U.S. Fish and Wildlife Service

Draft Revised Recovery Plan for the

Conasauga Logperch (*Percina jenkinsi)*

Prepared by:

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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 do not necessarily represent the views nor the official positions or approval of any individuals or agencies involved in the plan formulation, other than the Service. They represent the official position of the Service only after they have been signed by the Regional Director as approved. Approved recovery plans are subject to modification as dictated by new findings, changes in species status, and the completion of recovery tasks. By approving this document, the Regional Director certifies that the information used in its development represents the best scientific and commercial data available at the time it was written. Copies of all documents reviewed in development of the plan are available in the administrative record, located at the Service's Georgia Field Office, Athens, Georgia.

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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 also lists specific actions necessary to meet those criteria and estimates the time and cost for implementing 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 at https://www.fws.gov/southeast/endangered-species-act/species-status-assessments/). A recovery implementation schedule (RIS) will be developed; it is the operational document that details on-the-ground activities for implementing the recovery plan actions. The RIS and SSA are finalized separately from the recovery plan and will be updated on a routine basis.

CURRENT SPECIES STATUS

The US Fish and Wildlife Service (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 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. Genetic analyses (George et al. 2010) and survey data (Hagler et al. 2011, Freeman et al. 2017) suggest ongoing, long-term declines in numbers and shoal occupancy. The species' estimated effective population size, based on genetic data from 33 individuals sampled 2010 and 2012 was 114 individuals (95% CI 60-526; Moyer et al. 2015).

HABITAT REQUIREMENTS AND LIMITING FACTORS

The Conasauga logperch most often is encountered in deep gravel runs or pools with small stones and sandy bottoms (Etnier and Starnes 1993). Captive mortality suggests maximum lifespan is four years (Rakes and Shute 2005). Logperches feed on aquatic insect larvae and have an interesting habit of flipping stones with their snouts to expose prey underneath (Mettee et al. 1996, Freeman 1999). Spawning behavior and details of spawning season conditions are unknown. Probable current stressors include natural stochastic events that affect small populations with limited geographic range, climate change, and habitat/water quality degradation associated with changes in agricultural practices in the basin (Purvis et al. 2000, Baker et al. 2013, Freeman et al. 2015, Lasier et al. 2016).

RECOVERY STRATEGY

The primary strategies for Conasauga logperch recovery are to (1) increase population numbers and distribution across the species' 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 (GDNR), The Nature Conservancy (TNC), Natural Resource Conservation Service (NRCS), University of Georgia, US Geological Survey (USGS), Limestone Valley RC&D, Georgia-Alabama Land Trust, Conservation Fisheries, Inc. (CFI), the Tennessee Aquarium, Conasauga River Alliance, U.S. Army Corps of Engineers (Corp), and U.S. Forest Service] will continue to work with private landowners

and state/local governments to implement measures to conserve the species. Available conservation programs include NRCS' Working Lands for Wildlife-Conasauga, the Corps' CWA 404 mitigation program, National Fish and Wildlife Foundation and Environmental Protection Agency Section 319 grants, the Service's Partners for Fish and Wildlife Program, and NRCS' Farm Bill programs. Partners need to better coordinate with the Georgia Environmental Protection Division (GEPD) to ensure protective measures and best management practices for sediment, erosion, and stormwater management are implemented to protect water quality within the logperch's 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 they can take to conserve the species.

Conservation partners will continue work to address information gaps related to Conasauga logperch demographics, life history, and threat sensitivity. Ongoing monitoring programs throughout the range should be continued to track the species' status, and further research is needed to evaluate parcels and land use practices where management actions first should be targeted. Management actions that reduce transport of agricultural nutrients/chemicals from farmland to stream systems and other best management practices may need to be developed/adapted to improve water quality, and environmental outreach/education is needed to promote public awareness of rare Conasauga species and their threats. Captive propagation 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.

THREATS AND CONSERVATION ACTIONS UNDER THE 1986 RECOVERY PLAN

The original Conasauga logperch recovery plan was published in June 1986 (USFWS 1986), when 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 were identified as proposed Corps' reservoir construction in the Conasauga mainstem, catastrophic events, increased silviculture, road and bridge construction, stream channel modification, and land use changes. Recovery efforts to date have not been sufficient to prevent Conasauga logperch declines in the face of changing/intensifying watershed-wide threats over the past few decades, including increased measured levels of nutrients, estrogens, and glyphosate break-down products in surface waters.

CRITERIA FOR DELISTING

1. Biennial fish surveys at fixed-sample locations on the Upper Conasauga River document a stable or increasing population trend as evidenced by natural recruitment, and multiple age classes.
2. Biennial fish surveys (as in Criterion 1) document adults occupying at least 80% of the shoals in the species' historic range.
3. Water quality standards are met such that the species will remain viable into the foreseeable future.
4. Conasauga logperch are protected from habitat threats and/or managed such that the species will remain viable into the foreseeable future.

JUSTIFICATION FOR RECOVERY CRITERIA

1. Criterion 1: A stable or increasing population trend, observed over a sufficient time period, would indicate that recruitment of young is occurring at a rate at or higher than adult mortality.
2. Criterion 2: Recolonization of historically-occupied habitat downstream of currently-occupied reaches would increase the species' resilience to stochastic and/or catastrophic events.
3. Criterion 3: Poor water quality is one of the main threats to this fish.
4. Criterion 4: Meeting Criteria 1 and 2 would indicate the population is currently resilient but not that it is no longer threatened or endangered with extinction in the future. Alleviation or reduction of threats insurers species viability will continue into the foreseeable future.

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.

Table 2. Recovery Actions with Estimated Cost and Priority Number[1]

Recovery Action	Estimated Cost	Priority
1. Implement management actions and encourage best management practices to improve water quality in the Conasauga mainstem. This action may include retrofitting existing stormwater networks, working with farmers to reshape agricultural ditches to serve as constructed wetlands or stormwater treatment swales, and other measures to improve water quality in runoff before it is discharged into receiving waters.	$20,000,000	1
2. Protect key parcels via land acquisition, conservation agreements, and conservation easements in both basins. 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. Additional monitoring post-recovery will also be needed.	$300,000	1
4. Install sensors at USGS gage 02384500 in the Conasauga River and 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 State and Federal	2

9. Work with GEPD to develop water quality standards for nitrate/nitrite and phosphorus in north Georgia free-flowing streams.	programs	3
10. Coordinate all activities and conduct periodic review of recovery progress and strategy		3
Total Estimated Cost: $70,775,000		

[1]Recovery 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 2040. As we learn more about this species and its threats and recovery actions are implemented and funded with close cooperation of all partners, we will carefully monitor and assess progress toward recovery to ensure we are on track.

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