

# An skeleton assessment for Snow crab in GMACS - Time varying natural mortality

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## A. Summary of Major Changes

1. Management: None
2. Input data:
3. Assessment methodology:
4. Assessment results

Notes: *Natural mortality is considered as time varying in this assessment.*

## B. Comments, responses, and assessment summary

## C. Introduction

Distribution

Life history characteristics

Natural mortality

Weight at length

Maturity

Molting probability

Reproduction

Growth

Management history

ADFG harvest strategy

History of BMSY

Fishery history

## **D. Data**

Catch data

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## **H. Data gaps and research priorities**

Methodology

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Scientific uncertainty

## **I. Ecosystem considerations**

## **Appendix A: Population dynamics**

Table 1: Changes in management quantities for each scenario considered. Reported management quantities are derived from maximum likelihood estimates.

Model	MMB	B35	F35	FOFL	OFL
Version 1.00	25.528	135.317	2.309	0.000	0.099
Version 1.01	25.528	135.317	2.309	0.566	11.226
Version 2.01.K	25.607	135.553	2.345	0.574	11.341
Version 2.01.K - Constant M	43.399	84.234	2.571	1.383	23.534



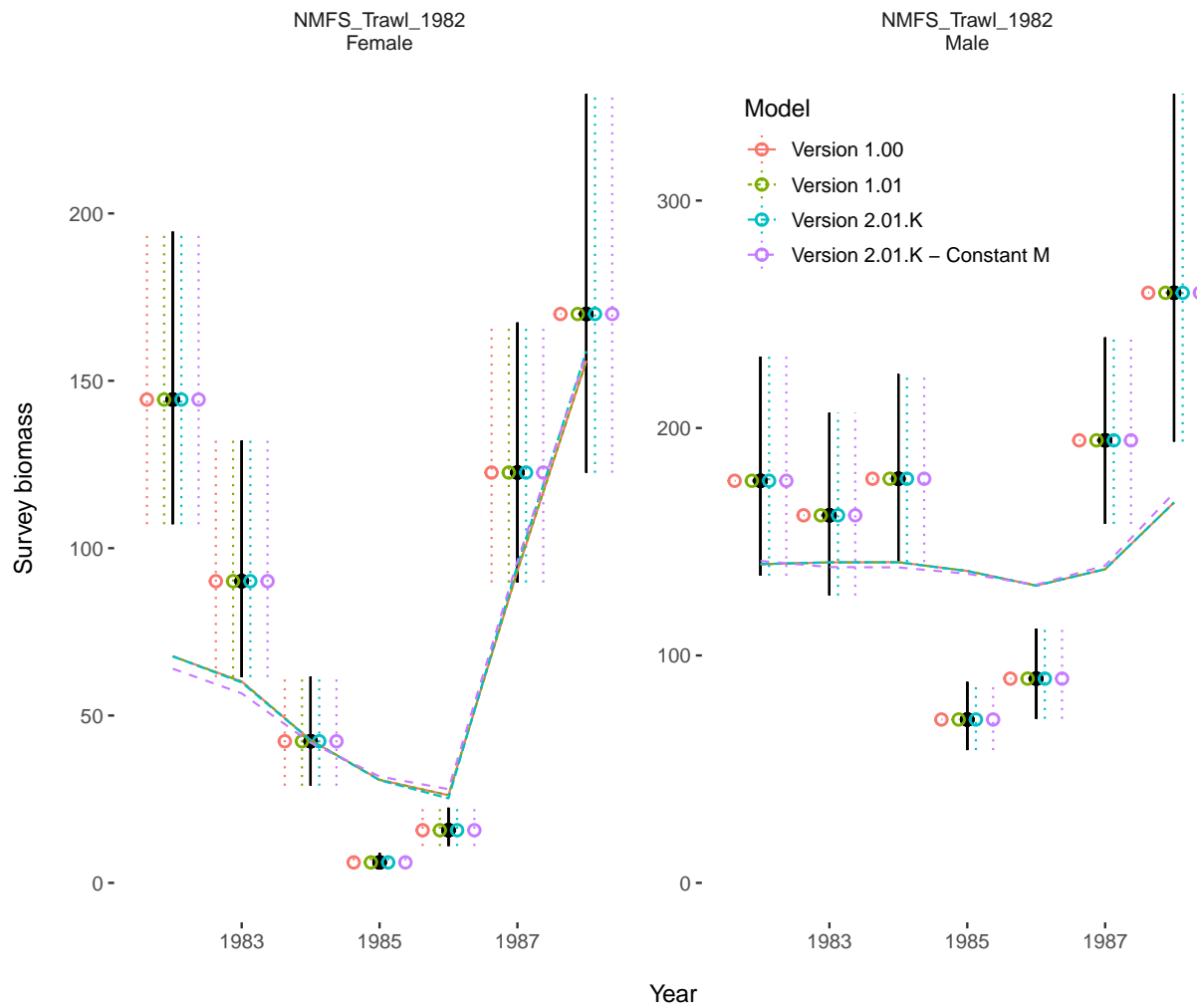


Figure 1: Model fits to the NMFS\_Trawl\_1982 survey.

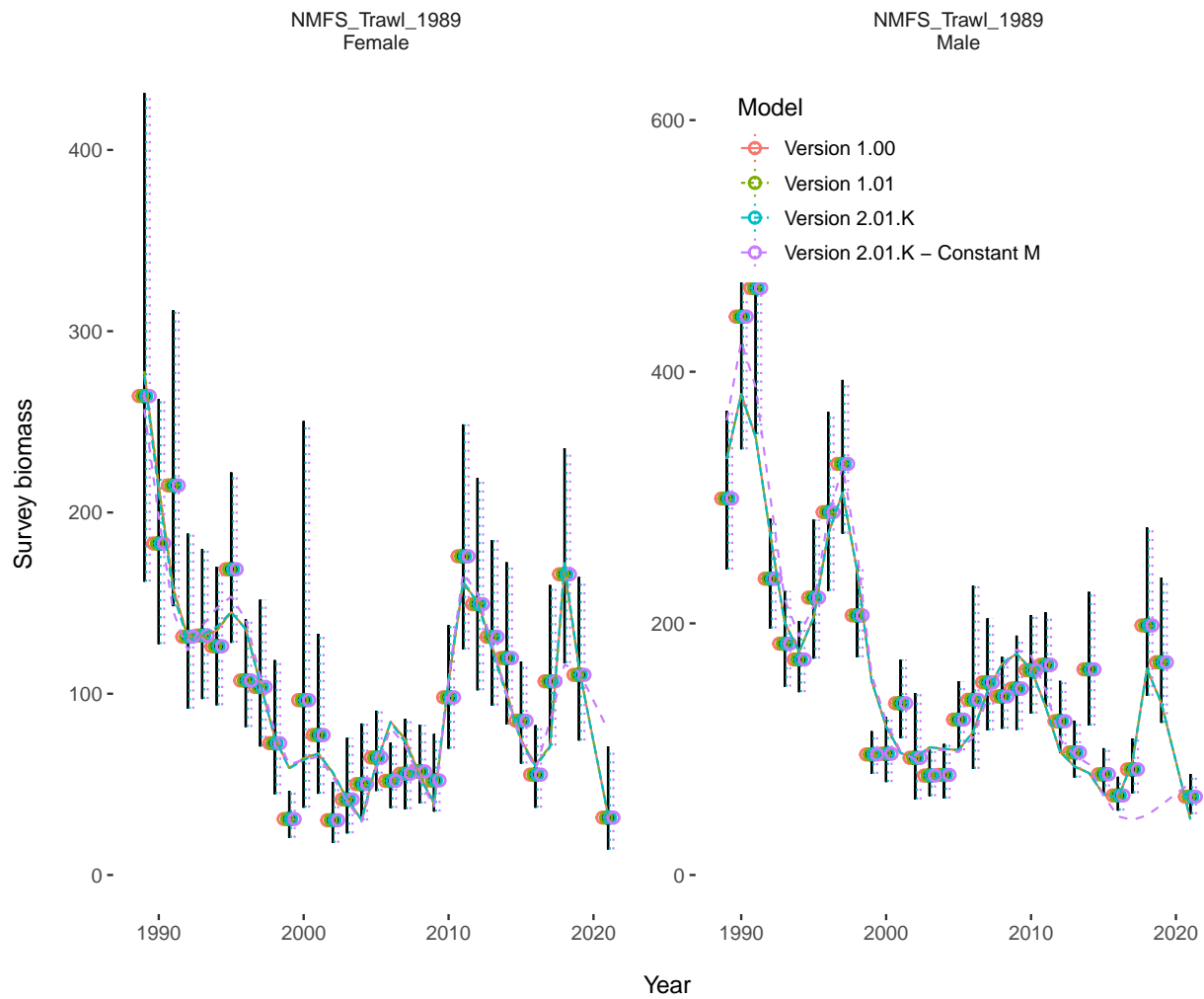


Figure 2: Model fits to the NMFS trawl 1989 survey.

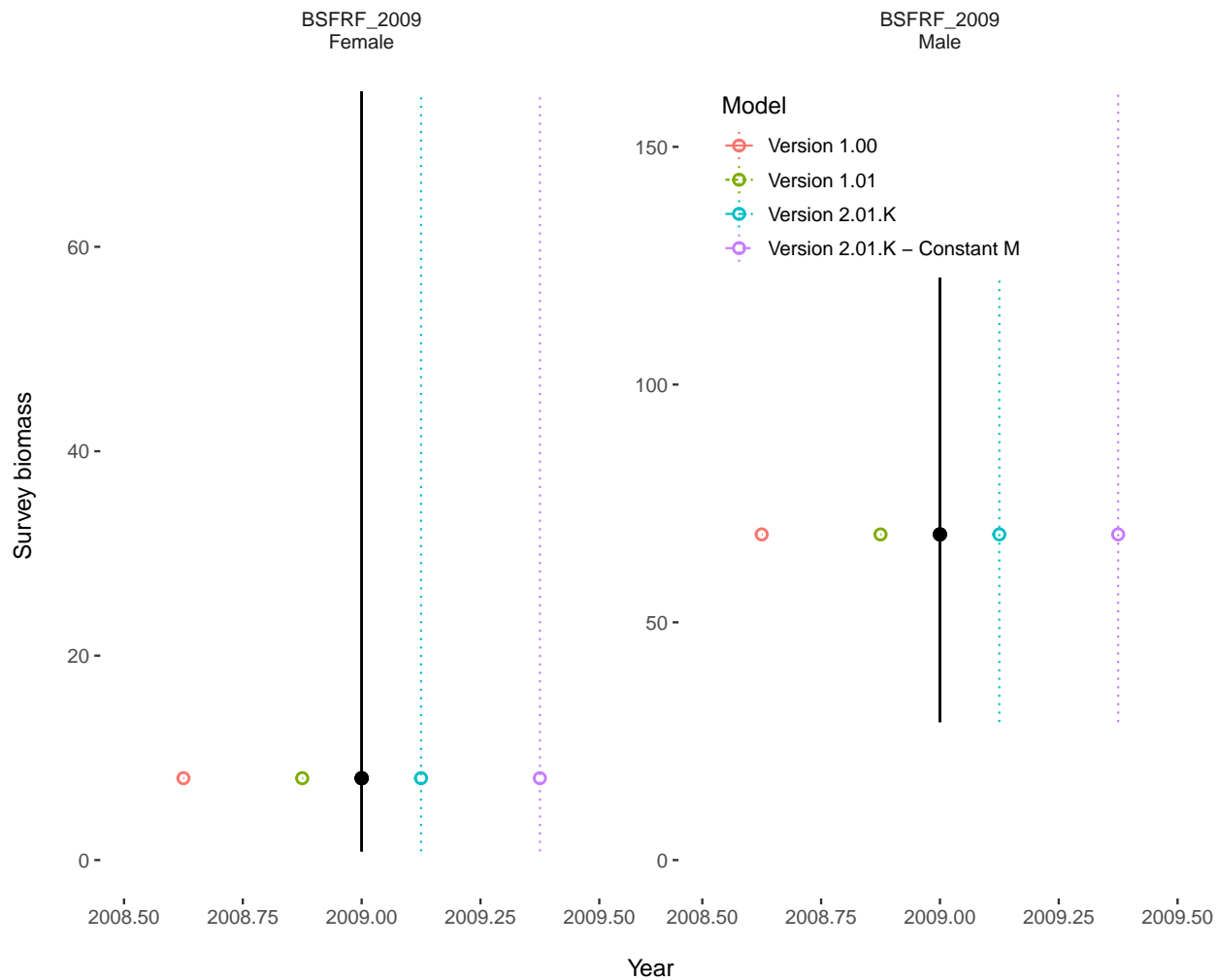


Figure 3: Model fits to the BSFRF 2009 survey.

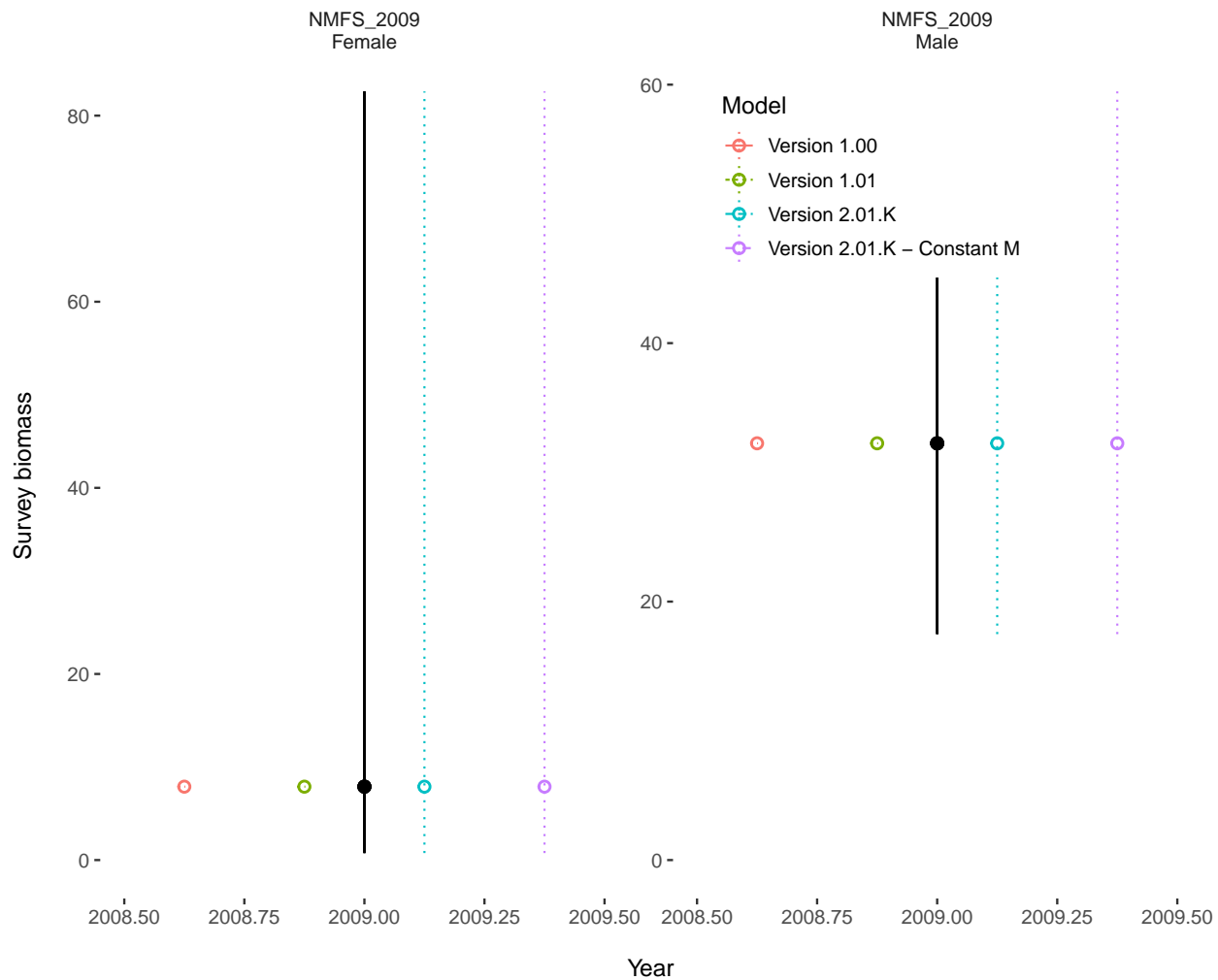


Figure 4: Model fits to the NMFS 2009 survey.

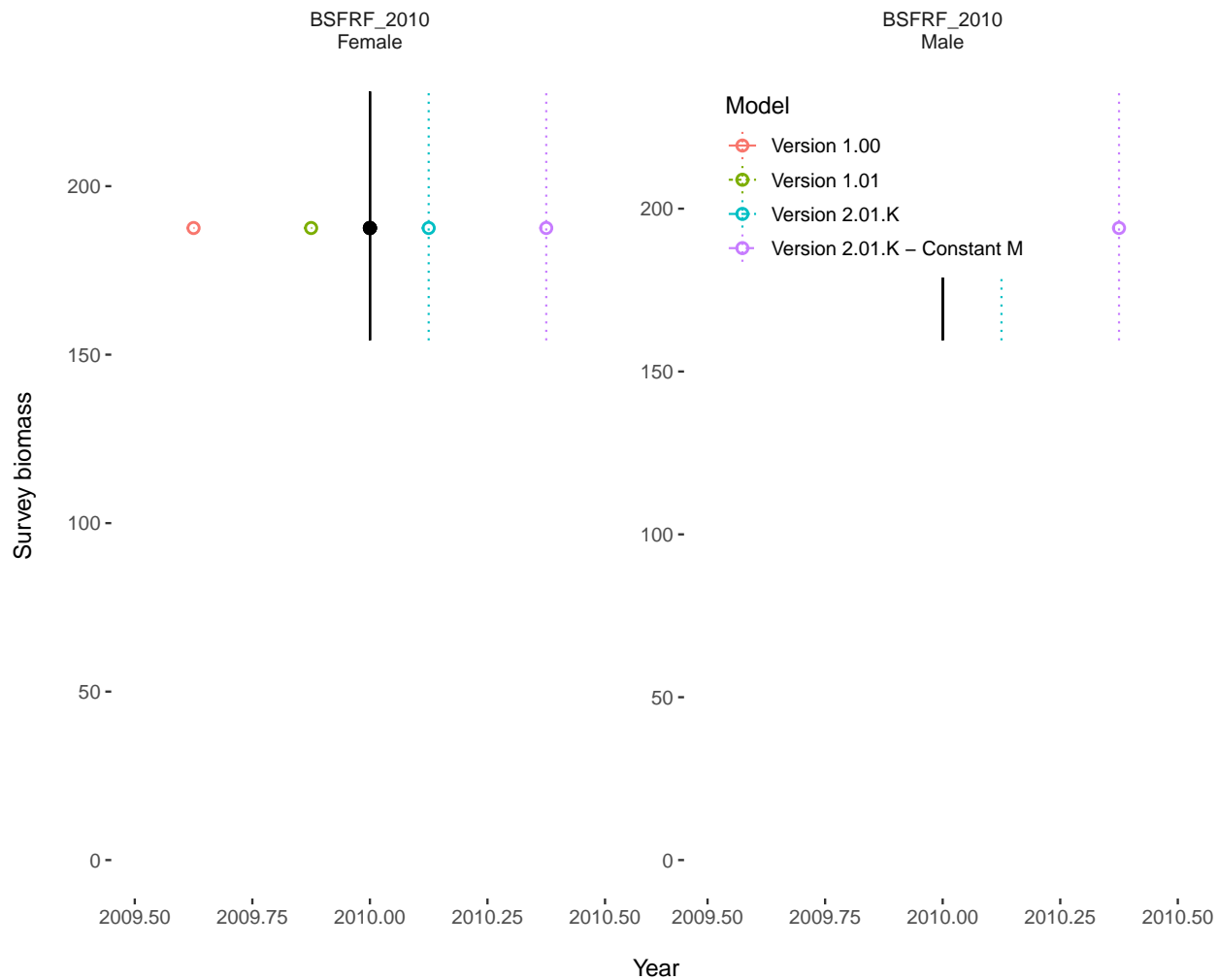


Figure 5: Model fits to the BSFRF 2010 survey.

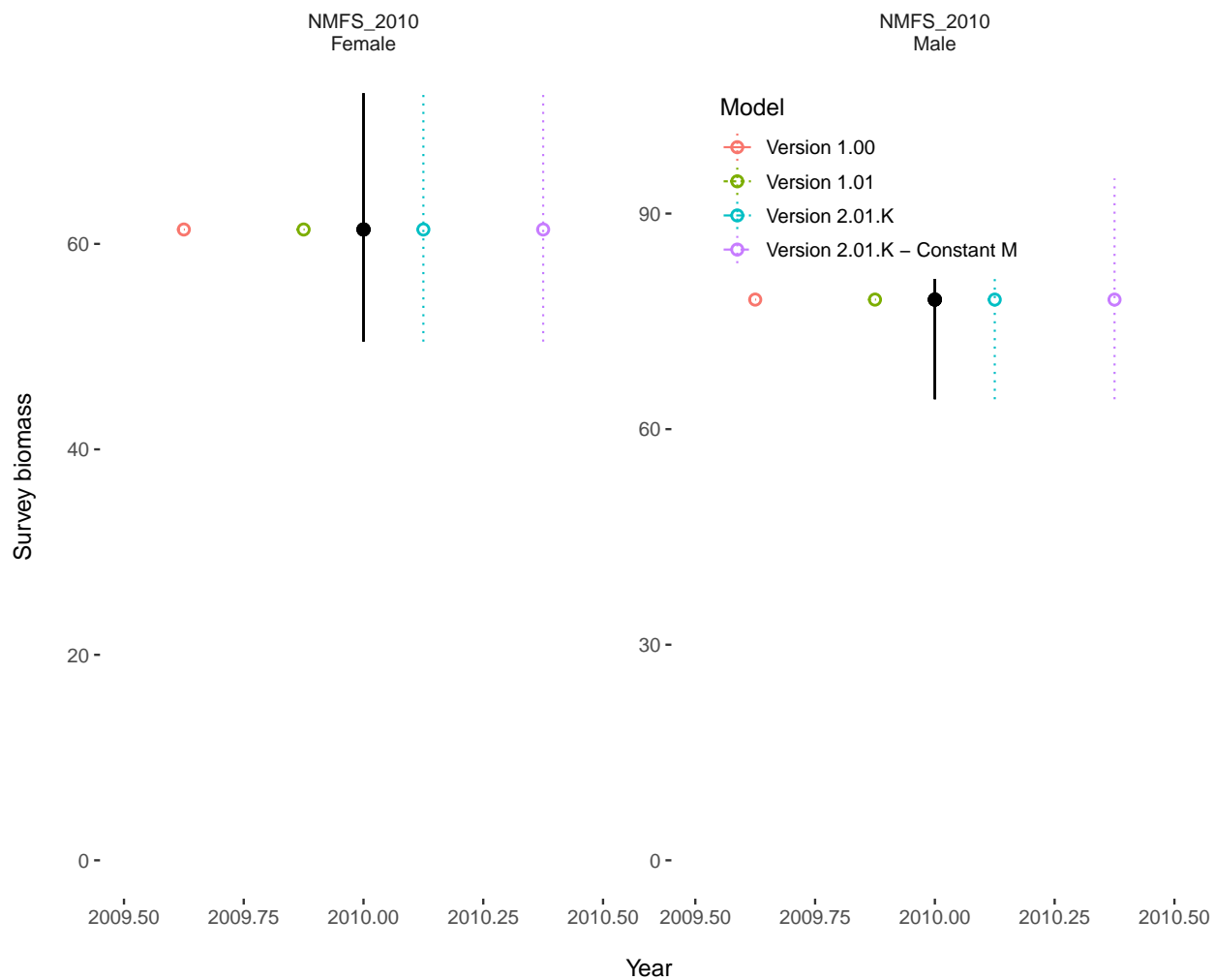


Figure 6: Model fits to the NMFS 2010 survey.

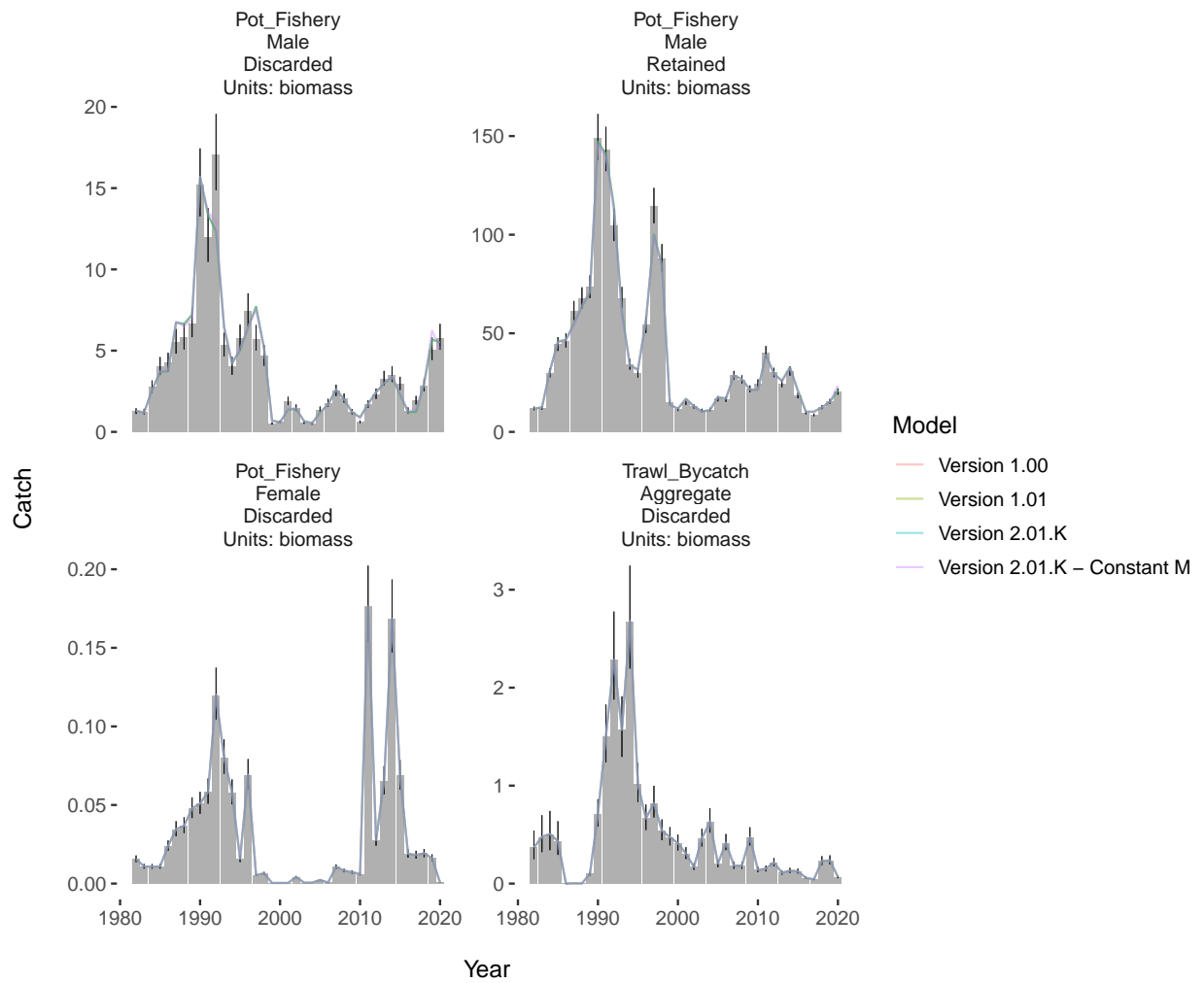


Figure 7: Model fits to the catch data.

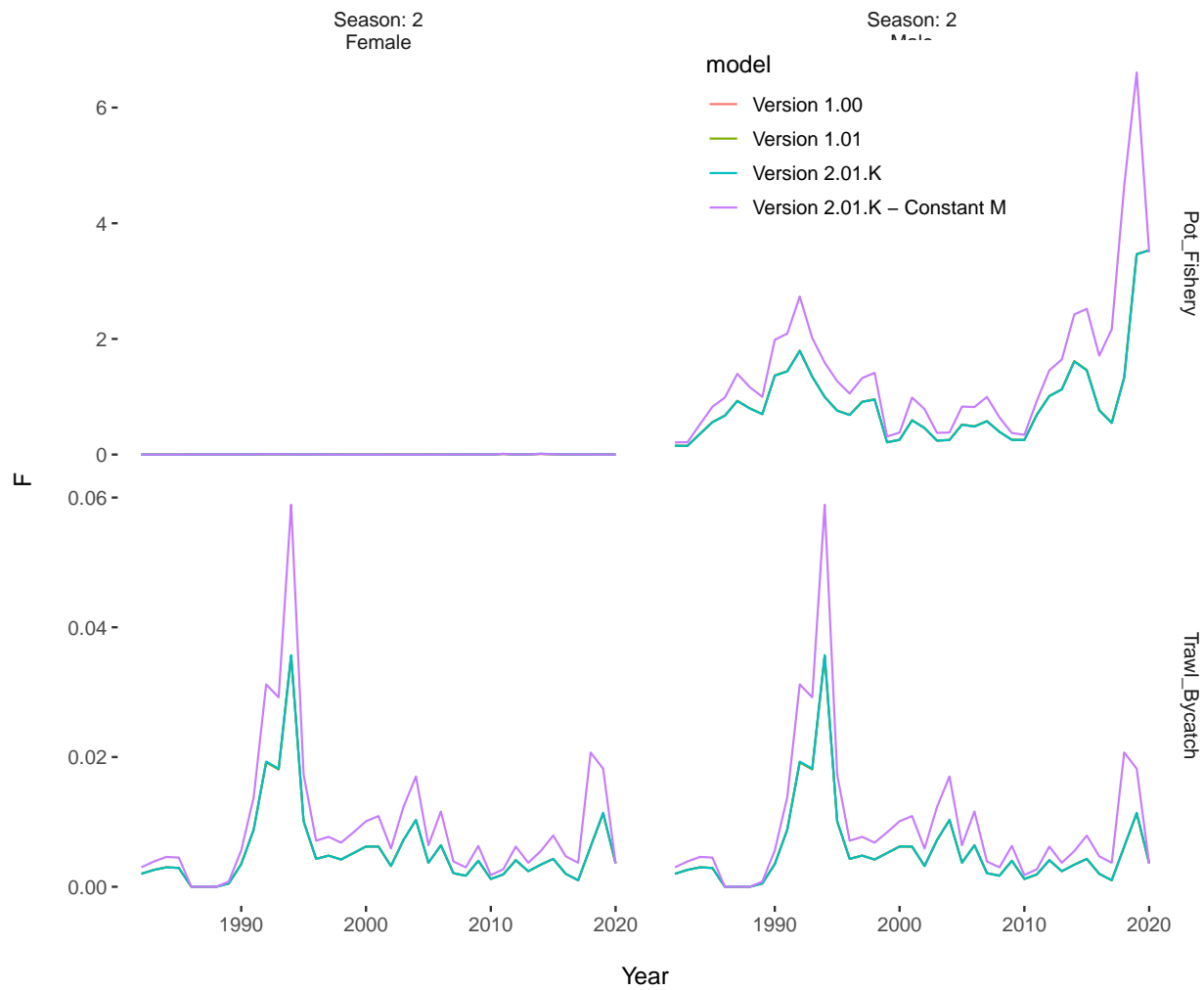


Figure 8: Estimated fishing mortality by fleet.



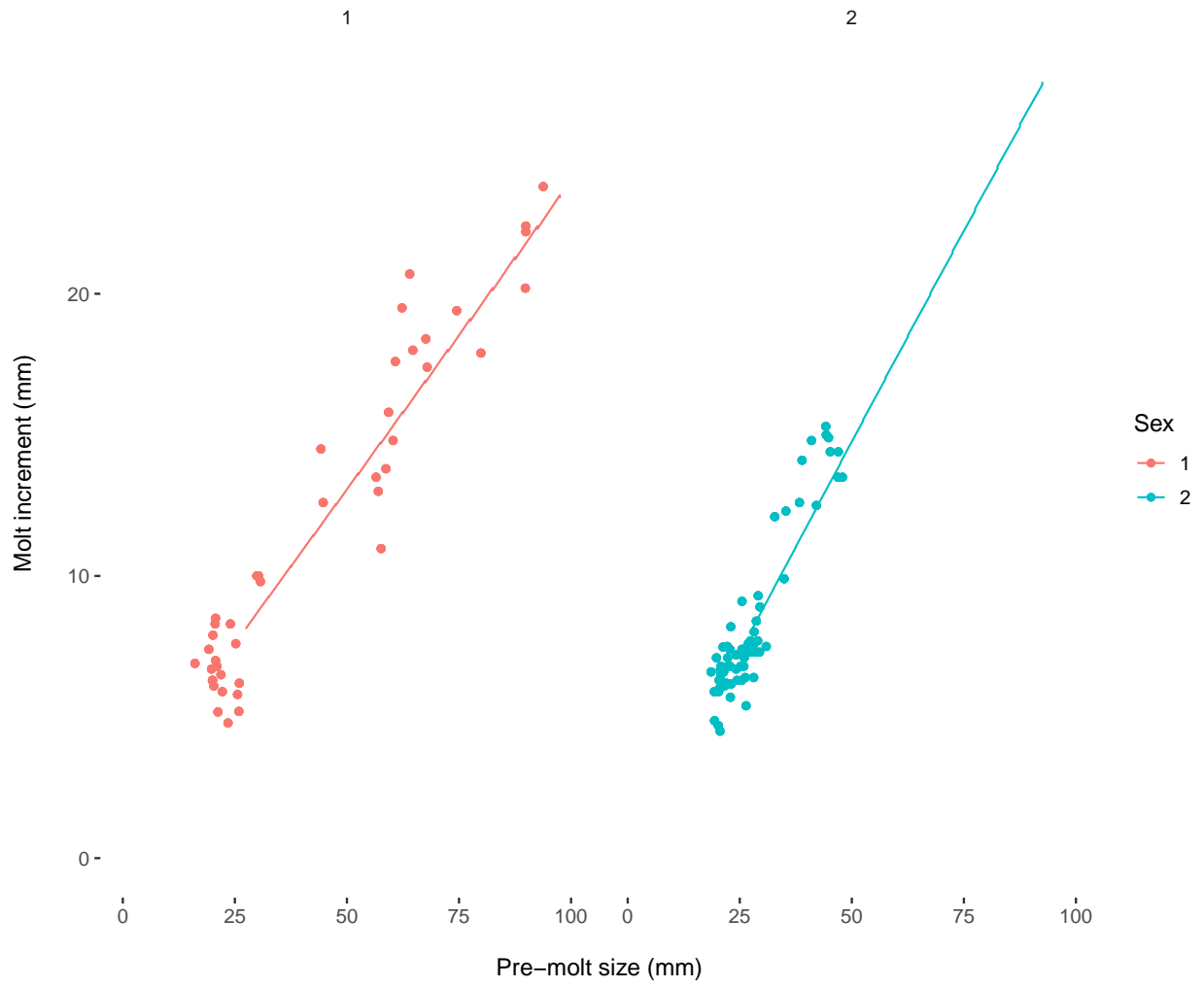


Figure 9: Estimated molt increments.

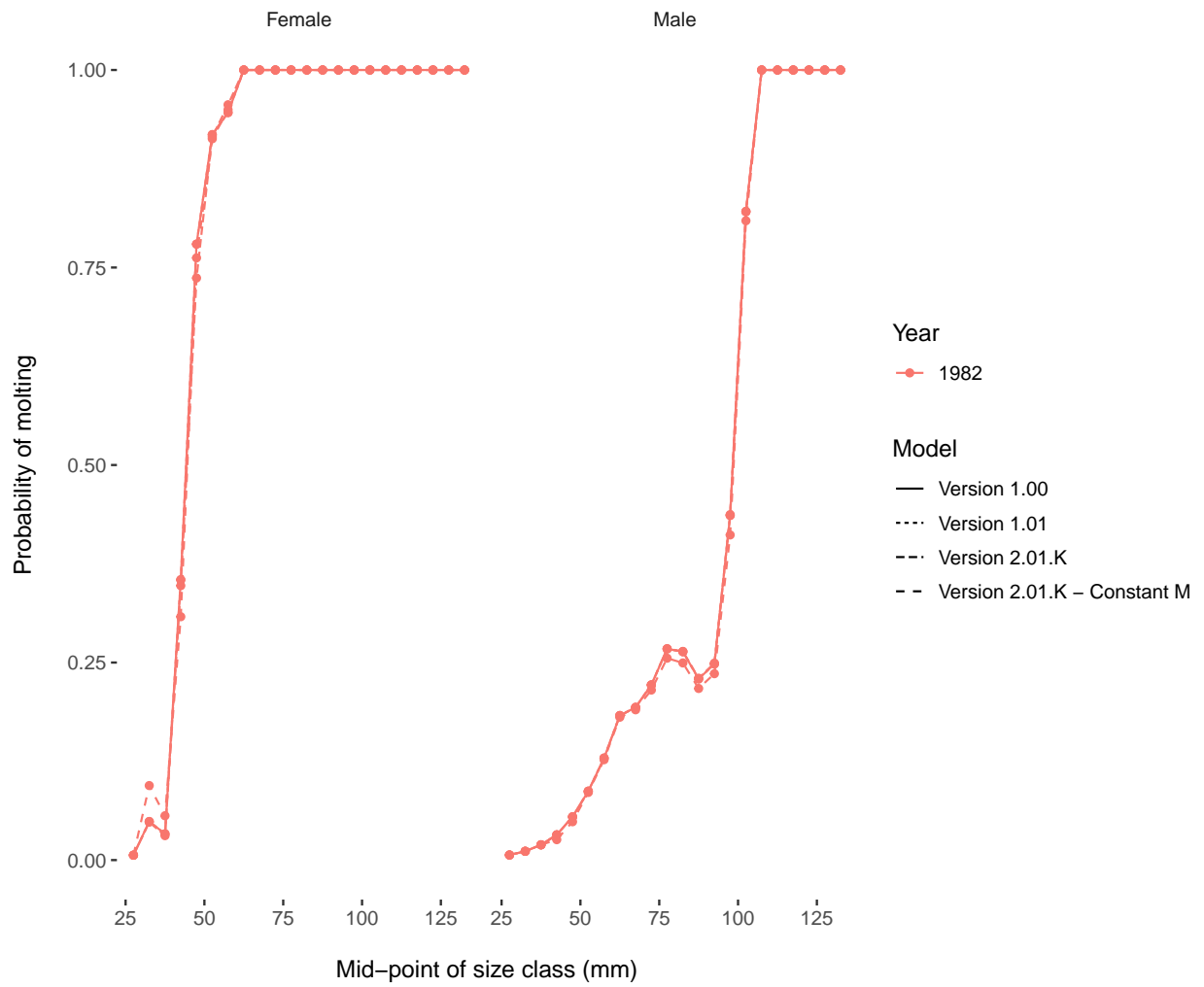


Figure 10: Estimated probability of molting.



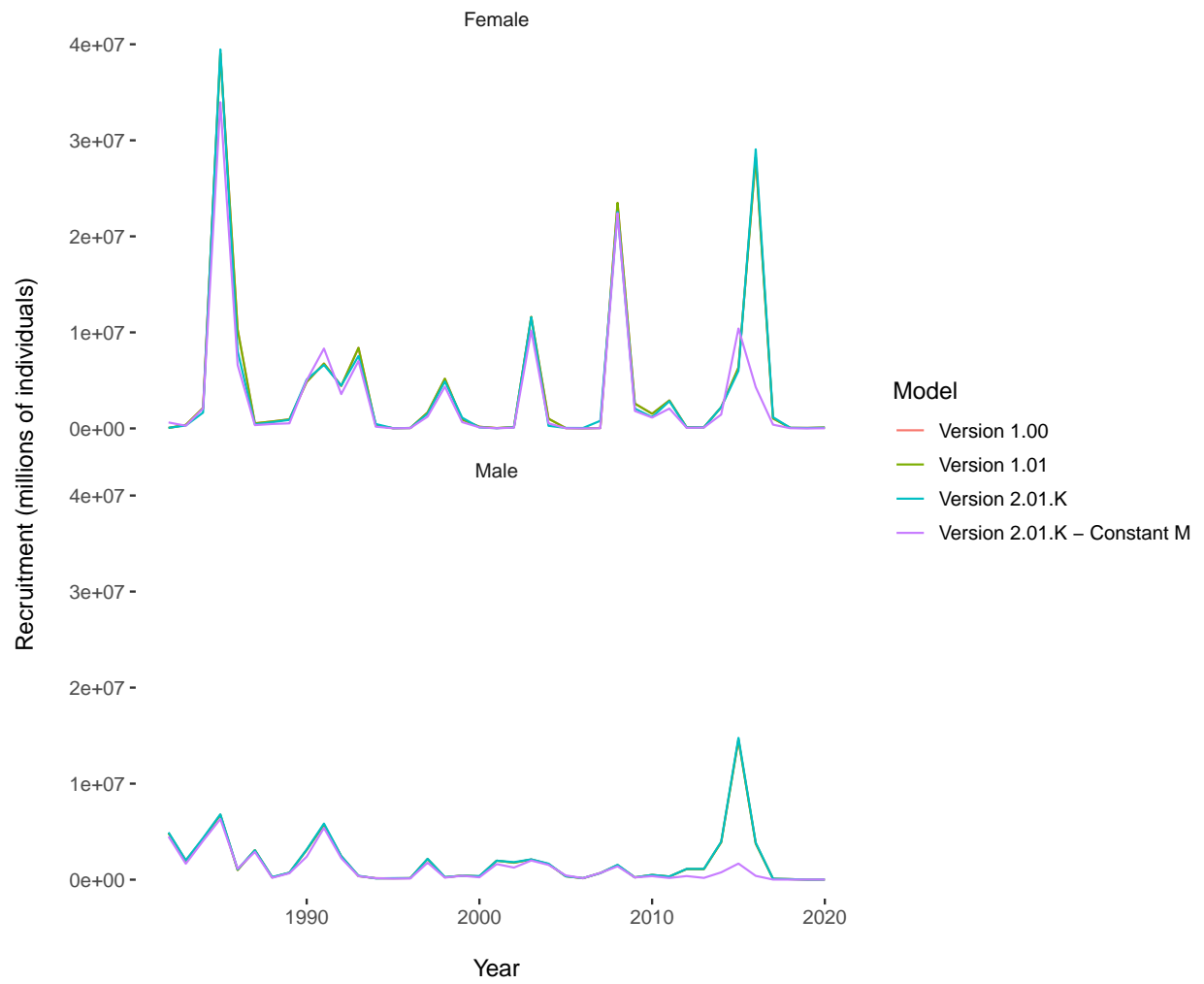


Figure 12: Estimated recruitment.

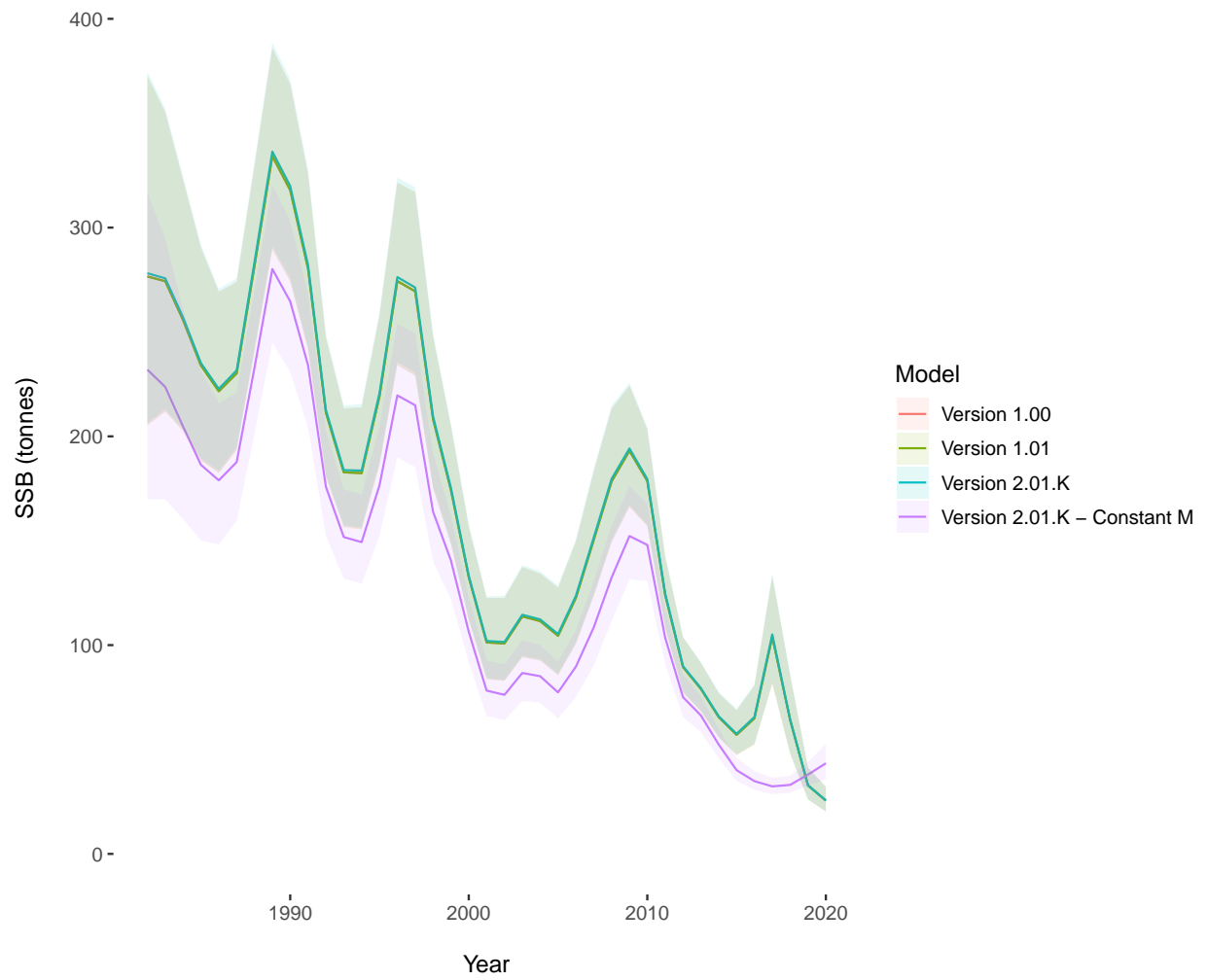


Figure 13: Estimated mature biomass

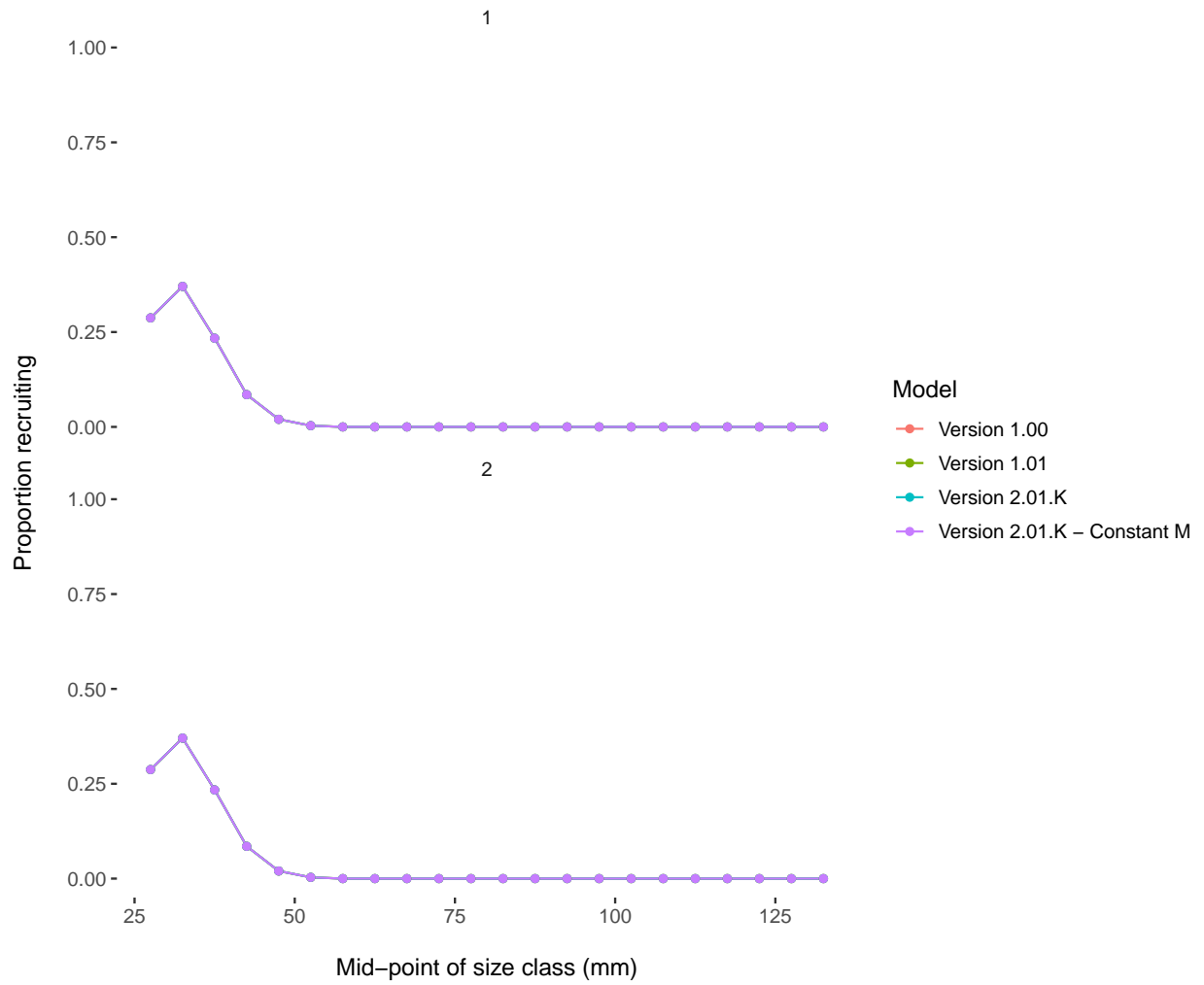


Figure 14: Estimated size at recruitment

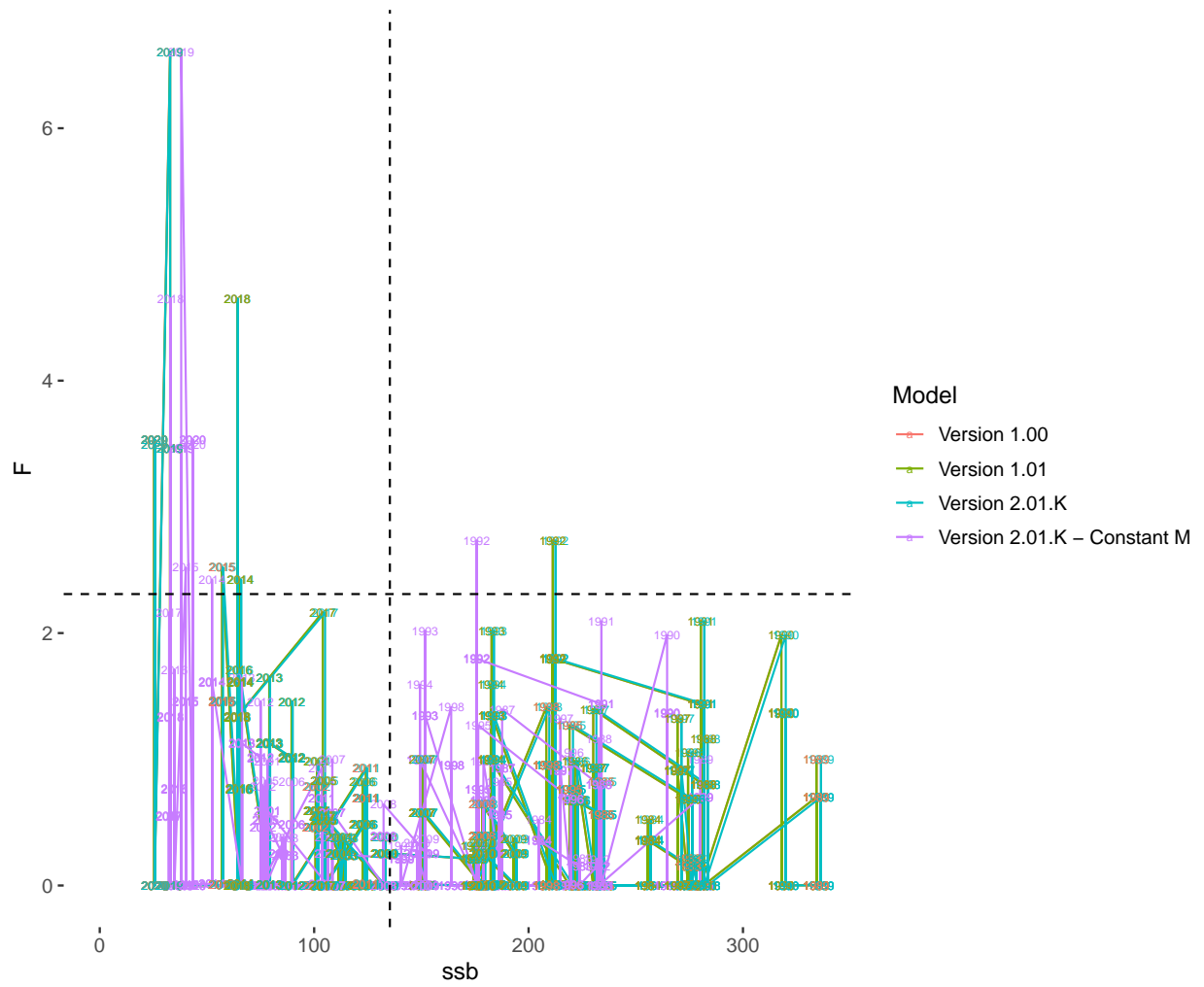


Figure 15: Kobe plot for the Pot Fishery fleet.