Anolis sagrei. Egg predation.

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7 authors, including:

David M. Delaney
Iowa State University

Andrew Michael Durso
Max Planck Institute for Biogeochemistry Jena

Aaron Reedy
University of Virginia

Daniel A Warner
Auburn University

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.

ANÍBAL H. DÍAZ DE LA VEGA-PÉREZ (e-mail: anibal.helios@gmail.com), Posgrado en Ciencias Biológicas, Instituto de Biología, Laboratorio de Herpetología, Universidad Nacional Autónoma de México, AP 70515, CP 04510, Distrito Federal, México; **PIERRE CHARRUAU**, Centro del Cambio Global y la Sustentabilidad en el Sureste A.C., Calle Centenario del Instituto Juárez s/n, C.P. 086080, Villahermosa, Tabasco, México (e-mail: charruau_pierre@yahoo.fr); **IXCHEL SAAVEDRA VALERO**, Animal Care Center S.A. de C.V. Patriotismo 549, CP 03710 Distrito Federal, México (e-mail: ixsv22@hotmail.com).

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 heterospecific 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).

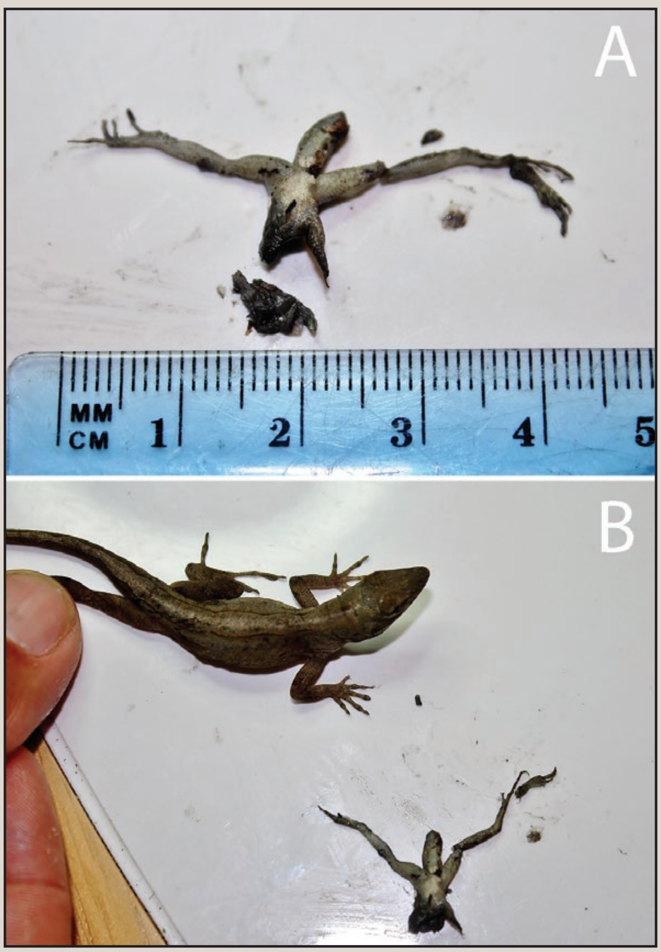

Fig. 1. Regurgitated carcass of a juvenile *Anolis sagrei* (A), and the cannibalistic adult female (B).

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.

COREY D. CATES (e-mail: cdcates@uab.edu), **DAVID M. DELANEY**, **ANDREW M. BUCKELEW**, Department of Biology, University of Alabama at Birmingham, Birmingham, Alabama 35294, USA; **ANDREW M. DURSO**, **SUSANNAH S. FRENCH**, Department of Biology, Utah State University, Logan, Utah 84321, USA; **AARON M. REEDY**, Department of Biology, University of Virginia, Charlottesville, Virginia 22904, USA; **DANIEL A. WARNER**, Department of Biology, University of Alabama at Birmingham, Birmingham, Alabama 35294, USA.

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. *Armases cinereum* with partially consumed anole egg.

While surveying populations of *Anolis sagrei* on spoil islands in the Matanzas River near Palm Beach, Florida, USA (29.64°N, 81.21°W; WGS 84) on 2 October 2013, we observed a Gray Marsh Crab (*Armases cinereum*) actively consuming an anole eggshell. The crab was measured (carapace length: 10 mm, carapace breadth: 1.2 mm, claw length: 8 mm) and photographed (Fig. 1). Gray Marsh Crabs are semi-terrestrial and found from high intertidal zones to 50 m inland. They have a broad distribution along the eastern coast of the United States, and into Veracruz, Mexico (Abele 1992. Smithson. Contrib. Zool. 527:30–31). Gray Marsh Crabs readily eat fresh plant material, carrion, and organic matter picked from sediments, but they also actively stalk small crustaceans and feed on soft-bodied invertebrates and small mollusks (Buck et al. 2003. J. Exp. Mar. Biol. Ecol. 292:103–116). Although we do not know if the crab killed the egg or if it was eating the eggshell after the hatchling emerged, this observation suggests that marsh crabs opportunistically eat anole eggs.

The spoil islands where we work have extremely high densities of Gray Marsh Crabs and fiddler crabs (*Uca* sp.). In addition, because of the high abundance of hatchling *A. sagrei* during late summer, we suspect that egg density at this time is also very high, allowing for crabs to come into contact with both incubating and hatched eggs. Indeed, crabs are often observed in the same microhabitats as anole eggs (Delaney et al. 2013. Herpetol. Rev. 44:314). The ability of *A. cinereum* to eat hard-shelled mollusks suggests that this species could also consume both intact and hatched anole eggs. Because *A. sagrei* lays eggs slightly below the surface of the ground in moist soil (unpubl. data), this oviposition location provides ample opportunity for interactions between eggs and marsh crabs. Although the observed eggshell being consumed could have been from *A. carolinensis*, it is more likely from *A. sagrei* given the substantially higher density of this species at our study site. Native *A. sagrei* populations are outside the geographic range of *A. cinereum*, but similar species of marsh crabs (genera *Sesarma* and *Armases*) in the Caribbean suggest that *Anolis* lizards and *Armases* crabs have probably had interactions over the course of their evolutionary history.

COREY D. CATES (e-mail: cdcates@uab.edu), **DAVID M. DELANEY**, **ANDREW M. BUCKELEW**, Department of Biology, University of Alabama at Birmingham, Birmingham, Alabama 35294, USA; **ANDREW M. DURSO**, **SUSANNAH S. FRENCH**, Department of Biology, Utah State University, Logan, Utah 84321, USA; **AARON M. REEDY**, Department of Biology, University of Virginia, Charlottesville, Virginia 22904, USA; **DANIEL A. WARNER**, Department of Biology, University of Alabama at Birmingham, Birmingham, Alabama 35294, USA.

ASPIDOSCELIS SEXLINEATA SEXLINEATA **(Six-lined Racerunner). SUPERNUMERARY CAUDAL ANOMALIES AND A BIFID TAIL.** We provide evidence that different types of wounds to the tail of an individual of *Aspidoscelis sexlineata sexlineata* can stimulate a range of responses including simple healing (i.e., closure of the wound), restoration (i.e., regeneration of the tail), development of a bifurcation (i.e., growth of a supernumerary second tail branch, Fig. 1A), or production of a cluster of supernumerary caudal extensions (i.e., growth of multiple tail branches, Fig. 1B–C). Consequently, this report expands the literature on caudal anomalies beyond references to tail bifurcation reported for an increasing number of lizard species (e.g., see Bateman and Chung-MacCoubrey 2013. Herpetol. Rev. 44:663; Vrcibradic and Niemeyer 2013. Herpetol. Rev. 44:510–511). The earliest report of a bifid tail in *A. sexlineata* known to us was published in Scientific American nearly 100 years ago (Anonymous 1915. Sci. Amer., p. 479)—that of a lizard from South Carolina. For a contemporary perspective, the examples of caudal anomalies in the three *A. sexlineata* from Alabama depicted in Fig. 1A–C are the only ones we have collectively observed in this species among several thousand specimens examined from Colorado, New Mexico, Texas, Kansas, Missouri, Louisiana, Arkansas, Oklahoma, Mississippi, Alabama, Georgia, Florida, South Carolina, and Tennessee. The recently published note (Cordes and Walker 2013. Herpetol. Rev. 44:319) on two triploid parthenogenetic *A. velox* from Utah are also the only other examples of bifid tails that can be recalled among the thousands of specimens of other species of *Aspidoscelis* examined by JMW.

From 1976–1979, SET studied the systematics (Trauth 1980. Ph.D. Dissertation, Auburn University) and natural history (Trauth 1983. Amer. Midl. Nat. 109:289–299) of *Aspidoscelis sexlineata* (= *Cnemidophorus sexlineatus*) across much of the southeast and south-central United States (Trauth and McAllister 1996. Cat. Amer. Amph. Rept. 628.1–628.12). In Alabama, only three of 201 specimens of *A. s. sexlineata* examined by SET expressed caudal anomalies other than simple tail regeneration. Two of them exhibited multiple fractures and subsequent growths of supernumerary tails (Fig. 1A–C). The phenotypically altered lizards (SET 2333; Auburn University Museum = AUM 27525; SET 2313) were collected from three south-central counties (Autauga, 32.70166°N, 86.48889°W; Chambers, 32.89288°N, 85.23701°W; Elmore, 32.57513°N, 85.94301°W, respectively). Each lizard was excavated from either activity or hibernation burrows in mostly well-drained red clay exposures, which faced S to W along secondary highways or rural dirt roads.

In SET 2333 (male, 64 mm SVL), the bifurcation developed immediately distal to the ~43rd whorl of caudal scales as the probable result of a moderately severe injury, leaving the original tail capable of growth and with an essentially anatomically normal appearance. The resulting supernumerary tail is almost as long as the original and possesses the types of scales typical of a regenerated portion of a tail (Fig. 1A). The result is what we term the classical bifid tail. In AUM 27525 (male, 74 mm SVL), the supernumerary aggregate of caudal extensions developed as a trifurcation immediately distal to the ~57th whorl of caudal scales as the probable result of multiple wounds, leaving the original tail incapable of normal growth and anatomically abnormal in appearance. A few mm distal to the trifurcation, the original tail has a bifurcation (Fig. 1B), the whole array being what we term supernumerary caudal extensions. In SET 2313 (female, 75 mm SVL), a trifurcation has developed immediately distal to the ~52nd whorl of caudal scales as the probable result of a complex wound, leaving the original tail incapable of normal growth and anatomically