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Number 9 (November 1979)

Abstract

The Status of the Southern Redbelly Dace, *Chrosomus erythrogaster* in Mississippi. By R.C. Cashner, et al., plus News Notes, 5 pp.

Keywords

southern redbelly dace, *Chrosomus erythrogaster*, mississippi



Southeastern Fishes Council **PROCEEDINGS**

DEDICATED TO THE PRESERVATION OF SOUTHEASTERN FISHES

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

Robert C. Cashner³, Royal D. Suttkus⁴,
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

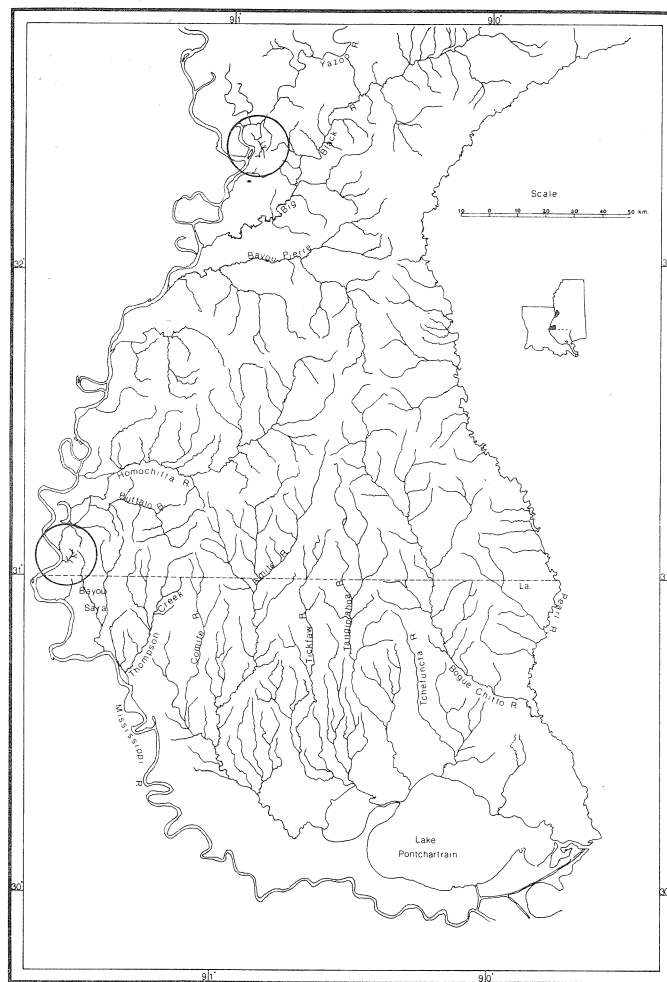


Figure 1. Map of Lower Mississippi River with Bliss Creek (upper) and Clark Creek (lower) drainages encircled.

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*

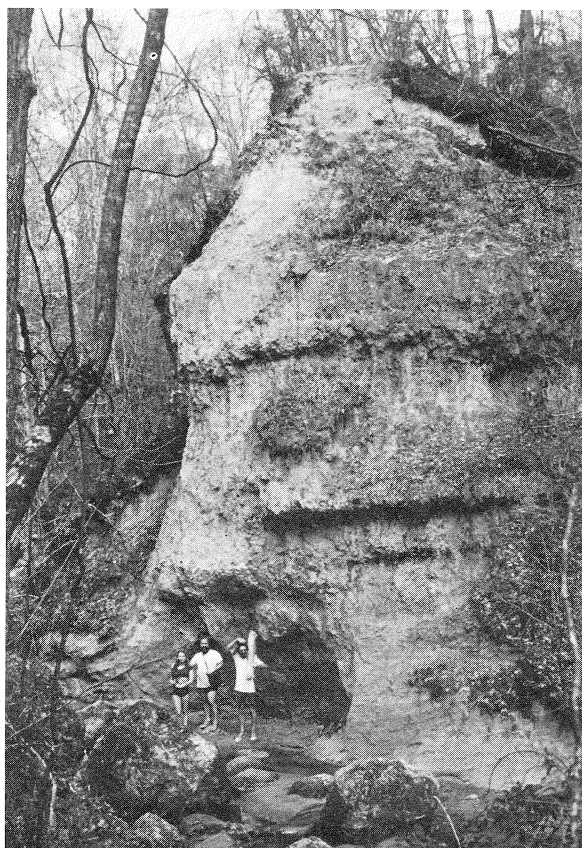


Figure 2. Bluff along headwaters of Clark Creek.

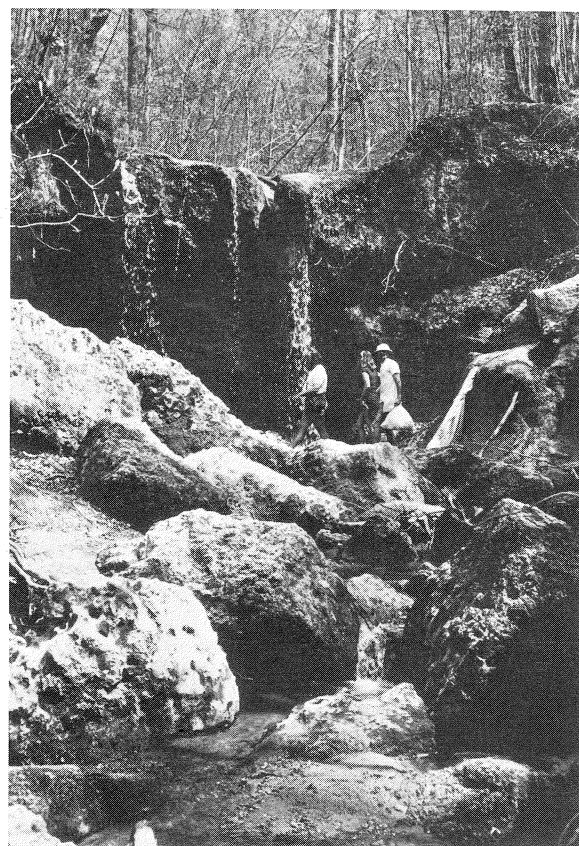


Figure 3. First falls on main Clark Creek.

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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Southeastern Fishes Council
PROCEEDINGS

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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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MEMBERSHIP

Present SFC membership now totals 167. Recent new members are:

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Correspondence addressed to the following members has been returned. Anyone knowing of their whereabouts should contact the secretary, Bob Cashner. Last known addresses are indicated.

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VENEZUELA

NEWS NOTES

FISHES COUNCIL OUTGOING OFFICERS

Sincere thanks are extended to outgoing officers Dr. Franklin F. Snelson, past secretary-treasurer, and Glenn Clemmer, past editor, for jobs well done.

RARE AND ENDANGERED BIOTA OF FLORIDA

We would like to call the membership's attention to the recent series of publications entitled "Rare and Endangered Biota of Florida." So far, five of the anticipated seven volumes have appeared (mammals, birds, amphibians and reptiles, fishes, and plants). Copies are available from the University Presses of Florida, Gainesville, Florida 32611, at a cost of \$5 each for volumes 1-4, and \$10 for volume 5 (plants).

1980 SFC MEETING

The next regularly scheduled meeting of the Southeastern Fishes Council will be held during the ASB meetings, to be held at the University of South Florida, in Tampa, from 26-29 March 1980. Exact time and place of the meetings will appear in a future number of the *Proceedings*.

COMMENTS ON RECENT EVENTS

Recent events have not been particularly encouraging. As you all know by now, Howard Baker and his cronies have, through behind-the-scenes maneuvering, revived the Tellico Dam project, this despite the fact that the Presidential commission charged with evaluating public works projects for possible exemption from the endangered species act had labelled Tellico as economically unsound, and also that TVA chairman Freeman had voiced opposition to the project in its original form. President Carter, despite his earlier stated commitment toward conservation, did not cast a veto, even though there was strong reason to believe such a veto would have been upheld in Congress! The main points raised by Baker, in justifying completion of the dam, were (a) the snail darter is "thriving" in the Hiwassee River (why wasn't it there to begin with?) and (b) it would cost more to dismantle Tellico than to fill it (why is it necessary to do either?).

One important point on which dam proponents have consistently misled the public pertains to the dam's lack of direct hydroelectric generating capacity. It's safe to say that many people believe that such capacity is involved, and that the project is therefore justified.

Hopefully the snail darter *will* continue to survive in the Hiwassee, and hopefully the publicity generated concerning the economic waste and boondoggling associated with Tellico will have some positive effect in the sense of making less likely similar wasteful and environmentally destructive projects in the future.

Meanwhile, the Tennessee-Tombigbee waterway (Tenn-Tom) also grinds on, despite a cost-benefit ratio that realistically is about thirty cents return for every dollar spent. The lessons to be learned from Tenn-Tom are (a) no matter how bad the project, any set of figures, if juggled long enough and expertly enough, can be made to yield a favorable cost-benefit ratio, and (b) the power of long-time Washington politicians, such as John Stennis, is awesome. A number of articles have been written on the project (see particularly James Nathan Miller's "Trickery on the Tenn-Tom" in *Reader's Digest*, September 1978). The CBS news program "60 Minutes" has been approached about covering this fiasco, but so far has shied away. Nevertheless, efforts should continue to induce this program or the other network counterparts (NBC's "20/20" or ABC's "Prime Time Sunday") to air the subject. Only by making the general public throughout the country aware of exactly how much of their tax money is going down the drain (this project will cost several *billion* dollars before it is done) will there be sufficient outcry to have reasonable hopes in this regard.

Other less-than-favorable news was reported in the most recent (August 1979) *Endangered Species Technical Bulletin* (Vol. 4, No. 8). This pertains to the proposal for establishment of Critical Habitat for two Alabama and one Tennessee species (the pygmy sculpin, *Cottus pygmaeus*; spring pygmy sunfish, *Elassoma* new species; and the Barrens topminnow, *Fundulus* new species), each of which is now apparently confined to a single spring and spring run. The notice reads as follows:

"Reproposal of Critical Habitat for three fishes in Alabama and Tennessee will be withdrawn by the Service because of procedural errors in the nature of the public meeting and the inadequate availability of information concerning economic considerations. The reproposal was published in the July 27, 1979, *Federal Register*, and the subsequent meetings were held August 28-30. The proposed listing for the spring pygmy sunfish (*Elassoma* sp.) and the pygmy sculpin (*Cottus pygmaeus*) will be automatically withdrawn on November 29, 1979, two years after its initial publication. The proposed listing for the Barrens topminnow (*Fundulus* sp.) will be withdrawn on December 30, 1979, also two years after publication. A new proposal will be made only if new information becomes available."

According to Jim Williams, the above resulted from the efforts of a group of lawyers, who had prepared for the hearings by conducting an intensive scare campaign among the local populace, and had succeeded in convincing them that the federal government was out to condemn their land and, in various other ways, threaten life, liberty, and the pursuit of happiness. As a result, a large group of mostly hostile citizens was on hand for the hearing. The lawyers succeeded in "proving" that insufficient prior notice had been given for the meetings, and also convinced the group that, inasmuch as two years had elapsed since the original proposal of Critical Habitat, the situation had probably changed, and therefore the opinion of "experts" would be necessary to establish that the setting aside of Critical Habitat was indeed required!

The main objection, so far as the pygmy sculpin was concerned, was inclusion of Dry and Coldwater creeks as Critical Habitat. Since the main sculpin population is located in Coldwater Spring itself (which is fenced), the fish would seem to be secure so long as no chemicals are applied or other types of habitat alteration occur. There seems to be some indication of local pride in having a unique fish in their midst, and as long as fish and human needs can exist in harmony here, the situation may be resolved to both sides satisfaction.

The situation regarding the other two species is less easily resolved, since there are no "safeguards" involved, such as at Coldwater Spring. Again, objection seemed to be concentrated on inclusion of the spring run as Critical Habitat, although subsequent discussions with the Moss Spring owners hopefully have assuaged some of their original fears and objections. Much of the objection concerning the Barrens topminnow CH involved the inclusion of areas where the species had once occurred, but where it has not recently been found. According to Jim, one of the localities where the species was recently known to occur has now been severely modified, with surrounding protective cover removed and resultant rise in water temperature. Chances that the fish will survive there are not good. Thus, it is possible that the Barrens topminnow may now survive only in one area, and even here human encroachment is a definite threat.

Inasmuch as the above three species are severely restricted in their distributions, and thus are very vulnerable to localized ecological catastrophe, efforts should be made to maintain captive, reproducing populations. Two Texas poeciliids, the Big Bend gambusia (*Gambusia gaigei*) and the Goodenough gambusia (*Gambusia amistadensis*) survive today only because of such efforts. The latter exists only as captive populations, and the former came, in 1957, within three individuals of extinction (two males, one female). Plans are moving ahead on the goal of acquiring a hatchery facility in the southeast, the primary function of which would be to maintain and propagate endangered and threatened species, as is currently being done at the federal facility at Dexter, New Mexico. As many of you are aware, Scott Mettee has successfully spawned *Elassoma* new species in aquaria at the University of Alabama. Since this species can live in a confined area, raising it in captivity should pose no great problem. Although the Barrens topminnow undoubtedly would require more living space than the spring pygmy sunfish, Mike Howell and Ann Black (Samford University) reportedly were successful in getting this *Fundulus* to spawn last summer, with about 300 young being produced.

The situation regarding other southeastern species remains about the same. No new localities for the watercress darter (*Etheostoma nuchale*) have been reported, and populations of the Maryland darter (*Etheostoma sellare*) remain about the same. Efforts are still being made to pump water from upstream areas of Deer Creek, which obviously would have an adverse effect on *E. sellare*. Apparently there has been no population explosion of Maryland