Appendix S4. Supplemental Figures for Simulation Results
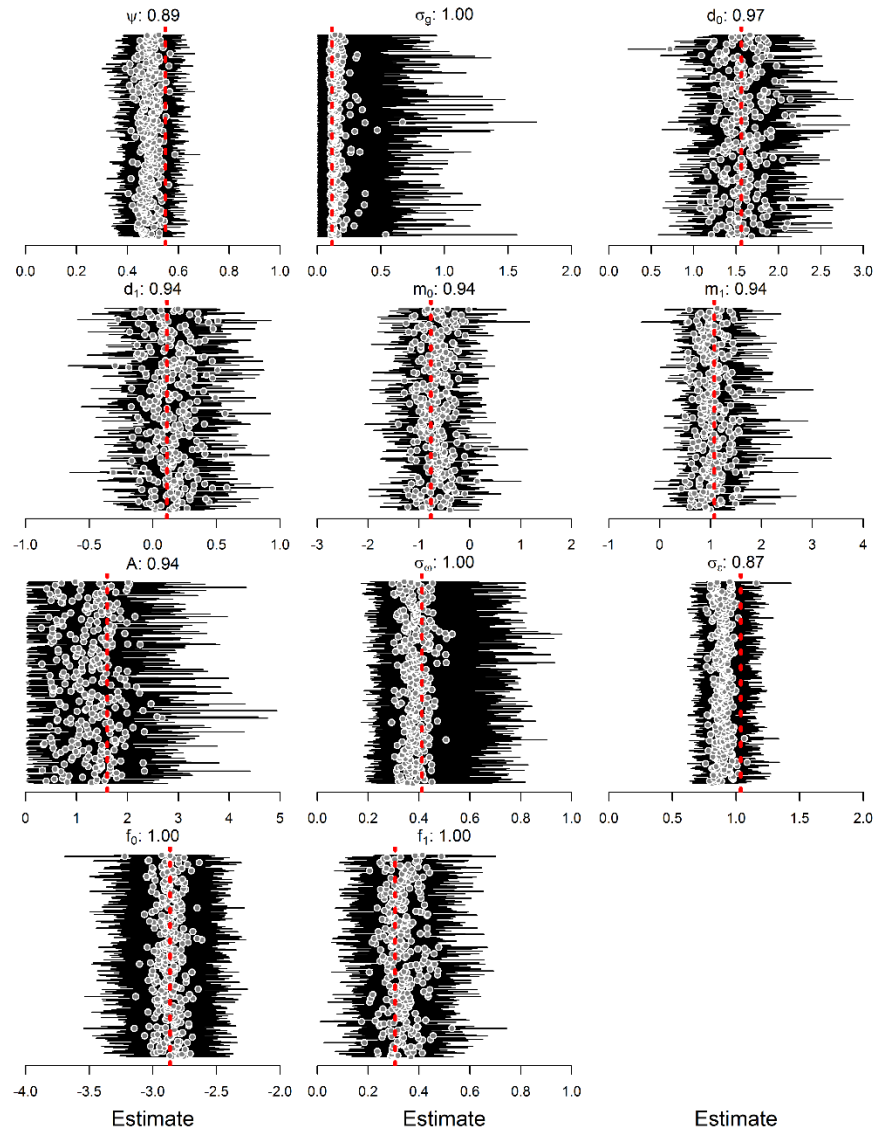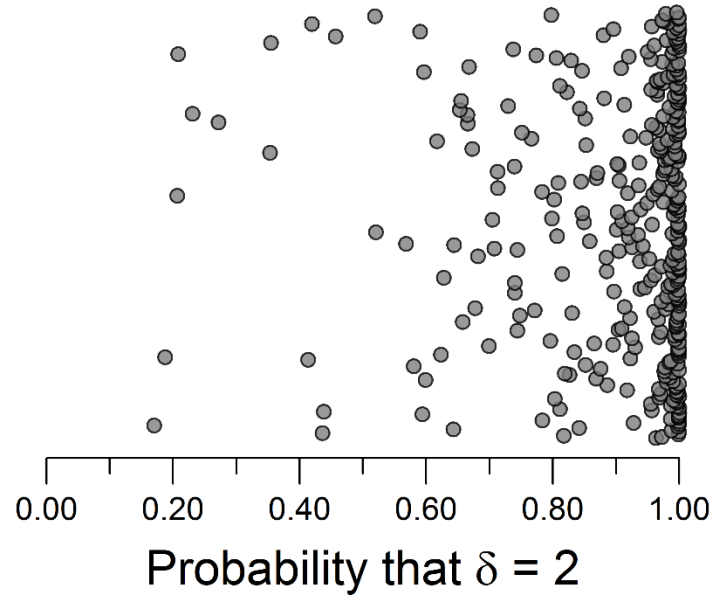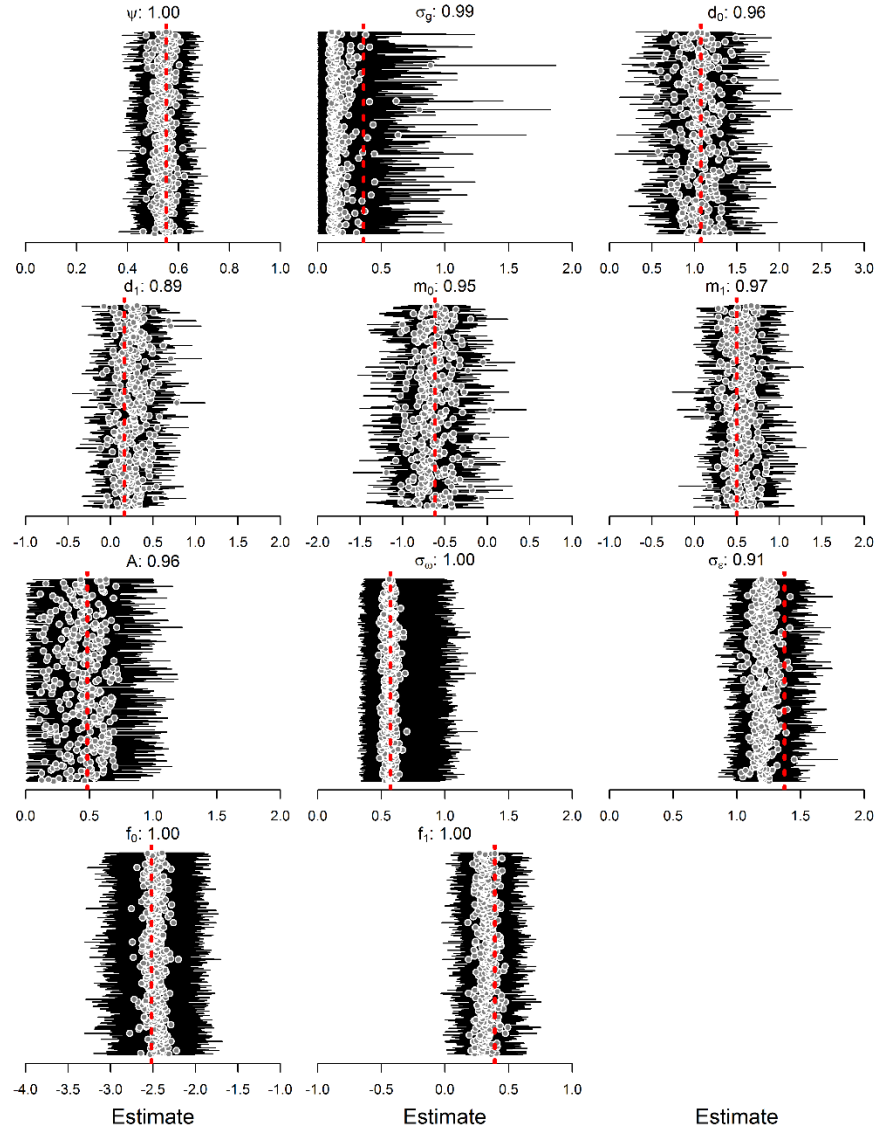

Figure S1. Results from a parameter recovery simulation of the periodic pulse dynamic occupancy model. 450 datasets were simulated and parameters were estimated by fitting the model to each simulated dataset. Parameters used to simulate these datasets were generated from the median estimates of the periodic pulse model fit to the coyote data from a large-scale long-term camera trapping survey of medium to large mammals throughout Chicago, IL, USA. Grey dots represent median estimates of the parameter from each simulation, while the horizontal black bars represent 95% credible intervals. The vertical red line is the 'known' parameter value estimated with the coyote data. Percent coverage is reported following the name of the
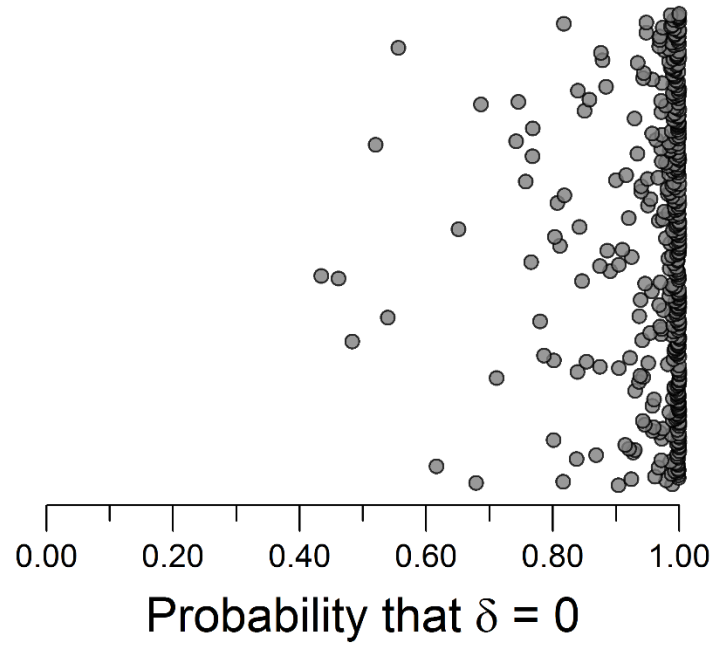
parameter, which represents the proportion of simulations in which the 95% credible interval included the 'known' parameter value.

Figure S2. The probability that δ, the phase shift parameter of a Fourier series, estimated the correct value on each simulation of the periodic pulse dynamic occupancy model. For each simulation, δ was set to 2, which represents an increase in the colonization rates during the fall. This value was estimated by the same model fit to coyote data from a large-scale long-term camera trapping survey of medium to large mammals throughout Chicago, IL, USA.

Fig. S3. Results from a parameter recovery simulation of the periodic boom-bust dynamic occupancy model. 450 datasets were simulated and parameters were estimated by fitting the model to each simulated dataset. Parameters used to simulate these datasets were generated from the median estimates of the periodic pulse model fit to the Virginia opossum data from a large-scale long-term camera trapping survey of medium to large mammals throughout Chicago, IL, USA. Grey dots represent median estimates of the parameter from each simulation, while the horizontal black bars represent 95% credible intervals. The vertical red line is the 'known' parameter value estimated with the Virginia opossum data. Percent coverage is reported following the name of the parameter, which represents the proportion of simulations in which the 95% credible interval included the 'known' parameter value.

Figure S4. The probability that δ, the phase shift parameter of a Fourier series, estimated the correct value on each simulation of the periodic boom-bust dynamic occupancy model. For each simulation, δ was set to 0, which represents an increase the colonization rates during the spring and fall. This value was estimated by the same model fit to Virginia opossum data from a large-scale long-term camera trapping survey of medium to large mammals throughout Chicago, IL, USA.