**Name:**

**Population Modeling in Ecology**

**Spring 2023**

**Week 1 – Closed Binomial N-mixture Model**

Complete the questions below and email to [gbarrile@uwyo.edu](mailto:gbarrile@uwyo.edu) with the subject line: **Week 1 Lab Report**

**Table 1.** Metadata for *PrairieDog\_SoilTexture.csv*

|  |  |
| --- | --- |
| **Column** | **Description** |
| Date | The date of the survey in month/day/year |
| Site | The site that was surveyed |
| Survey | Survey number at a given site |
| Count | The number of prairie dogs observed a site during a given survey |
| Clay | Percent clay in the soil at a given site |
| Time | Time of day that a given survey was conducted |

Please answer the following questions:

1. How many sites were surveyed?
2. How many surveys per site?
3. What is the site-level covariate?
4. What is the observation-level covariate?

*Fit a single model with (1) detection probability as a function of time of day and (2) abundance as a function of percent clay in the soil. Then answer the questions below.*

1. Describe the relationship between detection probability and time of day (make prairie dogs the subject of the sentence).
2. When might be the best time to survey prairie dog colonies?
3. Describe the relationship between abundance and the percent clay in the soil (again, make prairie dogs the subject of the sentence).
4. Produce a plot showing the relationship between percent clay in the soil and prairie dog abundance. The figure should include the mean predicted line and 95% confidence intervals. Insert the figure here: