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The Status of the Southern Redbelly Dace, *Chrosomus erythrogaster*, in Mississippi



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The Status of the Southern Redbelly Dace, *Chrosomus erythrogaster*,¹ in Mississippi.²

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Frank L. Pezold³ and James M. Grady.³

The southern redbelly dace is a wide ranging cyprinid fish, with the main body of its distribution lying in the upper and middle Mississippi River Valley. The species was unknown from the state of Mississippi until 1951, when Hemphill (1957) discovered a disjunct population in Bliss Creek, Yazoo River system, just outside the city limits of Vicksburg in Warren County. Hemphill (1957) reported on three collections of 51 specimens from an area in Bliss Creek below a small waterfall. Cook (1959) cited Hemphill's record as the only Mississippi locality for *C. erythrogaster*.

In the past year two additional Mississippi populations of the redbelly dace have been discovered. TVA biologists have located the species in Yellow Creek, Tennessee River drainage, in Tishomingo County (Charles Sayer, pers. comm.). Inasmuch as the redbelly dace is distributed throughout the Tennessee River drainage, its occurrence in the northeastern part of Mississippi is not surprising. A second new record, however, from Clark Creek in Wilkinson County, in extreme southwestern Mississippi, represents another disjunct population in the lower Mississippi River Valley, and extends the limit of the species southward more than 100 miles.

As the Tennessee River drainage record is based only on field identification (C. Sayer, pers. comm.), and there are no preserved specimens, this report will deal only with the status of the two dace populations in the tributaries to the lower Mississippi (Figure 1).

Bliss Creek is a small, clear, spring-fed tributary to the Yazoo River, and drains a small portion (38.9 km²) of the Loess Bluffs formation near Vicksburg. The stream is approximately 13.2 km long and typically does not exceed a width of 2 m or a depth of 1 m.

The status of the Bliss Creek dace population has been the subject of some concern due to an apparent decline in numbers, and the potential threat to the habitat from urban expansion. The redbelly dace was proposed for peripheral-endangered status for the state of Mississippi by Clemmer, Suttkus and Ramsey (1975). In a survey of the fish collections at Northeast Louisiana University, Mississippi State University, the University of Alabama, and the Tulane University Museum of Natural History, we found that only the last two collections had dace material from Bliss Creek and tributaries.

We located 4 lots containing 13 specimens, all collected by Hemphill in 1951 and 1952, at the University of Alabama. Some of the 51 specimens reported

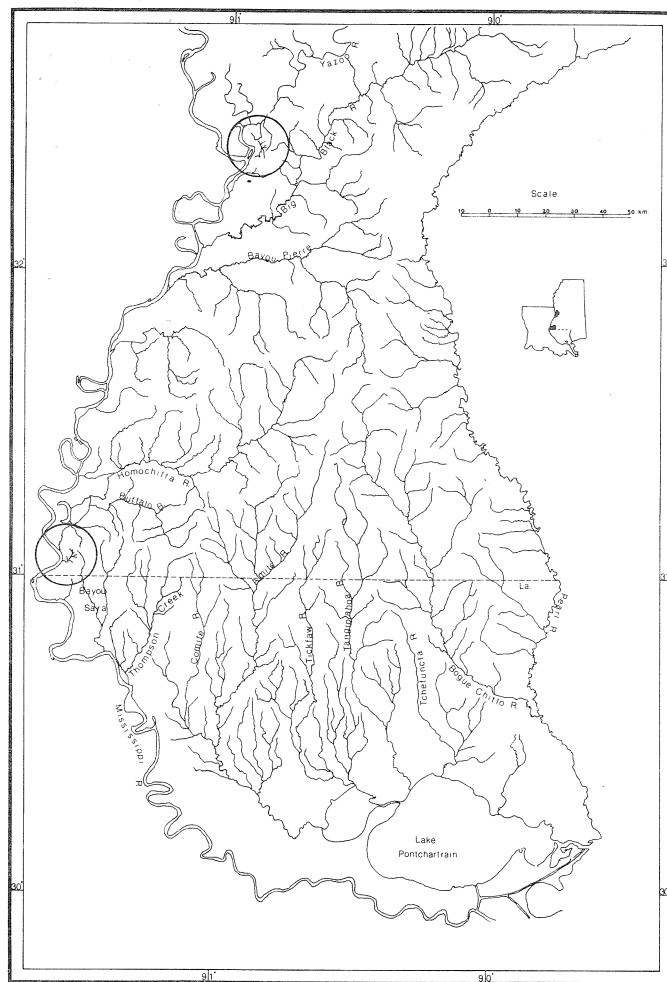


Figure 1. Map of Lower Mississippi River with Bliss Creek (upper) and Clark Creek (lower) drainages encircled.

1. Referred to the genus *Phoxinus* by many authors and in the 1970 and 1980 American Fisheries Society checklists.
2. Contribution No. 21 from the Tulane Museum of Natural History.
3. Department of Biological Sciences, University of New Orleans.
4. Tulane University Museum of Natural History.

upon by Hemphill (1957) were sent to the Mississippi Game and Fish Commission Museum, of which the largest series (36), collected on 12 March 1955, was not found. One of the University of Alabama collections (UAIC 249) is from Hatcher Bayou, 3.7 km S of Culkin Academy and 3.2 km W of Mt. Albin Church, in Warren Co. Hatcher Bayou is a tributary to Hennessey's Bayou, which empties directly into the Mississippi River. According to the label, a series of 11 specimens was taken by Hemphill and Webb on 10 May 1952, although only a single specimen now remains. The locality on the label is between 5.6-6.4 km south of the reported Bliss Creek sites (Hemphill 1957). To the best of our knowledge, this is the first report of the Hatcher Bayou record, and we can offer no information on the status of *C. erythrogaster* there. However, the U. S. Army Corps of Engineers is reported to be planning a survey of Hatcher Bayou to determine if the dace population is still extant (Marvin Connor, pers. comm.). Tulane University has 3 lots from the Bliss Creek drainage, comprising a total of 80 specimens, all collected between 1964 and 1974 by R. D. Suttikus and students. Suttikus made a total of 8 collections in the Bliss Creek drainage during a ten year span, and was successful in finding *C. erythrogaster* only in a small tributary to the main creek, just north of the locality reported by Hemphill (1957). The failure to collect redbelly dace in the main part of Bliss Creek and the drop in numbers of specimens collected in the tributary (77 in 1964; 2 in 1968; and 1 in 1974) was partly responsible for the recommendation that the species be protected.

The associated species from the Bliss Creek drainage may partially explain the reason for the low numbers of *C. erythrogaster*. Hemphill (1957) reported large numbers of *Campostoma anomalum*

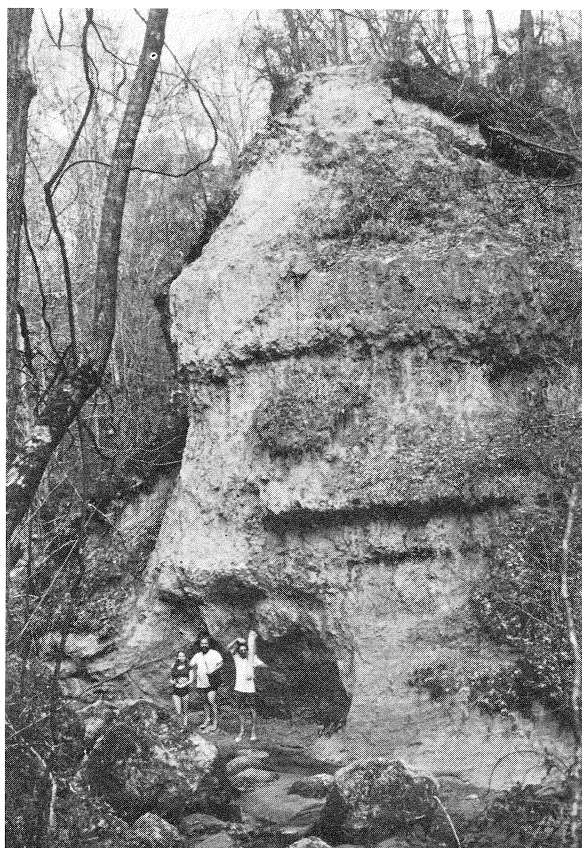


Figure 2. Bluff along headwaters of Clark Creek.



Figure 3. First falls on main Clark Creek.

and *Semotilus atromaculatus* as being present, but did not comment on other associated species. We have taken a total of sixteen species from Bliss Creek, including seven cyprinids. Four species, *Semotilus atromaculatus* (31.4%), *Campostoma anomalum* (29.6%), *Pimephales notatus* (16.7%) and *Hybognathus nuchalis* (5.5%), account for over 83% of our total of 4145 specimens. The relatively large biomass of these four cyprinids, supported by the limited carrying capacity of this small creek, and the abundance (50% of total) of three (*C. anomalum*, *P. notatus*, and *H. nuchalis*) potentially herbivorous competitors, may represent natural restrictive forces on the Bliss Creek redbelly dace population.

We can at least report from two sources of information that the Bliss Creek population of *C. erythrogaster* is still extant. On 3 September 1978, we collected approximately 30 young and juveniles at sites above and below a small waterfall in a tributary to Bliss Creek, 1.3 km north of the junction of By-Pass U. S. Hwy. 61 and Business U. S. Hwy. 61 at U. S. Hwy. 61 north of Vicksburg. Also, we were informed recently that Ms. Darlene Heffner has completed a study of redbelly dace in the Bliss Creek drainage and has collected specimens at several localities (John Burras, pers. comm.).

The second locality for *C. erythrogaster* in the lower Mississippi River, Clark Creek, was discovered on 26 February 1978. Clark Creek is smaller than Bliss Creek in regard to its length and drainage area, which is 5.9 km and 22.1 km²*, respectively. It is a tributary to the Mississippi River, located between Tunica Bayou and Buffalo Bayou, and is wholly contained in southern Wilkinson County, Mississippi. Clark Creek flows to the west and drains a small portion of the Tunica Hills, also part of the Loess Bluffs. The creek and surrounding area are indeed unusual habitat for the lower Mississippi Valley (Figures 2, 3



Figure 4. Small cataract below second falls.

and 4). There are several waterfalls, 5-10 m high, and high bluffs located on the main creek and tributaries. The spring-fed stream is only about 3 m wide and less than 0.5 m deep for most of its course. The area has long been popular with hikers and campers, and recently, the upper part of Clark Creek was acquired by the Mississippi Heritage Committee.

Since the initial collection, bi-monthly trips to Clark Creek have revealed an extremely viable dace population in Clark Creek and tributaries. The redbelly dace has been collected from most of the 22 collection sites, from the headwaters downstream to near the confluence with the Mississippi River. One collection from a tributary yielded over 100 specimens.

Despite its small size, Clark Creek evidently supports a richer ichthyofauna than Bliss Creek. Twenty-eight species have been recorded, including all but one (*Ictalurus punctatus*) known from Bliss Creek. As in Bliss Creek, cyprinids account for the great majority of specimens, with 14 species making up approximately 92% of the 3500 collected. In contrast, however, *Semotilus atromaculatus* (23%), *Campostoma anomalum* (11.8%), *Pimephales notatus* (2%), and *Hybognathus nuchalis* (1%) account for only 37.8% of the total, as compared with 83% for the same four species in Bliss Creek.

We suggest a change of status for the redbelly dace, *Chrosomus erythrogaster*, from peripheral-

endangered to peripheral-threatened. We would not suggest any further delisting unless additional populations are discovered.

*The figure for drainage area of 37 km² for Clark Creek given by Cashner *et al.* (1979) was incorrect.

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darters, such as occurred in 1965. This situation is considered essential before individuals can be removed for purposes of captive propagation or introduction into other nearby streams.

The efforts of SFC president Herb Boschung and the resolutions committee (Wayne Starnes, chairman) should be noted and commended here. Letters were sent to President Carter, urging him to veto the Tellico project; the Mississippi State Museum, in Jackson, offering assistance following last spring's floods; and TVA chairman David Freeman (see below), for his open-minded posture regarding dams and other projects.

The following is the text of a letter sent to Mr. S. David Freeman, chairman of the Tennessee Valley Authority, on 1 June 1979:

"Dear Chairman Freeman:

In its recent annual meeting in Chattanooga, Tennessee, the Southeastern Fishes Council unanimously voted a resolution of commendation to you for your open-minded posture regarding TVA dam-building projects. The SFC has a membership composed of nearly 200 professional ichthyologists, fishery biologists, and other concerned individuals throughout the southeastern United States.

The SFC in particular applauds your willingness to consider all the facts surrounding the Tellico and Columbia dam projects. This stance will enable you to pass judgment on the relative values of projects before completion, rather than to simply carry out courses of action predetermined 40 or more years ago. There are many such projects that were proposed at a time when little consideration was given to the economic and environmental impacts of dam construction and impoundment. The Tellico controversy has clearly brought to light viable alternatives, in terms of economic and social values, to the completion of long proposed dams. These positive aspects are in addition to the preservation of our diminishing riverine environmental resources and dependent, surrounding terrestrial ecosystems.

It is indeed fortunate to have leadership in the direction of exploring alternatives to dam construction. TVA has the opportunity to again lead the way as a "demonstration agency," and to stand at the forefront of research and development of means of energy production that are compatible with environmental preservation and conservation.

We again commend you for the prudent ideals that you have demonstrated thus far. We hope to share in many others in the future."

(The letter was signed by Wayne Starnes, Robert Cashner and David Etnier)

The following response was received from Mr. Freeman on 9 July:

"Dear Dr. Cashner:

I am greatly appreciative for the vote of confidence from the Southeastern Fishes Council. Outside recognition such as this is very important in that we are better able to judge our progress and direction toward the wise management of the Valley resources. To do the best job possible will require input from concerned citizens and groups such as yours. I hope to hear from you in the future.

Again, thank you and your membership for your interest.

Sincerely,

S. David Freeman
Chairman

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