
OCCUPANCY AND ABUNDANCE OF AMERICAN BADGERS AND PIUTE GROUND SQUIRRELS IN THE SAGEBRUSH-STEPPE: IMPLICATIONS OF THE FIRE-CHEATGRASS CYCLE

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Sagebrush-steppe is experiencing vast changes due to biological invasions and changing fire characteristics. Understanding how these changes influence functionally important animals is essential for ecosystem management. American Badgers (*Taxidea taxus*) are an apex predator and ecosystem engineer within sagebrush ecosystems. Piute Ground Squirrels (*Urocitellus mollis*) are also an ecosystem engineer as well as an essential prey source for many predators. Our objective was to evaluate the relative importance of large-scale changes, abiotic processes, and biotic processes on badgers and ground squirrels. We samples 163 1-ha plots across a gradient of burn histories within a 1,962 km² area in Southern Idaho, USA. At each plot, we characterized ground squirrel and badger occupancy, ground squirrel relative abundance, and many environmental variables. We used information-theoretic approaches to evaluate competing hypotheses concerning occupancy of ground squirrels and badgers, and ground squirrel relative abundance. Results suggest that ground squirrel occupancy was positively associated with abiotic characteristics (e.g., higher precipitation and finer textured soil). Badger occupancy was positively associated with ground squirrel occupancy and agriculture. Relative abundance of ground squirrels was positively associated with finer textured soils, but negatively associated with cheatgrass (*Bromus tectorum*), fire frequency, agriculture and shrubs. Managers can focus restoration efforts on areas with high cheatgrass and shrub cover, if ground squirrels are a management objective. These results support previous hypotheses suggesting abiotic processes are important for herbivore occupancy. However, we provide support that a combination of abiotic, biotic and disturbance processes are important for mesocarnivore occupancy and herbivore abundance.