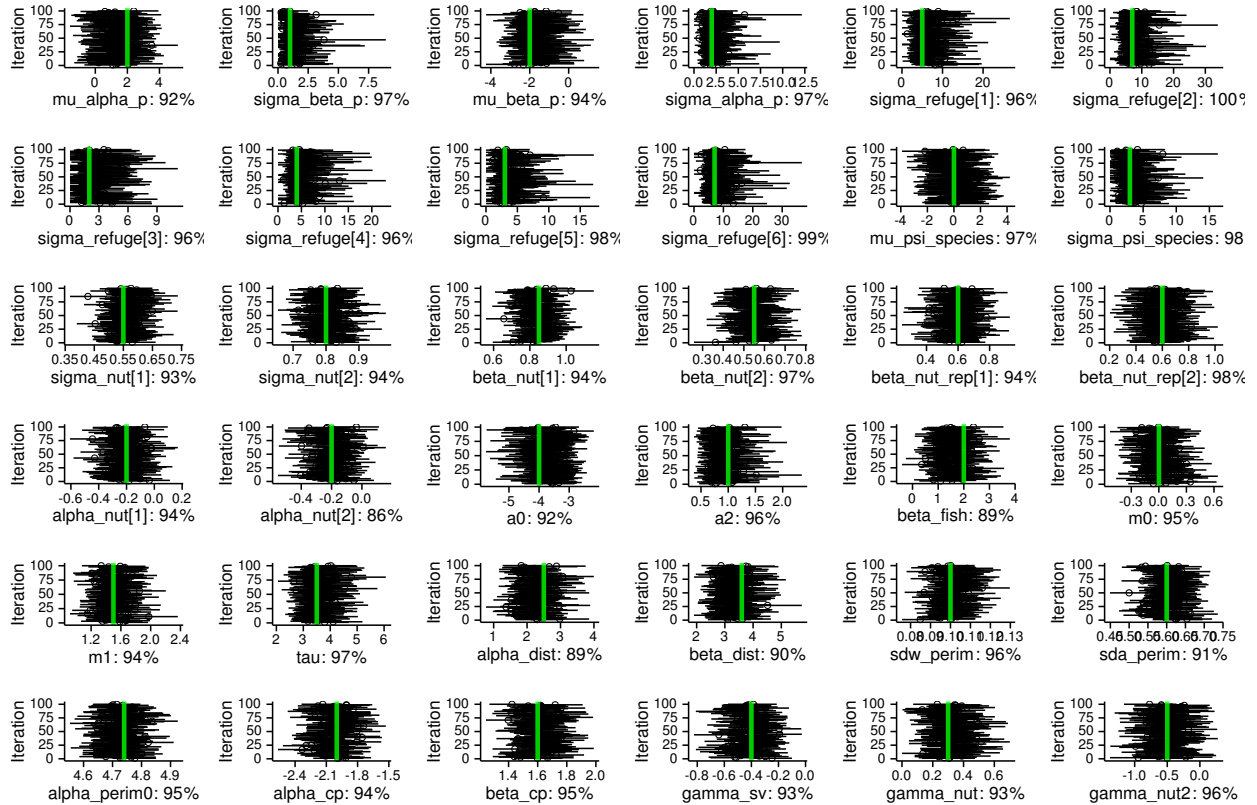


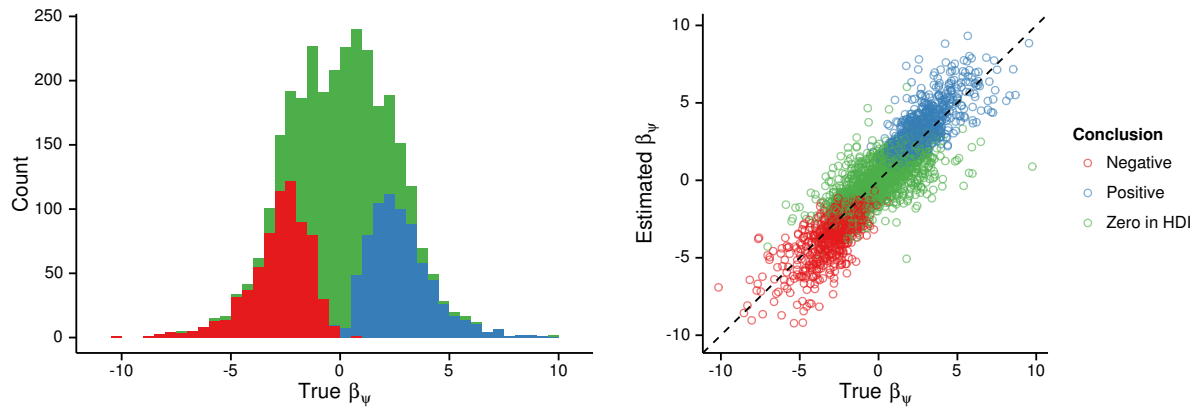
1 Appendix S1- Supplemental figures for simulation results, regional
 2 standard deviations, detection probabilities, and independence
 3 checks.

4 Fig. S1



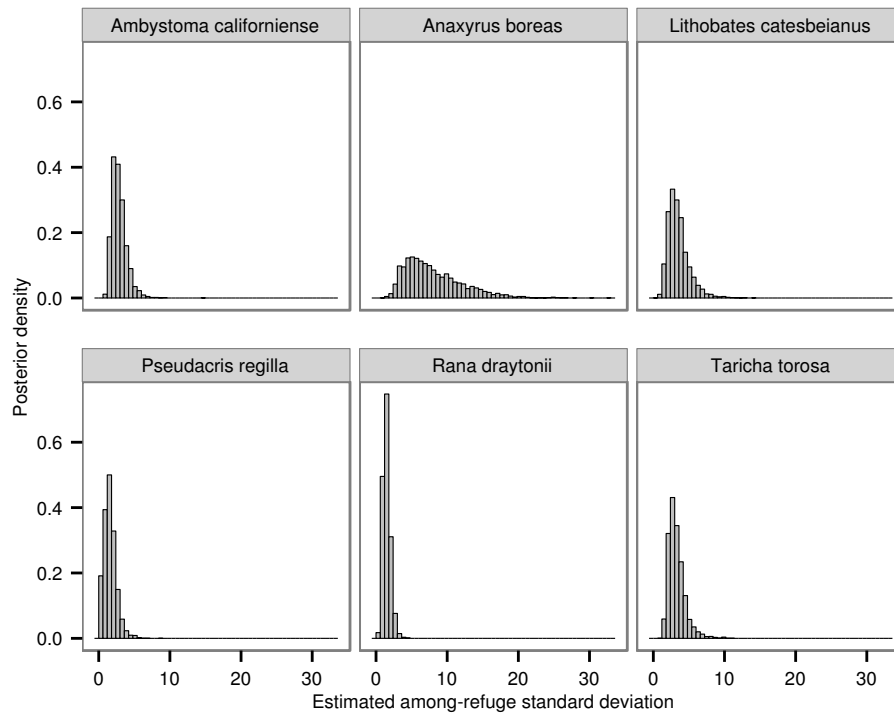
5 Results from a parameter recovery simulation in which >100 data sets were simulated from
 6 the model, and parameters were estimated. Percent coverage represents the percentage of
 7 highest posterior density intervals (HDIs) containing the true value for each parameter.

8 Fig. S2



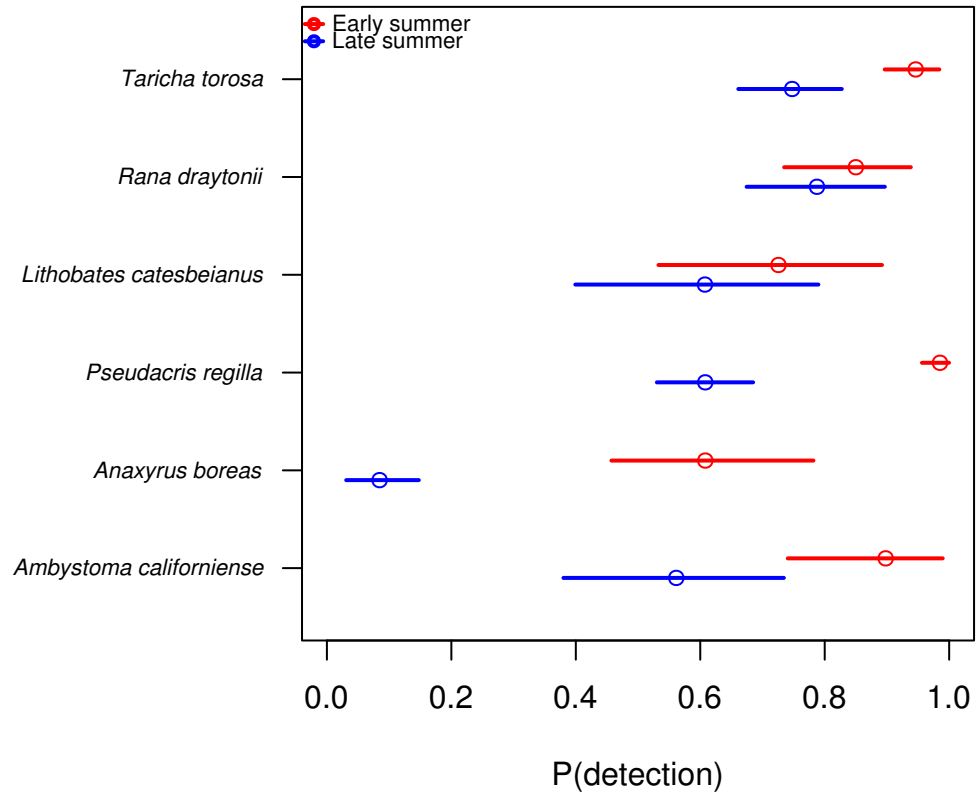
9 Recovery of β_ψ terms from the simulated 100 data sets. Red indicates parameter estimates
10 for which the HDI was entirely negative, green indicates HDIs overlapping zero, and blue
11 indicates HDIs that were entirely positive.

12 **Fig. S3**



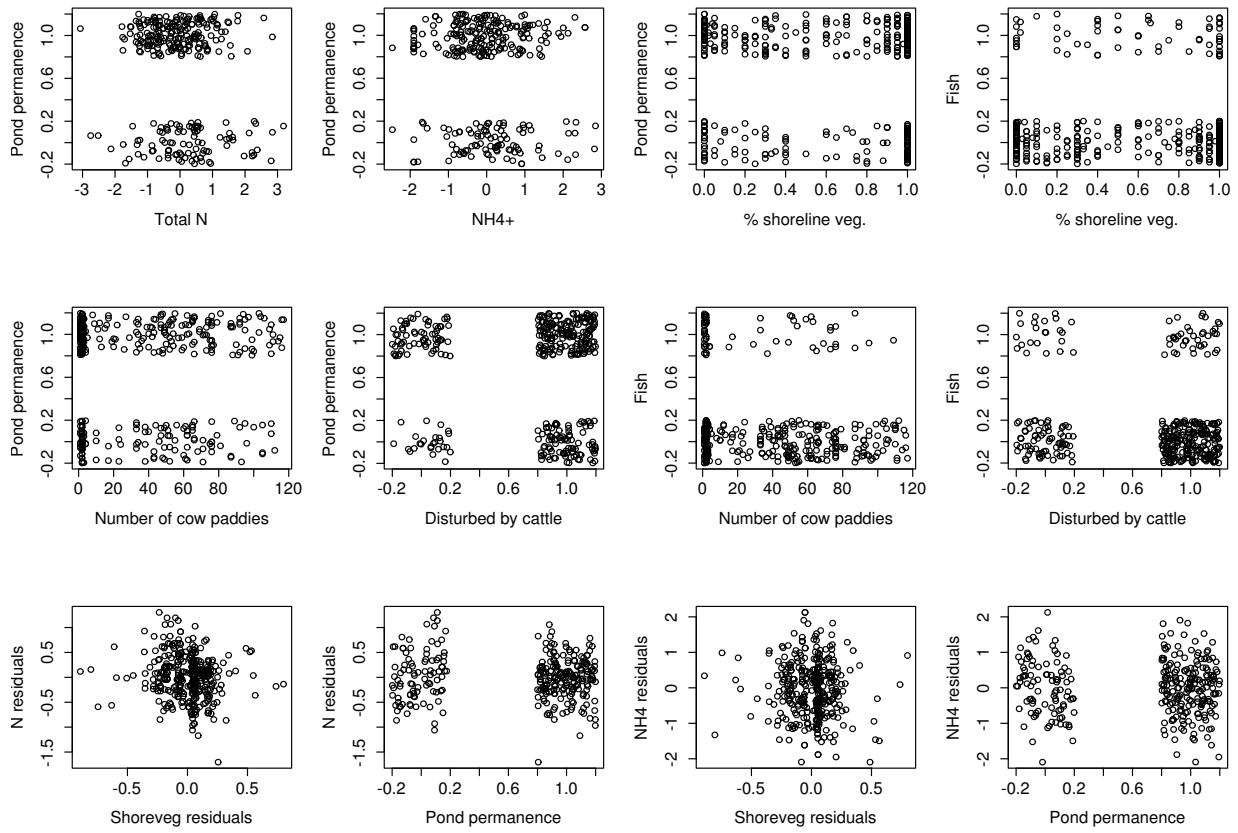
13 Estimated among-refuge standard deviations in occupancy probabilities for each species.

14 Fig. S4



15 Posterior estimates of detection probabilities for each species in early and late summer. The
16 interval represents the 95% HDI, and the points are placed at the posterior medians.

17 Fig. S5



18 Graphical checks of independence assumptions implied by our model, used to check for
19 missing causal pathways.