

## The Type Locality of the Frog *Acris crepitans*

The original type locality of *Acris crepitans* Baird (1854) has invariably been understood as the "northern states generally," inasmuch as Baird directly cited no other locality and gave the area indicated as the "habitat" for the species.

With that understanding, limited only by the parameters implied by the "northern states," two restrictions of the type locality have been published. The earliest (Smith and Taylor 1950:359) cited by the "northern states," Smith and Taylor (1950:359) cited being published. The earliest (Smith and Taylor 1950:359) cited being published. The earliest (Smith and Taylor 1950:359) cited being published.

Unaware of the Smith/Taylor restriction, Schmidt (1953:68) restricted the type locality to the "Potomac River at Harper's Ferry, West Virginia," on unknown grounds. That restriction is here refuted, not because it is outside of either the known range of the species or the "northern states" (which might be construed as any species or the "northern states" which West Virginia was, or any north of the Mason-Dixon line, which West Virginia was not), but because the original description does, in fact, provide a more restricted locality than has been assumed in acceptance of the "northern states" as the original type locality.

Baird (1854) not only described the species, briefly, but cited as a synonym "*Hylodes gryllus* LeConte" of DeKay's great classic on the zoology of New York (1842:70, pl. 22, fig. 61). That reference is therefore a part of the type material (hypodigm), and it does clearly provide a more restricted locality for the species, namely New York. This we regard as the original type locality, inasmuch as Baird actually did not specify a type locality as such—only the general range, under the rubric of "habitat."

Unfortunately no more precise locality than "New York" is cited for the species in DeKay's work, but it is reasonable to suppose that DeKay observed the frog near his home, indicated in the preface of the book as "The Locusts, Queen's County."

According to The National Cyclopaedia of American Biography, in the 1830's "the state of New York was publishing valuable works... and Dr. DeKay was selected to contribute a book on the zoology of the state, a work of great difficulty, owing to the lack of printed material.... The result of his work was embodied in five quarto volumes.... In order to work at his zoology, he left the city for "The Locusts," a country place at Oyster Bay, Long Island, where he resided until his death" 21 November 1851. The eastern part of the original Queen's Co. was separated in 1899 as Nassau Co., where Oyster Bay is now registered.

There are several early collections of *Acris* from Queen's, Nassau, and Suffolk counties, so it is apparently safe to assume that the frog occurred in the vicinity of DeKay's home and that he was familiar with it. Although at one time the species undoubtedly ranged throughout the island, no records after the 1930's exist, and the species may well no longer occur there.

Nevertheless, since the species did once occur in the vicinity of DeKay's home near Oyster Bay, where most of the Zoology of New York was written, we regard the present restriction of the type locality of *Acris crepitans* to "The Locusts," near Oyster Bay,

Nassau Co., Long Island, New York" as appropriate and soundly conformant with present knowledge.

### LITERATURE CITED

- BAIRD, S. F. 1854. Descriptions of new genera and species of North American frogs. Proc. Acad. Nat. Sci. Philadelphia 7:59-62.
- BENTON, A. H., AND D. SMILEY. 1961. Some noteworthy records from eastern New York. Herpetologica 17:142.
- DEKAY, J. E. 1842. Zoology of New York... Part III. Reptiles and Amphibia. Albany, New York, vii, 98 pp.
- DUPELLMAN, W. E. 1970. The hylid frogs of Middle America. Monograph Mus. Nat. Hist. Univ. Kansas (1):1-753.
- SCHMIDT, K. P. 1953. A Checklist of North American Amphibians and Reptiles. 6th ed. Univ. Chicago Press, Chicago, Illinois, viii, 280 pp.
- SMITH, H. M., AND E. H. TAYLOR. 1950. Type localities of Mexican reptiles and amphibians. Univ. Kansas Sci. Bull. 33(8):313-380.

**HOBART M. SMITH**

Department of EPO Biology  
University of Colorado  
Boulder, Colorado 80309-0334, USA

**ROBERT T. ZAPPALORTI**

Herpetological Associates, Inc.  
2525 Dover Road-Bamber Lake  
Forked River, New Jersey 08210, USA

**ALVIN R. BREISCH**

New York State Department of Environmental Conservation  
Endangered Species Unit  
Wildlife Resources Center  
Delmar, New York 12054-9767, USA

and

**DANIEL L. MCKINLEY**

10 Knowles Terrace  
Albany, New York 12203, USA.

## Evidence of Possible Sperm Storage in the Caiman, *Paleosuchus palpebrosus*

Sperm storage has been reported in a number of chelonians and squamates but it has not been reported in crocodilians (Ferguson 1985). In squamates, sperm storage is made possible by structures located in the oviducts and in some species fertile eggs can be produced months or even years after copulation (Goin et al. 1978). Some male snakes store sperm over winter in the ductus deferens and are then used during mating the following spring (Seigel and Ford 1987). Some chelonians can also store sperm, females producing viable eggs for several years after last mating (Goin et al. 1978). Hatten and Gist (1975) found sperm stored in the albumen secreting tubules in the box turtle, *Terrapene carolina*. Gist and Jones (1987) later reported stored sperm in these structures in many species of chelonians.

On 25 February 1981, the National Zoological Park received one male and three female dwarf caiman, *Paleosuchus palpebrosus*, from Surinam. A fourth female was added to the group on 5 August 1984. Sex was determined using the method described by Brazaitis (1969). This group was moved into a livestock water tank on 12 September 1990 and maintained there until 6 March 1991 when three of the females were removed. These three males have since been maintained together without contact with

any other individuals. On 7 July 1992, 488 days after the last contact with a male, 16 eggs were found submerged in the tank. Mean egg weight was 64.8 g (range 59.2-68.0 g), mean width was 40.3 mm (range 38.3-41.4 mm) and mean length was 66.9 mm (range 63.1-70.1 mm). All eggs were normal in appearance and were incubated at approximately 28°C in an environmental chamber. By 10 July, six eggs had begun to band, an indication of fertility (Ferguson 1985). Mean band width measured at the top of each egg was 20.2 mm (range 13.9-28.9 mm). By 16 July, band width had increased to a mean 31.7 mm (range 27.7-37.0 mm) indicating embryonic development. A seventh egg began to band on 18 July. As band growth seemed arrested by the beginning of September, the seven eggs were dissected by NZP pathologists to determine development. One egg contained a live, well-developed embryo. The remaining six eggs had decayed to the point that possible embryonic tissue could be seen only in two, possible blood spots in another two, and in the remaining two eggs nothing indicating fertility could be discerned.

On 24 January 1993 two of the three females were measured. Their snout-vent lengths were 59.6 cm and 56.3 cm. The third female is of very similar size. At this time, the sex of the three females was rechecked (Brazaitis 1969).

In crocodilians, the interval between insemination and egg-laying reportedly varies between species (Ferguson 1985). The longest interval, five months, was reported by Pooley and Gans (1976) for the Nile crocodile, *Crocodylus niloticus*. This was determined through field observations but in such cases it may be difficult to determine when copulation attempts are successful or if the male is producing viable sperm. In captivity at the National Zoological Park, Cuban crocodiles, *Crocodylus rhombifer*, begin to court and attempt copulation in December and continue for several months before eggs are laid the following April or May (pers. observ.). Even though pool water is relatively clear and the crocodiles are close to the observer, it is still difficult to determine when copulation attempts are successful. Ferguson (1985) suggested detailed autopsies to verify the seemingly variable intervals between insemination and egg-laying in different species. The interval measured here for *P. palpebrosus* is the longest reported in a crocodilian. No attempt to locate sperm storage structures in this species has been published; however, they have not been found in either the American alligator, *Alligator mississippiensis* or *C. niloticus* (Ferguson 1985). Detailed descriptions of the adult crocodilian oviducts are not available, though it reportedly is generally similar to that of chelonians (Gist and Jones 1987). However, because sperm storage structures have not been reported in crocodilians does not mean they do not exist. Long term sperm storage in chelonians was reported before the sperm storage structures, the tubular albumen-secreting glands in the oviduct, were discovered (Hatten and Gist 1975).

A decrease in fertility was noted in this clutch of *P. palpebrosus* eggs compared to other clutches laid at NZP by females with continuous access to a male. Similarly, decreases in fertility have been shown to occur in egg clutches laid by diamondback terrapins, *Malaclemys terrapin*, as the time interval from last mating increases (Goin et al. 1978).

Sperm storage may be an advantage for a crocodilian species which reportedly occurs in low densities in the wild (Ross and Magnusson 1989). Such a capability would allow reproduction by females that do not have regular access to males.

**Acknowledgments.**—I thank Geoffery Birchard and Dale L. Marcellini for their helpful critiques of the manuscript.

### LITERATURE CITED

- BRAZAITIS, P. 1969. The determination of sex in living crocodilians. Brit. J. Herpetol. 4(3):54-58.
- FERGUSON, M. W. J. 1985. Reproductive biology and embryology of the crocodilians. In C. Gans, F. Billett, and P. F. A. Maderson (eds.), Biology of the Reptilia, Vol. 14, Development A, pp.329-491. John Wiley & Sons, New York.
- GIST, D. H., AND J. M. JONES. 1987. Storage of sperm in the reptilian oviduct. Scanning Microscopy 1(4):1839-1849.
- GOIN, C. J., O. B. GOIN, AND G. R. ZUG. 1978. Introduction to Herpetology. W. H. Freeman and Company, New York. 378 pp.
- HATTEN, L. R., AND D. H. GIST. 1975. Seminal receptacles in the eastern box turtle, *Terrapene carolina*. Copeia 1975:505-510.
- POOLEY, A. C., AND C. GANS. 1976. The Nile crocodile. Sci. Amer. 234:114-124.
- ROSS, C. A., AND W. E. MAGNUSON. 1989. Living crocodilians. In C. A. Ross (ed.), Crocodiles and Alligators, pp. 58-73. Facts on File, New York.
- SEIGEL, R. A., AND N. B. FORD. 1987. Reproductive ecology. In R. A. Seigel, J. T. Collins, and S. S. Novak (eds.), Snakes: Ecology and Evolutionary Biology, pp. 210-252. Macmillan Publishing Co., New York.

**MICHAEL DAVENPORT**

Department of Herpetology  
National Zoological Park  
3000 Block of Connecticut Avenue, N.W.  
Washington, D.C. 20008, USA.

## Distributional Notes for the Night Lizard *Lepidophyma gaigeae* (Xantusiidae)

Gaige's tropical night lizard, *Lepidophyma gaigeae*, is a relatively small flat-bodied member of the family Xantusiidae, variously placed in the subfamily Xantusiinae (Savage 1959) or Lepidophyminae (Crother et al. 1986; Smith 1987). Since its original description by Mosauer (1936), the scattered published records report this night lizard as occurring in rock fissures and between loose rocks in limestone areas. It occurs chiefly in pine-oak forests, as well as the walnut belt of the Sierra Madre Oriental in northwestern Hidalgo and northeastern Querétaro, México, at elevations of 1515-2200 m (Bezy 1984, 1988, 1989; Bezy and Camarillo 1992; Dixon et al. 1972; Smith 1973; Smith and Taylor 1950). Xantusiid lizards have been described as habitat specialists (Bezy 1989), and the ranges of the majority of species are fragmented, characteristic of primitive, relictual groups (Bezy 1972).

In early August 1991, the author and two colleagues, Carlos Camacho (CCA) and Dionisio Saucedo (DSR) found two *L. gaigeae* (AGA0767, SVL = 42.5 mm, sub-adult; CCA011, SVL = 55.1 mm, adult) about 2 km SSW of the small village of Verdosas (10 airline km north of Zimapán, and 18 km ESE of Durango, Hidalgo). The habitat at this locality is pine-oak forest, and both lizards were found under loose rocks on a rocky slope at elevations of 2170 and 2520 m respectively (Figs. 1A, B). The following reptiles, associated with the same habitat at this locality, were also collected: *Sceloporus grammicus*, *S. jarrovi immucronatus*, *S. torquatus melanogaster*, *S. parvus scutulatus*, *Gerrhonotus liocephalus taylori*, *Leptophis mexicanus*, and *Crotalus triseriatus aguilus*.

In addition, during field trips to eastern Querétaro and western Hidalgo (near the border between these states) the author collected two specimens of *L. gaigeae* in October 1989 and April 1990. The