Alabama Sturgeon
(*Scaphirhynchus suttkusi*)

5-Year Status Review:
Summary and Evaluation

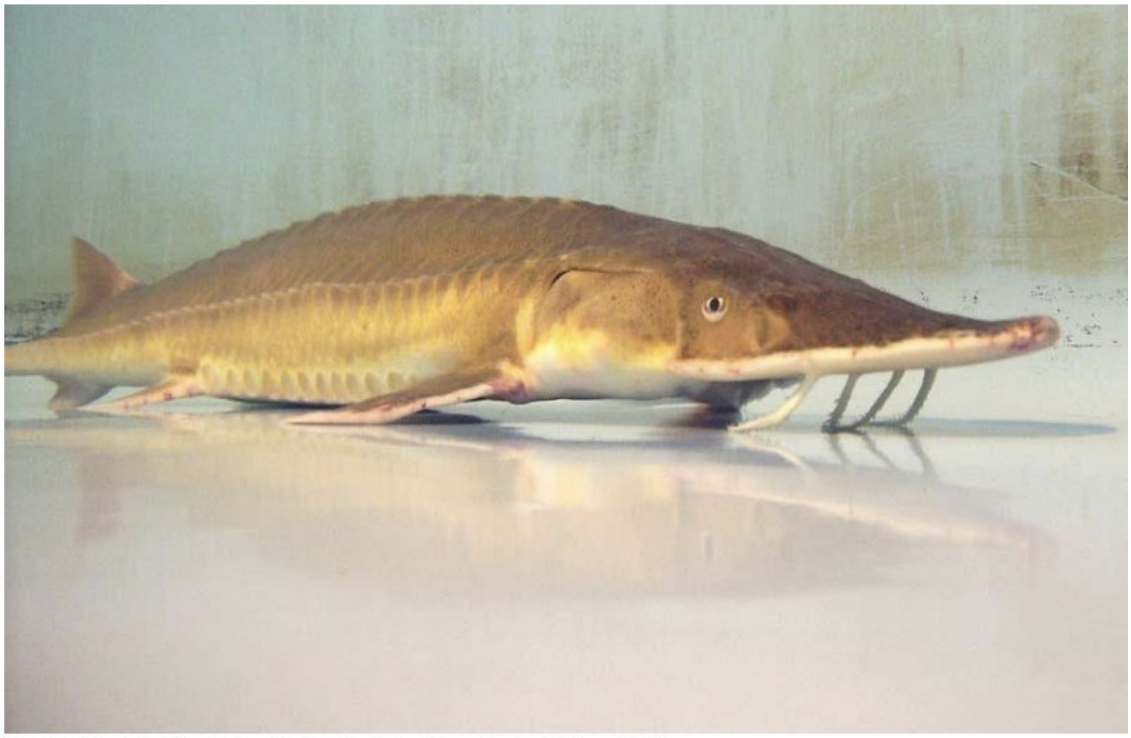

Photo: Paul J. Johnson, Alabama Aquatic Biodiversity Center

U.S. Fish and Wildlife Service
Southeast Region
Alabama Ecological Services Field Office
Daphne, Alabama

March 2025

5-YEAR STATUS REVIEW
Alabama Sturgeon (*Scaphirhynchus suttkusi*)

GENERAL INFORMATION

Current Classification: Endangered

Lead Field Office: Alabama Ecological Services Field Office.

Review Author: Scott Lamont, Alabama Ecological Services Field Office.

Contributing Authors: Angel Velasquez, Sue Ellen Gibbs-Huerta, Jodie Phipps, Jeevanthika Vignes, and Cidney Williams, University of Texas at San Antonio, College of Science, Integrative Biology.

Reviewers:

Lead Regional Office: Carrie Straight, Southeaster Region.

Date of original listing: June 5, 2000 (65 FR 26438; May 5, 2000).

Critical Habitat: July 2, 2009 (74 FR 26488; June 2, 2009).

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. The U.S. Fish and Wildlife Service (Service) evaluated the best available information about the Alabama Sturgeon's (*Scaphirhynchus suttkusi*) biology, habitat, and threats of to inform this status review. We announced initiation of this review in the Federal Register on June 6, 2024 (84 FR 48437) with a 60-day comment period and received one comment from the National Council for Air and Stream Improvement, Inc. The comment received refers to best management practices for silviculture practices and their benefit, when implemented, to water quality, which we have incorporated into this review. The primary sources of information used in this analysis were the 2000 final listing rule (Service 2000), the 2013 and 2019 recovery plan and amendment (Service 2013 and 2019, respectively) peer-reviewed reports, agency reports, unpublished survey data and reports, and personal communication with recognized experts. This review was completed by the Alabama Ecological Services Field Office, Daphne, Alabama. All literature and documents used for this review are on file at the Field Office. All recommendations resulting from this review are the result of thoroughly reviewing the best available information on the Alabama sturgeon. All recommendations resulting from this review are the result of thoroughly reviewing the best available information on the Alabama sturgeon.

FR Notice citation announcing the species is under active review: June 6, 2024 (89 FR 48437)

Species' Recovery Priority Number at start of 5-year review (65 FR 26438): 5C. This number indicates a species with a high degree of threat and a low recovery potential. The "C" indicates that the species recovery is, or may be, in conflict with construction or other development projects or other forms of economic activity. For this species it reflects a degree of conflict with activities associated with river navigation and in-water activities associated with development.

Review History:
There have been two previous 5-year reviews for this species, both indicating no change in status and recommending the species remain listed as endangered (Service 2010 and 2020).

REVIEW ANALYSIS

Taxonomy and nomenclature

The current taxonomy of the Alabama Sturgeon is *Scaphirhynchus suttkusi,* as stated by Williams and Clemmer (1991) and recognized by Nelson et al. (2004), Eschmeyer (2010), Integrated Taxonomic Information System (ITIS 2025), and the International Union for Conservation of Nature (IUCN) (2010). 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

Recovery Plan for the Alabama Sturgeon (*Scaphirhynchus suttkusi*) (Service 2013).

Amendment to Recovery Plan for the Alabama Sturgeon (*Scaphirhynchus suttkusi*) (Service 2019).

The 2019 Recovery Plan Amendment listed the following criteria for delisting the Alabama Sturgeon:

1. At least two (2) populations exhibit a stable or increasing trend, natural recruitment, and multiple age classes (Factors A, B, and E).

2. The Alabama River Basin and the Tombigbee River Basin are each occupied by at least one (1) population, and sufficient length of unimpeded continuous flowing river is available in each river basin (Factors A, B, and E).

3. Threats have been addressed and/or managed to the extent that the species will be viable into the foreseeable future (Factors A, B, D, and E).

Biology and Habitat Summary

The Alabama Sturgeon's historical range included nearly 1,600 kilometers (km) (1,000 mi) of riverine habitat in the Mobile River Basin in Alabama and Mississippi (Service 2013 and references therein). There are records of Alabama Sturgeon from nearly all the major rivers in the Mobile River Basin at or below the Fall Line including the Black Warrior, Tombigbee, Alabama, Coosa, Tallapoosa, Mobile, Tensaw, and Cahaba Rivers (Figure 1).

The collection history of the Alabama Sturgeon, supported by anecdotal reports from commercial fishermen, suggest that the species has disappeared from at least 85 percent of its historical range, and has experienced a significant decline in the remaining range since the 1960s (Service 2013 and references therein). Recent collections have been restricted to the lower Alabama River below Millers Ferry Lock and Dam to the confluence of the Tombigbee River and in the lower Cahaba River near its confluence with the Alabama River. Despite intensive sampling efforts for broodstock and habitat information beginning in 1997, only seven individuals have been captured from the Cahaba and Alabama Rivers; with only two of those seven individual captures occurring since 2000 (Service 2020). The presence of Alabama sturgeons were last detected in 2014-2015 using eDNA sampling in the Alabama and Tombigbee Rivers (Pfleger et al., 2016), but no living species have been documented since 2009 (Service 2010). In the fall of 2021 and summer of 2022, surveying for the Alabama sturgeon was conducted by the Alabama Department of Conservation and Natural Resources (ADCNR) at locations near the previous eDNA hits. Despite extensive surveying using a variety of methods, no Alabama sturgeon were collected during this most recent effort (Rider et al., 2022).

There is no new information regarding the life history and biology of the Alabama sturgeon that we are aware of, as of 2024. The current information on the biology of the species is described in the previous Recovery Plan (Service 2013) and 5-year reviews (Service 2010 and 2020).

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. Threats summarized in the 2020 5-Year Review continue to be valid and applicable

for this species (Service 2020). The threats currently acting on the species are summarized below.

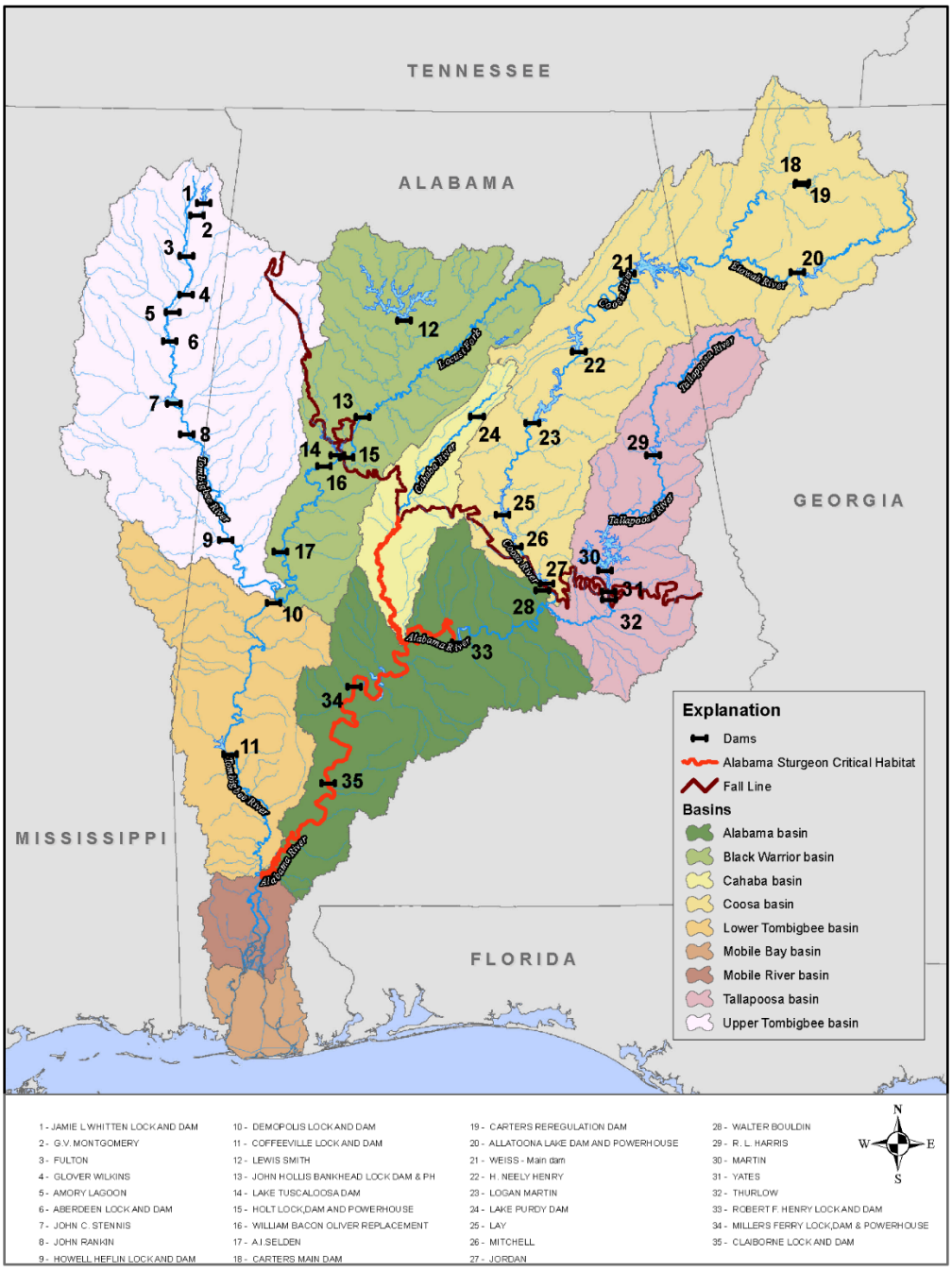

Figure 1. The range for Alabama sturgeon, which is restricted to the Alabama basin, shown in dark green area of the map including the dams numbered 28, 33, 34, and 35(Service 2013).

Factor A. The Present or Threatened Destruction, Modification, or Curtailment of its Habitat or Range

The Alabama sturgeon has declined and has experienced significant curtailment of its range due to extensive habitat modifications to its' historical range (e.g., dam construction, changes in natural flow regimes, navigational channel dredging). The entire historical range of the Alabama sturgeon in the Mobile River basin is now controlled by a series of more than 25 large locks and/or dams (Service 2010). These man-made structures have resulted in a series of impoundments that are interspersed with short, free-flowing reaches. It is unlikely that Alabama sturgeon habitat and life cycle requirements can be met in reaches between impoundments, where decreased flows typically cause silt and other fine sediments to accumulate over bottom habitats, creating unsuitable conditions for spawning, feeding, and larval development. These structures also result in barriers to fish movements, preventing adults from reaching historical spawning locations and negatively impacting larval survival as they drift downstream.

In addition, impoundments, mining, toxic chemical spills, siltation, agriculture, runoff and discharge of organic and inorganic pollutants, channelization, dredging, streambank erosion, and other forms of non-point source pollution continue to impact the Alabama sturgeon and its habitat. Many of these impacts typically occur during the summer and fall months when flows are at lower levels. Low stream flows tend to concentrate pollutants. Improvements on the landscape have worked toward reducing theses inputs such as best management practices used by the forest industry to protect overall water quality and habitat for aquatic organisms.

Factor B. Overutilization for Commercial, Recreational, Scientific, or Educational Purposes

Incidental commercial and recreational harvest of the species has been documented and is believed to be a current threat. Because the species is believed to have low abundance, any removal of individuals is of concern. The species is not believed to be impacted by overutilization for scientific or educational purposes.

Factor C. Disease or Predation

There are no currently known threats to the Alabama sturgeon due to disease or predation.

Factor D. The Inadequacy of Existing Regulatory Mechanisms

The Alabama sturgeon is afforded some protections by the State of Alabama under their Protected Nongame Species Regulation (Alabama Administrative Code 22-02-92). While the Alabama sturgeon may have species protections afforded it under both state and federal regulation, people may be unaware of its presence and protected status and fail to take additional precautionary measures to aid in the recovery of this species unless they specifically contact the Service for technical assistance.

The Clean Water Act is the primary federal law in the United States governing water pollution and regulates point source discharge of pollutants to surface waters through the National Pollutant Discharge Elimination System. The Alabama Department of Environmental Management requires that discharges not exceed state water quality standard (Alabama

Administrative Code, Title 22, Section 22-22-1 et seq.). Current State and Federal regulations regarding pollutants are assumed to be protective of native freshwater fishes; however, there is no information on the species' sensitivity to common pollutants. Some species, including the Alabama sturgeon, may have lower thresholds to some pollutants than the test organisms commonly used in developing the criteria.

Forestry also is a major land use within the range of Alabama sturgeon. Forestry best management practices (BMPs) are voluntary. However, BMPs are required for third party-certified landowners and landowners that supply wood to mills with third party-certified fiber sourcing. The requirement for BMP use by forest certification programs provides certainty that BMPs will be implemented for fiber sourcing from small to large, private forested lands. Annual third-party auditing helps ensure BMP compliance. There is a large body of scientific literature supporting conservation benefits provided to aquatic species from BMP implementation on private, working forests, which include protecting water quality and riparian forest structure (as reviewed in Cristan et al., 2016; Warrington et al., 2017; Cristan et al., 2018; Schilling et al., 2021). It is unknown how much forestry practices have or still impact the species, but BMPs when implemented correctly can provide significant benefits to water quality and help minimize impacts to aquatic fishes.

In addition, other pollutants, like pesticides or accidental discharges carrying toxins could be entering waterways. Currently we don't have species-specific information to understand if federal and state water quality laws are protective of the Alabama sturgeon or how impactful periodic toxic inputs are on the species.

Factor E. Other Natural or Manmade Factors

The primary issues affecting the Alabama sturgeon are its small population size and its apparent inability to successfully recruit. The extreme curtailment of range, extensive modification of riverine habitat, and length of time between both individual contact and successful spawning efforts may be insurmountable extinction obstacles to species such as the Alabama sturgeon, who are thought to possess the lowest fecundity of all the North American sturgeon species.

In Alabama it is expected that air temperatures will likely increase in the future, along with increases in extreme rainfall events (Runkle et al. 2022). These changes are expected to cause changes in water temperature that may alter the growth and life history of fishes, and even moderate changes can make a difference in distribution and number. Hatchery and experimental studies have revealed an optimal temperature range for development of young during incubation and develop and that temperatures above a specific threshold can decrease survival (Earhart et al. 2023).

Freshwater habitats can be stressed by changes in both water quality and levels because of anticipated extreme weather periods as mean precipitation is expected to decrease along with an increase in precipitation intensity, specifically in tributaries. Aquatic systems are expected to be impacted by increasing water temperatures, decreasing dissolved oxygen levels, altered streamflow patterns, increased demand for water storage and conveyance structures, and

increasing toxicity of pollutants. These changes may alter the habitat which Alabama sturgeon depend upon.

Synthesis

The Alabama sturgeon is a slender freshwater fish and opportunistic bottom feeder. Its historic range encompassed all major rivers in the Mobile Basin below the Fall Line; however, recent collections have been restricted to the lower Alabama River below Millers Ferry Lock and Dam to the confluence of the Tombigbee River and in the lower Cahaba River near its confluence with the Alabama River. In the last 24 years, there have only been three documented occurrences of the Alabama sturgeon. With the loss and fragmentation of riparian habitat, populations have decreased. Additionally, there has been little to no documented recruitment over the last 50 year. The species continues to be impacted by fragmented landscape, potential decreases in survival of larval and young and adults associated with increases in water temperature and decreases in dissolved oxygen. Considering continued threats and limited population size and fragmentation, we believe the species continues to meet the definition of an endangered species.

RECOMMENDED FUTURE ACTIVITIES

A detailed discussion of recovery actions and criteria is presented in the current Recovery Plan (Service, 2013) and previous Five-Year Review (Service 2020). In-the-course of this status review new and/or targeted potential recovery activities were identified and are included below.

Recovery Activities

- Continue efforts to assess fish passage and/or bypass at all respective dams on the Alabama River that are a barrier to sturgeon life history needs.
- Investigate the habitat and fish passage needs on the Tombigbee River.
- Work with the US Army Corps of Engineers to improve operations, including base-flow operations, at Claiborne, Millers Ferry, and R.F. Henry Locks and Dams by increasing the amount of free-flowing habitat available within the reservoirs. The Corps has released the Claiborne and Millers Ferry Locks and Dams Fish Passage Study Draft Feasibility Report (FR), a project intended to look at interest in establishing fish passages in around the two southernmost lock and dam structures on the Alabama River to reconnect critical spawning river habitat for several threatened and endangered species including the Alabama Sturgeon (Army Corps, 2023).
    - Establish inter-agency and multi-entity agreements that manage water flow and dam releases, with the Service to maintain minimum biological flows necessary.
- Continue to work with necessary agencies (state and regional) to implement state-wide mandatory forestry best management practices (BMPs) that would benefit the Alabama sturgeon by stabilizing riverbanks, reduced pollutant runoff, and promoting clean water for habitat.
- Continue efforts to reduce nonpoint source pollution from agricultural activities to implement best management practices and reduce nonpoint runoff.

- Captive propagation efforts could be conducted by potentially reducing sampling time, identifying productive target sampling area(s), and increasing sampling efficiency.

Monitoring and Research Activities

- Continue to monitor population levels, demographics, and habitat conditions. Investigate different methods to attempt to estimate population sizes given the limited captures in the past. This includes attempts to collect individuals for telemetry studies. Cooperation between the Service and faculty and graduate students at local and state universities should be utilized for short and long-term studies and population analysis.
- Continue efforts aimed at obtaining individuals and improving techniques necessary for captive propagation of the species.
- Continue efforts to identify locations along the Alabama and Cahaba Rivers for suitable spawning habitat.
- Evaluate and assess the relationship between water quality and upstream dam releases and continue monitoring seasonal and diurnal changes in water quality in the Alabama River.
- Begin habitat assessments of locations where Alabama sturgeons were last seen and locations where eDNA detection was positive for better understanding of the past/current habitat characteristics.
- While continuing to utilize existing legislation and regulations (Federal and State endangered species laws, water quality requirements, stream alteration regulations, etc.) to protect the species and its habitat, encourage water quality regulatory agencies to develop new criteria suitable for the species they are intended to protect.
- Explore the use of eDNA detection techniques to aid collection efforts to obtain individuals necessary for capture and detection of the target species beyond historical range and habitat.

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RESULTS / SIGNATURES

U.S. Fish and Wildlife Service
Status Review of Alabama Sturgeon

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*
_X_ No change needed

FIELD OFFICE APPROVAL:

Field Supervisor, Alabama Ecological Services Field Office, Fish and Wildlife Service

Approve WILLIAM PEARSON Digitally signed by WILLIAM PEARSON Date: 2025.03.19 15:25:23 -05'00'