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Department of Herpetology, Natural History Society of Maryland, Inc.

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Meetings

Meetings are held monthly and will be announced in the "Maryland Herpetological Society" newsletter and on the website, www.maryland-nature.org.

Deletion of *Eurycea guttolineata* from the Herpetofauna of Maryland

Despite the attempts of four authorities to add the three-lined salamander, *Eurycea guttolineata*, to the herpetofauna of Maryland, there is currently no basis for it. Bishop (1943) was the first and mapped this species (as *E. longicauda guttolineata*) as occurring throughout southern Maryland, even though he stated its northern range limit was Fairfax County, Virginia. Next Schmidt (1953), in his checklist, stated its range to be "Coastal plain and piedmont from Maryland southwestward" It appears there was no evidence at the time for either of these actions, and there is no support in the preceding checklist (Stejneger and Barbour 1943) or the first four editions. A third assertion that the three-lined salamander occurs in Maryland was provided by Suttkus and Gordon (1956); Miller (1980) discussed the basis for this erroneous claim. The possibility of this species' occurrence in the state was next mentioned by Harris et al. (1967) and Harris (1969, 1975), but Ireland (1979), without comment, was the first to plot a locality and map this taxon (as *E. longicauda guttolineata*) as ranging throughout the Maryland piedmont. He did not include southern Maryland on his map. Miller (1980) noted the significance of Ireland's record and later (1984) published an updated map of the complex. Ireland's preserved herpetological collection was to be eventually deposited in the American Museum of Natural History (P. H. Ireland, personal communication, 1980), but never was and its location is unknown (D. A. Kizirian, personal communication, 2006). It appears that Ireland's report of the three-lined salamander in Maryland was the result of a mapping error, considerable embellishment of this error, and until verifiable evidence becomes available, this species should not be considered a part of the state's fauna.

Acknowledgment.

I thank David A. Kizirian for his assistance in attempting to resolve the location of the Ireland collection.

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Notes on Reproduction of the Crested Dragon, *Ctenophorus cristatus* (Squamata: Agamidae) from Western Australia

Stephen R. Goldberg

The crested dragon, *Ctenophorus cristatus* occurs in the drier parts of southern Western Australia to southwestern South Australia (Cogger, 2000). Information on aspects of wild *C. cristatus* reproduction is in Chapman and Dell (1977), Dell and Chapman (1978), and Ehmann (1992). The purpose of this paper is to add information on the timing of the reproductive cycle of *C. cristatus* from a histological examination of museum specimens. The first information on the testicular cycle is presented.

Five *C. cristatus* (3 males, mean snout-vent length, SVL = 79.00 mm \pm 12.5 SD, range = 66-91 mm; 1 female, SVL = 92.0 mm and one juvenile, SVL = 32.0 mm) collected ca. 28 mi W. Balladonia, 31°02'S, 123°45'E during 1967-68 were examined from the herpetology collection of the Natural History Museum of Los Angeles County, LACM, Los Angeles, California: LACM 55179-55183.

Gonads were dehydrated in ethanol, embedded in paraffin, sectioned at 5 μ m and stained with Harris' hematoxylin followed by eosin counterstain. Enlarged ovarian follicles (>4 mm width) were counted. Histology slides are deposited at LACM.

Spermiogenesis (= sperm formation) was underway in two of the three January males (LACM 55181, 55182). Lumina of the seminiferous tubules were lined by clusters of spermatozoa and/or metamorphosing spermatids. One male (LACM 55180) exhibited a regressed testis. The germinal epithelium consisted of spermatogonia interspersed with Sertoli cells. No residual sperm were observed. The annual testicular cycle had concluded for this male.

Five oviductal eggs were found in the January female (LACM 55179). Histological examination of the revealed corpora lutea but no yolk deposition suggesting no further clutches would be produced during the current breeding season.

One presumed neonate was collected in February.

Using data from the current study and supplementing it with information from the literature gives a more complete description of the *C. cristatus* reproductive cycle. Reproduction is underway in October as one male exhibited an enlarged testis 8 mm long and one female contained 5 enlarged ovarian follicles 7 mm long (Dell and Chapman 1978). One female collected on 10 November contained 4 eggs that measured 20 mm length (Chapman and Dell 1977). Ehmann (1992) reported *C. cristatus* mating begins in spring and gravid females were collected October to January with clutches of 2-5; there was a potential for some females to produce two clutches. It thus appears *C. cristatus* exhibits a reproductive cycle similar to other species of *Ctenophorus* (Goldberg, 2007, 2008, 2009a, b, c).

Ctenophorus cristatus appears to fit the Type 1 category of spring mating and ovulation of Heatwole and Taylor (1987). With 24 species of *Ctenophorus* currently recognized (Uetz and Hallermann, 2009), subsequent investigations are required before one could verify if all species exhibit a spring-summer reproductive period.

I thank Christine Thacker (LACM) for permission to examine lizards.

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**Notes on Reproduction of the Speckle-lipped Mabuya,
Trachylepis maculilabris (Squamata: Scincidae)
from Kenya and Uganda**

Stephen R. Goldberg

The speckle-lipped mabuya, *Trachylepis maculilabris* is known from Kenya, Uganda, Rwanda and Burundi, west to Senegal, south to Angola and central Mozambique (Spawls et al., 2002). There is anecdotal information on reproduction in this species from a field guide (Spawls et al., 2002). The purpose of this paper is to add information on the reproductive biology of *T. maculilabris* from a histological examination of museum specimens. A new minimum clutch size, proof that multiple egg clutches are produced, minimum sizes for maturity of males and females and the first information on the testicular cycle are presented.

Twenty-five females (mean SVL = 77.1 mm \pm 6.2 SD, range: 62-88 mm) sixteen males (mean SVL = 77.6 mm \pm 5.1 SD, range: 64-83 mm) and two each sub-adult females (SVLs 54, 60 mm) and males (SVLs 51, 56 mm) *T. maculilabris* from Kenya and Uganda were examined from the herpetology collection of the Natural History Museum of Los Angeles County (LACM), Los Angeles, California. Lizards were collected 1967, 1968, 1970, 1973. The following *T. maculilabris* were examined: **Kenya**, Ljara District (LACM) 93190; **Uganda**, Kabarole District (LACM) 38836-38847, 38849-38856, 38862-38865, 46431, Hoima District 39057-39060, Rakai District 39546-39548, Masindi District 59584, 59585, 59593, 59597, 59587-59592, 59595.

The left testis was removed from males and the left ovary was removed from females for histological examination. Enlarged follicles (> 4 mm length) or oviductal eggs were counted. Tissues were embedded in paraffin, sectioned at 5 μ m and stained with hematoxylin followed by eosin counterstain. Testis slides were examined to determine the stage of the testicular cycle. Ovary slides were examined for the presence of yolk deposition or corpora lutea. Histology slides were deposited in LACM. *Trachylepis maculilabris* adult male versus adult female mean body sizes were compared using an unpaired *t* test. The relationship between body size (SVL) and clutch size was examined by linear regression analysis. Statistical tests were performed using InStat (vers. 3.0b, Graphpad Software, San Diego, CA).

There was no significant size difference between male and female SVL (unpaired *t* test, $P = 0.79$). Two stages in the testicular cycle were noted: (1) spermiogenesis in which the lumina of the seminiferous tubules were lined by clusters of spermatozoa or groups of metamorphosing spermatids; (2) recrudescence, in which the germinal epithelium increases in cellularity in preparation for the next period of spermiogenesis. Primary and secondary spermatocytes predominate; an occasional spermatid is noted. Males undergoing spermiogenesis were noted in the following months (sample size in parentheses): February (1), April (2), May (2), June (9), December (2). The smallest reproductively active male (spermiogenesis) measured 64 mm SVL (LACM 59589) and was from May. One male from May (56 mm SVL) exhibited testicular recrudescence (LACM 59591), another male from April (51 mm SVL) contained tiny testes (SVL 59588). Both were considered to be sub-adults.

Monthly stages in the ovarian cycle of *T. maculilabris* are in Table 1. Five stages were present: (1) quiescent (no yolk deposition), (2) early yolk deposition (basophilic yolk granules present), (3) enlarged ovarian follicles, (4) oviductal eggs (eggs in oviducts), (5) corpora lutea from a previous clutch and concomitant yolk deposition for a subsequent clutch. Mean clutch size ($n = 10$) was 6.0 \pm 1.7 SD, range = 3-8. Spawls et al. (2002) reported clutches of 6-8 eggs for *T. maculilabris*

Table 1. Monthly stages in the ovarian cycle of *Trachylepis maculilabris*.

Month	<i>n</i>	Quiescent	Early yolk deposition	Enlarged follicles > 4mm	Oviductal eggs	Corpora lutea and yolk deposition
February	3	0	0	2	1	0
April	2	2	0	0	0	0
May	4	4	0	0	0	0
June	13	4	3	3	3	0
October	1	1	0	0	0	0
December	2	1	0	0	0	1

from central Africa. Three (reported herein) is a new minimum clutch size for *T. maculilabris*. The presence of one December female (LACM 39059) with corpora lutea from a previous clutch and concomitant yolk deposition for a subsequent clutch indicates *T. maculilabris* may produce multiple clutches in the same reproductive year. Spawls et al. (2002) reported *T. maculilabris* produced five to six clutches per year. Linear regression analysis revealed the relation between female SVL and clutch size was not significant ($P = 0.052$). This may be due to my small sample size ($n = 10$). The smallest reproductively active female measured 68 mm SVL, contained 3 enlarged ovarian follicles (> 4 mm length) and was from June (LACM 38852).

It appears that *T. maculilabris* exhibits an extended reproductive cycle with sperm production noted in all five months examined and ovarian activity in widely separated months (February, June and December). Examination of additional samples of *T. maculilabris* gonads are needed to more fully characterize its reproductive cycle.

Considering other species of African *Trachylepis*, it appears that both extended reproductive cycles are present as seen in *T. variegata* (Goldberg, 2006a) and “temperate” seasonal reproductive cycles with periods of testicular regression and no female reproductive activity as seen in *T. capensis* (as *Mabuya capensis*) (Flemming, 1994), *T. spilogaster* (Goldberg, 2006b), *T. sparsa* (Goldberg, 2007) and *T. occidentalis* (Goldberg, 2008). Furthermore, differences in duration of the ovarian cycles were noted between low and high elevation populations of *T. striata* (as *Mabuya striata*) by Patterson (1990). With 71 species of *Trachylepis* known (Uetz and Hallermann, 2009), 64/71 (90%) of which occur in Africa, many additional species need to be studied before the diversity of reproductive cycles exhibited by these lizards can be ascertained.

I thank Christine Thacker (LACM) for permission to examine specimens.

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News and Notes:

Harris (2009) mentioned that the NHSM was in the process of gathering Species Accounts, for all of Maryland's amphibians and reptiles, to be placed on the NHSM/DNR Website and eventually be published as a hard copy. This issue of the Bulletin of the Maryland Herpetological Society, contains the third series of these accounts, placed in a forum for any corrections/additions etc. prior to actual publication. These accounts will be authored by many individuals and when this project is completed will be a valuable asset to both the amateur and professional alike.

I would like to thank Dr. John E. Cooper of the North Carolina State Museum of Natural Sciences for his diligent editing of the Species Accounts.

Please send all comments to Herb Harris either by USPS or e-mail (hsharris@juno.com).

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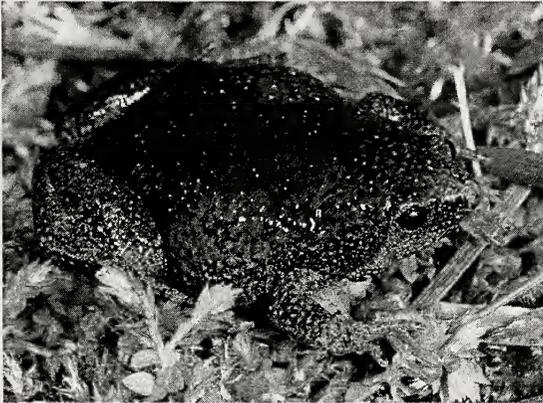
Herbert S. Harris, Jr., The Natural History Society of Maryland, P.O. Box 18750, Baltimore, Maryland 21206.

EASTERN NARROW-MOUTH FROG***Gastrophryne carolinensis***

The Eastern narrow-mouth frog is one of the smallest frogs in Maryland. Females, which are slightly larger than males, reach a maximum length of 28 mm. The typical color pattern consists of a dark dorsal trapezoidal area extending from behind the eyes to the hind legs. This area may be various shades of grey or brown, sometimes with silvery or reddish overtones. The dark dorsal area is usually flanked by a pair of broad, pale, lateral stripes extending from the head to the hind legs. The venter is heavily mottled with black, and, in males, the throat is black. A prominent fold of skin extends across the head just behind the eyes. Unlike all other Maryland frogs, the snout of this species is distinctly pointed, and the head, when compared to the rest of the body, is small. The body is squat and oval (egg-shaped) and the legs are stout and short. Toe webbing is lacking, and the tympanum is hidden.

Distribution: Found along the Atlantic and Gulf Coasts (including offshore islands) from the Delmarva Peninsula (in both Maryland and Virginia) to central Texas. North from Texas through Oklahoma to southeastern Kansas, and east through parts of Missouri, Kentucky, Virginia and Maryland to the Atlantic coast. Introduced in the Bahaman and Cayman Islands in the West Indies. Although restricted to the Coastal Plain in Maryland, it has been recorded from elevations of 549 to 732 meters in other parts of its range. It is now known from two Maryland counties (Calvert and St. Marys) west of the Chesapeake Bay and four counties (Dorchester, Kent, Somerset, and Worcester) on the Delmarva Peninsula east of the Bay.

Habitat: A solitary, secretive, fossorial species. Moist soil and abundant ground cover are essential components of the habitat. Narrow-mouth frogs are often found near the edges of



Eastern Narrow Mouth Frog.
(2277631436-52a79b243.jpg, couresty www.flickr.com).

ponds or ditches, but have also been recorded from wooded areas (especially pine forests), and from moist open fields and meadows having abundant ground cover. Places of concealment include fallen logs, bark, saw-dust piles, flat rocks, decaying vegetation, and, occasionally, crawfish borrows and the nest of other animals. They feed on ants and termites, and are consequently often found near ant nests.

News and Notes:



Distribution of the Narrow-mouth Frog in Maryland.

Breeding: Breeding is initiated by heavy rains and may occur, throughout the range, anytime from March to October. The call is non-musical and sounds much like an electric buzzer or the baying of sheep. Each call last from 0.4 to 2.3 seconds. Males call from floating or emergent vegetation in ponds, ditches, and brackish cattail mashes as well as from temporary pools and puddles. They have been observed calling in very shallow rain puddles, where they burrow in the sand with only their snouts protruding. Breeding has been observed at air temperatures of 22 to 25.5°C., and water temperatures of 22 to 32°C. Females deposit up to 1,600 eggs arranged in individual single-layered floating sheets, each containing from 10 to 150 eggs. Hatching usually occurs in 1 to 1.5 days; but is occasionally delayed until the third day. Hatching length is apparently unknown.

The maximum total length of the tadpoles is 21 mm. and the snout/length at metamorphosis is 8 to 12.5 mm. The tadpoles are easily identified by having a distinctly pointed snout (as in the adults) and by the presence of a yellowish mid-lateral line on the tail (best developed on the anterior one-third of the tail). The vertical fins are heavily blotched. Metamorphosis occurs in 20 to 70 days.

Status: The eastern narrow-mouth frog has been considered endangered in Maryland since 1973. The population at Cove Point, Calvert County, declined rapidly as a result of urbanization and the associated destruction of ant nests, ground cover, and breeding ponds. The last known specimen from Cove Point was collected in July, 1960; and the last known breeding pond was destroyed sometime between 1970 and 1973. The current status of other Maryland populations is unknown. Although the general population of this species throughout its range is apparently stable, it is critically endangered in Kansas, endangered in Illinois, and possibly extinct in Iowa.

News and Notes:

It is interesting to note that the eastern narrow-mouth frog was formerly abundant, but is now extinct at Cove Point, Calvert County. In 1947 about 25 specimens were collected in four days (including "about a dozen" in one day).

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News and Notes:

Editor's Note:

In: Harris and Crocetti. 2008. The Eastern Spadefoot Toad, *Scaphiopus holbrookii* in Maryland. Bull. Md. Herp. Soc. 44(3):107-110, we inadvertently sent an earlier draft to the type setter, leaving out a record for the spadefoot in Queen Anne's County and the following reference...

White, J.F. and A.W.White.

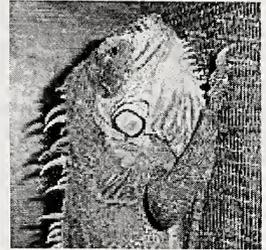
2002. Amphibians and reptiles of Delmarva. Delaware Nature Society, Inc., Tidewater Publishers, Centreville, MD. xvi + 248 pp.

Sorry for any inconvenience this may have caused.

News and Notes:

MARS REPTILE & AMPHIBIAN RESCUE IS NOW

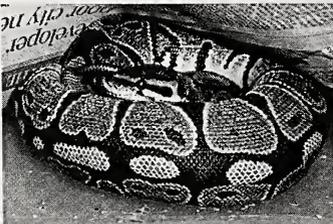
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Society Publication

Back issues of the Bulletin of the Maryland Herpetological Society, where available, may be obtained by writing the Executive Editor. A list of available issues will be sent upon request. Individual numbers in stock are \$5.00 each, unless otherwise noted.

The Society also publishes a Newsletter on a somewhat irregular basis. These are distributed to the membership free of charge. Also published are Maryland Herpetofauna Leaflets and these are available at \$.25/page.

Information for Authors

All correspondence should be addressed to the Executive Editor. Manuscripts being submitted for publication should be typewritten (double spaced) on good quality 8 1/2 by 11 inch paper with adequate margins. Submit original and first carbon, retaining the second carbon. If entered on a word processor, also submit diskette and note word processor and operating system used. Indicate where illustrations or photographs are to appear in text. Cite all literature used at end in alphabetical order by author.

Major papers are those over five pages (double spaced, elite type) and must include an abstract. The authors name should be centered under the title, and the address is to follow the Literature Cited. Minor papers are those papers with fewer than five pages. Author's name is to be placed at end of paper (see recent issue). For additional information see *Style Manual for Biological Journals* (1964), American Institute of Biological Sciences, 3900 Wisconsin Avenue, N.W., Washington, D.C. 20016.

Reprints are available at \$.07 a page and should be ordered when manuscripts are submitted or when proofs are returned. Minimum order is 100 reprints. Either edited manuscript or proof will be returned to author for approval or correction. The author will be responsible for all corrections to proof, and must return proof preferably within seven days.

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