

**OBSERVATIONS OF SNAKE-EATING
BY CAPTIVE AFRICAN BULLFROGS (*PYXIECEPHALUS ADSPERSUS*)**

GARY L. PAUKSTIS* & STEPHEN L. REINBOLD**

**Department of Zoology and Entomology, Colorado State University, Fort Collins, Colorado 80523*

***Department of Biological Sciences, Illinois State University, Normal, Illinois 61761*

Although the African Bullfrog or Giant Pyxie (*Pyxiecephalus adspersus*) is known to eat snakes (Rose, 1962; Branch, 1976), published observations are lacking on the behavior involved. We describe here six observations of three captive frogs eating eastern garter snakes (*Thamnophis sirtalis*). All frogs were purchased from a commercial dealer and maintained on a diet of laboratory rats, mice and leopard frogs (*Rana*). Frogs were housed in individual 75.7 liter aquaria containing sand and a water bowl. All feeding trials involved a single frog and were conducted in the aquarium in which the frog was housed. Feeding trials were conducted between 14 July 1978 and 17 July 1979.

Snakes were introduced into the aquaria on 13 occasions. Few details were recorded for the first observation. Five detailed observations are summarized in Table 1. In all cases except the sixth trial, the snake was captured near the head. Generally, the frogs held the intermittently struggling snake for a period of time and then began actively feeding by pushing the snake away from the mouth with one or both forelegs, straightening and centering the snake, and lunging forward with rapid release and regripping of the snake allowing swallowing. When pushing the snake, the foreleg or forelegs were held with the palms forward and digits pointing inward with one or two digits beneath the snake's body and the others arching over the snake. The largest frog (number 1) tended to maintain a grip with both forelegs more than the other two frogs. The sixth observation was unusual in that the snake was eaten backwards and occurred with more vigorous activity by the frog which was responding to being bitten. In several cases the snake bit the frog causing the frog to brush the snake's head loose. While actively feeding, the frogs intermittently had rapid ventilations, apparently due to difficulty in breathing.

These observations are interesting in several respects. First, very few anurans are known to use their digits extensively as aids in feeding. While some anurans are known to use their forelegs for brief prey orientation while swallowing, the typical anuran feeding behavior consists of using the tongue and mouth to capture prey. Exceptions include certain aquatic anurans in the family Pipidae that are known to use their digits and forelimbs while feeding underwater (Noble, 1931; Sokol, 1969; Frye and Avila, 1979). In these species, however, prey items are generally not held with the digits but are scooped into the mouth (Avila and Frye, 1977). These observations are of further interest in view of the size of the snakes eaten, indicating an unexpected potential food source in the wild.

Table 1. Data for five observations of three *Pyxicephalus adspersus* eating *Thamnophis sirtalis*. "Wait time" was the period of time after capture before feeding began. "Feeding time" was the period of time required to swallow the snake after feeding began.

| No. | Frog Snout-vent Length mm | Head Width at Jaw mm | Snake Length mm | Wait Time min. | Feeding Time min. |
|-----|------------------------------------|----------------------------|-----------------------|----------------------|-------------------------|
| 1 | 150 | 60 | 590 | 20 | 14 |
| 1 | 170 | 70 | 760 | 42 | 19 |
| 2 | 115 | 40 | 510 | 5 | 28 |
| 3 | 130 | 70 | 520 | 3 | 17 |
| 3 | 130 | 70 | 520 | 0 | 12 |

LITERATURE CITED

- Avila, V.L. and Frye, P.G. (1977). Feeding behavior in the African Clawed Frog (*Xenopus laevis* Daudin). *Herpetologica* 33: 152-161.
- Branch, W.R. (1976). Two exceptional food records for the African Bullfrog, *Pyxicephalus adspersus* (Amphibia, Anura, Ranidae). *J. Herpetol.* 10: 266-268.
- Frye, P.G. and Avila, V.L. (1979). Food-initiated behavior of the African Clawed Frog (*Xenopus laevis*): effect of population density. *Herpetologica* 35: 30-37.
- Noble, G.K. (1931). *The Biology of the Amphibia*. McGraw Hill Co., Inc., New York.
- Rose, W. (1962). *The Reptiles and Amphibians of Southern Africa*. Maskew Miller Ltd., Cape Town.
- Sokol, O.M. (1969). Feeding in the pipid frog *Hymenochirus boettgeri* (Tonier). *Herpetologica* 25: 9-24.