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Analysis of Mexican Spotted Owl Diet in the Canyonlands of Southern Utah

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I. Introduction

The Mexican spotted owl (*Strix occidentalis lucida*) is listed as a threatened species by the U.S. Fish and Wildlife Service (USFWS) [1]. Since the Mexican spotted owl is federally listed as a threatened species, it is important to identify primary prey of Utah's canyon dwelling owls in order to better understand their dietary needs (U.S. Fish and Wildlife Service 1993).

Mexican spotted owls in Arizona and New Mexico utilize forested habitats, while owls in Utah inhabit a variety of canyon terrain [3, 4, 5]. Compared to forested owl habitat, canyon habitats are poorly defined and present several unique management challenges (but see Willey In Press). [6]. Identifying primary prey species and diet composition of breeding Mexican spotted owls in canyon habitats across southern Utah is an important step towards the conservation of Utah's spotted owl habitat and population [2]. We hope that the findings from this research can better inform state and federal managers on spotted owl prey use and aid in future management of small mammal populations in canyon habitats.

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II. Methods

We collected 159 pellets from 8 known Mexican spotted owl nest/roost sites in 3 National Parks across southern Utah during the 2011 and 2012 breeding season.

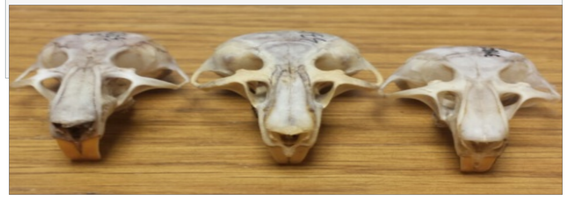
Pellets were dissected and the contents were identified using a standard protocol outlined by Ward (2011). Analysis of pellets included estimating biomass and number of each prey item in each sample. Prey was identified by skeletal remains using a dichotomous key or reference collection of small mammal remains. Number of prey was estimated by counting the skulls, mandibles, long bones or pieces of the exoskeleton (of insects).

A complete list of prey species was compiled, the mean dietary composition was computed for each owl territory.

To determine the time of day owls were foraging, prey was subdivided into groups based on when they are most active (i.e. nocturnal, diurnal, or both (Forsman et al. 2004).

Mean biomass of prey captured at each site was calculated by dividing the total biomass in the sample by the number of prey in the sample (Forsman et al. 2004).

Prey composition was compared to past data collected in Utah's canyonlands (see Willey) determining if prey composition was consistent over time. We used ANOVA to determine whether or not the composition remained the same.

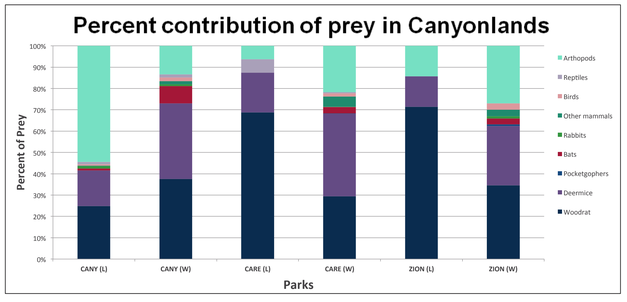


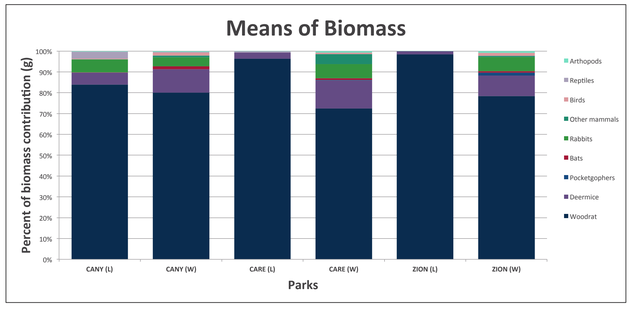
III. Results

We identified 358 prey items from 159 pellets collected from the canyonlands of southern Utah. The owls consumed at least thirteen mammal species, one avian species, one reptile species and several arthropod species. The Mexican Spotted Owls most frequently consumed Neotoma species, which had the highest biomass contribution.

We did not find significant difference in prey composition in our data compared data collected in the past (see Willey).

We have determined that the owls primarily forage during the night since the majority of prey type identified were nocturnal species.





IV. Conclusions

We have determined that the prey composition has remained the same from 1994 to 2012 (see Willey). There is no significant difference between current data collected compared to past data. The high frequency of Neotoma species is consistent with past data. We have also determined that Mexican Spotted Owls primarily feed on small nocturnal mammals, concluding that they primarily forage during the night. Mexican Spotted Owls mostly consume Neotoma species followed by Peromyscus across all sites. The Neotoma species have the highest biomass, providing most efficient form of energy.

Understanding the prey composition for this threatened species will provide insight for adaptive management. With the data collected managers can better understand future changes in diet composition as well as any impacts it may have on the population dynamics.

V. References

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