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Observations of Jamaican Crows (*Corvus jamaicensis*) mobbing Jamaican boas (*Chilabothrus subflavus*)

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*Photos: Gary R. Graves (crow)
D. Craig Rudolph (snake)*

Observations of Jamaican Crows (*Corvus jamaicensis*) mobbing Jamaican boas (*Chilabothrus subflavus*)

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Abstract We describe five observations of avian mobbing of Jamaican boas (*Chilabothrus subflavus*) in northern Cockpit Country, Trelawny Parish, Jamaica. Four mobbing events were carried out by Jamaican Crows (*Corvus jamaicensis*), and one by a group of smaller passerines. We also describe a probable instance of a boa depredating a crow nest.

Keywords *Chilabothrus subflavus*, *Corvus jamaicensis*, Jamaica, Jamaican boa, Jamaican Crow, mobbing, passerine

Resumen Observaciones de *Corvus jamaicensis* acosando a *Chilabothrus subflavus*—Describimos cinco observaciones de acoso por aves a *Chilabothrus subflavus* en el norte de Cockpit Country, Trelawny Parish, Jamaica. Se realizaron cuatro eventos de acoso por parte de *Corvus jamaicensis* y uno por un grupo de paseriformes más pequeños. También describimos un caso probable de una boa depredando un nido de cuervo.

Palabras clave acoso, *Chilabothrus subflavus*, *Corvus jamaicensis*, Jamaica, paseriformes

Résumé Observations de Corneilles de la Jamaïque (*Corvus jamaicensis*) harcelant des boas de Jamaïque (*Chilabothrus subflavus*)—Nous décrivons cinq observations de harcèlement de boas de Jamaïque (*Chilabothrus subflavus*) par des oiseaux, au nord de Cockpit Country, Trelawny Parish, en Jamaïque. Ces harcèlements étaient menés à quatre reprises par des Corneilles de la Jamaïque (*Corvus jamaicensis*), et une fois par un groupe de petits passereaux. Nous décrivons également un cas probable de prédation d'un nid de corneille par un boa.

Mots clés boa de Jamaïque, *Chilabothrus subflavus*, Corneille de la Jamaïque, *Corvus jamaicensis*, harcèlement, Jamaïque, passereau

"If you want to catch the yellow snake, just go to where a group of crows are making the most noise" (Jamaican farmer, as told to B. Newman, pers. comm.).

Mobbing is an anti-predator defense behavior performed by many species and is particularly well known among birds. Avian mobbing is described as a gathering of birds around a potential predator, accompanied by loud vocalizations, conspicuous visual displays, or both (Curio 1978, Francis *et al.* 1989). Sometimes, the predator is physically attacked. The function of mobbing behavior is not entirely understood, and a number of hypotheses have been offered to explain its benefits, including self-defense, protection of nest or fledglings, teaching offspring to recognize and react to predators, and self-advertisement to maintain or improve social status (Curio 1978, Slagsvold 1984, Dugatkin and Godin 1992). While mobbing may provide these benefits, it can also be associ-

ated with costs, including being attacked by a predator, drawing attention to a nearby nest, and expending time and energy that could benefit other fitness-enhancing activities (Dugatkin and Godin 1992, Forsman and Mönkkönen 2001).

The Jamaican Crow (*Corvus jamaicensis*) is endemic to Jamaica. It is generally restricted to the north-central region of the island, where it is sparsely distributed but locally common (Graves and Schmidt 2015). Although the global population is estimated at < 2,900 individuals (Graves and Schmidt 2015), it is currently classified as "Least Concern" by the International Union for Conservation of Nature (IUCN) (BirdLife International 2016). The Jamaican boa (*Chilabothrus subflavus*) is also a Jamaican endemic, classified as "Vulnerable" by the IUCN (Gibson 1996). It is the largest snake and native terrestrial predator on Jamaica (Schwartz and Henderson 1991, Tzika *et al.* 2008). The crow and boa co-occur most notably on the northern frontier of Cockpit Country, a region with steep, limestone hills in central-western Jamaica (Tzika *et al.* 2008, Graves and Schmidt 2015). Relatively little behavioral information is available for either species, and there are no published records of birds mobbing the Jamaican boa. We report four instances of Jamaican Crows mobbing Jamaican boas, a probable instance of boa depredation on the

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contents of a crow nest, and an additional instance of songbirds mobbing a boa, all in northern Cockpit Country.

Observations

All observations occurred at or near the Windsor Research Centre (WRC), Windsor, Trelawny Parish (18°21'28.8"N, 77°38'54.0"W). The first mobbing observation consisted of a series of events over a 1-week period during May 2004. SEK observed a pair of Jamaican Crows exhibiting mobbing behavior at the forest edge adjacent to the southeast corner of the yard at WRC. The crows briefly perched on top of the concrete perimeter wall (1 m tall) located at the edge of the yard, vocalized loudly with hoarse, agitated "caws" (Fig. 1A), and swooped down toward the grass. This behavior was observed nearly daily over the following week, and presumably always involved the same pair of crows. On 29 May 2004, after observing mobbing behavior by the crows, SEK found a large boa basking in the herbaceous ground cover (video available online: www.cockpitcountry.com/Video/JACR-Boa.m4v). It was subsequently captured and determined—via cloacal probing—to be a female. It weighed 2.35 kg and had a snout-vent length of 153 cm. Total length was not measured because the tail was visibly "stubby," with a small portion of the tip missing.

The second mobbing observation occurred on 9 November 2008 at 0915 while undertaking activities to launch a radio-telemetry study of Jamaican boas. RRS heard a pair of crows vocalizing loudly from a guango tree (*Samanea saman*) at the northeast corner of the perimeter wall at WRC. These calls were

similar to those described in our first observation (Fig. 1B). The crows appeared agitated and exhibited mobbing behavior with movements and posturing directed at a specific point within the thick foliage of a *Philodendron* vine growing up the tree trunk and lower primary branches. One crow pulled on a vine leaf with its beak. We then spotted a large, coiled boa 8.5 m above the ground within the vine foliage just below the leaf. The boa was captured and determined to be a female weighing 2.4 kg and having a total length of 195 cm.

The third mobbing observation took place on 29 August 2011 when a member of our field crew was alerted by loud vocalizations and directed flight activity of three crows. The crew member searched the area and located a large boa coiled in a red bead tree (*Adenanthura pavonina*). The boa was captured and determined to be a female weighing 2.5 kg and totaling 185 cm in length.

The fourth mobbing observation occurred on 24 November 2011. At approximately 1000, a WRC employee heard a very vocal pair of crows and observed directed flight activity that led the observer to a large boa coiled at a fork in a large guango tree. The boa was not captured.

A probable crow nest depredation event was witnessed by SEK during 4–7 June 2009. A male boa carrying a transmitter was residing in a building attic at WRC (this individual, measured in November 2008, weighed 0.6 kg and had a total length of 144 cm). At the same time, a pair of crows was attending a nest of loosely woven twigs 11 m above the ground in an ackee tree (*Blighia sapida*) near the building. SEK noted that by 15 May

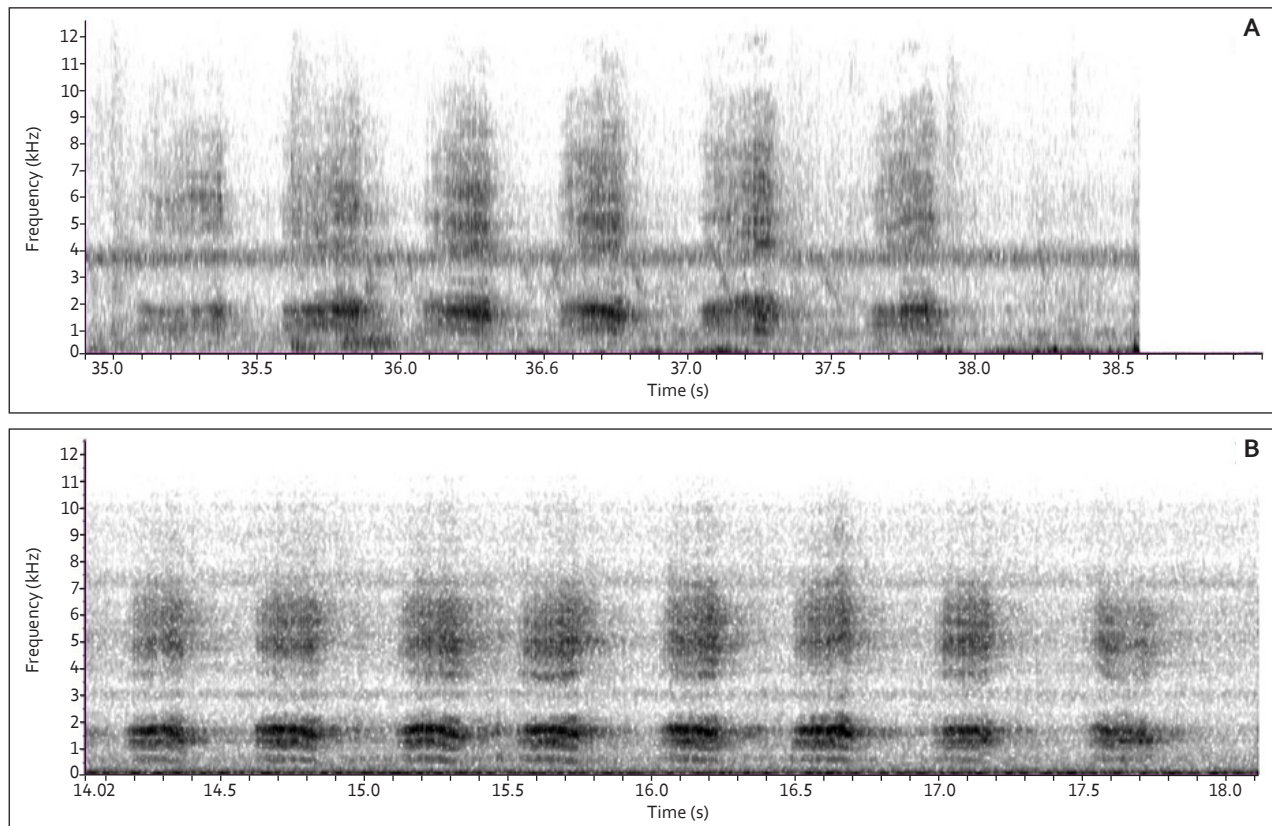


Fig. 1. Sonograms of Jamaican Crow mobbing vocalizations from our first (A) and second (B) observations of crows mobbing Jamaican boas.

2009 the boa was making regular nocturnal forays into the nest tree. On 4 June at 2035, well after dark, a crow flushed from the nest with brief “caw” notes. At 2045, the boa transmitter signal was tracked to the area of the crow nest, but there was no visual confirmation. At 2300, the boa was tracked back to the building attic. On the morning of 5 June, the crows checked the nest several times. Nest contents, if any, could not be seen from the ground. On 6 June, one crow checked the nest at 1354. Between 1600 and 1630, SEK witnessed four occurrences of both crows carrying twigs to a second tree near the original, apparently failed, nest tree. On 7 June at 0700, the boa signal was again tracked to the building attic. Between 0730 and 0930, the crows did not visit the nest. However, both crows carried twigs on several flights to the second tree, indicating a new nest was being constructed. We believe that the combined circumstantial evidence strongly supports the likelihood that the original nest was depredated by the boa.

A final mobbing event was observed at 0815 on 5 December 2013 in a fencerow near WRC. GRG’s attention was attracted by rapid, emphatic call notes of a White-chinned Thrush (*Turdus aurantius*). A large female boa, later determined to be 170 cm in total length and 2.1 kg in weight, was discovered 7–8 m above the ground in a principal fork of a bastard cedar tree (*Guazuma ulmifolia*) on the roadside. The thrush was highly agitated, shifting perches every 5–10 s, and approaching the boa as close as 1.5–2.0 m. A Common Yellowthroat (*Geothlypis trichas*) and Black-throated Blue Warbler (*Setophaga caerulescens*) silently inspected the boa at similar distances.

Discussion

The Jamaican boa is a known predator of birds and is, specifically, a major predator of Black-billed Parrot (*Amazona agilis*) nestlings in the vicinity of the WRC (Koenig 2001, Koenig et al. 2007). We have also confirmed predation on nestling Olive-throated Parakeets (*Eupsittula nana*; Koenig et al. 2015), and in November 2008, we found Jamaican Woodpecker (*Melanerpes radiolatus*) remains in regurgitation and fecal materials obtained from a female boa weighing 0.54 kg and having a total length of 122 cm (SEK unpubl. data).

The Jamaican Crow nesting season occurs from April through June. We observed mobbing by crows during late May, late August, and during both early and late November. This timespan indicates that mobbing is not restricted to the crow’s nesting season. In addition to attempting to drive boas away from a nest or territory, mobbing behavior directed at Jamaican boas may be used by adult crows to teach their young to recognize predators. Jamaican Crows are known to roost communally, but are presumed to disperse to territories each morning (Graves 2009). We observed mobbing behavior by only two or three crows at a time, in contrast to the much larger numbers that have been noted for *Corvus* species in some mainland mobbing events (Bent 1946). This suggests the mobbing we observed by Jamaican Crows was performed by a resident pair or family group within their defended territory.

In Puerto Rico, researchers have reported several mobbing events directed at Puerto Rican boas (*Chilabothrus inornatus*) by six species of smaller passerines (including two wintering species) and the Puerto Rican Woodpecker (*Melanerpes portoricensis*) (Mercado et al. 2002). All such mobbing events reported from Puerto Rico involved large female boas. Notably, researchers have reported that females tend to be larger than males in both Puerto Rican and Jamaican boas, and that larger boas may be more detectable to birds, especially when basking (Mercado et al. 2002, SEK unpubl. data).

Our observations corroborate these findings as four of our five mobbing events involved large female Jamaican boas. The boa involved in the event on 24 November 2011 could not be captured but was considered large by observers. It is probable that Jamaican Crows and other birds are less likely to detect smaller, well-hidden boas. It is also possible that smaller boas are less of a threat to a bird the size of a crow and are simply ignored. Additionally, the immediate threat posed to birds involved in diurnal mobbing events (such as those we observed in Jamaica and others occurring in Puerto Rico) may be minimal, since both boa species are primarily, if not entirely, nocturnal hunters (Rodríguez-Durán 1996, Koenig and Schwartz 2003).

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