**Name:**

**Population Modeling in Ecology**

**Spring 2023**

**Week 6 – Open Occupancy Model in RMark**

Complete the questions below and email to [gbarrile@uwyo.edu](mailto:gbarrile@uwyo.edu) with the subject line: **Week 6 Lab Report**

In RMark, fit the same model that you fit for last week’s lab report with the *Wolves\_Mange.csv*.

As a reminder, last week’s model was a single model with (1) detection probability as a constant or null model (i.e., ~ 1), (2) initial occupancy as a function of Region, (3) colonization as a function of year, and (4) extinction as a function of year. However, instead of using unmarked like last week, fit that same model in RMark.

Then, also just like last week, use the predicted estimates from the model that you fit in RMark to create two plots. The first plot should display colonization probabilities between each year (include mean estimates and 95% confidence intervals). Label the y-axis “Probability of contracting mange”. The second plot should display extinction probabilities between each year (again, include mean estimates and 95% confidence intervals). Label the y-axis “Probability of clearing infection”. Insert both plots into this document. Both plots should be accompanied by a caption that explains the figure.

Finally, below are the two plots that you produced last week from the estimates of the model fit using the unmarked package. Compare/contrast the two plots that you created in RMark versus those you created in unmarked. Do the estimates differ? How so?

Chart, line chart

Description automatically generated

**Figure 1.** Mean annual probability (and 95% CIs) of contracting mange in gray wolves (*n* = 26) sampled in Yellowstone National Park (hypothetically) during 2011–2015. Each year on the x-axis denotes the probability of contracting mange between said year and the next. For instance, 2011 denotes the probability of contracting mange between 2011-2012. Estimates were derived from a *colext*() model in ‘unmarked’.

Chart, line chart

Description automatically generated

**Figure 2.** Mean annual probability (and 95% CIs) of clearing mange infection in gray wolves (*n* = 26) sampled in Yellowstone National Park (hypothetically) during 2011–2015. Each year on the x-axis denotes the probability of clearing infection between said year and the next. For instance, 2011 denotes the probability of clearing infection between 2011-2012. Estimates were derived from a *colext*() model in ‘unmarked’.