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Conservation of the arboreal squirrels: how well are we doing?

John L. KOPROWSKI

Wildlife Conservation and Management, School of Natural Resources and the Environment, University of Arizona, Tucson, AZ 85721, USA (squirrel@ag.arizona.edu)

Forests worldwide are threatened by a number of emerging factors to include changes in fire regimes, unnatural successional patterns, and climate change. Conservation and management of forest-dwelling wildlife are thus complicated by these new challenges. Developing efficacious forest management approaches requires an understanding of impacts on sensitive wildlife. Endangered Mt. Graham red squirrels store cones within larderhoards known as middens. Middens are believed to keep cones cool and moist thus deterring cone opening and promoting retention of protected seeds. Furthermore, middens may serve as hotspots of diversity in forests for mammals. Changes in forest structure and microclimate induced by natural or anthropogenic agents may have profound impacts on midden occupancy and red squirrel populations. We assessed habitat structure at occupied and unoccupied middens as well as at random sites, while also monitoring microclimate. We demonstrate that cone opening is indeed influenced by temperature and humidity and that these factors vary between middens and random sites. We also compare temperature and moisture conditions on Mt. Graham with a site in Baja California where caching of cones does not occur and demonstrate

that microclimate at this southerly site is relatively hot and dry. Furthermore, we relate midden microclimates to forest structure suggesting that changes in forest structure due to natural and anthropogenic disturbance can impact the suitability of sites for cone storage. Successful conservation of forest-dwelling wildlife will require an understanding of such relationships.