Anolis sagrei. Prey stealing behavior.

Article *in* Herpetological Review · January 2014

8 authors, including:

David M. Delaney
Iowa State University

13 PUBLICATIONS   **10** CITATIONS

SEE PROFILE

Andrew Michael Durso
Max Planck Institute for Biogeochemistry Jena

28 PUBLICATIONS   **131** CITATIONS

SEE PROFILE

Aaron Reedy
University of Virginia

12 PUBLICATIONS   **37** CITATIONS

SEE PROFILE

Daniel A Warner
Auburn University

72 PUBLICATIONS   **1,553** CITATIONS

SEE PROFILE

Some of the authors of this publication are also working on these related projects:

Project   Snake assemblage trophic niche width, overlap, and position across North America View project

Project   Non-native reptile ecology View project

Fig. 1. Female *Anolis cristatellus wileyae* on lamp shade in a hotel room, Tortola Island.

view. JEM had been coming and going from the room previously during the day, but had not observed the subject, and had last left the room ~1¼ h previous to observations just after sunset (1832 h on 2 April 2013, Tortola Is.) when the overhead light was switched off and the curtains were closed, leaving the room in darkness. While very low illumination in the room through the window and gaps in the curtains might have been available in the gloaming from outside shortly after we left the room, later perhaps from exterior lights, or under the door from hallway lights, at some point during the intervening ~1¼ h period the lizard had climbed the furniture and the lamp shade, in darkness or near-darkness, as typical of arboreal perching behavior at dusk reported in many *Anolis* spp. (e.g., *A. uniformis* in Mexico; Cabrera-Guzman and Reynoso 2010. Rev. Mex. Biodivers. 81:921–924; *A. grahami, A. lineatopus,* and *A. valencienni* in Jamaica; Singhal et al. 2007. Behaviour 144:1033–1052; general discussion, Losos 2009, *op. cit.*), and the lamp shade in the above case was probably the highest accessible point in the room. The subject reported herein was the only *A. c. wileyae* observed on Tortola Island during the brief stay by JEM.

This observation is apparently the first report of nocturnal activity in typically diurnal *Anolis c. wileyae* within a human-occupied building on Tortola Island. Some congenerics (e.g., *A. equestris*) may remain active for a brief period after nightfall via thigmothermy on warm substrates. An alternative explanation is that availability of light rather than heat is the factor limiting activity in *Anolis* spp., if sufficient illumination is provided by incandescent or fluorescent lights, where insects attracted to

artificial lights may provide an attraction for opportunistic foraging anoles, as noted in several reviews (e.g., Henderson and Powell 2001. Carib. J. Sci. 37:41–54; Perry and Fisher 2006. *In* Rich and Longcore [eds.], Ecological Consequences of Artificial Night Lighting, pp. 169–191. Island Press, Washington, DC), the most recent and extensive of which reported 17 *Anolis* spp. as engaged in this behavior (Perry et al. 2008. *In* Mitchell et al. [eds.], Urban Herpetology, pp. 239–256. Herpetol. Conserv. Vol. 3. SSAR, Salt Lake City, Utah), and there have been several subsequent reports (e.g., Stroud and Giery 2013. Herpetol. Rev. 44[4]:660–661); these reports indicate nocturnal foraging around artificial lights might be widespread in *Anolis* spp. Nocturnal foraging activity at artificial lights was reported for the nominate race *A. c. cristatellus* in Puerto Rico (Garber 1978. Trans. Kansas Acad. Sci. 81[1]:79–80) and as exotics in the Dominican Republic, Hispaniola (Schwartz and Henderson 1999, *op. cit.*), and for *A. c. wileyae* which were in turn predated by the typically diurnal snake *Liophis portoricensis anegadae* on Guana Island, British Virgin Islands (Perry and Lazell 2000. Herpetol. Rev. 31[4]:227; Perry and Powell 2009. IRCF Reptiles & Amphibians 16[1]:6–17, photograph p. 11:B). The above case of a wild *A. c. wileyae* active in the dark in order to attain a sleeping perch demonstrated that this species will also engage in nocturnal activity other than foraging under artificial lights.

DEAN C. METCALFE, PO Box 4046, Werrington, NSW, Australia 2747 (e-mail: dean_metcalfe@yahoo.com.au); **JENNIFER E. METCALFE**, PO Box 734, South Brisbane, Queensland, Australia, 4101 (e-mail: jenni@econnect.com.au).

ANOLIS SAGREI (Brown Anole). PREY STEALING BEHAVIOR. *Anolis sagrei* is native to Cuba and the Bahamas, and has been introduced throughout many tropical and subtropical regions of the world (Kolbe et al. 2004. Nature 431:177–181). Trunk-ground anole ecomorphs (e.g., *A. sagrei*) utilize a sit-and-wait foraging strategy where they detect prey visually by their movement (Losos 2009. Lizards in an Evolutionary Tree: Ecology and Adaptive Radiation of Anoles. Univ. of California Press, Berkeley. 528 pp.). The diet of *A. sagrei* consists primarily of invertebrates, but adults occasionally eat other lizards including young of their own species (Cochran 1989. Herpetol. Rev. 20:70; Gerber and Echternacht 2000. Oecologia 124:599–607).

On 13 October 2013, we observed an adult *A. sagrei* steal a subdued spider from a spider-wasp (Hymenoptera: Pompilidae) on a spoil island located at Tomoka State Park, Ormond Beach, Florida, USA (29.349599°N, 81.090158°W; WGS 84). Spider-wasps paralyze and then lay eggs inside spiders, which subsequently hatch inside the spider host where the larvae feed (Eaton and Kaufman 2007. Kaufman Field Guide to Insects of North America. Houghton Mifflin, New York. 392 pp.).

The wasp attacked a funnel-web spider (Araneae: Agelenidae), which was located on the ground at the base of a small tree. The spider attempted to flee about 0.5 m before becoming motionless, presumably due to venom injected by the wasp. The wasp quickly grabbed the spider and began to drag it backwards towards the site of the initial confrontation. An adult *A. sagrei* had been observing the wasp/spider interaction from about 0.5 m above in the small tree. As the wasp was dragging the spider, the *A. sagrei* jumped to the ground, bit and stole the spider, and quickly returned to its perch where it began to consume the spider. The wasp took flight when the *A. sagrei* bit the spider and fled the area within a few minutes following the event.

Anolis sagrei are important components of tropical and subtropical communities that affect invertebrate populations directly (i.e., depredation) and indirectly (i.e., competition) (Spiller and Schoener 1990. Oecologia 83:150–161; Huang et al. 2008. Ecol. Entomol. 33:569–576). While it is known that *A. sagrei* depredate spiders opportunistically (Spiller and Schoener 2001. Ecology 82:1560–1570), there are no studies to our knowledge that have documented direct competition between spider-wasps and anoles for spider prey. The frequency of these interactions depends upon numerous factors (e.g., wasp density, lizard density) and might contribute to shaping community structure where anoles and spider-wasps occur sympatrically, both in and outside the native range of *A. sagrei*.

DAVID M. DELANEY (e-mail: dmdelane@uab.edu), **COREY D. CATES**, **ANDREW M. BUCKELEW**, Department of Biology, University of Alabama at Birmingham, Birmingham, Alabama 35294, USA; **DANIEL M. DELANEY**, Department of Biology, Millikin University, Decatur, Illinois 62522, 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; and **DANIEL A. WARNER**, Department of Biology, University of Alabama at Birmingham, Birmingham, Alabama 35294, USA.

***ASPIDOSCELIS TIGRIS AETHIOPS* (Sonora-Sinaloa Desert Whiptail). SIZE AND REPRODUCTION.** I assessed SVL and reproductive characteristics for *Aspidoscelis tigris* based on a sample from among the southernmost continental areas known for the species, populations which occur in a coastal state of western México. Use of the trinomial *A. t. aethiops* for these populations of diminutive lizards (max. SVL 67 mm) is problematic. Further studies may show that they represent an undescribed subspecies (Walker, unpubl. data). I examined 28 specimens from the California Academy of Sciences (CAS 115648–115675) collected by A. E. Greer and F. W. Burley on 20 July 1963 from ~7 km NE of Topolobampo near the road to Los Mochis (25.69°N, 109.04°W; datum NAD27) in the northern part of Sinaloa State, México. This site is beyond the southern limits of the Sonoran Desert as mapped by Brown and Wright (1994. Herpetology of the North American Deserts. Proc. Symp. Southwest. Herpetol. Soc. Spec. Publ. 5. Van Nuys, California. XX pp.). Data for SVL and clutch size based on dissection of the CAS sample are presented by ranges of variation, sex as a ratio, and/or means (to one decimal place) ± 1 SE.

Numbers of males and females of *A. t. aethiops*, respectively (in parens), by size (as 5 mm increments in SVL where applicable) among the 28 specimens were: 50–54 (2:4), 55–59 (3:0), 60–64 (10:6), 65–67 (3:0), and overall sex ratio from opportunistic collecting (18:10). Among the 10 females in the sample, nine were sexually mature (i.e., >51 mm SVL), seven were gravid, five had yolked ovarian follicles, and two had oviductal eggs. Sexual dimorphism in SVL for the Sinaloa population of *A. t. aethiops* is not apparent at $P = 0.05$, based on data for adult males (60.7 ± 0.91, 53-67, N = 18) compared with adult females (58.7 ± 1.47, 52–63, N = 9). Among females 50–54 mm SVL, 2 (50%) were gravid; clutch size was 1–2 (mean = 1.5). Among females 60-64 mm SVL, five (83.3%) were gravid; clutch size was 1–2 (mean = 1.8). For the single-date Sinaloa sample, two females had clutches of one egg and five females had clutches of two eggs. Clutch size for seven females was 1.7 ± 0.18; there is no relationship between clutch size and SVL for the seven Sinaloa females of *A. t. aethiops* (based on adjusted r^2 = -0.18).

The sample of *A. t. aethiops* from the area northeast of Topolobampo, Sinaloa, referenced herein is ~331 km straight line distance southsoutheast of the nearest continental site at Estación Ortiz (28.289972°N, 110.716889°W; datum WGS84), Sonora, from which specimens were previously used to assess SVL and reproductive characteristics at that latitude in this species (Walker et al. 2005. Herpetol. Rev. 36:316–317). The present study revealed a geographic trend from significantly higher means for adult male SVL (71.7 ± 0.71, range 6087, N = 91), adult female SVL (68.5 ± 0.73, 6081, N = 60), and clutch size (2.2 ± 0.09, range 14, N = 43) at Estación Ortiz compared with the aforementioned lower means for the sample from northeast of Topolobampo, Sinaloa.

JAMES M. WALKER, Department of Biological Sciences, University of Arkansas, Fayetteville, Arkansas 72701, USA; e-mail: jmwalker@uark.edu.

***ASPIDOSCELIS TIGRIS PUNCTILINEALIS* (Sonoran Tiger Whiptail). UPLAND HABITATS.** The geographical distribution of *Aspidoscelis tigris punctilinealis* (= *Cnemidophorus tigris gracilis*; see Reeder et al. 2002. Amer. Mus. Novitat. 3365:161; Taylor and Walker 1996. Copeia 1996:140–148; Walker et al. 1966. Copeia 1966:498505) includes Isla Tiburón (type locality), Gulf of California, Sonora, Mexico, and large mainland areas in Sonora and Arizona (see map in Dessauer et al. 2000. Bull. Amer. Mus. Nat. Hist. 246:1148; Taylor and Walker 1996, *op. cit.*; Walker et al., *op. cit.*). In this report we show that the popular conception of *A. t. punctilinealis* (Sonoran Tiger Whiptail) in Arizona as the ubiquitous, moderately large (~95 mm maximum SVL), wary, and rapidly-moving denizen of openstructured Sonoran desertscrub consisting of relatively stable creosote and/or mesquite flats (Dessauer et al., *op. cit.*; Taylor and Walker 1996, *op. cit.*) is inadequate to explain the existence of much larger lizards (>105 mm maximum SVL) in topographically complex upper elevation disturbed ecotones connecting woodland biomes in the central part of the state. Herein, we describe atypical habitats utilized by lizards that apparently represent *A. t. punctilinealis* (based on dorsal and ventral color patterns) at the northern terminus of the range of the subspecies. The descriptions are based on studies conducted by BKS during 2006, 2007, 2012, and 2013 in the vicinity of Sedona, Yavapai County, Arizona (Boynton Canyon, 10 km NW Sedona, UTM 12S 422156E, 3863365N; all NAD 1927) and near Payson, Gila County, Arizona, (including Forest Road 414, 5.6 km SW Payson, UTM 12S 462837E, 3785055N and Houston Mesa Trailhead, 1.6 km NW Payson, UTM 12S 471684E, 3792453N).

At the sites in Gila County, three biomes occur in close proximity, and ecotones between the three blur distinctions easily made in other areas of the state. At elevations of ~1400 to 1800 m, complex mosaics of Great Basin Woodland, Chaparral and Petran Montane Coniferous Forest can be found, with broad to narrow ecotones among the three, resulting in exceptionally high plant diversity relative to typical "pure" stands of these biomes elsewhere. *Aspidoscelis t. punctilinealis* is abundant in these ecotones near Payson, but almost never in pure Chaparral nor pure Woodland nor pure Forest stands. These lizards are especially likely to be present in recently burned areas characterized by newly created open areas with exposed substrate, resulting from both natural and man-made causes. They flourish in these areas as they recover at least for 5-10 years post-burn, with reduced abundance if the community becomes densely vegetated with little exposed substrate (e.g., closed