

3-1-1977


# Mouthless Cypriniform Fishes from Louisiana and Arkansas

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## NSUWorks Citation

Patrick S. Hambrick and Richard E. Spieler. 1977. Mouthless Cypriniform Fishes from Louisiana and Arkansas. *The Southwestern Naturalist*, (1) : 143 -146. [http://nsuworks.nova.edu/occ\\_facarticles/207](http://nsuworks.nova.edu/occ_facarticles/207).

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## Southwestern Association of Naturalists

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Source: *The Southwestern Naturalist*, Vol. 22, No. 1 (Mar. 1, 1977), pp. 143-146

Published by: [Southwestern Association of Naturalists](#)

Stable URL: <http://www.jstor.org/stable/3670482>

Accessed: 30/09/2014 10:24

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Roberts Co., Texas, on 22 April 1972. The water was clear and shallow with sandy bottom and no salt encrustaceans on dry areas. Other species in the collection were *Notropis lutrensis*, *N. girardi*, *N. stramineus*, *Pimephales promelas*, *Hybognathus placitus*, *Fundulus kansea*, and *Gambusia affinis*. Probably the pupfish was artificially transported into the area. It does not occur in certain saline waters of the Arkansas drainage of western Oklahoma, which would support large pupfish populations in the Red and Brazos river drainages.—Anthony A. Echelle and Alice F. Echelle, Biology Department, Baylor University, Waco, Texas 76703, and Frank B. Cross, University of Kansas, Museum of Natural History, Lawrence, Kansas 66044.

**MOUTHLESS CYPRINIFORM FISHES FROM LOUISIANA AND ARKANSAS.**—Reports of astomous fishes from American waters are few (Leidy 1875; Fuller 1951; Menzel 1974) and include only carp (*Cyprinus carpio*) and buffalo-fishes (*Ictiobus*). Two additional specimens, *I. bubalus* and *C. carpio*, possessing this unique abnormality have recently become available for study.

*Ictiobus bubalus*, Smallmouth buffalo.—A subadult (385 mm SL) *I. bubalus* (Fig. 1) was captured in a gill net from the Tensas River, Madison Parish, Louisiana, on May 1967 by James Fletcher, a commercial fisherman. The specimen was donated to the Northeast Louisiana University Vertebrate Museum where it is now housed (NLU 6240).

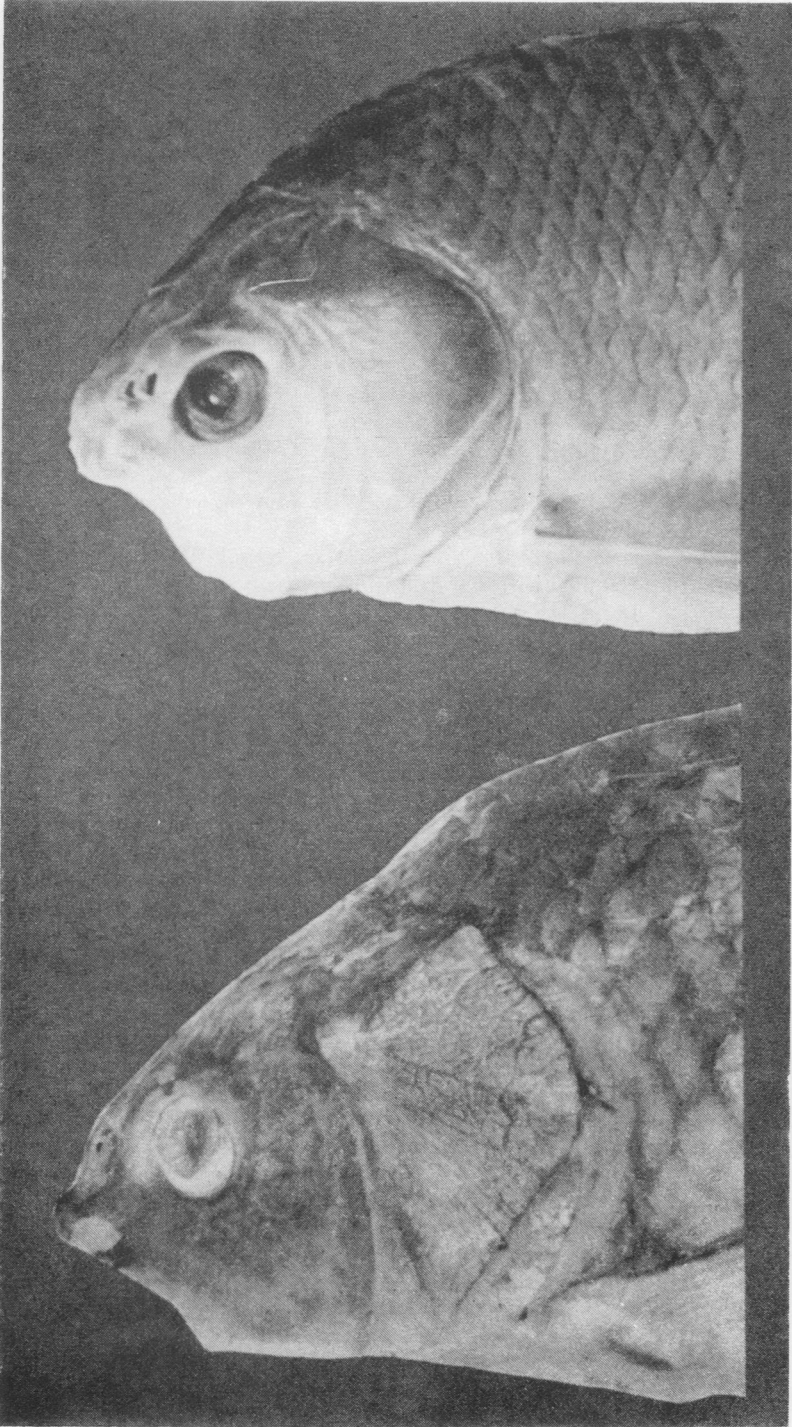
The dentary, premaxillaries, and maxillaries are absent. The integument is tightly stretched over the oral cavity between the snout, suborbitals, lachrymals, and articular ends of the quadrate. Depressed suborbitals and lachrymals cause the lower portion of the eyes to be free from the socket. Eye width (14 mm) is considerably smaller than orbit width (20 mm) because of osteological abnormality in the orbital region. Nasal and ethmoid bones are fan-shaped and flattened dorso-laterally, and, as a result, the external nares are on top of the snout instead of laterad. Thus, the width between the external nares is greater than normal. This abnormality is probably not due to regeneration of tissue after previous injury because the cephalic acousticolateralis system, particularly the infraorbital and preoperculumandibular canals, is well developed; damage to this system was not detected.

As the primary criterion for separating the three species of *Ictiobus* is lip type (Moore 1968), this specimen was identified as *I. bubalus* by having about 60 gill rakers, standard length/body depth of 2.6, and a predorsal keel (Douglas 1974).

The astomous fish possibly stirred up softer sediments with its snout by steady "plowing", as observed by Jester (1973) in normal *I. bubalus*, then remained motionless in the area of stirred sediment and/or slowly swam backwards through the water while engulfing detrital material and microorganisms through the opercular openings into the oral cavity and then swallowing. Another thesis is that the fish possibly burrowed in sediment and engulfed food material into the oral cavity through the opercles by forceful opening of the buccal cavity. Gill filaments were very abraded. Much detrital material, too large to be strained into the oral cavity, was found lodged on the gill filaments. Detrital material was also found in the external nares.

Intestinal contents were scant; only a few particles of detritus were found. The only identifiable contents were two pieces of decayed leaves, each about 1 mm square.

Examination of scales revealed this specimen to be in year class IV. The fish is



**Fig. 1.** Mouthless cypriniforms, *Ictiobus bubalus* (top) from Louisiana and *Cyprinus carpio*(bottom) from Arkansas.

not emaciated in appearance and its size is comparable to that of other year class IV smallmouth buffalo (Walburg 1964; Fitz 1968).

*Cyprinus carpio*, Carp.—An adult carp (410 mm SL) was collected from Black River in Shirey Bay-Rainey Brake Game Management Area, Arkansas, on 25 July 1971 (Fig. 1). It is presently deposited in the Arkansas State University Vertebrate Museum (ASU 625).

This specimen lacks a lower jaw. X-rays revealed the absence of the dentaries, premaxillaries, and maxillaries. The prefrontal and nasal bones slope sharply at approximately a 75° angle toward the rostrum, which appears as a knoblike process, approximating a pugheaded condition. The oral orifice is completely covered by integument and barbels are lacking. The external nares lie in the depression formed by the abnormal development of the rostral-nasal-ethmoid complex and project anteriorly instead of dorsolateral as in normal carp.

The fish undoubtedly fed by opercular ingestion of detritus. Examination of gut contents revealed unidentified cyanophytes, navicular diatoms, and fragments of vascular plants and crustaceans.

Examination of scales revealed this specimen to be in year class VII. The fish is not emaciated in appearance and its size is comparable to that of other year class VII carp (Jester 1974).

We concur with Leidy (1875) that astomous conditions are probably due to a developmental abnormality and not previous injury (see Menzel 1974 for this argument). As the number of anomalous specimens taken from a stream possibly relates to the amount and kind of pollutants a stream receives, we feel that the reporting of anomalous specimens especially large numbers (Lux 1972) or several species collected from the same locality which exhibit anomalous conditions, should be encouraged.

Drs. Neil H. Douglas and John K. Beadles loaned the *Ictiobus* and *Cyprinus*, respectively. Dr. William F. Smith-Vaniz supplied a copy of Leidy's (1875) paper. Chris Parker and Mike Turner provided the photograph. Dr. J. Michael Fitzsimons reviewed the manuscript.

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COACHWHIP PREYS ON HORNED LIZARD.—At 1912 hrs on 12 July 1975 (sunny and partly cloudy, temperature 30°C) I watched a large pink coachwhip (*Masticophis flagellum testaceus*) devour an adult Texas horned lizard (*Phrynosoma cornutum*) in mesquite-grassland country 2.5 km west and 1 km south of Reed, Greer County, Oklahoma.

When I first saw the snake it was lying in a loose coil on a pasture road, its head held vertically about 15 cm above the ground. It held the horned lizard, which did not seem to be struggling, cross-wise in its mouth. As I watched, the coachwhip manipulated its prey so that it could be swallowed head-first. By 1916 hrs, the smaller reptile was completely ingested. After a lively chase, I captured the male snake, which measured 160.4 cm (S-V) and weighed 637 g (exclusive of the *Phrynosoma*). By this time, the lizard had been forced down to a position about 20 cm behind the snake's head. After it was forcibly regurgitated, the lacertilian appeared to be partially paralyzed and could not open its eyes. It was a male which measured 6.3 cm (S-V) and weighed 17.9 g. The *Phrynosoma* (CUMZ 130) and the *Masticophis* (CUMZ 93) are deposited in the Cameron University Museum of Zoology in Lawton, Oklahoma.

On the afternoon of 6 July 1973 I had forced another large pink coachwhip (161.3 cm, total length) to regurgitate an apparent adult *Phrynosoma* at Black Mesa State Park, 14.5 km southeast of Kenton, Cimarron County, Oklahoma.

Although lizards are often listed as foods of *M. flagellum*, nowhere in the literature could I find a reference to this species actually preying on *Phrynosoma*. McKinney and Ballinger (*Southwest. Nat.* 11: 410–412, 1966) found horned lizard remains in 14 of 30 prairie rattlesnakes (*Crotalus viridis*) from Winkler and Andrews counties in west Texas, but found no evidence of this species in the stomachs of 17 coachwhips from the same vicinity.—*Jack D. Tyler, Department of Biology, Cameron University, Lawton, Oklahoma 73501.*