Phrynosoma cornutum (Texas horned lizard) Behavior

Jennie Mook  
Southern Illinois University Carbondale, jmook@siu.edu

Eric M. Schauber  
Southern Illinois University Carbondale, schauber@siu.edu

Miranda Vesy  
Southern Illinois University Carbondale

Raymond W. Moody  
U.S. Air Force, Tinker Air Force Base

Donna Nolan  
U.S. Air Force, Tinker Air Force Base

Follow this and additional works at: http://opensiuc.lib.siu.edu/zool_pubs

Recommended Citation
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.

CARLOS E. COSTA-CAMPOS, Laboratório de Herpetologia, Departamento de Ciências Biológicas e da Saúde, Universidade Federal do Amapá, Campus Marco Zero do Equador, 68.903-419, Macapá, AP, Brazil; e-mail: eduardocampos@unifap.br.

**NOROPS CHRYSOLEPSIS** (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 (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.

**RUBENILSON O. PINTO** (e-mail: rubenilson07@gmail.com) and CARLOS EDUARDO COSTA-CAMPOS, Laboratório de Herpetologia, Departamento de Ciências Biológicas e da Saúde, Coordenação de Ciências Biológicas, Universidade Federal do Amapá, Campus Marco Zero, 68.903-419, Macapá, AP, Brazil (e-mail: eduardocampos@unifap.br).

**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 (Endris 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
ENDOPARASITES. The nematodes, is the only endemic terrestrial

Fig. 1. Four dormant Phrynosoma cornutum hatchlings clustered to-gether (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.

JENNIE MOOK (e-mail: jmook@siu.edu), ERIC SCHAUBER (e-mail: schauber@siu.edu), and MIRANDA VESY (e-mail: mnvesy@gmail.com), Cooperative Wildlife Research Laboratory and Department of Zoology, Southern Illinois University, Carbondale, Illinois 62901-6504, USA; RAY-
MOND W. MOODY, 7701 Arnold St. Suite 109, US Air Force, Tinker Air Force Base, Oklahoma 73145-9100, USA (e-mail: raymond.moody@us.af.
ED); DONNA NOLAN, University of Oklahoma and Tinker Air Force Base, 7701 Arnold St. Suite 109, US Air Force, Tinker Air Force Base, Oklahoma 73145-9100, USA (e-mail: donna.nolan.1 ctr@us.af.mil).

PHYMATURUS EXTRILIDUS. ENDPARASITES. 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 Parapharyngodon 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 Tucumán, Tucumán, Argentina as P. riojensis (FML# 07666, 07667).

Parapharyngodon riojensis was described from the lizard Phymaturus 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 is a new host record.

GERALDINE RAMALLO, Instituto de Invertebrados, Fundación Miguel Lillo, San Miguel de Tucumán, Argentina (e-mail: gramallos@yahoo.com. ar); CHARLES R. BURSEY, Department of Biology, Pennsylvania State University, Shenango Campus, Sharon, Pennsylvania 16146, USA (e-mail: cxib13@psu.edu); STEPHEN R. GOLDBERG, Department of Biology, Whittier College, Whittier, California 90608, USA (e-mail: sgoldberg@whittier. edu); GABRIEL CASTILLO (e-mail: nataliocastillo@gmail.com) and JUAN CARLOS ACOSTA, DIBOVA (Diversidad y Biología de Vertebrados del Ár-ido). Departamento de Biología, Facultad de Ciencias Exactas Fisicas y Naturales, Universidad Nacional de San Juan, San Juan, Argentina.

PLESTIODON LONGIROSTRIS (Bermuda Skink). TAIL BIFUR-
CATION. 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 Ser-
ices, Government of Bermuda. Bermuda). However, populations remain fragmented and isolated throughout the mainland and offshore islands due to habitat loss, anthropogenic distur-
bances (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-napped Crowned Herons (Nyctanassa violacea), domestic and feral cats (Felis ca-
tus), and three Anolis species (A. grahami, A. leachi, A. extremus). While conducting fieldwork in Bermuda on Plestiodon longiros-
tris 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

PLESTIODON LONGIROSTRIS (Bermuda Skink). TAIL BIFUR-
CATION. 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 Ser-
ices, Government of Bermuda. Bermuda). However, populations remain fragmented and isolated throughout the mainland and offshore islands due to habitat loss, anthropogenic distur-
bances (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-napped Crowned Herons (Nyctanassa violacea), domestic and feral cats (Felis ca-
tus), and three Anolis species (A. grahami, A. leachi, A. extremus). While conducting fieldwork in Bermuda on Plestiodon longiros-
tris 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