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Phrynosoma cornutum (Texas horned lizard) Behavior

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FIG. 1. Adult *Siphlophis compressus* preying upon an adult (diurnally active) *Neusticurus bicarinatus* at night.

predation on *N. bicarinatus* by *S. compressus* and corroborates the suggestion of Prudente et al. 1998 (Rev. Bras. Zool. 15:375–383) that *S. compressus* preys upon inactive diurnal lizards at night.

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***NOROPS CHRYSOLEPIS* (Goldenscale Anole). DEFENSIVE DISPLAY.** Tail display behavior is a strategy employed by some lizards to avoid predation or to signal to conspecifics in agonistic encounters (Pianka and Vitt 2003. Lizards: Windows to the Evolution of Diversity. University of California Press. Berkeley. 333 pp). In *Norops* lizards, tail movements are not extensively used; however there are some reports of tail display during agonistic interactions (Beltrán and Amézquita 2015. Herpetol. Notes 8:357–359). *Norops chrysolepsis* is a medium-sized, diurnal, primarily arboreal lizard found from the mouth of the Amazon River in eastern Brazil to the base of the Andes mountains in Ecuador and Peru, and occurs on a north–south transect from Venezuela to the state of São Paulo (Vanzolini and Williams 1979. Arq. Zool. 19:1–298). Here we report tail display behavior in *Norops chrysolepsis* during an agonistic encounter.

During field work on 21 September 2014, an adult *N. chrysolepsis* (Fig. 1) displayed a lifted tail behavior after the approach of one of us (ROP) or the approach of other sympatric lizards (*Gonatodes humeralis* and *Norops auratus*). The specimen was found perched on a branch ca. 7 m above the ground in upland forest area at 1012 h in the municipality of Serra do Navio (0.91388°N, 51.99977°W; WGS 84), state of Amapá, eastern Amazon. This behavior appeared in the first 5 minutes of the encounter and lasted for about half of the total encounter time (approximately 15 minutes). This behavior has previously been observed in lizards that appear to be mimicking scorpions

FIG. 1. A *Norops chrysolepis* exhibiting lifted tail behavior in response to approach of observers or other lizard species.

(Passos et al. 2012. Herpetol. Rev. 43:486–487). This is the first report of lifted-tail behavior during agonistic interaction in a *Norops* species.

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***PHRYNOSOMA CORNUTUM* (Texas Horned Lizard). BEHAVIOR.** The hibernation strategy of adult *Phrynosoma cornutum* has been well documented, with the lizards typically remaining buried for about six months, October through April (Fair and Henke 1997. J. Wildl. Manage. 61:1366–1370; Sherbrooke 2003. Introduction to Horned Lizards of North America. University of California Press, Berkeley, California. 177 pp.). The hibernation burrows in central Oklahoma, USA, are usually shallow (< 2.5 cm deep) and located in open, southwestern-facing areas where they are exposed to the afternoon sun (Endriss et al. 2006. Herpetologica 63:320–331). Adults typically remain underground for the duration of winter and only emerge following warm temperatures in the spring. Less is documented regarding dormancy behavior in *P. cornutum* hatchlings, likely due to the difficulty of tracking them in the field. However, we used harmonic radar to determine the hibernation behavior of hatchling *P. cornutum* for two years.

We captured hatchlings by hand during visual surveys. Harmonic radar tags (< 0.05 g), consisting of a Schottky barrier diode and a copper or aluminum antenna, were attached using superglue in the field, and lizards were released immediately after attachment. We relocated lizards 1–3 times per week for a total of 111 geolocations for nine hatchlings (mean = 12.33 ± 6.88 SD) over two winter seasons (2014–2016) at Core Reserve Area 3 (CRA3), a preserved area of prairie on Tinker Air Force Base near Oklahoma City (35.41578°N, 97.41097°W; WGS 84). We obtained 42 geolocations for two hatchlings during October 2014–June 2015 and 69 geolocations for seven hatchlings during September 2015–March 2016.

Hatchlings did not burrow underground, but instead, remained dormant in shallow depressions on the surface. Moreover, we observed hatchlings clustered together and on top of each other. We also noted that hatchlings had sporadic

FIG. 1. Four dormant *Phyrnosoma cornutum* hatchlings clustered together (and on top of each other) on the surface.

bouts of activity in warmer temperatures (> 15°C) during which they made 1–3 small movements (12–38 cm) before resuming dormancy.

To our knowledge, hatchling over-wintering behavior has not been documented for *Phrynosoma*, and our data indicate key differences in behavior between life stages. Hatchlings are generally understudied, and our observations contribute to the gap in knowledge about their movements and behavior.

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***PHYMATURUS EXTRILIDUS*. ENDOPARASITES.** *Phymaturus extrilidus* was described by Lobo et al. (2012. Copeia 2012:12–22) and is known only from the type locality: Reserva Natural Don Carmelo, Argentina. We know of no previous published parasite records for *P. extrilidus* and we establish the initial helminth list in the present note.

Two *P. extrilidus* (one male, SVL = 94.8 mm, one female, SVL = 94.4 mm) were collected in April 2014 and deposited in the herpetology collection of the Universidad Nacional de San Juan, San Juan, Argentina as UNSJ 1950 and UNSJ 1973.

The body cavity was opened by a mid-ventral incision and the digestive tract was removed. The esophagus, stomach, and intestines were longitudinally slit and the contents were examined for helminths using a dissecting microscope. The helminths found were 186 (139 females, 47 males) nematodes in the large intestines. The prevalence of infection was 100% with a mean intensity of 93 (32–154) nematodes per lizard. The nematodes were cleared in a drop of lactophenol, placed on a glass slide, cover-slipped, studied under a dissecting microscope and identified as *Parapoharyngodon riojensis*. The nematodes possessed the characteristic diagnosis of the species, including the presence of seven caudal papillae, an ovary that does not coil around the esophagus, oval eggs with a punctate thick shell, and an echinate anal lip in males. The specimens were deposited in the Helminthological Collection, Fundación Miguel Lillo, San Miguel de Tecumán, Tecumán, Argentina as *P. riojensis* (FML# 07666, 07667).

Parapharyngodon riojensis was described from the lizard *Phymaturas punae* from La Rioja Province (Ramallo et al. 2002. J. Parasitol. 88:979–982). It has also been found in *Phymaturus palluma* from Neuquen Province and *Liolaemus buergeri* from Mendoza Province (Goldberg et al. 2004. Comp. Parasitol. 71:208–204). *Parapharyngodon riojensis* in *P. extrilidus* is a new host record.

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***PLESTIODON LONGIROSTRIS* (Bermuda Skink). TAIL BIFURCATION.** *Plestiodon longirostris* is the only endemic terrestrial vertebrate in Bermuda. It typically occurs along the rocky coastline, associated with the native Sea Oxeye (*Borrichia arborescens*) and Bay Grape (*Coccoloba uvifera*) vegetation (Edgar et al 2010. Bermuda Skink Recovery Plan. Department of Conservation Services, Government of Bermuda. Bermuda). However, populations remain fragmented and isolated throughout the mainland and offshore islands due to habitat loss, anthropogenic disturbances (particularly from coastal developments) and increased predation pressure and competition from several introduced species. These include rats (*Rattus rattus and R. norvegicus)*, Kiskadee Flycatchers *(Pitangus sulphuratus)*, Yellow-crowned Night Herons *(Nyctanassa violacea*), domestic and feral cats (*Felis catus*), and three *Anolis* species (*A. grahami, A. leachi, A. extremus).* While conducting fieldwork in Bermuda on *Plestiodon longirostris* during 2015–2016, we recorded the incidence of bifurcated tails in two populations.

Seven adult *P. longirostris* with bifurcated tails were discovered, the first such cases officially documented in this critically endangered species. Individuals were caught from two offshore islands within Castle Harbour; Castle Island (32.3408°N, 64.6722°W), a 3.5-acre nature reserve, and Southampton Island (32.3422°N, 64.6675°W), a 2.2-acre nature reserve. Overall (in both years), the incidence of bifurcation was 0.8% (2/238 skinks captured) on Castle Island and 1.9% on Southampton Island (5/268). The bifurcated tails differed from the original