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W. Mike Howell

Ann Black

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## Status of the Watercress Darter



# Southeastern Fishes Council PROCEEDINGS

DEDICATED TO THE PRESERVATION OF SOUTHEASTERN FISHES

VOL. 1 NO 3

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## STATUS OF THE WATERCRESS DARTER

By  
W. Mike Howell and Ann Black  
Department of Biology  
Samford University  
Birmingham, Alabama 35209

The watercress darter, *Etheostoma nuchale* (Fig. 1), was first discovered in Glenn Spring at Bessemer, Jefferson County, Alabama (Howell and Caldwell, 1965).

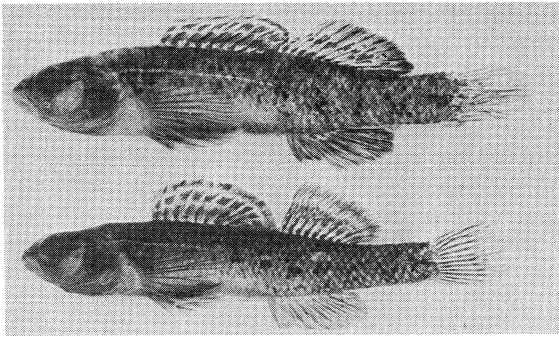


Fig. 1. Two nuptial male specimens of *Etheostoma nuchale* from Glenn Spring. Top male is approximately 40 mm. in standard length.

Five years later, the watercress darter was officially recognized as an "endangered" species by the U.S. Department of Interior's Office of Endangered Species (Federal Register, 13 October 1970, p. 16048). The reasons for the endangered listing are as follows: 1) Glenn Spring (Fig. 2) is located within twenty yards of Jefferson County Route 20, a highway with locally heavy traffic. For some time, Jefferson County Highway officials



Fig. 2. View of Glenn Spring where it emerges from the base of Glenn Hill (note arrow). The foreground shows the dense growths of watercress and other vegetation in the run-off creek.

have had plans to widen this section of highway to promote a smoother flow of traffic. It is obvious that such construction would destroy the type-locality of this fish. 2) Conservative estimates have placed the number of watercress darters in the spring at 700 or less individuals. In 1972, W. M. Howell and graduate students, using a quadrant sampling method, estimated the population size at 700 individuals. In that same year, R. D. Caldwell independently estimated the population size at 400-600 specimens. In the "redbook", *Threatened Wildlife of the United States* (1973), the estimated number was listed as 400. 3) The water flow from the spring has been observed to fluctuate widely. In 1964, when R. D. Caldwell and W. M. Howell first collected Glenn Spring, the water flow from the spring was estimated at 500 gallons per minute. However, it was noted that the flow from the spring was variable and was dependent upon recharge from local rains. During drought periods, especially in summer months, we, and others, have noted that the spring flow is reduced to an estimated rate of only 250-300 gallons per minute. Several smaller springs in the area have been known to become completely dry in recent years. The recent growth and expansion of shopping centers and apartment complexes in the Bessemer region has led to the paving of acres of land. It is obvious that rainfall cannot continue to recharge local springs when the water is swiftly channeled off parking lots into gutters and cement drains. Thus, it has become obvious to those ichthyologists who have independently monitored the ecological conditions at Glenn Spring, that a deterioration of the watercress darter's habitat is taking place. In addition, obvious eutrophication is occurring in the outflow creek because of overgrowth of aquatic plants and slow decay of these after they die (Fig. 3).



Fig. 3. View of Glenn Spring run-off paralleling Highway 20. Note dense growth of cattails indicating eutrophication.

In an attempt to transplant and establish a new population of watercress darters in another spring, R. D. Caldwell and W. M. Howell, in 1965, collected and introduced 21 nuptial males and 22 nuptial females into Prince Spring, tributary to Valley Creek (SE  $\frac{1}{4}$  NE  $\frac{1}{4}$  sec. 18, T 19S, R 4W). This spring is located only 1 airmile NW of Glenn Spring and seems to approximate well the ecological conditions present at the type-locality. Subsequent collections at Prince Spring in 1966, 1972 and 1975 yielded no watercress darters; however, many redbfin darters, *E. whipplei*, were collected. The redbfin darter may be a competitor of the watercress darter.

**Possible Former Distribution.**—In the Vertebrate Collection at Samford University, Birmingham, Alabama, we found three 1962-63 collections of *E. nuchale*. These records were obtained by Dr. Francis Bush and students enrolled in his Vertebrate Field Zoology course. There is some question with regards to validity of locality data, particularly a record from the Cahaba River drainage. If these records are accepted, the watercress darter once had a wider distribution in the valley which is now occupied by the heavily industrialized and populated cities of Bessemer, Midfield, Fairfield, Birmingham and Roebuck.

**New Distribution Records.**—On 23 September 1966, J. L. Dobie and W. M. Howell collected four watercress darters in Halls Creek, approximately 0.25 mile upstream from Glenn Spring (see no. 2 on map). We assumed that these specimens represented "strays" from the type-locality. However, on 13 February 1976, A. Black, J. Burnette, G. Dingerkus and W. M. Howell collected a private, spring-fed pond (Fig. 4) at the headwaters of Halls Creek and obtained two adult male watercress

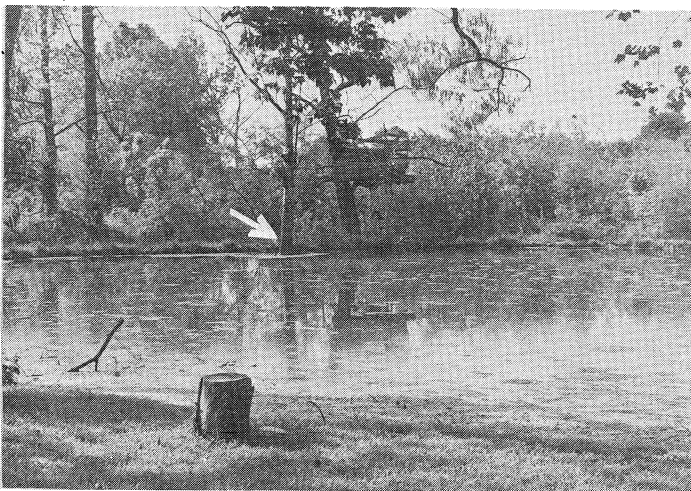


Fig. 4. View of Thomas' Spring where second population of the watercress darters was found. The sycamore tree locality is indicated by the arrow.

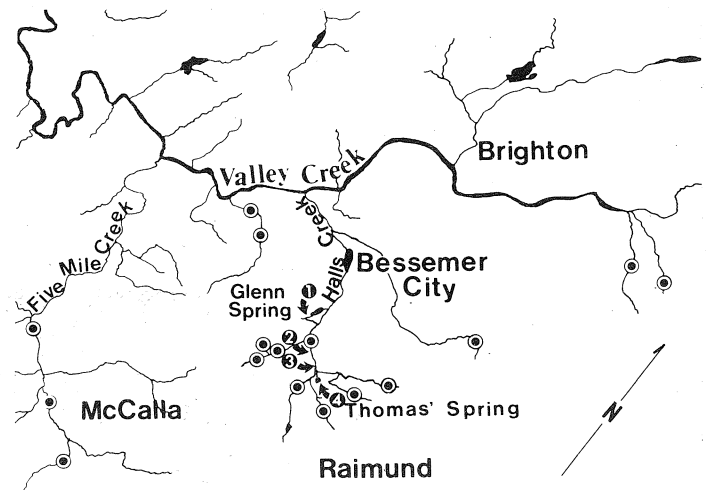
darters (see no. 4 on map). Another specimen was obtained in the run-off stream immediately below the dam, while another was obtained 300 meters below the dam (see no. 3 on map). This spring-fed pond is owned by Mr. Frank Thomas and is located at 300 Eastern Valley Road, Bessemer, Jefferson County, Alabama, at the intersection of Eastern Valley Road with Division Street (NW  $\frac{1}{4}$  sec. 21, T 19S, R 4W, Greenwood Quadrangle). Thomas' Spring has been dammed up for approximately twenty years. There are two springs feeding the spring-pond on the SE border and two run-offs on the NW border which empty into Halls Creek. Thomas' Spring is 15

meters in length and 35 meters in width. It approaches a depth of 2 meters at the deepest point. Visibility in the spring is excellent. The bottom is of silt and is covered with dense growths of aquatic vegetation, primarily *Chara* and *Spirogyra*. Numerous species of aquatic insects and snails are found in the dense vegetation. No watercress, *Nasturtium officinale*, is found in the spring.

Thomas' Spring has been stocked with game fish by Mr. Thomas and maintenance of the spring-pond includes regular fertilization and removal of excess vegetation. Other species of fishes found in the spring are: *Cyprinus carpio*, *Gambusia affinis*, *Lepomis cyanellus*, *Lepomis macrochirus* and *Micropterus salmoides*.

On 28 April 1976, a second trip was made to Thomas' Spring for the purpose of observing the watercress darters by diving and of obtaining photographs of living specimens. The dive was conducted by R. A. Stiles but no watercress darters were observed. Failure to observe any darters probably was due to the thickness of the vegetation. We feel that the darters, if present in the deeper water, were probably burrowed within the dense vegetation and would not be visible. Indeed, we looked carefully in the shallower water around the spring-pond edges but could observe no darters. However, when we seined through the vegetation mats near the dam in the vicinity of a sycamore tree, seven juvenile specimens of *E. nuchale* were obtained in the first seine haul. Continued seining through the mats of *Spirogyra* yielded a total of 21 specimens which ranged in length from 9 to 18 mm. An estimate of the population of juveniles in this mat of *Spirogyra* approximated 100 specimens. Other mats of *Spirogyra* were sampled but yielded no darters. When we seined through a mat of *Chara*, near the spot where the juveniles were taken, 2 adult males and 1 adult female were taken. The specimens were placed into an aquarium set-up at the spring, photographed, and immediately returned to the capture site. Thus, there is a breeding population of the watercress darter inhabiting Thomas' Spring.

In February 1976, Mr. Thomas indicated a sympathetic understanding of the plight of the watercress darter. In March, Mr. Thomas stated that he was still concerned about *E. nuchale*, but that he was planning to dredge the spring, remove all game fish, and restock the spring-pond



Map 1. Map showing Glenn Spring and surrounding drainage. Numbered circles indicate sites where watercress darters have been taken. Un-numbered circles indicate sites where no watercress darters were found.

with catfish. We feel that such action on the part of Mr. Thomas would completely destroy the *E. nuchale* habitat and result in the elimination of that population.

**Prognosis of the Watercress Darter.**—The watercress darter undoubtedly will be extirpated unless quick and accurate decisions are made relative to its recovery. On 25 May 1976 the U.S. Fish and Wildlife Service officially appointed a watercress darter recovery team consisting of the following: Herbert T. Boschung, Jr., University of Alabama; John S. Ramsey, Auburn University; and W. Mike Howell, Samford University (Leader). Four possible plans of recovery seem available: 1) the purchase and future protection of either the Glenn Spring or Thomas' Spring-pond property; 2) the possibility that Mr. Glenn, upon his death, may will his property jointly to Auburn University, University of Alabama, and Samford University, so that concerned persons at these institutions could formulate plans to protect the habitat and the species; and, 3) the transplantation of the watercress darter from either Glenn Spring or Thomas' Spring into other nearby springs in the Black Warrior River system.

Mr. Thomas has indicated to us that he would definitely sell his spring-pond property. We feel that this possibility is by far the most promising for the recovery of the watercress darter. We feel that the Thomas' Spring

habitat is large enough that it could support a large population of the watercress darters. At a later date when population structure is well known, individuals could then be removed for transfer into nearby springs.

The transplanting of specimens at this time from either of the spring populations, with their present low numbers of individuals, is not considered by us to be a wise step in view of the Prince Spring transplant failure previously mentioned.

The recovery team is engaged in an appraisal of the situation and soon will be reaching final decisions on a recommended course of action.

#### LITERATURE CITED

HOWELL, W. M. and R. D. CALDWELL. 1965. *Etheostoma (Oligocephalus) nuchale*, a new darter from a limestone spring in Alabama. *Tulane Studies in Zoology* 12 (4): 101-108.

U. S. Department of the Interior, Bureau of Sport Fisheries and Wildlife, Office of Endangered Species and International Activities. 1973. *Threatened Wildlife of the United States*, Resource Publication 114, published by the Bureau of Sport Fisheries and Wildlife.

## News Notes . . .

The "Endangered Species Technical Bulletin", an excellent monthly information publication, will be of interest to many of our members. Four issues have been published in the series. For information write: Endangered Species Program, Fish and Wildlife Service, Dept. of Interior, Washington, D.C. 20240.

#### SFC at Desert Fishes Council Meeting

Royal D. Suttkus represented the SFC at the eighth annual meeting of the Desert Fishes Council in Grand Junction, Colorado, on 18-20 November. Copies of the *Proceedings* were displayed, and a report on our New Orleans meeting was presented.

#### Snail Darter Update

On 14 October the 6th Circuit Court of Appeals heard arguments on the TVA Tellico Dam — Snail Darter controversy. The case is still under consideration, and the ruling is expected at any time.

#### Savannah River Dam Contested in Suit

The National Wildlife Federation and nine other state and local groups filed suit against the Corps of Engineers in an effort to halt construction of a dam on the upper Savannah River in Georgia and South Carolina. The dam would provide hydroelectric power and add to flatwater recreation, but would inundate the last free-flowing 30 miles of the upper Savannah. The suit was filed 16 November.

#### New River Saved

President Ford signed into law a bill designating 26.5 miles of the New River in North Carolina as a component of the National Wild and Scenic River system. The provisions of the bill will prevent construction of two dams on the river that were licensed by the Federal Power Commission.

#### Manuscript Request

The Alabama Museum of Natural History is seeking manuscripts on natural history subjects of the Southeastern United States for publication in *Bulletin of the Alabama Museum of Natural History*. Single manuscripts of not less than 100 pages, or a series of short papers on similar subjects (such as, descriptions of new species of fishes) are desirable. Manuscripts will be evaluated by the editor and an editorial committee. Anyone interested is encouraged to write to: Herbert Boschung, Director/Alabama Museum of Natural History/The University of Alabama/P. O. Box 5897/University, AL 35486.

#### Bulletin:

Two lawsuits against the Tennessee-Tombigbee Waterway in Mississippi and Alabama were filed in the U.S. District Court in Washington, D.C. on 30 Nov. Plaintiffs in the cases, the L & N Railroad, the Environmental Defense Fund, and CLEAN are requesting an injunction against design, construction and all work on the waterway until a comprehensive review is made by Congress.