

Telemeco et al. 2011. *Anim. Behav.* 82:369–375). They may also deploy flight and/or hiding behaviors that likely decrease the risk of predation (Broom and Ruxton 2005. *Behav. Ecol.* 16:534–540).

On 4 July 2018 at 1433 h, in the ecological reserve Laguna Bélgica, Ocozocoautla, Chiapas, Mexico (16.88208°N, 93.45688°W, WGS 84; 976 m elev.), I observed an adult *Sceloporus internasalis* basking on a decaying log on the forest floor. When first encountered, the lizard climbed up to an inclined fallen trunk to a height of ca. 2 m. As I moved closer for a photograph, the lizard ran ca. 1 m, stopped, and began undulating its tail from side to side (Fig. 1). Seeing that I was still there, the lizard jumped to another fallen trunk at a height of ca. 10 cm and once stopped, began undulating its tail again. After this, the lizard sought refuge on the back of the trunk and disappeared from my view. Each undulating movement of the tail took ca. 3 seconds and involved the entire tail, as the rest of the body remained motionless. Because there were no other lizards present at the time of observation, I suggest that these behaviors were antipredator displays. Similar evidence have been recorded for Broad-headed Skinks that undulate their tail just prior to fleeing (Cooper 1998. *Behav. Ecol.* 9:598–604; Cooper 1998. *Can. J. Zool.* 76:1507–1510).

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#### ***SCELOPORUS MALACHITICUS* (Emerald Swift). COLORATION.**

Body coloration strongly influences individual fitness in many reptile and amphibian species, and it often varies greatly among individuals. In lizards, individuals can exhibit considerable color variation both between and within populations. Many lizard species also change color on the short-term in response to social cues, temperature, and stress, or can exhibit longer-term changes in conjunction with ontogeny or sexual receptivity.

*Sceloporus malachiticus* is a medium-sized (64–98 mm SVL), viviparous lizard found throughout Central America at premontane to subalpine elevations (Savage 2002. *The Amphibians and Reptiles of Costa Rica: A Herpetofauna between Two Continents, between Two Seas.* University of Chicago Press, Chicago, Illinois. 934 pp.). Males are vibrantly colored, with bright green dorsa and blue-black badges on their throats and abdomens. Females have duller coloration overall, but may possess male-like blue badges on their abdomens. Inter-population variation in color has been noted, with males from some high altitude populations described as having “dark green above and deep blue ... beneath” and those from low altitude populations with “bright green above and lively blue below” (Stuart 1971. *Herpetologica* 27:235–259). Short-term color changes have also been identified in *S. malachiticus*, with body coloration darkening at lower temperatures. Here, I report atypical throat coloration in *S. malachiticus*.

On 12 June 2018 at approximately 1145 h, an adult male *S. malachiticus* (85 mm SVL) with an orange and blue throat (Fig. 1) was captured by noose near the Biological Station at Las Alturas de Cotón, on the edge of La Amistad International Biosphere Preserve, in Puntarenas, Costa Rica. Orange and blue regions of the throat were separated, with the orange region stretching approximately 11.5 mm from under the tip of the snout toward the back of the jaw and 16 mm wide at its widest point. The blue throat region began abruptly where the orange region ended and was approximately 7.5 mm long and 14.5 mm wide. This individual’s abdomen (Fig. 1B) and dorsum (Fig. 1C) were blue and green, respectively, as is typical for this species. No noticeable changes in body coloration were observed during



FIG. 1. Male *Sceloporus malachiticus* with orange throat coloration: A) dorsal view, B) throat, and C) ventral view.

or following handling. After measurement and photography, I released the individual at its site of capture.

Other male *S. malachiticus* (ca. N =10) captured at this site in 2018 and in a previous year (2015) lacked orange throats. Almost all formal descriptions of *S. malachiticus* indicate that males are blue and/or blue-black throated, although Stuart (1971) notes that some *S. malachiticus* individuals had “a chin with a dirty yellowish hue.” This suggests that throat color variability in male *S. malachiticus* may still be more widespread than most published reports represent. In conjunction with scattered evidence for variability in the extent of the area covered by the blue throat badges in both males and females, and similar variability in the area covered by the blue and/or black abdominal badges in males, this observation contributes to our understanding that the overall hue and coverage of coloration in *S. malachiticus* is highly variable. Notably, male throat coloration in *S. malachiticus* is likely to be highly visible during territorial and courtship displays. How coloration relates to social and/or sexual signaling in *S. malachiticus* is yet to be fully examined, but it seems probable that such throat coloration could play a substantial role in communication.

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#### ***TAKYDROMUS DORSALIS* (Sakishima Grass Lizard).**

**PREDATION.** *Takydromus dorsalis* is an arboreal lizard species that occurs in the Yaeyama Islands, Ryukyu Archipelago, Japan (Goris and Maeda 2004. *Guide to the Amphibians and Reptiles of Japan.* Krieger, Malabar, Florida. 285 pp.). Known predations include snakes (Mori and Moriguchi 1988. *Snake* 20:98–113) and a wild cat (Sakaguchi and Ono 1994. *Ecol. Res.* 9:167–174). *Anguilla marmorata* (Giant Mottled Eel) is a large eel that feeds on small fish, shellfish, and crustaceans (Abe 1987. *Illustrated Fishes of the World in Colour.* Hokuryukan, Tokyo. 1029 pp.). Here, I report the first record of predation on *T. dorsalis* by *A. marmorata*.



FIG. 1. *Takydromus dorsalis* regurgitated from *Anguilla marmorata*.

On 11 September 2015, at 1445 h, I collected an *A. marmorata* (TL ca. 350 mm) in a small stream at the foot of Mt. Komi, Iriomote Island, Okinawa Prefecture, Japan (24.34°N, 123.91°E, WGS 84; 20 m elev.). I kept the eel in a plastic bag until that night, when I found a dead *T. dorsalis* (SVL = 63 mm; tail length [broken] = 16 mm; KUHE 59794) and pieces of a crab in the plastic bag (Fig. 1). The tail of the lizard was broken, but the body was fresh and not digested. *Takydromus dorsalis* is arboreal and diurnal; in contrast, *A. marmorata* is aquatic and nocturnal. Thus, it is possible that the lizard was attacked by the eel when the lizard jumped into the stream to escape from some other predator, because escape behavior to water is common in arboreal lizard species (Pinto et al. 2017. Herpetol. Rev. 48:662).

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#### **TRIOCEROS ELLIOTI (Montane Side-striped Chameleon).**

**REPRODUCTION.** *Trioceros ellioti* is a viviparous species inhabiting high, moist savanna (1000–2800 m elev.) in western Kenya, parts of Uganda, Tanzania, Rwanda, Burundi, south Sudan, and Democratic Republic of Congo (Spawls et al. 2018. Field Guide to East African Reptiles. Bloomsbury, London. 624 pp.). Information on *T. ellioti* captive reproduction including litter sizes of 2–18 is in Neças (1999. Chameleons: Nature's Hidden Jewels. Edition Chimaira, Frankfurt am Main. 348 pp.). Leptien (1989. Salamandra 25:21–24) reported captive *C. ellioti* stored sperm. In this note I present additional information on *T. ellioti* reproduction including monthly events in the testis and ovarian cycles from a histological examination of museum specimens.

A sample of 50 *T. ellioti* specimens collected in 1967 and 1969 and deposited in the herpetology collection of the Natural History Museum of Los Angeles County (LACM), Los Angeles, California, USA was examined. The sample consisted of 14 adult males (mean SVL = 65.7 mm ± 6.6 SD, range = 55–75 mm), 32 adult females (mean SVL = 68.1 mm ± 6.7 SD, range = 58–83 mm), one subadult female (SVL = 53 mm) and three unsexed subadults (SVLs = 30, 31, 42 mm). *Trioceros ellioti* dates and localities are: LACM 35144, 35145 Uganda, Bwindi Impenetrable National Park (1.0499°S, 29.7166°E, WGS 84) March, 1967; LACM 38759–38768, 38770, 38772–38773, 38775–38783, 38785–38791 Uganda, Semeliki National Park, Bundibugyo District, Bwamba Forest (0.7511°N,

TABLE 1. Monthly stages in the ovarian cycle of 31 adult *Trioceros ellioti* females from Kenya and Uganda. One female \* not shown in table from December (LACM 39108, SVL = 60 mm) exhibited early yolk deposition.

Month	N	Enlarged follicles > 4 mm	Oviductal eggs	Embryos
March	1	0	1	0
June	20	6	11	3
July	2	0	1	1
September	1	0	1	0
*December	7	0	5	2

30.0203°E, WGS 84) June, July 1967; LACM 39100–39110 Uganda, Bugoma Forest, Holma District (1.2876°N, 30.9647°E, WGS 84) December 1967; LACM 60790–60797 Kenya, Lotongot, Samburu District (1.7386°N, 35.6196°E, WGS 84) September 1969.

A cut was made in the lower abdominal cavity and the left testis or ovary was removed, embedded in paraffin, cut into 5- $\mu$ m sections and stained by Harris hematoxylin, followed by eosin counterstain. Histology slides were deposited at LACM.

All examined *T. ellioti* males were undergoing sperm formation (spermiogenesis). The lumina of the seminiferous tubule were lined by groups of sperm or clusters of metamorphosing spermatids. The smallest reproductively active male measured 55 mm SVL (LACM 60796) and was from September. Males undergoing spermiogenesis by month were: March (N = 1), June (N = 7), September (N = 4), December (N = 2).

Reproductively active *T. ellioti* females were present in all months examined (Table 1). The smallest reproductively active females measured 58 mm SVL: LACM 38768 (7 oviductal eggs); LACM 38789 (10 oviductal eggs); LACM 38791 (14 oviductal eggs). One slightly smaller female (LACM 60793, SVL = 53 mm) was not reproductively active and was considered a subadult. Mean litter size (N = 31) was 10.1 ± 2.1 SD, range = 6–14. Linear regression analysis indicated the relation between female size (SVL) and litter size was not significant ( $r = 0.33$ ,  $P = 0.071$ ).

From the above, it is apparent *T. ellioti* has a prolonged reproductive cycle and has potential for production of multiple litters. While the number of litters produced in wild populations is not known, captive *T. ellioti* females can produce up to five litters in one year. Also, the ability to store sperm (Leptien 1989, *op. cit.*) will facilitate production of multiple litters.

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#### **URANOSCODON SUPERCILIOSUS (Diving Lizard).**

**REPRODUCTION.** *Uranoscodon superciliosus* is a medium-size arboreal lizard, endemic to the Amazon Biome in Bolivia, Brazil, Colombia, French Guiana, Peru, Suriname and Venezuela (Avila-Pires 1995. Lizards of Brazilian Amazonia. Zool. Verh. Leiden 299:1–706; Ribeiro 2015. Zootaxa. 3983:1–110). It is commonly found in igapo and varzea forests, and also occurs in riparian habitat along streams in terra firme forest (Howland et al. 1990. Can J. Zool 68:1366–1373; Vitt et al. 2008. Guide to the Lizards of Reserva Adolpho Ducke, Central Amazonia. Attema Design Editorial Ltda, Manaus, 180 pp.). The species has an extended breeding period, with oviposition from July through December, and its clutch size varies from