Supplementary Figures
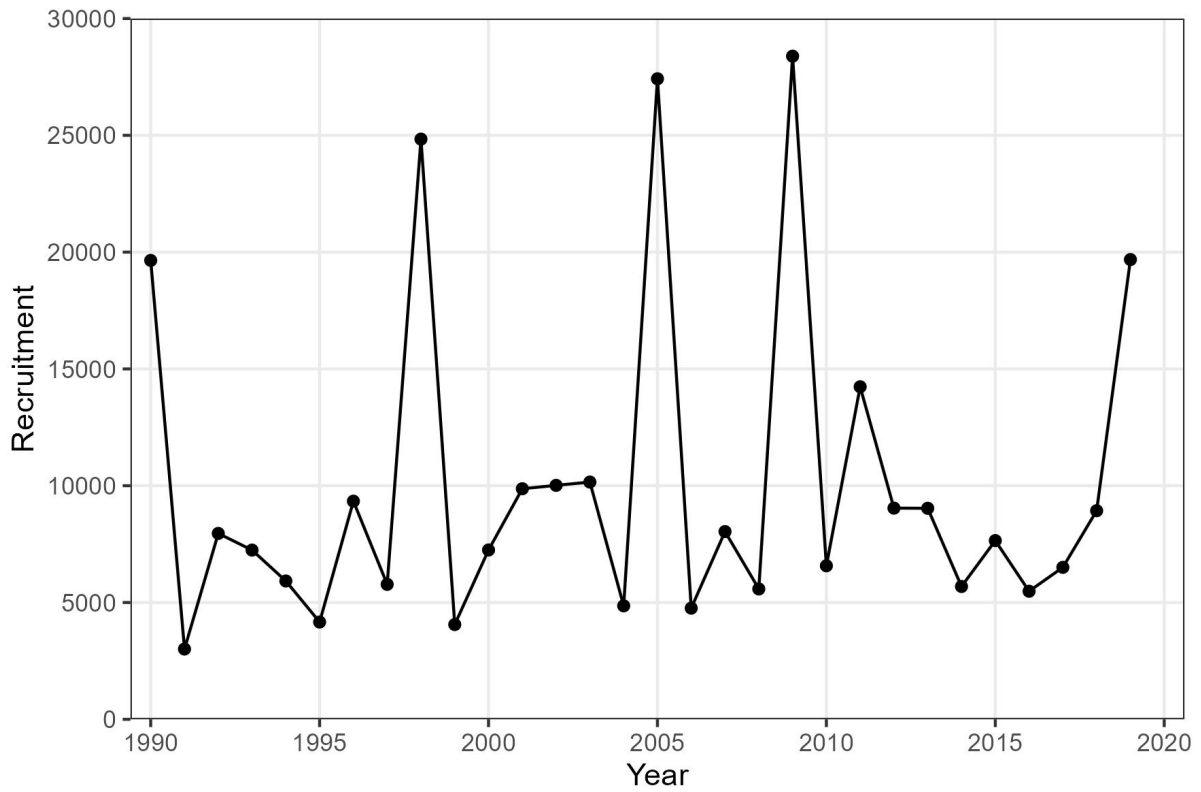

Fig. S1. Recruitment time-series of age-0 fish entering the IBM simulated fishery.
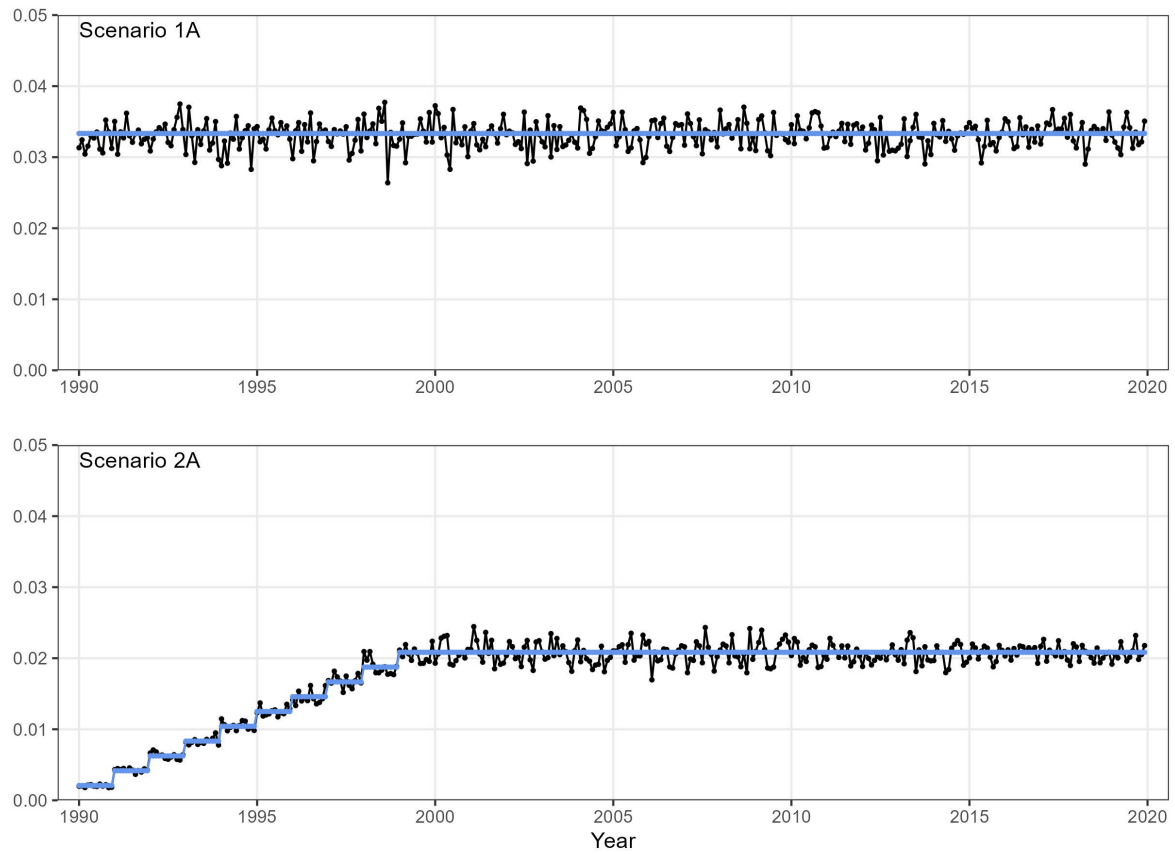
Fig. S2. Simulated fishing effort (black) versus IBM true monthly F (blue) by month for scenarios 1A and 2A. Values plotted correspond to replicate 1 (of 100), for all simulation years (1990-2019).
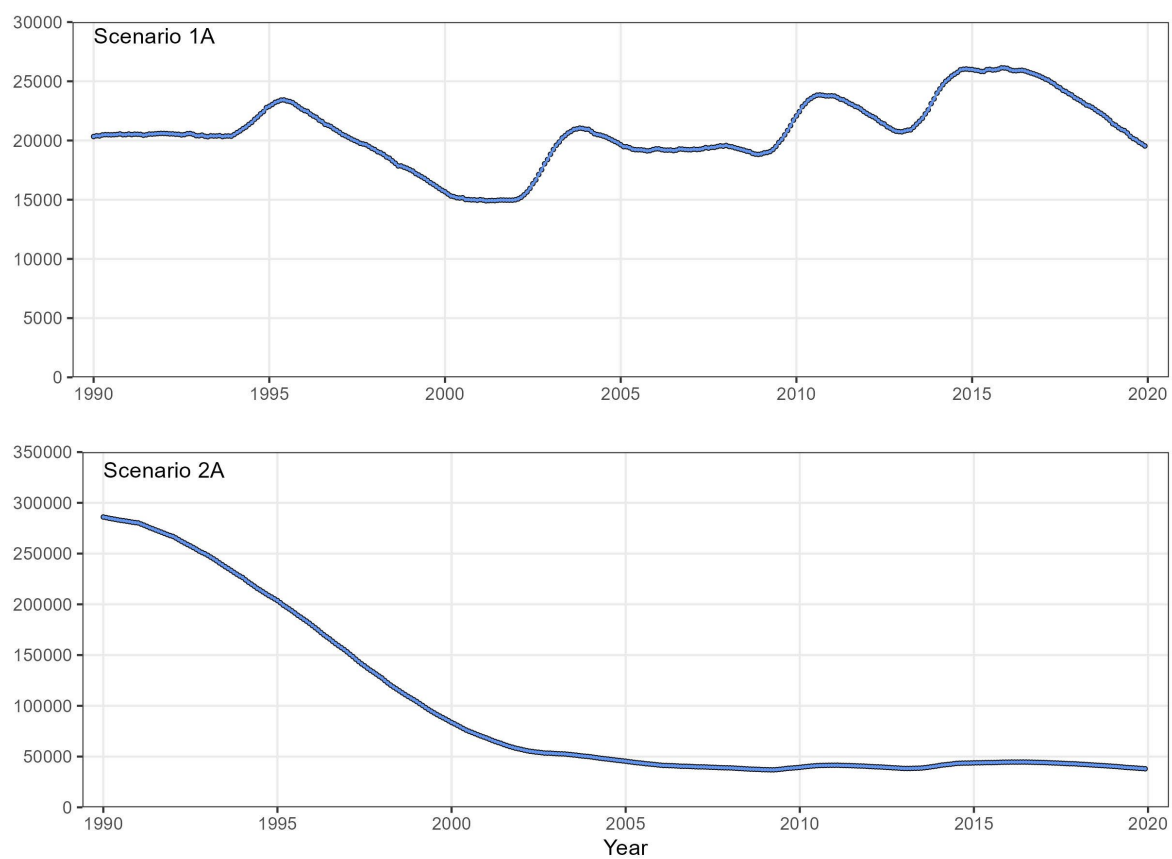
Fig. S3. IBM true model biomass (black) versus CPUE (blue) by month for scenarios 1A and 2A. Values plotted correspond to replicate 1 (of 100), for all simulation years (1990-2019).
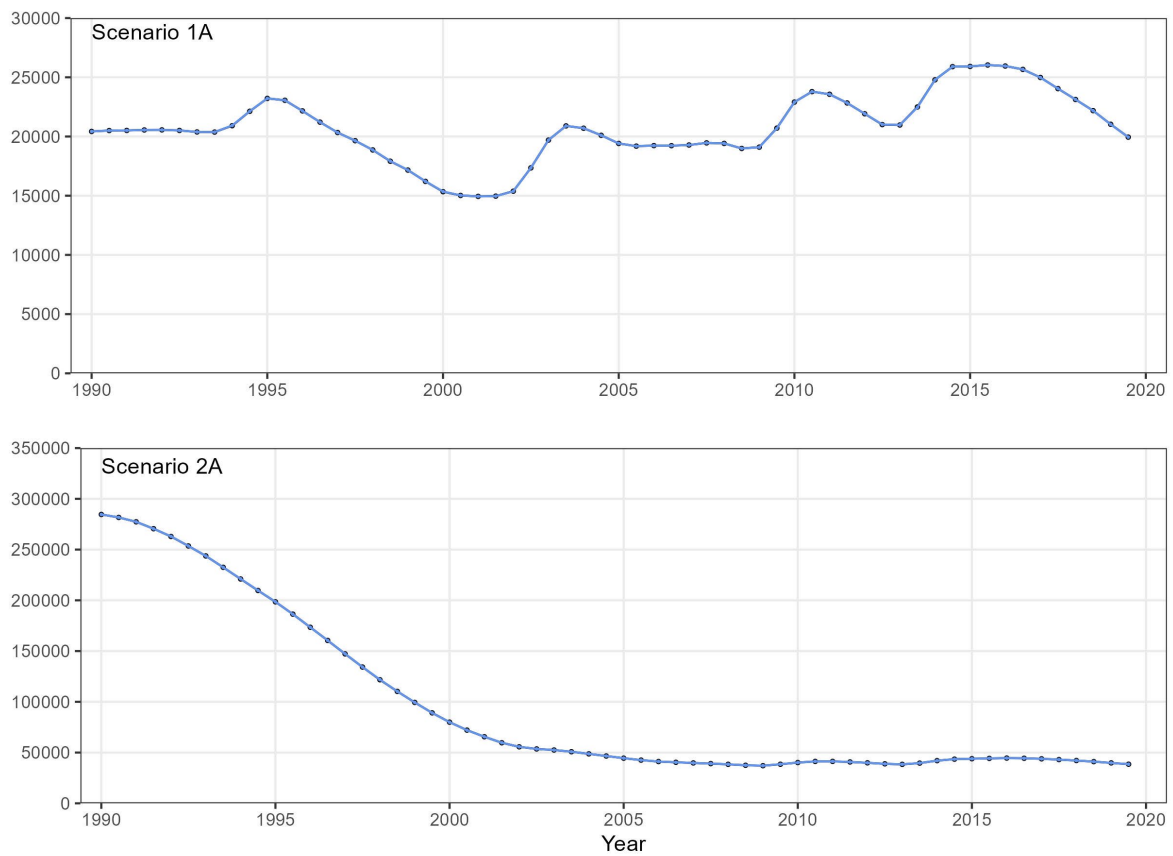
Fig. S4. Half-yearly IBM biomass (black points) versus IBM CPUE (blue line) for scenarios 1A and 2A. Values plotted correspond to replicate 1 (of 100), for all simulation years (1990-2019).
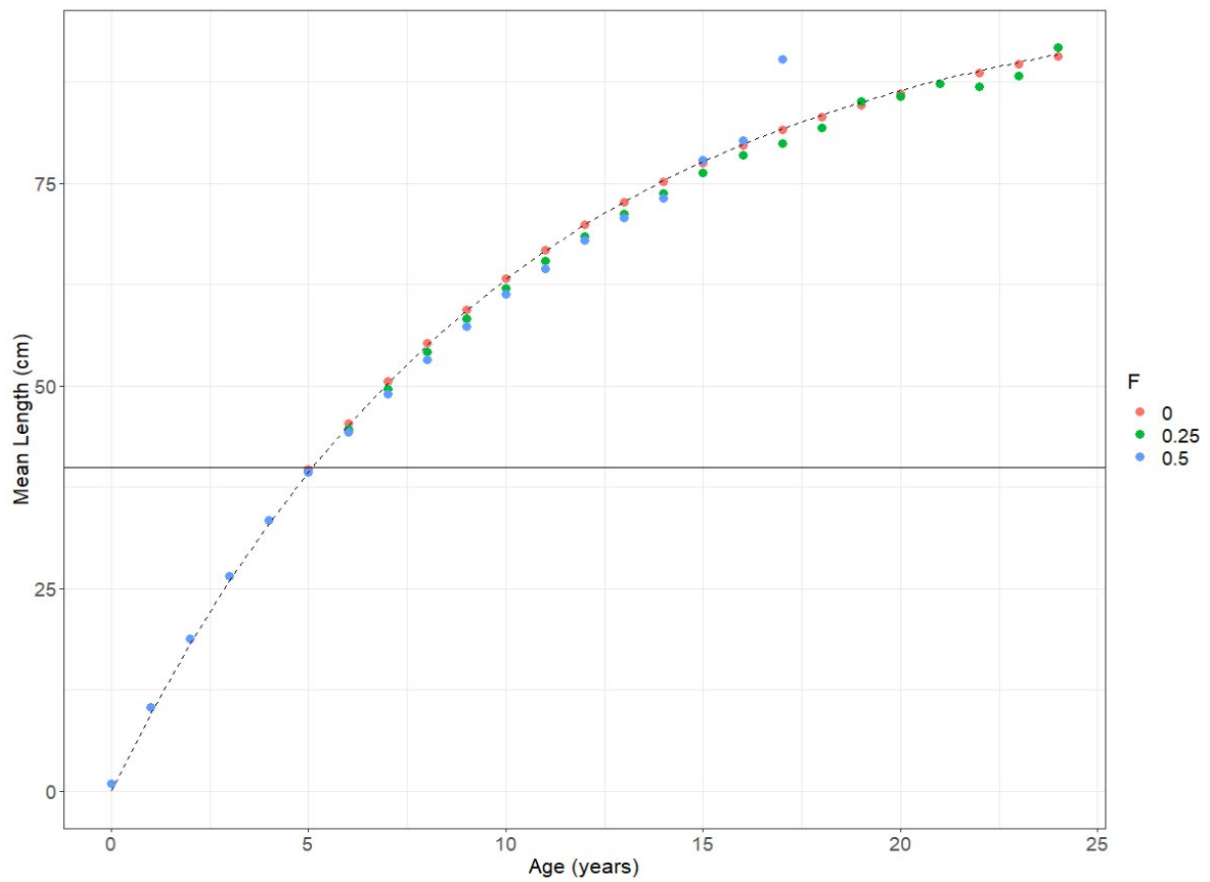
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Fig. S5. Mean length-at-age for a single cohort of fish with individual growth variation quantified by $CV_K = CV_{L_\infty} = 0.1$. The horizontal line shows $L_{50} = 40$ cm. This population is similar to scenario 1A (near-knife-edge selectivity; constant F), but with differing levels of constant F, and recruitment for this cohort was fixed at 10,000 fish.
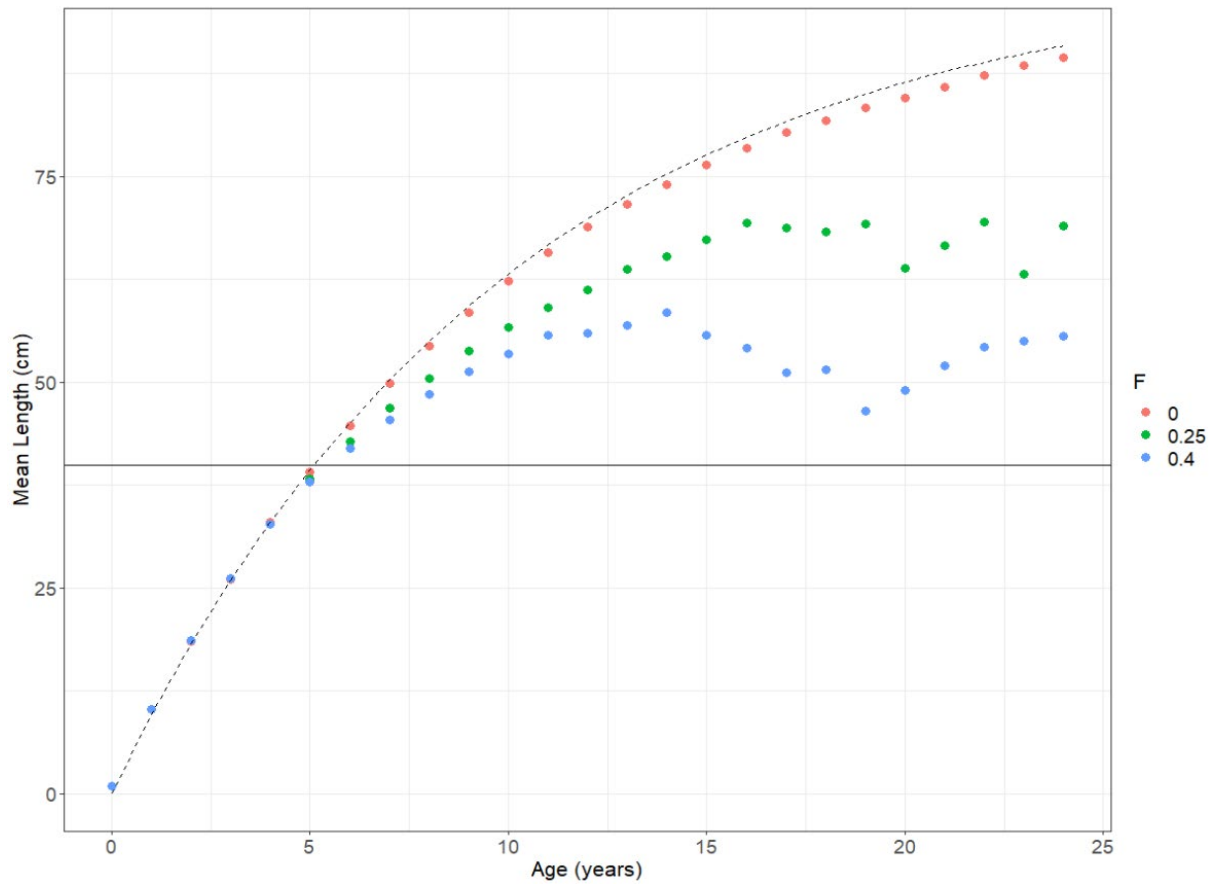
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Fig. S6. Mean length-at-age for a single cohort of fish, for the scenario of greater individual growth variation of $CV_K = CV_{L_\infty} = 0.2$ (B scenarios). The horizontal line shows $L_{50} = 40$ cm. The IBM did not complete its run for $F = 0.5\text{yr}^{-1}$ in this higher growth variability case, so it was re-run with $F = 0.4\text{yr}^{-1}$ (making this run identical to scenario 1B).
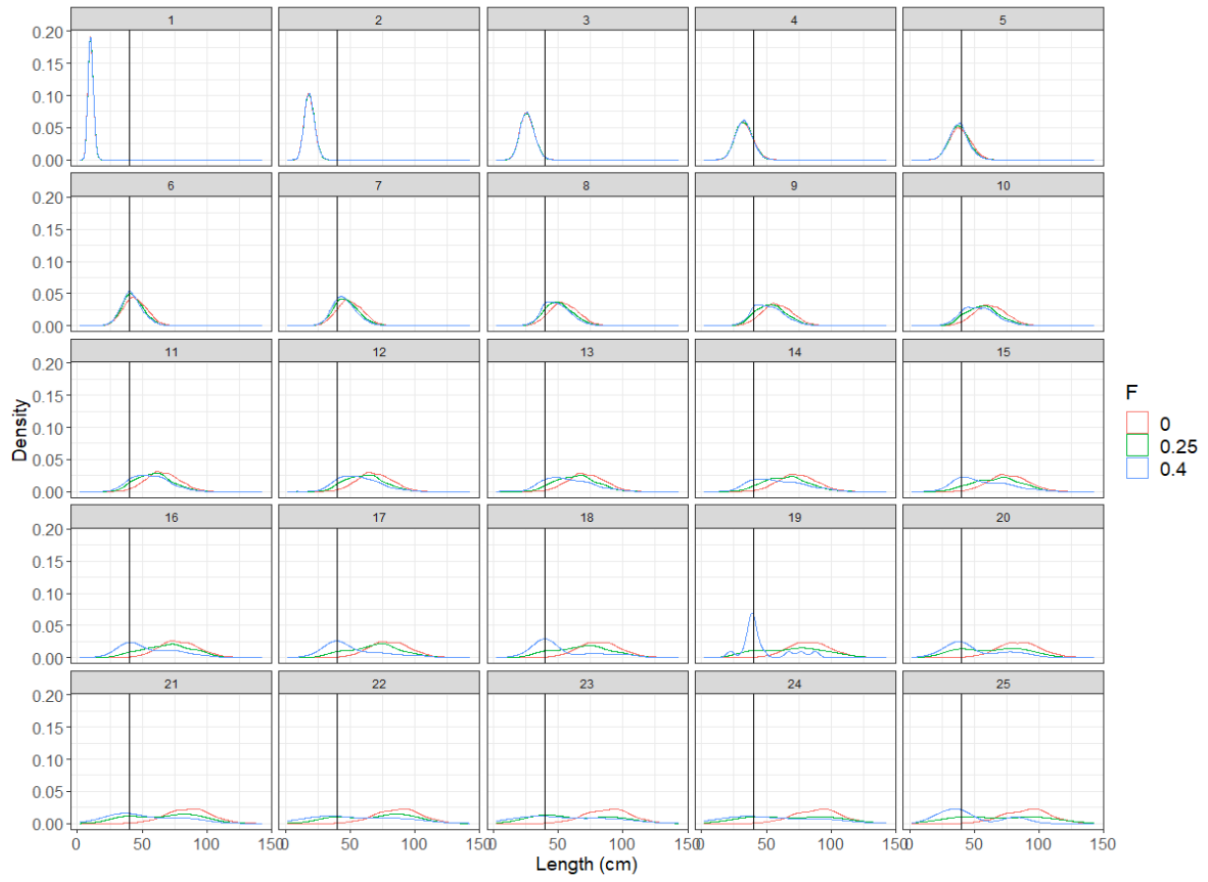
Fig. S7. Example IBM lengths-at-age for a single cohort as it ages. Normalized kernel density showing the spread of lengths among all surviving fish under three assumed constant levels of *F*. Higher individual growth variation is assumed here, with CV_K and CV_{L_∞} = 0.2. Vertical lines show L_{50} = 40 cm. Age of cohort shown at the top of each panel.
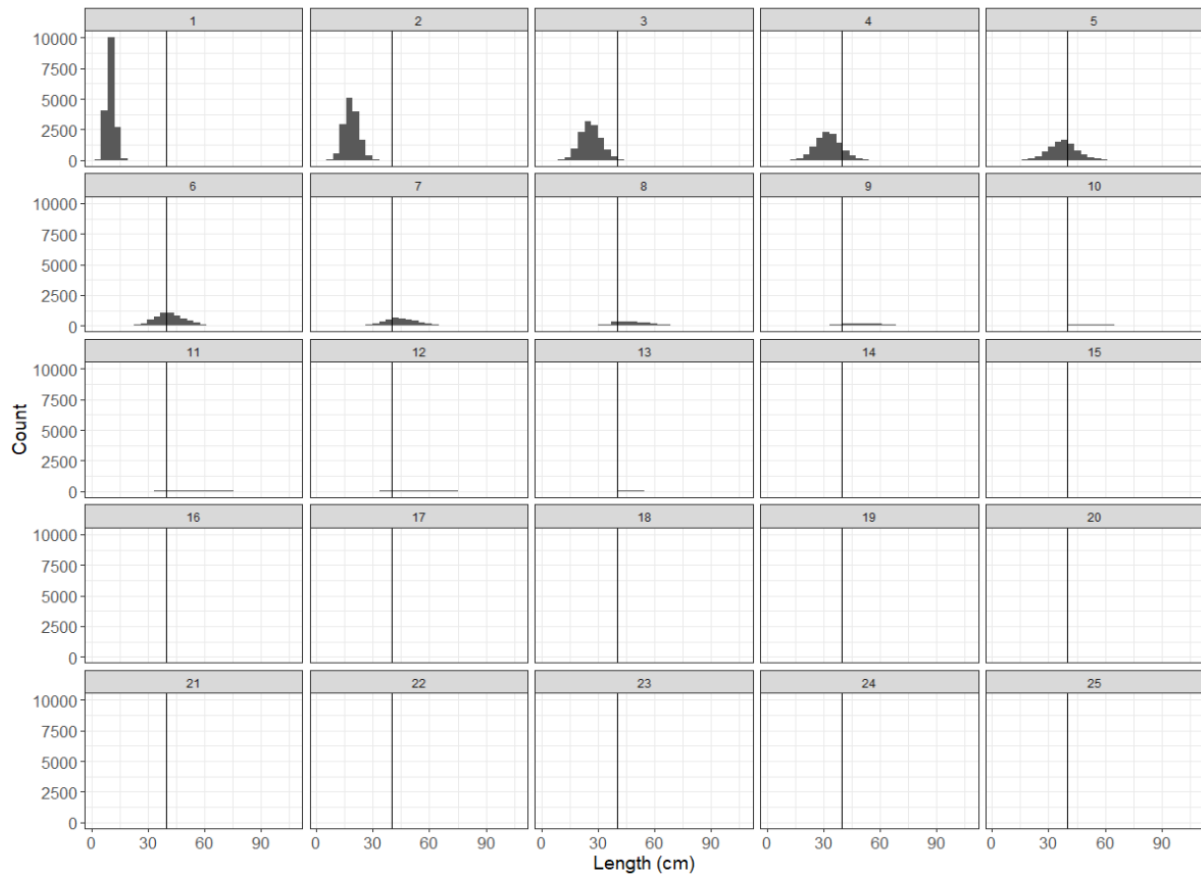
Fig. S8. Same IBM lengths-at-age as in Fig. S7, for the $F = 0.4\text{yr}^{-1}$ case, but here plotting histograms of absolute population numbers surviving to each age shown rather than as normalized pdfs.
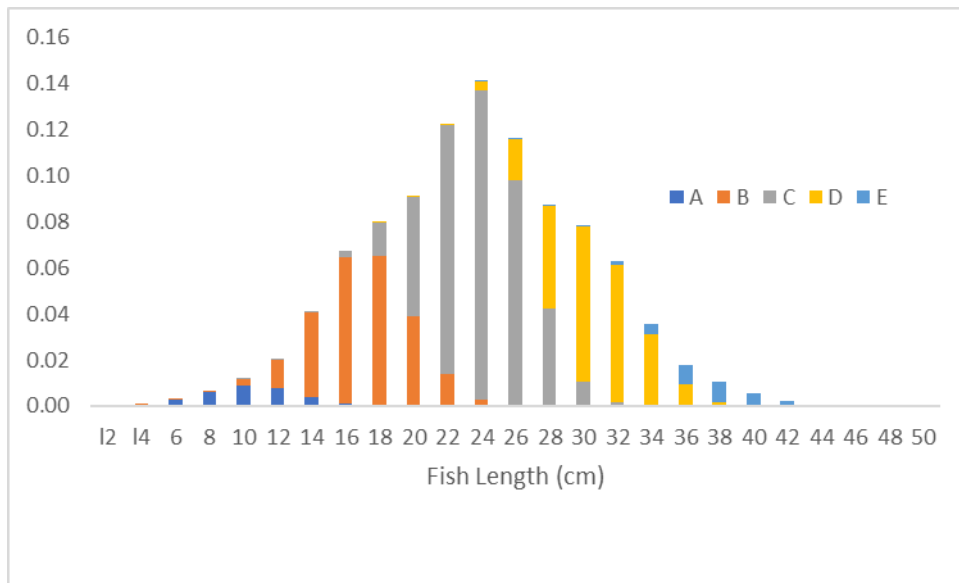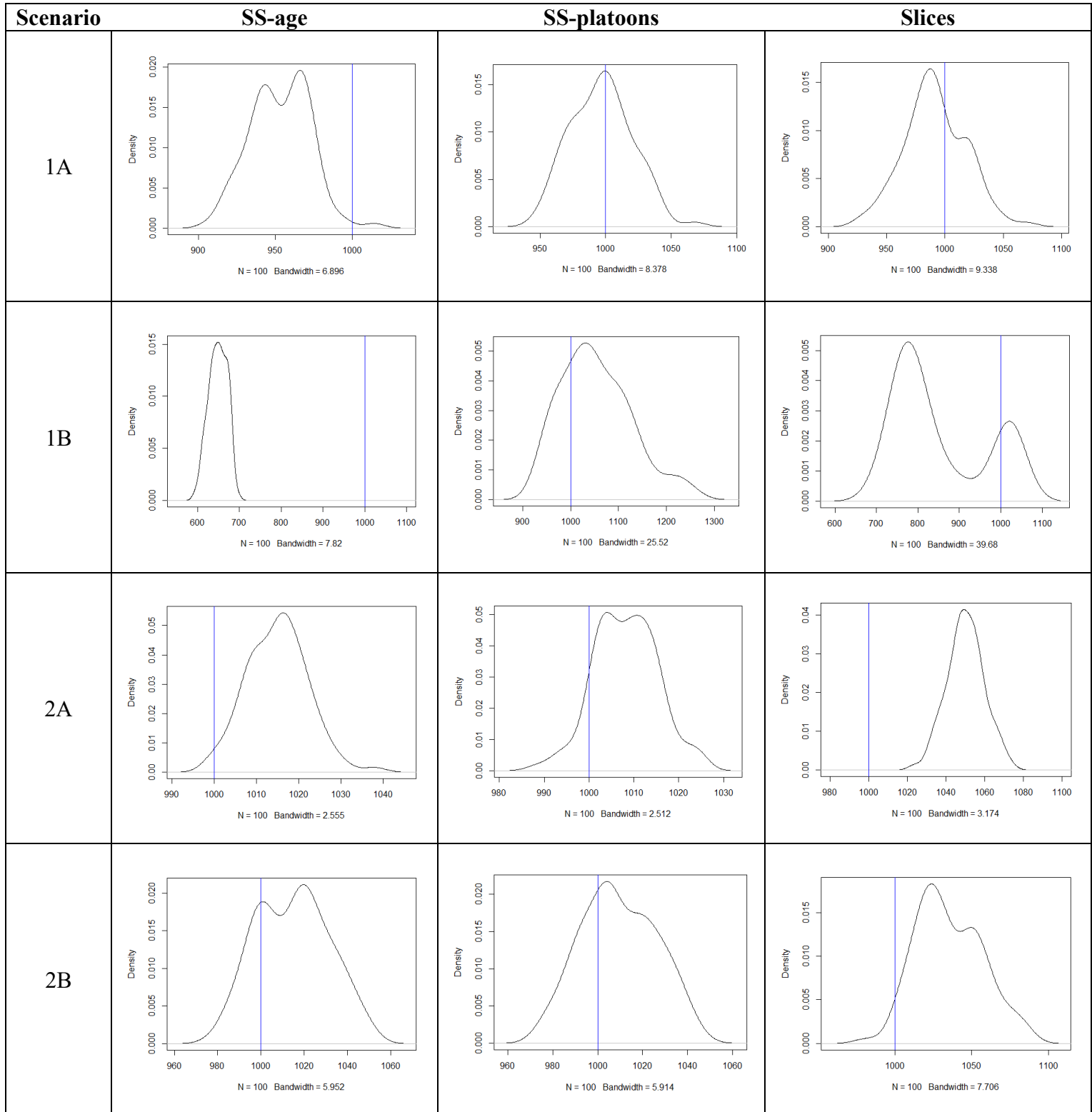
8

Fig. S9. Length distribution at age 3 comprised of 5 platoons. The fraction of fish assigned at birth to each platoon was: A: 0.031, B: 0.237, C: 0.464, D: 0.237, E: 0.031.
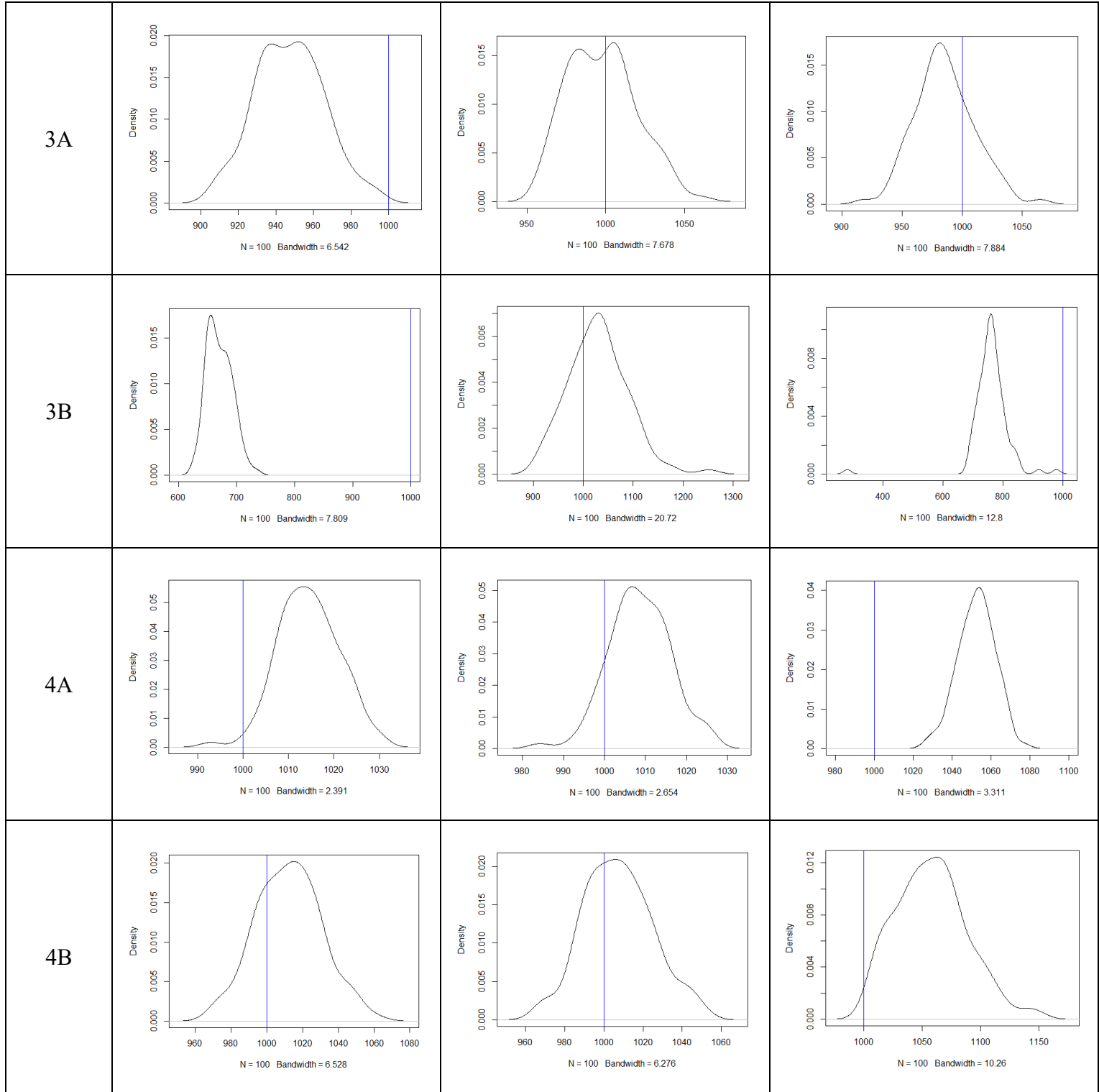
9

Scenario	SS-age	SS-platoons	Slices
1A			
1B			
2A			
2B			

10

Fig. S10. Distribution of L_∞ by scenario and model. The estimated kernel density for estimated L_∞ (black curve) relative to the true value of 1000 mm (vertical blue line). Each panel represents the estimated value of L_∞ for a scenario (row) and model (column) combination.

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Supplementary Files S11-13 present yearly time series plots of true and model-estimated recruitment, biomass, population number, and fishing mortality rate, and for logistic length selectivity and von Bertalanffy mean length-at-age. These plotted estimated-vs-true comparisons are for the first scenario 1A (Constant F, near-knife-edge selectivity, CV = 0.1). In each figure panel (of each file), we display the estimates and simulation true for the first 20 of 100 runs of this scenario. Each Supplementary File presents outcomes for one of the three assessment models.

File S11: Slice model time series.

File S12: SS3-age time series.

File S13: SS3-platoons model time series.