



FIG. 1. Predation of *Amphisbaena vermicularis* by *Apostolepis cearensis*.

AMPHISBAENA VERMICULARIS. PREDATION. The natural history of amphisbaenians is poorly known, probably due to their fossorial habits (Gans and Amdur 1966. Proc. California Acad. Sci. 33:69–90; Filho et al. 1996. Scitientibus 14:57–68). *Amphisbaena vermicularis* is probably a species mainly of Caatinga and Cerrado that just enters eastern Amazonia (Hoogmoed and Ávila-Pires 1991. Bol. Mus. Para. Emílio Goeldi. sér. Zool. 7[1]:77–94), known from the Brazilian states of Pará to Minas Gerais, Mato Grosso, and Mato Grosso do Sul (Gans and Amdur, *op. cit.*; Vanzolini et al. 1980. Répteis das Caatingas. Acad. Bras. de Ciênc., Rio de Janeiro. 161 pp.; Uetanabaro et al. 2007. Biota Neotropica 7:279–289). Here, we report predation of *A. vermicularis* by the snake *Apostolepis cearensis* (Fig. 1).

On 1 February 2012 at 0700 h in the semiarid region of Bahia (9.876173°S, 41.07277°W), about 50 km from the city of Sobradinho we photographed an *Apostolepis cearensis* consuming an *Amphisbaena vermicularis* in the open and above ground. The recording took place at the time the snake had grabbed the head of amphisbaenian, which in turn revolved around its own axis in an attempt to escape the attack. *Apostolepis* snakes are known predators of amphisbaenians (Gomes et al. 2005. Herpetol. Rev. 36:170). There is one record of predation of *A. vermicularis* by *Micrurus ibiboboca* (Lisboa and Freire 2010. Herpetol. Rev. 41:73). *Apostolepis cearensis* can prey on small snakes such as *Tantilla melanocephala* (Mesquita et al. 2009. Herpetol. Rev. 40:440), but amphisbaenians have not been reported. This is a new predator record for *A. vermicularis* and also a new record of prey for *A. cearensis*.

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ANOLIS LIOGASTER (Guerreran Anole). CANNIBALISM. *Anolis liogaster* is a Mexican endemic (Muñoz-Alonso and Flores-Villela 1990. Cat. Amer. Amph. Rept. 489:1–2) and information on the natural history of this species is lacking. *Anolis* lizards have



FIG. 1. Adult specimen of *Anolis liogaster* and a partially digested juvenile.

previously been reported to eat other lizards (Griffith and Wingate 1994. Herpetol. Rev. 25:26) but our observation reported herein is the first known record of cannibalism in *A. liogaster*, although this behavior has been reported in other members of the genus (Gerber 1999. In Losos and Leal [eds.], 1999. Anolis Newsletter V, pp. 28–39).

On 19 January 2014, in Chilpancingo, Guerrero, Mexico, we collected a male *A. liogaster* that had previously been captured by a Domestic Cat (*Felis catus*). We noticed the lizard specimen had a food bolus partially protruding from its mouth, which we identified as a partially digested juvenile of the same species (Fig. 1). We hypothesize that this behavior is a response to the disturbed, urban habitat or a consequence of high population density, resulting in the elimination of both natural predators and natural prey items.

The *Anolis liogaster* specimens were deposited in the Museo de Zoología Facultad de Ciencias as MZFC 28671 for the adult and MZFC 28672 for the juvenile prey item.

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ANOLIS SAGREI (Brown Anole). ABSCESS. *Anolis sagrei* is native to Cuba, the Bahamas, and Jamaica, but has been introduced to many Caribbean countries and islands, including the Yucatán Peninsula where it is widespread in coastal areas (Lee 1996. The Amphibians and Reptiles of the Yucatán Peninsula. Cornell Univ. Press, Ithaca, New York. 500 pp.). Recently, it has been reported in the Banco Chinchorro Biosphere Reserve, an atoll located 31 km off the coast of the state of Quintana Roo, México (Charruau et al. Herpetol. Conserv. Biol., *in press*). During fieldwork on the reserve in April 2012, we captured five individual *A. sagrei* with deformations, abscesses, and swelling in their jaws, principally at the point of the mouth. We collected just one lizard (CNAR IBH 26868) for observations and determination of the nature of the wounds in laboratory. Two abscesses were removed via surgery and the lizard was maintained in a terrarium for 10 months, offered mealworms (*Tenebrio molitor*) and water *ad libitum*. Six months after the first surgery, the swelling came back at the same part of the jaw and we removed the tissue for analysis. We sent a swab from the tissue for bacterial culture and antibiogram; these laboratory tests obtained bacterial cultures of the genera *Streptococcus* and *Staphylococcus*, which are considered opportunistic pathogens (Huchzermeyer 2003. Crocodiles: Biology, Husbandry and Diseases. Onderstepoort Veterinary Institute, South Africa. 337 pp.). During the capture of *A. sagrei* we observed that

these lizards fed on the eggs of ants and in some cases the ants bit the lizards, principally in the mouth. We suggest that the wound caused by the ant bites could provoke the swelling and then infection leading to abscess. After eight months the lizard could not feed by itself and was fed manually.

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ANOLIS SAGREI (Brown Anole). CANNIBALISM. *Anolis sagrei* is native to the Bahamas and Cuba, but has been introduced to many tropical regions around the world (Kolbe et al. 2004. *Nature* 431:177–181). Although *A. sagrei* primarily eats invertebrates, it will sometimes consume other anoles (Losos 2009. *Lizards in an Evolutionary Tree: Ecology and Adaptive Radiation of Anoles*. University of California Press, Berkeley. 528 pp.). For example, adult *A. sagrei* are more likely to consume hetero-specific juveniles than conspecifics given a choice (Gerber and Echternacht 2000. *Oecologia* 124:599–607). Nevertheless, cannibalism does occur in *A. sagrei* (Nicholson et al. 2000. *Herpetol.*

Rev. 31:173–174), but in most other documented cases of *Anolis* cannibalism, the cannibalistic adult was a male rather than a female. Cannibalism by females is rare and has only been reported twice among anole species, once each in *A. cristatellus* and *A. whitemani*. One record was based on an autotomized tail found in stomach contents of a female, yet anoles will consume their own and others' shed tails (Gerber 1999. *In* Losos and Leal [eds.], 1999. *Anolis Newsletter* V, pp. 28–39). Additionally, a laboratory experiment demonstrated that adult female anoles ignore juveniles, whereas adult males attempt cannibalism more frequently (Stamps 1983. *Behav. Ecol. Sociobiol.* 12:19–33).

During our research on spoil islands in the Matanzas River near Palm Beach, Florida, USA (29.64°N, 81.21°W; WGS84), we collected an adult female *A. sagrei* that regurgitated a partially digested juvenile *A. sagrei* with only the posterior half of the abdomen, the hind legs, pelvic region, and partial tail remaining. The adult female was measured (mass = 2.63 g; SVL = 48 mm; TL = 78 mm) but the remnants of the carcass precluded accurate measurement of the cannibalized juvenile (Fig. 1). However, we identified the juvenile as female based on the absence of enlarged post-cloacal scales. To our knowledge, this is the first report of cannibalism by an adult female *A. sagrei*.

Past studies of *Anolis* suggest that competition is the primary selective force in island populations, whereas predation is more prominent in mainland populations (Calsbeek and Cox 2010. *Nature* 465[7298]:613–616). Depending on the frequency of cannibalism in *A. sagrei* populations, both forces may be at work because predation on young individuals by adults can influence future competition, and hence impact community structure and population dynamics (Gerber and Echternacht 2000. *Oecologia* 124:599–607). Thus, the role of cannibalism in driving ecological and evolutionary processes in *A. sagrei* may be particularly strong, and warrants more study.

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ANOLIS SAGREI (Brown Anole). EGG PREDATION. *Anolis sagrei* is native to many islands throughout the West Indies, and invasive populations have expanded throughout Florida primarily over the last half-century (Kolbe et al. 2004. *Nature* 431:177–181). Similar to other anoles, *A. sagrei* produces a single-egg clutch and oviposits at regular intervals (about every 7–10 days) throughout the reproductive season (Cox and Calsbeek 2010. *Evolution* 64[5]:1321–1330). At present, little is known about anole oviposition behaviors, but laboratory studies suggest that females choose oviposition sites with suitable conditions for embryo development (Socci et al. 2005. *Herpetologica* 61:233–240; Reedy et al. 2013. *Behav. Ecol.* 24:39–46). Although females tend to select sites with proper ambient conditions, some eggs still succumb to mortality. Predation could be a major factor driving variation in egg mortality in the field. For example, studies of *A. limifrons* demonstrate that leaf litter invertebrates (*Solenopsis* ants, *Salasiella* snails) contribute to egg mortality (Andrews 1982. *Herpetologica* 38:165–171; Chalcraft and Andrews 1999. *Oecologia* 119:285–292). Here, we report that marsh crabs may be another important predator of *Anolis* eggs.



FIG. 1. Regurgitated carcass of a juvenile *Anolis sagrei* (A), and the cannibalistic adult female (B).