

Plains Topminnow



ASSESSING HABITAT QUALITY FOR PRIORITY WILDLIFE SPECIES IN COLORADO WETLANDS



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Living only about four years, plains topminnows (*Fundulus sciadicus*, Family *Fundulidae*) are very small, growing to an average of 1.5 inches in Colorado.

Species Description

Identification

With greenish-tan backs and sides and silvery white bellies, plains topminnows rarely grow more than 2.5 inches. During summer, the fins of breeding males take on a rainbow appearance with violet-blue bands and reddish tips.

Preferred Habitats

Plains topminnows are restricted to streams, oxbows, and ditches; they can be raised in ponds.

Diet

Plains topminnows feed from the top of the water column, consuming insects, ostracods, and snails. At least in some areas, plains topminnows in slow-moving waters feed on a wider variety of items than plains topminnows in faster-moving water, which feed primarily on gastropods.

Conservation Status

Federal: Not listed.

Colorado: Not listed, but designated Tier 1 Species of Greatest Conservation Need.

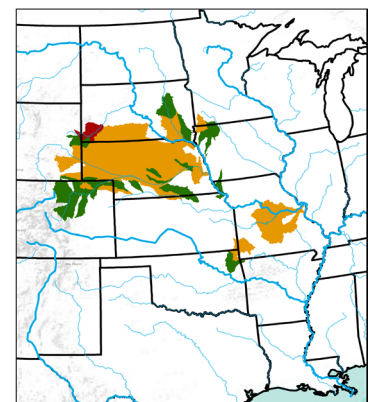
USFS: Listed as Sensitive Species.

In 2013, the U. S. Fish and Wildlife Service determined that information regarding threats to plains topminnow did not support elevating the species to candidate listing status because it still occupies the majority of its range, and states within the range have implemented conservation actions to improve populations.

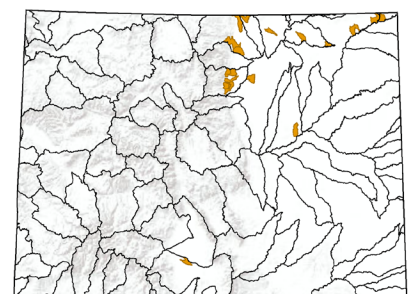
Species Distribution

Range

Plains topminnows have a discontinuous distribution across the plains states, including Colorado, Iowa, Kansas, Minnesota, Missouri, Nebraska, Oklahoma, South Dakota, and Wyoming. In Colorado, they occur in the South Platte River main stem and its tributaries; they have also been reported from the White River and Rio Grande Basins.



— Major Rivers
 ■ Current Native Distribution
 ■ Extirpated Populations
 ■ Introduced Populations



Known occurrence

Distribution of plains topminnow in North America and in Colorado. Map of entire range based on data provided by NatureServe. 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. Unlike many other Colorado fish, plains topminnows use spawning locations in the same general area where they spend the rest of their life cycles. However, connectivity is nevertheless important for both gene flow and for refuge during drought or low flows. To some degree, plains topminnows can withstand harsh conditions in isolated pools during drought: high temperatures and low dissolved oxygen.

Features within streams	sloughs, backwaters, oxbows, channel edges and pools with still water
Cover	instream and overhanging vegetation, woody debris and undercut banks
Substrate	sand or silt
Vegetation (for both spawning and cover)	abundant aquatic vegetation, emergent vegetation, and filamentous algae
Water clarity	clear
Water depth	shallows, including shallows adjacent to waters of intermediate depth
Water temperature, including for spawning	64–77 °F

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 plains topminnows have suggested numerous practical steps that can be taken to improve habitat quality for this species.

Hydrology

- Restore and maintain water tables.
- Avoid dewatering.

Vegetation

- Preserve conditions that promote instream vegetation.

Land Use

- Manage livestock grazing to avoid potential negative effects.
- Avoid further stream fragmentation, such as road crossings and dams.

Conservation

- Secure availability of water.
- Consider opportunities to reduce or eliminate invasive native and non-native fish that compete with or prey upon plains topminnows.



Acknowledgements

Boyd Wright (Colorado Parks and Wildlife, Fort Collins, CO) 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. Colorado Parks and Wildlife, Denver, CO.

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

Felts, E. A., and K. N. Bertrand. 2014. Conservation status of five headwater stream specialists in South Dakota. *American Midland Naturalist* 172:131-159.

NatureServe. 2013. *Fundulus sciadicus*. The IUCN Red List of Threatened Species 2013: e.T202390A18231727. <http://dx.doi.org/10.2305/IUCN.UK.2013-1.RLTS.T202390A18231727.en>. [Accessed 24 September 2018].

Rahel, F. J. and L. A. Thel. 2004. Plains topminnow (*Fundulus sciadicus*): a technical conservation assessment. [Online]. USDA Forest Service, Rocky Mountain Region. Available: <http://www.fs.fed.us/r2/projects/scp/assessments/plainstopminnow.pdf>.

Schumann, D. A., K. D. Koupal, W. W. Hoback, C. W. Schoenebeck, and S. Schainost. 2015. Large-scale dispersal patterns and habitat use of plains topminnow (*Fundulus sciadicus*): implications for species conservation. *Journal of Freshwater Ecology* 30:311-322.

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.



Habitat Scorecard for Plains Topminnow (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				
Features within stream				
Sloughs, backwaters, oxbows, channel edges or pools with still water	15.4			
Waters with medium velocity	10.3			
Waters with swift current	5.2			
Substrate				
Sandy or mix of sandy-gravelly with sand dominating	15.4			
More rock than sand and silt	10.3			
Mostly rock	5.2			
Vegetation				
Abundant aquatic vegetation, emergent vegetation, and filamentous algae	15.4			
Sparse aquatic vegetation, emergent vegetation, and filamentous algae	10.3			
Little to no aquatic vegetation, emergent vegetation, and filamentous algae	5.2			
Water quality				
No visual evidence of turbidity or pollutants	15.4			
Localized areas of cloudiness and contamination	10.3			
Water is murky or has oily sheen	5.2			
Cover				
Presence of all of following: aquatic and overhanging vegetation, woody debris, and undercut banks	13.8			
Presence of aquatic vegetation plus 1-2 of the following: overhanging vegetation, woody debris, and undercut banks	9.2			
Sparse cover, including aquatic and overhanging vegetation, woody debris, and undercut banks	4.6			
Riparian condition				
Riparian area thick with uninterrupted vegetation; livestock fully excluded	12.3			
Riparian area contains patchy vegetation; livestock partially excluded	8.2			
Riparian area contains sparse vegetation and erosive banks; livestock not excluded	4.1			
Landscape context				
Land adjacent to stream is continuously vegetated by primarily native plants and consists mostly of permeable surfaces	12.3			
Land adjacent to stream has a mix of vegetation with some barren areas and/or impermeable surfaces	8.2			
Vegetation is sparse on adjacent land with large areas of impermeable surface	4.1			
Total (of 100 possible): add all numbers in before or after columns				