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MONTHLY VARIATION IN A LOGGERHEAD SHRIKE CACHE IN CENTRAL FLORIDA

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The Loggerhead Shrike (*Lanius ludovicianus*) is a small (~50 grams) predatory passerine. Adaptations to its predatory life history include a large head, sharp vision, and a raptorial beak equipped with a tomial tooth (Sloane 1991, Smith 1972). The behavior of impaling its prey to form caches is also, most likely, a predatory adaptation (Sloane 1991). Cade (1967) and Craig (1978) postulated that impaling serves both a storage and a prey manipulation function. Smith (1972) hypothesized that impaling allows shrikes to take larger prey. However, certain pecularities of caches indicate that it may serve multiple functions. Sloane (1991) stated that impaling may serve different functions depending on the species, region and time of year. The fact that shrikes impale items that do not require butchering (pers. obs.) and that they impale inedible objects (pers. obs.) implies a multifunction of the impaling behavior. Shrike caches are displayed in conspicuous places allowing kleptoparasitism, which further suggests that storage does not fully explain the behavior (Yosef 1988). Yosef and Pinshow (1989) hypothesized that caches may serve an advertising function. They predicted that male shrikes would increase their cache size prior to the breeding season; male shrikes with larger caches would mate first and fledge more offspring than male shrikes with smaller caches. The results of their experiments supported the hypothesis that caches may play a role in attracting a mate. The objectives of this study were to identify cached items of a Loggerhead Shrike, to determine if cache size varied through time, and, if variation existed, to relate it to the breeding cycle.

I studied the cache of a Loggerhead Shrike in southwest Orange County, Florida, within an industrial park. A barbed wire fence surrounded a wetland within the park. A single male Loggerhead Shrike resided permanently on the property and used the fence to impale its prey. The male successfully attracted a mate and fledged two broods during the 1991 season. For 13 months the cache of this shrike was collected three times a month. Cached items were quantified and identified to the lowest possible taxonomic group (Table 1).

Sixty-one cached items were retrieved from a section of the fence where the shrike was often perched. Based on the fact that males shrikes hold territories year round, and they defend these areas vigorously (Sloane 1991), I assumed that a single shrike was responsible for the caches analyzed.

The composition of the cached prey was comprised of 77% invertebrates, with arthropods and annelids making up the total (Fig. 1). Crickets (Gryllidae) and grasshoppers (Acrididae) were the most common items cached among the invertebrate prey. Vertebrates comprised 23% of the caches, with amphibians and reptiles accounting for 95% and birds the remaining 5% of the vertebrate prey. The ground skink (*Scincella lateralis*) accounted for 77% of the vertebrate prey. The mean cache size over the 13 month study was 5.0 items (SD = 5.34). The mean cache size for the four months prior to breeding was 11.25 compared to 1.67 for the breeding and post breeding months (Fig. 2). Comparison of cache size in the breeding season (March - August) and the non-breeding season (September - February) using a Wilcoxon Rank Sum Test resulted in a significant difference (TA = 49, $P < 0.05$).

The proportion of invertebrate versus vertebrate items in the cache and the composition of the invertebrates reported in this study are parallel to a dietary analysis of shrikes done

Table 1. The number and identity (lowest taxonomic group possible) of cached items based on three samples periods per month, October 1990 to October 1991.

Taxon	Number
Invertebrates	
Annelida	
Lumbricus sp.	1
Arthropoda	
Odonata	
Anisoptera - Dragonfly	1
Phasmatodea	
Pseudophasmatidae - Walking Stick	2
Orthoptera	
Acrididae - Grasshopper	10
Gryllidae - Cricket	13
Gryllotalpidae - Mole Cricker	2
Tettigonidae - Coneheaded Grasshopper	2
Dictyoptera	
Blattidae - Cockroach	1
Hemiptera	
Reduviidae - Assassin Bug	1
Belostomatidae - Electric Light Bug	2
Homoptera	
Cicadidae - Cicada	1
Coleoptera	
Carabidae - Ground Beetle	4
Lepidoptera	
Arctiidae - Caterpillar	1
Danaidae - Monarch Butterfly	1
Hymenoptera	
Apidae - Bee	4
Vertebrates	
Amphibia	
Gastrophryne carolinensis	1
Reptilia	
Scincella lateralis	10
Elaphe guttata	1
Aves	
Passerina cyanea	1
Inedible Objects	
Paper Wasp Nest	1
Egg Shell - Unidentified Sp.	1
Total	61

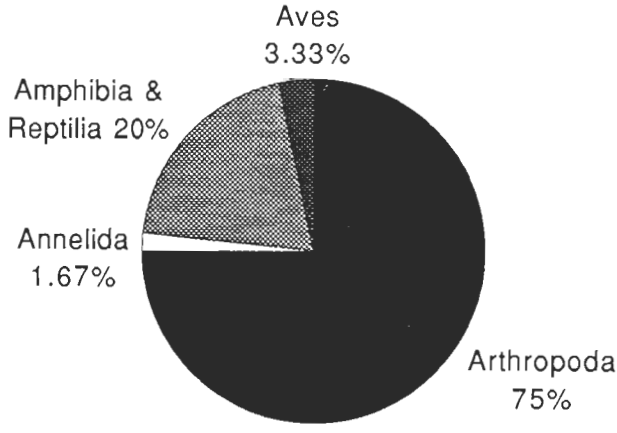

Figure 1. Composition of prey cached by a Loggerhead Shrike over a 13 month period.

by Beal and McAtee (1912). However, the composition of vertebrates differed between the two studies. Beal and McAtee (1912) found the majority of vertebrate prey consisted of mammals. This discrepancy could be due to the abundance of arthropod or small vertebrate prey in central Florida that may be more energetically efficient to capture and handle than local mammals (Craig 1978).

The monthly variation in cache size paralleled the findings of Yosef and Pinshow (1989) for Northern Shrikes (*Lanius excubitor*). The variation in cache size appeared to be related to the breeding cycle. Cache size increased in the months before the breeding season and declined during the nesting period and subsequent nonbreeding season. The results of this study therefore, support the theory that one possible function of caching in shrikes is mate attraction (Yosef and Pinshow 1989).

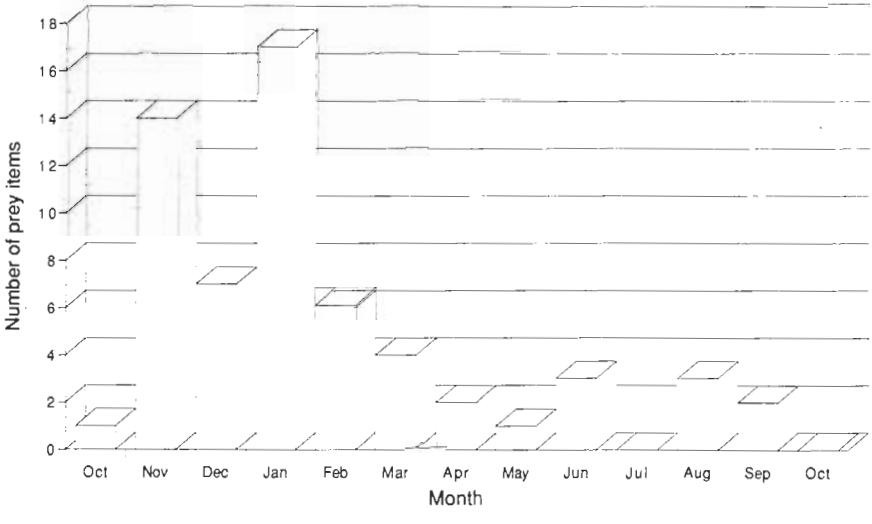

Figure 2. Monthly cache size of a Loggerhead Shrike, October 1990 to October 1991.

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WOOD STORK MORTALITY FROM HURRICANE HUGO

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Hurricane Hugo, with sustained surface winds of 140 km/h, and gusts to 173 km/h, hit Charleston County, South Carolina at 0001 h on 22 September 1989. On 29 September I surveyed the Atlantic Ocean beach on Sullivan's Island for storm-killed birds. I searched 1 h along a 1-km stretch of beach. The distance was determined by pacing. I found 8 Wood Storks (*Mycteria americana*). Other birds found were 3 White Ibises (*Eudocimus albus*), 1 Brown Pelican (*Pelecanus occidentalis*), and 2 Ring-billed Gulls (*Larus delawarensis*). All the birds were imbedded in a line of tidal debris that extended from the mean high tide line 25-30 m inland, at an average depth of 1 m. All birds were easily visible at the seaward edge of the debris, and I did not attempt to search in the wrack for hidden specimens. Because of the extent and depth of the debris, more birds may have been obscured. As the hurricane hit the coast in the middle of the night, it is probable that the Wood Storks and others were killed while they were roosting. The findings of this report are unusual because of the relatively large numbers of Wood Storks found dead in a limited area.