



First record of the bat *Artibeus jamaicensis* in the diet of the Common Black Hawk (*Buteogallus anthracinus*) in the Neotropics

Primer registro del murciélago *Artibeus jamaicensis* en la dieta de la Aguililla negra menor (*Buteogallus anthracinus*) en el neotrópico

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Abstract

The Common Black Hawk (*Buteogallus anthracinus*) is a raptor that feeds mainly on crustaceans and fish, but is an opportunistic consumer that can also feed on other prey. We visited the El Cantil Blanco cave in Veracruz, Mexico, located in deciduous lowland forest and secondary vegetation, to study bats. On 18 December 2023, we observed two Common Black Hawks at the entrance to the cave. One hawk was holding a dead bat, which it dropped as we approached. On inspecting the site below the hawk's perch, we found remains of *Artibeus jamaicensis* bats. Our results provide the first record of *A. jamaicensis* bats in the diet of this raptor in the Neotropics, which is notable considering the few records of mammals in the diet of this raptor.

Keywords: Chiroptera, Mammal prey, Predation, Prey remains, Raptor.

Resumen

La aguililla negra menor (*Buteogallus anthracinus*) es una rapaz que se alimenta principalmente de crustáceos y peces, pero es un consumidor oportunista que también puede alimentarse de otras presas. Visitamos la cueva El Cantil Blanco en Veracruz, México, ubicada en un bosque caducifolio de tierras bajas y vegetación secundaria, para estudiar murciélagos. El 18 de diciembre de 2023, observamos dos aguilillas negras comunes en la entrada de la cueva. Un aguilucho sostenía un murciélago muerto, que dejó caer cuando nos acercamos. Al inspeccionar el sitio debajo de la percha de la aguililla, encontramos restos de murciélagos *Artibeus jamaicensis*. Nuestros resultados proporcionan el primer registro de murciélagos *A. jamaicensis* en la dieta de esta rapaz en el Neotrópico, lo cual es notable considerando los pocos registros de mamíferos en la dieta de esta rapaz.

Palabras clave: Chiroptera, Mamíferos de presa, Depredación, Restos de presas, Ave rapaz.

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Introduction

The Common Black Hawk (*Buteogallus anthracinus*) is a bird of prey considered an opportunistic consumer (Schnell 1994). The diet of the Common Black Hawk is highly variable depending on their distribution, prey availability, and season (Sherrod 1978, Hiraldo et al. 1991). As resident top predators, hawks have an important role in controlling the populations of prey species (Ferguson-Lees and Christie 2010). Main prey items include invertebrates (Stiles and Skutch 1989, Herrera and González 2017), crustaceans and fish (Stiles and Skutch 1989, Hiraldo et al. 1991, Snyder and Snyder 2006, Barradas-García and Morales-Mávil 2007, Monge 2010, Escamilla-Cortés and García-Grajales 2024), as well as reptiles, and some birds and mammals (Caldwell 1986, Wiley and Garrido 2005, Etzel et al. 2014, Shedd et al. 2021).

Most of the records of mammal prey for Common Black Hawks are from the United States, with few records for the Neotropics. The occurrence of mammals in the diet of hawks is low, 3 - 6% (Sherrod 1978) and mainly comprises rodents (Sherrod 1978, Wiley and Garrido 2005, Etzel et al. 2014). There is only one record of bats of the genus *Myotis* in food remains reported in a raptor nest in Arizona (Etzel et al. 2014). The present note documents a new record in the diet of the Common Black Hawk, and one of the few records from the Neotropics.

Methods

Observations were made in the El Cantil Blanco cave (19.39993, -96.55417; WGS 84) in Emiliano Zapata, Veracruz, Mexico (Fig. 1). The climate is warm sub-humid with an average annual humidity of 44%, a temperature range of 20-26°C, and total annual rainfall of 900-1300 mm (INEGI 2010). The dry season occurs from October to May, and the rainy season from June to September (Gómez-Ortega 2018). The vegetation comprises low deciduous forest, agricultural fields, and grassland (INEGI 2010).

The El Cantil Blanco cave is located 180 masl, about 10 m from the Paso de la Milpa River, a tributary of the Actopan River. This small cave extends to a depth of 12 m, starting from an entrance approximately 3 m high and 3 m wide, narrowing to 1 m high and 1.5 m wide at its most distal point. The cave is a refuge for bats, mainly *Artibeus jamaicensis*, *Pteronotus personatus* and *Desmodus rotundus*. Inside the cave, we found colonies of *Artibeus jamaicensis* and *Pteronotus personatus* roosting on the ceiling. Bat species were identified using field guides to the bats (Medellín et al. 2008) and mammals (Álvarez-Castañeda et al. 2015) of Mexico.

We visited the cave every two weeks to make video recordings inside the cave to obtain data on the agonistic behaviour in a reproductive context of

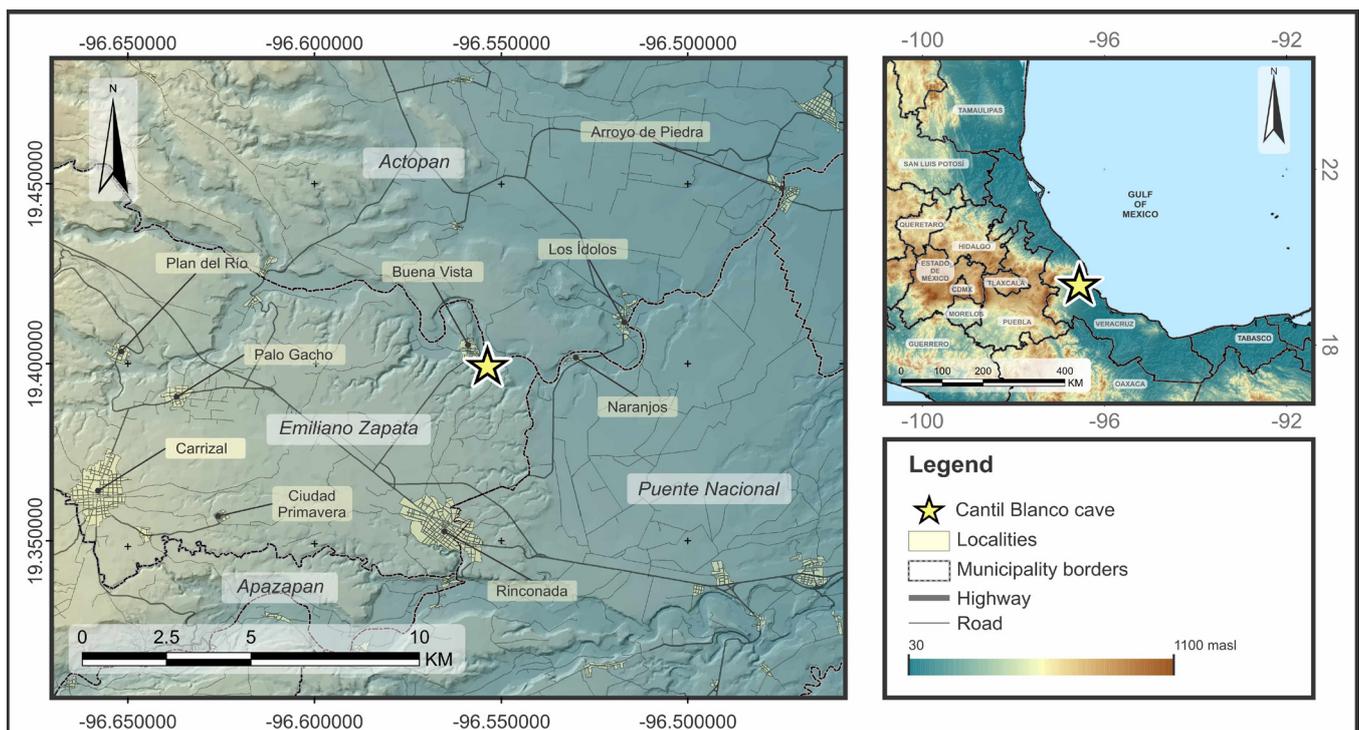


Figure 1. Location of the El Cantil Blanco cave in Emiliano Zapata, Veracruz, Mexico.

A. jamaicensis. During one of the visits to the cave, we recorded feeding behavior of a pair of Black Hawks at the entrance to El Cantil Blanco cave.

Results

On 18 December 2023, at 12:30 h, we observed a pair of Black Hawks manipulating a bat's body. The hawks were identified as adult Common Black Hawks by their dark plumage and a white terminal band on the tail (Howell and Webb 1995). The site at the entrance to the cave where we observed the hawks was a stone wall with a relatively flat surface, at a height of about 1 m from the ground. When the hawks perceived our presence, they flew away from the site.

One of the hawks dropped the bat's body, which was immediately collected and photographed. We identified the specimen as an adult male *A. jamaicensis* by the short interfemoral membrane, the absence of an external tail, and pointed ears (Fig. 2). The specimen had a body length of 78.5 mm and a forearm of 63.6 mm. The remains of the collected bat showed muscular rigidity, suggesting that the



Figure 2. Bat *Artibeus jamaicensis* specimen dropped by a Common Black Hawk (*Buteogallus anthracinus*). Note the short interfemoral membrane, the absence of an external tail and the pointed ears.

bat had died before we observed the hawks. There was also no odor of decomposition, therefore death was relatively recent. On inspection of the area at the base of the rock at the entrance to the cave, we found numerous bat remains along with bird pellets. Bat remains at the feeding roost were mainly wings and jaws. We counted parts of five jaws (Fig. 3a), all from *A. jamaicensis*, and 13 wing remains (Fig. 3b). The remains were not collected, but they were photographed and left *in situ*.

Consultation of previous studies found that reports of mammal prey in the diet of the Common Black Hawk mainly comprised rodents, with only two records of bats: *Myotis* sp (Etzet et al. 2014); and an unidentified bat (Sherrod 1978) both from Arizona, USA (Table 1).

Discussion

We provide the first direct observation of consumption of bat prey by the Common Black Hawk, and the first record for the Neotropics. Furthermore, our observation of the consumption of *A. jamaicensis* prey is the first species-specific record for the order Chiroptera (Sherrod 1978, Wiley and Garrido 2005, Etzel et al. 2014). This result shows that bats are part of the diet of these raptors in our study area. We did not actually observe how the raptors capture the bats, however, this could be by active hunting. We propose that this is an opportunistic feeding behavior for Black Hawks in this coastal area of Veracruz, Mexico. This highlights not only the dietary flexibility of Black Hawks, but also their opportunistic feeding practices and exploitation of foraging sites.

Although Black Hawks feed on invertebrates (mainly crabs), fish, amphibians, reptiles, birds and mammals (Schnell 1994, Shedd et al. 2021, Escamilla-Cortés and García-Grajales 2024), the occurrence of mammals in the diet of hawks is low compared to other food items (Sherrod 1978). Reported mammalian prey mainly includes rodents, such as rats and mice, and a squirrel (Sherrod 1978, Wiley and Garrido 2005, Etzel et al. 2014), with few records of bats in the diet of the Common Black Hawk (Etzet et al. 2014).

The muscular rigidity of the bat specimen dropped by one of the hawks suggests the specimen died some time before. The consumption of carrion by Common Black Hawks has been documented on only a few occasions (Carter and Wauer 1965,



Figure 3. Bat remains found on a rock used as a feeding site by a pair of Common Black Hawk (*Buteogallus anthracinus*) at the entrance to a bat roosting cave in Veracruz, Mexico: a) jaw remains of *Artibeus jamaicensis* bats, b) remains of bat wings and bones.

Brown and Amadon 1968, Abramson 1976), although it is known to occur in *Buteogallus* sp. when food is scarce (Sánchez 2022). The context of our record, located in deciduous forest during the dry season, when there is reduced availability of food resources (Johnson and Schnell 2024), could explain the greater dependence of Black Hawks on alternative food resources, such as bats. The low height, narrow width and shallow depth of the cave may provide a favorable environment for hawks to both capture live prey and access carrion, suggesting that birds strategically use this site for

easy access to food.

The presence of two adults feeding at the same time suggests that this represents a breeding pair. Our observation in December coincides with the period of courtship, which occurs between December and January in the state of Veracruz, Mexico, with nesting between February and March (Barradas-García et al. 2004, Barradas-García and Morales-Mávil 2007), similar to Trinidad and Panama (Mohan 2012). The remains found near the cave entrance highlight the importance of future research

Table 1. List of mammal prey of the Common Black Hawk (*Buteogallus anthracinus*) obtained from a literature search of dietary items.

Taxon	Location	Reference	Record type
Rodentia			
<i>Spermophilus variegatus</i>	Arizona, USA	Etzet et al. 2014	Prey remains
<i>Tamias</i> sp.	Arizona, USA	Etzet et al. 2014	Prey remains
<i>Eutamias</i> sp.	Arizona, USA	Sherrod 1978	Not specified
<i>Ammospermophilus</i> sp.	Arizona, USA	Etzet et al. 2014	Prey remains
<i>Peromyscus</i> sp.	Arizona, USA	Etzet et al. 2014, Sherrod 1978	Prey remains Not specified
<i>Neotoma</i> sp.	Arizona, USA	Sherrod 1978	Not specified
<i>Rattus rattus</i>	Ciénega de Zapata, Cuba	Wiley & Garrido 2005	Direct observation
<i>Rattus</i> sp.	Arizona, USA	Sherrod 1978	Not specified
Chiroptera			
<i>Myotis</i> sp.	Arizona, USA	Etzet et al. 2014	Prey remains
<i>Artibeus jamaicensis</i>	Veracruz, Mexico	This study	
Chiroptera (unidentified)	Arizona, USA	Sherrod 1978	Not specified
Lagomorpha			
<i>Silvilagus</i> sp.	Arizona, USA	Sherrod 1978	Not specified

to understand the Common Black Hawk's foraging strategies and their ecological implications. This behavior adds to our understanding of the trophic ecology of Common Black Hawks. It highlights the importance of further research into the dynamics of predator-prey interactions to better understand the ecological role of these birds of prey within their ecosystems.

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