

**Using radiotelemetry to investigate secondary dispersal of acorns by eastern gray squirrels**

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Scatter-hoarding rodents selectively disperse and cache seeds below the ground surface in individual, widely spaced caches for subsequent use. This behavior has important implications for seed dispersal, seedling establishment, and tree regeneration when these seeds are not recovered. Several factors influence the dispersal of acorns, including germination schedules, seed chemistry, seed abundance, and seed size; however, multiple movements of seeds further increases the distances dispersed. Small mammals (e.g. arboreal squirrels) are often assumed to manage these caches by recovering and eating some caches and re-caching others. Recaching is the process by which seeds are retrieved from one cache site and moved to a new cache location. This process of recaching is poorly understood in the oak dispersal system.

Here, we evaluate the importance of secondary caching in the management of acorn caches by eastern gray squirrels (*Sciurus carolinensis*) using radiotelemetry. We implanted radio transmitters in red oak (*Quercus rubra*) acorns and presented these acorns to squirrels in a natural setting over a three-year period. After the acorns were dispersed, we used telemetry to track the acorns and determine their fates. Cached acorns were checked

periodically to document evidence of recovery and recaching. For each dispersal event, the distance from the source and the compass bearing were recorded and then mapped with Arc-GIS. Over three years, we tracked 106 acorns, 33 (31 %) of which were dispersed on 2 or more occasions. One acorn was moved five times. These results suggest that gray squirrels may engage in significant cache management during periods of long-term caching, which may act to counter pilferage, recharge their spatial memory, and/or obtain feedback on the status of the caches. This behavior may influence seed dispersal and seedling establishment.