Outline

**Introduction**

* Active field of research in ecological statistics is developing methodology to combine data types to obtain better population estimates

**Body**

Background

* Give a quick refresher on the methods for monitoring species

History

* Existing attempts to combine data types
* Literature review

Existing results

* What model we are looking at
* Describe the model by Blanc et al. and what assumptions it makes.
* More in-depth model specification
* Describe how Blanc et al. link together the two types of data

Specific Problems we aim to study

* Model underestimates population sizes
* Fails to consider locations of animals when dealing with spatial mark-recapture data
* Sites vs overall abundance
* Give an overview of the current hypothesis on why this is happening.

1. Paper equates the probability that there are animals in the overall study area and the probability that each site is occupied (6)
2. Consider equation (6). Lambda is an increasing function of psi\_i (higher abundance=higher occupancy)
3. The data on occupancy drives psi\_i down because at least some sites are unoccupied and psi\_i is less than 1.
4. But the abundance (N) data pushes lambda and psi\_i up.
5. Our resulting population estimate is more about the interplay between lambda and psi\_i being on different scales and ignores data on detection.

Simulation Study

* Show some graphs of results from simulation study
* Captured individuals matching estimated population size
* Straight line correlation
* 95% credible interval failing to be met

**Conclusion**

* Model shows serious flaws
* Future work may attempt to develop a model that considers animal movements when combining presence-absence and mark-recapture data

History (Literature Review)