

U.S. Fish and Wildlife Service
Revised Recovery Plan for the
Conasauga Logperch (*Percina jenkinsi*)



Photo by Tennessee Aquarium Conservation Institute

Prepared by:

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For:

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DISCLAIMER

Recovery plans delineate reasonable actions that are believed necessary to recover and/or protect the species. Plans are prepared by the U.S. Fish and Wildlife Service (Service), sometimes with the assistance of recovery teams, contractors, State agencies, and others. Plans are reviewed by the public and subject to additional peer review before they are adopted by the Service. Objectives will only be attained and funds expended contingent upon appropriations, priorities, and other budgetary constraints. Recovery plans do not obligate other parties to undertake specific tasks. Recovery plans represent the official position of the Service only after they have been signed by the Regional Director; they do not necessarily represent the views or the official positions or approval of other individuals or agencies involved in the plan formulation. Approved recovery plans are subject to modification as dictated by new findings, changes in species' status, and completion of recovery tasks. Copies of all documents reviewed in development of the plan are available in the administrative record, located at the Service's Georgia Ecological Services Field Office, Athens, Georgia.

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Recovery Plan for Conasauga Logperch (*Percina jenkinsi*)

This recovery plan describes criteria for determining when the Conasauga logperch should be considered for removal from the *List of Endangered and Threatened Wildlife* (50 CFR 17.11). It lists specific actions necessary to meet those criteria and estimates the time and cost to implement recovery actions. Brief descriptions of the species' status, habitat requirements, and limiting factors are included. This recovery plan was informed by a Species Status Assessment (SSA) (available online at the US Fish and Wildlife Service Catalog, <https://ecos.fws.gov/ServCat/>). The Conasauga logperch recovery implementation schedule (RIS), which is the operational document that details on-the-ground activities for implementing the recovery plan actions, also is posted at ServCat. The RIS and SSA will be updated on a routine basis. This trio of documents replaces the 1986 recovery plan for the species.

CURRENT SPECIES STATUS

The Service listed the Conasauga logperch as endangered and identified critical habitat in the Conasauga River on August 5, 1985 (50 FR 31597). The fish occurs only in a 34-mile (54.7 km) reach of the Conasauga River mainstem, from near the confluence of the Conasauga and Jacks Rivers, Polk County, Tennessee, downstream to Mitchell Bridge, Murray County, Georgia. No other population, current or historic, is known. Survey data suggest ongoing, long-term declines in numbers and shoal occupancy in the upper and lower third of the species' range (Golder Associates 2010, Hagler et al. 2011, Freeman et al. 2008, 2009, 2015; Hagler and Freeman 2012; Bumpers et al. 2019, and Conservation Fisheries unpublished survey data). Moyer et al. (2015) estimated the species' effective population size was 114 individuals (95% CI 60-526), based on genetic data from 33 individuals sampled 2010 and 2012.

HABITAT REQUIREMENTS AND LIMITING FACTORS

The Conasauga logperch is a large darter that reaches up to 5.25 inches in length (133 mm). It most often is encountered in deep gravel runs or pools with small stones and sandy bottoms (Etnier and Starnes 1993). Even within suitable habitat, the darter is rare, typically observed at low densities of scattered individuals or pairs (Rakes and Shute 2005). Captive mortality in Conasauga logperch suggests maximum lifespan is at least five years (Petty et al. 2015). Logperch feed on aquatic insect larvae – the fish has a fleshy, pig-like snout, which it uses to flip stones to expose prey (Mettee et al. 1996, Freeman 1999). Spawning behavior and details of spawning season conditions are unknown.

The original Conasauga logperch recovery plan was published June 1986 (USFWS 1986). The recovery team determined it was unlikely the fish would ever be removed from the list of endangered and threatened species due to the single population's vulnerability to extinction. Primary threats, at the time, included siltation, proposed reservoir construction on the river's mainstem, catastrophic events, increased silviculture, road and bridge construction, stream channel modification, and land use changes. Research over the past 30+ years has identified current stressors likely are (1) habitat/water quality degradation associated with agriculture and urbanization that increases levels of sediment, nutrients, estrogens, and herbicides in the river (Baker et al. 2013, Freeman et al. 2015, Lasier et al. 2016), (2) loss of riparian buffers, (3) decline in *Podostemum*, (4) natural demographic, environmental, and genetic stochastic events that affect small populations with limited geographic range (Purvis et al. 2000), and (5) climate change.

RECOVERY STRATEGY

The primary strategies for Conasauga logperch recovery are to (1) increase the species' numbers and distribution across the historic range, (2) reduce priority anthropomorphic stressors, (3) conserve genetic and morphological diversity of the species, and (4) emphasize voluntary soil and water stewardship practices by citizens living and working in the watershed. To achieve this, the Service and conservation partners [e.g., Georgia Department of Natural Resources, The Nature Conservancy, Natural Resource

Conservation Service (NRCS), University of Georgia, US Geological Survey (USGS), Limestone Valley RC&D, Georgia-Alabama Land Trust, Conservation Fisheries, Inc., the Tennessee Aquarium, Conasauga River Alliance, U.S. Army Corps of Engineers (Corps), U.S. Forest Service, et al.] will continue to work with private landowners and Federal/state/local governments to implement measures to conserve the species. Available conservation programs include NRCS' Working Lands for Wildlife-Conasauga, the Corps' Clean Water Act 404 mitigation program, National Fish and Wildlife Foundation and Environmental Protection Agency Section 319 grants, the Service's Partners for Fish and Wildlife Program, NRCS' Farm Bill and Regional Conservation Partnership Programs, and other programs. Partners need to better coordinate with state agencies in both Tennessee and Georgia to ensure protective measures and best management practices to minimize sediment and nutrient transport, erosion, and stormwater runoff are implemented to protect water quality within the Conasauga logperch range. The Service must also work with conservation partners to inform local governments and the public about the logperch, the value of its habitat to the community (e.g., recreation, drinking water, tourism), and conservation measures to conserve the species.

Management actions that reduce transport of agricultural nutrients and chemicals from farmland to stream systems, as well as other best management practices to reduce stressor impact, may need to be developed/adapted to improve water and habitat quality. Ongoing fish monitoring programs at established survey stations throughout the range should continue to track the species' status, and further research is needed to address information gaps related to Conasauga logperch demographics, life history, and threat sensitivity. Partners need to prioritize parcels to be targeted for conservation/ restoration, determine management actions to best address stressors on priority parcels, and, with landowner approval, implement those actions and monitor results. Environmental outreach and education is needed to promote public awareness of rare Conasauga species and their threats. Captive propagation and release of offspring may be necessary if populations continue to decline before management actions are implemented at a scale that sufficiently restores habitat and water quality within the species; range.

CRITERIA FOR DELISTING

The Conasauga logperch exists as a single (one) population within its 36 mile historic range in the upper Conasauga River basin in Tennessee and Georgia. The Conasauga logperch will be considered for removal from the List of Endangered and Threatened Wildlife (50 CFR 17.11) when the following criteria are met;

1. A stable, self-sustaining population in the Conasauga River, as evidenced by population trends over multiple spawning cycles.
2. Eighty percent of shoals within the species' historic range are consistently occupied by the species.
3. Key water quality standards are met such that the species will remain viable, based on Population Viability Analysis (PVA) or other scientifically-defensible evaluation methods, for the foreseeable future.
4. Conasauga logperch are protected from habitat threats and/or managed such that the species will remain viable, based on PVA or other scientifically-defensible evaluation methods, for the foreseeable future.

JUSTIFICATION FOR RECOVERY CRITERIA

1. Criterion 1: A stable, self-sustaining population trend, observed during biennial surveys over a 20-year time frame, would indicate that recruitment of young is equaling or outpacing adult mortality and the species is recovering.
2. Criterion 2: Recolonization of historically-occupied habitat (e.g., adults are collected at 80% of shoals in the species' historic range in at least 4 of 6 biennial surveys including the two most recent surveys)

would increase the species' resilience to some stochastic and/or catastrophic events.

3. Criterion 3: Poor water quality, particularly nitrates, is one of the main threats to this fish.
4. Criterion 4: Reduction of threats should increase survival and recruitment, thereby increasing resilience.

ACTIONS NEEDED

The recovery actions identified in the table below are those we believe are necessary to recover the Conasauga logperch, based on the best available science.

Recovery Action	Estimated Cost	Priority Number ¹
1. Implement management actions and encourage best management practices on priority tracts to improve water quality in the Conasauga mainstem. This action may include retrofitting existing stormwater networks, working with farmers to reshape agricultural ditches or create pocket wetlands to serve as stormwater treatment areas, and other measures to improve water quality in runoff before it is discharged into receiving waters.	\$20,000,000	1
2. Protect (and restore, if needed) key parcels via land acquisition, conservation agreements, and conservation easements. Promote voluntary stewardship to reduce non-point pollution and habitat improvement.	\$50,000,000	1
3. Implement a biennial fish monitoring program at Conasauga shoals to determine population and habitat trends as management actions are implemented. Monitoring should continue until recovery criteria are met; monitoring methodology should allow future PVA or other scientifically-defensible evaluation methods. Additional monitoring post-recovery will also be needed.	\$300,000	1
4. Install sensors at USGS gage 02384500 in the Conasauga River to monitor real time water quality, focusing on nitrite, phosphorus, turbidity, and water temperature.	\$100,000	1
5. Conduct research to determine the species' demographics and threat sensitivity.	\$250,000	2
6. Develop, and implement as needed, a propagation plan for the species that provides for an ark population if numbers continue to decline and reintroduction to former habitat when stressors are identified and eliminated/reduced.	\$100,000	2
7. Increase public awareness through outreach materials, festivals, planned snorkel and canoe/kayak trips, and other methods.	\$25,000	2
8. Modify State and local government policies and regulations to improve protection of the fish and its habitat and enhance enforcement of such policies and regulations.	Costs covered under existing programs	2
9. Work with GEPD to develop water quality standards for nitrate/nitrite and phosphorus in north Georgia free-flowing streams.		3

10. Coordinate all activities and conduct periodic review of recovery progress and strategy		3
Total Estimated Cost: \$70,775,000		

¹Recovery actions are assigned numerical priorities to highlight the relative contribution they may make toward species recovery (48 FR 43098):

Priority 1 - An action that must be taken to prevent extinction or to prevent the species from declining irreversibly.

Priority 2 – An action that must be taken to prevent a significant decline in species population/habitat quality or some other significant negative impact short of extinction.

Priority 3 – All other actions necessary to provide for full recovery of the species.

ESTIMATED COST TO DELIST

The cost to recover and ultimately delist the Conasauga logperch is estimated to be \$70,775,000. Costs will be considerably less if landowners are amenable to easements and conservation agreements to conserve the fish, rather than land purchase, and if NRCS Farm Bill and other funds can be applied to improve water quality of runoff from agricultural lands in the basins. Some costs are not determinable at this time. Ten other fish and mussel species listed as endangered or threatened occur in the Conasauga mainstem, and recovery actions above will benefit these species.

DATE OF DELISTING

If all actions are fully funded and implemented, in a timely manner, as outlined, including full cooperation of all partners needed to achieve recovery, we anticipate that recovery criteria for delisting could be met by 2050. As we learn more about this species and its threats, and as recovery actions are implemented with close cooperation of all partners, we will carefully monitor and assess progress toward recovery to ensure we are on track.

LITERATURE CITED

- Baker, C.L., M.M. Hagler, and B.J. Freeman. 2013. Determining current threats to protected and rare aquatic species of the Conasauga River system. Final report to the Georgia Department of Natural Resources. April. Unpublished manuscript in USFWS files, Athens, GA. 122 pp.
- Bumpers, P.M., J. Skaggs, and B.J. Freeman. 2019. Assessing the status and trends of fishes and water quality in the Conasauga River. Final report to the Georgia Department of Natural Resources. Unpublished document in USFWS files, Athens, GA. 66 pp.
- Etnier, D.A., and W.C. Starnes. 1993. Fishes of Tennessee. The University of Tennessee Press, Knoxville, Tennessee. 681 pp.

- Freeman, B.J. 1999. Identification and mapping of critical habitats in the Conasauga River corridor of Georgia and Tennessee. Annual Report Fall 1999. Unpublished manuscript in the files of Georgia Ecological Services, Athens, GA. 39 pp.
- Freeman, B.J., M.M. Hagler, S.J. Wenger, and G.B. Anderson. 2008. Identification and mapping of critical habitats in the Conasauga River Corridor of Georgia and Tennessee. 2007 annual report. Unpublished manuscript in USFWS files, Athens, GA.
- Freeman, B.J., M.M. Hagler, and N. L. Pontzer. 2009. Identification and mapping of critical habitats in the Conasauga River Corridor of Georgia and Tennessee. 2007 annual report. Unpublished manuscript in USFWS files, Athens, GA.
- Freeman, B.J., M.M. Hagler, and P.M. Bumpers. 2015. Assessing causes of decline of aquatic species in the Conasauga River system. Report to the Georgia Department of Natural Resources, 2013-2014 Summary Report. Unpublished manuscript in USFWS files, Athens, GA. 59 pp.
- Golder Associates, Inc. 2010. Comprehensive report: assessment of potential impacts on protected fish and mussel species from River Road Reservoir releases 1995-2009. Unpublished document in Georgia Field Office, US Fish and Wildlife Service, files. Athens, GA.
- Hagler, M.M., M.C. Freeman, S.J. Wenger, B.J. Freeman, P.L. Rakes, and J.R. Shute. 2011. Use of recent and historical records to estimate status and trends of a rare and imperiled stream fish, *Percina jenkinsi* (Percidae). *Can. J. Fish. Aquat. Sci.* 68:739-748.
- Hagler, M.M., and B.J. Freeman. 2012. Assessing causes of decline of aquatic species in the Conasauga River system. 2011-2012 Summary Report Unpublished report submitted to the Georgia Department of Natural Resources.
- Lasier, P.J., M.L. Urich, S.M. Hassan, W.N. Jacobs, R.B. Bringolf, and K.M. Owens. 2016. Changing agricultural practices: potential consequences to aquatic organisms. *Environmental Monitoring and Assessment* 188:672.
- Mettee, M.F., P.E. O'Neil, and J. M. Pierson. 1996. *Fishes of Alabama*. Oxmoor House, Birmingham. 819 pp.
- Moyer, G.R., A.L. George, P.L. Rakes, J.R. Shute, and A.S. Williams. 2015. Assessment of genetic diversity and hybridization for the endangered Conasauga logperch (*Percina jenkinsi*)," *Southeastern Fishes Council Proceedings*: No. 55.
- Petty, M.A., P.L. Rakes, C. L. Ruble, and J.R. Shute. 2015. Preventing extinction of the endangered Conasauga logperch, *Percina jenkinsi*: 2013 & 2014 post-release surveys and monitoring. Final report to U.S. Fish and Wildlife Service. Unpublished manuscript in USFWS files, Athens, GA. 10 pp.
- Purvis, A., J.L. Gittleman, G. Cowlishaw, and G. Mace. 2000. Predicting extinction risk in declining species. *Proc.R. Soc. Lond. B Biol. Sci.* 267:1947-1952.
- Rakes, P.L., and J.R. Shute. 2005. Propagation of the endangered Etowah darter, *Etheostoma etowahae*, and the endangered Conasauga logperch, *Percina jenkinsi*. Final Report August 2005. Unpublished manuscript in the files of Georgia Ecological Services, Athens, GA. 13 pp.
- USFWS. 1986. Recovery plan for the Conasauga logperch (*Percina jenkinsi*) and amber darter (*Percina antesella*). U.S. Fish and Wildlife Service, Region 4, Athens, GA.