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Does Personality Affect the Probability That Piute Ground Squrriels (*Urocitellus Mollis*) Will Be Shot by Recreational Hunters?

Daniel Wolfe

Zoe Tinkle

Benjamin P. Pauli

Emily Sun
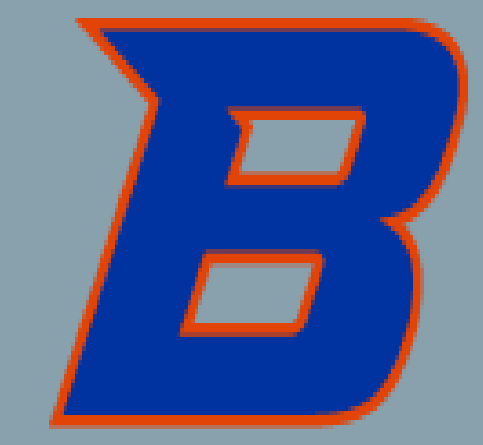
Romaric Mukuna

See next page for additional authors

Authors

Daniel Wolfe, Zoe Tinkle, Benjamin P. Pauli, Emily Sun, Romaric Mukuna, Jennifer S. Forbey, and Julie Heath

PERSONALITY, HABITAT, AND SOUND EFFECTS ON THE RECREATIONAL SHOOTING OF PIUTE GROUND SQURRIELS

Daniel Wolfe, Zoe Tinkle, Benjamin P. Pauli, Emily Sun, Romaric Mukuna, Brian Leavell, Julie A. Heath, Jennifer S. Forbey

Department of Biological Sciences, Boise State University

Background

- Public lands provide important ecosystems services for Idahoans such as wildlife habitat and recreation activity.
- The Snake River Birds of Prey National Conservation Area (NCA) is a popular area for recreation by Treasure Valley residents.
- The NCA has many types of recreational activities such as hiking, off-roading, bird-watching, shooting, etc..
- Conflicts may arise between recreationists and wildlife .
- Recreational shooting of ground squirrels common in NCA.
- Shooting of squirrels may impact multiple species in ways that are not apparent.
- Shooter may target specific squirrels which exhibit Bold vs. Docile personality traits.
- Three potential major effects of recreational shooting include:
- **Recreational shooting could influence distribution and frequency of personality of prey across landscape.**
- **Vegetation type (e.g. grass vs shrubs) may influence hunting success.**
- **Sound from recreational shooting may attract aerial predators and scavengers.**

Figure 1: Wyoming big sagebrush (Sage) (*Artemisia tridentata wyo.*) and Sandberg's bluegrass (Grass)(*Poa secunda*). Squirrels were targeted more frequently at grass site.

Objectives

- Investigate the effects of personality, habitat, and sound on recreational shooting of Piute ground squirrels.
- Our Objectives:
- Determine if bold squirrels are successfully targeted more frequently than docile squirrels.
- Compare hunting success of targeting squirrels between two habitats types.
- Determine if gunfire from recreational shooting will attract aerial predators or scavengers.

Research Methods

- Focus on two sites that differ in vegetation: High sagebrush density (SAGE) and native grass (GRASS) (Fig. 1).
- Squirrels (N=106) were marked with dye as either bold or docile based on personality tests.
- 4 consecutive days of shooting simulations where a range finder with cross hairs was used to simulate a hunting scope.
- The live trapping webs were used as simulation boundaries (Fig. 3).
- Gunfire playback was played 2 of 4 days (Figure 4).
- Observations of animals occurred within a 60˚ section of view. There were a total of 6 sections.
- Observers were stationed at the center of the trapping web and surveyed 60° sections in clockwise order (skipping alternating sections) before reversing direction and performing the same technique on the remaining sections (example order: A-C,E-G,I-K, I-G, E-C, A-K).
- The fox pro speaker was place in the center of the web.
- Each simulation lasted 30 min per 60˚ section for a total of 3 hours per day per habitat type.
- Observers identified ground squirrels within a section. Positioning cross hairs of scope on body of squirrel was recorded as a successful shot.

Figure 2: Wiggle test to determine personality.

Piute Ground Squirrel. Photo By Shawn Smith.

Figure 3: Simulation boundaries.

FoxPro Reproduced Gunfire at 91.8 +/- 0.6 dB(A)

Figure 4: Live gunfire recorded in the NCA produces 125.7 dBa. Gunfire was recorded and played back during 2 of 4 simulations. The Front of the speaker produce an average of 91.8 +/- 0.6 dB(A). The side produced an average of 83.6 +/- 3.5 dB(A).

Results

Simulations Targeted Personalities Equally
- $\chi^2_1 = 0.708$, p = 0.40
- Chi-Square analysis for targeting personalities. This suggests no difference among targeted personalities.

Squirrels are Targeted More Frequently in Grass Habitats
- $\chi^2_1 = 165.48$, p = 7.2E-38
- Chi-Square analysis for targeting squirrels in different habitat types: Grass, Sage. This suggests squirrels are targeted more frequently in grass habitats

Response of Gunfire Did Not Differ Among Personality
- $\chi^2_1 = 0.117$, p = 0.73
- Partial chi-square analysis for the response of squirrels from sound based on personality type. This suggests response of squirrels from sound did not differ among personality type.

Figure 5: Column graph depicting the number of raptor and ravens observed during simulation with and without gunfire playback. 43% more ravens were observed during simulations with gunfire playback

Discussion

- Personality of squirrels did not influence probability of being shot. This may be due to:
- Low sample size, impact of weather (e.g. wind and temperatures) on above ground activity by squirrels, and poor ability to distinguish dye patterns.
- More squirrels shot in native grass sites. This may be due to:
- Lower concealment of squirrels in grass compared to shrub habitat.
- Gunfire attracted ravens, but not raptors. This may be due to:
- Squirrel death is contributed to gunfire, attaching scavenging birds such as ravens.

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