

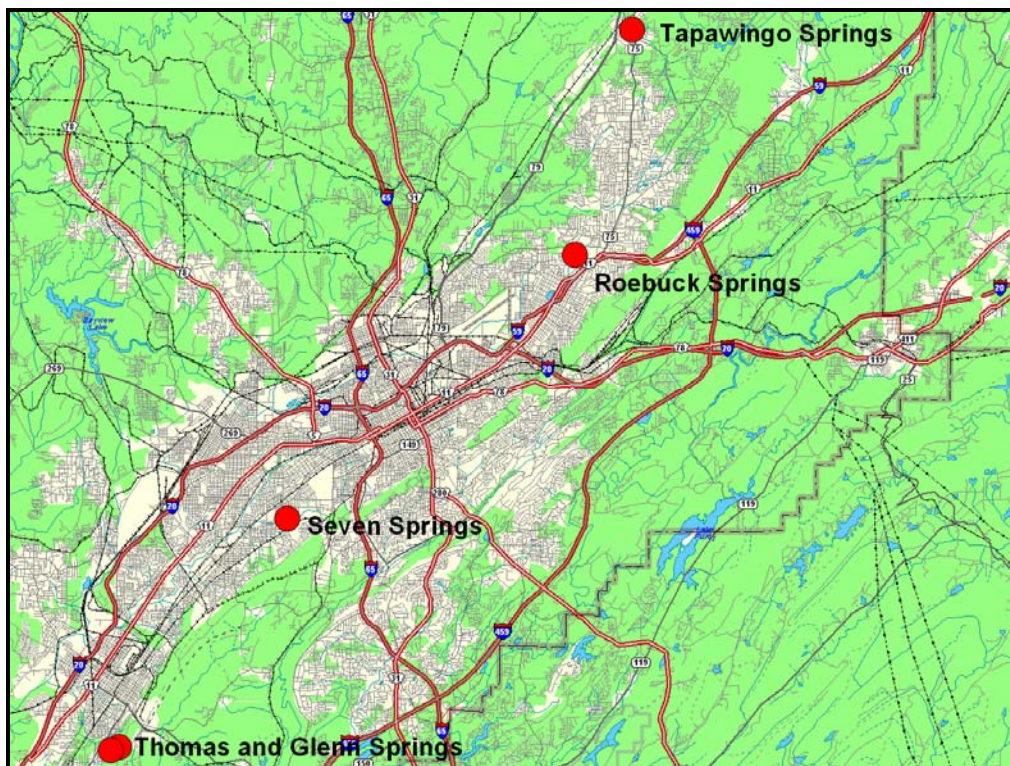
## Citizen Water Monitors Keep a Vigilant Watch over Their Endangered Darters

Since the discovery of a beautiful little two-inch long fish named the Watercress Darter in the 1960's, many Birmingham-area groups have partnered to protect this endangered species, a member of the Percidae family of fishes (perches, from *Fishes of Alabama* by H. T. Boschung, R. L. Mayden and J. R. Tomelleri). These tiny darters thrive in the very unique aquatic environments associated with the limestone springs – slow-moving, cool backwaters, where they seek refuge from the heat in the summer months and love to “perch” in dense aquatic vegetation, particularly watercress and common water moss.



***Watercress Darter (Etheostoma nuchale)***

The only places where this rainbow-colored creature can be found are in five limestone springs in Jefferson County, Alabama – Glenn and Thomas springs (tributaries of Halls Creek, a tributary of Valley Creek in Bessemer), Seven Springs (a tributary of Valley Creek in Powderly), Roebuck Springs (a tributary of Village Creek in Roebuck), and Tapawingo Springs (also called Penny Springs, a tributary of Turkey Creek in Pinson). All five springs are in and around the Greater Birmingham Metropolitan Area (see map below).



***Five springs in the Birmingham area where the Watercress Darter can be found.***

Partners in Watercress Darter protection efforts include scientists from Samford University and Birmingham-Southern College, the Freshwater Land Trust, the U. S. Fish and Wildlife Service, the Faith Apostolic Church in Powderly, AL, the Sierra Club Water Sentinels, the Alabama Department of Conservation and the Birmingham Audubon Society. Achievements have included 1) getting the rare darter listed as endangered under the Endangered Species Act, the first fish in Alabama to receive this special protected status, 2) creation of the Watercress Darter National Wildlife Refuge for the protection of 23 acres of the darter's habitat in Jefferson County, and 3) the development of the Seven Springs Ecoscape, a park at the Faith Apostolic Church in Powderly that will serve to protect the darter and educate the public about this rare and precious fish. Preservation efforts of the Faith Apostolic congregation are featured in Sierra Club's 2008 national report, Faith in Action: Communities of Faith Bring Hope to the Planet (see [www.sierraclub.org/partnerships/faith/report2008/](http://www.sierraclub.org/partnerships/faith/report2008/) ).

Citizen water monitors have joined in the partnership for protection and preservation of the darter and its habitat. The Watercress Darter Water Quality Monitoring Program (WDWMP) was initiated by the U.S. Fish and Wildlife Service in April 2007, under the direction of Dr. R. Scot Duncan, a professor at Birmingham-Southern College. Goals of the WDWMP are to collect consistent water quality data, which are currently lacking, following Alabama Water Watch (AWW) protocols, in the springs where the Watercress Darter thrives. Water test kits were provided through a grant from the U.S. Fish and Wildlife Service administered by Mr. Daniel Drennen in Jackson Mississippi. This data will provide a baseline of water quality required to sustain the darters as well as indicate any changes that may adversely affect them.

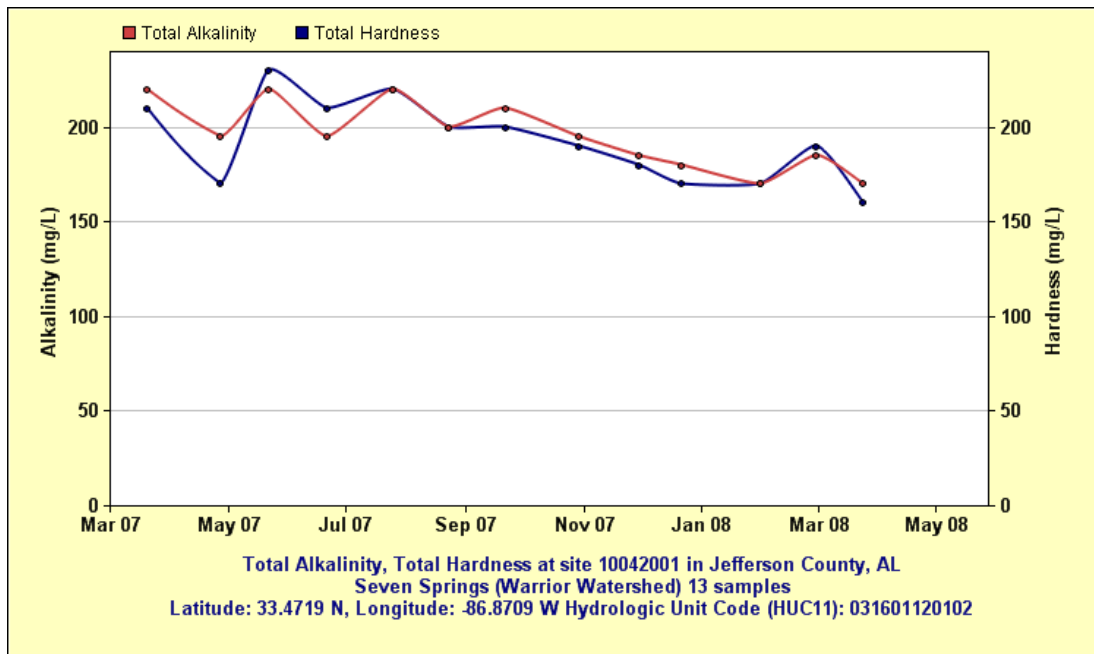
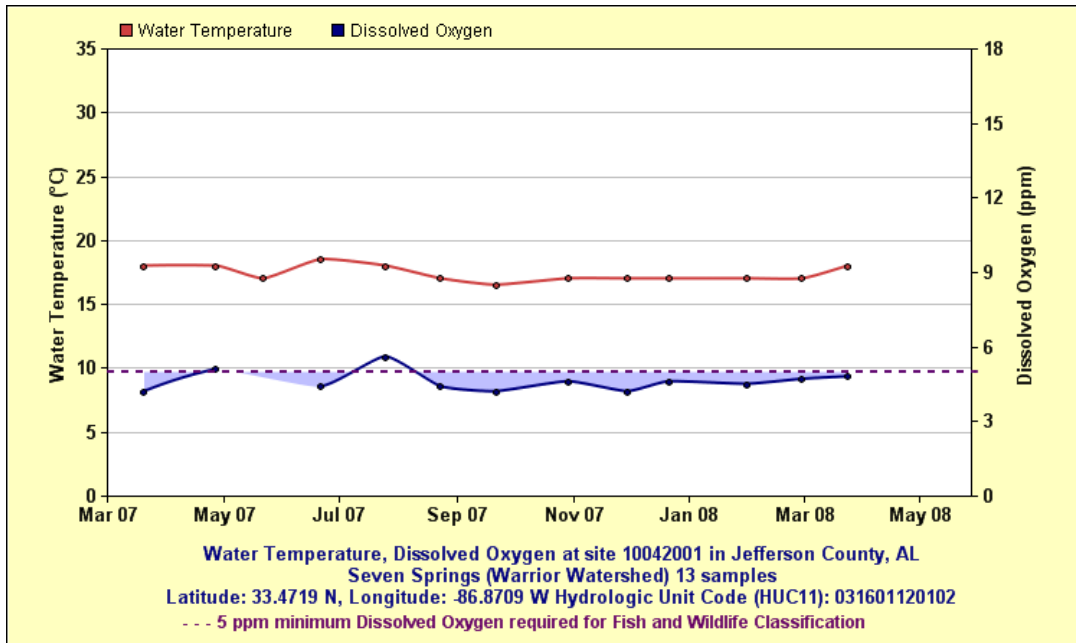


***Members of the Faith Apostolic Church in Powderly, AL, became certified AWW water monitors by completing training in water chemistry monitoring under AWW trainers Hanna Burwinkle and Taylor Steele in September 2007. They now monitor Seven Springs (center photo) on the church grounds.***

After receiving training and certification in Water Chemistry Monitoring from AWW, several citizen monitors have established water quality monitoring sites in the springs where the darters thrive (except in Glenn Springs, which is privately owned). Monitors visit their sites monthly and measure six water chemistry parameters with their portable test kits: water temperature, dissolved oxygen, pH, alkalinity, hardness and turbidity. Water data is sent to the AWW statewide database, where it can be queried, graphed and viewed by anyone with an internet connection.

Emerging data trends show that the limestone springs maintain a narrow range in water temperature year-round, from about 16-19 degrees Celsius, and oftentimes have relatively low dissolved oxygen, characteristic of spring water that emerges from the ground (see AWW graphs below). The spring waters also exhibit high alkalinity and hardness values (relative to the Piedmont and Coastal Plain waters of southern Alabama) in the range of

150-250 mg/L, owing to the local limestone-rich geology. The ‘hard’ water may be an important habitat characteristic, along with the cool water temperatures, which allows the darters to thrive.



**Water temperature, dissolved oxygen (top graph) and alkalinity, hardness (bottom graph) measured at Seven Springs in Powderly, Alabama by citizen monitors following AWW protocols (graphs available online at [www.alabamawaterwatch.org](http://www.alabamawaterwatch.org)).**

These growing citizen monitor data sets are valuable in not only characterizing the water quality of the Watercress Darter’s rare habitat, but act as an ongoing gauge of the health of these waters to sustain this rare and endangered fish. For many of the 75,000 miles of Alabama streams, citizen water data has become the major source of water quality information on local waterbodies. Go to [www.alabamawaterwatch.org](http://www.alabamawaterwatch.org) to check on a stream, lake or river near you, and consider joining community-based watershed management by becoming an AWW water monitor.