

Interim Core Map Documentation for Applegate's milk-vetch

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

Species Summary

The Applegate's milk-vetch (*Astragalus applegatei*, Entity ID #885) is a slender, low-growing, vine-like herbaceous perennial in the Fabaceae (pea family). Plants have multiple sprawling stems 12 to 36 inches long and small white to light-pink to lavender flowers that are present from June to September (FWS, 1998).

The Applegate's milk-vetch was listed as endangered under the Endangered Species Act (Act) in 1993. Additional information is provided in **Appendix 1**.

Description of Core Map

The core map for the Applegate's milk-vetch is based on the species range identified by the U.S. Fish and Wildlife Service (FWS). The species range is highly refined and recently updated, therefore, further refinements were deemed unnecessary. There is no designated critical habitat for this species.

Figure 1 depicts the resulting interim core map for the Applegate's milk-vetch. The size of this core map is approximately 5,501 acres. Landcover categories within the core map area are included in **Table 1**. Landcover within the core map is predominantly developed open space, low – high intensity developed, scrub/shrub, and grassland/herbaceous, which is consistent with the habitat of this species.

The core map developed for the Applegate's milk-vetch is considered interim. This core map will be used to develop pesticide use limitation areas (PULAs) that include the Applegate's milk-vetch. 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 judgment classification to describe major uncertainties/limitations. The map is based on the range described by FWS, with no additions or subtractions; all supporting data sources consistently support the core map. This core map does not replace or revise any range or designated critical habitat developed by FWS for this species.

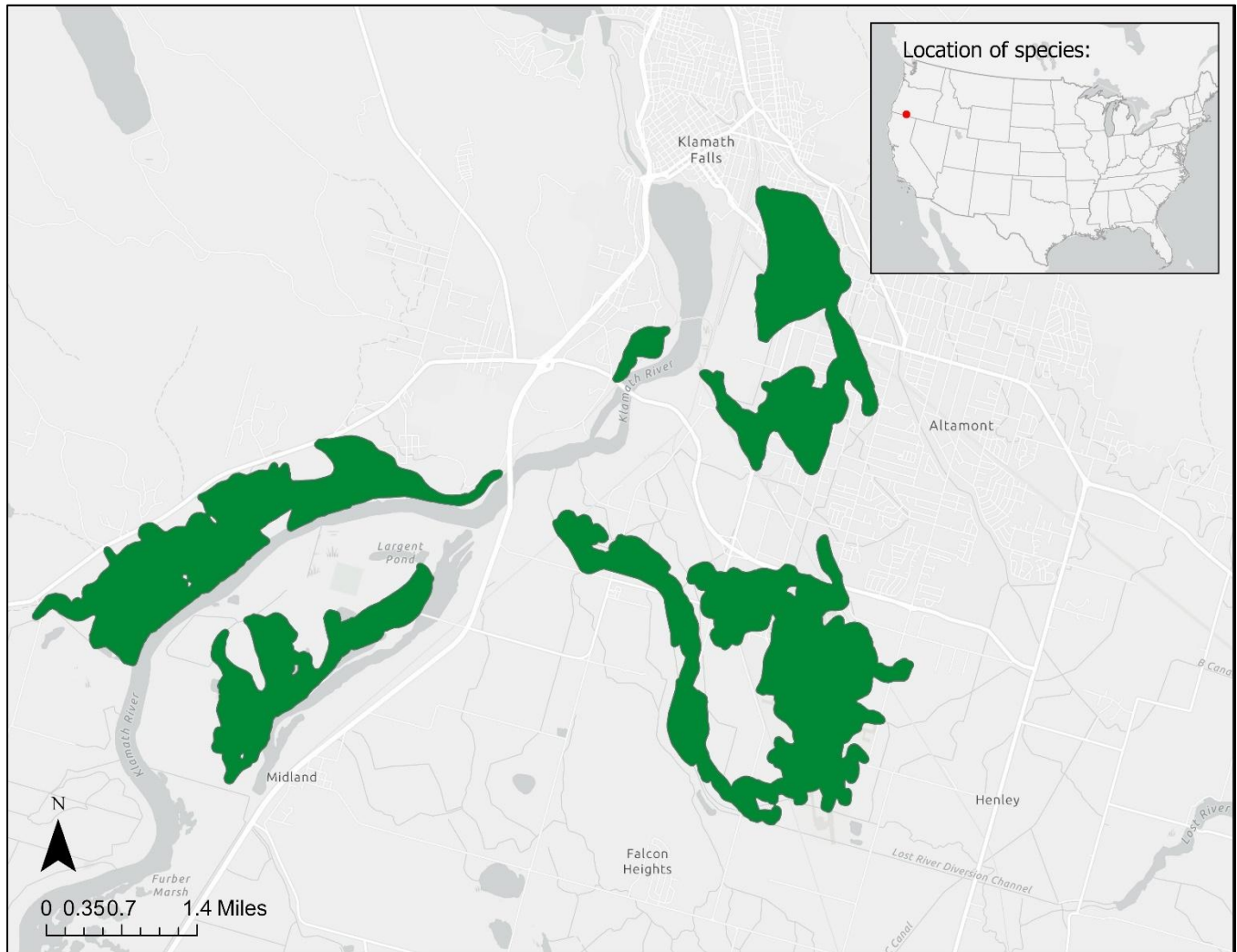


Figure 1. Interim core map for the Applegate's milk-vetch. The total acreage of the core map is approximately 5,501 acres.

Table 1. Percentage of Interim Core Map Represented by NLCD¹ Land Covers and Associated Example Pesticide Use Sites/Types.

Example pesticide use sites/types	NLCD Class/Value	% Area	Total area for landcover type
Forestry	Deciduous Forest (41)	0%	3%
Forestry	Evergreen Forest (42)	1%	3%
Forestry	Mixed Forest (43)	2%	3%
Agriculture	Pasture/Hay (81)	0%	1%
Agriculture	Cultivated Crops (82)	1%	1%
Mosquito adulticide, residential	Open space, developed (21)	10%	41%
Mosquito adulticide, residential	Developed, Low intensity (22)	11%	41%
Mosquito adulticide, residential	Developed, Medium intensity (23)	10%	41%
Mosquito adulticide, residential	Developed, High intensity (24)	10%	41%
Invasive species control	Woody Wetlands (90)	0%	56%
Invasive species control	Emergent Herbaceous Wetlands (95)	0%	56%
Invasive species control	Open water (11)	2%	56%
Invasive species control	Grassland/herbaceous (71)	10%	56%
Invasive species control	Scrub/shrub (52)	44%	56%
Invasive species control	Barren land (rock/sand/clay; 31)	0%	56%
Total Acres	Interim Core Map Acres	5,501 acres	

NLCD: National Land Cover Dataset

Evaluation of Known Location Information

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

- Descriptions of locations provided by FWS,
- Occurrence locations in iNaturalist;
- Occurrence locations in the Global Biodiversity Information facility (GBIF); and
- Occurrence locations in NatureServe.

EPA evaluated these four sets of data before selecting the type of and developing the core map. Occurrences in iNaturalist, GBIF, and NatureServe were consisted with the general locations discussed in FWS documentation.

Appendix 1 includes more information on the available known location information.

Approach Used to Create Core Map

EPA compiled available information for the Applegate’s milk-vetch from FWS, as well as observation information available from various publicly available sources (including iNaturalist, NatureServe, and GBIF). The information compiled for the Applegate’s milk-vetch is included in **Appendix 1**.

¹ Dewitz, J., 2023, National Land Cover Database (NLCD) 2021 Products: U.S. Geological Survey data release, <https://doi.org/10.5066/P9JZ7A03>

EPA used this information to identify the core map type, which is the species range as determined by FWS. The range has been recently updated and is highly refined, therefore, further refinements are not needed.

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

EPA did not explore other approaches in the development of this core map.

Appendix 1. Information Compiled for Species

1. Recent FWS Documents/Links

- [1998 Recovery Plan](#)
- [2019 Recovery Plan Amendment](#)
- [2019 5-year Review](#)
- [2024 5-year Review](#)

2. Background Information

- **Status:**

Listed as endangered on July 28, 1993

- **Taxonomy**

Kingdom:	Plantae – plantes, Planta, Vegetal, plants
Subkingdom:	Viridiplantae – green plants
Infrakingdom:	Streptophyta – land plants
Superdivision:	Embryophyta
Division:	Tracheophyta – vascular plants, tracheophytes
Subdivision:	Spermatophytina – spermatophytes, seed plants, phanérogames
Class:	Magnoliopsida
Superorder:	Rosanae
Order:	Fabales
Family	Fabaceae – peas, legumes
Genus	Astragalus L. – milkvetch, astragales, locoweed
Species	Astragalus applegatei M. Peck – Applegate's milkvetch, Applegate's milk-vetch

- **Resiliency, Redundancy, and Representation**

Not discussed explicitly in the FWS documents reviewed, but expected to be low due to the species limited distribution.

- **Life History**

- **Habitat**

FWS (2024) states that information provided during the 5 Year Review indicates that the Applegate's milk-vetch is present at 7 of the 8 previously known locations. These locations are named as Ewauna Flats, Collins Products, Milled Island Unit of the Klamath Wildlife Area, Crater Lake-Klamath Regional Airport, Washburn Railroad right-of-way, Mallard Lane, and the OC&E Woods Like State Trail. This species is endemic to the Lower Klamath Basin, in Klamath County, Oregon, about fifteen miles north of the Oregon-California border (FWS, 1998).

FWS (1998) states that the Applegate's milk-vetch is restricted to flat-lying, seasonally moist, strongly alkaline soils. Additionally, FWS (1998) states that although the current habitat includes introduced grasses and other weeds, it was historically characterized by sparse, native bunch grasses and patches of bare soil.

- **Biology**
The Applegate's milk-vetch is a taprooted, herbaceous, perennial plant (FWS, 1998). According to FWS (2009), the species is a slender, low-growing, vine-like herbaceous perennial in the Fabaceae (pea family). Plants have multiple sprawling stems 12 to 36 inches long and small white to light-pink to lavender flowers that are present from June to September.
- **Pollination**
Pollination is thought to be mediated by butterflies and polylectic bees, which have been seen visiting the species (FWS, 1998). The Melissa blue butterfly (*Plebejus melissa*) is a specific known pollinator (58 FR 40548). Significant seed production is also possible through self-fertilization, which is common for this genus (FWS, 1998).

- **Relevant Pesticide Use Sites**

Pesticide threats to the species were not discussed in the FWS documentation for this species. However, agricultural development is discussed as a threat.

- **Threats**

The main threat discussed in the FWS documentation is habitat destruction due to intensive agricultural and urban development in the Klamath River floodplain, which has resulted in severe depletion and fragmentation of the species' habitat (FWS, 1998). Because of this habitat modification, the Applegate's milk-vetch may be limited by competition from exotic weeds (FWS, 1998).

- **Recovery Criteria**

Recovery and downlisting criteria were updated with FWS (2019).

Downlisting criteria:

1. A minimum of four self-sustaining populations under protected management for the benefit of the species
2. For a site to be considered a self-sustaining population, a minimum of 2,200 reproductive plants need to be present over five consecutive years of monitoring.

Delisting criteria:

1. A minimum of four self-sustaining populations under protected management for the benefit of the species or six self-sustaining recovery populations under protected management for the benefit of the species.
2. For a site to be considered a self-sustaining population, a minimum of 2,200 reproductive plants need to be present over five consecutive years of monitoring.

3. **Species Range**

The species range was last updated on July 11, 2022, and is approximately 5,501 acres.

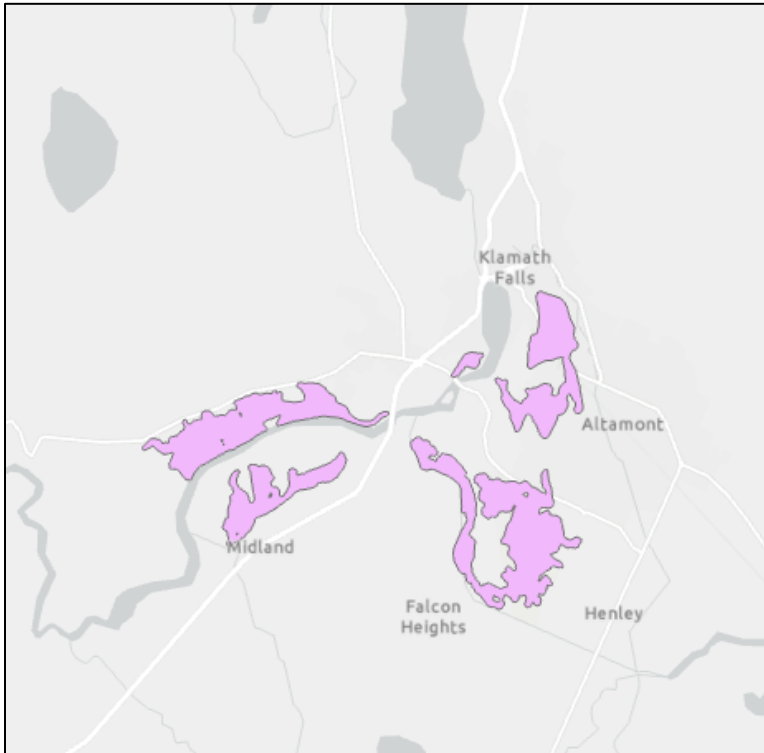


Figure 2. Species range, downloaded from ECOS.

4. Critical Habitat

FWS has not designated a critical habitat for this species.

5. Additional Known Locations

- [iNaturalist](#)
 - Searched on 8/8/2025
 - 4 research grade and verifiable observations made between June 2020 – July 2025

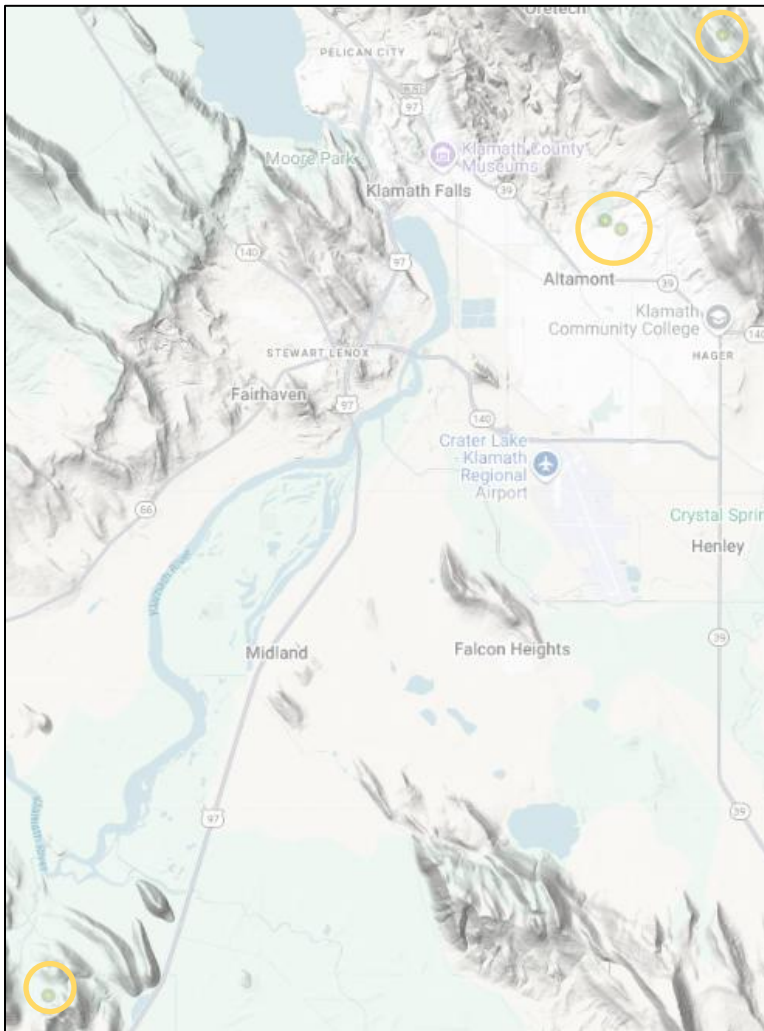


Figure 3. Screenshot of observations of the Applegate’s milk-vetch in iNaturalist. Yellow circles added for emphasis.

- [GBIF](#)
 - Searched on 8/8/2025
 - 13 observations made between 2020 –2025
 - 1 observation included coordinates



Figure 4. Screenshot of observation of the Applegate's milk-vetch in GBIF.

- [NatureServe](#)
 - Searched on 8/8/2025
 - 18 hexagons include observations

References

FWS, 1998. *Recovery Plan for the Applegate's Milk-vetch (Astragalus applegatei)*. April 10, 1998. U.S. Fish and Wildlife Service.

FWS, 2009. *Astragalus applegatei (Applegate's Milk-vetch) 5-Year Review: Summary and Evaluation*. January 2009. Klamath Falls Fish and Wildlife Office, U.S. Fish and Wildlife Service

FWS, 2019. *Recovery Plan Amendment for Applegate's milk-vetch*. October 4, 2019. Pacific Southwest Region, U.S. Fish and Wildlife Service.

FWS, 2024. *5-Year Review Applegate's milk vetch (Astragalus applegatei)*. August 30, 2024. U.S. Fish and Wildlife Service.