

General Field Notes

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Incidental Cache Use by the Brown Thrasher, with Notes on Secondary Cache Use by Additional Avian Species

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Food hoarding is a widespread and complex behavior (Vander Wall 1990). Most research has focused on cache placement or food recovery by the hoarding animal, or on cache theft by conspecifics or by other food-hoarding species. Here, I document the way in which Brown Thrashers (*Toxostoma rufum*) used caches likely made by jays or squirrels. I also observed other avian species consuming partial remains of previously opened caches, indicating that more participants may be involved in cache utilization than addressed by recent research.

On 6 and 7 October 1990, in Athens, Clarke Co., Georgia, I recorded five instances in which a Brown Thrasher uncovered an acorn while searching the leaf litter beneath redtip shrubs (*Photinia serrulata* x *fraseri*). Observations occurred between 10:45 and 14:00. In each case, the bird opened the acorn using series of two to five rapid strikes, or individual "pile-driver" motions (Skinner 1928). Later observation of the cache area revealed that Blue Jays (*Cyanocitta cristata*) cached and opened acorns beneath the redtips.

At 10:00 on 18 February 2000, in Belvedere, Aiken Co., SC, I observed a Brown Thrasher pile-driving a pecan in leaf litter beneath flowering dogwood (*Cornus florida*), Carolina laurel cherry (*Prunus caroliniana*), and redtip. The bird was flushed from the pecan before it was finished eating. Approximately 15 min later, a White-throated Sparrow (*Zonotrichia albicollis*) that was searching in the leaf litter found the opened pecan and fed from it. After another 10 min, I examined the remainder of the pecan. I found that most of the nut was removed and that strike marks were present on the husk where a bill likely had glanced off on impact. For several months prior to these

observations, I often observed eastern gray squirrels (*Scirurus carolinensis*) importing pecans from trees approximately 20 m away and then caching the pecans within the observation area.

At 07:50 on 20 February 2000, again at the Belvedere location, I observed a female Eastern Towhee (*Pipilo erythrophthalmus*) picking at an opened pecan in the leaf litter. Almost immediately, the towhee was chased away from the nut by a Blue Jay. The towhee and jay then supplanted each other several times. The opened pecan had strike marks similar to the one described above.

The Brown Thrasher behavior has three potential explanations: 1) thrashers cache and later uncache food items; 2) while foraging, thrashers incidentally uncover items that were cached by other animals; and 3) thrashers purposefully search areas where they are likely to find caches. Skinner (1928) noted that Brown Thrashers do carry acorns away from a parent oak tree, but his descriptions suggest that the birds open the nuts immediately after transport instead of caching them. Similarly, Vander Wall (1990) includes no references of cache storage, retrieval, or theft by any mimic thrush (Mimidae). Because other species (jays, squirrels) were observed caching items in the areas where thrashers were seen opening similar items, Brown Thrashers likely use caches uncovered during routine feeding searches. Moreover, while it is possible that thrashers purposefully forage in areas that are likely to hold cached items, all of my observations of uncaching events were of birds that were under trees that had deposited mast by the time the thrashers were seen foraging. Therefore, the incidental cache use hypothesis may adequately explain the behavior. Also, since my observations were made 10 years and > 190 km apart, incidental cache use by thrashers may be widespread both temporally and spatially.

The towhee, sparrow, and jay observations demonstrate that the animal that finds and opens the cache may not always be the only animal that consumes it. The jay may have supplanted the towhee to recover its own cache or a cache that the jay itself had pilfered. However, squirrels were seen caching pecans in nearby locations, and thrashers were the only avian species observed opening a pecan. Also, since the pecans (mean length = 3.68 cm; mean width = 2.06 cm, N = 20) may have been too large for the jays to carry (Darley-Hill and Johnson 1981), both birds were likely vying for a squirrel's cache that was previously pilfered by a Brown Thrasher. I am unaware of other references documenting this secondary use of opened caches.

Cache theory predicts that in response to cache loss, caching species should avoid previously pilfered cache sites (Hampton and Sherry 1992; Heinrich and Pepper 1998; but see Baker and Anderson 1995). Long distance transport of hoarded food may occur to avoid detection of cache sites by competitors (Heinrich and Pepper 1998). Although long distance transport of the food item may decrease theft by competitors at the host tree, if species such as Brown Thrashers frequently uncover caches, the benefit of long distance transport will be decreased. These observations indicate that many species may benefit from caches and that the complexity of cache biology may yet remain to be uncovered.

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