

FIG. 1. *Amphisbaena vermicularis* in stomach (A) and after dissection (B, C) of *Hoplias malabaricus* sampled in Lagoa Azul, state of Sergipe, Brazil.

potentially forcing the lizard to expose itself to opportunistic fish predation.

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SQUAMATA — LIZARDS

ANOLIS GUNDLACHI (Yellow-chinned Anole) and **A. CRISTATELLUS** (Crested Anole). DIET. In Puerto Rico, at least three *Plasmodium* species circulate among *Anolis* communities, presumably transmitted by a not-yet-known arthropod vector(s), possibly a mosquito (Telford Jr. 2009. Hemoparasites of the Reptilia: Color Atlas and Text. CRC Press, Boca Raton, Florida. 376 pp.). Among reptiles, broadly, mosquito-host interactions have been poorly characterized, and much of the research on mosquito-host associations has focused on the mammalian and avian reservoirs of medically important viruses and parasites (Mendoza-Roldan et al. 2021. IJP-PAW 15:132–142). However, anoles have been recognized as important hosts for some mosquitoes in the subgenus *Culex* (Reeves and Burkett-Cadena 2022. Front. Trop. Dis. 11:842543); for example, in Florida, two *Culex* mosquito species from the subgenus *Melanocionion* specialize almost exclusively on *Anolis* hosts (Reeves et al. 2019. Insects 10:239). Here, we report mosquito-host interactions in which the mosquito *Culex* (*Micraedes*) *antillummagnorum* feeds from *Anolis gundlachi* and *A. cristatellus* in Puerto Rico, USA.

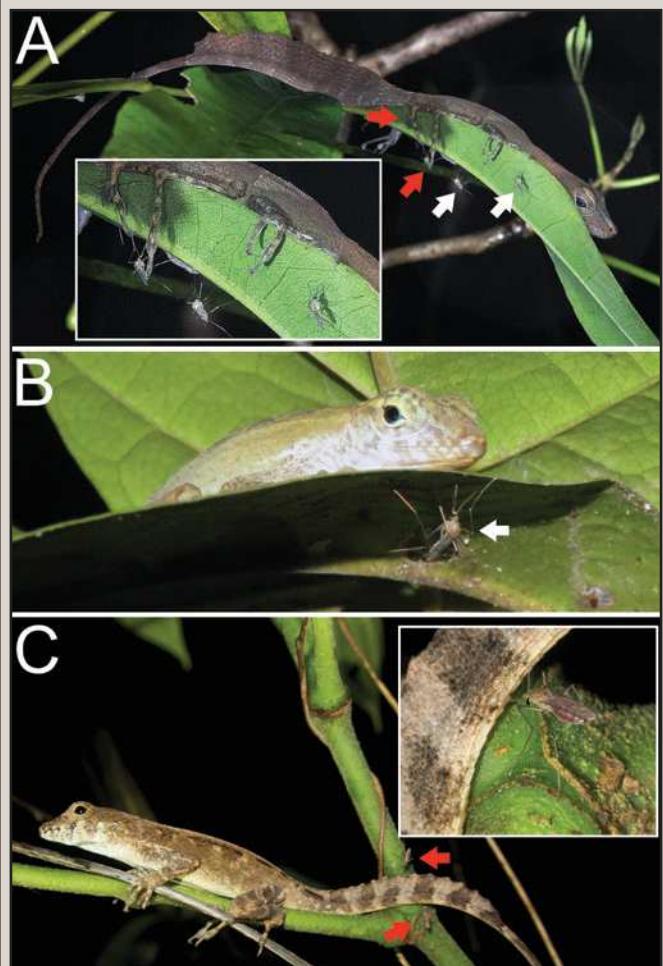


FIG. 1. Interactions between female *Culex antillummagnorum* and *Anolis gundlachi*: A) two mosquitoes feeding (red arrows) and two approaching (white arrows; inset shows closer view of the four mosquitoes); B) *A. gundlachi* with an approaching female *C. antillummagnorum*; C) two female *C. antillummagnorum* feeding on *A. cristatellus* (inset shows closer view of one of the mosquitoes feeding on the tail).

At 1952 h on 2 June 2023, we found four female *C. antillummagnorum* perched on the same leaf as an adult male *A. gundlachi* (Fig. 1A) and two of these appeared to be feeding from the digits of the hind leg, while two appeared to be approaching the anole. The anole was sleeping, head down, at ca. 7 m on a leaf of a *Tabebouia* sp. (Bignoniaceae) tree adjacent to the Río Sonadora Suspension Bridge, El Verde Field Station, Municipality of Río Grande, northeast Puerto Rico (18.3214°N, 65.8172°W; WGS 84; 379 m elev.). We made additional observations of female *C. antillummagnorum* feeding on *A. gundlachi* between 3 June 2023 and 18 July 2023 in the vicinity of El Verde Field Station. During this period, we photographed 12 instances in which one to two female *C. antillummagnorum* were perched within ca. 1 cm of a sleeping anole, with their head and proboscis facing the lizard's body (Fig. 1B). At 2155 h on 13 June 2023, we observed two female *C. antillummagnorum* feeding at the tail of an adult male *A. cristatellus* (Fig. 1B) as it slept head up at ca. 1.7 m on a twig of a shrub along the main trail to Charco Azul, Carite State Forest, Municipality of Patillas, Puerto Rico (18.0907°N, 66.0332°W; WGS 84; 605 m elev.). No other mosquito species were observed feeding after repeated observations from sleeping anoles.

Culex species of multiple subgenera (*Culex*, *Melanoconion*, *Neoculex*) are known to feed from lizards, and lizard-derived blood meals have been found in several *Culex* species in Puerto Rico (Barrera et al. 2011. *J. Med. Entomol.* 48:701–704). However, the host associations of *C. antillummagnorum*, or any other *Micraedes* species, have never been assessed. Otero et al. (2018. *Parasitol.* 146:453–461) found that 10–50% of sampled *A. gundlachi* were infected with one or more of the three *Plasmodium* species known from Puerto Rico and other species of anoles on the island, including *A. cristatellus*, are less frequently infected with malarial parasites (Schall and Vogt 1993. *Biotropica* 25:229–235). These observations, and the absence of other mosquito species visiting sleeping lizards, suggest that *C. antillummagnorum* is a candidate vector of lizard malaria in Puerto Rico. Among the criteria for incriminating the vector(s) of an arthropod-vectorized pathogen is host contact: there must be a demonstrated significant association between the putative vector, and the affected host population in the wild (World Health Organization 1969. *Tech. Rep. Series Num.* 369). Future work should elaborate on the role of *C. antillummagnorum* in the transmission of lizard-infecting *Plasmodium* to clarify the degree to which this species uses *Anolis* hosts through DNA extracted from mosquito blood meals.

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ANOLIS RICHARDII (Richard's Anole). **CLAWLESSNESS.** Most squamatan reptiles with well-developed limbs possess claws, which are thought to have been present ancestrally in crown reptiles (Alibardi 2020. *Anat. Rec.* 304:732–757). Although claws contribute to clinging, particularly on rough surfaces (Bloch and Irschick 2004. *J. Herpetol.* 37:293–298; Naylor and Higham 2019. *Integr. Comp. Biol.* 59:168–181), they have been lost evolutionarily several times within Gekkota, always in taxa that possess a digital adhesive system, i.e., toepads (Russell and Bauer 2008. In Gans et al. [eds.], *Biology of the Reptilia*, Vol 21, pp. 1–465, Society for the Study of Amphibians and Reptiles, Ithaca, New York). The only large clade outside of Gekkota whose members possess digital pads is *Anolis* (Hagey et al. 2017. *Evolution* 71:2344–2358; *Anolis* sensu Poe et al. 2017. *Syst. Biol.* 66:663–697), but claws are present in all species in that clade (Yuan et al. 2018. *Evolution* 73:231–244). Here, we report on a specimen of *Anolis richardii* that lacks claws on all 20 of its digits.

On 12 August 1992, Kevin de Queiroz and Jonathan B. Losos collected a series of 15 *A. richardii* on the SW coast of Grand Anse Bay, Saint George Parish, Grenada (ca. 12.022°N, 61.767°W; WGS 84; ca. 10–50 m elev.), of which one adult female (68 mm SVL; National Museum of Natural History, Smithsonian Institution [USNM] 321805) lacks claws. In 2023, we obtained radiographic images of the specimen using a Thermo Scientific Kevex



FIG. 1. Photograph of the right forelimb in dorsal view (A) and radiograph (B) of the right forelimb of a specimen of *Anolis richardii* (USNM 321805) exhibiting the absence of claws and of ungual (claw-bearing) phalanges on all digits. For phalangeal-formula counts, note that the elements proximal and similar in appearance to the phalanges are metacarpals. Anterior is toward the top of the figures; scale bar equals 5 mm.