Introduction

- Cattle grazing is a common landuse on public land in the Intermountain West that has complex effects on wildlife.
- Small mammal abundance in grasslands often declines with grazing, likely due to the strong positive relationship between small mammals and vegetation biomass (Birney 1976).
- Survivorship of small mammals has been shown to decrease in reduced-cover treatments, such as after ungulate grazing (Peles 1996).
- Moreover, small mammals are important prey for many mesopredators and raptors (Fig. 1), possibly leading to indirect effects of cattle grazing on these groups.

Methods

- Three adjacent grazing units were selected for study that provided a wide range of grazing frequencies (1, 3, and 8 years of rest) (Table 1).
- Randomly placed trapping grids (2/unit) were located within wet meadow habitat.
- Each grid (1.8 ha) contained 100 traps spaced 15 m apart in a 10 trap x 10 trap configuration.
- Each unit was sampled 3 days during each of 3 primary trapping sessions.
- Animals were identified to species, weighed, measured, sexed and on first capture marked with an uniquely numbered ear tag (Fig. 2).
- Vegetation characteristics were quantified in each grid using the point line intercept method.

Data Analysis

- We tested for differences in vole (Microtus spp.) apparent survival among grazing units using Robust Design capture-recapture models (Pollock 1982) in program MARK (White and Burnham 1999).
- We used Huggin’s conditional likelihood method to derive abundance estimates from the most parsimonious Robust Design model.
- Candidate models were ranked using AICc values (Burnham and Anderson 1998).

Results

- We captured 357 individuals and had 174 recaptures during 27 trap-nights from 9 July - 7 August.
- Voles (Microtus spp.) comprised nearly 99% of individuals trapped, with 2 deer mice (Peromyscus maniculatus) and one masked shrew (Sorex cinereus) also captured.
- Litter depth did not differ between the units with 3 and 8 years of rest, but was significantly lower in the unit with only 1 year of rest (Fig. 3).

Discussion

- Our results indicate that litter depth in grazed wet meadows reaches an asymptote after at least 3 years of rest from grazing.
- Vole apparent survival is greatest in the unit that rests for 3 years from cattle grazing, lowest in the unit with 8 years of rest, and intermediate in the unit most recently grazed (Fig 4).

Literature Cited


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