

Small Mammal Population Survey in Thinned Ponderosa Pine Forest



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Deer Mouse (*Peromyscus maniculatus*)



Un-treated Site



Treated Site



Un-logged Site

Results:

Mammals were caught on three of the four nights of trapping (see side graph). Four small mammals were caught in all and all were deer mice. The four deer mice caught were all in untreated sites at the Metolius Preserve. Three of the mammals were trapped on the perimeter of the grids, and one mouse was caught in the center of the grid on the first night, the 10th. The un-logged site on the graph was a test site in a forested area that has never been disturbed by the land trust. No mammals were caught in the control sight or the treated sites.

Discussion and Data Analysis:

- Since there was such a small amount of small mammals caught a definite conclusion cannot be made. Although all mammals caught were located in un-treated sites which does not support our hypothesis.
- Improvements to the experiment might be obtained through more samples (more sites). The more data collected the better when doing scientific experiments.
- The plots were not chosen randomly which may lead to biases. Due to the small number of untreated sites led to the difficulty of randomness.
- The short time frame in which the experiment was done may also be a factor with our limited results. There was a full moon on the first two trap nights and a ¾ moon on the third. It has been observed by researchers that the phases of the moon have an effect on small mammal activity (see moon chart below). The brighter it is at night the easier it is for predators to spot prey.
- The times of the trapping also effect which species are out and had the most chance of getting caught. By trapping at night, the species that could be caught were limited to nocturnal species. If possible, future experiments should trap later in the mornings in order to include species such as the yellow pine chipmunks.

Conclusions:

In conclusion, the data that was retrieved from this study is suggestive that the mammals are being affected by the thinning of the forest. Perhaps the restoration is in the first stage of recovery, and the mammals were scared off, or killed in the process of thinning as Sarah J. Converse suggests. This small mammal survey at the Metolius Forest does not supply enough information to make a bold statement as to what is happening to the mammals or exactly how the mammals have been affected. The mammals are likely being affected by the thinning, but more surveys need to be completed. Following the future surveys, it needs to be determined whether the animals are benefiting, or being negatively affected by the thinning.

Moon Phases	
Date	Phase
May 10th	
May 13th	
May 17th	
May 29th	

Works Cited:

Converse, Sarah J., "Small Mammal Responses to forest restoration and Fuel Reduction: Dissertation," Department of Fishery and Wildlife Biology, Colorado State University, 2003.

Covington, Wallace W., et al., "Modeling Ecological Restoration Effects on Ponderosa Pine Forest Structure," *Restoration Ecology*, Vol. 9 No. 4, 2001.

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Pamenter, Robert R., MacMahon, James A., "Animal Density Estimation Using a Trapping Web Design: Field Validation Experiments," *Ecology*, Vol. 70, No. 1, Feb., 1989.

Martin, Karl J., McComb, William C., "Small Mammal Habitat Association at Patch and Landscape Scales in Oregon," *Society of American Foresters*, 48 (2), 2002.

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Vehlen, Thomas T., et al., "Disturbance regime and disturbance interactions in a Rocky Mountain subalpine forest," *Journal of Ecology*, 82, 1994.

West, Neil E., "Rodent-Influenced Establishment of Ponderosa Pine and Bitterbrush Seedlings in Central Oregon," *Ecology*, Vol. 49, No.5, Sep. 1968.

Abstract:

Small mammal populations are vital to the Metolius Forest Preserve. The forest preserve is undergoing selective thinning, which may affect small mammal populations in the forest. Our null hypothesis is that small mammal populations are not affected by the treatment of the forest. In addition to the null hypothesis, we have predicted that there are short-term effects that will contribute to a rise in the numbers of small mammals in the treated sites when compared to data that is obtained in identical future surveys. To test the null hypothesis, small mammal traps were set up on 9 experimental plots. Two plots were set up for four non-consecutive nights, and an additional control plot was set up in an un-logged area in the same forest. Four deer mice (*Peromyscus maniculatus*) were caught in untreated areas only. In conclusion, small mammal populations are probably effected by the thinning of the Metolius Forest Preserve.

Introduction:

Small mammals are very important in forest ecosystems because they are food sources for predators, create seed caches, and are important contributors to the Ponderosa Pine clusters and patches of other vegetation (West 1968, Veblen et al. 1994, Martin et al. 2002). Forest floor small mammals, as a group, may help to reveal changes in forest structure (Sullivan et al. 2001). Therefore, it is important to monitor the small mammal populations in Metolius forest because the forest structure is being altered.

It is important to establish baseline information for future comparative research on the restoration of the Metolius Land Preserve. Moreover, we feel that the diversity of small populations is vital to an ecosystem; therefore we have designed a survey to monitor the effects of the restoration on small mammals.

We hypothesize that small mammal populations will vary between the treated and untreated sites. A null hypothesis: small mammal populations will not be effected by the treatment of the Metolius Forest. In addition, we have predicted that there are short-term effects that will contribute to a rise in the numbers of small mammals in the treated sites when compared to data that is obtained in identical future surveys.

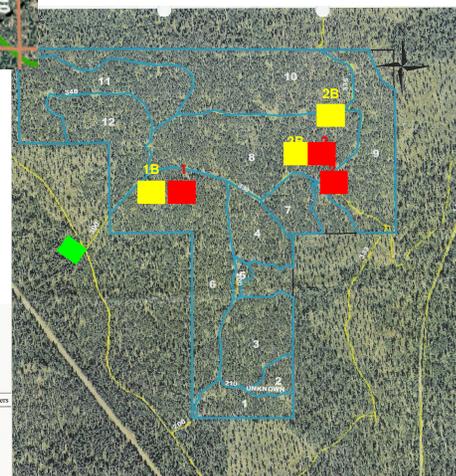
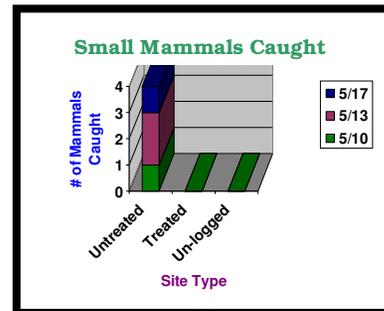
Methods:

➢ Trapping was done for four nights (May 10th, 13th, 17th and 29th), which will give a set of eight experimental total plots and one control in non-logged area. Two plots will be used each night of trapping. Each plot was 25 meters by 30 meters. The traps sat approximately 5 meters apart. Five traps were placed across and six down in a grid pattern, yielding a total area of 750 square meters (see grid:1). A total of 30 traps were used for each plot site.

- Each trap was flagged for visual purposes in retrieving traps.
- Bait consisted of smooth peanut butter and rolled oats which were mixed together and wrapped in wax paper like a taffy.
- Cotton was placed in each trap for insulation purposes.
- Traps where set at 6pm and checked the next day. If trap was occupied information was recorded.

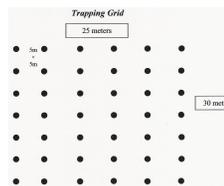
➢ When a mammal was trapped we slipped a plastic bag over the trap door and shook the animal into the bag to be identified and sexed. Gloves were worn during this process.

➢ Occupied traps were sanitized later with a bleach solution.



Section 29 Compartments

Map of Site



Grid:1

