



U.S. Fish & Wildlife Service

# Boulder Darter



The endangered boulder darter (*Etheostoma wapiti*).

The endangered boulder darter (*Etheostoma wapiti*) is a small-sized member of the perch family reaching a maximum length of about 3 inches. The males of the species are olive to gray in color, while the females are similar but lighter in color. Both sexes have a gray to black bar located below the eyes and a similarly colored spot behind the eyes.

The boulder darter is currently found only in the Elk River, a large tributary system of the Tennessee River in southern Tennessee and northern Alabama. It is currently restricted to about 63 miles (101 kilometers) of the main channel of the lower Elk River and a few of its tributaries.



Pat Rakes, CFI, Inc. holds boulder darters found in 1999 survey at the Elk River.

However, the species is not distributed continuously within this range, but is concentrated at a few sites with suitable habitat within the main channel and tributaries. Historically, the boulder darter also lived in Shoal Creek, a tributary of the Tennessee River in northern Alabama, but that population has been extirpated.

As the common name suggests, the boulder darter lives and spawns (mid-June to late summer) among boulders that occur in relatively shallow water,

in depths of three feet or less. The boulders must also occur in flowing water that is not too swift, such as in riffles or rapids, and not too slow, as in slightly flowing pools.



These conditions are ideal for maturation of the eggs that are attached to the undersides of these rocks and guarded by the male. Because of this specificity, suitable habitat is limited in the Elk River and its tributaries. In addition to this lack of habitat, many human-caused factors have contributed to the decline of the boulder darter. In the Elk River, the principal impacts resulted from impoundment of the upper river section by Tims Ford Reservoir; thermal alteration of the tailwaters below Tims Ford Dam from warm to cold water; impoundment of the lower Elk River by Wheeler Reservoir; fluctuating water levels from power generation at Tims Ford Reservoir; industrial, municipal, and agricultural pollution; and extensive siltation from soil erosion. The primary reason for the demise of the boulder darter in Shoal Creek was the impoundment of the lower creek by Wilson Reservoir; siltation from agricultural erosion, and pollution from upstream municipalities in Alabama.



Placing boulders in the Elk River under the I-65 bridge 6 miles north of the Tennessee - Alabama border. 1999

As a result of these threats and the species limited range, the U.S. Fish and Wildlife Service listed the boulder darter as an endangered species in September 1988. Since that time, the Service, along with other conservation agencies



*TWRA and USFWS using boats and muscle to place boulders in the middle of the Elk River. 1999*

and organizations, has been working to learn more about the boulder darter and its habitat. This information is being used to protect and restore the species to its historic range.

In 1995, Conservation Fisheries, Inc. (CFI), a non-profit organization in the business of propagating rare fish species, collected boulder darters from the Elk River to develop a captive breeding program. This was initiated in the hopes that population numbers in the Elk River could be augmented and the fish possibly reintroduced into Shoal Creek.

In addition to these efforts, personnel with CFI have surveyed the Elk River looking for addition occurrences of boulder darters and suitable habitat where captive-reared fish can be released. They have also surveyed Shoal Creek for suitable habitat for possible locations of future reintroductions of the species.

At about the same time, personnel with the Tennessee Wildlife Resources Agency (TWRA) began augmenting existing spawning habitat with man-made, concrete structures fashioned to mimic natural slabrock. Because these structures met with limited utilization by boulder darters, the TWRA, Service, and CFI decided to try utilizing natural limestone slabrock. In the summer of 1999, three-and-a-half tons of slabrock were placed in the Elk River at a known boulder darter occurrence. Subsequent surveys of the site revealed the largest concentration of

boulder darters ever found. As a result of this great success, efforts to augment spawning habitat at other locations in the Elk River continue with boulder placement and reintroductions at two sites in August, 2001 at Hamilton Mill and Fayetteville, Tennessee.

**For more information, visit:**  
<http://southeast.fws.gov>

Through the partnerships of agencies and entities and the successful implementation of various recovery efforts, it is hoped that these successes will enable the U.S. Fish and Wildlife Service to someday remove this species from the list of endangered species.

*Dump-truck load of rock being pre-positioned near Elk River. 1999*



*photos: Tyler Sykes, USFWS*

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