Interim Core Map Documentation for Peter's Mountain Mallow

Version 1

Review Completed: April 2026

Core Map Developer: U.S. Environmental Protection Agency (EPA) Office of Pesticide Programs (OPP)

Species Summary

The Peter's Mountain mallow (*Iliamna corei*; Entity ID #949) is an endangered terrestrial plant (dicot). There is no designated critical habitat for this species. This species is fire-adapted, fire-dependent, and is mostly found in pockets of shallow soil on an outcrop of sandstone on a northwest facing slope approximately 3,000 feet above sea level. There is only one single location with known historical population on Peter's Mountain, above The Narrows of the New River in Giles County, VA. The Peter's Mountain mallow flowers in June through August and fruiting takes place from July through October. Peter's Mountain mallow flowers are pollinated primarily by sweat bees and germination is enhanced by fire. Additional information is provided in **Appendix 1**.

Description of Core Map

The core map for Peter's Mountain mallow is based on species range. The species range is refined and represents areas important for this species' conservation. There is only one known population of this species. There is no designated critical habitat. **Figure 1** depicts the interim core map for the Peter's Mountain mallow. The core map represents approximately 1,579 acres.

The Peter's Mountain mallow plants occupy a small area around Peter's Mountain. Landcover categories within the core map area are included in **Table 1.** Landcover is predominantly deciduous forest.

The core map developed for the Peter's Mountain mallow is considered interim. This core map will be used to develop pesticide use limitation areas (PULAs) that include the Peter's Mountain mallow. This core map incorporates information developed by FWS and made available to the public; however, the core map has not been formally reviewed by FWS. This interim core map may be revised in the future to incorporate expert feedback from FWS. This interim core map has a "none" (1) best professional classification because it consists of the species' range without additions or subtractions. There is confidence in the core map because the species' range is highly refined, represents areas important for this species' conservation, and contains all known populations of this species. This core map does not replace or revise any range or designated critical habitat developed by FWS for this species.

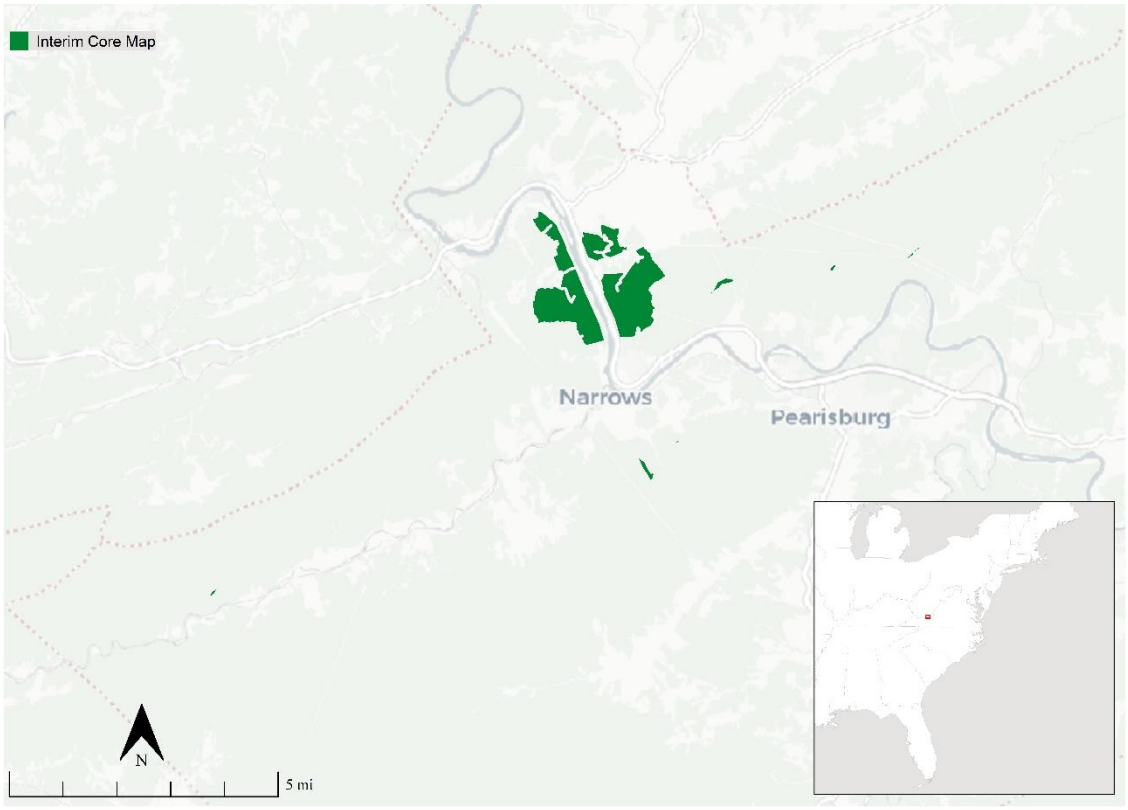

Figure 1. Interim core map for the Peter's Mountain mallow. The total acreage of the interim core map is approximately 1,579 acres.

Table 1. Percentage of Interim Core Map Represented by National Land Cover Database (NLCD)[1] Land Covers and Associated Example Pesticide Use Sites/Types.

Example pesticide use sites/types	NLCD Landcover (Value)	% of core map represented by landcover
Forestry	Deciduous Forest (41)	95
Forestry	Evergreen Forest (42)	0
Forestry	Mixed Forest (43)	1
Agriculture	Pasture/Hay (81)	1
Agriculture	Cultivated Crops (82)	0
Mosquito adulticide, residential	Open space, developed (21)	1
Mosquito adulticide, residential	Developed, Low intensity (22)	<1
Mosquito adulticide, residential	Developed, Medium intensity (23)	0
Mosquito adulticide, residential	Developed, High intensity (24)	0
Invasive species control	Woody Wetlands (90)	0
Invasive species control	Emergent Herbaceous Wetlands (95)	0
Invasive species control	Open water (11)	0
Invasive species control	Grassland/herbaceous (71)	1
Invasive species control	Scrub/shrub (52)	<1
Invasive species control	Barren land (rock/sand/clay; 31)	0
Total Acres	**Interim Core Map Acres**	**~1,579**

Evaluation of Known Location Information

There are four datasets with known location information for this species:

- Descriptions of locations provided by FWS
- Occurrence locations included in iNaturalist
- Occurrence locations included in the Global Biodiversity Information Facility
- (GBIF)
- Occurrence locations included in NatureServe

EPA evaluated these sets of data to inform or support the core map. iNaturalist had 4 research grade observations between 2015 to 2025, which are consistent with the species range, all of them occurring around Peter's Mountain. GBIF's occurrence data consisted only of occurrences that had also been accounted for in iNaturalist. Neither FWS nor NatureServe included location data that would support further core map refinement. **Appendix 1** includes more information on the available known location information.

[1] Dewitz, J., 2023, National Land Cover Database (NLCD) 2021 Products: U.S. Geological Survey data release, https://doi.org/10.5066/P9JZ7AO3

Approach Used to Create Core Map

The core map was developed using the "Process EPA Uses to Develop Core Maps for Draft Pesticide Use Limitation Areas for Species Listed by the U.S. Fish & Wildlife Service (FWS) and their Designated Critical Habitats[2]" (referred to as "the process"). This core map was developed by EPA using the 4 steps described in the process document:

1. Compile available information for a species
2. Identify core map type
3. Develop the core map for the species
4. Document the core map

For step 1, EPA compiled available information for the Peter's Mountain mallow from FWS, as well as observation information available from various publicly available sources (including iNaturalist, GBIF and NatureServe). The information compiled for the Peter's Mountain mallow is included in **Appendix 1**. Influential information included:

- The species range is highly refined, limited to just the area around Peter's Mountain.
- There is only one known population in FWS documentation, which is within the species' range.
- Occurrence data from other sources are consistent with the species range location.

For step 2, EPA used the compiled information to identify the core map type. EPA compared known location data to the range and found that these known locations are consistent with the species range. Based on the narrow range that includes all occurrence data identified by FWS, EPA selected the range to use as the species core map. For step 3, EPA used the ECOS species range for the Peter's Mountain mallow.

Discussion of Approaches and Data that were Considered but not Included in Core Map

EPA did not explore approaches other than those described in this documentation.

[2] Dated 2024, available online at: https://www.epa.gov/endangered-species/process-epa-uses-develop-core-maps-pesticide-use-limitation-areas

Appendix 1. Information Compiled for Species

1. **Recent FWS Documents**
   - 5-Year Review 2019
   - 5-Year Review 2008
   - Recovery Plan 1990

2. **Background information on Species**
   - **Status:** Federally listed as endangered in 1986
   - **Taxonomy**. FWS plant group 9: dicot flowering plants that require outcrossing with biotic pollination vectors.
   - **Resiliency, Redundancy, and Representation**
     - Genetic drift does not appear to be affecting the taxon. (5-year review 2008)
     - Self-incompatibility and resultant genetic recombination reduce the species' vulnerability to inbreeding, even when low numbers and reproductive failure pose substantial demographic risks. (5-year review 2008)
   - **Habitat Description**
     - This plant is found in pockets of shallow soil on an outcrop of sandstone on a northwest-facing slope approximately 3,000 feet above sea level. The population is growing in a forest with a few pines. It appears to grow best in full sunlight but can tolerate some shade. (ECOS)
     - The Peter's Mountain mallow is fire-adapted and fire-dependent. (5-year review 2008)
- **Pollinator and Reproduction**
     - The Peter's Mountain mallow can produce 15 to 20 blooms during the flowering season of June through August. (ECOS)
     - Fruiting takes place from July through October. (ECOS)
     - It can form long-lived seed banks. Seeds can remain germinable after 6 years. (5-year review 2008)
     - Viable seed requires cross-pollination of flowers. "Although pollinator species has not been identified, no impediments to pollination have been observed as along as multiple flowering plants are available concurrently." (5-year review 2008)
     - Not self-compatible. (5-year review 2008)
     - This species reproduces by seeds and asexually. (ECOS)
     - The flowers are apparently pollinated primarily by sweat bees and germination is enhanced by fire. (ECOS)

- **Ecology**
     - Requires fire – mean [median] fire return interval of 6.1 [2.2] years between 1941-1992 [1867-1976]. (5-year review 2008)
     - 93.5% of fires occurred during the species' dormant season (between completion of growth in the fall and before initiation of spring growth). (5-year review 2008)

- **Relevant Pesticide Use Sites**
  No available information on pesticide use sites is included in FWS documents.

- **Threats**
     - Present or threatened destruction, modification, or curtailment of its habitat or range

- Overutilization for commercial, recreational, scientific, or educational purposes
- Disease or predation
- Inadequacy of existing regulatory mechanisms
- Suppression of natural fires

- **Reclassification Criteria**
  - "The natural population has reached carrying capacity and has been self-maintaining or expanding into new areas for at least 5 years.

    This criterion is vague and difficult to assess. Now that existence of a long-lived seed bank is better understood, this criterion should be refined to appropriately reflect a species survival strategy adapted to periodic fire. It is likely that such a criterion will incorporate a running-average number of plants and seed production. However, formulating the appropriate number of plants, seed production, and time-scale reflective of a species that is no longer "endangered" (i.e., is not in danger of extinction) will require further analysis and discussion." (5-year review 2008)
  - "Life history, ecology, and population biology are understood sufficiently to ensure effective management. Progress towards this criterion is sufficient to support reclassification to threatened, but revised delisting criteria are likely to require additional information to more clearly define long-term management needs." (5-year review 2008)
  - "There exists a permanent monitoring/management program, as necessary. This criterion has been sufficiently met as a reclassification condition." (5-year review 2008)
  - "The tract of land on which it occurs is in permanently protected status. This criterion has been met." (5-year review 2008)
  - "Plants representing a variety of genotypes are maintained in propagation at a minimum of two established plant breeding facilities. As currently, written, this criterion has been partially met. However, this criterion should receive further consideration and clarification to: (1) reflect whether long-term seed storage is a biologically preferable (and more efficient) strategy for ex situ conservation of this species, and, if so; (2) how much seed should be stored at each of the two facilities." (5-year review 2008)

- **Delisting Criteria**
  - "Ecological studies and site investigations indicate that the appropriate sites for establishment of additional PMM populations exist on Peters Mountain. This criterion has not been met but requires re-evaluation to determine continued relevance." (5-year review 2008)
  - "At least five additional populations have been located or established." (5-year review 2008)
  - "These populations are permanently protected, monitored, and managed. This criterion has not been met, but it may not bear continued relevance." (5-year review 2008)
  - "The new populations are demonstrated to be self-maintaining or expanding for at least 5 years. This criterion cannot be evaluated at this time and may not bear continued relevance." (5-year review 2008)

- **Recovery Actions (Recovery Plan 1990)**
  - Conduct and assess effects of landscape burn in 2009
  - Continue ex situ seed increase efforts and assure secure long-term seed storage
  - Update reclassification criteria 1 and 5

- Based on results of initial landscape burn, evaluate future burning requirements and associated funding needs
- Develop long-term agreements for continuing management of Peter's Mountain mallow populations at the Narrows Preserve
- Reconsider need for and desirability of establishing additional Peter's Mountain mallow populations outside of the species' known historic range

3. Description of Species Range

"The species' range in the wild is still confined to about 0.1 acre at the single historic site." (5-Year Review 2008)

Figure A1-1 depicts the FWS range map of the Peter's Mountain mallow. This range was last updated 3/15/2023 and has an area of approximately 1,579 acres.

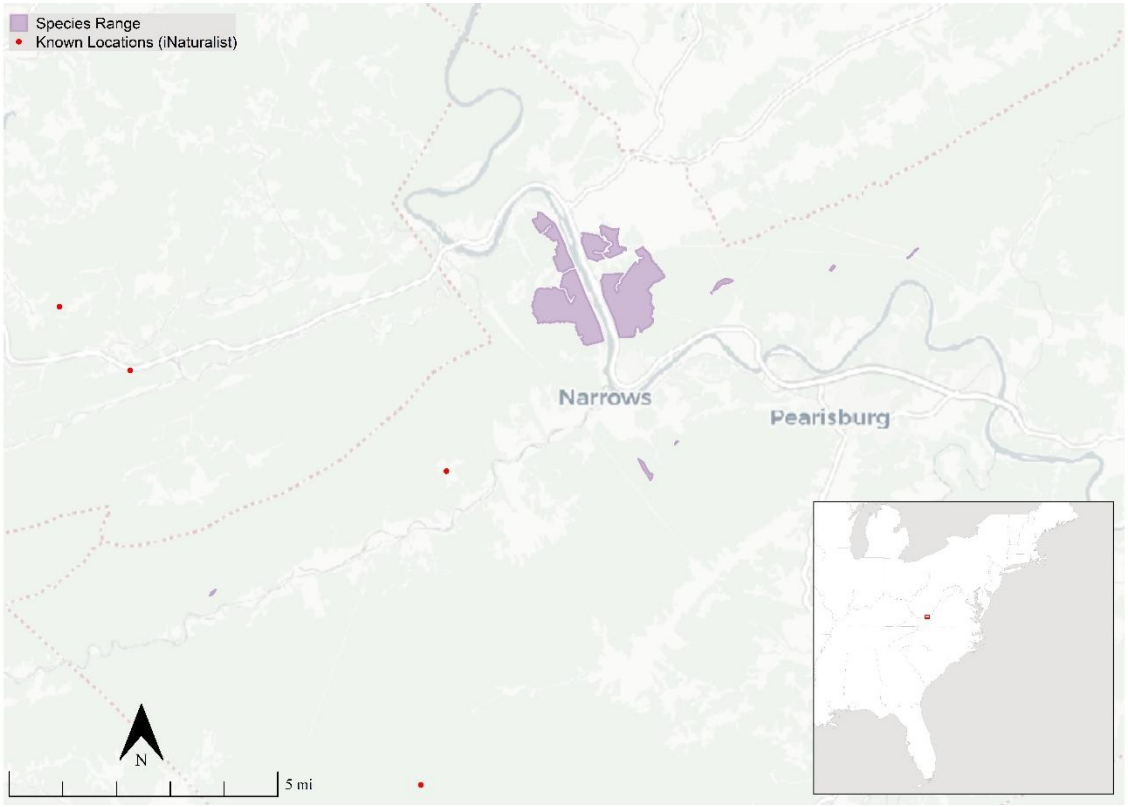

Figure A1-1. Map of the Peter's Mountain mallow range.

4. Critical Habitat

There is no designated critical habitat for this species.

5. Known Locations

- Occurrences Described in iNaturalist: https://www.inaturalist.org/observations?quality_grade=research&subview=map&taxon_id=164046
    - iNaturalist includes 4 research grade observations consistent with the indigenous range (all within the area around Peter's Mountain)

    - **Figure A1-1** depicts the locations of these observations.

- Occurrences Described in GBIF: https://www.gbif.org/occurrence/search?basis_of_record=HUMAN_OBSERVATION&taxon_key=3939866&year=2010,2025
    - All observations listed are also included in iNaturalist

- Occurrences Described in NatureServe: https://explorer.natureserve.org/pro/Map/?taxonUniqueId=ELEMENT_GLOBAL.2.155689
    - NatureServe does not have detailed location data