THE AMERICAN KESTREL ON CUMBERLAND ISLAND, GEORGIA

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Two subspecies of the American Kestrel (*Falco sparverius*) have been reported on Cumberland Island National Seashore, Georgia – the Northern Kestrel (*F. s. sparverius*) and the Southeastern Kestrel (*F. s. paulus*). Northern Kestrels are migratory and some winter along the Georgia Coast. The Southeastern Kestrel is resident in South Georgia and Florida, west to Louisiana. Its population status along the Georgia Coast has undergone change since Burleigh (1958) published Georgia Birds, and probably well before that publication. He reported kestrels breeding on Cumberland and Blackbeard Islands, and at other coastal localities, yet records today are scarce. We found the northern subspecies was fairly common on barrier islands only during winter, when we collected data on kestrel diets. Our (CR) general detections (N = 27 birds) of kestrels on Cumberland Island were between 1971 and 2008, and all were between 1 October and 4 April. No kestrels were recorded during summers. The purpose of this paper is to present information on food habits of kestrels on Cumberland Island during winter, and to speculate on reasons for the disappearance of the resident southeastern subspecies.

Most authors agree that while diet may vary with season, insects, especially grasshoppers (Orthoptera), are the mainstay of the kestrel (Sprunt 1954, Bent 1961), and suitable insects are prevalent on Cumberland Island. The reported diet of kestrels also includes spiders, small rodents, reptiles, and birds (Sprunt 1954). Tomkins (1948) referred to the southeastern subspecies as a notable "lizard eater," but most accounts mention lizards in the diet of both subspecies.

Materials and Methods

From 12 February through 27 March 2008, 68 regurgitated pellets from Northern Kestrels were collected from the interdune area on Cumberland Island from 2 widely separated (24 km) localities. We suspect that 2 individual kestrels were involved. Each pellet was examined separately and teased apart with probes and forceps. The various food items were identified to the lowest taxonomic level possible, depending on condition of the material and importance to the diet. The percent volume of each item in each pellet was estimated visually, and these data were totaled for each food item. Data from each pellet were summarized by percent volume ([volume of food item/volume of pellet] x 100; Whitaker 1988) to indicate the relative amount of each type of food. A mean frequency of occurrence of each identified food type was obtained (N = 68 pellets).

Results

The most frequent insect order in the diet was Orthoptera, primarily grasshoppers, but also some crickets, comprising 75.8% of the food by volume and occurring in 98.5% of the pellets. Beetles comprised 20% of the volume and occurred in 79.4% of the pellets, and lizards 3.3% and 17.6%, homopterans 0.4% and 2.9%, and birds 0.4% and 2.9%, respectively, made up the remainder (Table 1).

Discussion

Kestrels regurgitate 1-4 pellets per day (Smallwood and Bird 2002), facilitating an inspection of their diet. Bird remains occurred in only 2 pellets (2.9% frequency) suggesting few birds were eaten during our study (February and March 2008). Scales occurred in 17.7% of the pellets, indicating reptiles as a much more important winter food. Two kinds of scales were represented, those of the eastern fence lizard (*Sceloporus undulatus*) and some keeled and some square scales not identified, but possibly from a small snake. The most common lizard in the interdune area, the six-lined racerunner (*Cnemidophorus sexlineatus*), is not active until late spring, so it was probably not available before the Northern Kestrels departed. Eastern fence lizards are active on warm days, even during the winter. Grasshoppers were much in evidence, as were numerous lizard tracks, but we were unable to find beetles, which may have been obtained by kestrels in other island habitats.

Currently, there are no Southeastern Kestrels on Cumberland Island or the other Georgia barrier islands. Recent queries to people knowledgeable about the status of kestrels during the summer along the Georgia Coast (D. Cohrs, resident, McIntosh Co.; J. Crawford, University of Georgia, Marine Extension Center, Skidaway Island, GA; J. Parrish, Department of Biology, Georgia Southern University, Statesboro, GA; S. Willis, resident, Waycross, GA; and B. Winn, Department of Natural Resources, GA, pers. comm.) produced negative results.

A few Northern Kestrels spend the winter along the coast and feed primarily on grasshoppers and lizards. They occur on Cumberland Island in the open sands of the interdune habitat, but only during winter. The characteristics of this habitat are naturally maintained due to proximity to the sea and influence of salt, which limits the establishment and growth of many plant species. While the vast areas of longleaf pine (*Pinus palustris*) on the mainland and old fields on the barrier islands have mostly disappeared, much interdune habitat remains and food is abundant. However, is there enough area to maintain a healthy resident kestrel population? In 1975, the amount of open interdune habitat on Cumberland Island was 365 ha (Hillestad et al. 1975). Scrub communities totaled 503 ha, and combined with interdune habitat, they could have provided almost 900 ha of open habitat if maintained by a natural fire regime. Historically, fire was a major factor in determining habitat composition on the island and is critical in maintaining the scrub and longleaf pines, but fire has been deliberately suppressed on Cumberland Island (total suppression policy for the past 30 years), making the resulting scrub flatwoods unattractive to kestrels, Common Ground-Doves (*Columbina passerina*), and other species that require open habitat. It also probably reduces the number of available nesting sites and snags for roosting, further limiting kestrel distribution. The impact of wildfires and the use of controlled burns have been greatly restricted in the last century, and the Southeastern Kestrel may be one of several species that has had to forsake Cumberland Island because of changes in habitat resulting from a human-modified fire regime.

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Table 1. Items found in 68 pellets of *Falco sparverius sparverius* from the interdune area of Cumberland Island, Georgia, 12 February through 27 March 2008.

Identified items		Frequency (%)	Volume (%)
ORTHOPTERA		(98.5)	(75.8)
	Acrididae	98.0	74.9
	Gryllidae	5.9	1.0
COLEOPTERA		(79.4)	(20.0)
	Unidentified	64.7	11.7
	Scarabaeidae	23.5	3.9
	Tenebrionidae	8.8	2.1
	Carabidae	7.4	1.7
	Curculionidae	1.5	0.07
	Chrysomelidae	1.5	0.07
	Elateridae	2.9	0.4
HOMOPTERA			
	Cercopidae	2.9	0.4
REPTILIA		(17.6)	(3.3)
	Sceloporus sp.	10.3	3.0
	Square scales	7.4	0.3
AVES	Unidentified bird	2.9	0.4