RECOMMENDATIONS/COMMENTS:

* Would be more appropriate for model to allow for heterogeneity in call rate (at least freq vs infreq), but would require a lot of data. EDA shows the time-to-detection does not follow exponential—more like at least 2-point b/c drops off a lot after first time interval
* Time-to-detection and detection distance are not independent in the data, though the model assumes it. In first minute, most of the detections are in the closest distance band.
* B/c only one observer per park essentially, can’t disentangle observer effects from park effects—so any bias due to observer cannot be estimated. EDA suggests there may be observer biases in things like estimating distance??
* Statistical model is severely limited by lack of good habitat covariate data and the fact that samples were allocated randomly across park instead of stratified by habitat. This means that differences in detectability / abundance due to habitat factors cannot be accounted for, so we are violating assumptions about detection probability and the confidence interval of the estimate will be huge. (but for parks like BITH that are pretty much homogeneous, this is not as much of a problem). IF the sampling had been stratified by habitat, we could have gotten a better estimate per habitat and then a park-wide estimate by weighting habitat (assuming we could use GIS to get % of park in each habitat type). See alternative habitat option below.
* Alternative habitat option—many studies have shown that estimating % of forest within a radius (this should probably be the effective detection radius for each species??) is a better covariate than habitat category. If this can be done then at least we can better meet assumption of detection model. Note that for some species, it won’t just be % forest that matters, but it may be things like how much edge habitat there is, or % open developed space. THIS post-hoc habitat determination may be the best option at this point, for getting good estimates.
* We are assuming that birders are sufficiently good in their ability to know if a bird has called before, or if it is really the first call of the bird...
* Should evaluate observer ability to “get” the correct distance band, e.g., have double sampling with different observers in the same plot-survey
* Paired acoustic sampling for analyses??? (read Solymos paper)