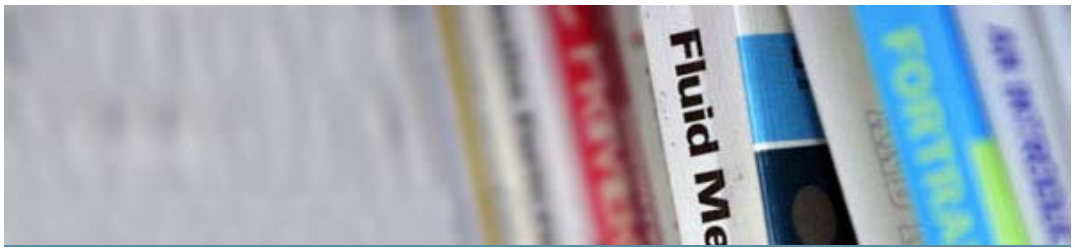

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Experimental study of the effects of mammalian acorn predators on red oak acorn survival and germination

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Résumé / Abstract
A decline in the dominance of oaks (Quercus) in eastern deciduous forests generally has been attributed to herbivory by white-tailed deer (Qdocoileus virginianus) or fire suppression, but few studies have considered a role for mammalian consumers of acorns. We used acorns placed on the soil surface and acorns buried approximately 2 cm underground in 4 types of exclosures to evaluate the effects of white-tailed deer, tree squirrels (Sciurus carolinensis and S. niger), and white-footed mice (Peromyscus leucopus) on survival and germination of red oak (Q. rubra) acorns. Buried acorns were intended to mimic caches of squirrels. When deer were excluded from a plot, squirrels and mice consumed or removed all surface acorns. When both deer and squirrels were excluded from a plot, mice consumed >90% of the acorns on the surface. Thus, acorn consumption by deer is unlikely to be a causal factor in the widespread decline of many oak species. Survival of buried acorns did not differ between open plots and plots where only squirrels and mice had access, but when squirrels were excluded from a plot, the survival of buried acorns increased. In addition, buried acorns germinated at a much higher rate than acorns on the surface. As suggested for many oak species, unrecovered caches of acorns are likely a critical source of red oak seedlings.

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