

Recovery Plan for Morefield's Leather Flower (*Clematis morefieldii*)

Available at: https://ecos.fws.gov/docs/recovery_plan/940503.pdf

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DRAFT AMENDMENT 1

We have identified the best available information that indicates the need to amend recovery criteria for Morefield's leather flower (*Clematis morefieldii*). In this recovery plan modification, we identify the current downlisting criteria, describe the proposed delisting criteria and revised downlisting criteria, and include the justification and rationale supporting the proposed recovery plan modification. The proposed modification supplements the recovery plan for Morefield's leather flower (U.S. Fish and Wildlife Service [USFWS] 1994) by revising downlisting criteria and adding delisting (recovery) criteria that were not developed at the time this recovery plan was completed, superseding only Part II, A (p. 4) of the recovery plan. Recovery plans are non-regulatory documents that provide guidance on how best to help recover the species.

**For
U.S. Fish and Wildlife Service
Southeast Region
Atlanta, Georgia**

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METHODOLOGY USED TO COMPLETE THE RECOVERY PLAN AMENDMENT

The proposed amendments to the recovery criteria are based on the species' recovery plan, recent five-year reviews, and recent studies with the species. The lead biologist for the species gathered the information on Morefield's leather flower and notified the species experts, the relevant State agencies, and nongovernmental partners of the Service's process to complete this amendment. This available information was used to revise the downlisting criteria and develop delisting criteria for Morefield's leather flower.

ADEQUACY OF RECOVERY CRITERIA

Section 4(f)(1)(B)(ii) of the Endangered Species Act (Act) requires that each recovery plan incorporate, to the maximum extent practicable, "objective, measurable criteria which, when met, would result in a determination...that the species be removed from the list." Legal challenges to recovery plans (see *Fund for Animals v. Babbitt*, 903 F. Supp. 96 (D.D.C. 1995)) and a Government Accountability Audit (General Accounting Office 2006) have also affirmed the need to frame recovery criteria in terms of threats assessed under the five threat factors in section 4(a)(1) of the Act.

Recovery Criteria

The current recovery plan (https://ecos.fws.gov/docs/recovery_plan/940503.pdf) (USFWS 1994) provides only downlisting criteria for the species (see page 4).

Synthesis

Morefield's leather flower is a perennial vine that is endemic to the southeastern United States, known from three states (Alabama, Georgia, and Tennessee). The species occurs almost exclusively in the Plateau Escarpment ecoregion (see Griffith *et al.* 2001 and U.S. Environmental Protection Agency 2013 for ecoregion description; see USFWS 2018 for more detailed distribution description). Most of the species' populations are known from Tennessee, while Georgia only has one known population.

Morefield's leather flower was listed as endangered on May 20, 1992 (57 FR 21562) due to threats posed by population and habitat destruction (Factor A), restricted range (Factor E), small number of populations (Factor E), small population sizes (Factor E), and encroachment of competing vegetation (Factor E). The species was also not protected by applicable state or international conservation laws or regulations (Factor D). In addition, when the species was listed, there was some concern that overcollection (Factor B) may emerge as a threat to this species, but there is no indication that this threat has arisen (USFWS 2010, 2018).

Since finalization of the recovery plan (USFWS 1994), recovery efforts have focused on surveying for new populations and protection and monitoring of existing populations. Surveys and fortuitous discoveries have expanded the species known distribution from Madison County, Alabama to include Jackson County, Alabama, Walker County, Georgia, and Franklin and Grundy counties, Tennessee (USFWS 2010, 2018), effectively alleviating the threat posed by restricted range (Factor E). The plant also receives some legal protections in Georgia and Tennessee—addressing non-permitted collection, transportation, and sale within these states—but receives no enhanced legal protections in Alabama (USFWS 2018), which has reduced the threat posed by inadequate regulatory mechanisms (Factor D). Based on the provisional population definition of 1 kilometer (0.6 mile) proposed in the Service's most recent Five-year Review (USFWS 2018), there are currently 32 known extant populations, which has alleviated the threat posed by small number of populations (Factor E). However, most populations remain small (Factor E), with fewer than 100 individuals (USFWS 2018). Likewise, 11 populations are protected on conservation lands, but available monitoring data is inadequate to indicate long-term population viability (USFWS 2018). Habitat destruction or modification (Factor A) due to urban development, timber management, roadside maintenance, and other activities have caused the loss or decline of populations (Factor A) and remain persistent threats to populations that are not protected on conservation lands (USFWS 2010, 2018). Encroachment of competing vegetation (Factor E), including non-native, invasive plant species, remains a threat to many populations (USFWS 2010, 2018).

AMENDED RECOVERY CRITERIA

Recovery criteria serve as objective, measurable guidelines to assist in determining when an endangered species has recovered to the point that it may be downlisted to threatened or that the protections afforded by the Act are no longer necessary and the species may be delisted. Downlisting is the reclassification of a species from endangered to threatened. Delisting is the removal of a species from the Federal Lists of Endangered and Threatened Wildlife and Plants (hereafter, "Lists"). An "endangered species" is a species (species, sub-species, or distinct population segment [DPS]) that is in danger of extinction throughout all or a significant portion

of its range. A “threatened species” is a species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

Revisions to the Lists, including downlisting or delisting species, must reflect determinations made in accordance with sections 4(a)(1) and 4(b) of the Act. Section 4(a)(1) requires that the Secretary determine whether a species is an endangered species or threatened species due to threats to the species. Section 4(b) of the Act requires that the determination be made “solely on the basis of the best scientific and commercial data available.” Thus, while recovery plans provide important guidance to the USFWS, States, and other partners on methods of minimizing threats to listed species and measurable objectives against which to measure progress towards recovery, they are guidance and not regulatory documents.

Recovery criteria should help indicate when we anticipate that an analysis of the species’ status under section 4(a)(1) would result in a determination that the species is no longer an endangered species or threatened species. A decision to revise the status of or remove a species from the Lists, however, is ultimately based on an analysis of the best scientific and commercial data then available, regardless of whether that information differs from the recovery plan, which triggers rulemaking. When changing the status of a species, we first propose the action in the *Federal Register* to seek public comment and peer review, followed by a final decision announced in the *Federal Register*.

Herein, we revise downlisting criteria and provide delisting criteria for the Morefield’s leather flower, which will supersede those included in the Morefield’s leather flower recovery plan as follows:

Downlisting Criteria

1. At least ten (10) geographically distinct populations within the Plateau Escarpment ecoregion exhibit stable or increasing population trends, as evidenced by natural recruitment and multiple size classes. (Addresses Factors A, E)
2. These ten (10) populations are protected by a conservation mechanism. (Addresses Factors A, D)
3. Protected populations are managed to promote open canopies, integrity of native plant communities, and growth of Morefield’s leather flower plants. (Addresses Factors A, E)

Delisting Criteria

1. All downlisting criteria have been met. (Addresses Factors A, D, E)
2. At least 10 additional geographically distinct populations within the Plateau Escarpment ecoregion exhibit stable or increasing population trends, as evidenced by natural recruitment and multiple size classes. (Addresses Factors A, E)
3. At least one population (as defined in delisting criterion 2) occurs in each of the five counties where the species is known to occur (Madison and Jackson Counties, Alabama; Walker County, Georgia; and Franklin and Grundy Counties, Tennessee). (Addresses Factors A, E)

Justification of Criteria

The proposed downlisting and delisting recovery criteria reflect the best available and most up-to-date information on Morefield's leather flower. These criteria address the five listing factors described in section 4(a)(1) of the Act and incorporate the conservation biology principles of representation, resiliency, and redundancy (Wolf *et al.* 2015).

Downlisting Criterion 1: This criterion was revised to more clearly define the geographic scope of recovery based on current knowledge of the species' distribution, thereby ensuring adequate representation throughout the species' known ecoregional distribution while also ensuring a minimum level of population redundancy across the ecoregion. No change has been made to the number of populations required for downlisting included in the 1994 recovery plan, as 10 populations adequately addresses population redundancy within its known ecoregion of occurrence (i.e., Plateau Escarpment) for reclassification to threatened. This requirement for reclassification will reduce threats posed by Factors A (loss of populations) and D (small number of populations). Ensuring that populations are viable, having long-term trends that are stable or increasing with an average minimum of 100 individuals and that are recruiting new individuals, will increase the resilience of populations. Furthermore, this will ensure adequate numbers of individuals within each population to buffer against threat Factor E (small population sizes) and reduce the likelihood of Factor B (overcollection) arising as a threat.

Downlisting Criterion 2: The requirement that 10 populations be protected remains unchanged from the 1994 recovery plan. Requiring that these populations be protected will ameliorate the lack of enhanced state legal protections. This requirement will primarily reduce threats posed by Factor D (inadequate legal protections) and will further reduce the threat of Factor A (loss of populations).

Downlisting Criterion 3: Habitat management that promotes conditions favorable for growth of Morefield's leather flower, such as open canopies and native plant community integrity, will increase the resilience of individual populations from environmental and anthropogenic perturbations and occasional catastrophic events. This requirement addresses Factors A (loss of habitat) and E (encroachment of competing vegetation [including invasive species]).

Delisting Criterion 1: See justification for Downlisting Criteria 1-3.

Delisting Criterion 2: Increasing the total number of viable populations will increase the species' overall resilience, redundancy, and representation, effectively buffering against potential long-term threats, such as increased drought frequency and expanding development and habitat conversion. While no minimum number of additional protected populations is required, any increase in the number of such populations will further reduce threats posed by the lack of adequate state protections. By expanding key aspects of the preceding criteria, this criterion will minimize or eliminate threats posed by Factors A (population and habitat loss), D (inadequate legal protections), and E (small number of populations, small population sizes).

Delisting Criterion 3: Requiring that each county where the species is known to occur harbors at least one viable population will ensure representation across the species' known geographic extent. This criterion will further minimize threats posed by Factors A (loss of populations) and E (small number of populations). Furthermore, combined with the preceding criteria, this

criterion will ensure Morefield's leather flower's overall viability and continued survival throughout its known range into the foreseeable future, thereby making the protections under the Act no longer necessary.

Rationale for Recovery Criteria

Downlisting criteria have been revised to more clearly define the geographic scope of recovery based on current knowledge of the species' distribution and to provide for a means to more readily assess important population and habitat parameters, such as number of populations, number of individuals in each population, integrity of native plant communities, and presence of open canopies. Delisting criteria have been developed to ensure the species' overall viability into the foreseeable future by increasing its resilience, representation, and redundancy across its known range.

Downlisting Criterion 1: No change to the 1994 recovery plan's minimum number of populations needed for downlisting is proposed. This will ensure a minimum level of representation necessary for reclassification to threatened. If additional natural populations are discovered in other ecoregions, these ecoregions may also be considered for recovery.

Viable populations require adequate numbers of individuals to reproduce and persist through time and can be demonstrated by long-term monitoring trends that indicate stable or increasing population sizes. Available genetic and population studies provide little data or insight to inform the minimum number of plants necessary for long-term viability of individual populations of Morefield's leather flower. As such, the proposed minimum population size of 100 for individual populations should be revised if future genetic studies, population models, or other relevant information indicate that this population size does not adequately ensure individual population viability for the foreseeable future. Furthermore, documented recruitment of seedlings over multiple years is another indicator of population viability as it provides evidence that populations contain adequate numbers of individuals and genetic diversity to promote production of successive generations. Resilience to anthropogenic (such as collection) and environmental events (such as droughts) is expected to increase with increasing population size.

Downlisting Criterion 2: No change to the 1994 recovery plan's downlisting requirement that 10 populations be protected is proposed. This requirement will ameliorate the inadequacy of existing legal protections, while also contributing to the continued existence of a minimum number of populations into the foreseeable future.

Downlisting Criterion 3: This criterion was revised to denote the desired conditions promoted by habitat and population management (i.e., open canopies, integrity of native plant communities, and growth of Morefield's leather flower plants). Morefield's leather flower thrives in open, sunny conditions and populations experience reduced vigor under excessive shade (USFWS 1994). As a species that thrives in habitats with open canopies, management activities, such as prescribed fire and other vegetation clearing activities are necessary to maintain these necessary conditions and enhance the growth of Morefield's leather flower plants. Indeed, recent observations have indicated that populations respond favorably to such management activities (USFWS 2010, 2018). Likewise, management activities are necessary to enhance the integrity of native plant communities and limit the encroachment of non-native, invasive plant species at sufficiently low numbers to not inhibit the growth or reproduction of Morefield's leather flower

plants. Together, maintenance of these conditions via appropriate habitat management will increase the overall resilience of individual populations by promoting the growth of Morefield's leather flower plants.

Delisting Criterion 1: See rationale for Downlisting Criteria 1-3.

Delisting Criterion 2: Increased numbers of viable populations across Morefield's leather flower's known range will further increase the species' representation among its known watersheds while buffering the species from the loss of individual populations (i.e., increase redundancy). Furthermore, increasing the total number of viable populations is expected to increase the connectivity among individual populations. This will increase the species' overall resilience to anthropogenic and environmental threats, thereby promoting the persistence of the species into the foreseeable future. While this criterion does not specify the number of additional protected populations needed for recovery, any increase in the number of such populations will further increase the resilience of the species as a whole.

Delisting Criterion 3: The requirement that at least one protected population occur within each of the species' five known counties of occurrence will ensure that Morefield's leather flower will be distributed throughout its known geographic extent within the Plateau Escarpment ecoregion. This will limit risks posed to the species as a whole by future threats that are not uniformly distributed throughout the species' range (e.g., habitat destruction). However, it may be appropriate to consider populations within neighboring counties if natural populations are discovered within these counties.

LITERATURE CITED

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