

sites for other reptiles in the southeastern USA (see review and references in Enge et al. 2000. *J. Herpetol.* 34:497–503). Several species of turtle have been identified to nest in alligator nests in these studies, including *Pseudemys nelsoni* (Florida Redbelly), *Apalone ferox* (Florida Softshell), *Kinosternon subrubrum* (Florida Mud Turtle), *K. bairii* (Striped Mud Turtle), and *Sternotherus odoratus* (Common Musk Turtle) (Deitz and Jackson 1979. *J. Herpetol.* 13:510–512; Enge et al., *op. cit.*; Kushlan and Kushlan 1980. *Copeia* 1980:930–932). Eggs of *Anolis carolinensis* (Green Anole) have also been found in alligator nests (Deitz and Jackson, *op. cit.*; Kushlan and Kushlan, *op. cit.*), although far less commonly than turtle eggs. Snake eggs are also rarely found in alligator nests, but Deitz and Jackson (*op. cit.*) described *Farancia abacura* (Mud Snake) eggs in one alligator nest in Florida, as well as several specimens of *Seminatrix pygaea* (Swamp Snake) and *Nerodia cyclopion* (Green Water Snake).

In Louisiana, four clutches of *F. abacura reinwardtii* (Western Mud Snake) eggs and one female were found in two alligator nest mounds; one nest had been depredated and the other appeared to be a false nest (Hall and Meier 1993. *Copeia* 1993:219–222). Additionally, *S. odoratus* eggs were located within two alligator nests in southwestern Louisiana, with two additional nests containing *F. abacura* specimens and eggs (Carbonneau 1987. Unpubl. M.S. thesis. Louisiana State Univ. 54 pp.). We herein report on findings of new reptiles using alligator nests for egg deposition sites in coastal Louisiana, which to our knowledge have not been previously documented.

Alligator eggs were collected from numerous nests on Rockefeller Wildlife Refuge in Cameron and Vermilion parishes for various research projects between 25 June and 2 July 2013. Two clutches of snake eggs were incidentally found within alligator nests. The snake eggs (clutch 1, N = 12; clutch 2, N = 4) were in the nest mound, but not within the egg cavities in which the alligator eggs were deposited. The snake eggs were collected and incubated in a field incubator in the same manner as alligator eggs, as previously described (Joanen and McNease 1977. *Proc. World Mariculture Soc.* 8:483–489). On 23 July we noted the presence of shed snake skins adhering to the wire mesh container in which the eggs had been placed; regrettably the ventilation holes were large enough to allow escape of the hatched snakes. Examination of the eggshells suggested 8 of 12 eggs from the larger clutch had hatched. The shed skins were collected, and viewed under a dissecting microscope. The presence of one preocular scale and two postocular scales from one shed skin was indicative the hatched snakes were likely *Lampropeltis getula holbrooki* (Speckled Kingsnakes).

One egg of the second clutch of four eggs was then dissected, as we were concerned they were non-viable. A near-term Speckled Kingsnake was noted and the remainder of the clutch was then moved to a more secure container for continued incubation. On the morning of 26 July we found a live Speckled Kingsnake had hatched; it measured 21.0 mm TL, 18.5 SVL, and had a mass of 4.07 g. That afternoon a second snake was beginning to emerge. We attempted to assist it in liberating itself from the egg by gently cutting the eggshell further. The snake did not readily emerge so we replaced the egg mass in the incubator. The following morning that egg had hatched, the snake measured 22.5 mm TL, 20.0 mm SVL, and 4.42 g. Both snakes were released to the wild near the field incubator on the day of hatching. The remaining egg appeared desiccated and non-viable.

On 29 July 2013, we visited six additional alligator nests to collect vegetation and soil samples for an associated research

project. Two nests contained presumed skink eggs, but we had not previously attempted to incubate these, although we commonly encounter them in alligator nests. Each clutch contained approximately five eggs; some may have been overlooked due to their small size. One egg in one clutch appeared collapsed and non-viable when collected and incubated in our field incubator. On 5 August two hatchling Ground Skinks (*Scincella lateralis*) were found in the incubator; they each had a mass of 0.14 g. These were released near the field incubator that afternoon. On 8 August six more *S. lateralis* were found hatched. Four had masses of 0.17 g, and one had a mass of 0.11 g and another of 0.15 g. We suspect the two smaller skinks may have hatched with those measured on 5 August but were undetected, having been burrowed in the nesting vegetation at the time.

We incidentally collected twenty clutches of alligator eggs from nests on White Lake Conservation Area in Vermilion Parish, Louisiana on 23 June 2009. One nest contained ten *Pseudemys concinna* (River Cooter) eggs. These were incubated at our field laboratory and seven turtles hatched on 2 August. We occasionally find turtle eggs in coastal marsh nests on Rockefeller Refuge, but far less frequently than in Florida lakes as per Enge et al.'s (2000) multi-year, multi-site study (26.6% of 1586 active alligator nests had *P. nelsoni* eggs).

Kushlan and Kushlan (*op. cit.*) noted that commensal nesting in vertebrates is rare, thus our finding of three previously unreported reptile species using alligator nests is of interest. We regularly see *L. getula holbrooki* locally, and *S. lateralis* was the most commonly encountered reptile in a herpetofaunal study conducted in a nearby chenier habitat (W. Selman, unpubl. data). The River Cooter, however, occurs less commonly in southwestern Louisiana marsh habitats (Dundee and Rossman 1989. *The Amphibians and Reptiles of Louisiana*. Louisiana State Univ. Press, Baton Rouge, Louisiana. 300 pp.). The advantages and disadvantages of turtles nesting in alligator nests were discussed in detail by Enge et al. (*op. cit.*, and references therein). Hall and Meier (*op. cit.*) also discussed strategic advantages of commensal nesting in alligator nests for nesting turtles and snakes (and their eggs). Similar benefits and adverse effects may play a role in other reptiles using alligator nests, such as the taxa described herein: *L. getula holbrooki*, *S. lateralis*, and *P. concinna*.

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RUTH M. ELSEY (e-mail: relsey@wlf.la.gov), **WILL SELMAN, RYAN KING, MICKEY MILLER**, Louisiana Department of Wildlife and Fisheries, Rockefeller Wildlife Refuge, 5476 Grand Chenier Highway, Grand Chenier, Louisiana 70643, USA; **STEVEN G. PLATT**, Wildlife Conservation Society, 2300 Southern Blvd. Bronx, New York 10460, USA (e-mail: sgplatt@gmail.com).

SQUAMATA — LIZARDS

ANOLIS EQUESTRIS (Cuban Knight Anole). **NOCTURNAL ACTIVITY.** *Anolis equestris* is native to Cuba and has been introduced to Florida, USA (Kraus 2009. *Alien Reptiles and Amphibians: A Scientific Compendium and Analysis*. Springer, Dordrecht, Netherlands. 563 pp.; Krysko et al. 2003. *Florida Sci.* 66:74–79). This species consumes a wide variety of animals and plants including vertebrates, invertebrates, and fruit (Camposano et al. 2008. *Iguana* 15:212–219, Giery et al., unpubl.). Documented activity times for populations in southern Florida indicate that *A. equestris* activity falls between mid-morning and late afternoon, ceasing at sunset (Meshaka et al. 2004. *The Exotic Amphibians*

and Reptiles of Florida. Krieger Publ. Co., Malabar, Florida. 166 pp.). Here, we report on nocturnal activity of *A. equestris* in South Florida.

On 18 April 2013 between 2203–2215 h, a single adult *Anolis equestris* was observed at Fairchild Tropical Botanical Gardens, Miami, Florida, USA (25.677°N, 80.276°W, WGS84; <1 m elev.). This individual was observed consuming Lepidoptera attracted to an artificial light source positioned above a doorway. Nocturnal lizards (*Hemidactylus mabouia*) were also present around the light source and could represent another potential prey source for nocturnally foraging *A. equestris*. This is the first documentation of *A. equestris* using artificial light sources to allow for nocturnal activity.

JAMES T. STROUD, Department of Biological Sciences, Florida International University, 11200 SW 8th St, Miami, Florida 33199, USA (e-mail: JamesTStroud@gmail.com); **SEAN T. GIERY**, Department of Biological Sciences, Florida International University, 3000 NE 151st St, North Miami, Florida 33181, USA (e-mail: stgiery@gmail.com).

ANOLIS EQUESTRIS (Cuban Knight Anole) and ANOLIS DISTICHUS (Hispaniolian Bark Anole). EXOTIC INTRAGUILD PREDATION. *Anolis equestris* is native to Cuba and *A. distichus* is native to Hispaniola; both have been introduced to Florida, USA (Kraus 2009. Alien Reptiles and Amphibians: A Scientific Compendium and Analysis. Springer, [Dordrecht, Netherlands], 563 pp.; Krysko et al. 2003. Florida Sci. 66:74–79). *Anolis equestris* consumes a wide variety of animals and plants including vertebrates, invertebrates and fruit (Camposano et al. 2008. Iguana 15:212–219, Giery et al. 2013. Functional Ecol. 2013:1–6). Documented activity times for populations in southern Florida indicate that *A. equestris* activity falls between mid-morning and late afternoon, ceasing at sunset (Meshaka et al. 2004. The Exotic Amphibians and Reptiles of Florida. Krieger Publ. Co., Malabar, Florida. 166 pp.). Here, we report on an intraguild predation event of *A. equestris* in South Florida (Miami) on an *A. distichus*.

On 28 August 2013 at 1504 h, a single adult female *Anolis equestris* was observed at Florida International University, Modesto A. Maidique Campus, Miami, Florida (25.757°N, 80.376°W, WGS84; ~2 m elev.). This individual was observed consuming a juvenile *A. distichus* on a tree at ~2 m height. Ingestion took <1 minute. Prior to the predation event, the *A. equestris* was a uniform dark brown base color, with faded yellow barring. Upon predation of the smaller anole, the *A. equestris* rapidly returned to a more typical pattern—green base color with a yellow bar above the shoulder of the forelimb. During the predation event an adult male *A. distichus* was observed performing dewlap extension displays at the *A. equestris* from a distance of ~55 cm. Following consumption, the *A. equestris* proceeded to try and catch an adult female *A. distichus* between 1507–1508 h but failed. This is the first recorded observation of *Anolis equestris* preying on *Anolis distichus* in Florida.

JAMES T. STROUD, Department of Biological Sciences, Florida International University, 11200 SW 8th St, Miami, Florida 33199, USA; e-mail: JamesTStroud@gmail.com.

ANOLIS SAGREI (Brown Anole). SEXUAL CANNIBALISM. Sexual cannibalism occurs when a reproductive adult kills and consumes a potential mate. This form of sexual conflict is common among invertebrates, especially arachnids (Birkhead et al. 1988. Behaviour 106:112–118; Dick 1995. J. Zool. 236:697–706; Kaston 1970. Trans. San Diego Soc. Nat. Hist. 16:33–82; Polis 1980. Annu.

Rev. Ecol. Syst. 12:225–251), and typically involves the consumption of males by females. In contrast to its frequent occurrence among invertebrates, cannibalism of any form among adult vertebrates is typically reported only in isolated instances in captivity or under stressful conditions (Amstrup et al. 2006. Polar Biol. 29:997–1002; Gander 1934. Copeia 187; Martinez-Freiria et al. 2006. Herpetol. Bull. 96:26–28). Here, we describe four separate occurrences of sexual cannibalism involving the consumption of adult female *Anolis sagrei* by conspecific males, two of which occurred under natural conditions in a wild population.

Brown Anoles exhibit pronounced sexual size dimorphism. Males from our study populations on the islands of Eleuthera and Great Exuma in The Bahamas exceed females by 22–32% in mean adult snout–vent length (SVL) and 106–153% in mean adult body mass (Cox and Calsbeek 2010. Evolution 64:798–809). Both sexes typically consume a variety of small invertebrates, but only rarely consume vertebrate prey (Norval et al. 2007. Russ. J. Herpetol. 17:131–138). Although males of *A. sagrei* and other *Anolis* species are known to cannibalize conspecific juveniles (Cochran 1989. Herpetol. Rev. 20:70; Gerber 1999. Anolis Newsl. V:28–39; Gerber and Echternacht 2000. Oecologia 124:599–607; Nicholson et al. 2000. Herpetol. Rev. 31:173), we report cannibalism among adult *Anolis* lizards in the wild.

During a mark-recapture study in September 2007 on Eleuthera, The Bahamas (24.83°N, 76.32°W), we captured and temporarily confined ca. 20 *A. sagrei* adults of both sexes together in a 6-gal plastic bucket (containing a large pile of sea grape leaves, *Coccoloba uvifera*, to provide individuals with shelter and spatial structure) for transport to a nearby field station. Upon removal of the animals for measurement ca. 2–4 h after capture, two individual adult males were found with the hind limbs and tails of females protruding from their mouths. Both females had lacerations and bite marks on their heads and necks and were dead or nearly dead when removed from the males. We did not document the sizes of the individual males and females in this incident, which we interpreted as an unfortunate and unnatural response to high density and stressful conditions.

We later observed two separate instances of sexual cannibalism under natural conditions during mark-recapture studies of a second population on Regatta Point, near Georgetown, Great Exuma, The Bahamas (23.5°N, 75.75°W). On 7 September 2010, we captured an adult male that was lethargic and visibly



FIG. 1. Conspecific female removed from the mouth of male *Anolis sagrei*.