

**Conasauga Logperch  
(*Percina jenkinsi*)**

**5-Year Status Review:  
Summary and Evaluation**



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**U.S. Fish and Wildlife Service  
Southeast Region  
Georgia Ecological Services Field Office  
Athens, Georgia**

**April 2025**

# **5-YEAR STATUS REVIEW**

## **Conasauga Logperch (*Percina jenkinsi*)**

### **GENERAL INFORMATION**

**Current Classification:** Endangered

**Lead Field Office:** Georgia Ecological Services Field Office

**Review Author:** Martha Zapata, Georgia Ecological Services Field Office

**Reviewers:**

**Lead Regional Office:** Southeast Region, Carrie Straight

**Cooperating Field Office:** Tennessee Ecological Services Field Office, Anthony Ford

**Date of original listing:** September 4, 1985 (50 FR 31597; August 5, 1985)

**Critical Habitat/4(d) Rule:** Critical habitat final rule: September 4, 1985 (50 FR 31597; August 5, 1985)

**Methodology used to complete the review:**

In accordance with section 4(c)(2) of the Endangered Species Act of 1973, as amended (Act), the purpose of a status review is to assess each threatened species or endangered species to determine whether its status has changed and if it should be classified differently or removed from the Lists of Threatened and Endangered Wildlife and Plants ([50 CFR 424.11](#)). The U.S. Fish and Wildlife Service (Service) evaluated the best available information about the Conasauga logperch's biology, habitat, and threats to inform this status review.

Information summarized in this review includes information from the final listing rule, published and unpublished reports, field observations, and personal communications from recognized experts in the field along with information from a Species Status Assessment Report (SSA; Service 2019b) that was developed by the Service and species experts. The SSA is a peer-reviewed document that represents our evaluation of the best available scientific information regarding the biology, life history, and condition of the species. In addition to the Service, the core team responsible for the SSA included species experts from state and federal agencies such as the Georgia Department of Natural Resources, the U.S. Geological Survey, and the University of Georgia. We published an announcement in the Federal Register requesting information on this species on June 6, 2024 (89 FR 48437), and a 60-day comment period was opened. In response, we received one public comment from The National Council for Air and Stream Improvement, Inc., which we have incorporated into this review. We also reached out to species experts, and in response we received data and information from the University of Georgia (UGA). This review was completed by the U.S. Fish and Wildlife Service, Georgia Ecological Services Field Office, Athens, Georgia. All

literature and documents used for this review are on file at the Field Office. A completed draft of this 5-year review was sent to other affected Service offices in the species' range for review and comment. All comments received were evaluated and incorporated into this final document as appropriate. All recommendations resulting from this review are the result of thoroughly reviewing the best available information on the Conasauga logperch.

**FR Notice citation announcing the species is under active review:**

June 6, 2024; 2024-12370 (89 FR 48437)

**Species' Recovery Priority Number at start of 5-year review ([48 FR 43098](#)): 5.**

Conasauga logperch is a species with a high degree of threat and low recovery potential.

**Review History:**

A Species Status Assessment of the Conasauga Logperch was published on November 1, 2019.

Previous 5-year reviews recommending no change in its status were published on November 6, 1991; December 16, 2011; and December 3, 2019.

## **REVIEW ANALYSIS**

### **Listed Entity**

**Taxonomy and nomenclature:** We are not aware of any changes to the taxonomy of this entity, and it is still considered valid by the Service.

**Distinct Population Segment (DPS) ([61 FR 4722](#)):** The Act defines species as including any subspecies of fish or wildlife or plants, and any distinct population segment of any species of vertebrate wildlife. This species was not listed as a DPS, and we have no new information that would indicate the species should be listed as a DPS under the Service's 1996 DPS Policy.

### **Recovery Criteria**

#### **Recovery Plan:**

Conasauga Logperch Revised Recovery Plan, January 9, 2020 (Service 2020).

Recovery plans are not regulatory documents and intended to provide guidance to the Service, States, and other partners on methods of minimizing threats to listed species and on criteria that may be used to determine when recovery is achieved. If the recovery criteria defined in the plan are still valid, meeting recovery criteria can indicate that the species no longer requires protections under the Act. However, when recommending whether a listed species should be delisted, the Service must apply the factors in section 4(a) of the Act ([84 FR 45020](#)).

According to the recovery plan, the criteria for delisting of the Conasauga logperch are:

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' historical 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.

The Service believes these criteria are appropriate and relevant; however, no criteria have currently been met.

### **Biology and Habitat Summary**

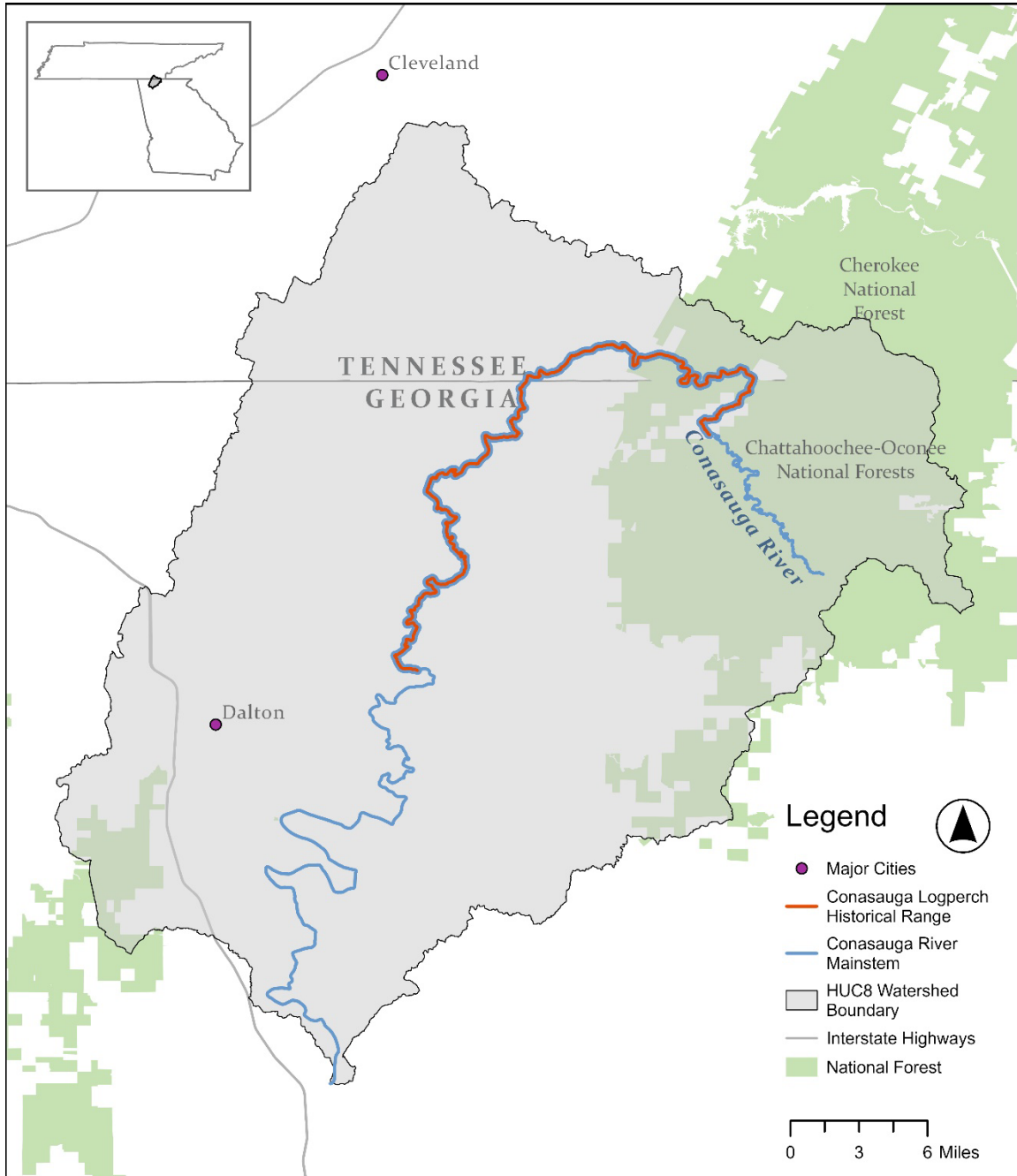
The Species Status Assessment (SSA) Report summarizes the best available information on the life history and habitat of the Conasauga logperch (Service 2019b).

The Conasauga logperch is endemic to a 36-mile (58 km) reach of the Conasauga River mainstem in Georgia and Tennessee (Figure 1). Adult individuals are found most frequently in riffles, deep runs, or pools with coarse gravel, small cobble, and sandy substrate (Etnier and Starnes 1993; Rakes *et al.* 2015; Service 2019a, 2019b, 2020), at depths greater than 0.5 meters (1.6 feet) with swift current (often greater than 0.5 meters/second or 1.6 feet/second (Freeman 1989, Golder and Associates 2002, Johnson and Damon 1996). Even within suitable habitat, the darter is rare, typically observed at low densities of scattered individuals or pairs (Rakes and Shute 2005). Between 2019 and 2024, there have been 8 documented observations, 6 during snorkel surveys and 2 during seine surveys. All observations occurred within the species' historical range.

Since 1996, the Georgia Museum of Natural History and University of Georgia's River Basin Center (UGA) have conducted annual seine surveys at several shoals of the Conasauga River (Georgia portion) during low-flow conditions in late summer through fall. The surveys were originally designed to monitor amber darter populations in the Conasauga River, and they continue to track shoal-dwelling species occurrence over time. Surveys target riffle, run, and shallow pool habitats. Since 1996, the surveys have documented 36 individuals at 13 unique locations. Using a subset of sites that have been sampled most consistently since 1996, UGA estimated trends in counts of Conasauga logperch using mixed-effects models, including an offset for survey effort. These models suggest that Conasauga logperch abundance has declined at their long-term survey sites at an annual rate of approximately 7 percent (UGA 2024). Between 2019 and 2024, UGA has captured 2 individuals during 46 seine surveys conducted within the Conasauga logperch range (P. Bumpers, pers. comm. 2025).

Of note, no juvenile individuals have not been collected during UGA's surveys over the 27-year long-term monitoring period and there is limited knowledge about the species' habitat needs at

larval and juvenile life stages. Juvenile Conasauga logperch may use different habitat than adults, or simply be extremely rare (Freeman 1990). Spatial variation in habitat use between age classes has been observed in the endangered Roanoke logperch, with adults and subadults found in run and riffle habitat, and young-of-year in shallow, stagnant backwaters and secondary channels (Rosenberger and Angermeier 2003).



**Figure 1.** Map of the historical range of the Conasauga logperch (*Percina jenkinsi*) in the Conasauga River of Georgia and Tennessee.

In July 2023, Conservation Fisheries, Inc. (CFI) conducted three targeted snorkel surveys (eight hours of effort), from the confluence with Jack's River to just above Minnewauga Creek and documented one individual (CFI 2025, unpublished data). Surveys focused on shallow pool, run, and riffle habitats.

Between 2021 and 2024, qualified field biologists have documented 5 observations of between one and three individuals made using snorkel methods also in Tennessee but further downstream of the Cherokee and Chattahoochee-Oconee National Forests (R. Lamb, pers. comm. 2021-2024 and A. Zimmerman, pers. comm. 2025). These observations were made in shallow pool and riffle habitats during the months of March, April, June, and September.

Due to the rarity of encountering this species in surveys, abundance estimates cannot be made. It is possible that low numbers of individuals may persist in other areas within the species' historic range, but the stronghold sites of a very limited number of individuals are likely isolated at individual shoals within the reach between the Cherokee National Forest downstream to Beaverdale, Georgia (Georgia Highway 2; approximately 23 river miles).

### **Threats (Five-Factor Analysis) Summary**

The status of a species is determined from an assessment of factors specified in section 4(a)(1) of the Act. Many of the threats were discussed in the 2019 5-year review (Service 2019a) and the SSA Report (Service 2019b). A summary of the current threats to the species is detailed below.

#### **Factor A: The present or threatened destruction, modification, or curtailment of its habitat or range**

##### ***Historic and Current Land Use***

Historic and current land use in the Conasauga River Basin has altered riparian buffers, stream channel morphology and stability, and nutrient, sediment, and contaminant loads, with implications on water quality and aquatic life (Service 2019b). Surface waters in the Conasauga basin receive pollution from point- and non-point source discharges associated with agriculture, industrial, and municipal development wastewater and stormwater runoff. The SSA (Service 2019b) and Recovery Plan (Service 2020) for the Conasauga logperch identifies habitat destruction and modification stressors related to historic and current land use as fine sediments, excess nutrients, contaminant inputs, and the decline of *Podostemum*. These stressors likely negatively impacted individuals through reduced health and reproduction and negatively impact available habitat for breeding, feeding, and sheltering. These threats continue to impact the species and its habitat.

##### ***Fine Sediments***

Fine sediments (*e.g.*, sand, silt, clay) enter streams and rivers through soil and streambank erosion, particularly during heavy rain events; but this can be intensified by human activities like agriculture, construction, and urbanization. Fine sediments reduce water clarity and quality which can negatively impact fish habitat, food availability, physiological functioning, and behavior (*e.g.*, feeding, spawning); reviewed in the SSA (Service 2019b).

### ***Excess Nutrients***

Nutrient and contaminant inputs to the Conasauga River are associated with agricultural, commercial, industrial, and municipal land use practices. Excess nutrients are known to stimulate algal growth and result in reduced water clarity and quality and fish habitat quality. However, the impact of nutrient loads in the Conasauga River Basin is also exacerbated by increasing surface imperviousness associated with urban development and decreasing riparian buffer area throughout the watershed. This shift often leads to quicker transport of stormwater to streams and rivers with less retention and filtration of inputs on the landscape before it enters waterways increasing contaminant loads, sedimentation, and temperature, which all can result negatively on Conasauga darter health and reproduction. Nutrient dynamics and the effects of imperviousness in the Conasauga River and the Upper Coosa Basin are reviewed in reviewed in the SSA (Service 2019b).

### ***Contaminants***

The widely used herbicide Glyphosate provides effective weed control that can be applied at any time during the growing season. Since the 1996 introduction of Roundup® Ready® crops, which were engineered to resist glyphosate, global use of this herbicide has increased by a factor of 15 (Benbrook 2016). Most glyphosate formulations include surfactants like polyethoxylated tallow amine (POEA), which causes toxicity to aquatic organisms (Folmar *et al.*, 1979; Defarge *et al.*, 2018). In the Conasauga River, a glyphosate byproduct— aminomethylphosphonic acid, or AMPA— was found in 77% of post-rainfall surface water and sediment samples collected from the mainstem and major tributaries between 2010 and 2013. These results indicate that glyphosate persists in the Conasauga River Basin and therefore may cause adverse effects on the river’s aquatic life, including Conasauga logperch (Lasier *et al.*, 2016; Hébert *et al.*, 2019).

Per- and polyfluoralkyl substances (PFAS) are a group of synthetic chemicals that include perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA) and occur widely in aquatic systems today (Jarvis *et al.* 2021). Exposure to specific PFAS have been linked to adverse health effects in humans, including altered immune and thyroid function, liver disease, lipid and insulin dysregulation, kidney disease, adverse reproductive and developmental outcomes, and cancer (reviewed in Fenton *et al.* 2021). High levels of PFAS have been detected in fish tissues in urban rivers (Stahl *et al.* 2014; Barbo *et al.* 2023). Perfluorooctane sulfonate concentrations are relatively high in the Conasauga River, ranging from below limit of detection (with a limit of detection of 1.5 ng/L) to 321 ng/L due to effluents from manufacturing facilities, wastewater treatment plants, and carpet mills (Konwick *et al.* 2008). They have been shown to disrupt endocrine functioning, growth, and development in fishes (Ma *et al.* 2023). In 2024, the Environmental Protection Agency designated PFOS and PFOA as hazardous substances under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended by the Superfund Amendment and Reauthorization Act of 1986 (also known as Superfund; 42 U.S.C §9601 *et seq.*) and set Maximum Contaminant Levels for PFAS in drinking water (89 FR 32532) and water quality criteria and benchmarks for aquatic life (89 FR 81077), launching new efforts to monitor and minimize its introduction into aquatic systems like the Conasauga River. However, decades of PFAS inputs have likely led to health and ecological

effects that negatively impacted the fishes of the Conasauga River including the Conasauga logperch.

### ***Decline of Podostemum***

Many imperiled species of the Conasauga rely on gravel shoal habitat, areas characterized by fast, shallow flow, which historically supported the native aquatic plant species hornleaf riverweed (*Podostemum ceratophyllum*) in high-flow areas (Wood *et al.* 2019), and American waterwillow (*Justicia americana*) on the margins. In recent decades, the decline of native fish and mussels in the Conasauga River have been correlated with a loss of shoal-dwelling plants like *Podostemum* and an increase of episodic algal blooms (Freeman *et al.* 2005; Argentina 2006; Argentina *et al.* 2010, Baker *et al.* 2013, Freeman and Freeman 2019). The presence and biomass of *Podostemum* affects macroinvertebrate biomass, which may be reason for the association with benthic fishes. The plant may enhance food availability as well as provide refuge from predators or swift currents for fishes like the Conasauga logperch.

### **Factor B: Overutilization for commercial, recreational, scientific, or educational purposes**

The Conasauga logperch is not commercially harvested, but illegal collection may pose a threat as its rarity becomes known. A Federal and State permit are required for collection, with conditional measures to minimize potential impacts developed in consultation with the Service, and the appropriate State agency (i.e., Georgia Department of Natural Resources or Tennessee Wildlife Resources Agency). Recreational activities, such as snorkeling and microfishing, often target shoal and pool habitats in the Conasauga River and may lead to altered behaviors in the Conasauga logperch but it is unknown whether this poses a significant risk to reproductive success or other metrics of population health. Currently, there is no indication that overutilization for commercial, recreational, scientific, or educational purposes presents a significant threat to the species.

### **Factor C: Disease or predation**

Diseases affecting the Conasauga logperch remain poorly studied. Although there's no evidence of native predators posing a significant threat, the introduction of the predatory species (e.g., lake sturgeon) into the Conasauga Basin may be cause for concern. Currently, there is no evidence that disease or predation presents a significant threat to the species.

### **Factor D: The inadequacy of existing regulatory mechanisms**

Georgia's Erosion and Sedimentation Control Act of 1975 (GESCA; O.C.G.A. § 12-7-1 *et seq.*) was passed to protect Georgia's waters from soil erosion and sediment deposition. The GESCA requires an erosion, sedimentation, and pollution control plan for land-disturbing activities on sites greater than 1 acre. The GESCA also mandates minimal stream buffer protection (25-foot riparian buffer between a permitted land-disturbing activity and a non-trout streams) and a buffer variance may be obtained. By contrast, the Tennessee Water Quality Control Act of 1971 (TWQA; T.C.A. § 69-3-101 *et seq.*) requires a 60-foot natural riparian buffer between a land-disturbing activity and a receiving stream designated as impaired or an Exceptional Tennessee water, such as the Conasauga River and its tributaries (TDEC 2025). A 30-foot natural riparian

buffer zone is required adjacent to all other streams. Agriculture and forestry are fully or partially exempted from regulation under the GESCA and the TWQA. The States address threats to water quality that are associated with agriculture and silviculture primarily through voluntary Best Management Practices (BMPs). We recognize that silvicultural operations are widely implemented in accordance with State-approved BMPs (as reviewed by Cristan *et al.* 2016), and the adherence to these BMPs broadly protects water quality, particularly related to sedimentation (Cristan *et al.* 2016, Warrington *et al.* 2017, and Schilling *et al.* 2021). However, the degree of compliance with BMPs for agricultural activities has not been systematically measured in either Tennessee or Georgia.

Nonpoint source pollution that may negatively affect fish habitat in the Conasauga River basin originates from agricultural runoff, urbanization, and commercial operations. BMPs can help safeguard aquatic ecosystems, but this is dependent upon effective implementation. Monitoring and regulating nonpoint source pollution poses a challenge to the species' recovery due to the absence of specific discharge permits and lack of end-of-pipe technologies. Under the Clean Water Act, as amended (33 U.S.C. 1251 *et seq.*), point source dischargers must obtain permits based on water quality standards derived from laboratory toxicity testing. However, limited data on aquatic contaminants present in the Conasauga River and specific toxicity effects studies for Conasauga logperch raises uncertainty about the species' response to aquatic contaminants and the protectiveness of water quality standards.

#### **Factor E: Other natural or manmade factors affecting its continued existence**

##### ***Temperature and Precipitation***

Environmental threats related to climate increase the Conasauga logperch's vulnerability by altering habitat conditions across its historical range. Over recent decades, Georgia and the southeastern United States, have already experienced more extreme weather patterns marked by exceptionally wet or dry summers (Groisman and Knight 2008; Wang *et al.* 2010). Climate models predict a 1.5°C temperature increase in the first half of the 2030's and 2.0°C by the end of the 21<sup>st</sup> century accompanied by intensified heatwaves and precipitation events (IPCC 2023). For Georgia and Tennessee, models predict higher temperatures, which are also expected to result in increases in droughts (Frankson *et al.* 2022; Runkle *et al.* 2022). The warmer temperatures and increased flood and drought frequency will affect floodplain area and nutrient and contaminant inputs (Dullo *et al.* 2021), along with increases in water temperatures, stream flow, and dissolved oxygen levels in the Conasauga River with likely impacts to Conasauga logperch habitat quality.

For the Conasauga logperch, intense precipitation and flood events are likely to limit larval development and recruitment. In captivity, Conasauga logperch eggs took 6-7 days from deposition to hatching, then 2-3 days of larvae burrowing before swimming up to feed, and then exhibiting a pelagic drift stage of several weeks (Petty *et al.* 2011; Rakes pers. comm. 2019). High flows during these sensitive periods would impact chances of successful development and recruitment by damaging eggs, displacing larvae from suitable nursery habitat, affecting available plankton resources, and/or preventing juveniles from migrating to suitable habitat. This may also be the case for other rare species. Hagler and Freeman (2014) found that the amber darter (*Percina antesella*) benefits from windows of low spring flow for spawning and

recruitment success. High spring flows in successive years that limit juvenile recruitment could eliminate multiple age classes, which could significantly depress population numbers, particularly since the Conasauga logperch's life span does not typically exceed five years.

### ***Other Stressors***

Low population size and related factors such as genetic isolation, limited fecundity, recruitment, and juvenile survival are likely driving the Conasauga logperch's ability to maintain or recover populations. Small, fragmented populations face genetic diversity loss due to isolation, increasing the risk of genetic bottlenecks and inbreeding depression. This can reduce reproductive output, survivorship, and the species' ability to adapt to future environmental changes.

### **Synthesis**

Conasauga logperch is a small-bodied fish endemic to the Conasauga River Basin in Tennessee and Georgia. Adult individuals have been found in the mainstem Conasauga River shoals in riffles, runs, and shallow pools swimming and foraging over sandy beds, coarse gravel, and small cobble. Juvenile Conasauga logperch have not been found during collections in recent years. Since 2019 detections of adult Conasauga logperch have been rare. Surveys indicate that the best portions of the population likely occur from just downstream of Highway 2 (Beaverdale) in Georgia upstream into the National Forest in Tennessee. The species is still exceedingly rare relative to past survey efforts and given reintroduction efforts in the past. Changes in habitat quality associated with land use and sedimentation, nutrient and contaminant inputs, climate-related changes in stream flows and stream temperature during sensitive life stages, and their small population size are continued threats to the species. Low population size and related factors such as genetic isolation, limited fecundity, recruitment, and juvenile survival are likely driving the Conasauga logperch's ability to maintain populations. The species' small, fragmented populations face genetic diversity loss due to isolation, increasing the risk of genetic bottlenecks and inbreeding depression. This can reduce reproductive output, survivorship, and the species' ability to adapt to future environmental changes. Due to the current condition of the species and ongoing threats, we believe the Conasauga logperch continues to meet the definition of an endangered species.

## **RECOMMENDED FUTURE ACTIVITIES**

In the upcoming years, priority activities include:

- Expand annual monitoring to Tennessee portion of the Conasauga logperch range and to include surveys of potential habitat for larval and juvenile individuals (*e.g.*, larval drift traps, snorkel surveys and/or other sampling methods in deeper slower-flow areas, secondary channels, pools);
- Conduct life history and threats assessment studies for larval and juvenile Conasauga logperch;
- Assess species population demographics (*e.g.*, eDNA) and genetic characteristics;

- Review and update propagation and reintroduction strategies for future implementation efforts;
- Protect and restore lands and waters in the Conasauga River basin by working with communities to implement streambank and riparian buffer restoration, shoal and aquatic vegetation (*e.g.*, *Podostemum*) restoration;
- Support protection of water quality through conservation easements, agreements, and other mechanisms along the Conasauga River and its tributaries;
- Evaluate status and impacts of sedimentation, nutrients, contaminants in the Conasauga River and biotic response;
- Conduct range-wide survey for potential suitable sites for restoration and/or reintroduction efforts.

Detailed discussions on recovery actions and criteria are presented in the Conasauga Logperch Revised Recovery Plan (Service 2020).

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## RESULTS / SIGNATURES

### U.S. Fish and Wildlife Service Status Review of Conasauga Logperch

#### Status Recommendation

On the basis of this review, we recommend the following status for this species. A 5-year review presents a recommendation of the species status. Any change to the status requires a separate rulemaking process that includes public review and comment, as defined in the Act.

Downlist to Threatened

Uplist to Endangered

Delist:

*The species is extinct*

*The species does not meet the definition of an endangered or threatened species*

*The listed entity does not meet the statutory definition of a species*

No change needed

#### **FIELD OFFICE APPROVAL:**

**Field Supervisor, Georgia Ecological Services Field Office, Fish and Wildlife Service**

Approve \_\_\_\_\_