Alabama Leather Flower
(*Clematis socialis*)

Status Review:
Summary and Evaluation

Photo by M. Scott Wiggers, USFWS

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U.S. Fish and Wildlife Service
South Atlantic–Gulf and Mississippi Basin Regions
Mississippi Field Office
Jackson, Mississippi

5-YEAR REVIEW
Alabama Leather Flower (*Clematis socialis*)

I. GENERAL INFORMATION

A. Methodology used to complete the review

In accordance with section 4(c)(2) of the Endangered Species Act of 1973, as amended (ESA), 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 biology, habitat, threats, and conservation activities of Alabama leather flower to inform this status review.

B. Reviewers

Lead Regional Office: Atlanta Regional Office, Carrie Straight, (404) 679–7226

Lead Field Office: Jackson, Mississippi, M. Scott Wiggers, (228) 475–0765

Cooperating Field Office(s): Daphne, Alabama, Erin Lentz, (251) 441–6633; Athens, Georgia, Michele Elmore, (706) 544–6428

C. Background

1. Federal Register Notice citation announcing initiation of this review

July 14, 2021 (86 FR 37178)

2. Review history

November 6, 1991 (56 FR 56882) – In the 1991 status review, multiple species were simultaneously evaluated with no species-specific, in-depth assessment of the five factors or threats as they pertained to each species' recovery. No changes were proposed for the status of Alabama leather flower in the review.

July 12, 2010 (July 14, 2005, 70 FR 34492) – This status review noted that only two populations were permanently protected and that all sites needed continued monitoring and management. No change to the species' endangered designation was recommended.

August 1, 2017 (August 30, 2016, 81 FR 59650) – This status review noted that six of eight known natural populations were extant, which included discovery of one additional population and extirpation of two populations. No change in the number of protected populations was noted. The review also summarized updated information on recovery activities. No change to the species' endangered designation was recommended.

3. Species' Recovery Priority Number at start of review: 5

Degree of Threat: High
Recovery Potential: Low

Taxonomy: Species

4. Recovery Plan

Name of Plan: Recovery Plan for Alabama Leather Flower (*Clematis socialis*)
Date Issued: December 27, 1989

II. REVIEW ANALYSIS

A. Application of the 1996 Distinct Population Segment (DPS) policy

The Endangered Species Act (ESA) defines species as including any subspecies of fish or wildlife or plants, and any distinct population segment of any species of vertebrate wildlife. This definition limits listing DPSs to only vertebrate species of fish and wildlife. Because the species under review is a plant, the DPS policy is not applicable.

B. Recovery criteria

1. Does the species have a final, approved recovery plan containing objective, measurable criteria?

__X__ Yes
_____ No

2. Adequacy of recovery criteria

a. Do the recovery criteria reflect the best available and most up-to-date information on the biology of the species and its habitat?

__X__ Yes
_____ No

b. Are all of the 5 listing factors that are relevant to the species addressed in the recovery criteria (and is there no new information to consider regarding existing or new threats)?

__X__ Yes
_____ No

3. List the recovery criteria as they appear in the recovery plan and discuss how each criterion has or has not been achieved

"*Clematis socialis* will be considered for reclassification from endangered to threatened status when ten geographically distinct, self-sustaining populations, occupying a minimum of one acre of habitat each, are known and protected from any foreseeable threats. Delisting will be considered when 20 such populations are secured. Viability of populations will be assessed through a periodic monitoring program for at least a ten year period." (Service 1989, p. 7.)

Recovery criteria have not been met. Progress has been made locating, protecting, and managing populations in Alabama and Georgia, but opportunities to enhance protection and management of plants remain. Of the eight natural Alabama leather flower populations known, only six are considered extant (two have been extirpated

in recent years). Only two natural populations are permanently protected on conservation lands. Half of known extant populations are considered large. Population augmentation and/or establishment projects have occurred or are underway/planned to address the small number of populations and small population sizes. Regular management is required to control aggressive competing vegetation and maintain suitable, open habitat conditions at all sites. A detailed demographic monitoring program has yet to be established at all sites to assess population trends thoroughly and consistently.

C. Updated information and current species status

1. Biology and habitat

Limited new information on Alabama leather flower is available since completion of the Service's previous 5-year review (Service 2017). New information pertinent to Alabama leather flower's status and recovery is summarized below.

a. Summary of new information of species biology and life history

No new information.

b. Abundance, population trends, demography

Limited new information on Alabama leather flower populations is available. Of note, two of Alabama's populations, both in Cherokee County, are extirpated (Service 2017, Byrd 2020) and three of the species' six extant populations are considered large (≥1,000 plants). No new information is available for either of Georgia's populations (including one natural population and one transplanted population). Populations are summarized in Table 1.

Table 1. Summary of Alabama leather flower populations.

State	Population (County & No.)	Type	Current Status	Size	Ownership	Habitat
Alabama	St. Clair 1	Natural	Extant	Large	NGO; Private	Right-of-way; Woodland
Alabama	St. Clair 2	Natural	Extant	Moderate	Private	Right-of-way; Woodland
Alabama	St. Clair 3	Natural	Extant	Small to Moderate	Private	Wetland Margin
Alabama	Cherokee 1	Natural	Extant	Large	Private	Right-of-way; Pasture
Alabama	Cherokee 2	Natural	Extirpated	Extirpated	Private	Right-of-way
Alabama	Cherokee 3	Natural	Extirpated	Extirpated	Private	Pasture
Alabama	Etowah 1	Natural	Extant	Large	Public (City)	Woodland
Georgia	Floyd 1	Natural & Transplant	Extant	Moderate	Public (State)	Woodland
Georgia	Floyd 2	Transplant	Extant	Moderate	Private	Woodland

Notes: NGO = non-governmental organization; Small populations have 100 or fewer stems, moderate populations have between 101 and 999 stems, and large populations have 1000 or more stems.

c. Genetics

No new information.

d. Taxonomic classification or changes in nomenclature

No new information. *Clematis socialis* is still recognized as a valid species (see *Integrated Taxonomic Information System* [*https://www.itis.gov*, accessed March 8, 2022] and *World Flora Online* [*http://www.worldfloraonline.org/taxon/wfo-0000610681*, accessed March 8, 2022]).

e. Distribution and trends in spatial distribution

No new information.

f. Habitat or ecosystem conditions

There has been limited new work providing additional insight into Alabama leather flower's habitat needs since completion of the previous 5-year review.

Moss et al. (2020) studied the relationship between soil chemistry (minerals, pH, etc.), overstory canopy, and several rare plants (including Alabama leather flower) within calcareous flatwoods communities on part of the Berry College campus and Georgia Department of Natural Resources' Little Dry Creek Natural Area in Floyd County, Georgia. Of note, the authors found that soil calcium content was generally lower than expected from descriptions of this habitat (e.g., Edwards et al. 2013), more closely resembling values for nearby longleaf pine stands than a nearby xeric limestone prairie. Expanding this study to include more of Alabama leather flower's habitats throughout its range could provide valuable insights into factors influencing the species' distribution within these habitats and inform future population searches, outplanting efforts, and habitat management activities.

g. Other

In addition to the various propagation studies, *ex situ* (off-site) conservation, and population augmentation/establishment projects attempted or underway described in the 2017 5-year review, Georgia Department of Natural Resources (GDNR) recently began a project with several other conservation partners (Atlanta Botanical Garden, Chattahoochee Nature Center, and State Botanical Garden of Georgia) to expand *ex situ* and *in situ* conservation of Alabama leather flower and various other species with funding from the Service (Lisa Kruse, Senior Botanist, GDNR, pers. comm., August 25, 2021). Activities supported by this project include collection for a seed bank, limited reproductive research, and establishment of at least three populations on protected lands. Such safeguarding activities expand upon similar activities underway elsewhere (e.g., Auburn University and North Carolina Botanical Garden; see Service 2017 for more details).

2. Five-factor analysis (threats, conservation measures, and regulatory mechanisms)

The purpose of a 5-Year Review is to recommend whether a listed taxon continues to warrant protection under the ESA and, if so, whether it should be reclassified (from threatened to endangered or from endangered to threatened). This task requires that

the analysis of threats to the species be performed while assuming that the species is not receiving the regulatory protections, funding, recognition, and other benefits of ESA listing. Summaries of ongoing applications of ESA protections may shed light on some future activities that constitute threats to the species. However, the analysis under Factor D (Inadequacy of Existing Regulatory Mechanisms) focuses on the adequacy of existing alternative (i.e., non-ESA) mechanisms to address the continuing and foreseeable threats.

Overall, the 5-factor analysis presented in the Service's 2017 5-year review remains applicable to Alabama leather flower. Pertinent information from the 2017 5-year review is summarized below along with limited new information.

a. Present or threatened destruction, modification or curtailment of its habitat or range (Factor A)

As noted in the previous 5-year review (Service 2017 and references cited therein), habitat destruction and conversion for agricultural and silvicultural purposes have reduced the available habitat for Alabama leather flower and extirpated populations, including the extirpation of one population in the past decade. Likewise, recent road improvements (widening and repaving) and use of heavy equipment for logging operations have damaged plants and degraded habitat at several sites in Alabama, while rutting caused by all-terrain vehicles and mowing equipment can also damage plants and degrade habitats (Service 2017). Development within the southeastern United States is expected to increase substantially by 2060 (Terando et al. 2014), which may increase exposure to these threats as habitat continues to be converted and degraded within the species' range (*sensu* Stein et al. 2020), particularly if adequate conservation measures are not pursued.

b. Overutilization for commercial, recreational, scientific, or educational purposes (Factor B)

While potential increased interest in collecting the species was a concern at the time of its listing, overcollection is not currently known to threaten Alabama leather flower.

c. Disease or predation (Factor C)

While some herbivory damage and seed predation have been noted for the species (see Service 2017 for more information), disease and predation are not currently considered to threaten Alabama leather flower.

d. Inadequacy of existing regulatory mechanisms (Factor D)

Alabama leather flower is a state threatened plant in Georgia (Patrick et al. 1995) and, therefore, receives state protection from non-permitted collection and sale. Collection of this species on public lands without a permit is prohibited in the state under the Georgia Wildflower Preservation Act of 1973, O.C.G.A. 12-6-170. No such provisions are afforded to plants found on privately owned lands in the state. The species does not receive any specific legal protections from state laws

or regulations in Alabama.

e. Other natural or manmade factors affecting its continued existence (Factor E)

As summarized in the 2017 5-year review, inadequate habitat management, including lack of mowing, prescribed fire, and/or hand clearing of competing vegetation, remains a persistent concern for Alabama leather flower populations. Because the species requires open conditions to thrive, inadequate habitat management can lead to increased growth of competing vegetation, which can obscure plants and suppress plant growth, as has been observed at populations in Alabama (see Service 2017 and references cited therein). Continued cooperation with landowners, land managers, and rights-of-way managers is crucial for maintaining necessary habitat conditions and avoiding incompatible habitat management practices (e.g., incompatible mowing regimes, herbicide application) within Alabama leather flower populations.

With only six extant populations, five of which are of moderate to large size, maintenance and expansion of existing populations is needed to ensure the species' continued survival, while discovery and/or establishment of additional populations are needed to promote the species' long-term recovery. To date, one population has been augmented and one population has been established, both in Georgia, with limited success and additional research is needed to improve success. See Service 2017 for more details about these efforts. With so few populations and individuals, Alabama leather flower remains vulnerable to catastrophic population losses due to anthropogenic actions or natural disasters, long-term impacts of global climate change (see Service 2017), and potentially faces increased risks associated with small populations, including genetic drift and inbreeding that can limit the species' adaptive capacity and ability to cope with future stressors (*sensu* Ellstrand and Elam 1993).

D. Synthesis

Alabama leather flower is an extremely rare species that was known from only two sites at the time of listing in 1986. Despite intensive surveys since that time, the species is currently known from only eight natural populations, including seven in Alabama and one in Georgia. Of these eight known populations, only six have been confirmed to be extant in recent years, while two (both in Alabama) have been recently extirpated. Only two of the six extant natural populations are permanently protected from outright habitat destruction (e.g., conversion to agriculture or development). Three populations are apparently large (with at least 1000 stems) and two are of moderate size. Attempts to establish and augment populations in Georgia have been made with limited success (the one established population is not currently considered a population contributing to recovery) and additional work is needed. While progress has been made toward recovery of Alabama leather flower, the species has only a small number of known populations and an inadequate number of protected populations. The species also faces persistent threats and continued habitat management needs. As such, Alabama leather flower continues to meet the definition of an endangered species under the ESA.

III. RESULTS

A. Recommended classification

_____ Downlist to Threatened
_____ Uplist to Endangered
_____ Delist (*Indicate reasons for delisting per 50 CFR 424.11*):
  _____ *Extinction*
  _____ *Recovery*
_____ Original data for classification in error
__X__ No change is needed

IV. RECOMMENDATIONS FOR FUTURE ACTIVITIES

The following actions are recommended to support and promote recovery of Alabama leather flower. Use of a numbered list for these recommendations is for convenient reference and does not necessarily imply prioritization of any activity over others.

1. Work with federal and state entities, non-governmental organizations, and private individuals to permanently protect and manage existing habitats and populations, including the development and implementation of management plans.
2. Conduct surveys to locate additional populations.
3. Conduct studies to determine the number and distribution of populations required to maintain the species' genetic diversity.
4. Conduct studies into the species' life history, biology, habitat, and ecology to inform future population searches, management, and potential population augmentation and (re)establishment efforts.
5. Investigate efficacy of habitat management techniques (e.g., fire). Update and improve monitoring and habitat management methods.
6. Expand *ex situ* (off-site) conservation efforts to include plants from all known extant populations.
7. Update the species' recovery plan to reflect current knowledge (e.g., distribution, habitats) and needs (e.g., data/knowledge deficiencies, management).

V. REFERENCES

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U.S. FISH AND WILDLIFE SERVICE
5-YEAR REVIEW of Alabama Leather Flower (*Clematis socialis*)

Current Classification: Endangered

Recommendation resulting from the 5-Year Review:

_____ Downlist to Threatened
_____ Uplist to Endangered
_____ Delist
__X__ No change needed

Appropriate Listing/Reclassification Priority Number, if applicable: No change

Review Conducted By: M. Scott Wiggers, Mississippi Ecological Services Field Office

FIELD OFFICE APPROVAL

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

Approve JAMES AUSTIN Digitally signed by JAMES AUSTIN Date: 2022.06.15 15:28:38 -05'00'

* Since 2014, Field Supervisors in the Region have been delegated authority to approve 5-year reviews that do not recommend a status change.