CSP4141

Introduction to Occupancy Modeling

## Thursday, May 24th and Friday May 25th, 2018

**Work in your assigned groups to complete the following activity.**

Thursday:

Convene in your groups and read through the scenario that was assigned to you. The scenario describes a situation for which you must determine (1) what the research question is, (2) what type of occupancy model to use to answer the question, and (3) what covariates from the excel file to include in the model. You will fit the models and go through model selection procedures.

Friday:

You will present the scenario, model selection and analysis, and results to the class. Provide rationale for why you made each decision (model used, covariates used, models fit, model selection, etc.). Finally, you should provide a final recommendation or interpretation of your results as they relate to the original question presented in the scenario.

You can use Google Earth and the provided KMZ file to map your sites, the internet to get photos, graphing tools to graph results, and PowerPoint or Prezi to present to the class. Creativity is encouraged. Save your R code in a word doc and provide the code and PPT to your instructor or Eric T. on Friday morning.

## Scenario 1:

You are a wildlife biologist at a new ecological preserve in San Mateo County south of San Francisco, CA. Your supervisor got a call from another manager asking about your grey fox (*Urocyon cinereoargenteus*) population. They think that they’ve seen an increase in illegal trapping on their lands and some of the biologist have reported seeing less grey fox signs in the county.

Use the grey fox survey data and the potential covariate dataset to develop an occupancy model that helps your supervisor with the calls she keeps fielding from other offices in the area.

## Scenario 2:

You’re a wildlife biologist and are collaborating with a landscape ecologist on a project to assess ecoregional habitat requirements for the common but wide-ranging coyote (*Canis latrans*). Some agencies in the ecoregion report having regular coyote sightings while others report never having any. You’re working on a Conservation Plan to help inform a group of stakeholders and managers.

Use the coyote survey data and the potential covariate dataset to develop an occupancy model that helps your team inform the stakeholder group.

## Scenario 3:

You’re a wildlife biologist and are working with an epidemiology lab in San Rafael, CA on a mange outbreak in your region. You’ve collected bobcat (*Lynx rufus*) survey data and want to know where to focus future survey efforts to trap and test bobcats.

Use the bobcat survey data and the potential covariate dataset to develop an occupancy model that helps you determine how to focus future surveys.

## Scenario 4:

You’re a wildlife biologist in Sonoma County, CA and are helping the game warden determine which hunting zones to open for the year. The warden thinks there are areas with high concentrations of deer (*Odocoileus heminous*) in the region and wants to know where these are.

Use the mule deer survey data and the potential covariate dataset to develop an occupancy model that helps warden determine where to focus hunting allotments.