

**Michaux's Sumac
(*Rhus michauxii*)**

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



Photo credit: Dale Suiter

**U.S. Fish and Wildlife Service
Southeast Region
Raleigh Ecological Field Services Office
Raleigh, North Carolina**

September 2026

5-YEAR STATUS REVIEW

Michaux's Sumac (*Rhus michauxii*)

GENERAL INFORMATION

Current Classification: Endangered

Lead Field Office: Raleigh Ecological Services Field Office, Raleigh, North Carolina

Review Author(s): Michelle Henson, Ph.D., Asheville Ecological Services Field Office,
U.S. Fish and Wildlife Service

Reviewers:

Lead Regional Office: Southeast Region, Carrie Straight

Cooperating Field Office(s): Georgia Ecological Services Field Office, Athens,
Georgia, South Carolina Ecological Services Field Office, Charleston, South
Carolina, Virginia Ecological Services Field Office, Gloucester, Virginia

Date of original listing: October 30, 1989 (54 FR 39850; September 28, 1989)

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 Michaux's sumac biology, habitat, and threats of to inform this status review.

We announced initiation of this review in the Federal Register on November 25, 2025 (90 FR 53383) with a 60-day comment period and received one comment from the U.S. Army, Fort Bragg military base in North Carolina. The primary sources of information used in this analysis were the 1989 final listing rule (54 FR 39850), the 1993 recovery plan and peer-reviewed reports, agency reports, unpublished survey data and reports, and personal communication with recognized experts. This review was completed by the U.S. Fish and Wildlife Service, Asheville Ecological Services Field Office, Asheville, North Carolina. All literature and documents used for this review are on file at the Asheville and Raleigh Field Offices. 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 Michaux's sumac.

FR Notice citation announcing the species is under active review:
November 25, 2025 (90 FR 53383)

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

The Recovery Priority Number for Michaux's sumac is 2, corresponding to a species with a high degree of threat and a high recovery potential.

Review History:

A previous 5-year review recommending no change in status was signed on January 6, 2021 (Service 2021).

REVIEW ANALYSIS

Listed Entity

Taxonomy and nomenclature

We are not aware of any changes to the taxonomy of this entity, and it 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 definition limits listing of a DPS to only vertebrate species. Because the species under review is not a vertebrate, the DPS policy does not apply.

Recovery Criteria

Recovery Plan or Outline

Recovery Plan for Michaux's sumac (*Rhus michauxii*) Sargent, April 30, 1993

Recovery plans are not regulatory documents and intended to provide guidance to the Service, states, and others on ways to minimize threats to listed species and 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](#)).

Criterion 1. It has been documented that at least 19 sustaining populations exist and that necessary management actions have been undertaken by the landowners or cooperating agencies to ensure their continued survival.

As stated in previous 5-year reviews, the recovery plan defines a self-sustaining population as one that is clonally expanding or sexually reproducing, and demographically and genetically viable. Without detailed monitoring data, we predict that self-sustaining populations are most likely those ranked by their respective natural heritage programs as having excellent (A-ranked) or good (B-ranked) viability. In North Carolina, there are 21 populations that rank as A or B (NCNHP 2025). In Georgia, five populations are either A or B ranked. In Virginia, there are two

populations that are ranked as A, and no extant populations in SC. Currently, a total of 28 populations are ranked A or B range wide out of 47 total populations.

Criterion 2. All of the above (self-sustaining) populations and their habitat are protected from present and foreseeable human-related and natural threats that may interfere with the survival of any of the populations.

A substantial portion of the species' largest populations are located on military installations or other management conservation lands, including Camp Mackall in North Carolina and Fort Pickett in Virginia, where prescribed fire and other disturbance-based management help maintain suitable habitat conditions. However, not all populations are adequately protected from present and foreseeable threats across the species' range, particularly those occurring on state and private lands where regulatory protections and active management may be more limited. In addition, long-term viability of this species requires continued implementation of site-specific management plans, including prescribed fire and woody vegetation control by landowners and managers. While progress has been made in protecting and managing several populations and their habitats, range wide protection and management remain incomplete. Criterion not met.

Abundance, Populations, Biology, and Habitat Summary

The definition of “population” for this species has changed since the time of listing and development of the recovery plan. Earlier documents generally used “population” to refer to any distinct occurrence, regardless of spatial proximity. In this document, the Service uses the term “occurrence” for individual sites or locations and the term “population” when referring to single populations with no known occurrences within 2 km or multiple occurrences within close proximity (2 km) of each other. Based on the biology of the species (e.g. dispersal and pollination), we believe this separation is a more accurate reflection of populations.

Across the range of Michaux's sumac, there are currently 32 extant populations in North Carolina, 9 populations in Georgia, 6 populations in Virginia, and no extant populations in South Carolina (Table 1).

Table 1. Number of extant populations in each state for the listing rule (1989), recovery plan (1993), and the 2014, 2021, and 2026 (current) 5-year reviews.

State	1989 (Listing)	1993 (Recovery Plan)	2014 (5-Year Review)	2021 (5-Year Review)	2026 (Current)
North Carolina	15	20	33	33	32
Georgia	1	1	6	7	9
Virginia	0	0	6	6	6
South Carolina	0	0	0	0	0
Total	16	21	45	46	47

Since the last 5-year review, site visits and surveys have been conducted throughout the species' range. Based on heritage program data records, 47 populations are currently recognized range wide. However, there are only 32 natural (not introduced) populations across the species' range.

Three new occurrences (one standalone and two subpopulations) have been discovered in North Carolina. In 2025, one new occurrence was discovered within an already known population in Virginia. The increase in the number of recognized populations in Georgia reflects updated records and populations associated with safeguarding and introduced populations, rather than the discovery of new natural populations.

North Carolina

Currently, there are 32 extant populations in North Carolina, including 25 natural populations and 7 introduced (NCNHP 2025). One new population was discovered in Cabarrus County in 2023 in an undeveloped field area adjacent to an industrial business/warehouse that appears to receive regular mowing. Two additional subpopulations were discovered recently: one in 2020 near Sandhills Game Land and Camp Mackall in Scotland County, and another in 2024 in Camp Mackall Army Airfield in Richmond County. There is a total of 20 extirpated or presumed extirpated populations in North Carolina.

Within the state, the species occurs primarily within two physiographic regions: the Sandhills and the Piedmont. The Sandhills region supports the majority of populations and generally contains larger, more viable, and more protected populations. In contrast, Piedmont populations tend to be smaller, more fragmented, and more likely to occur on unprotected lands. A substantial number of these occurrences are associated with military lands, particularly Camp Mackall, where 24 sites are associated with disturbance-maintained habitats. The sites are maintained on a three-year prescribed fire return interval, and when additional management is needed, light mechanical treatment is conducted by hand in the immediate vicinity of plants. Because many of these sites occur near an airfield and training compound, development and land-use change are not currently considered majority threats in this area.

Despite the relative protection of the Sandhills populations, some biological concerns remain. As previously mentioned in the 2021 5-year review, a study by Youngsteadt and Sorenson (2019) found that pollen is not being transported among sites, suggesting limited connectivity and potential reproductive isolation between populations. To overcome these barriers to sexual reproduction, the study suggested that hand pollination and the translocation of mates to single-sex sites may be necessary to ensure the species' long-term evolutionary potential. In addition, hybridization with smooth sumac (*Rhus glabra*) remains an ongoing issue, with hybrids comprising approximately 15% of stems. To address this issue, active management now involves removing smooth sumac whenever it appears near Michaux's sumac locations.

In contrast to Sandhills populations, Piedmont occurrences tend to be smaller, more fragmented, and more likely to occur on unprotected lands. Threats to Piedmont populations are typically higher and include woody encroachment, habitat succession, restricted habitat availability, and incompatible right-of-way management. Although some augmentation and reintroduction efforts have occurred in the Piedmont region, relatively few natural occurrences are permanently protected, and long-term management remains limited.

Georgia

In Georgia, nine populations are considered extant, including one natural population and eight introduced populations established for conservation and safeguarding purposes (GADNR 2025).

These populations occur across a mix of federal, state, and privately-owned lands. Four populations are considered extirpated.

Abundance varies widely among sites in Georgia. Many occurrences are dominated by clonal stems, with limited evidence of consistent sexual reproduction. At several sites, reproductive output remains low or uncertain. For example, viable fruit production has not yet been confirmed at the Lower Broad River site, where hybridization with winged sumac (*Rhus copallinum*) has been documented. Some introduced populations, such as those at Panola Mountain State Park, are expanding clonally under prescribed fire and active management, with ongoing monitoring of vegetative and reproductive stems.

Outplanting efforts in Georgia have demonstrated variable success. Earlier efforts were limited by drought stress, late-season planting, and post-planting care. However, more recent horticultural efforts at the State Botanical Garden of Georgia have used rhizome divisions grown in shallow propagation pans for one year to mimic natural shallow soil conditions, which may improve establishment success.

While propagation efforts can be challenging, a study by Pullman et al. (2021) focused on developing conservation protocols for Michaux's sumac using smooth sumac (*Rhus glabra*) as the model. To overcome the species' thick seed coats and low natural reproduction, the researchers established a successful in vitro germination method using a six-hour sulfuric acid scarification, which achieved germination rates of 70% for Michaux's sumac and 96% for winged sumac. The study also documented that seeds of both species can survive cryopreservation in liquid nitrogen, offering a viable path for long-term germplasm storage. Importantly, the research led to the establishment of the first known seedlings from endemic Georgia populations in a greenhouse environment. While attempts at micropropagation from mature buds were complicated by endophytic bacteria, which live inside the plant tissue, the developed protocols for seed storage and germination provide critical tools for safeguarding and recovering the species.

Overall, Georgia populations remain fragmented and largely dependent on active management. Key threats include fire suppression, woody encroachment (e.g., sweetgum and other hardwoods), hybridization with winged sumac, and limited seed recruitment. However, ongoing adaptive management strategies, including prescribed fire, habitat restoration, improved propagation techniques, and genetic evaluation, have contributed to improved outcomes. Long-term viability will depend on restoring fire-maintained habitat, increasing sexual reproduction and viable seed production, clarifying genetic integrity, and ensuring consistent site stewardship.

Virginia

There are currently six extant populations in Virginia, with no new standalone populations discovered since the previous 5-year review (VANHP 2025). In 2025, a new subpopulation was discovered within the Fort Pickett population. It occurs within a powerline right-of-way and consists of both male and female plants that appear healthy. The occurrences in Virginia represent the northernmost extent of the species' range and include some of the largest known populations range wide. All known populations occur on or adjacent to Fort Pickett, where military training activities and prescribed fire maintain suitable early successional habitat.

Because much of the surrounding landscape near Fort Pickett is privately owned, long-term conservation in Virginia depends on continued coordination among land managers, including the Department of Defense and private landowners. The Virginia Natural Heritage Program has delineated conservation sites to include occupied habitat as well as adjacent areas necessary to support long-term population viability.

South Carolina

Consistent with previous 5-year reviews, there are no extant occurrences of Michaux's sumac in South Carolina. The species was last observed in Kershaw County in 1961. Subsequent surveys of the historical site (and surrounding areas) have not resulted in relocation of the species, and the site has undergone substantial development.

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. A summary of this assessment is detailed below.

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

Habitat destruction and modification remain the primary threats to Michaux's sumac throughout its range. The species is strongly dependent on open, disturbance-maintained habitat conditions, and the long-term suppression of fire continues to drive habitat degradation through woody encroachment and ecological succession. In the absence of regular prescribed fire or comparable disturbance, suitable habitat rapidly becomes shaded and unsuitable for persistence and recruitment. This remains one of the most significant factors contributing to population decline and historical extirpation across the species' range.

Additional habitat threats persist from timber operations, residential and commercial development, land conversion, and infrastructure maintenance activities. Populations occurring on highway and utility rights-of-way remain vulnerable to mowing during the growing season, herbicide application, and other routine maintenance practices that can directly damage plants or alter habitat structure. While some extant populations persist in managed rights-of-way and other disturbed settings, these areas are often suboptimal and require continued coordination of disturbance management to maintain open conditions.

Across North Carolina, Georgia, and Virginia, the species is typically associated with open habitats on shallow, well-drained soils, including mafic and amphibolite substrates. Continued loss, fragmentation, and degradation of these habitats, particularly on unprotected private lands, remain substantial threats to the species' long-term viability.

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

As mentioned in the 2014 5-year status review, there is no evidence to suggest that Michaux's sumac is being overutilized for commercial, recreational, scientific or educational purposes.

Factor C. Disease or Predation

The Service is not aware of any new information regarding disease since the 2021 5-year review. However, deer herbivory is a concern in portions of the species' range. In Georgia, browse pressure has been documented in some populations, which may reduce stem vigor, suppress flowering and fruit production, and limit recruitment, thereby affecting population persistence.

Factor D. The Inadequacy of Existing Regulatory Mechanisms

Michaux's sumac is state listed as endangered in North Carolina, Georgia, and Virginia. The North Carolina Plant Conservation and Protection Act (North Carolina Code Article 19B, § 106-202.12) provides limited protection from unauthorized collection and trade of plants listed under that statute. However, the statute does not protect the species or its habitat from destruction in conjunction with development projects or otherwise legal activities. Georgia's Wildflower Preservation Act of 1973 provides protections for the species on any public lands from cutting, digging, pulling, or removing unless the State has authorized such acts. The Virginia Endangered Plant and Insect Species Act (Chapter 10 § 3.2-1000 through 1011 of the Code of Virginia, as amended) primarily regulates collection and trade in listed species and does not prohibit landowners from neglecting or otherwise impacting such species on their own property or in conjunction with otherwise legal activities.

Factor E. Other Natural or Manmade Factors

As mentioned in previous 5-year reviews (Service 2014, 2021), the long-term viability of Michaux's sumac continues to be affected by its small, single-sex populations. The species is dioecious, with male and female flowerings occurring on separate plants, and many known occurrences consist primarily or entirely of one sex. Because sexual reproduction requires male and female plants in close proximity, many populations have limited or no capacity for seed production and natural recruitment. In addition, the species frequently persists as clonal colonies arising from rhizomes, which may further limit effective genetic exchange among occurrences. This reduced reproductive capacity likely constrains recruitment, lowers genetic diversity, and decreases the species' ability to adapt to environmental change and stochastic disturbance.

Hybridization with more common congeners also remains a significant threat to the long-term viability of Michaux's sumac across its range. Existing evidence indicates that the species hybridizes with winged sumac and smooth sumac, raising concerns regarding introgression, reduced reproductive integrity, and limited sexual recruitment. Recent genetic work by Selby (2021) documented extensive hybridization within two of the largest known Virginia populations, Fort Pickett and Deepwater, and found that hybrids were widespread among sampled colonies. The study also identified a high rate of field misidentification, with 59% of individuals initially identified as Michaux's sumac and later genetically determined to be hybrids. Importantly, hybrids were found to be fertile and capable of backcrossing with parental species, increasing the risk of hybrid swamping and genetic assimilation of the rare species by more common congeners. Earlier work also found that Michaux's sumac possesses substantially lower genetic diversity and fewer polymorphic loci than its widespread relatives (Sherman-Broyles et al. 1992), which may further limit adaptive capacity and increase vulnerability to genetic threats. Additional range-wide genetic work is needed to better understand hybridization dynamics, population structure, and the development of viable seed sources for future recovery and conservation actions.

In addition, projected extreme weather events are anticipated to threaten many rare species and the habitats in which they occur. While fine scale predictive models are not currently available for all occupied areas, broader regional projections for the southeastern United States predict extreme weather including droughts, heavy precipitation, heat waves, and more intense storm events (Kinlaw et al. 2019, Schoof & Robeson 2016), which may negatively affect Michaux's sumac and its habitat. For example, drought conditions may cause physiological stress or mortality, especially in dry habitats and in populations that have been newly augmented or reintroduced. Likewise, heavy precipitation and storm events may damage plants, destabilize soils, and alter habitat conditions.

Synthesis

Michaux's sumac is a small dioecious shrub endemic to North Carolina, Virginia, Georgia, and South Carolina. Since the 2021 5-year review, new occurrences have been documented in North Carolina and Virginia, including one newly recognized population in North Carolina, two newly documented subpopulations in North Carolina, and one new subpopulation within an existing population in Virginia. Currently, 47 populations are recognized range-wide, including 32 natural populations and 15 introduced populations. The increase since the previous review is attributed to both newly documented occurrences in North Carolina and Virginia and updated accounting of introduced conservation populations in Georgia. Of these, 28 populations are ranked as having good to excellent viability (A or B-ranked). Uncertainty persists across the range regarding which populations are self-sustaining based on demographic and genetic viability. In addition, many populations remain small, clonally dominated, single-sex, or impacted by hybridization, all of which limit sexual reproduction and long-term viability. The most significant threats remain habitat loss and modification, woody encroachment, ecological succession, incompatible right of way management, and development. While management and research efforts have improved conservation outcomes, substantial work remains to improve population resiliency, redundancy, and representation across the species' range. Continued recovery actions focused on habitat management, genetic integrity, population connectivity, and long-term monitoring will be necessary. We believe that Michaux's sumac continues to meet the definition of an endangered under the Endangered Species Act.

RECOMMENDED FUTURE ACTIVITIES

A detailed discussion of recovery actions and criteria are presented in the Recovery Plan (Service 1993). During this status review, new and/or targeted potential recovery activities were identified and are included below.

Recovery Activities

- Develop species distribution and habitat suitability models to identify potential unoccupied habitat and guide targeted surveys for undiscovered populations across the range.
- Prioritize protection of natural populations occurring on unprotected lands through conservation easement, cooperative agreements, acquisition, or management agreements with private landowners and partners.

- Implement site-specific management strategies for populations occurring in highway and utility rights-of-way, including coordination on mowing schedules, herbicide avoidance, and habitat buffers during the growing season.
- Evaluate and manage hybrid populations to determine where hybridization threatens species integrity and where targeted removal of congeners or hybrids may be warranted.
- Expand ex situ conservation efforts, including seed banking, cryopreservation, and living collections representing populations across the species' range.

Monitoring and Research Activities

- Conduct range-wide genetic analyses to assess diversity, connectivity, clonality, and the extent and consequences of hybridization.
- Establish a standardized long-term monitoring protocol across all states to evaluate stem abundance, flowering and fruiting rates, recruitment, sex ratios, and habitat condition.
- Refine criteria for defining self-sustaining populations using demographic, reproductive, and genetic metrics.
- Investigate pollinator movement and pollen limitation among populations to determine whether assisted pollination or translocation may improve reproductive success.
- Assess the impacts of drought and extreme weather on population persistence, particularly for shallow-rooted and newly introduced populations.
- Develop an adaptive management framework that integrates monitoring results into future fire, restoration, and hybrid management decisions

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RESULTS / SIGNATURES

U.S. Fish and Wildlife Service Status Review of Michaux's Sumac

Status Recommendation:

On the basis of this review, we recommend the following status for this species ([50 CFR § 424.11](#)). 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 is recovered.*
 - ☐ *New information indicates 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:

Acting Field Supervisor, Raleigh Ecological Services Field Office, U.S. Fish and Wildlife Service

Approve JENNIFER ARCHAMBAULT Digitally signed by JENNIFER ARCHAMBAULT
Date: 2026.09.22 09:09:56 -04'00'

COOPERATING REGIONAL OFFICE APPROVAL:

We emailed this 5-year review to the Northeast Regional Office for their concurrence prior to finalizing the document. We will retain any comments that we received, as well as verification of concurrence from other regions, in the administrative record for this 5-year review.