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Novel Reproductive Data on Blue Sucker, *Cycleptus elongatus* (Cypriniformes: Catostomidae), from Northeastern Arkansas

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Running Title: *Cycleptus elongatus* Reproduction

Abstract

Nothing has been published in the scientific literature concerning the reproductive biology of the Blue Sucker, *Cycleptus elongatus* in Arkansas. We examined seven female *C. elongatus* collected in late February 2021 and 2022 and again in early March 2023 from the Black River, Lawrence County. Egg mass (g) averaged 15.8% of the total weight of these gravid females. It appears that this sucker can spawn as early as February in this population. This is the first time information on female reproduction in this species has been published from any population of *C. elongatus* in the state.

Introduction

The Blue Sucker, *Cycleptus elongatus* Lesueur (Fig. 1), occurs in the Mississippi River basin from Pennsylvania to Montana and south to Louisiana, and in Gulf slope drainages from the Sabine River, Louisiana, to México (Gilbert 1980; Page and Burr 2011). This long-lived catostomid occurs in deep, swift chutes and main channels of medium to large rivers over sand, gravel, and bedrock. In Arkansas, it ranges widely in large rivers but is rarely collected because of its preference for deep, swift waters (Robison and Buchanan 2020). Populations in Arkansas are ranked G3 (vulnerable) by NatureServe (2023).

Layher (2007) reported information on the reproduction of *C. elongatus* in the state but the data was presented in a state game and fish document and not the refereed scientific literature; thus, it is considered gray literature. In addition, although others have reported on reproduction, these reports were from other states. In Kansas, individuals in breeding condition were collected in April and late May (Gilbert 1980; Moss *et al.* 1983). In Iowa, adult Blue Suckers with milt and/or

eggs have been collected in the Mississippi River in late April (Rupprecht and Jahn 1980). Spawning runs of *C. elongatus* have been reported in western Tennessee during February (Starnes 1973); however, actual spawning did not occur until late April or May (Etnier and Starnes 1993). Daugherty *et al.* (2008) collected pre-spawn (= ripe) individuals during March and April in the Wabash River near Lafayette, Indiana.

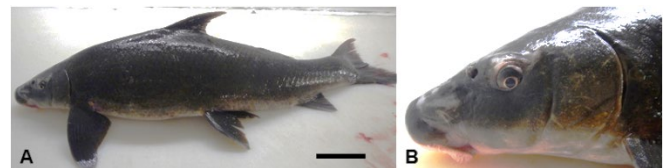


Figure 1. Female *Cycleptus elongatus* from the Black River. (A) Lateral view showing left side of entire specimen; scale bar = 100 mm. (B) Lateral view showing close-up of left side of head. Photos by CTM.

Here, we document novel reproductive information for *C. elongatus* from a major northeastern Arkansas river.

Materials and Methods

During 24–26 February 2020 (n = 3), 25 February 2021 (n = 3), and 2 March 2023 (n = 1), seven female *C. elongatus* (mean \pm SD total length [TL] = 610.3 \pm 71.2, range 523–759 mm. Fig. 1) were collected by a local commercial fisherman using un-baited hoop nets from the Black River at Black Rock, Lawrence County (36° 06'04.3848"N, -91°05'7.9224"W). Live fish were transferred temporarily to large (625 liter) aerated tanks containing habitat water and eventually killed by cervical dislocation. They were immediately weighed on an Ohaus digital scale to the nearest 0.1 g. A mid-

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ventral incision was made from the lower operculum to the anus (vent). Entire egg masses were removed from the coelomic cavity and weighed to the nearest 0.1 g on the same scale noted above. Photographs of voucher specimens were also taken.

Results and Discussion

All seven female *C. elongatus* possessed large yolked egg masses (Figs. 2A–B) that ranged in weight from 190.5 to 544.3 g (340.5 ± 105.6 g) (Table 1). Egg mass accounted for 13.2 to 18.8% ($15.8 \pm 1.5\%$) of total body weight (Fig. 2B); the largest female (759 mm TL, 3,433.7 g) had the largest egg mass (544.3 g). At the same time, a single male *C. elongatus* (600 mm TL, 1,814.4 g) collected on 2 March 2023 possessed nuptial tubercles (Figs. 3A–B) and was sexually mature and producing milt. An estimate of the relative fecundity and egg size of female *C. elongatus* was not attempted.

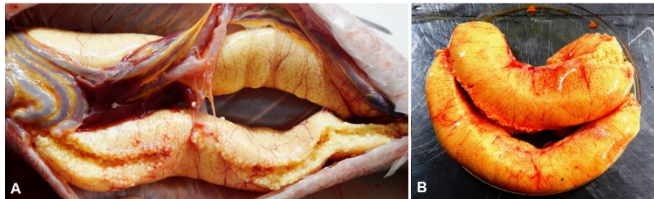


Figure 2. Egg mass complement from *Cycleptus elongatus*. (A) Eggs in situ. (B) Eggs removed for weighing. Photos by CTM.

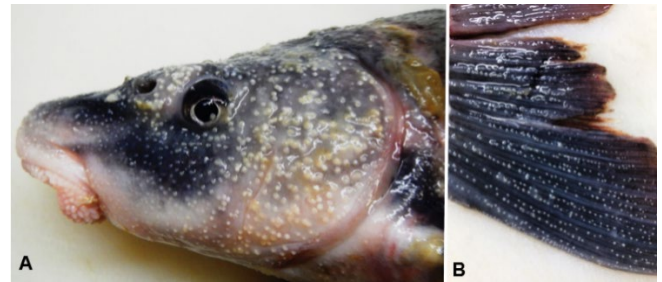


Figure 3. Nuptial male *Cycleptus elongatus* from the Black River. (A) Tubercles covering head. Photo by CTM. (B) Tubercles on caudal fin. Photos by EML.

We document that spawning of *C. elongatus* in a northeastern Arkansas river (upper White River system) may occur as early as late February. It is our hope that this reproductive data will increase our understanding of its ecology and provide helpful management information necessary for future population recovery efforts throughout its Arkansas distribution. Indeed, further collection of *C. elongatus* from other parts of the state in other river drainages (Arkansas and Red systems) is recommended to add more to our knowledge on the life history studies of this often under collected fish.

Table 1. Reproductive data on female *Cycleptus elongatus* from the Black River at Black Rock, Lawrence County, Arkansas.

Specimen no.	TL (mm)	Total wt g (lbs)	Egg mass g (lbs)	Egg mass % of total wt
1*	570	1,818.9 (4.01)	276.7 (0.61)	15.2%
2*	565	1,519.5 (3.35)	285.8 (0.63)	18.8%
3*	645	2,612.7 (5.76)	421.8 (0.93)	16.1%
4†	585	1,439 (3.15)	190.5 (0.42)	13.2%
5†	523	2,027.6 (4.47)	322.1 (0.71)	15.9%
6†	625	2,213.5 (4.88)	344.7 (0.76)	15.6%
7‡	759	3,433.7 (7.57)	544.3 (1.20)	15.9%

*Collected during 24–26 February 2020.

†Collected on 25 February 2021.

‡Collected on 2 March 2023.

Acknowledgments

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