

## GREATER ANTILLEAN GRACKLE (*QUISCALUS NIGER*) PREYS ON *ANOLIS GRAHAMI*

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**Abstract:** A female Greater Antillean Grackle (*Quiscalus niger*) was observed to dismember and consume a large male *Anolis grahami* in Kingston, Jamaica. The entire dismemberment sequence lasted 57 minutes. The large size of the anole indicates that the geographically-widespread grackle may be capable of preying on all size classes of the seven Jamaican *Anolis* species, with the possible exception of adult male *Anolis garmani*, the largest species on the island. This observation also suggests that individual grackles may exhibit handedness.

**Key words:** *Anolis grahami*, Caribbean, Greater Antillean Grackle, Jamaica, predation, *Quiscalus niger*

**Resumen:** EL CHICHINGUACO (*QUISCALUS NIGER*) DEPREDANDO *ANOLIS GRAHAMI*. Una hembra de Chichinguaco (*Quiscalus niger*) fue observada desmembrando y consumiendo un gran macho de *Anolis grahami* en Kingston, Jamaica. La secuencia completa duró 57 minutos. El gran tamaño del lagarto indica que esta ave, ampliamente distribuida es capaz de depredar todas las tallas de las siete especies de *Anolis* de Jamaica, con la posible excepción de los machos adultos de *Anolis garmani*, la mayor de las especies de la isla. Esta observación también sugiere que *Quiscalus* individuales pueden tener lateralidad.

**Palabras clave:** *Anolis grahami*, Caribe, Chichinguaco, depredación, Jamaica, *Quiscalus niger*

**Résumé :** LE QUISCALE NOIR (*QUISCALUS NIGER*) EST UN PREDATEUR DE *ANOLIS GRAHAMI*. Une femelle de Quiscale noir (*Quiscalus niger*) a été observée en train de démembrer et de consommer un grand mâle d'*Anolis grahami* à Kingston en Jamaïque. La durée complète du démembrement a été de 57 minutes. La grande taille de cet anolis confirme que ce quiscale à large aire de répartition est capable de capturer toutes les classes de taille des sept espèces d'*Anolis* jamaïcains, à l'exception, peut-être, du mâle adulte de l'*Anolis garmani*, la plus grande espèce de l'île. Cette observation suggère aussi que des individus de quiscales peuvent montrer une certaine adresse "manuelle".

**Mots-clés :** *Anolis grahami*, Caraïbe, Jamaïque, prédation, *Quiscalus niger*, Quiscale noir

AVIAN PREDATION may exert strong selection on body size and behavior of *Anolis* lizards in the Caribbean (Schoener 1979), yet the guild of anole predators on each island and the size range of anoles taken by particular avian species are virtually unknown (Lack 1976, Wunderle 1981). Although a few dietary studies of anole predators have been conducted (Wetmore 1916, McLaughlin and Roughgarden 1989, Gasset *et al.* 2000), predation data typically accumulate as anecdotes such as the one I report here.

On 11 February 2004, Brian Schmidt and I observed a female Greater Antillean Grackle (*Quiscalus niger*) consume a large male *Anolis grahami* in Hope Botanical Garden, Kingston, Jamaica (18°01.30'N, 76°44.89'W; WGS-84). The geographically-widespread grackle is known to feed on a wide range of animal and plant foods (Gosse 1847, Wetmore 1916). Although a comprehensive dietary study of Jamaican populations has yet to be conducted, grackle stomachs ( $n = 74$ ) examined in Puerto Rico contained earwigs, beetles, weevils,

cicadas, stinkbugs, mole crickets, grasshoppers, crickets, lepidopteran caterpillars, wasps, ants, ticks, and snails, as well as fruit, seeds, and corn (Wetmore 1916). Vertebrate remains included frogs (*Leptodactylus* sp. and *Eleutherodactylus* sp.), small anoles (*Anolis* sp.), and ameiva lizards (*Ameiva exsul*).

Our Jamaican observation was noteworthy for several reasons. First, it suggests that the Greater Antillean Grackle is capable of preying upon all size classes of the seven Jamaican *Anolis* species with the possible exception of adult males of the largest species, *A. garmani*. Secondly, the observations provide insight on the behavioral techniques used by grackles to dismember large, tough prey items. Finally, the anecdote suggests that individual grackles may exhibit handedness. The bulk of this report addresses the behavioral aspects with a particular emphasis on the sequence of events.

The grackle emerged from a palm grove and carried the anole in its bill to a low tree overhanging the main road through the garden. The grackle was

thought to be a female because it had glossy plumage but lacked the distinctive keeled tail characteristic of males. The anole was limp and undamaged except for an obvious head wound, which I assumed was inflicted by the grackle. The grackle held the anole against the branch with its left foot and vigorously grasped and then wrenched and pulled fragments of skull, muscle, and then the fleshy tongue, through the anole's gaping mouth, leaving the skin of the cranial region flaccid. The grackle then crushed and mashed the anole's forelimbs by running them back and forth through its mandibles, and afterwards grasped and jerked, but failed to detach, the anole's toes. The procedure was repeated on the hind limbs without visible success. The distal half of the anole's tail was then torn free and crushed by passing it back and forth through the grackle's mandibles before it was swallowed. The grackle paused a few seconds while the tail fragment settled in its stomach and then grasped and jerked large pieces of flesh from the tail stump.

The grackle flipped the anole several times and picked tissue from its neck region until the orange dewlap was torn half away. The grackle then penetrated the visceral cavity by pecking and enlarging the anole's cloacal opening. After extracting and consuming the intestines, the grackle made another unsuccessful attempt to tear away the forelimbs and pectoral girdle. The grackle was hidden from view behind foliage for several minutes. When it reappeared, the skin of the anole's back exhibited a large tear. In short order, the grackle consumed the remaining viscera and began ripping away the trunk musculature. The hind limbs were ripped free from the inside and skinned down to the metatarsals by pulling on the free end of the limbs. The vertebral column was completely stripped of loose muscle tissue and then dropped to the ground. The remainder of the carcass was torn in two pieces. The skinned hind limbs of the anole dangled from a long strip of skin held by the grackle's left foot, whereas the anole's pectoral girdle and forelimbs were held to the perch with its right foot. During the observation period, the grackle made several short flights (1-2 m) with the anole in its bill. Although the grackle's right foot appeared to be fully functional, the bird invariably anchored the anole with its left foot, which seemed to indicate handedness (Vince 1964, Clark 1973, Knox 1983).

In one of the more noteworthy maneuvers, the grackle grasped the dangling skin with its bill and pulled the suspended hind limbs toward the tree limb, anchored the loop of skin with its left foot,

and then grasped the hind limbs directly with its bill. Only a dozen or so species of birds have been previously recorded pulling suspended food up to a perch (Thorpe 1963, Heinrich 1995). The grackle picked some additional bits of flesh from the hind limbs but finally left the remnants of skin and bone wrapped around the branch. The pectoral girdle and forelimbs were then dropped, perhaps inadvertently, because the grackle tilted its head and peered downward toward the scrap. The grackle paused only momentarily before it began searching a nearby clump of *Tillandsia* in the canopy. The entire dismemberment sequence lasted 57 minutes.

Based upon measurement of the recovered forelimbs, the snout-vent length of the anole was ~70 mm (body mass, ~9-12 g), which is near the maximum size recorded for male *Anolis grahami* (Schoener and Schoener 1971). This indicates that female grackles (body mass;  $\bar{x} = 76.0 \pm 4.5$  g,  $n = 11$ ; S. Koenig, unpubl. data) are capable of preying on all size classes of the small to medium-sized *Anolis* species (*grahami*, *opalinus*, *valencienni*, *lineatopus*, *sagrei*, *reconditus*) known from Jamaica (Rand 1967, Schoener and Schoener 1971). On the other hand, male grackles (body mass;  $\bar{x} = 107.7 \pm 8.0$  g,  $n = 11$ ; S. Koenig unpubl. data) may be able to prey on the largest Jamaican species, *A. garmani*, with the possible exception of adult males (snout-vent length ~ 110 mm).

#### ACKNOWLEDGMENTS

I thank James Schulte for confirming the identity of the anole with cytochrome b gene sequence data (Genbank accession number DQ353945), Susan Koenig for providing body mass data for grackles, Brian Schmidt for field assistance, and William Hayes, Catherine Levy, and Douglas McNair for comments on the manuscript. Research permits were granted by National Environment and Planning Agency, Kingston.

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