

Large Mammal Advisory Committee

Approved Project

QUARTERLY PROGRESS REPORT

Project Name: Assessing the Efficacy of Camera Surveys for Monitoring Deer and Bear at the Deer Assessment Unit Scale

Quarter: First Quarter 2014

Project Objectives:

- Collect presence-absence information on deer and bear from camera surveys for use in occupancy models
- Collect demographic information on deer and bear for estimating sex ratio, age class distribution, and reproduction
- Conduct a power analysis for calculating the sampling effort and timeframe necessary for detecting trends in occupancy and demographic parameters, under various expected ecological scenarios.

Work Performed:

We completed interpretation of 133,359 photographs from camera traps at 169 stations surveyed during the fall of 2013. Each photograph was reviewed to identify the species detected, the number of individually recognizable animals, gender and age class, and the condition of bait items remaining at the station. This information was entered into an Access database.

We imported this information in to the R programming language to convert the raw data into detection histories for each species indicating whether each species was photographed during each 24-hour day after the start of the survey up to 30 days, or when the survey ended, if sooner.

We completed preliminary occupancy modeling of black bear using all camera trap survey data from 562 stations (285 hexagons) surveyed 2009 to 2013. We identified seasonal and latitude effects on detection probability and corrected for these biases for providing more accurate estimates of occupancy. Our estimates of station-level occupancy in forested habitats were 0.823 [90%CI: 0.771-0.872] in the Klamath Mountains and 0.482 [90%CI: 0.420-0.546] in the Southern Cascades.

We completed a power analysis demonstrating good statistical power (>80%) to monitor trends as small as 2% per year over 10 years in the Klamath Mountains and as small as 4% per year over 10 years in the Southern Cascades.