

The Urban Life of Darters

by Daniel J. Drennen



Male (top, showing breeding colors) and female vermilion darters.

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Most people in the United States now live in urban areas and suburbs, squeezed onto three percent of the nation's land area. In turn, most of the water that enters our southeastern streams and lakes is affected by activities that occur on these developed lands, such as storm water drainage and the construction of buildings, houses, roads, and parking lots. In the Pinson community of Jefferson County, Alabama, just northeast of Birmingham, three fish species are endangered by excessive sedimentation in urban streams.

Too much sedimentation can affect the habitat of darters and associated fish species by making urban streams and lakes unsuitable for feeding and reproduction. Sediment abrades and suffocates organisms that are attached to submerged substrates (such as rocks, sticks, and leaf litter), disrupts aquatic insect natural processes like feeding and reproduction, and depresses fish growth, survival, and reproduction. The species that have evolved over thousands of years in these waters are put at risk.

The freshwater fish species—the watercress darter (*Etheostoma nuchali*), listed as endangered in 1970; the rush darter (*Etheostoma phytophilum*), a listing candidate; and the vermilion darter (*Etheostoma chermocki*), a species listed as endangered in 2001—have the most restricted distributions of any vertebrates in Alabama. The watercress darter was transplanted in the Tapawingo/Penny Springs area of Turkey Creek in 1988 and has endured, even though urbanization and sedimentation threaten its survival. A recent evaluation of the watercress darter's population indicates that it has expanded throughout the Tapawingo/Penny Springs

waterways that have not been degraded by sediments. The rush and vermilion darters, however, have declined significantly throughout the Turkey Creek watershed of the Locust Fork of the Black Warrior River.

The Fish and Wildlife Service is now researching the rush darter to better understand its natural history, locality, and population ecology within the Turkey Creek watershed. Up to now, the rush darter, a species not described until 1999, had received little attention. Populations of rush darters are widely separated from one another. Historically, rush darters were found in three watersheds: the Clear Creek system in Winston County, the Tapawingo/Penny Springs area of the Turkey Creek system in Jefferson County, and the Little Cove Creek system in Etowah County. Currently, however, only two rush darter populations remain in the Clear Creek and Turkey Creek systems. Researchers at Auburn University estimated the species' total population at 500 individuals or fewer throughout its entire range. The rush darter's type locality is in a roadside ditch on a highway through Pinson and the Tapawingo/Penny

Springs area. One catastrophic event could easily destroy this important habitat. The vermilion darter is found only in 7.2 miles (11.5 kilometers) of the main stem of Turkey Creek and the lowermost reaches of two tributaries within the Turkey Creek drainage. Researchers at the University of Alabama estimated the population of vermilion darters as fewer than 3,500 individuals. In 1998, a county jail was proposed for construction on an area adjacent to Turkey Creek, and it would have had direct sedimentation impacts on the vermilion darter and the watershed. This concerned the local community and led it to galvanize support for the protection of Turkey Creek by forming START (Society to Advance the Resources of Turkey Creek). Ultimately, after negotiations between Jefferson County and START, the jail site was changed to a location outside the watershed. Concurrently, Jefferson County proposed the former 600-acre (240-hectare) jail site along Turkey Creek as a nature preserve, and plans have been made for a nature center and management of the acreage.

The Service met with stakeholders of the watershed, including START and Jefferson County, concerning the distribution, threats, and status of the vermilion darter. To lessen threats to the vermilion darter, START participated in several "Partners for Fish and Wildlife Projects" aimed at minimizing nonpoint source pollution within Turkey Creek. Additionally, the Black Warrior and

Cahaba River Land Trust and the Service identified important lands within the watershed for possible acquisition by the Jefferson County Greenways Project. One such site, the Tapawingo/Penny Spring area, a clean water tributary of the creek and a spawning site for the vermilion and possibly rush darters, was purchased by Jefferson County. It also contains a viable population of watercress darters. This area has been restored with assistance from the Service.

In 2001, the Service signed a Memorandum of Understanding with Jefferson County that will alert us to any county projects that may affect the vermilion darter's habitat. In return, we exchange information about vermilion darter range locations and habitat requirements with the county.

Threats to the three darter species are mounting due to increased sedimentation of the Turkey Creek watershed caused by urbanization. However, networking of stakeholders through meetings with the Service has spotlighted the importance of sediment control in the watershed. By working closely with its partners, the Service will not only be able to more effectively reduce sediment loads coming into these darters' streams, but

will also be able to address impacts of storm water runoff, sewage effluent, road maintenance, and construction of homes and businesses on the watershed, with the goal of conserving clean water for fish and people alike.

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Below: Vermilion darter habitat, Turkey Creek. Bottom left, Tapawingo Springs, home of the rush and watercress darters, surrounded by houses and a trailer park. Bottom right, construction site of a subdivision being developed on Turkey Creek vermilion darter sites.

Photos by Daniel Drennen/USFWS

