

central New Mexico (34.46878°N, 106.57305°E, datum WGS84; 1615 m elev.). Additionally, while field processing (for an unrelated study) another central New Mexico (34.59945°N, 106.66008°E, WGS84; 1545 m elev.) adult female *T. o. luteola* on 24 September 2007 she defecated the scaled remains of a Greater Short-horned Lizard, *Phrynosoma hernandesi*, which had presumably also been scavenged as carrion. On 2 September 2009 at 1925 h on the Sevilleta National Wildlife Refuge ca. 67 km S of Albuquerque, New Mexico (34.37210°N, 106.68092°E, datum WGS84; 1588 m elev.) we observed an adult male *T. o. luteola* feeding on the flower buds of a Hot Springs Globemallow, *Sphaeralcea polychroma* (Fig. 1). On 10 August 2002 between 0926–0945 h ca. 20 km S of Alamogordo, New Mexico (32.69755°N, 105.97853°E, datum WGS84; 1225 m elev.) we noted an adult female *T. o. luteola* feeding on the pads of a small Purple Prickly Pear Cactus, *Opuntia macrocentra*, as well as an adult male (ca. 60 m away) eating the dried remains of a Long-nosed Snake, *Rhinocheilus lecontei*. We additionally witnessed an adult male *T. o. luteola* eating a road-killed Texas Horned Lizard, *Phrynosoma cornutum*, on a nearby road (32.71292°N, 105.98387°W, datum WGS84; 1224 m elev.) on the morning of 15 July 2002. These observations emphasize the opportunistic nature of foraging in *T. o. luteola* and reflect their proclivity to forage on road-killed carrion, a behavior which likely increases turtle mortality on roads.

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#### SQUAMATA — LIZARDS

**ACRITOSCINCUS PLATYNOTA (Red-throated Skink). ENVIRONMENTALLY CUED HATCHING.** In some groups such as amphibians, embryos can choose a hatching date by assessing and responding to risks posed by abiotic or biotic factors (Warkentin and Caldwell 2009. *In* Dukas and Ratcliffe [eds.], *Cognitive Ecology II. The Evolutionary Ecology of Learning, Memory and Information Use*, pp. 177–200. Univ. of Chicago Press, Chicago, Illinois). Recent research and a review have established that environmentally cued hatching (ECH) occurs in reptiles (Doody 2012. *Integr. Comp. Biol.* 51:49–61). In one type of ECH, embryos hatch early in response to predator attacks (Warkentin and Caldwell, *op. cit.*). Although a few lizard species can hatch early in response to being handled, ECH is unknown for most lizard species, presumably due to the difficulty in finding lizard eggs (Doody et al. 2009. *Quart. Rev. Biol.* 84:229–252) and due to the lack of understanding of the adaptive context of hatching in response to handling (i.e., handlers assume that eggs hatching in hand reflects coincidence). Herein, we report on an observation of early hatching in *Acritoscincus platynota* from eastern Australia. We comment on implications for predator avoidance.

In March 2008 at around 1800 h, BS raked seven small skink eggs and one hatched eggshell from a sandy area under a large sandstone rock near Silverdale, New South Wales, Australia (33.905216°S, 150.611240°E). The eggs were gently picked up

during which time a small slit appeared on one egg within 10 seconds. Within about 20 seconds an embryo burst through the slit and the hatchling immediately ran across BS's hand. The hatchling was easily confirmed as a Red-throated Skink, based on throat coloration. The remaining eggs were placed back in the sand under the rock.

Our report has two noteworthy implications. First, the nest complement of eight eggs is probably greater than the maximum clutch size in the species, suggesting that the nest was communal; communal nesting has been reported for the species (Doody 2006. *Herpetofauna* 36:23–24). Second, the handling-induced hatching in *A. platynota* likely reflects early hatching in response to an increase in perceived predation risk, as observed in another Australian skink, *Lampropholis delicata* (Doody and Paull 2013. *Copeia* 2013:160–165). This observation, along with a similar finding for *Carlia schmeltzii* (BS, unpubl. obs.), suggests that the behavior may be widespread in Australian skinks, or perhaps in skinks in general. Further research should investigate the temporal hatching window (plasticity in hatching age and developmental stage) and the potential predators of *A. platynota*, and how they might elicit early hatching in the species. A comparative study of ECH in skinks would determine if early hatching is an ancestral trait or if it has evolved multiple times within that group.

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**ANOLIS CRISTATELLUS (Puerto Rican Crested Anole). ABNORMAL DEWLAP COLOR.** *Anolis cristatellus* is native to Puerto Rico and has been introduced to Florida, USA (Krysko et al. 2003. *Florida Sci.* 66:74–79; Kraus 2009. *Alien Reptiles and Amphibians: A Scientific Compendium and Analysis*. Springer, Dordrecht, Netherlands. 563 pp.). Typical *A. cristatellus* dewlap color and pattern is yellow with orange borders. In Florida there are two distinct source populations from San Juan and Agua Claras/Ceiba, northeastern Puerto Rico, established in Key Biscayne, Florida and South Miami, Florida, respectively (Kolbe et al. 2012. *Ecol. Evol.* 2[7]:1503–1516).

On 13 January 2014 at 1109 h, an adult male *A. cristatellus* was observed at Fairchild Tropical Botanical Gardens, Miami Florida,



Fig. 1. Abnormal dewlap color and pattern in *Anolis cristatellus*.

USA (25.403°N, 80.163°W, WGS84; < 1 m elev.). This individual was caught using a noose by WAB, with dewlap subsequently assessed by JTS. This population of *A. cristatellus* corresponds to the population originating from Agua Claras/Ceiba, northeastern Puerto Rico (Kolbe et al., *op. cit.*). This individual had an abnormally colored dewlap, with a large proportion being gray (Fig. 1). Another individual was subsequently caught (~1113 h) which also exhibited gray on its dewlap, however with a lower proportion and a more patchy distribution. A total of ~30 *A. cristatellus* were caught during this time period, with no other lizards displaying this dewlap pattern. Extensive sampling of *A. cristatellus* in this area has been conducted by JTS and no other lizards with this abnormal pattern have been observed previously.

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**ANOLIS SAGREI (Brown Anole). GOPHERUS POLYPHEMUS BURROW COMMENSALISM.** *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). In Florida, USA, *A. sagrei* has established invasive populations across much of the state and occurs in sympatry with native *Gopherus polyphemus* (Gopher Tortoise).

*Gopherus polyphemus* excavate burrows that are used as refuge sites by approximately 60 species of vertebrates and more than 300 species of invertebrates (Jackson and Milstrey 1989. *In* Diemer et al. [eds.], *Proceedings of the Gopher Tortoise Relocation Symposium*, pp. 86–98. Florida Game and Fresh Water Fish Commission, Tallahassee, Florida; Witz et al. 1991. *Am. Midl. Nat.* 126:152–158). We report observations of a previously unreported *G. polyphemus* burrow commensal species.

On three separate occasions during March 2014, we observed *A. sagrei* using *G. polyphemus* burrows as retreat sites on an island in the intracoastal waterway near Marineland, Florida, USA (29.6236°N, 81.2106°W; WGS84). All three *A. sagrei* were adults and two were identified as males based on size and dorsal pattern. One *A. sagrei* was observed basking at the mouth of a burrow at 1000 h on 8 March 2014. It likely used the burrow as a retreat site overnight and had emerged to bask in the sunlight. After photographing the lizard, it retreated about 0.25 m inside the burrow. At 1100 h on 25 March 2014, we observed another *A. sagrei* flee about 2 meters across the ground to a burrow and about 15 cm inside. At 1630 h on 25 March 2014, we observed an adult of unknown sex about 15 cm inside a burrow and oriented facing out of the burrow. The lizard retreated at least 1 m inside the burrow after our approach.

Each *A. sagrei* used a different burrow, which varied in size of opening (N = 3, width = 31.3 ± 2.3 cm, height = 11.0 ± 1.3 cm) and maintenance. Two contained leaves and twigs at the mouth of the burrow, one of which was partially collapsed. The third burrow appeared well maintained at the mouth, but had a 10 cm hole in the top of its tunnel about 0.5 m behind the mouth. We were unable to confirm if the burrows were being actively used by *G. polyphemus*.

Although *A. sagrei* occupy a wide range of habitats, they usually associate with arboreal and semi-arboreal structure. We are unaware of any previously published accounts of burrow use by *A. sagrei*. We provide evidence that *A. sagrei* use *G. polyphemus* burrows as retreat sites, but it is unclear how often this occurs

and how *A. sagrei* might affect the ecology and community structure of *G. polyphemus* burrows.

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**BASILISCUS PLUMIFRONS (Double-Crested Basilisk Lizard). ANTAGONISTIC BEHAVIOR.** The Double-Crested Basilisk Lizard is widely distributed in the Caribbean lowlands of Central America from Nicaragua to Panama (Van Devender 1983. *In* D. Janzen [ed.], *Costa Rican Natural History*, pp. 378–380. Univ. Chicago Press, Chicago, Illinois). This species is considered a generalist feeder of invertebrates and vertebrates, in addition to various flowers and fruits (Guyer 1994. *In* McDade et al. [eds.], *La Selva: Ecology and Natural History of a Neotropical Forest*, pp. 210–261. Univ. Chicago Press, Chicago, Illinois; Marquis and Braker 1994. *In* McDade et al., *op. cit.*, pp. 261–281). Unlike other species in the genus, which primarily occupy water-margin habitats, *B. plumifrons* is often observed away from water (van Devender, *op. cit.*). Nothing has been published regarding the interaction of *B. plumifrons* at food sources with other vertebrates (such as birds) with similar diets.

On 10 February 2014, between 1500 h and 1600 h, several species of birds were observed feeding intermittently at a small pile of freshly peeled bananas placed on a wooden tray atop a post about 0.75 m above ground. The feeding station was in an open grassy area approximately 50 m upslope from the Sarapiquí River at La Virgen, Heredia Province, Costa Rica (10.38°N, 84.12°W) and at an elevation of about 200 m. This locality is within premontane tropical wet forest (Holdridge 1967. *Life Zone Ecology*. Tropical Science Center, San Jose, Costa Rica. 187 pp.). The actual study site is on the grounds of Centro Neotropico Sarapiquí (CNS) where the bird-feeding station has been in place several years.

During the single day of observing birds at the feeder, the following species were present: Clay-colored Robin (*Turdus grayi*), Summer Tanager (*Piranya rubus*), Blue-gray Tanager (*Thrysis episcopus*), Green Honeycreeper (*Chlorophantes spiza*), Shining Honeycreeper (*Cyaneges lucidus*), Passerinis/Cherries Tanager (*Ramphocelus costaricensis*), and Blue Dacnis (*Dacnis cayana*). Up until 1500 h, the Clay-colored Robin appeared dominant at the bananas as it chased smaller birds whenever it appeared. This apparent dominance was episodic throughout the observation period.

At about 1500 h, a single adult male *B. plumifrons* suddenly appeared at the feeder, approaching from a small cluster of old citrus trees from a distance of about 15 m. At first, the lizard fed on a banana peel in the grass beneath the feeder, devouring the entire peel in about 12 minutes. The lizard's arrival coincided with the departure of all birds except the Clay-colored Robin. Upon finishing the banana peel, the lizard quickly jumped onto the feeder, remaining motionless there for about 10 minutes, and chasing away the Clay-colored Robin. After several minutes, the *B. plumifrons* commenced to devour the fruit on the tray. It fed intermittently in bouts of 2–4 minutes and shifted position on the tray three times. During this period, no birds shared the fruit station platform. At about 1530 h, a Clay-colored Robin landed on the grass near the feeder. It slowly circled around the feeder for a few minutes, flew up to the fruit, chased the *B. plumifrons*, and began to eat the fruit. Within a minute or two, other bird species began to reappear at the feeder. The *B. plumifrons* did not return for the rest of the day.