FOOD-CACHING BEHAVIOR IN OWLS

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Abstract

Captive individuals of several species of tytonid and strigid owls have been observed to cache excess food items. This activity appears to differ from the frequently recorded stockpiling of food items at nest sites in that individual items are carefully hidden, generally in separate places, and subsequently retrieved. It appears to be an adaptive strategy for the nonnesting season.

Excess uneaten food items have been recorded at nest sites of numerous species of owls of both the Tytonidae and Strigidae (Bent 1938, Ligon 1968, Höglund and Lansgren 1968, Kaufman 1973, pers. obs.). Most prey items were vertebrates, but in at least one case an accumulation of invertebrates was reported (Ligon 1968:32). Such stockpiling of food is thought to be a response to perhaps localized or temporary abundances of food rather than to the surplus killing reported for other types of carnivores (Kruuk 1972). Caching of food where prey items are actively concealed rather than simply stockpiled at a nest or nest cavity has been less often recorded. The following observations on captive individuals seem to be instances of such food caching.

On several occasions during March 1963, I observed an adult female Hawk Owl (*Surnia ulula*) tethered to an indoor log perch apparently caching food items. In each case, partially eaten rats (*Rattus* and *Sigmodon*) and mice (*Peromyscus*) were pushed against the baseboard of a nearby wall or against the base of the perch, an indication that they had been placed there, and not casually or accidentally dropped in that position.

This conclusion was confirmed by the following observations summarized from my notes made on 2 March 1963. At approximately 0945 the Hawk Owl picked up one of two mice (*Peromyscus floridanus*) given it an hour earlier and ate the head and one forelimb. The owl then hopped off its perch, carrying the mouse, and approached the wall about four feet away. The mouse was laid belly down on the floor near the wall and nudged several times with the beak to push it tight against the baseboard. The owl then returned to the perch, looked intently at the clearly visible "cached" prey, and then settled down quietly facing another direction. As also noted by Tordoff (1955), the actions during food caching "could best be described as furtive." The second mouse was partially eaten around 1130 and then cached against the base of the perch. The remains of both mice were eaten by 1800 that same day.

Great Horned Owls (*Bubo virginianus*) were watched caching food under more natural conditions (J. Aron pers. comm.). Throughout the spring of 1972 a pair of these owls were maintained in a 20' x 12' x 6' enclosure. Starting in mid-May two owls approximately two weeks old were also housed in the same cage. After 6 weeks, when food was placed in the enclosure, the adult female quickly fed herself and then began to feed the two young owls. When the young owls were satiated and no longer begged for food, the female began to take food items to various parts of the cage and cache them. At first, items were simply placed against the base of the cage in a remote corner. Subsequent food items, including small rats (*Rattus*) and mice (*Mus*) and pieces of chicken neck, were placed under or behind rocks or logs.

No more than one food item was ever cached at any one location by the Great Horned Owls. Only the beak was utilized to position the food item in the hiding place. A thorough visual inspection by the owl usually followed, and on several occasions food items were retrieved only to be cached again at a new location. In one instance, when an observer attempted to remove a cached food item, the female flew to the site, fluffed out her feathers in a threat posture, and excitedly clacked her beak. When the observer left, she quickly retrieved the food item and concealed it elsewhere in the enclosure. Despite the care taken by the owl in caching food items, few were left for any length of time, and all were consumed within 12-24 hours.

When the two young owls were 20 weeks old, and several days after the adults had been removed, they also showed food-caching behavior. Food items were simply shoved into a hole at the back of the cage or placed against the sides of the cage. However, unlike the adult female, the young birds never went back to utilize the cached food, perhaps because they had an ad libitum food supply.

Observations by Kaufman (1973) of nonbreeding captive Barn Owls (*Tyto alba*) indicated that when excess food in the form of live mice was supplied, all the mice were killed, and most were "stockpiled" at nine locations in the pen. Unlike the other owls which carefully hid each item in a separate location, the Barn Owls placed from two to four mice at each location. In this respect their behavior was more similar to the stockpiling of prey at nests than to the food caching reported here.

Food caching by a captive Saw-whet Owl (*Aegolius acadicus*) was reported by Bendire (1877 in Bent 1938:234). Mumford and Zusi (1958:190) saw a Saw-whet Owl on winter territory retrieve a decapitated mouse which it had left on a branch. This observation might be taken as evidence that food caching occurs in free-living owls and is not strictly an artifact of captivity. It is also possible that it was simply a case of a raptor's returning to a kill which was not wholly consumed at the first meal. The furtiveness usually associated with caching behavior makes it unlikely that caching would be observed frequently in the wild.

Mueller (1974) observed caching by five species of owls in captivity and suspected that caching is found in most species of owls. Food caching has been reported for a wide variety of other birds, particularly members of the Corvidae (Simmons 1968, Croze 1970, Chisholm 1972, Balda and Bateman 1972).

Among the falconiforms it appears to be uncommon in the Accipitridae but well known for members of the genus *Falco* (Beebe 1950, Mueller 1974). The most detailed accounts are those of Tordoff (1955) and Mueller (1974) who observed food caching in the American Kestrel (*Falco sparverius*).

Tordoff's observations of free-living and captive individuals indicated the same use of both ground and elevated storage sites, furtiveness associated with the storing activity, belly-down placement of the prey item, and close visual scrutiny of the storage site characteristic of the above observations of owls. Mueller's (1974) experiments with captive American Kestrels indicate that caching behavior was correlated with deprivation interval but did not exhibit a circadian rhythm. Retrieving of cached food items was both frequent and accurate. Caching behavior appeared spontaneously in hand-reared birds as similarly noted here for the young Great Horned Owls.

The capacity to exploit brief or seasonal abundances of food would be clearly adaptive to most birds, particularly carnivores. Simply stockpiling excess food at the nest, which is usually actively defended, may suffice during the nesting season. At other times of the year concealing individual food items in separate locations would decrease the possibility of their being stolen by individuals of the same or other species, thus making food caching an adaptive strategy.

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DUKE AND REDIG RECEIVE PRESTIGIOUS AWARD

Dr. Gary E. Duke and Dr. Patrick Redig, both of the College of Veterinary Medicine, University of Minnesota, received a joint American Motors Conservation Award on November 23, 1976. Presentation was made at the Fall Awards Convocation of the Veterinary College. The citation states in part:

"Duke and Redig are among seventeen men and five women from seventeen states named to receive 1976 Conservation Awards. They have been presented annually since 1954 to professional and nonprofessional conservationists for outstanding contributions in the field of renewable natural resources. Winners receive bronze sculptured medallions and honorariums of $500.

"Dr. Duke, a professor of physiology, and Dr. Redig, a veterinarian, are making a major contribution to understanding and preservation of birds of prey and other large nongame birds through establishment of a unique rehabilitation clinic at the University of Minnesota. They have combined their skills in physiology, surgery, and pharmacology in the treatment of hundreds of sick or injured birds, ranging from eagles to falcons to many other kinds of raptors."

Dr. Duke, of course, is the hard-working Treasurer of the Raptor Research Foundation, and Dr. Redig is an enthusiastic and productive member. Congratulations, Gary and Pat!