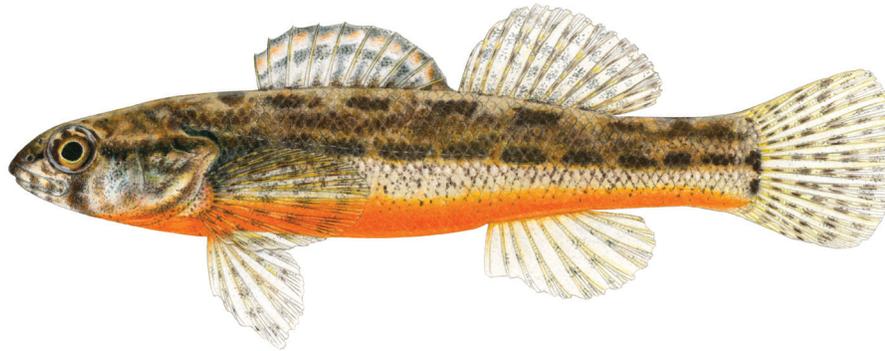


Arkansas Darter



ASSESSING HABITAT QUALITY FOR PRIORITY WILDLIFE SPECIES IN COLORADO WETLANDS



© JOSEPH R. TOMELLERI

Arkansas Darters (*Etheostoma cragini*, Family Percidae) are small native fish of the Colorado plains. They inhabit pools and channels within small streams.

Species Description

Identification

Arkansas darters are 2½- to 3-inch fish belonging to the perch family. During April and May, the belly of breeding males changes from white to bright orange.

Preferred Habitats

Arkansas darters inhabit spring-fed streams, stream channels, and pools near shorelines, often with undercut banks.

Diet

A large portion of the Arkansas darter's diet consists of snails, but they consume many other aquatic animals, including insects, crustaceans, other invertebrates, and fish eggs.

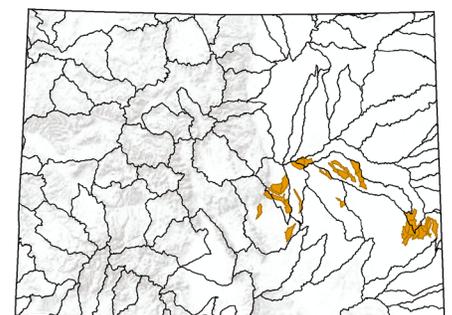
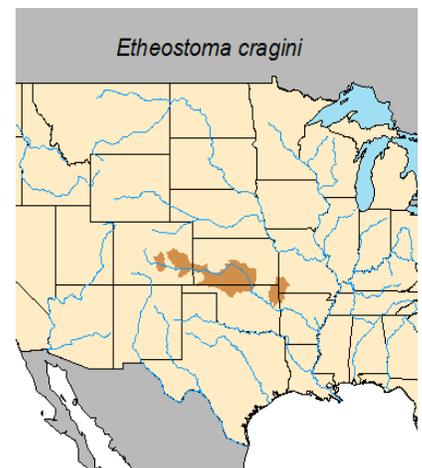
Conservation Status

Arkansas darters appear on several lists of concern: Federal candidate species (U.S. Fish and Wildlife Service), sensitive (Bureau of Land Management), threatened and Tier 1 Species of Greatest Conservation Need (CPW 2015), and near threatened (International Union for Conservation of Nature). Flows on a landscape or segment scale are needed for the fish to move between or among pools and to disperse. Large-scale withdrawals of ground water and dewatering streams are thought to have caused extirpations.

Species Distribution

Range

Arkansas darters occur only in parts of Arkansas, Colorado, Kansas, Missouri, and Oklahoma. In Colorado, they are known from eight drainages within the Arkansas River Basin: Upper Arkansas, Fountain, Chico, Upper Arkansas-Lake Meredith, Horse, Upper Arkansas-John Martin, Big Sandy, and Rush.



Known occurrence

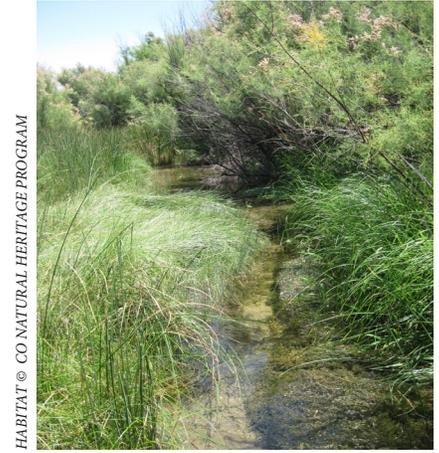
North America map used from U.S. Geologic Survey (<http://nas.er.usgs.gov>). Colorado map based on CPW (2019) and represents the most current information on distribution by 12-digit hydrologic unit codes (HUCs), shown in orange with grey outline. Solid black lines indicate larger 8-digit HUCs.

Version Date: November 2020

Preferred Habitat Conditions

All fish must have connectivity among habitats, suitable for all life cycles, including spawning, rearing, feeding, and refuge. Dams and other barriers to fish movement can have both positive and negative effects for fishes of conservation concern. Barriers can block contact with non-native predatory fish or non-native fish that alter the gene pool of native fish, but they can also prevent desirable gene flow among populations. Due to the difficulty of generalizing effects of barriers, they are not included in the scorecard.

Dominant vegetation	floating, broad-leafed vegetation, especially water-cress (<i>Nasturtium officinale</i>)
Landscape context	heavy grazing unsuitable
Stream order	first and second but may use larger streams for dispersal
Stream width	varies considerably through range; in Colorado 1.5–22 yards
Substrate	sand, silt, gravel
Sunlight	high exposure to sunlight
Water depth (predominant)	varies through range; in Colorado 4–20 inches
Water origin	spring fed
Water quality	clear, pH between 7–8.5
Water temperature	varies across seasons; in Colorado 55–86°F



HABITAT © CO NATURAL HERITAGE PROGRAM

Acknowledgements

Paul Foutz (Colorado Parks and Wildlife) reviewed an earlier version and provided input on preferred habitat conditions.

Suggested Reading and Citations

CPW (Colorado Parks and Wildlife). 2015. State Wildlife Action Plan: A Strategy for Conserving Wildlife in Colorado. Denver, Colorado.

CPW. 2019. Species Activity Mapping: CPW Fish Shapefile Download. <https://www.arcgis.com/home/item.html?id=c1aa2ab573e34dbb86a1a1b6190abeb1>.

Fuller, P. 2014. *Etheostoma cragini*. USGS Nonindigenous Aquatic Species Database, Gainesville, Florida.

Labbe, T. R., and K. D. Fausch. 2000. Dynamics of intermittent stream habitat regulate persistence of a threatened fish at multiple scales. *Ecological Applications* 10: 1774–1791.

Layher, B. 2002. Recovery plan for the Arkansas Darter, *Etheostoma cragini* Gilbert, in Kansas. Prepared for Kansas Department of Wildlife and Parks.

Miller, D. L. 1984. Distribution, abundance, and habitat of the Arkansas darter *Etheostoma cragini* (Percidae) in Colorado. *Southwestern Naturalist* 29: 496–499.

Taber, C. A., B. A. Taber, and M. S. Topping. 1986. Population structure, growth and reproduction of the Arkansas darter, *Etheostoma cragini* (Percidae). *Southwestern Naturalist* 31: 207–214.

USFWS (United States Fish and Wildlife Service). 2010. Species Profile for Arkansas darter (*Etheostoma cragini*).

Woodling, J. 1985. Colorado's little fish: a guide to the minnows and other lesser known fishes in the state of Colorado. Colorado Division of Wildlife, Denver, Colorado.

Management Recommendations

This fact sheet contains easy-to-use guidelines for understanding habitat needs of Colorado Parks and Wildlife priority wetland-dependent wildlife. Biologists with expertise in Arkansas darter have suggested numerous practical steps that can be taken to improve habitat quality for this species.

Hydrology

- Protect springs and connecting streams.
- Maintain refugia on landscape scale.
- Maintain corridors by allowing natural disturbances.
- Protect individual pools.
- Maximize water conservation.
- Protect natural function.
- Promote natural flow regimes.
- Restore and/or enhance connections for migration and dispersal.

Vegetation

- Implement tamarisk control, with an emphasis on long term management for native vegetation.

Contamination

- Eradicate predatory and non-native fish.
- Avoid pesticide and herbicide use near small streams.

Land Use / Other

- Reduce impact from livestock grazing.

Conservation

- Translocate to establish new populations.
- Identify suitable habitat for potential translocations.



FEMALE ARKANSAS DARTER

MALE © ULAND THOMAS

Habitat Scorecard for Arkansas Darters (v. Nov 2020)

Assessment of habitat before and after restoration or management actions

Project Name: _____ Project Area (acres): _____ Habitat Area (acres): _____

Size of Contiguous Habitat outside Project Area (acres): _____ Ownership (circle): Same / Different / Conservation Easement

Scorecard Instructions: Enter one value that best describes early to mid-summer conditions of each habitat variable, using the numbers in the value column. Habitat variables are in shaded boxes; ranges of condition are directly below each variable. **If condition is outside range or is not described, enter a zero.**

Project Area and Habitat Area: The project area includes the entire area affected by the project. The habitat is the area that will provide (in case of pre-project) or does provide (post-project) habitat for each potential target species within the project area. The habitat area may be the same size as the project area or it might be smaller and it may be defined differently for different target species. If there is contiguous habitat area outside the project area, note the size and whether the ownership of the contiguous areas is the same or different and whether it is under conservation easement or other habitat protection. If the habitat area within your project area is noncontiguous and/or if sections are in very different conditions, consider using multiple scorecards so that each scorecard represents the general conditions. If you use multiple scorecards, identify each habitat area on a map.

Key habitat variable and conditions	Value	Pre-Project	Expected Post-Project	Actual Post-Project
Date of assessment				
Morphology of stream				
Permanent pools with connectivity to other waters	11.6			
Substrate				
Sand must be a component	11.6			
Dominant vegetation				
Aquatic floating (e.g. watercress) and aquatic submerged or robust, e.g., cattail, bulrush, reedgrass	11.6			
Water quality				
No visual evidence of turbidity or other pollutants	11.0			
Some turbidity or presence of other pollutants, but limited to small and localized areas within the wetland. Water may be slightly cloudy	7.3			
Water is cloudy or has unnatural oil sheen, but the bottom is still visible. Note: If the sheen breaks apart when you run your finger through it, it is a natural bacterial process and not water pollution	3.7			
Water origin				
Spring fed	10.4			
Stream order				
1 – 2	9.8			
Sunlight				
Full sun to 10% shade	9.8			
Water depth				
>4 – 20 inches	9.2			
>20 – 40 inches	6.2			
0 – 4 inches or >40 inches	3.1			
Stream width at bankfull				
3.3 – 5.5 yards	9.2			
>5.5 – 22 yards	6.2			
>22 – 44 yards	3.1			
Landscape context				
Ungrazed	5.8			
Grazed moderately	3.9			
Grazed heavily	1.9			
Total (of 100 possible): add all numbers in before or after columns				