LMAC Prospectus

Deer population monitoring at zone and Deer Assessment Unit scales using remote cameras

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Proposed Start Date: June 2012

Proposed Completion Date: June 2014

Executive Summary including Statement of Need

Development and implementation of statistically robust and feasible methods to estimate deer population trends is important to effectively manage and conserve populations. In forested environments where deer are difficult to observe and where most hunting in terms of tag sales occurs, surveys using traditional ground or aerial techniques have low statistical power and substantial bias. We propose to evaluate the use of camera traps to collect population trend and herd composition data on deer in areas where other techniques may be comparatively ineffective.

Introduction

The Department of Fish and Game uses a variety of methods to obtain population trend and herd composition for deer. These include aerial helicopter surveys, road transects, fixed point counts, and hunter surveys. The use of various techniques is influenced by factors such as herd size and distribution, vegetative cover, funding, access, management objectives, and safety. Surveying deer in forested environments, where the majority of hunting occurs in California, is particularly problematic due to the difficulty of observing deer and implementing unbiased sampling strategies.

Camera trap surveys and occupancy modeling may provide a statistically efficient, cost-effective means of collecting population trend information of value for making scientifically informed deer management decisions.

Objectives

To assess the feasibility of camera surveys for monitoring deer at the zone and DAU scales.

Methods

- Camera stations will be established at 100-150 random plots per year in the B and C deer zones.
- Survey stations at plots will be baited with salt or will passively document deer presence.

- Sampling duration per plot will be 2 months
- Photos will be interpreted to determine the presence of deer and to record the sex and age classes of deer photographed
- Data will be used to estimate occupancy as it varies by month, elevation, and habitat

Products (and estimated dates of completion)

The data collected from survey plots will be used to estimate occupancy (a viable surrogate for abundance), detection probabilities, sex and age ratios, and reproductive indices. In turn, these data will be incorporated into a Monte Carlo simulation power analysis identifying sample sizes and monitoring timeframes for different effect size thresholds.

We will compare these results with other survey methods for which comparable power analyses are available. This information will be summarized in a completion report.

Collaborators

- Andrew Engilis Jr., Curator, Museum of Wildlife and Fish Biology, University of California Davis

Personnel Requirements and Funding from CDFG

DHMPIP funds will be used to purchase 50 Reconyx cameras and other supplies, and to employ a Scientific Aide for 6 months each year. An Environmental Scientist will oversee planning and implementation of the project, and publication of results.

Budget:
- $35,000 --   Purchase of 50 Reconyx cameras
- $30,000 --   Scientific aid time ($15,000 annually for two years) to implement surveys.
- $5,000   --   Vehicle support
- **Total Budget = $70,000**

Issues to be Resolved

None