
BULLETIN

of the

Chicago Herpetological Society



Volume 58, Number 2
February 2023



BULLETIN OF THE CHICAGO HERPETOLOGICAL SOCIETY
Volume 58, Number 2
February 2023

Notes on the Herpetofauna of Mexico 41: New Range Extensions for the Plain-necked Glass Lizard, <i>Ophisaurus incomptus</i> McConkey, 1955, in the State of Tamaulipas, Mexico	María Fernanda Soto-Zúñiga, Carlos Barriga-Vallejo, David Lazcano, Javier Banda-Leal, Pablo A. Lavín-Murcio, Sergio A. Terán-Juárez, Osbel Antonio Martínez-Arriaga, Oscar Hinojosa-Falcón, Lydia Allison Fuscko and Larry David Wilson	21
Erratum to the article “Diet Records for Snakes from Guinea, West Africa”	Olivier S. G. Pauwels	25
Notes on Reproduction of Levant Green Frogs, <i>Pelophylax bedriagae</i> (Anura: Ranidae), from Israel	Stephen R. Goldberg	26
Herpetological Art in the Nashville Zoo—June 6, 2022	Roger Carter	28
Results of the 2022 CHS Membership Survey	Rachel Bladow	31
Minutes of the CHS Board Meeting, January 10, 2023		32
New CHS Members This Month		32
Advertisements		32

Cover: Female timber rattlesnake, *Crotalus horridus*, and young, within a hollow log, Brown County, Indiana, September 2014. Photograph by Roger Carter.

STAFF

Editor: Michael A. Dloogatch—madadder0@aol.com
Copy editor: Joan Moore

2023 CHS Board of Directors

President: John Archer
Vice-president: (vacant)
Treasurer: Rich Crowley
Recording Secretary: Gail Oomens
Media Secretary: Gabrielle Evans
Membership Secretary: Mike Dloogatch
Sergeant-at-arms: Tom Mikosz
Members-at-large: Kyle Houlihan
Margaret Ann Paauw
Amelia Pollock

The Chicago Herpetological Society is a nonprofit organization incorporated under the laws of the state of Illinois. Its purposes are education, conservation and the advancement of herpetology. Meetings are announced in this publication, and are normally held at 7:30 P.M., the last Wednesday of each month.

Membership in the CHS includes a subscription to the monthly *Bulletin*. Annual dues are: Individual Membership, \$25.00; Family Membership, \$28.00; Sustaining Membership, \$50.00; Contributing Membership, \$100.00; Institutional Membership, \$38.00. Remittance must be made in U.S. funds. Subscribers outside the U.S. must add \$12.00 for postage. Send membership dues or address changes to: Chicago Herpetological Society, Membership Secretary, 2430 N. Cannon Drive, Chicago, IL 60614.

Manuscripts published in the *Bulletin of the Chicago Herpetological Society* are not peer reviewed. Manuscripts and letters concerning editorial business should be e-mailed to the editor, mdloogatch@chicagoherp.org. Alternatively, they may be mailed to: Chicago Herpetological Society, Publications Secretary, 2430 N. Cannon Drive, Chicago, IL 60614. **Back issues** are limited but are available from the Publications Secretary for \$2.50 per issue postpaid.

Visit the CHS home page at <http://www.chicagoherp.org>.

The *Bulletin of the Chicago Herpetological Society* (ISSN 0009-3564) is published monthly by the Chicago Herpetological Society, 2430 N. Cannon Drive, Chicago IL 60614. Periodicals postage paid at Chicago IL. **Postmaster:** Send address changes to: Chicago Herpetological Society, Membership Secretary, 2430 N. Cannon Drive, Chicago IL 60614.

**Notes on the Herpetofauna of Mexico 41:
New Range Extensions for the Plain-necked Glass Lizard,
Ophisaurus incomptus McConkey, 1955, in the State of Tamaulipas, Mexico**

**María Fernanda Soto-Zúñiga¹, Carlos Barriga-Vallejo², David Lazcano³, Javier Banda-Leal⁴,
Pablo A. Lavín-Murcio⁵, Sergio A. Terán-Juárez⁶, Osbel Antonio Martínez-Arriaga⁷, Oscar Hinojosa-Falcón⁷,
Lydia Allison Fuscko⁸ and Larry David Wilson⁹**

Abstract

We document reports of *Ophisaurus incomptus* from the state of Tamaulipas, Mexico. This is one of the rarest lizards found in northeastern Mexico. There are some general data from the sites where they were reported, but we know that there is much that is unknown about this species.

Resumen

Documentamos reportes de *Ophisaurus incomptus* del estado de Tamaulipas, México. Esta es una de las lagartijas más raras que se encuentran en el noreste de México. Hay algunos datos generales de los sitios donde fueron reportadas, pero sabemos que hay mucho que se desconoce sobre esta especie.

Introduction

The family Anguinae currently comprises 10 genera in three subfamilies: Gerrhonotinae includes *Abronia* (with 38 species), *Barisia* (seven), *Elgaria* (seven), *Gerrhonotus* (nine); Anniellinae includes only the genus *Anniella* (six species); Anguinae includes *Anguis* (five species), *Dopasia* (seven), *Hyalosaurus* (one), *Ophisaurus* (six) and *Pseudopus* (one) (Uetz, 2023). North American Anguinae are known from the Miocene from disarticulated fossils attributed to *Ophisaurus* from Canada (Holman, 1970), from Colorado (Holman, 2003), and from more recent epochs (Pliocene and Pleistocene) from the southeastern USA (Auffenburg, 1955; 1956). A very interesting paper has been published by Lavin and Girman (2019), in which they discuss the phylogeny of the subfamily Anguinae (commonly referred to as glass lizards). Unfortunately *Ophisaurus incomptus* was not included in the analysis. Glass lizards are characterized by an elongated, limbless body plan; they occur throughout the Northern Hemisphere primarily in North America, Europe, and Asia, but also have a presence in North Africa and Indonesia (Lavin and Girman, 2019).

There are two species of the genus *Ophisaurus* reported for the country of Mexico, *La Lagartija sin Patas Tamaulipeca* / Plain-necked Glass Lizard (*Ophisaurus incomptus*) and *Lagartija sin Patas Veracruzana* / Ceron's Glass Lizard (*O. ceroni*). Both species are endemic to Mexico and subject to special protection (SEMARNAT, 2010). At present, there is still a large gap in our understanding of their respective geographic distributions, as well as other aspects of their biology. In particular, the geographic distribution of *O. incomptus* is especially poorly understood. Initially, it was limited to the locality for a female collected by E. H. Taylor in 1953, seven miles south of Ciudad Valles, San Luis Potosí, in tropical deciduous forest (Holman, 1971). Subsequently, the distributional area of the species was expanded considerably, based on two documented records for Tamaulipas (Farr et al., 2007; Terán-Juárez, 2008). Currently, we have additional information on the distribution of *O. incomptus* from Tamaulipas, which we document here.

Background

Ophisaurus incomptus is a medium-sized, limbless, serpentine lizard with a distinctive lateral fold, as evidenced by the

1. Parque Ecológico Chipinque, A.B.P., Carretera a Chipinque Km 2.5, Valle de San Ángel, 66290, San Pedro Garza García, Nuevo León, México. fsoto@eshaconservacion.org

2. Pronatura Noroeste A.C. Loma Grande 2623, Col. Loma Larga, C.P. 64710, Nuevo León, México. cbarrigav@gmail.com

3. Universidad Autónoma de Nuevo León, Facultad de Ciencias Biológicas, Laboratorio de Herpetología, Apartado Postal 157, San Nicolás de los Garza, Nuevo León, C.P. 66450 México. imantodes52@hotmail.com.

4. Sistemas de Innovación y Desarrollo Ambiental S.C., Tepeyac 159, Col. Churubusco, Monterrey, Nuevo León, C.P. 64590, México. javier_banda@hotmail.com

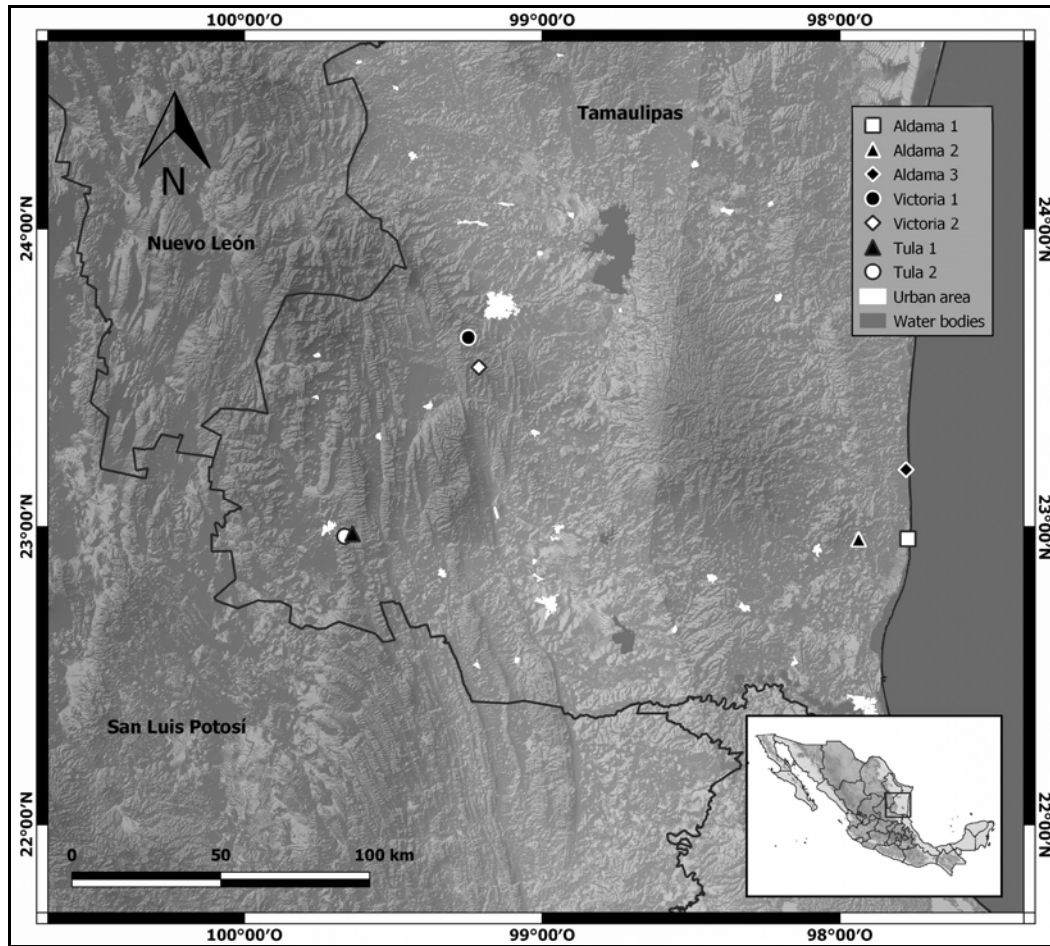
5. Universidad Autónoma de Ciudad Juárez, Laboratorio de Biodiversidad, Instituto de Ciencias Biomédicas, Estocolmo y Anillo del Prof s/n, Ciudad Juárez, Chihuahua, C.P. 32310 México. plavin@uacj.mx

6. División de Estudios de Posgrado e Investigación, Tecnológico Nacional de México, Campus Ciudad Victoria, Ciudad Victoria, México. sergioatj@gmail.com

7. Instituto Tecnológico de Ciudad Victoria, Departamento de Ingeniería Química y Bioquímica, Laboratorio de Zoología, Boulevard Emilio Portes Gil 1301, Ciudad Victoria, Tamaulipas, C.P. 87010, México. oscar.hf@cdvictoria.tecnm.mx (OHF); osbel117@hotmail.com (OAMA).

8. Department of Humanities and Social Sciences, Swinburne University of Technology, Melbourne, Victoria, Australia. lydiafusco@gmail.com

9. Centro Zamorano de Biodiversidad, Escuela Agrícola Panamericana Zamorano, Departamento de Francisco Morazán, Honduras; 1350 Pelican Court, Homestead, FL 33035-1031, USA. bufodoc@aol.com.



Localities in the Mexican state of Tamaulipas for seven specimens of *Ophisaurus incomptus*. Map by Javier Banda-Leal.

other species in this family. Whitish markings are present on the edges of the dorsal scales. No vertical white markings are present on the neck. A series of black markings form lines in each row of scales below the lateral fold. These black lines vary in width, the widest being found on the fourth row of scales below the lateral fold (McConkey, 1955). We have found that the different shades of colors between the black lines and dots can vary in intensity.

Methods

The state of Tamaulipas has been the focus of our group in the Laboratorio de Herpetología de la Facultad de Ciencias Biológicas, Universidad Autónoma de Nuevo León, since we obtained financial support from the Comisión Nacional para el Estudio de la Biodiversidad de México (CONABIO) back in 1997. Since then, we have conducted many surveys independently or collaboratively around the 43 municipalities that make up the state, depending on the financial support from government institutions or non-government organizations (NGOs).

Results

We report here seven well- and less well-documented records for *Ophisaurus incomptus* in the state of Tamaulipas, which we discuss below chronologically.

- The first record (Aldama-1) was collected by Michael

Bishop in 1983 (no month or day were included); its geographical location is 22°57'35"N, 97°49'15"W, elevation 50 masl, in the municipality of Aldama; it was found 11.7 km NE Aldama on State Road 100 (Aldama–Barra del Tordo); predominant vegetation types are Induced Grassland–Tamaulipan Thornscrub and what remains of Tropical Deciduous Forest. The catalogue number of this specimen is UTAR-14069 (University of Texas at Arlington, Amphibian and Reptile Diversity Research Center). This specimen is fragile and degraded (likely a DOR) and has been preserved for many years, such that the curators of the collection have informed us that the specimen is too delicate to be handled; therefore, the necessary measurements cannot be provided.

- The second record (Victoria-1) was collected by Sergio A. Terán-Juárez on 05 July 2006; its geographical location is 23°38'7.79"N, 99°14'51.71"W, elevation 1583 masl, in the municipality of Victoria; it was found 1 km NNE del Ejido Sierra Madre; the predominant plant community type is Chaparral–Oak Forest. It was catalogued as ITCV-1016 (Instituto Tecnológico de Ciudad Victoria). This specimen was captured alive. It is a male with the following measurements: snout–vent length (SVL) = 207 mm; tail length = 150 mm; total length = 357 mm. This specimen had a regenerated tail.



Oak Forest (left) and Induced Grassland (right) habitats near where the sixth record (Victoria-2) was collected. Photographs by Oscar Hinojosa-Falcón.

After the specimen died, it was lost; we no longer have the specimen physically.

- The third record (Aldama-2) was collected by Chris Rodríguez, Ian Recchio, Alan Kardon and David Lazcano on 18 July 2006; its geographical location is $22^{\circ}57'29.84''\text{N}$, $97^{\circ}56'11.36''\text{W}$ elevation 140 masl; it was found 15.3 km NE of Aldama, on State Road 100 (Aldama–Barra del Tordo); the predominant plant community types are Induced Grassland–Tamaulipan Thornscrub and what remains of Tropical Deciduous Forest. Its catalogue number is UANL-6824 (Universidad Autónoma de Nuevo León). This specimen is a DOR. Its sex was not possible to determine as it has no tail. The fragmented specimen totaled 442 mm in length.
- The fourth record (Aldama-3) was collected by Jesús Manuel Rosas-Colmenares on 22 May 2019; its geographical location is $23^{\circ}11'29.1''\text{N}$, $97^{\circ}46'37.9''\text{W}$, elevation 0–5 masl, in the municipality of Aldama; it was found in the area known as the Santuario Tortuguero of Playa de Rancho Nuevo—an important nesting site for *Lepidochelys kempii*, *Chelonia mydas* and *Dermochelys coriacea*. The predominant plant community is Coastal Dune vegetation. Its catalogue number is MZFZ-IMA-361 (Universidad Nacional Autónoma de México). This record is a photo voucher; sex, SVL, tail length and total length were not recorded.
- The fifth record (Tula-1) was collected by Carlos Barriga-Vallejo and Maria Fernanda Soto-Zúñiga on 31 November 2022. Its geographical location is $22^{\circ}58'36.16''\text{N}$, $99^{\circ}38'11.24''\text{W}$, elevation 1265 masl; it was found 9.7 NE of the city of Tula, on State Road 66 (Limón–Tula–Ocampo). The predominant plant communities are Submontane Scrub Forest–Agriculture. Its catalogue number is UANL-8571 (Universidad Autónoma de Nuevo León). This specimen was a DOR. Its sex was not possible to determine even though it had a tail. The fragmented specimen totaled 509 mm in length.
- The sixth record (Victoria-2) was collected by Osbel Antonio Martínez-Arriaga and Rocio Esmeralda

Hernández-Quñones on 24 September 2021. Its geographical location is $23^{\circ}32'6.68''\text{N}$, $99^{\circ}12'43.14''\text{W}$, elevation 1585 masl, in the municipality of Victoria in locality known as the new population center Puerto Paraíso (south of locality of El Huizachal on a dirt road); the predominant plant communities are Induced Grassland–Oak Forest. Its catalogue number is ITCV-00345 (Instituto Tecnológico de Ciudad Victoria). This specimen was captured alive. Its sex is male and its measurements are as follow: SVL = 124.2 mm, tail length = 309 mm, total length = 433.2 mm. The collectors of this information also informed us that one other undocumented individual was sighted.

- The seventh record (Tula-2) was obtained by Isaís Pérez-Baez on 5 December 2022. Its geographical location is $22^{\circ}58'5.1564''\text{N}$, $99^{\circ}39'48.4411''\text{W}$, elevation 1322 masl, in the municipality of Tula. This site is about 5.61 km SW of the city of Tula. The predominant



Preserved specimen of *Ophisaurus incomptus* from the sixth record (Victoria-2). Photograph by Oscar Hinojosa-Falcón.

plant community of the surroundings is degraded Oak Forest on a hill. One interesting aspect of this finding is that the specimen was regurgitated by a coral snake (*Micrurus tener*); this is a new food item in the coral snake's diet. The specimen was found along the State Highway 66 that runs from Tula to Ocampo. Unfortunately, no specific data were taken on either specimen. This lizard specimen was not collected.

There is a report (Alfaro-Reyna, 2003) of a sighting NW of the locality of La Reata, in the municipality of Aldama, but this report is doubtful.

Discussion and conclusions

Distributional records of *Ophisaurus incomptus* from Tamaulipas come from sites with differing environmental characteristics. The species inhabits coastal environments with halophytic vegetation, low deciduous forests in plains and hills, and temperate oak forests in mountainous areas up to 1585 masl. Such environmental plasticity can explain the fact that most of the individuals have been recorded in sites with some degree of anthropogenic transformation.

The months of collection of the known records for *Ophisaurus incomptus* from Tamaulipas range from May to December. A study on seasonal incidence and reproduction in *O. attenuatus* revealed that the species presents two peaks of terrestrial activity: one that occurs during the reproductive season in April and May, and the other that occurs in October and November (Trauth, 1984).

To assess the conservation status of *Ophisaurus incomptus* in Tamaulipas, we used the same systems (i.e., SEMARNAT, IUCN and EVS) used by Alvarado-Díaz et al. (2013) and Mata-Silva

et al. (2015). For a detailed description of the three systems see Mata-Silva et al. (2015). Thus, *O. incomptus* is an endemic species in Mexico and is listed by the IUCN as a Data Deficient species. This lizard has an EVS score of 15 (lower portion of the high vulnerability category) and is listed as Endangered (P: *En peligro de extinción*) in the Mexican NOM-059 status (SEMARNAT, 2010; Terán-Juárez et al., 2016). This species is found in two of the seven physiographic regions of Tamaulipas, i.e., *Llanuras y Lomerías* and *Gran Sierra Plegada*.

Reflections

The northeastern portion of Mexico has been suffering from prolonged drought. Human populations in cities across northeastern Mexico (in Tamaulipas, Nuevo León and Coahuila) are suffering from a lack of sufficient water supplies. Many surface and underground water bodies and dams are not obtaining sufficient water to increase their levels because our precipitation periods are not functioning as usual. We do not know yet how nature is adapting to these novel climatic changes. The fauna is also suffering from increasing road traffic. New protected areas are being established in states with the highest numbers of herpetofaunal species.

Acknowledgments

We wish to thank the professors and students of the Instituto Tecnológico de Ciudad Victoria, Departamento de Ingeniería Química y Bioquímica, Laboratorio de Zoología Instituto for continuing their interest in herpetology of the state. We also thank the authorities of Pronatura Noroeste A.C., Rainforest Trust, and WYSS Foundation (Hansjörg Wyss) for financing regular herpetological surveys throughout the state and promoting the establishment of new protected areas.

Literature Cited

- Alfaro-Reyna, T. 2003. Distribución geográfica y ecológica de los anfibios y reptiles de Tamaulipas. Unpublished Licentiate thesis, Instituto Tecnológico de Ciudad Victoria. Tamaulipas, Mexico.
- Alvarado-Díaz, J., I. Suazo-Ortuño, L. D. Wilson and O. Medina-Aguilar. 2013. Patterns of physiographic distribution and conservation status of the herpetofauna of Michoacán, Mexico. *Amphibian & Reptile Conservation* 7(1):128-170.
- Auffenberg, W. 1955. Glass lizards (*Ophisaurus*) in the Pleistocene and Pliocene of Florida. *Herpetologica* 11(2):133-136.
- . 1956. Additional records of Pleistocene lizards from Florida. *Quarterly Journal of the Florida Academy of Sciences* 19(2/3):157-167.
- Farr, L. W., P. A. Lavín-Murcio and D. Lazcano. 2007. New distributional records for amphibians and reptiles from the state of Tamaulipas, Mexico. *Herpetological Review* 38(2):226-233.
- Holman, J. A. 1970. Herpetofauna of the Wood Mountain Formation (Upper Miocene) of Saskatchewan. *Canadian Journal of Earth Sciences* 7(5):1317-1325.
- . 1971. *Ophisaurus incomptus*. *Catalogue of American Amphibians and Reptiles* 114.1.
- . 2003. Early Hemingfordian (early Miocene) squamate reptiles from the Quarry A Local Fauna, Logan County, Colorado. (Note). *Michigan Academician* 34(4):477-480.
- Lavin, B. R., and D. J. Girman. 2019. Phylogenetic relationships and divergence dating in the Glass Lizards (Anguinae). *Molecular Phylogenetics and Evolution* 133:128-140.
- Mata-Silva, V., J. D. Johnson, L. D. Wilson and E. García-Padilla. 2015. The herpetofauna of Oaxaca, Mexico: Composition, physiographic distribution, and conservation status. *Mesoamerican Herpetology* 2(1):5-62.

- McConkey, E. H. 1955. A new lizard of the genus *Ophisaurus* from Mexico. Chicago Academy of Sciences Natural History Miscellanea 145:1-2.
- SEMARNAT (Secretaría del Medio Ambiente y Recursos Naturales). 2010. Norma Oficial Mexicana NOM-059-SEMARNAT-2010. Protección ambiental—Especies nativas de México de flora y fauna silvestres—Categorías de riesgo y especificaciones para su inclusión, exclusión o cambio—Lista de especies en riesgo. Diario Oficial de la Federación, 3 de Agosto de 2017.
- Terán-Juárez, S. A. 2008. *Anguis incomptus* (Sauria: Anguillidae), una adición a la herpetofauna de Tamaulipas, Mexico. Acta Zoologica Mexicana 24(2):235-237.
- Terán-Juárez, S. A., E. García-Padilla, V. Mata-Silva, J. D. Johnson and L. D. Wilson. 2016. The herpetofauna of Tamaulipas, Mexico: Composition, distribution, and conservation status. Mesoamerican Herpetology 3(1):42-113.
- Trauth, S. E. 1984. Seasonal incidence and reproduction in the western slender glass lizard, *Ophisaurus attenuatus attenuatus* (Reptilia, Anguillidae), in Arkansas. The Southwestern Naturalist 29(3):271-275.
- Uetz, P. (editor). 2023. The Reptile Database. <<http://www.reptile-database.org>> (accessed 03 January 2023).
-

Bulletin of the Chicago Herpetological Society 58(2):25, 2023

Erratum to the article “Diet Records for Snakes from Guinea, West Africa”

Olivier S. G. Pauwels
Royal Belgian Institute of Natural Sciences
Rue Vautier 29
B-1000 Brussels
BELGIUM
opauwels@naturalsciences.be

In a recent paper on the diet of Guinean snakes, we wrote “Mané and Trape (2017) noted that amphibians represented more than a third of the prey items recovered from 13 Senegalese *Elapsoidea semiannulata trapei*.” The latter taxon was a lapsus for *Elapsoidea semiannulata moebiusi* (Werner, 1897). *Elapsoidea trapei* Mané, 1999 is a separate and valid species, well distinct morphologically. I thank Jean-François Trape for pointing out this lapsus.

Mané, Y. 1999. Une espèce nouvelle du genre *Elapsoidea* (Serpentes, Elapidae) au Sénégal. Bulletin de la Société Herpétologique de France 91:13-18.

Pauwels, O. S. G., L. Chirio and W. Dekoninck. 2022. Diet records for snakes from Guinea, West Africa. Bulletin of the Chicago Herpetological Society 57(6):117-123.

Notes on Reproduction of Levant Green Frogs, *Pelophylax bedriagae* (Anura: Ranidae), from Israel

Stephen R. Goldberg
Whittier College, Biology Department
Whittier, CA 90608
sgoldberg@whittier.edu

Abstract

I conducted a histological examination of gonadal material from 21 adult *Pelophylax bedriagae* from Israel consisting of 11 adult males and 10 adult females. In Israel males of *P. bedriagae* produce sperm and females contained mature oocytes in all months examined. The smallest mature male (sperm in lumina of seminiferous tubules) measured 50 mm SVL and was from April. The smallest mature female (mature oocytes) measured 56 mm SVL and was from November. Varying amounts of follicular atresia (spontaneous degeneration of oocytes) were noted in 70% (7/10) of adult females. One female from May (TAU 1343) contained postovulatory follicles from a recent spawning (*sensu* Redshaw, 1972) and concurrent yolking follicles in the same ovary suggesting this female would spawn again later during the same year.

Pelophylax bedriagae (Camerano, 1882) is known from Egypt, Israel, Turkey, Greek Islands, Cyprus, western Syria, Lebanon and Jordan (Bar et al., 2021). It was introduced into France and Malta (Kraus, 2009). In Iran it is common in ponds, rain pools, streams, rivers and other aquatic sites (Kamali, 2020). *Pelophylax bedriagae* inhabits permanent ponds for breeding; hence, reproduction is not dependent on rainfall (Disi and Amr, 2010). Egg-laying takes place throughout the summer (Goldberg et al., 2009; Bar et al., 2021). Akef (2012) described the female reproductive cycle of *P. bedriagae* from Egypt.

In this paper, I add information on reproduction of *P. bedriagae* from Israel utilizing a histological examination of gonadal tissues. The use of museum collections for obtaining reproductive data avoids euthanizing specimens and obviates the need for a collecting permit from local and government authorities.

A sample of 21 *P. bedriagae* from Israel collected 1944 to 2016 (Appendix) consisting of 11 adult males (mean SVL = 60.6 mm \pm 7.1 SD, range = 50–73 mm) and 10 adult females (mean SVL = 83.6 mm \pm 15.7 SD, range = 56–107 mm) was examined from the herpetology collection of the Zoology Museum of Tel Aviv University (TAU), Tel Aviv, Israel. An unpaired *t*-test was used to test for differences between adult male and female SVLs (InStat, vers. 3.0b, Graphpad Software, San Diego, CA, USA).

A small incision was made in the lower part of the abdomen and the left testis was removed from males and a piece of the left ovary from females. Gonads were embedded in paraffin, sections were cut at 5 μ m and stained with Harris hematoxylin followed by eosin counterstain (Presnell and Schreiber, 1997). Histology slides were deposited at TAU.

Testicular morphology of *P. bedriagae* is similar to that of other anurans as detailed in Ogielska and Bartmańska (2009a). Within the seminiferous tubules, spermatogenesis occurs in cysts which are open during the late spermatid stage and differentiating sperm reach the lumina of the seminiferous tubules (Ogielska and Bartmańska, 2009a). A ring of germinal cysts is located on the inner periphery of each seminiferous tubule. All 11 *P. bedriagae* males in my sample were undergoing spermiogenesis in which clusters of sperm occurred in the lumina of the seminiferous tubules. These males were from the following months: February (N = 1), April (N = 4), August (N = 2), November (N = 4). The smallest mature male (TAU 1365) mea-

sured 50 mm SVL and was from April.

The mean SVL of *P. bedriagae* females was significantly larger than that of males ($t = 4.4$, $df = 19$, $P = 0.0003$). The ovaries of *P. bedriagae* are typical of other anurans in being paired organs lying on the ventral sides of the kidneys. In adults the ovaries are filled with diplotene oocytes in various stages of development (Ogielska and Bartmańska, 2009b). Mature oocytes are filled with yolk droplets; the surrounding layer of follicular cells is thinly stretched. The ovaries of all *P. bedriagae* females contained mature oocytes and were in spawning condition. They were from the following months: January (N = 2), February (N = 2), April (N = 1), May (N = 1), July (N = 1), September (N = 1), November (N = 2). One female (TAU 1343) from May also contained postovulatory follicles from a recent spawning. Postovulatory follicles form when the ruptured follicle collapses after ovulation; the follicular lumen disappears and proliferating granulosa cells are surrounded by a fibrous capsule (Redshaw, 1972). Postovulatory follicles are short-lived in most anuran species and are resorbed after a few weeks (Redshaw, 1972). There were also vitellogenic follicles present in the same ovary (TAU 1343) suggesting this female might spawn a second time during the same year. Akef (2012) reported that *P. bedriagae* females from Egypt can produce at least two clutches per year and vitellogenesis occurred in all months. The smallest mature female *P. bedriagae* (mature oocytes) from Israel measured 56 mm SVL (TAU 1350D) and was from November.

Atresia (spontaneous oocyte degeneration) is a widespread process occurring in the ovaries of all vertebrates (Uribe Aranzábal, 2009). It is common in the amphibian ovary (Saidapur, 1978) and was present in 70% (7/10) of my mature female sample. Atresia is the spontaneous deterioration of a diplotene oocyte by its own hypertrophied and phagocytic granulosa cells which invade the follicle and eventually degenerate after accumulating dark pigment (Ogielska and Bartmańska, 2009b). See Saidapur and Nadkarni (1973) and Ogielska et al. (2010) for a detailed description of stages of atresia in the frog ovary. Atresia plays an important role in fecundity by influencing numbers of ovulated oocytes (Uribe Aranzábal, 2011). Akef (2012) reported that maximum follicle atresia occurred after oviposition in *P. bedriagae* females from Egypt.

My data on the testis and spawning cycles of *P. bedriagae* is in agreement with a report of summer spawning for this species

in Israel (Bar et al., 2021). Akef (2012) reported the period of reproduction for *P. bedriagae* from Egypt in 2008 and 2009 was late March to August. In Morocco, the congener, *Pelophylax saharicus* breeds during spring and summer (Martínez del Mármol et al., 2019). Periods of reproduction for *P. bedriagae* from different areas are in Table 1. There is variation in times of breeding including both winter, spring and summer over the broad geographic range of *P. bedriagae*. Histological examination of samples of *P. bedriagae* from additional months are warranted to further document multiple yearly spawnings in Israel and to elucidate other aspects of the *P. bedriagae* reproductive cycle.

Acknowledgment

I thank Shai Meiri (TAU) for permission to examine *P. bedriagae* and Karin Tamar (TAU) for facilitating the loan 041021.

Table 1. Periods of reproduction for *Pelophylax bedriagae* from different areas.

Locality	Reproductive activity	Source
Egypt*	early spring to late summer	Baha El Din, 2006
Egypt	March to August	Akef, 2012
Israel*	tadpoles during summer	Goldberg et al., 2009
Jordan	starts January–February (Jordan Valley) starts April–May (colder areas)	Disi and Amr, 2010
Not specific	February to July	Dufresnes, 2019

* as *Rana bedriagae*.

Literature Cited

- Akef, M. S. A. 2012. Female reproductive cycle in a southern population of the water frog (*Pelophylax bedriagae*) in Egypt. *Russian Journal of Herpetology* 19(3):251-260.
- Baha El Din, S. 2006. A guide to the reptiles and amphibians of Egypt. Cairo and New York: The American University in Cairo Press.
- Bar, A., G. Haimovitch and S. Meiri. 2021. Field guide to the amphibians and reptiles of Israel. Frankfurt am Main, Germany: Edition Chimaira.
- Disi, A. M., and Z. S. Amr. 2010. Morphometrics, distribution and ecology of the amphibians in Jordan. *Vertebrate Zoology* 60(2): 147-162.
- Dufresnes, C. 2019. Amphibians of Europe, North Africa and the Middle East.: A photographic guide. London: Bloomsbury Wildlife.
- Goldberg, T., E. Nevo and G. Degani. 2009. Breeding site selection according to suitability for amphibian larval growth under various ecological conditions in the semi-arid zone of northern Israel. *Ecologia mediterranea: Revue internationale d'écologie méditerranéenne = International Journal of Mediterranean Ecology* 35(1):65-74.
- Kamali, K. 2020. A guide to the reptiles and amphibians of Iran. Frankfurt am Main, Germany: Edition Chimaira.
- Kraus, F. 2009. Alien reptiles and amphibians: A scientific compendium and analysis. Dordrecht, Netherlands: Springer.
- Martínez del Mármol, G., D. J. Harris, P. Geniez, P. de Pous and D. Salvi. 2019. Amphibians and reptiles of Morocco. Frankfurt am Main, Germany: Edition Chimaira.
- Ogielska, M., and J. Bartmańska. 2009a. Spermatogenesis and male reproductive system in Amphibia—Anura. Pp. 34-99. *In: M. Ogielska, editor, Reproduction of amphibians.* Enfield, New Hampshire: Science Publishers.
- Ogielska, M., and J. Bartmańska. 2009b. Oogenesis and female reproductive system in Amphibia—Anura. Pp. 153-272. *In: M. Ogielska, editor, Reproduction of amphibians.* Enfield, New Hampshire: Science Publishers.
- Ogielska, M., B. Rozenblut, R. Augustyńska and A. Kotusz. 2010. Degeneration of germ line cells in amphibian ovary. *Acta Zoologica (Stockholm)* 91(3):319-327.
- Presnell, J. K., and M. P. Schreibman. 1997. Humason's animal tissue techniques. Fifth edition. Baltimore: The Johns Hopkins University Press.
- Redshaw, M. R. 1972. The hormonal control of the amphibian ovary. *American Zoologist* 12(2):289-306.
- Saidapur, S. K. 1978. Follicular atresia in the ovaries of nonmammalian vertebrates. Pp. 225-244. *In: G. H. Bourne, J. F. Danielli and K. W. Jeon, editors, International Review of Cytology, Volume 54.* New York: Academic Press.
- Saidapur, S. K., and V. B. Nadkarni. 1973. Follicular atresia in the ovary of the frog *Rana cyanophlyctis* (Schneider). *Acta Anatomica* 86(3-4):559-564.
- Uribe Aranzábal, M. C. 2009. Oogenesis and female reproductive system in Amphibia—Urodela. Pp. 273-304. *In: M. Ogielska, editor, Reproduction of amphibians.* Enfield, New Hampshire: Science Publishers.
- . 2011. Hormones and the female reproductive system of amphibians. Pp. 55-81. *In: D. O. Norris and K. H. Lopez, editors, Hormones and reproduction of vertebrates, Volume 2. Amphibians.* Amsterdam: Elsevier.

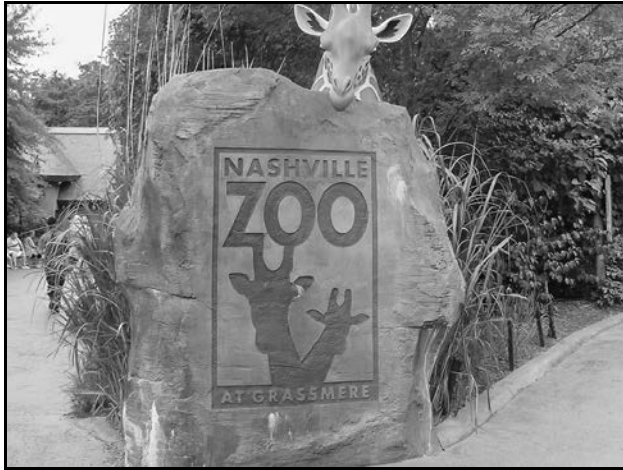
Appendix

Twenty-one *Pelophylax bedriagae* examined by region from Israel borrowed from the Zoology Museum at Tel Aviv University (TAU), Tel Aviv, Israel: **Central Coastal Plain:** TAU 39, 554, 1350A, 1350C, 1350D, 1350F, 1350G, 1350H, 1392; **Dead Sea Area:** TAU 2921; **Golan Heights:** TAU 1343; **Jordan Valley:** TAU 166; **Southern Coastal Plain:** TAU 930, 1801; **Upper Galilee:** TAU 816, 817, 1363–1366; **Yizre'el Valley:** TAU 40.

Herpetological Art in the Nashville Zoo — June 6, 2022

Photos and story by
Roger Carter
625 Lakeview Dr
Zionsville, IN 46077
drymarchonzz@hotmail.com

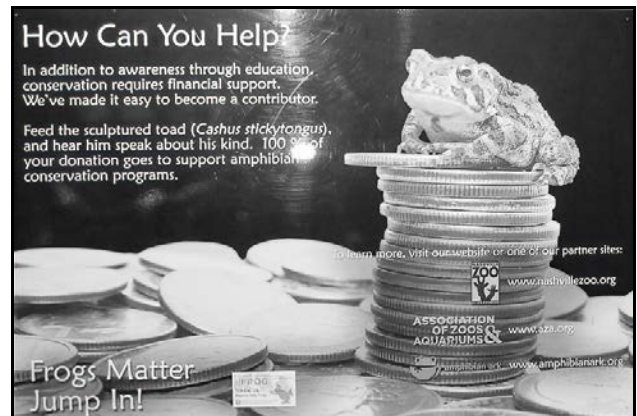
While on vacation, my wife Holly and I went to the Nashville Zoo for the day on our way to Atlanta, Georgia.



Their reptiles and amphibians are in a building called “Unseen New World: Creatures of the Americas.” Right above the entrance is a large sculpture of a Red-eyed treefrog, *Agalychnis callidryas*, hanging onto the words “Unseen” and “World,” and just inside the building is another large sculpture of a Red-eyed treefrog hanging from the wall. Both sculptures have the correct colors for this species.

On a pedestal is a statue of a toad, a little larger than a basketball, that looks like it was made by gluing pebbles together. There is a sign that says “Put your money in my mouth. Proceeds support amphibian conservation.” Another sign says “How can you help? In addition to awareness through education, conservation requires financial support. We’ve made it easy to become a contributor. Feed the sculptured toad (*Cashus stickytongus*) and hear him speak about his kind. 100% of your donation goes to support amphibian conservation programs.”

On another pedestal in what is probably an acrylic case is a life size statue of a Hellbender, *Cryptobranchus alleganiensis*,

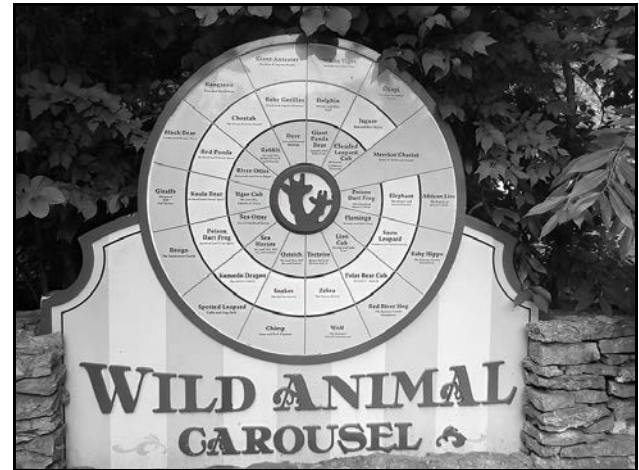


with a sign “2013 State Wildlife Action Plan Award/Tennessee Hellbender Recovery Partnership/Dale McGinnity/Nashville Zoo.”

Above a nearby food concession stand there is a sign that says, “Snake BITES.” The S in “snake” is in the shape of a snake with the tail hanging onto the I in “bites.” The snake and the word snake are colored yellow, and the word BITES is colored blue.

At the entrance to the Peruvian exhibit on top of a large pole there is an artistic sheet metal sculpture of what is probably

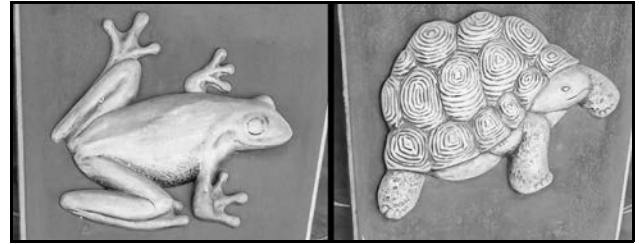




meant to be a frog of some sort. This is set up high enough so that no one can touch it. This sculpture is colored blue.

The zoo has a carousel that has animal figures for children to ride. Besides the usual images of zoo creatures—giraffe, wolf, zebra, etc.—there are several herps that can be ridden. There is a Komodo Dragon, *Varanus komodoensis* (colored gray), two snakes that are climbing on a log (the snakes are multi-colored with orange, black, faded yellow, and tan), there are two poison dart frogs, Dendrobatidae (one is mostly green and black and the other is faded blue with spots on the blue and the rest of the body is black and white), there is a ride that is identified as a tortoise but, to me, it looks more like a box turtle, possibly an Eastern Box Turtle, *Terrapene carolina carolina*, there is a bench to accommodate more than one person and, on the outward facing end, there is the image of a snake that is hanging on





a tree branch. This snake is yellow and black, and the pattern reminds me of a Ball Python, *Python regius*.

On a canopy above the rides are panels that have images of animals, including one that resembles a treefrog and another image of what might be a tortoise.

Vertical stone and wooden beams support the canopy of the carousel ride. Sculptures of several different animals appear to be climbing the supports. These include a Komodo Dragon, Meerkats, Koala Bears and a Giant Anteater. The Meerkats and Koalas are larger than real animals, but the Komodo Dragon and Giant Anteater seem to be the size of adult animals. All of these images are a uniform gray color, maybe concrete.

I have seen carousel rides at a few zoos, but this is the first one I have seen that has reptile and amphibian rides.

Near the carousel is a metal plate in the image of some kind of old world chameleon with the tail curled up and the tongue shooting out to catch prey. From the patina on this plate, I think it's been outside in the weather for a long time.

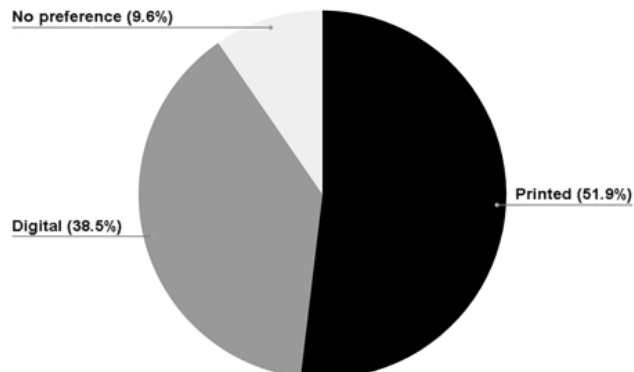
Results of the 2022 CHS Membership Survey

Rachel Bladow
rbladow@chicagoherp.org

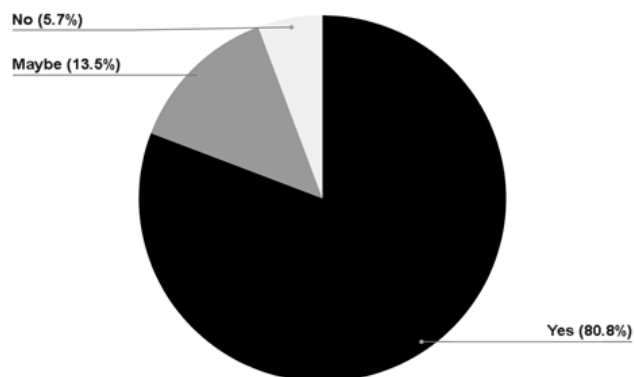
Earlier this year, we sent a survey to ask what you all like or don't like about CHS and to hear what you'd like to see from your society. A total of 52 people participated! Thank you to everyone that contributed and took the time to reflect on your experience in CHS!

Here's what we found out!

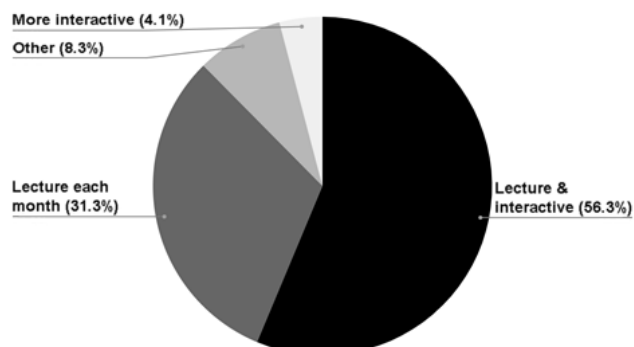
If you had to choose between receiving a printed or digital monthly CHS Bulletin, which version would you prefer?



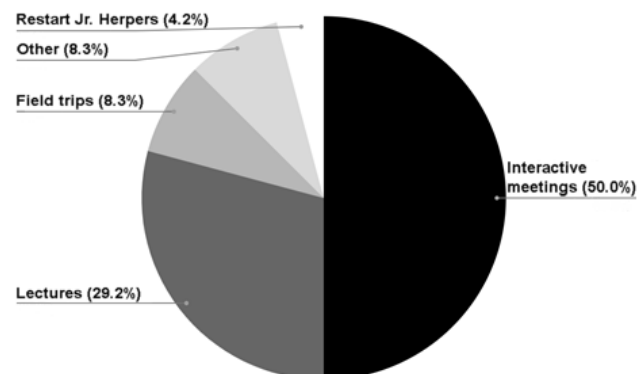
The price of yearly CHS membership has not increased in over 20 years, yet the cost of printing and shipping the bulletin has increased. Would you be willing to pay a little more per year to continue receiving a printed Bulletin?



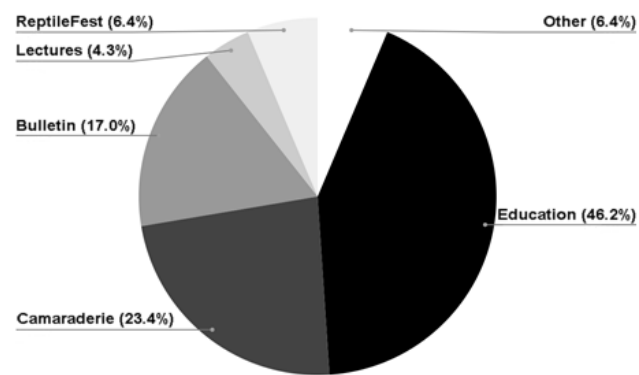
Please select the following options that best reflect your opinion on the structure of our monthly meetings and what you would like to see in the future.



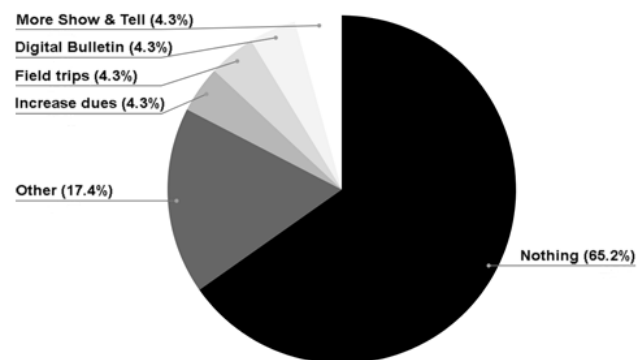
Please elaborate on why you do or do not want the meeting format to change, and share what topics/ideas you would like to see in the future. (Responses coded as "Other" included bringing in a wider variety of members and husbandry information.)



What do you like about CHS? What do you hope CHS continues to do in the future? (Responses coded as "Other" include Junior Herpers, virtual meetings, and adoptions.)



Is there anything you would change about CHS? (Responses coded as "Other" include bringing in new members, moving the meeting location, and keeping meetings dynamic.)



Thanks again for your valued insight! If you have more ideas for what you want CHS to do, please email any members of the Board <<https://chicagoherp.org/board-staff>>.

Minutes of the CHS Board Meeting, January 10, 2023

A meeting of the CHS board of directors was called to order via Zoom at 7:33 P.M. All board members were in attendance. Zorina Banas, Jason Smith and Josh Vossler also attended. Minutes of the December 13 board meeting were read and accepted.

Officers' reports

Treasurer: Rich Crowley presented the December and year-end financial reports.

Media secretary: Gabrielle Evans reported that Instagram seems to be our best site with regard to interaction. We now have a Tumblr page that seems to be going okay. Twitter is having technical issues. The board discussed keeping social media posts current, maybe posting an "Illinois Herp of the Week" with a photo and short 'bio' and asking people to share their own stories about the herp.

Membership secretary: Mike Dloogatch read through the list of recent nonrenewals.

Committee reports

Adoptions: Margaret Ann Paauw reported having received many

recent requests from persons wishing to relinquish their animals. She has been asking them to fill out the relinquish form online and hold on until we can get to them.

Old business

The board discussed restarting the insurance for live animal shows. But with ReptileFest uncertain, it is difficult to justify the expense. And because the Notebaert is requiring volunteers be vaccinated and submit to a background check, it does not seem that we will resume our weekend shows there.

Junior Herpers: Despite several members having expressed an interest, we do not yet have anyone to run this program.

New business

Jason Smith volunteered to give a short presentation on hingeback tortoises at the January meeting.

The meeting adjourned at 8:54 P.M.

Respectfully submitted by recording secretary Gail Oomens

NEW CHS MEMBERS THIS MONTH

Gabrielle Evans
Kendra Megan Fischer
Mark Jones
Al Mayhugh

Advertisements

For sale: **highest quality frozen rodents.** I have been raising rodents for over 30 years and can supply you with the highest quality mice available in the U.S. These are always exceptionally clean and healthy with no urine odor or mixed in bedding. I feed these to my own reptile collection exclusively and so make sure they are the best available. All rodents are produced from my personal breeding colony and are fed exceptional high protein, low fat rodent diets; no dog food is ever used. Additionally, all mice are flash frozen and are separate in the bag, not frozen together. I also have ultra low shipping prices to most areas of the U.S. and can beat others shipping prices considerably. I specialize in the smaller mice sizes and currently have the following four sizes available: Small pink mice (1 day old—1 gm) , \$25 /100; Large pink mice (4 to 5 days old—2 to 3 gm), \$27.50 /100; Small fuzzy mice (7 to 8 days old—5 to 6 gm), \$30/100; Large fuzzy mice / hoppers (10 to 12 days old—8 to 10 gm), \$35/100 Contact Kelly Haller at 785-224-7291 or by e-mail at kelhal56@hotmail.com

Line ads in this publication are run free for CHS members — \$2 per line for nonmembers. Any ad may be refused at the discretion of the Editor. Submit ads to mdloogatch@chicagoherp.org.

UPCOMING MEETINGS

From now on the monthly meetings of the CHS will be held in the afternoon on the third Sunday of each month. The meetings will begin at 2:00 P.M. The next meeting will take place on February 19. The program has not yet been confirmed. Please try to join us online or *in person* at the Notebaert Nature Museum, 2430 N. Cannon Drive, Chicago.

The March meeting will take place on Sunday, March 19. The program has not been confirmed.

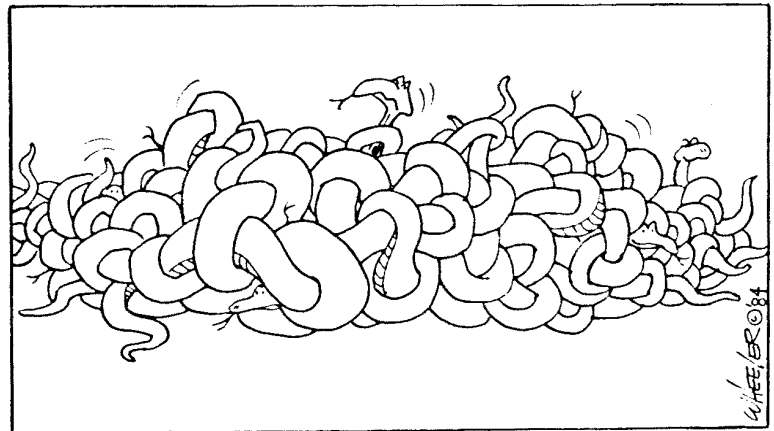
Please check the CHS website or Facebook page each month for information on the program. Information about attending a Zoom webinar can be found here:

<[https://support.zoom.us/hc/en-us/articles/115004954946-Joining-and-participating-in-a-webinar-attendee->](https://support.zoom.us/hc/en-us/articles/115004954946-Joining-and-participating-in-a-webinar-attendee-)

Board of Directors Meeting

Are you interested in how the decisions are made that determine how the Chicago Herpetological Society runs? And would you like to have input into those decisions? The next board meeting will be held online. If you wish to take part, please email: jarcher@chicagoherp.org.

THE ADVENTURES OF SPOT



Periodicals Postage
Paid at Chicago IL

CHICAGO HERPETOLOGICAL SOCIETY

Affiliated with the Chicago Academy of Sciences

2430 North Cannon Drive • Chicago, Illinois 60614
