

## *TIM Diagnostics*

### MODEL STRUCTURE

Match/Mismatch: Matching

Population Structure: Metapopulation

Diagnostic Run: NO. Uses OBS values as data inputs

Residual plots represent RELATIVE difference;  $((\text{TRUE}-\text{ESTIMATED})/\text{TRUE})*100$

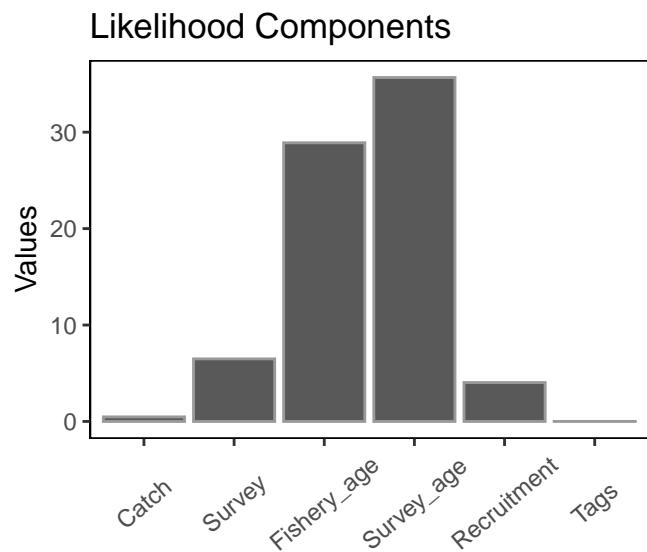
Run Time of Estimation: 0.07083 minutes

### OM Error Parameters

|   | Parameter        | 1    | 2    |
|---|------------------|------|------|
| 1 | Sigma_Rec        | 0.4  | 0.4  |
| 2 | Sigma_Rec_Apport | 0.2  | 0.2  |
| 3 | Sigma_F          | 0.2  | 0.2  |
| 4 | Rec_Index_sigma  | 0.5  | 0.5  |
| 5 | Survey_Sigma     | 0.2  | 0.2  |
| 6 | Catch_Sigma      | 0.05 | 0.05 |
| 7 | SIM_N_Catch      | 100  | 100  |
| 8 | SIM_N_Survey     | 100  | 100  |

Model Converged

num gradient component = 4.40943607522461e



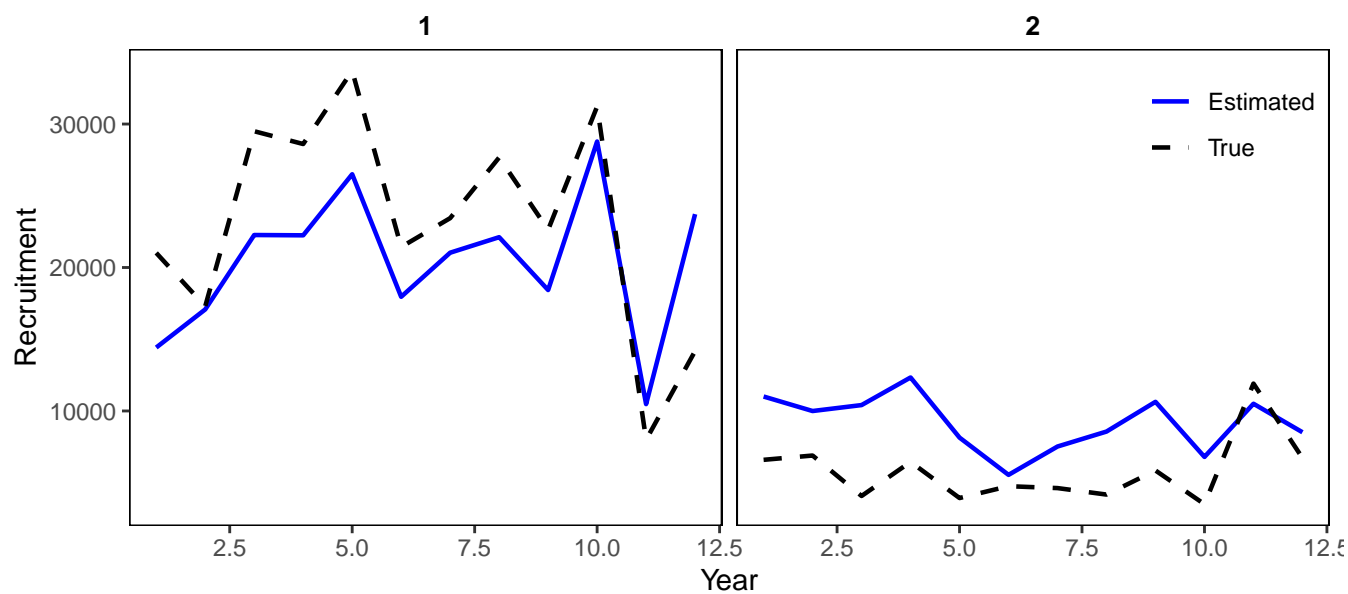
Estimated Parameter Values

|    | Parameter      | 1        | 2       |
|----|----------------|----------|---------|
| 1  | q              | 0.00     | 0.00    |
| 2  | R_ave          | 22037.10 | 9521.70 |
| 3  | beta 1 fishery | 4.90     | 4.95    |
| 4  | beta 2 fishery | 1.74     | 1.91    |
| 5  | beta 3 fishery | NA       | NA      |
| 6  | beta 4 fishery | NA       | NA      |
| 7  | beta 1 survey  | 5.17     | 4.84    |
| 8  | beta 2 survey  | 1.53     | 1.66    |
| 9  | beta 3 survey  | NA       | NA      |
| 10 | beta 4 survey  | NA       | NA      |

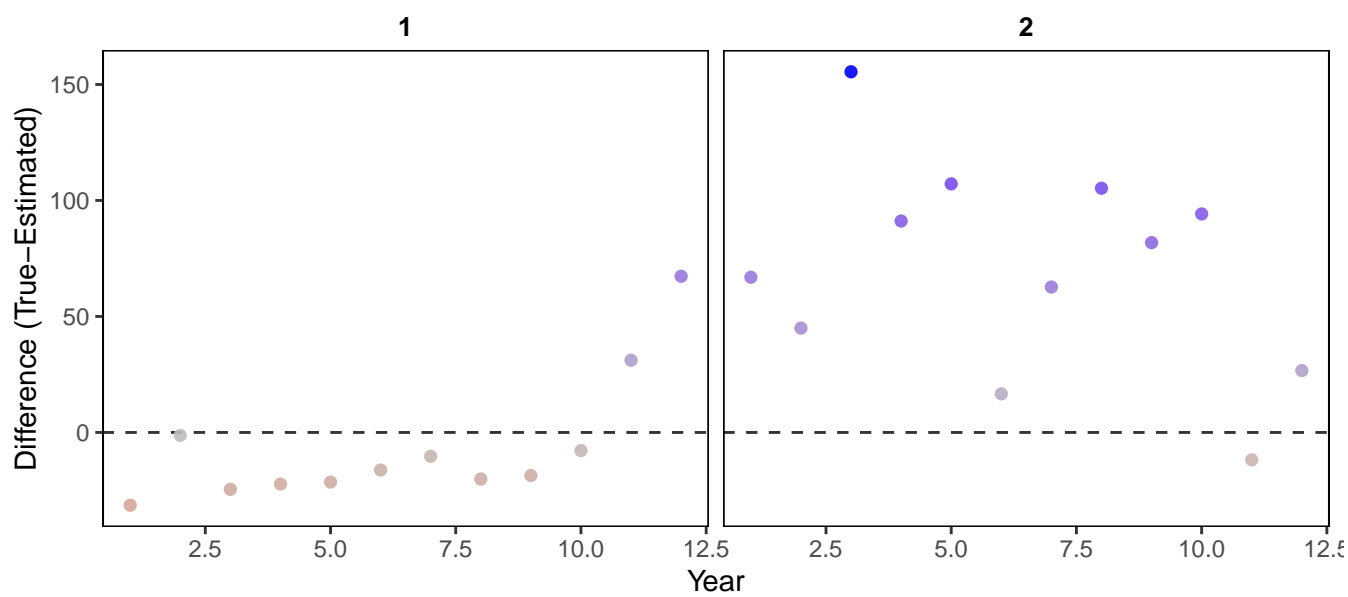
True Parameter Values

|    | Parameter      | 1        | 2       |
|----|----------------|----------|---------|
| 1  | q              | 0.00     | 0.00    |
| 2  | R_ave          | 21019.00 | 6596.00 |
| 3  | beta 1 fishery | 1.31     | 2.45    |
| 4  | beta 2 fishery | 3.76     | 3.16    |
| 5  | beta 3 fishery | NA       | NA      |
| 6  | beta 4 fishery | NA       | NA      |
| 7  | beta 1 survey  | 2.51     | 1.81    |
| 8  | beta 2 survey  | 2.31     | 2.64    |
| 9  | beta 3 survey  | NA       | NA      |
| 10 | beta 4 survey  | NA       | NA      |

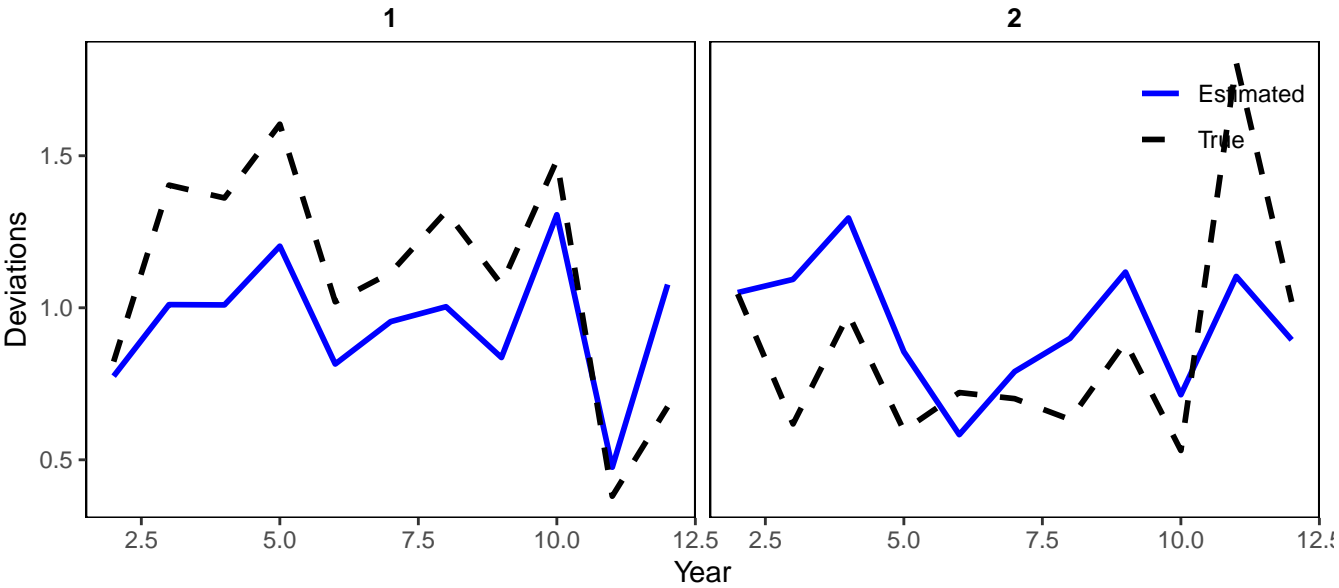
Recruitment Total



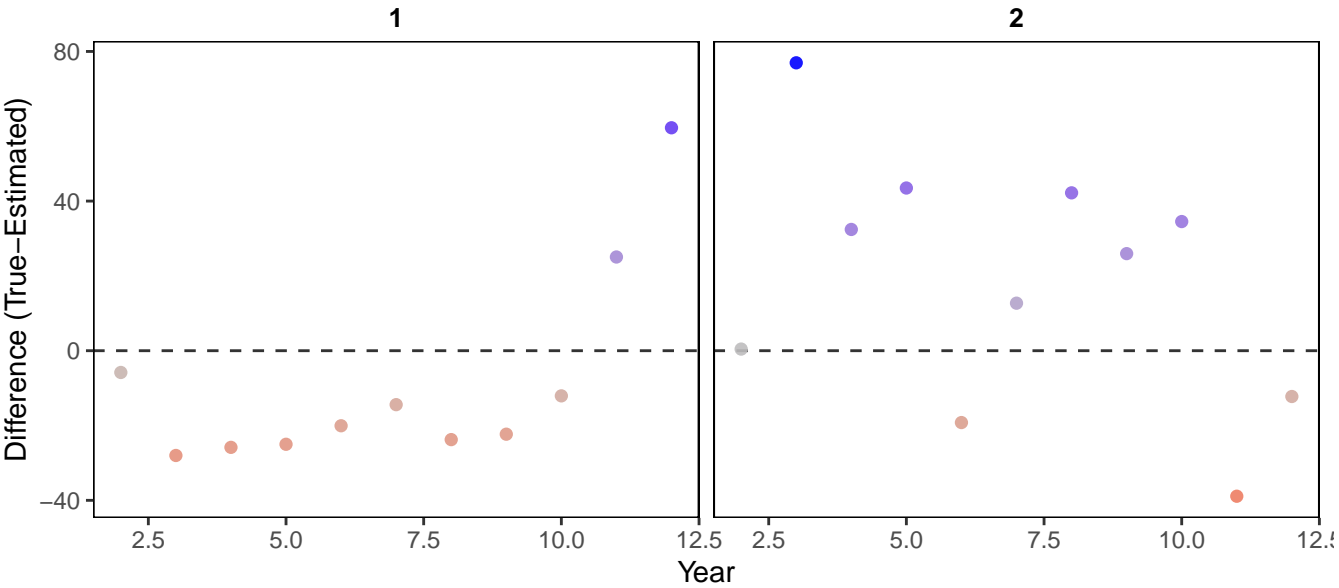
Recruitment Residuals



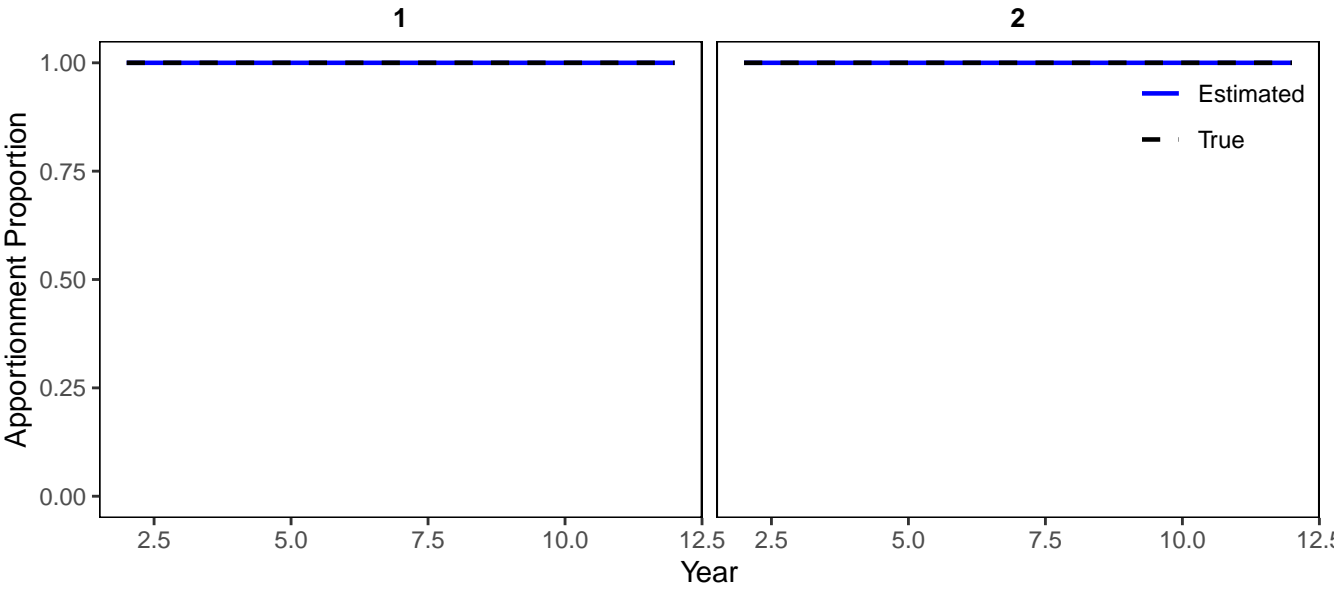
Recruitment Deviations



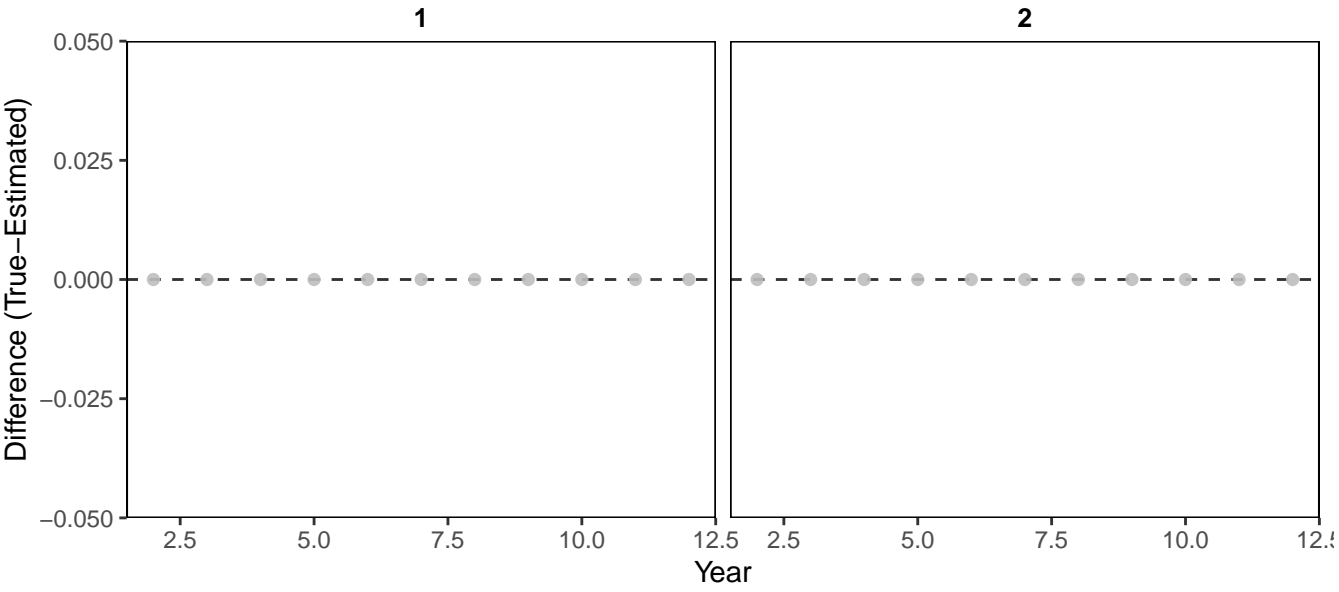
Recruitment Devs Residuals



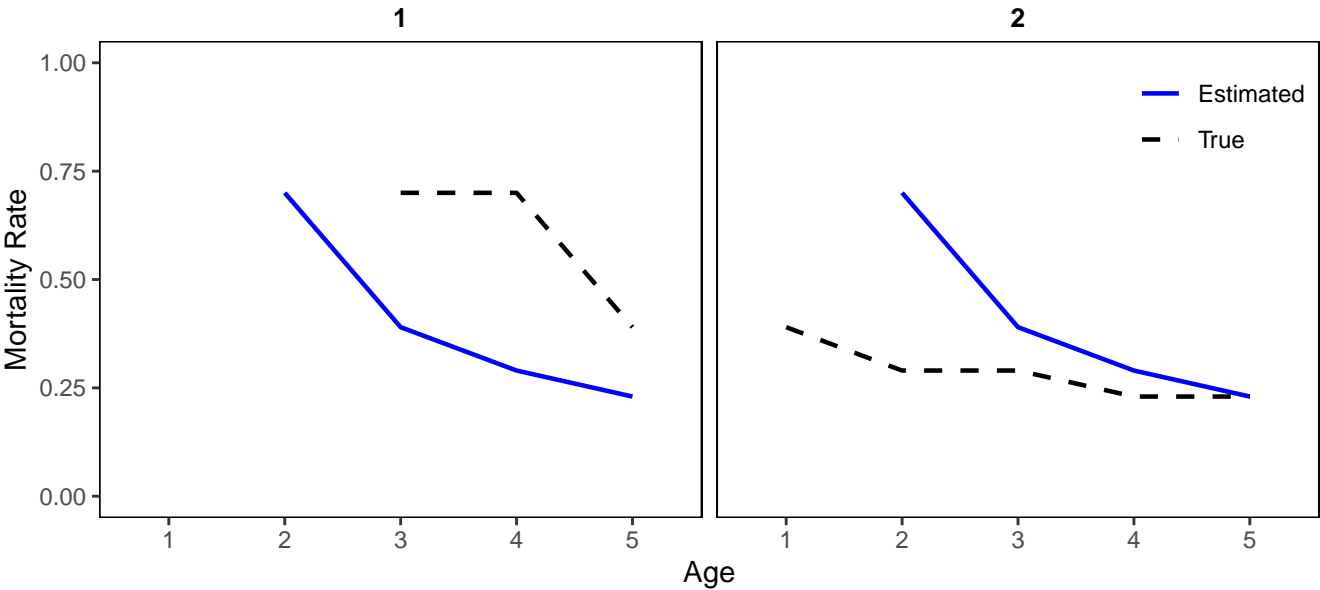
Recruitment Apportionment



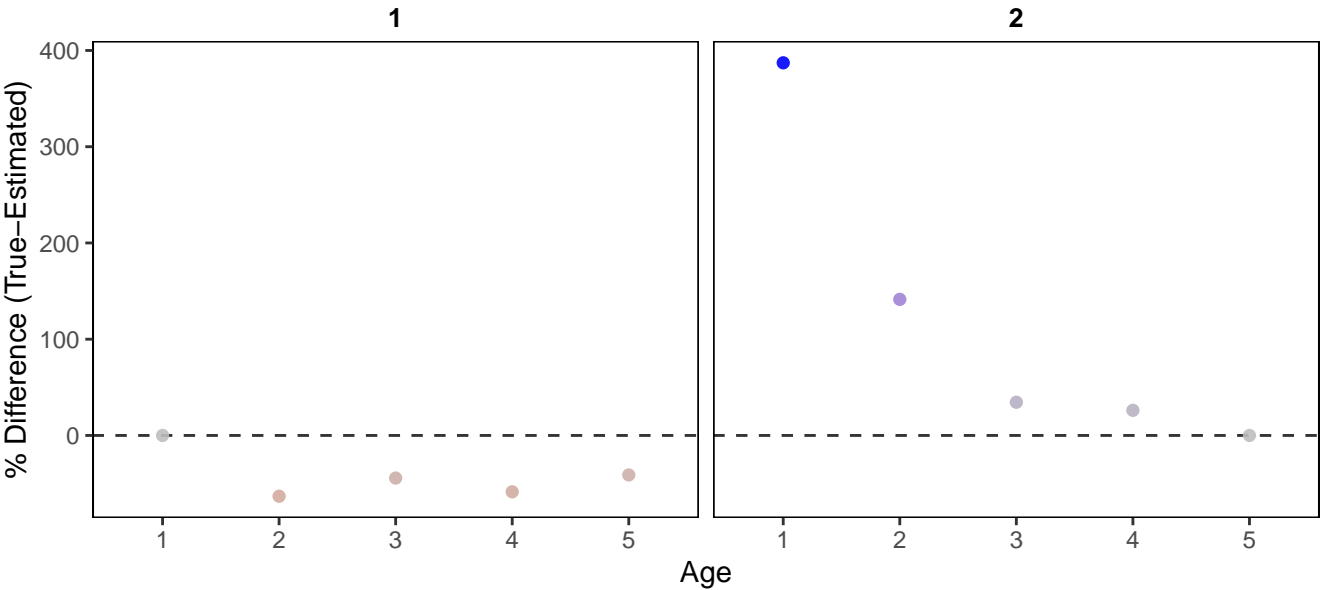
Recruitment Apportionment Residuals



Mortality Rate



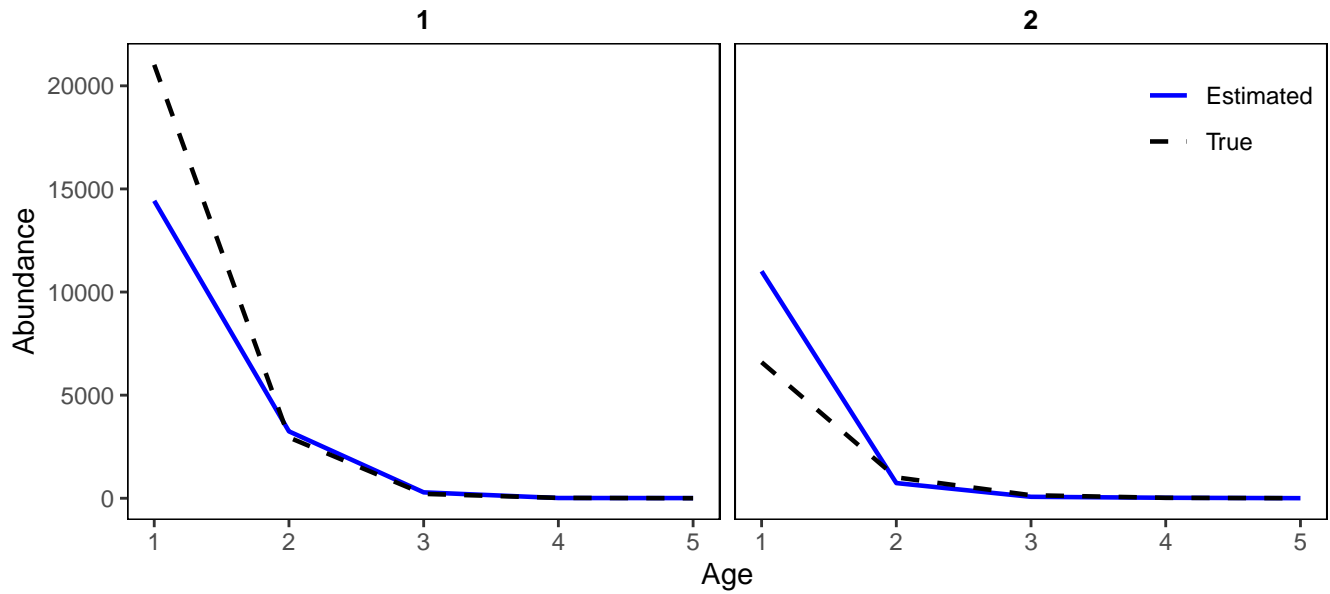
Mortality Rate Residuals



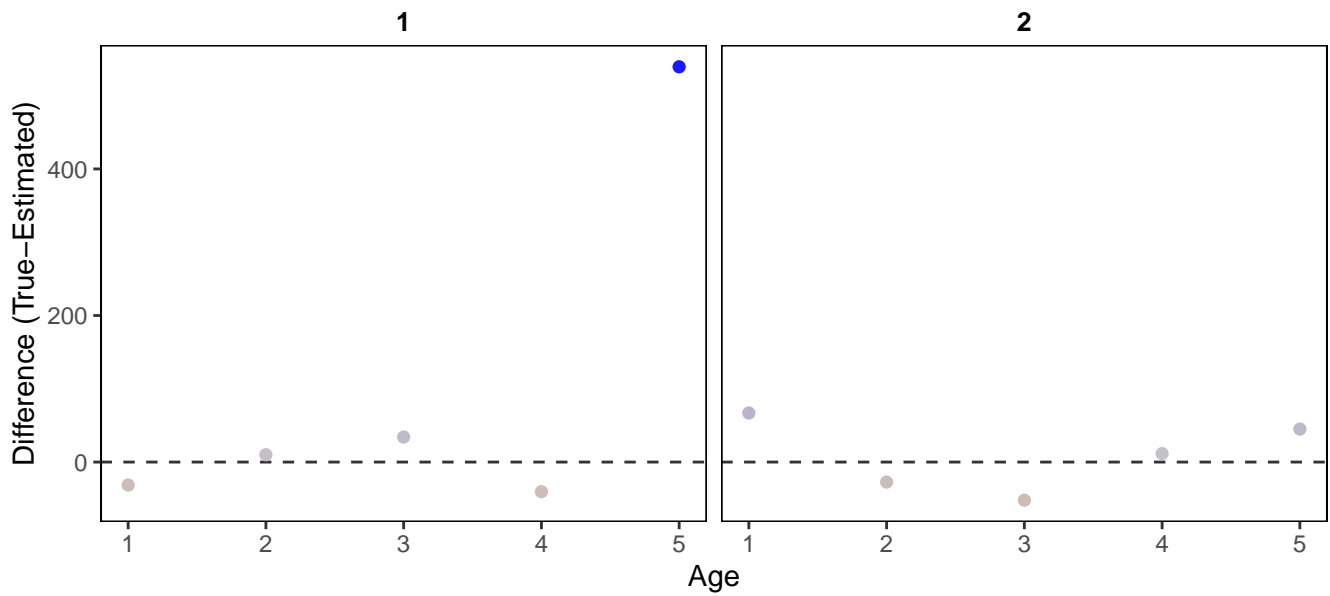
Reporting Rate



Initial Abundance

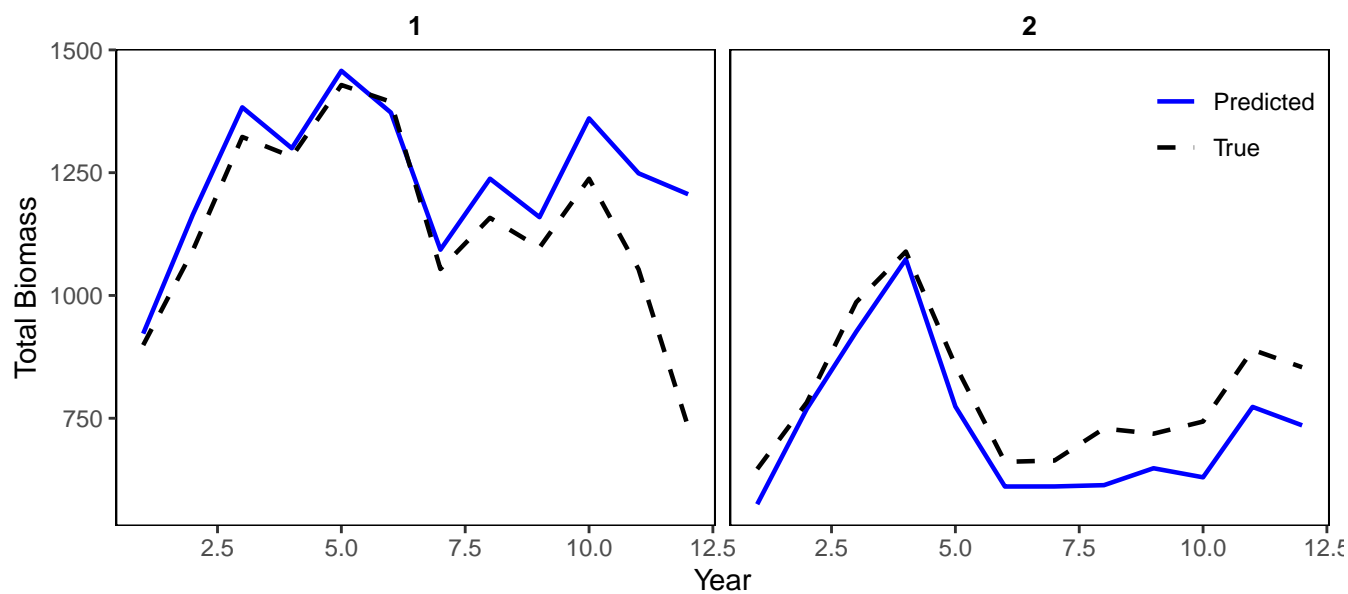


Initial Abundance Residuals

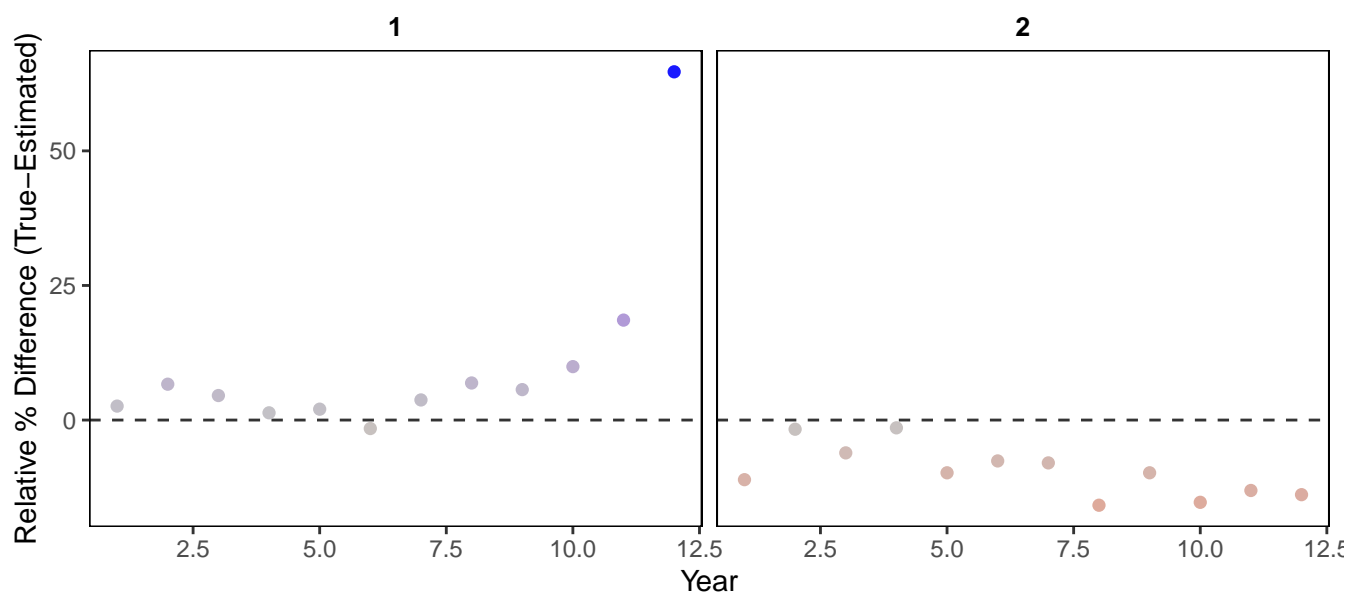




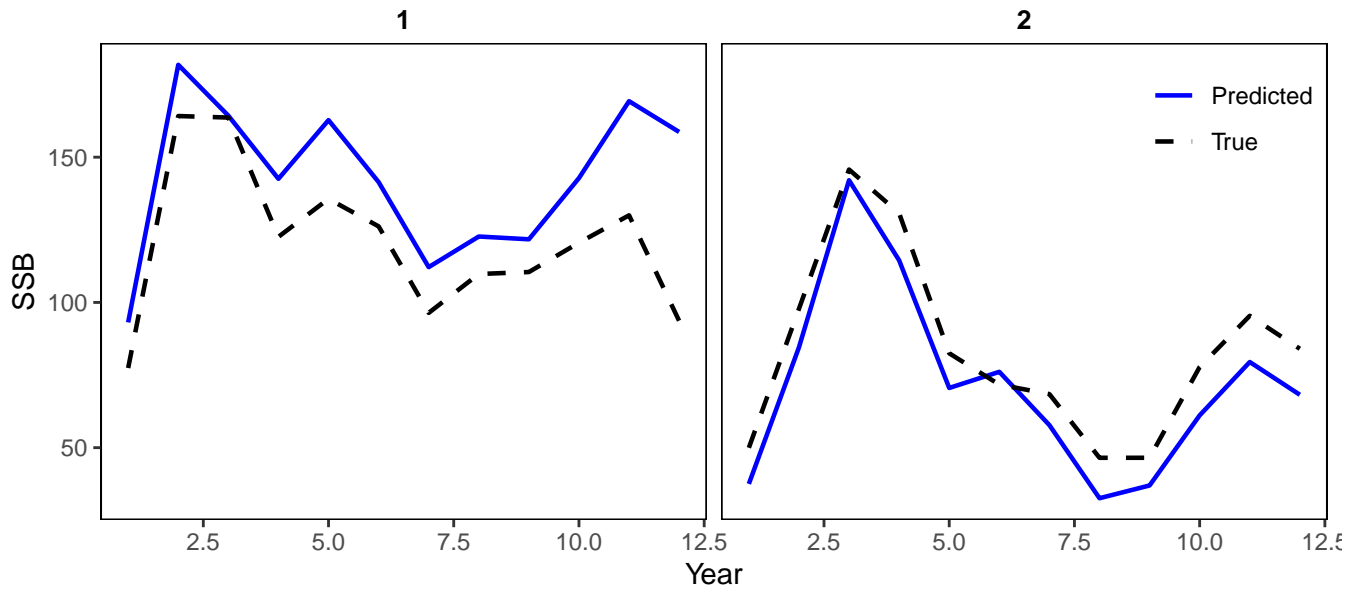
Total Biomass



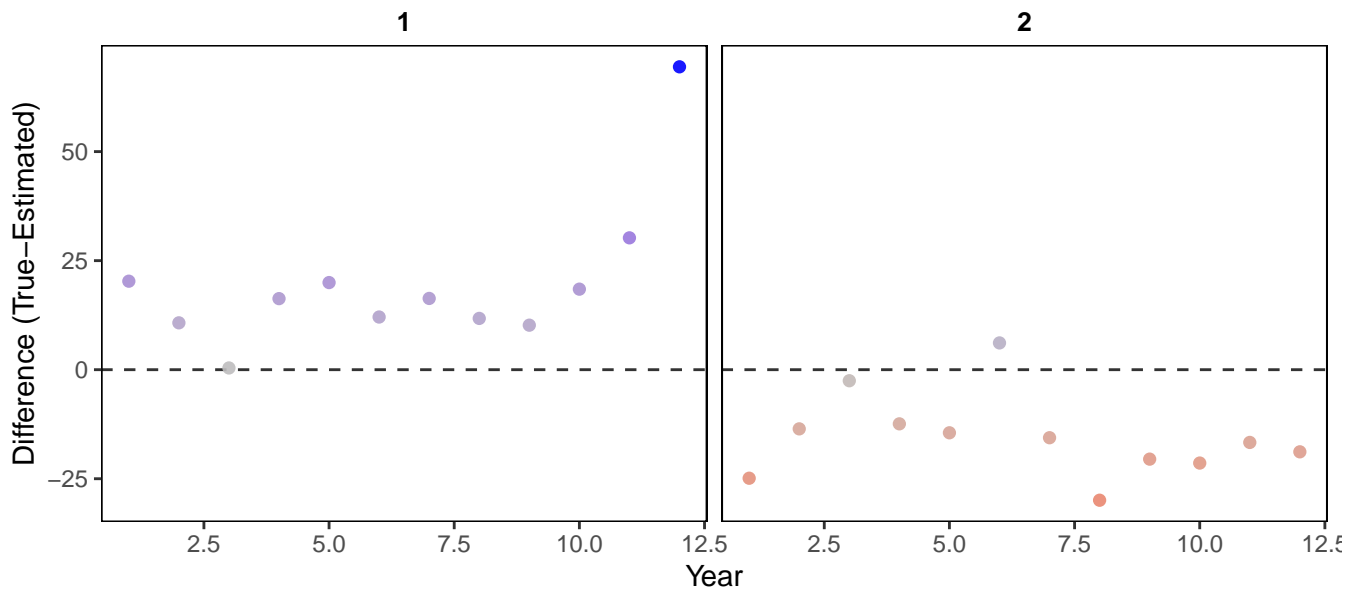
Biomass Residuals



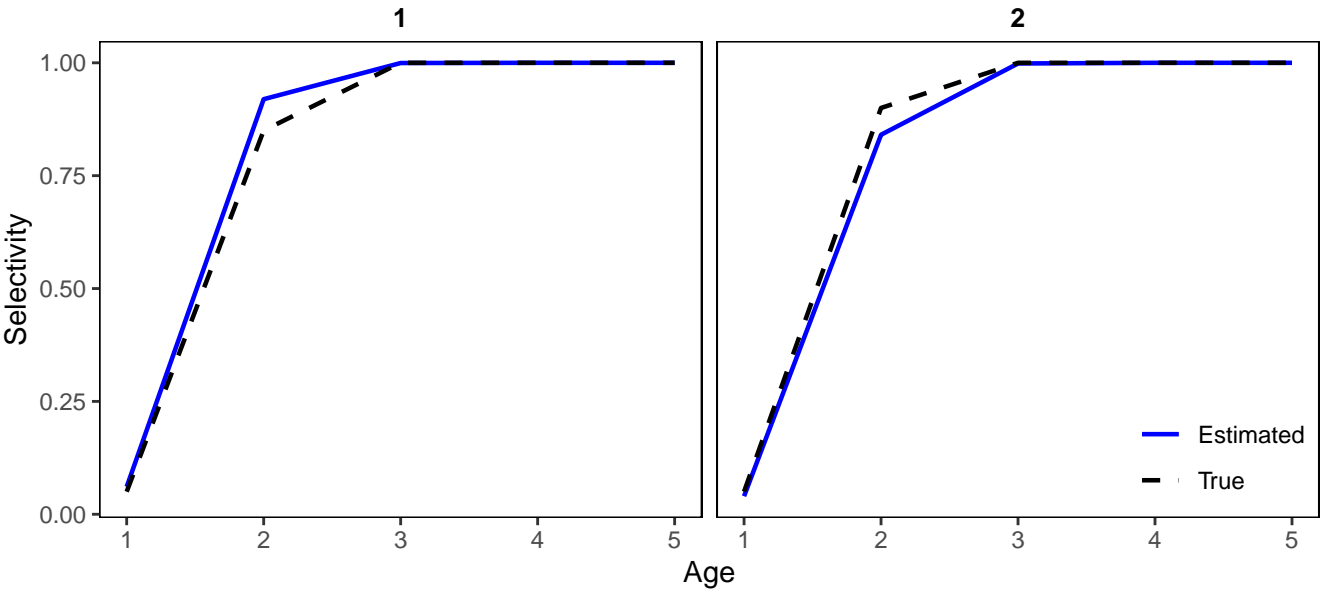
## SSB



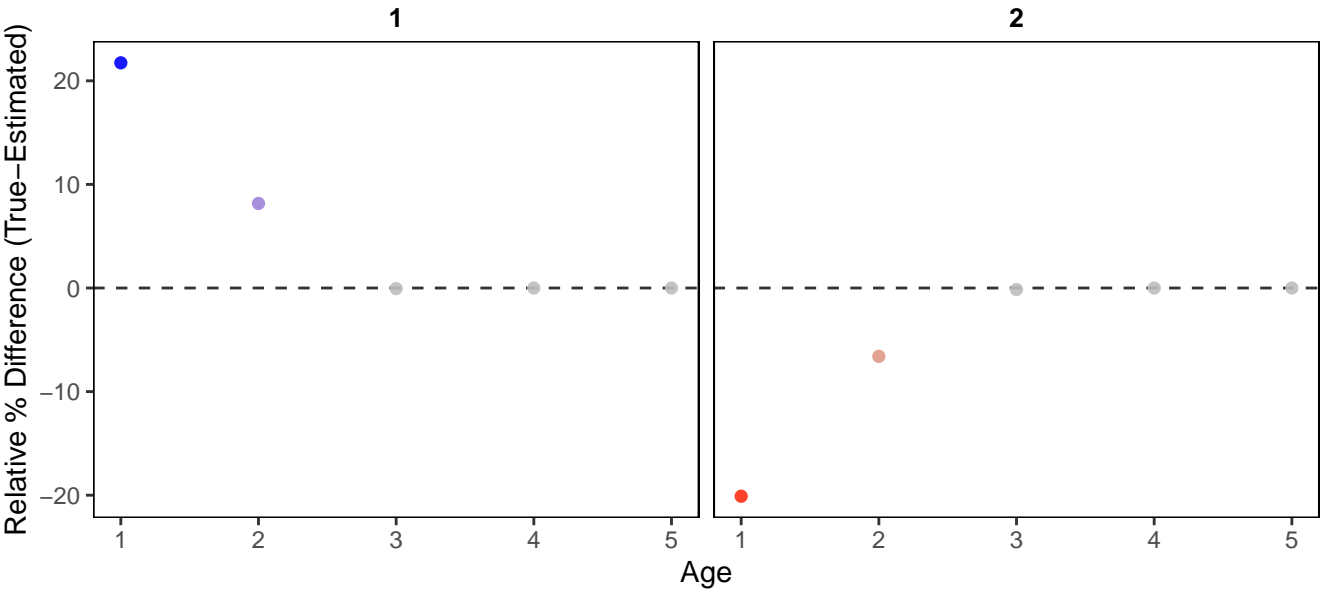
## SSB Residuals



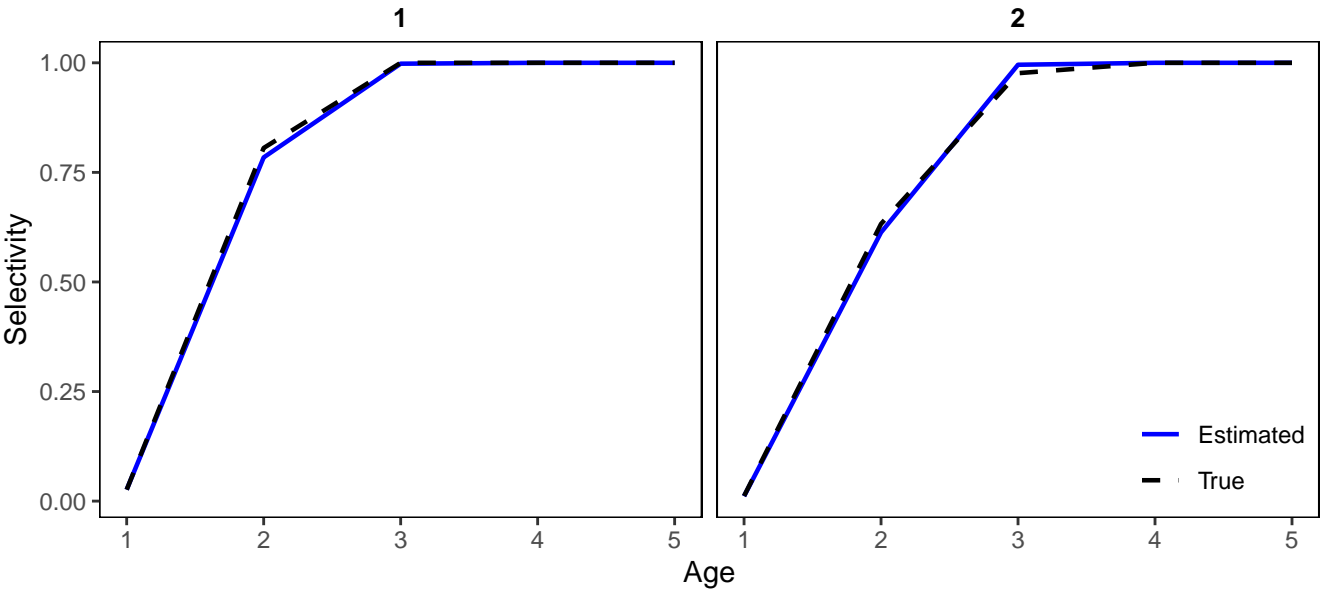
Survey Selectivity



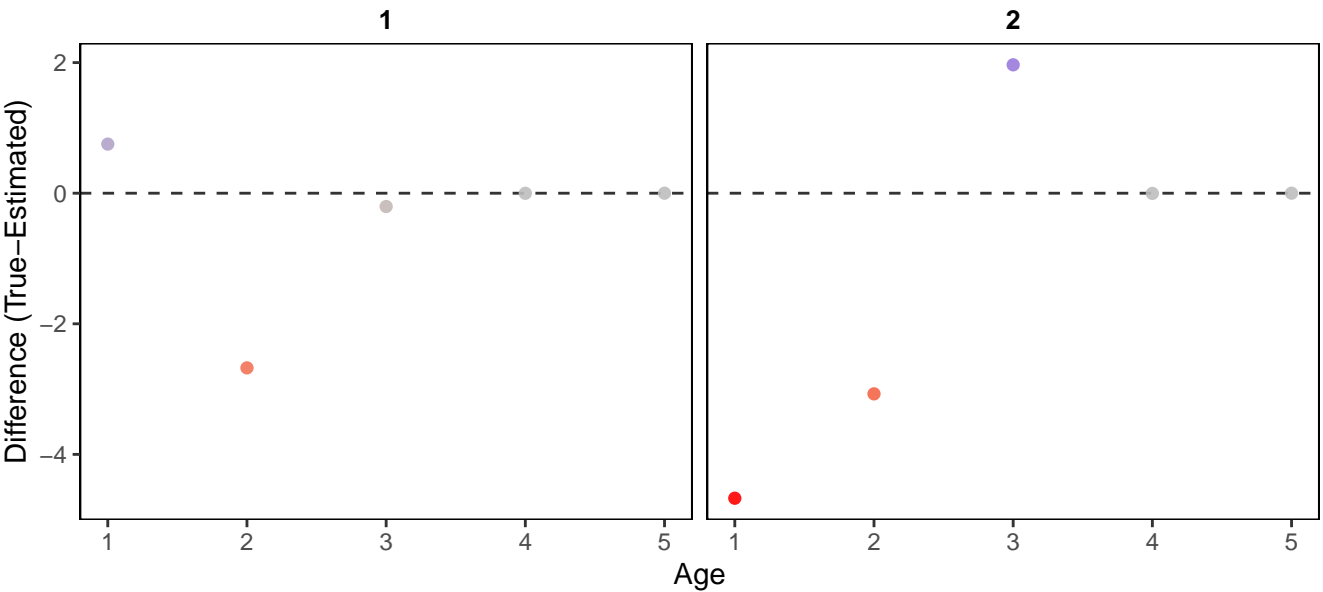
Survey Selectivity Residuals



Fishery Selectivity

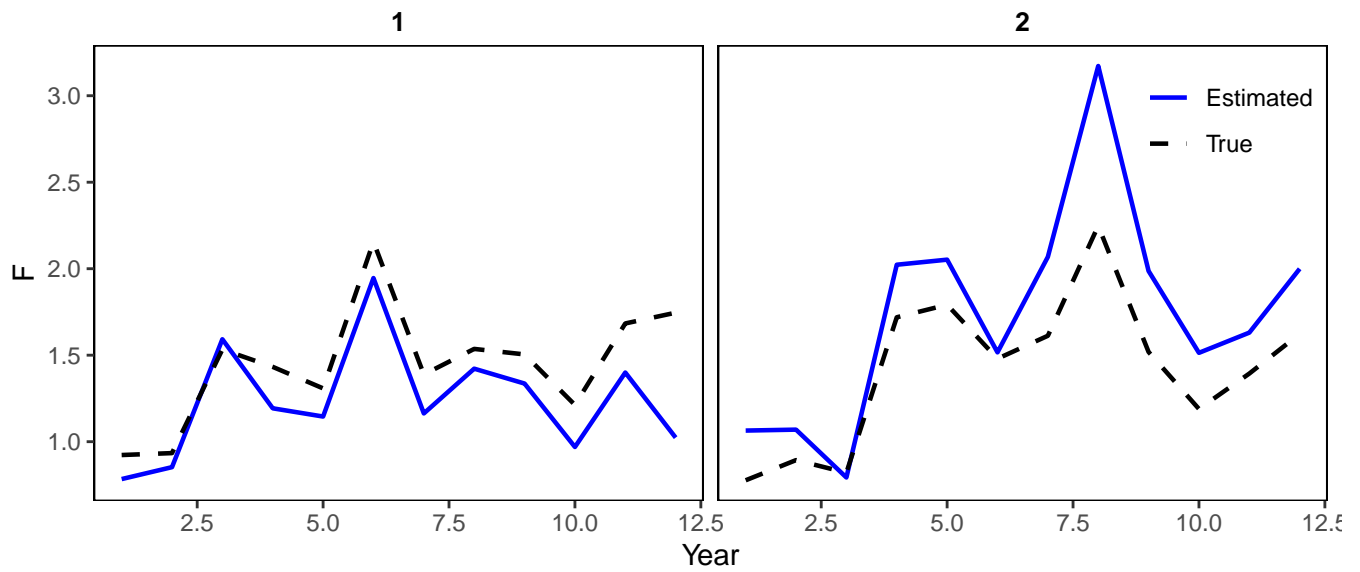


Fishery Selectivity Residuals

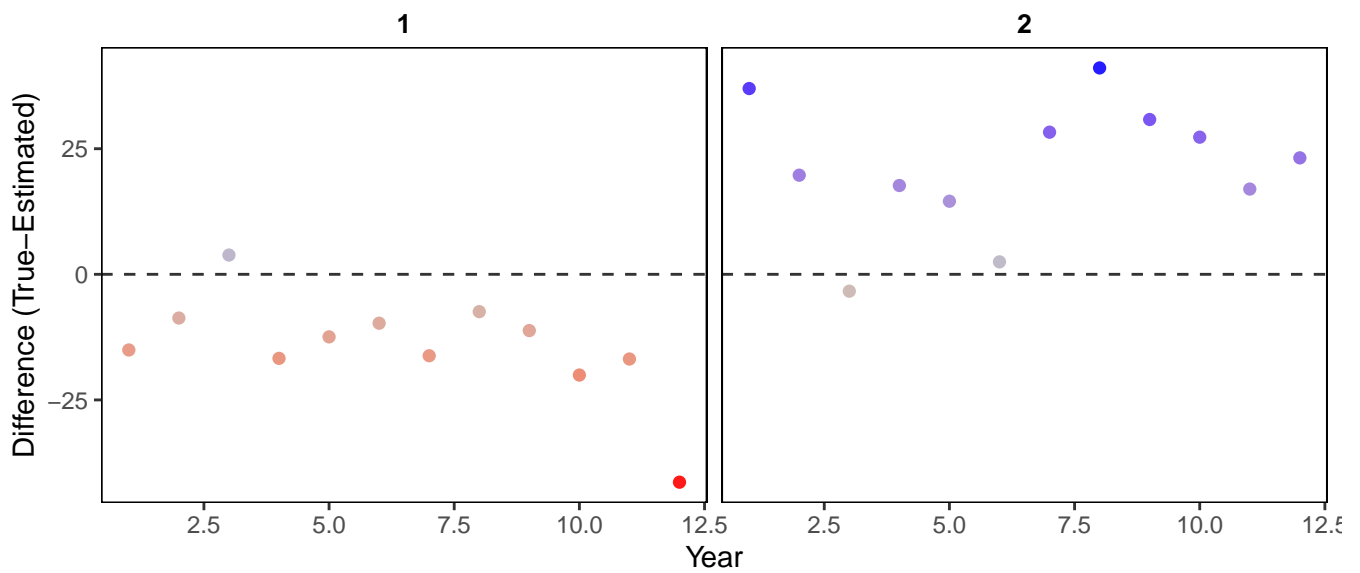


## Fishing Mortality

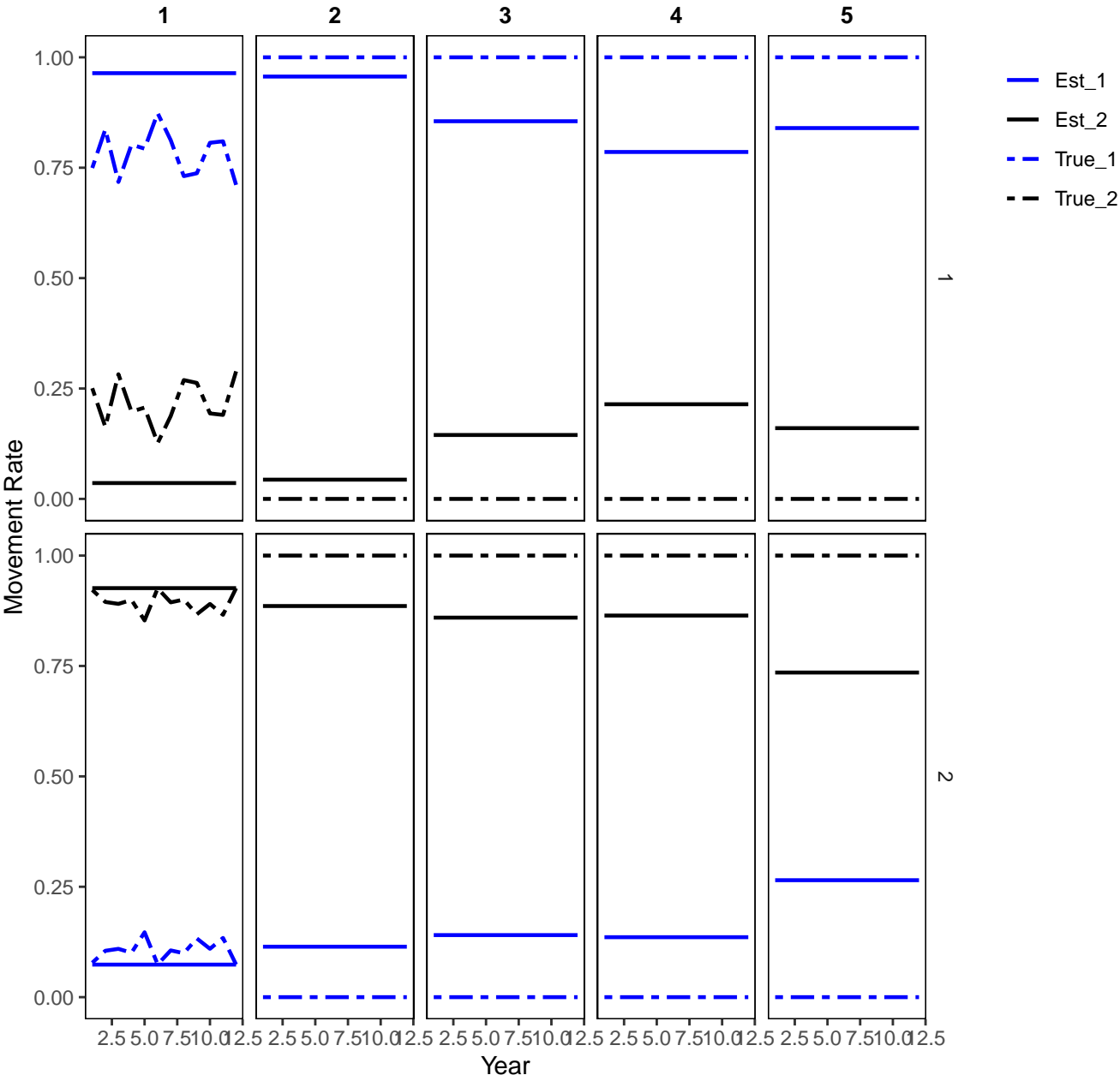
### Fully selected F by Year



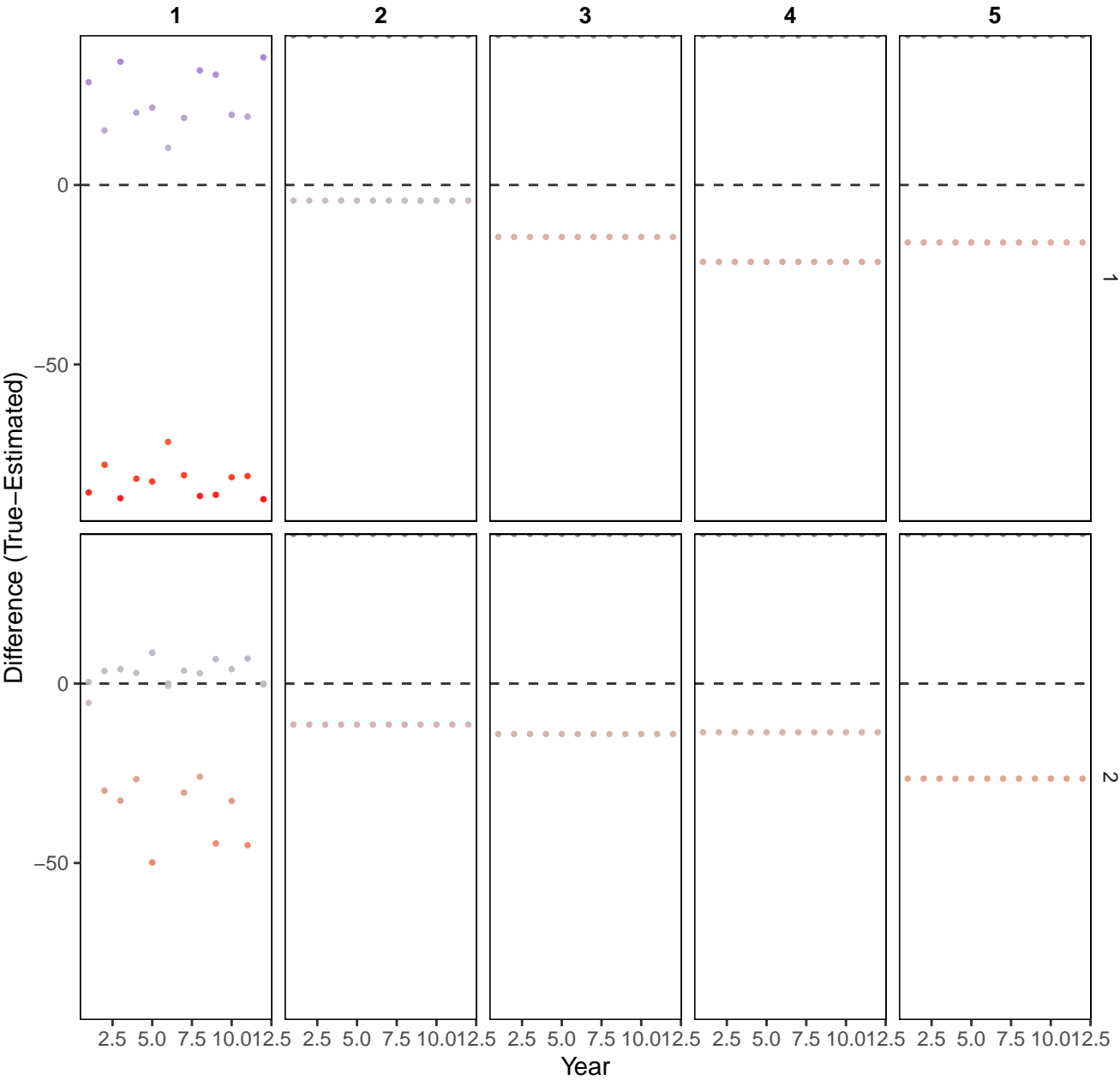
### Fully Selected F Residuals



Yearly Movement Rate

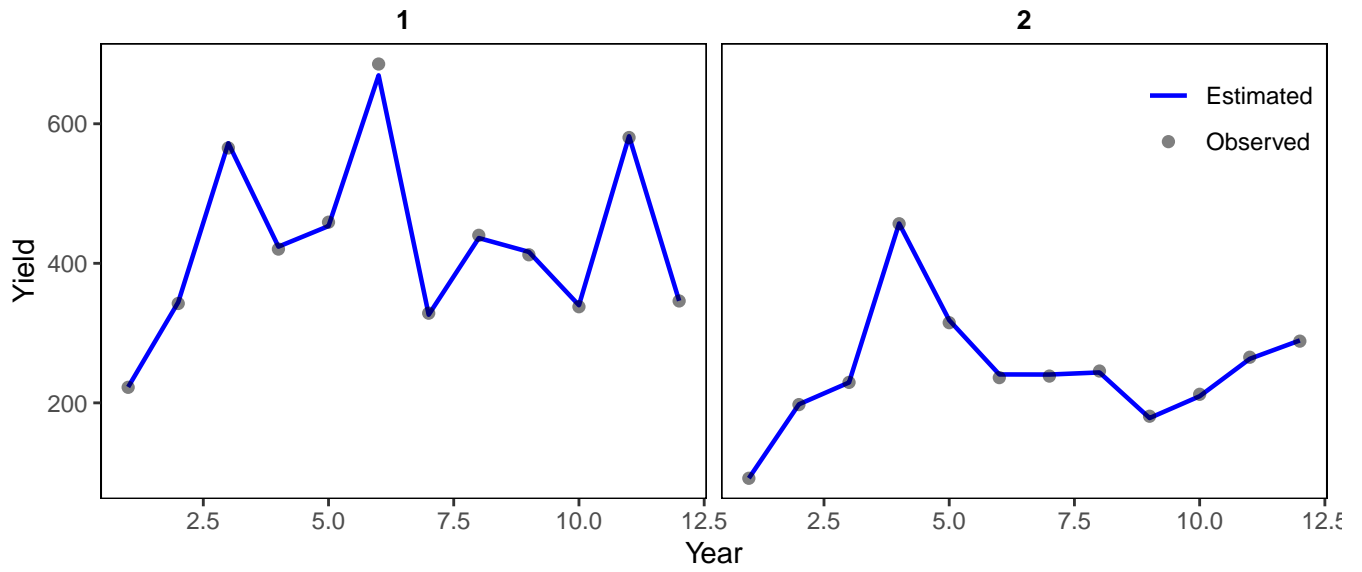


Yearly Movement Rate Residuals

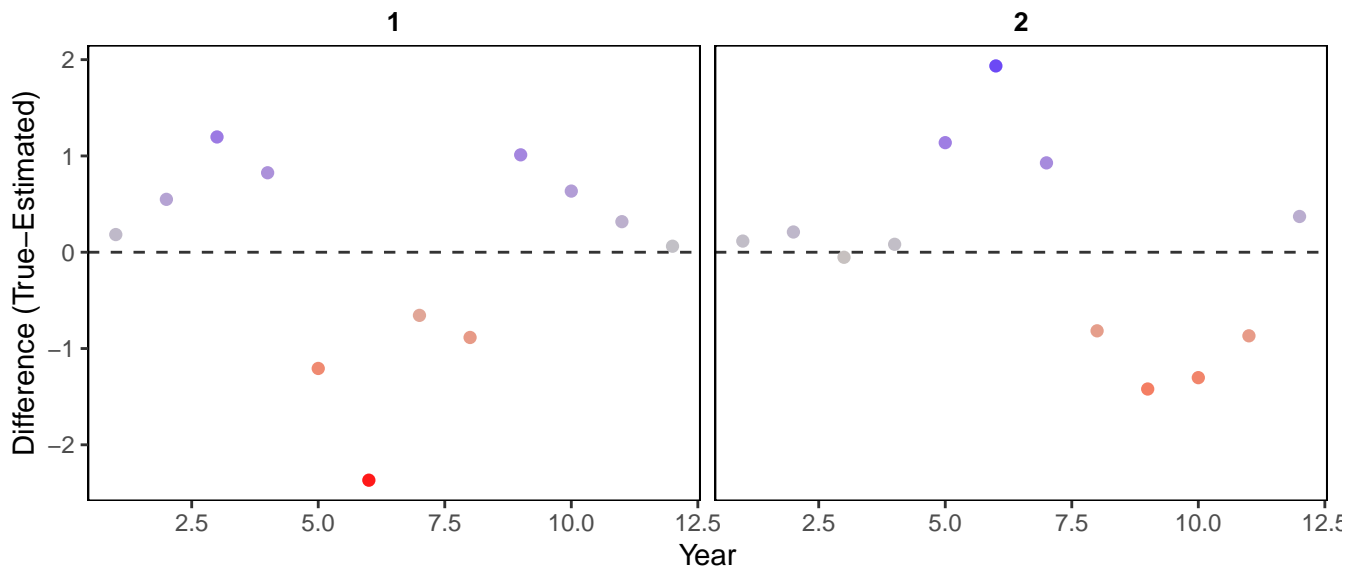


## Fits to Data

Yield



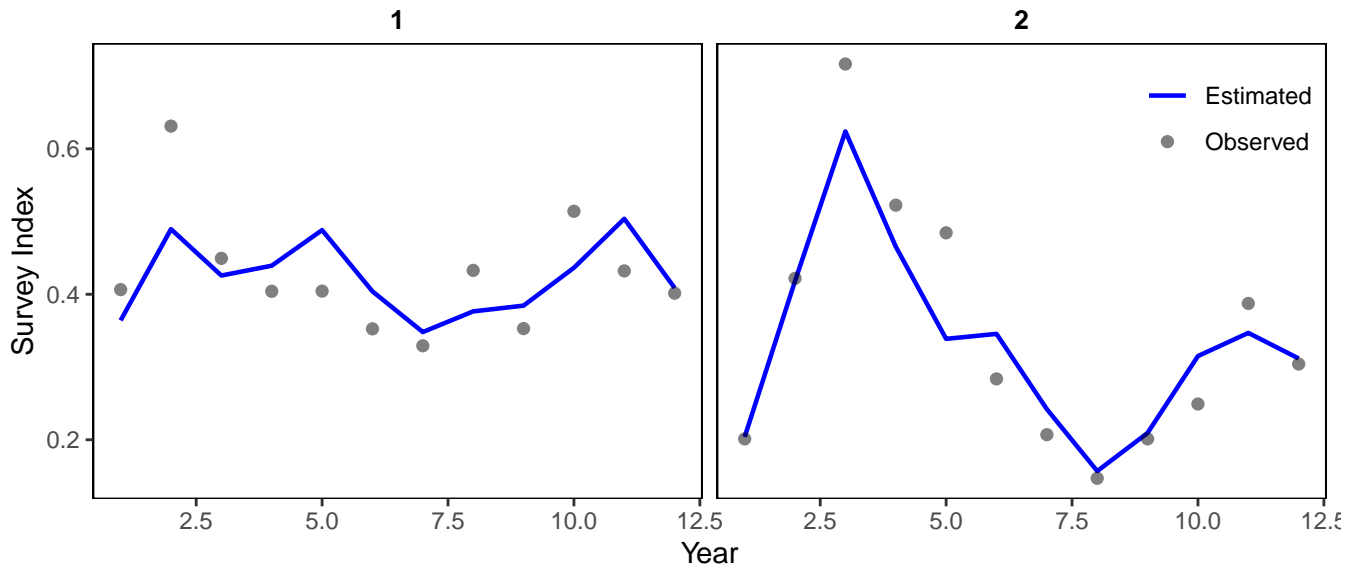
Yield Residuals



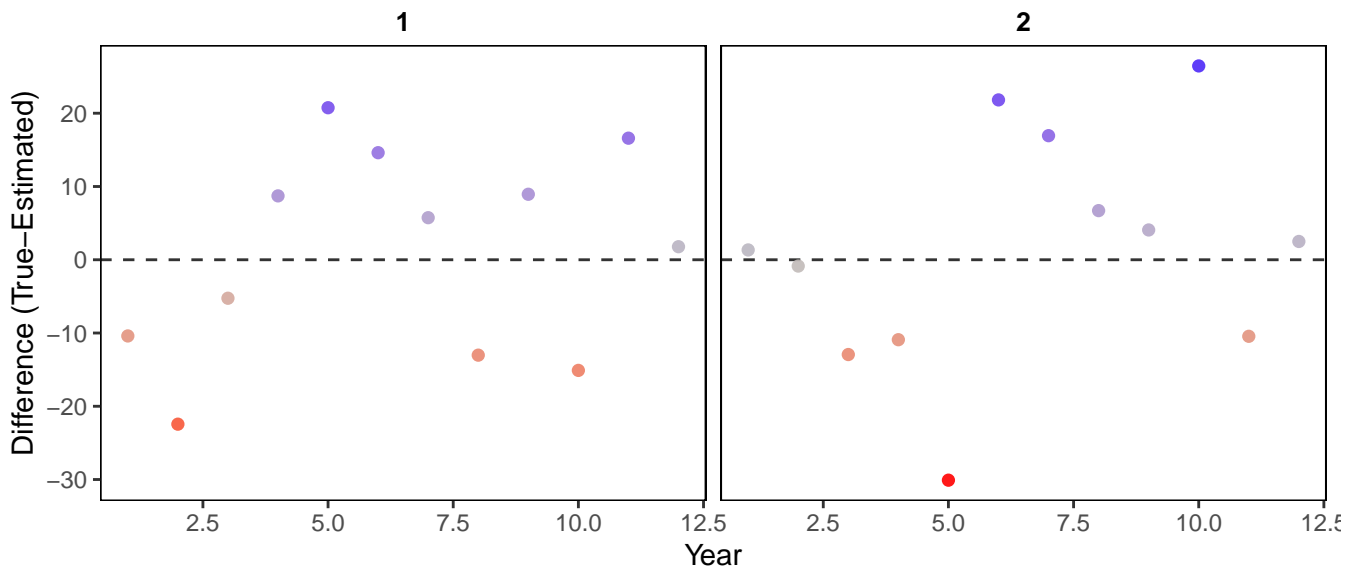


## Fits to Data continued

### Survey Biomass



### Survey Index Residuals



Fits to Data continued

