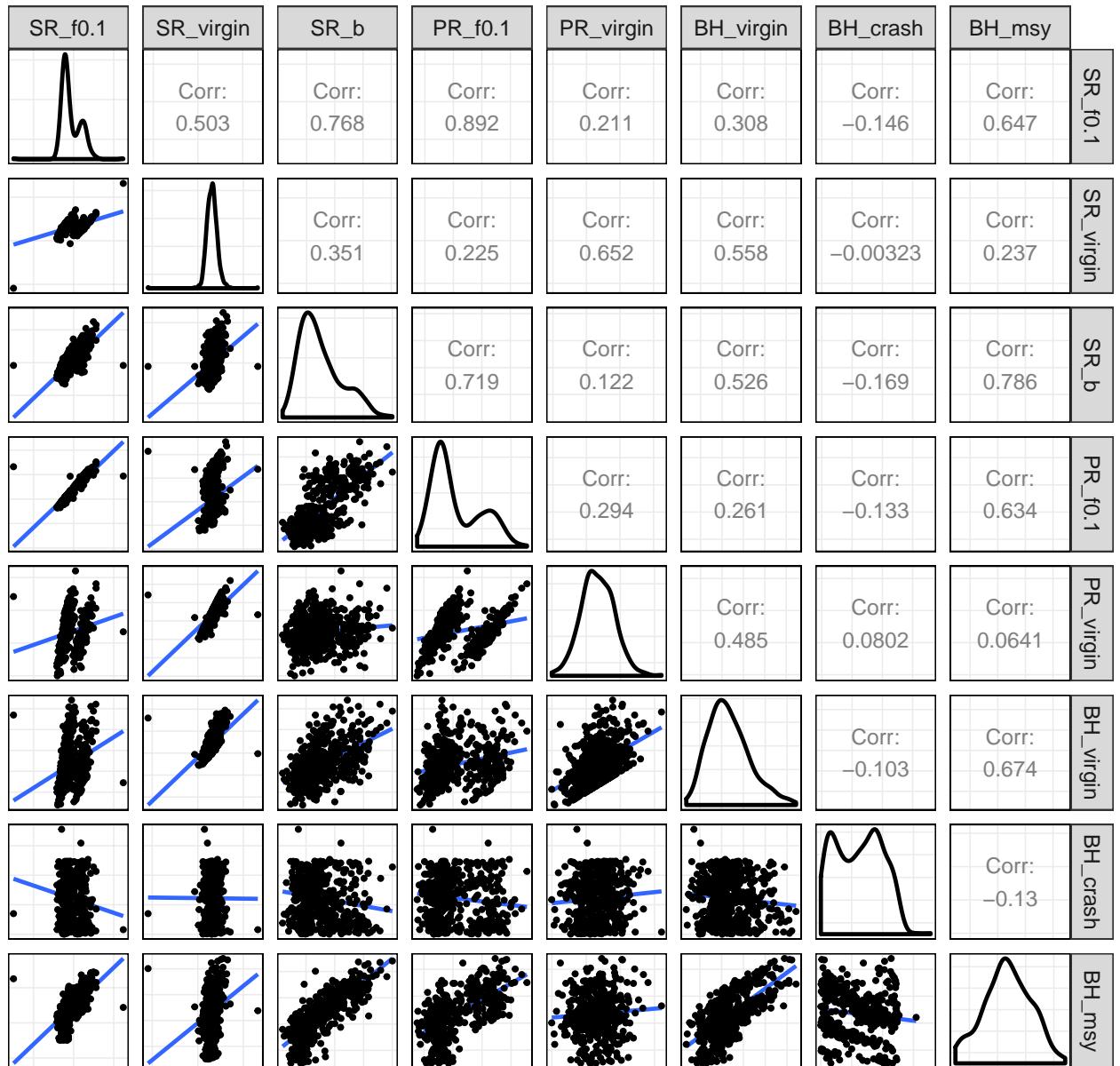


**Figure 18.** Cross test F reference points for lobster.

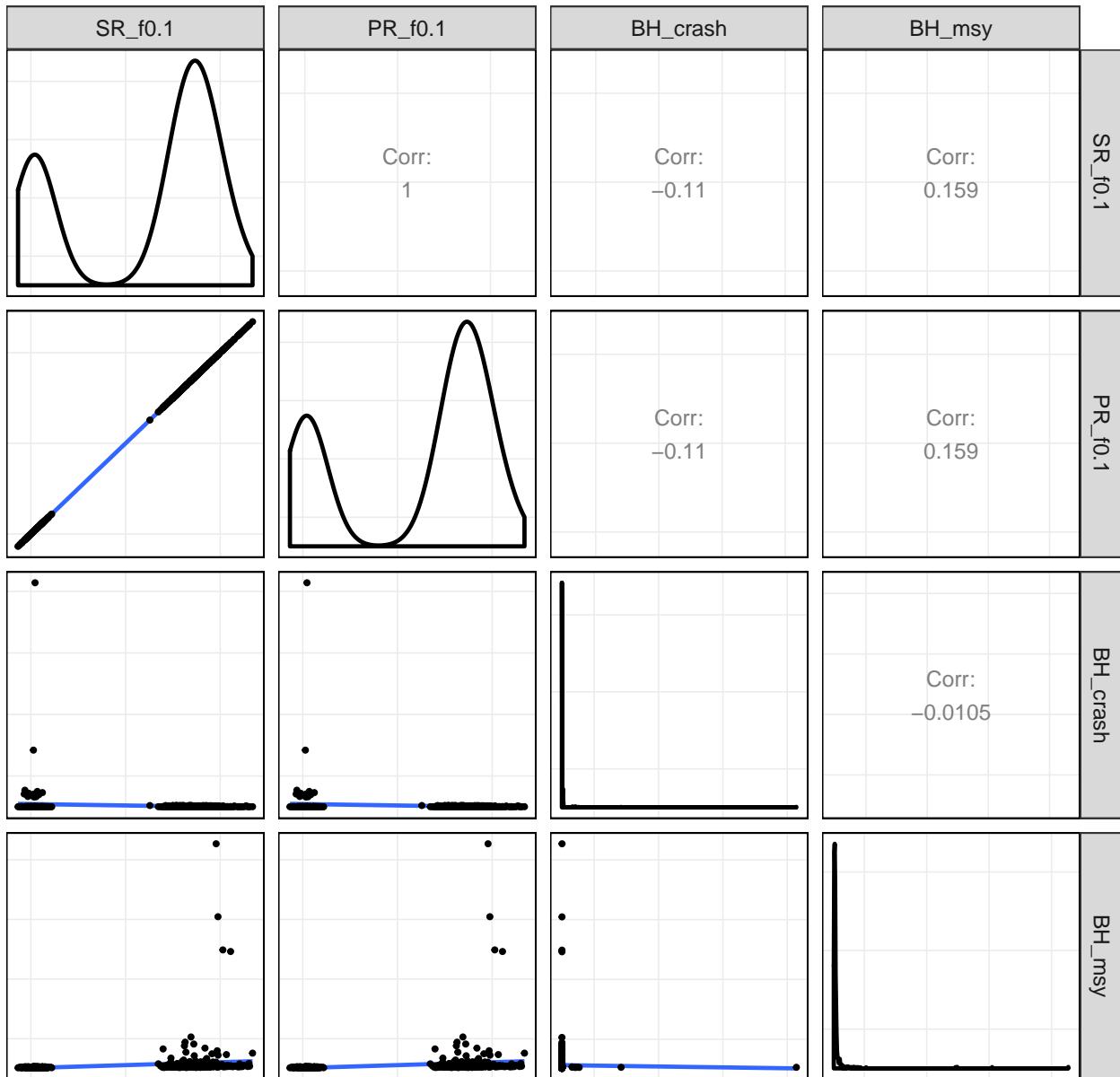
## Razors



**Figure 19.** Simulation test for razor.



**Figure 20.** Cross test SSB reference points for razor.



**Figure 21.** Cross test F reference points for razors.

**Figure 22.** Retrospective test

**Figure 23.** Single retrospective test

## Software Versions

- R version 3.4.1 (2017-06-30)
- FLCore: 2.6.8
- FLife: 3.2.0
- FLBRP: 2.5.3
- FLAssess: 2.6.1
- FLXSA: 2.6.1
- **Compiled:** Mon Jul 23 08:10:35 2018

## **Author information**

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## **Acknowledgements**

This vignette and many of the methods documented in it were developed under the MyDas project funded by the Irish exchequer and EMFF 2014-2020. The overall aim of MyDas is to develop and test a range of assessment models and methods to establish Maximum Sustainable Yield (MSY) reference points (or proxy MSY reference points) across the spectrum of data-limited stocks.

## **References**

## Session Info

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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
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LAPACK: /usr/lib/lapack/liblapack.so.3.6.0

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[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] parallel stats      graphics grDevices utils      datasets methods
[8] base

other attached packages:
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[4] GGally_1.4.0      FLXSA_2.6.1     FLAssess_2.6.1
[7] FLBRP_2.5.3      ggplotFL_2.6.4   FLCore_2.6.8
[10] lattice_0.20-35  dplyr_0.7.6     plyr_1.8.4
[13] reshape_0.8.7    ggplot2_3.0.0   knitr_1.20

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