

Tag growth

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1 Introduction

Dissostichus mawsoni

Key words: Antarctic toothfish, Ross Sea

2 Simulation

Simulated 315 individuals, the same number as in the actual toothfish data set. The next step was to simulate sex, Age1, Age2 and time at liberty. What I did in the current simulation run was:

- Sampled sex from the observed sexes of individuals (with replacement).
- Sampled Age1, Age2 and time at liberty independently (with replacement) from those observed. Randomly selected one of these variables and calculated this values given the other two.
- Rounded Age1, Age2 and time at liberty off to the nearest integer.

This is a bit of a hack I know, but the alternative did not yeild realistic looking Age1, Age2, liberty samples.

2.1 Fits to simulated data

2.1.1 sims1

This was our first attempt at estimating simulated data. Here b was treated as a random effect. L_0 was estimated without a prior penalty. Looking at the histograms below there seems to be two states that the model estimates are jumping between. Looking at the trace plots, when σ_o is estimated high then the remaining parameters are poorly estimated.

Table 1: .		
Parameter	Female	Male
L_0	43	50
\bar{b}	0.001	0.00106
σ_b	0.21	0.19
γ	0.19	0.19
ψ	2e-10	2e-10
σ_o	0.083	0.083
σ_z	0.0	0.0
σ_y	0.0	0.0

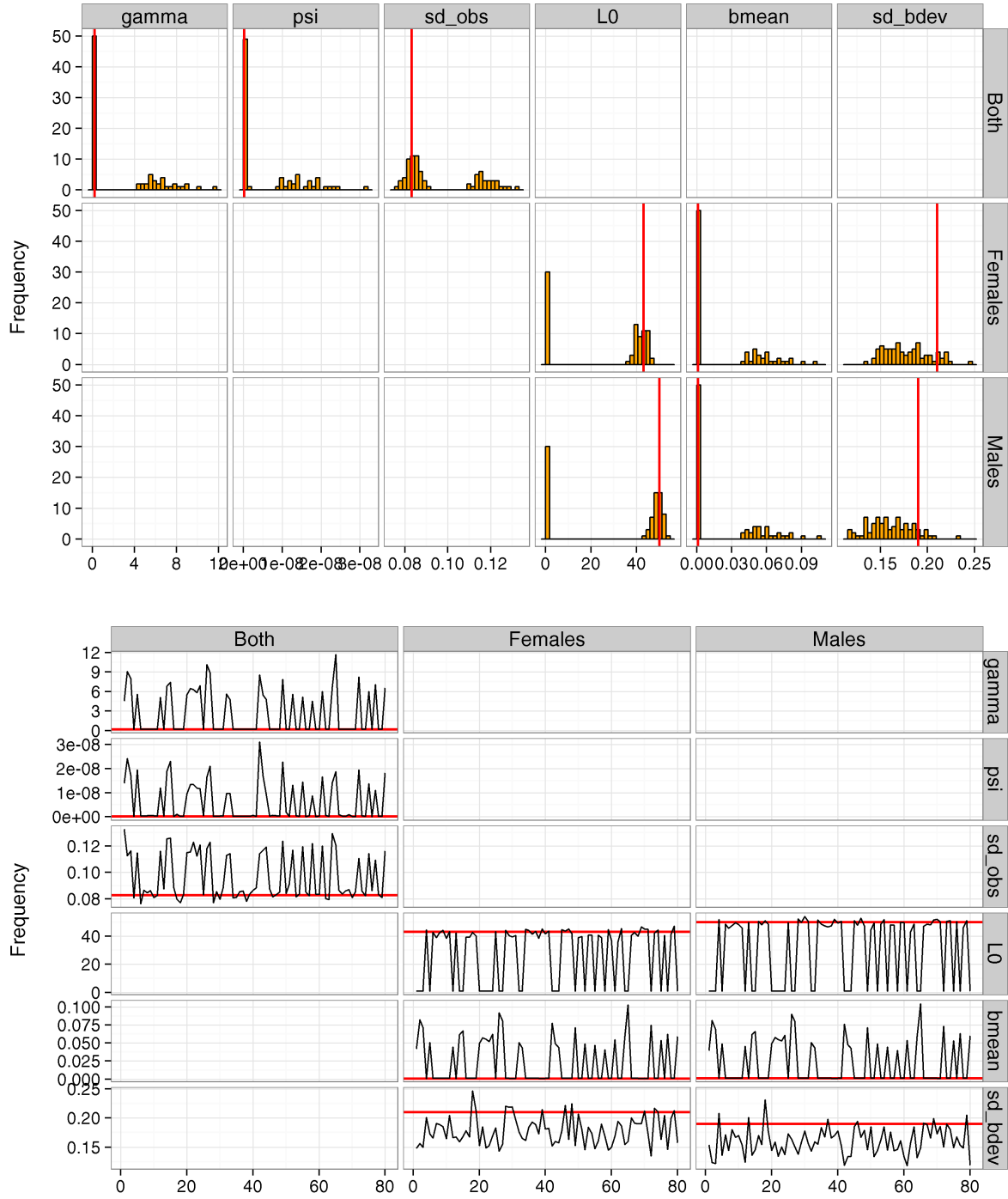


Figure 1: pdH fits plotted only (80 of 100 fits were pdH)..

2.1.2 sims2

In this simulation/estimation we placed a prior penalty on L_0 (a normal centered about 0). The simulation was run with L_0 values much closer to 0. Again, b was treated as a random effect. Doing a poor job of recovering L_0 for males. Two states that seem to be linked to σ_o again. Not getting ψ at all.

Table 2: .		
Parameter	Female	Male
L_0	0.0	6.9
\bar{b}	0.003	0.003
σ_b	0.106	0.112
γ	0.4	0.4
ψ	0.001	0.001
σ_o	0.099	0.099
σ_z	0.0	0.0
σ_y	0.0	0.0

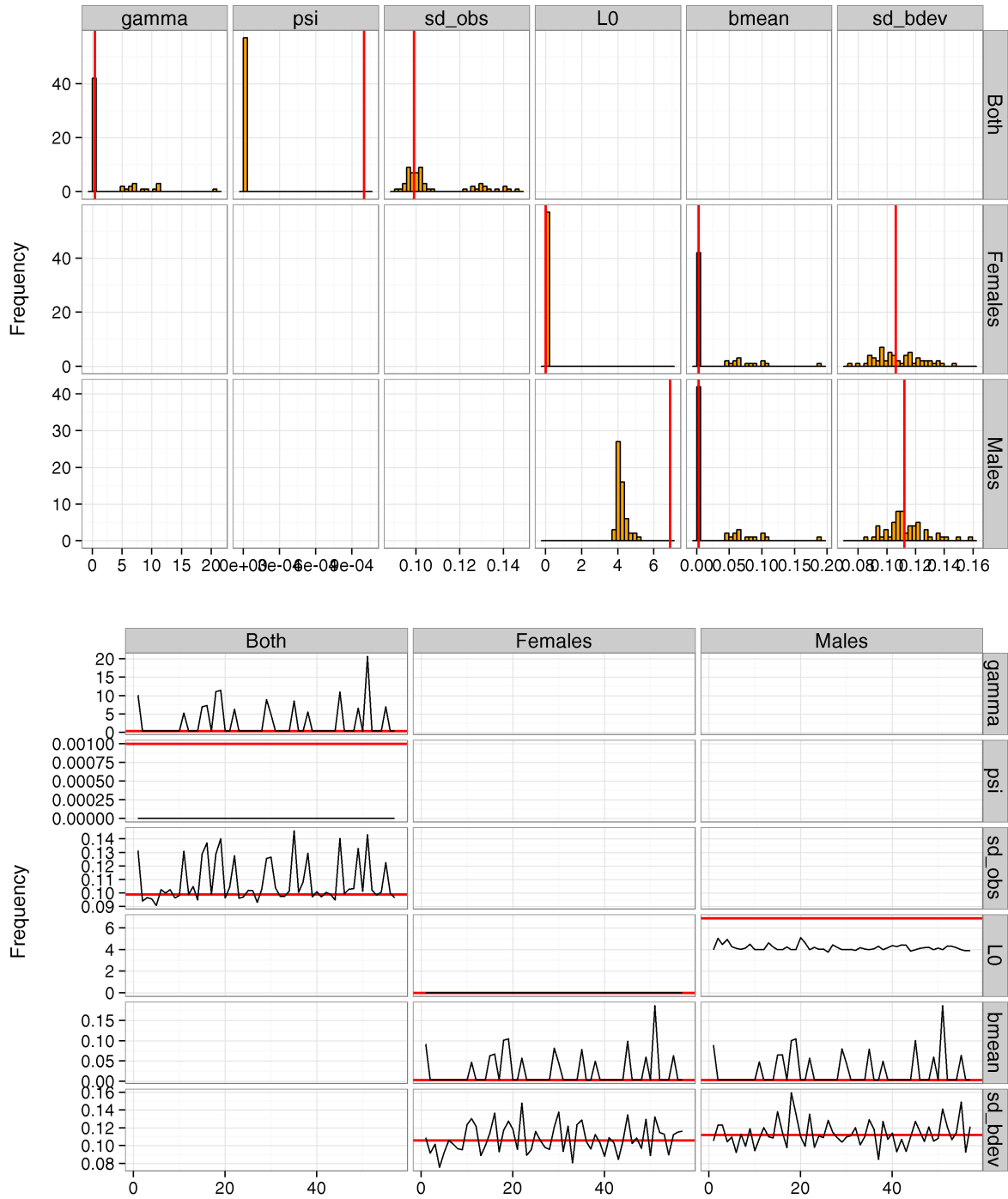


Figure 2: pdH fits plotted only (57 of 100 fits were pdH).

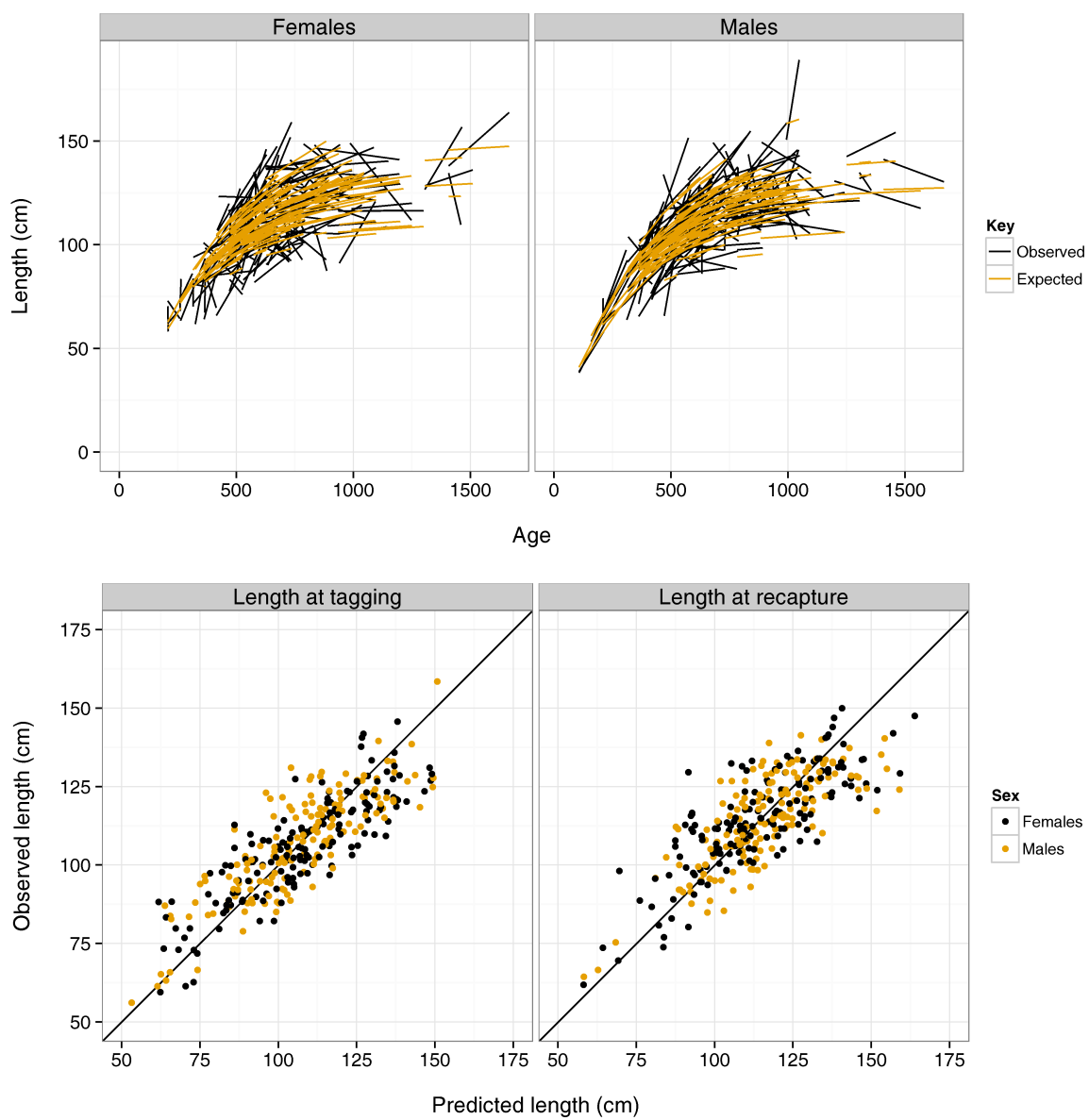


Figure 3: The first pdH simulation (sim 3).