

successful breeding of *T. s. elegans* in northern California. To date, known cases of reproduction in *T. s. elegans* in northern California are in or near urban areas, where it is more likely that pet turtles will escape or be released. The mild Mediterranean climate of the Central Valley may facilitate the survival and successful breeding of introduced *T. s. elegans*. With these additional sightings of reproduction in northern California, it appears that established populations of *T. s. elegans* are more widespread than previously recognized. Further research should focus on whether introduced populations of Sliders are a potential threat to the native *A. marmorata*.

Research was conducted under Scientific Collecting Permits from the California Department of Fish and Game, under authorization of the Department of Water Resources, and with approval to conduct surveys in the City of Redding and Sacramento County. We thank Richard Corwin, Doug Degross, Erik Meyer, and Willow Wegner for their help in the field.

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CROCODYLIA

CAIMAN CROCODILUS (Spectacled Caiman). **PREDATION/EAVESDROPPER.** The use of mating signals by unintended receivers, or eavesdroppers, is a widespread phenomenon and has been documented in several signal modalities (Zuk and Kolluru 1998. *Quart. Rev. Biol.* 73:415–438). Several predators and parasites use mating calls of other species to locate their prey/host. Male frogs calling to find a mate are known to attract predators such as frog-eating bats (*Trachops cirrhosus*: Tuttle and Ryan 1981. *Science* 214:677–678; Ryan and Tuttle 1983. *Anim. Behav.* 31:827–833) and opossums (*Philander opossum*: Tuttle et al. 1982. *Biotropica* 13:233–234), and parasites such as blood-sucking flies (*Corethrella* spp.: McKeever 1977. *Mosquito News* 37:522–523). Here, I report observations of eavesdropping on advertisement calls of frogs and toads by *Caiman crocodilus* from Gamboa (9°07.0'N, 79°41.9'W, datum: WGS84; elev. 35 m), Panama.

The diet of *C. crocodilus* includes a wide variety of foods; young caiman eat mostly aquatic arthropods (insects and crustaceans), whereas adults feed mainly on fishes and frogs (Savage 2002. *The Amphibians and Reptiles of Costa Rica*. University of Chicago Press, Chicago. 934 pp.). Yet, no reports exist on what cues caimans use to find the frogs they eat. Given that *C. crocodilus* hunt at night when most frogs call, their use of prey-emitted cues seems likely. *Caiman crocodilus* are known to be attracted to distress calls of the Smokey Jungle Frog, *Leptodactylus pentadactylus* (LeVering 1999. Unpubl. Ph.D. dissertation, University of Texas, Austin). LeVering (*op. cit.*) showed that *L. pentadactylus* frogs under attack produce distress calls that resemble the calls produced by young caimans. Such distress calls attract adult Spectacled Caimans, some of which interfere and may increase the

probability of the frog escaping.

Between 1 and 14 August 2005, I observed the responses of two adult and two juvenile *C. crocodilus* to playbacks of frog advertisement calls. I broadcast calls of four species of frogs common in the area of Gamboa (Panama) from a speaker placed at ground level. I played a series of calls of 5–10 individuals of each species for 30 min with the purpose of trapping blood-sucking flies, *Corethrella* spp., that are attracted to advertisement calls of frogs. Only calls of one frog species were played during each 30-min interval, and calls were presented at the call rate at which they were originally recorded.

When I was setting up the trap to collect flies between 2010 and 2245 h on 1 August 2005, I noticed an adult (ca. 200 cm TL) *C. crocodilus* in a small pond 10–12 m from the pool of water next to which I had placed the trap. I first broadcast calls of *Eleutherodactylus diastema*, a small arboreal frog, and only a few *Corethrella* flies were attracted. I then played the calls of *L. pentadactylus*, and when I returned to close the trap I found an adult *C. crocodilus* by the trap, looking directly at the speaker (Fig. 1). The caiman had displaced the speaker about 10 cm and claw marks were present on the ground nearby. When I approached the trap, the caiman went back to the pond where I originally saw it at the beginning of the evening. After that, I played calls of *Agalychnis callidryas*, a slender medium-sized treefrog, but did not attract caiman. Finally, I broadcast calls of the toxic toad *Bufo marinus* and a caiman, apparently the same one based on overall morphology, approached the speaker again. On 10 August 2005, another adult (ca. 170 cm TL) caiman in an area about 100 m away approached a speaker playing *B. marinus* calls. On both nights, the caimans that approached the speaker moved it with their head and feet and scratched the area around it with their claws. On 2 and 14 August 2005 between 2000 and 2200 h, I broadcast calls of *L. pentadactylus* and *B. marinus* at 30-min intervals to juvenile caimans (ca. 70 cm TL) that were within 7–10 m of the speaker. In no case did the small caimans move in the direction of the calls.



FIG. 1. Adult *Caiman crocodilus* attracted to a speaker broadcasting *Leptodactylus pentadactylus* calls. The trap was originally intended to attract *Corethrella* flies.

These observations suggest that adult *C. crocodilus* use advertisement calls of frogs to locate their prey. Further, they seem to selectively approach terrestrial frogs large enough to offer a substantial meal (e.g., *L. pentadactylus* and *B. marinus*). Studies that further investigate caiman prey selectivity based on advertisement calls of frogs are necessary to confirm this observation. Crocodylians other than Spectacled Caimans are known to feed on frogs and toads (*Crocodylus acutus*: Savage, *op. cit.*; *Crocodylus moreletii*: Perez-Higareda et al. 1989. *Copeia* 1989:1039–1041). For instance, Morelet's Crocodiles have a diverse diet that includes *B. marinus* and *Rana vaillanti* (Perez-Higareda et al., *op. cit.*). Hence, use of prey-emitted cues by crocodylians that feed heavily on anurans deserves exploration.

These observations were possible thanks to the support of the Smithsonian Tropical Research Institute (STRI) through a fellowship conducted to study *Corethrella* flies in the same area. I thank Bill Weislo for his support as STRI sponsor and Mike Ryan for referring me to the study done by Kate LeVering. Marc Hayes provided valuable comments that improved this manuscript.

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LACERTILIA

ANOLIS ALLISONI (Allison's Anole/Camaleón Azul). **NECTAR FEEDING.** As recently as the ecological review in Schwartz and Henderson (1991. *Amphibians and Reptiles of the West Indies: Descriptions, Distribution, and Natural History*. University of Florida Press, Gainesville. 720 pp.), nectarivory among anole lizards remained undocumented. Yet, over the last decade, more attention has been paid to lizard behavior when they are near flowers, resulting in scattered evidence for polychrotid lizards feeding on nectar and/or pollen (e.g., *Anolis carolinensis*: Bartlett 1995. *Reptiles* 2:48–65; Himes 1998. *Herpetol. Rev.* 29:236; Campbell and Bleazy 2000. *Herpetol. Rev.* 31:239; *A. conspersus*: Echternacht et al. 2000. *Herpetol. Rev.* 31:173; *A. grahami*: Losos and Queiroz 1997. *Natural History* 108:34–39; *A. porcatius*: Townsend 2003. *Herpetol. Rev.* 34:141–142; and *A. stratulus*: Perry and Lazell 1997. *Herpetol. Rev.* 28:150–151). Cuban anoles may seem an exception to this pattern, but the many dietary studies on Cuban anoles, based almost entirely on stomach contents analyses (e.g., review in Rodríguez-Schettino 1999. *The Iguanid Lizards of Cuba*. University of Florida Press, Gainesville. 384 pp.) rather than behavioral observations, have provided little opportunity to record nectarivory. However, two anoles native to Cuba have been identified as nectar feeders in Florida: *A. porcatius* (an introduced species) on the ornamental Areca Palm (*Chrysalipedocarpus lutescens*; Townsend, *op. cit.*), and the native *A. carolinensis* on two native palms: *Serenoa repens* and *Sabal palmetto* (Campbell and Bleazy, *op. cit.*). For this reason, I document nectarivory in *A. allisoni* in Cuba.

Between 0830 and 0930 h on 17 June 2003, I observed several females and juveniles of *A. allisoni* lapping nectar from the flowers of the ornamental palm 'Adonidia' (*Veitchia merrillii*, Arecaceae) in a garden in the Balcón de la Sierra (Bartolomé Masó). This palm is native to the Philippines but is common in Cuba (Leiva 1999. *Las Palmas en Cuba*. Ed. Científica-Técnica. La Habana,

Cuba. 84 pp.). In this garden, *A. allisoni* is relatively abundant, and the species is often seen (often 3–4 on the same trunk) climbing these palms at heights < 2 m. On 10 occasions, females and juveniles were observed visiting flowers for nectar. Although several males were present in different palms at similar heights as females and juveniles, I never observed them visiting flowers during this period. My observation is similar to behavioral data obtained in captivity, where juveniles of different Cuban anoles have been observed feeding on nectar directly from flowers (L.V. Moreno, pers. comm.). In this garden, flowers of *V. merrillii* were also frequently visited by honeybees, but I did not observe aggressive interactions between lizards and bees, although on one occasion, a juvenile *A. allisoni* left when a honeybee arrived at the same flower. Remaining lizard-plant interactions occurred without *Apis mellifera* presence.

An insectivorous diet has been reported for *A. allisoni*, both in island (Cuba) (Rodríguez-Schettino, *op. cit.*) and mainland (Mexico) situations (Lee 1996. *The Amphibians and Reptiles of the Yucatan Peninsula*. Comstock Publ. Assoc., Ithaca, New York. 500 pp.). This observation documents a new example of lizard nectar feeding in island habitats, where this phenomenon has been observed relatively more frequently than in mainland situations (Olesen and Valido 2003. *Trends Ecol. Evol.* 18:177–181), and where lizards have the potential to act as pollinators. Lizard pollination of plants has been experimentally demonstrated in but a few cases (e.g., the lacertid *Podarcis lilfordi* from the Balearic Islands [Traveset and Sáez 1997. *Oecologia* 111:241–248; Pérez-Mellado and Casas 1997. *Copeia* 1997:593–595], and the scincid *Niveocincus microlepidotus* in Tasmania [Olsson et al. 2000. *Biol. J. Linn. Soc.* 71:191–202]), but together with scattered indirect evidence from New Zealand (Whittaker 1987. *New Zealand J. Bot.* 25:315–328; Eifler 1995. *Oecologia* 101:228–233), Mauritius (Nyhagen et al. 2001. *J. Trop. Ecol.* 17:755–761), the Canary Islands (Fong and Ferrer 1995. *Herpetol. Rev.* 26:35–36; Valido et al. 2002. *Acta Oecologica* 23:413–419), New Caledonia (Bauer and Sadlier 2000. *The Herpetofauna of New Caledonia*. SSAR Publications, Ithaca, New York. 310 pp.), and the Seychelles (Cheke 1984. *In* Stoddart [ed.], *Biogeography and Ecology of the Seychelles Islands*, pp. 331–360. W. Junk Publishers, The Hague), these observations imply that greater attention should be paid to the possibility of lizard pollination (Proctor et al. 1996. *The Natural History of Pollination*. Harper Collins, London. 479 pp.).

Here, I reported nectarivory by a Cuban anole on an exotic palm. However, if we consider the abundance of palms in Cuba (about 80 native species; Leiva, *op. cit.*) along with the ability of *Anolis* to exploit nectar from palm flowers and hummingbird feeders (*A. carolinensis*: Liner 1996. *Herpetol. Rev.* 27:78), or bottles of honey left open in houses in Cuba (*A. porcatius*: A. Fong., pers. comm.), interactions between anoles and native palms that involve nectarivory and perhaps pollination should be expected.

I thank Lourdes Rodríguez-Schettino, Luis Moreno, and Ansel Fong for their assistance on Cuban anole information, and Ramona Oviedo and Gabriel Brull for hospitality and palm identification. Funding was provided by Marie Curie grant (MCFI-2000-1995).

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