Interim Core Map Documentation for the Calistoga Allocarya

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

Species Summary

The Calistoga allocarya (*Plagiobothrys strictus*; Entity ID 593) is an endangered terrestrial plant (dicot). The U.S. Fish and Wildlife Service (FWS) has not designated a critical habitat for the Calistoga allocarya. This species inhabits pools and swales adjacent to and fed by hot springs and small geysers in grasslands between 90 and 160 meters (300 to 500 feet) in elevation. The extant populations occur on clay soils characterized by high concentrations of boron, arsenic, and sulfate. Pollination for this species is unknown. Currently, the Calistoga allocarya is known to have two extant occurrences in Calistoga, CA (Myrtledale Hot Springs and the former Calistoga glider airport location). Additional information on the species is provided in **Appendix 1**.

Description of Core Map

The core map for the Calistoga allocarya is based on biological information. The outer extent of this core map is defined by the property borders of the two properties in Calistoga, CA, where there are known extant occurrences (Myrtledale Hot Springs and the former Calistoga Glider Airport location). However, both private properties have since changed ownership. Myrtledale Hot Springs is now Duffy's Napa Valley Rehab and the Calistoga Glider Airport is owned by the City of Calistoga with no known land use (as of April 2025).

Figure 1 depicts the resulting interim core map for the Calistoga allocarya. The size of this core map is approximately 67 acres. Landcover categories within the core map area are included in **Table 1.** Landcover is predominantly grassland/herbaceous.

The core map developed for the Calistoga allocarya is considered interim. This core map will be used to develop pesticide use limitation areas (PULAs) that include the Calistoga allocarya. 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 species expert feedback from FWS. This interim core map has a "moderate" best professional judgment classification to describe major uncertainties/limitations. The map is based entirely on property descriptions made by FWS where, at the time of listing, this species is known to have extant populations. EPA had to manually create the boundaries based on FWS' outdated property descriptions but was then verified to be consistent with locations of known hot springs. This core map does not replace or revise any range or designated critical habitat developed by FWS for this species.

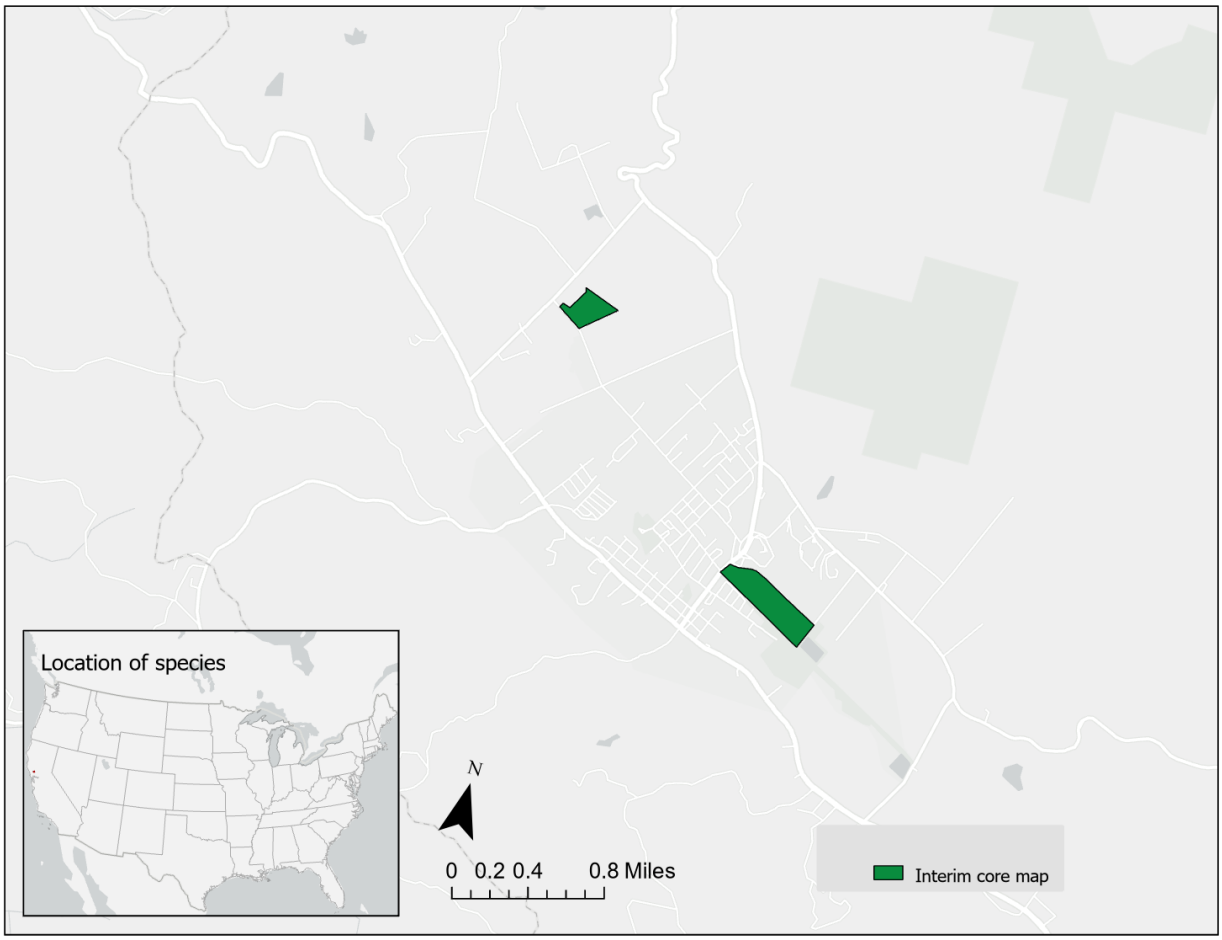

Figure 1. Interim core map for the Calistoga allocarya. The total acreage of the interim core map is approximately 67 acres.

Table 1. Percentage of Interim Core Map Represented by 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	% of core map represented by example pesticide use
Forestry	Deciduous Forest (41)	0	0
Forestry	Evergreen Forest (42)	0	0
Forestry	Mixed Forest (43)	0	0

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

Example pesticide use sites/types	NLCD Landcover (Value)	% of core map represented by landcover	% of core map represented by example pesticide use
Agriculture	Pasture/Hay (81)	0	1
Agriculture	Cultivated Crops (82)	1	1
Mosquito adulticide, residential	Open space, developed (21)	4	18
Mosquito adulticide, residential	Developed, Low intensity (22)	4	18
Mosquito adulticide, residential	Developed, Medium intensity (23)	4	18
Mosquito adulticide, residential	Developed, High intensity (24)	6	18
Invasive species control	Woody Wetlands (90)	0	81
Invasive species control	Emergent Herbaceous Wetlands (95)	0	81
Invasive species control	Open water (11)	0	81
Invasive species control	Grassland/herbaceous (71)	81	81
Invasive species control	Scrub/shrub (52)	0	81
Invasive species control	Barren land (rock/sand/clay; 31)	0	81
Total Acres	**Interim Core Map Acres**	**~67**	

Evaluation of Known Location Information

There are four datasets with known location information:

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

EPA evaluated these four sets of data before selecting the type of and developing the core map. FWS appeared to have the finest resolution of the location information, providing names of locations within Calistoga, CA. Occurrences in iNaturalist, GBIF, and NatureServe did not support expanding the core map outside of these three watersheds. **Appendix 1** includes more information on the available known location information.

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"). EPA developed the core map 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; and
4. Document the core map.

For step 1, EPA compiled available information for the Calistoga allocarya from FWS, as well as observation information available from various publicly available sources (including iNaturalist, NatureServe, and GBIF). The information compiled for the Calistoga allocarya is included in **Appendix 1**. Influential information that impacted the development of the core map included:

- There are only two known extant occurrences of the Calistoga allocarya, both occurring in Calistoga, CA (Myrtledale Hot Springs and the former Calistoga glider airport location); and
- There is no designated critical habitat for the species.

For step 2, EPA used the compiled information to identify the core map type including species range and known location information. The extant populations are in Calistoga, CA, within the species' range. Therefore, EPA based the core map on the known extant occurrences identified for FWS. The entire range of the species was not used as the core map because the range contains areas where the species does not occur.

For step 3, EPA used the best available data sources to generate the core map. Data sources are discussed in the process document. For this core map, EPA used the known extant occurrences identified by FWS (Myrtledale Hot Springs and the former Calistoga glider airport location). **Appendix 2** provides more details on the GIS analysis and data used to generate the core map.

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

EPA explored using the range for the core map, however the range from FWS included areas where the species was not known to exist. Furthermore, FWS identified two locations where there were known extant occurrences of the species.

[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 the Calistoga allocarya During Step 1

1. **Recent FWS documents/links and other data sources**
   - Five Year Review (2023) (https://ecosphere-documents-production-public.s3.amazonaws.com/sams/public_docs/species_nonpublish/5589.pdf)
   - Five Year Review (2010) (https://ecosphere-documents-production-public.s3.amazonaws.com/sams/public_docs/species_nonpublish/1548.pdf)

2. **Background information**
   - **Status**: Federally listed as endangered in 1997
   - **Resiliency, redundancy, and representation** (the 3Rs)
     - NA
   - **Habitat (2025 Five Year Review)**
     - "species inhabits pools and swales adjacent to and fed by hot springs and small geysers in grasslands between 90 and 160 meters (300 to 500 feet) in elevation. The extant populations occur on clay soils characterized by high concentrations of boron, arsenic, and sulfate (California Department of Fish and Wildlife [Department] 2005, p. 287)"
   - **Pollinator/reproduction**
     - No information provided in FWS 5-Year Reviews
   - **Taxonomy**
     - Terrestrial Plant (dicot)
   - **Relevant Pesticide Use Sites**
     - No information provided in FWS Five Year Reviews
   - **Recovery Criteria/Objectives (2023 Five Year Review)**
     - Currently no recovery plan
   - **Recovery Actions**
     - Recommended actions from 2023 five Year Review:
       - "Partner with private landowners, the California Department of Fish and Wildlife, the City of Calistoga, and the California Native Plant Society to ensure protection of all known populations of Calistoga allocarya and Napa bluegrass."
       - "Work with the California Department of Fish and Wildlife, the City of Calistoga, and the California Native Plant Society to ameliorate or eliminate any threats to Calistoga allocarya and Napa bluegrass from hydrological changes and competition from invasive plants."
       - "Collect seeds from both populations of both species and store them in Center for Plant Conservation certified botanic gardens to guard against extirpation from chance catastrophic events."
       - "Follow policy CON-17 and associated conservation measures as stated in the Napa County General Plan to "Preserve and protect native grasslands, serpentine grasslands, mixed serpentine chaparral, and other sensitive biotic communities and habitats of limited

distribution" (Napa County Department of Conservation, Development, and Planning 2009, p. CON-28)."

- "Follow policies P1.1-3 and P1.1-4 and associated actions as stated in the Open Space and Conservation Element (Updated 2012) of the City of Calistoga General Plan to continue "efforts to identify and map biological resources on the gliderport property [airport property], which provides an important and unique habitat area within the city limits" and "explore the possibility of designating parcels as Natural Resource Preservation Areas in areas of the city known to contain sensitive and unique species, in order to protect these resources" (City of Calistoga 2012, p. OSC-23)."
- "Conduct a population assessment for each species and continue monitoring annually."

3. Description of Species Range

- Figure A1-1 depicts the FWS range. The range was last updated on June 10, 2021. The total acreage of the range is around 6,020 acres.

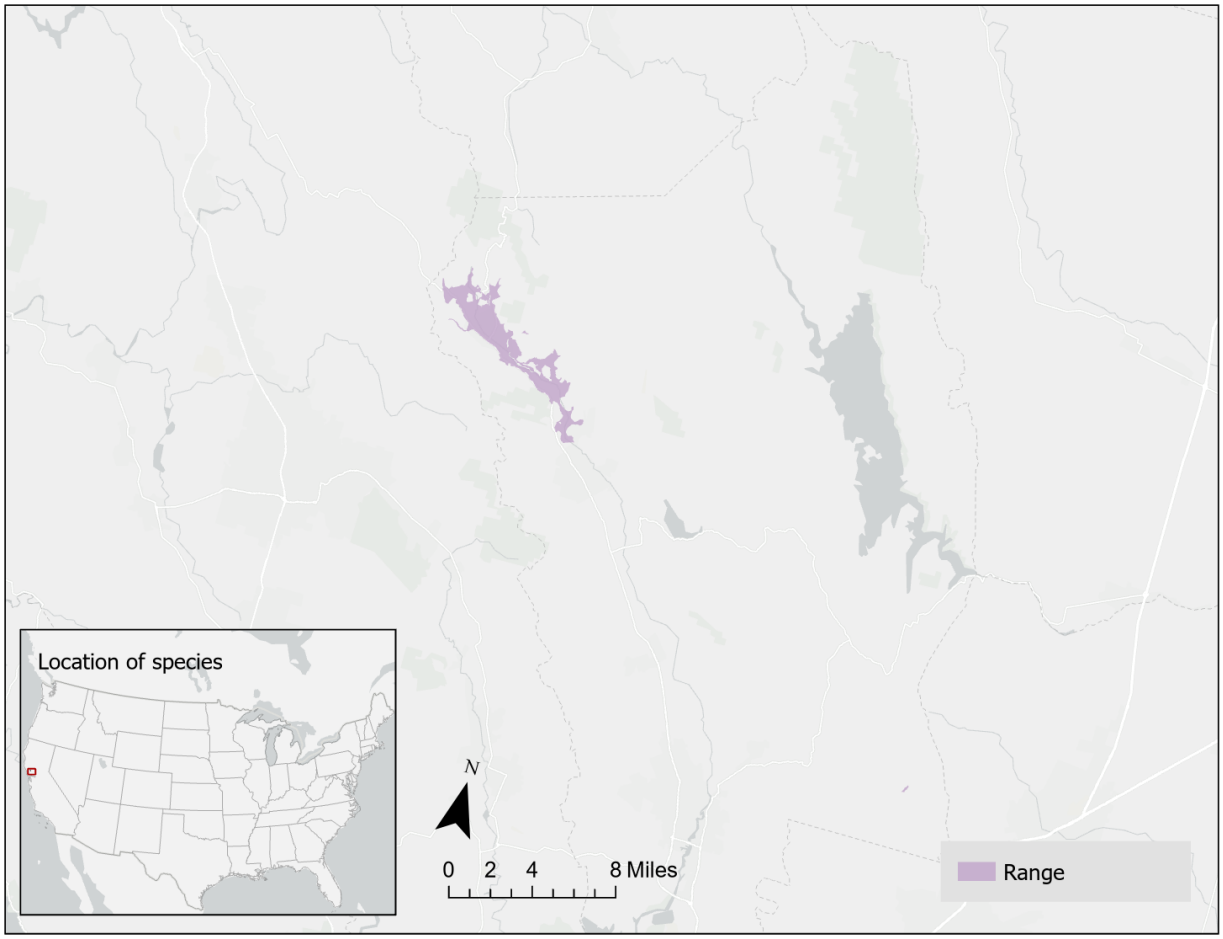

Figure A1-1. FWS range for the Calistoga allocarya. The total acreage of the range is around 6,020 acres.

4. **Critical Habitat**
   - FWS has not designated a critical habitat for this species.(https://ecos.fws.gov/ecp/species/6161)

5. **Known Locations**
   - Known Locations Described in FWS Recovery Documents
     - Currently found in two locations in Calistoga, CA (Myrtledale Hot Springs and the former Calistoga glider airport location)

   - **Occurrences Included in Public Databases**
     - EPA queried iNaturalist, GBIF, and NatureServe. Occurrences in NatureServe were also consistent with other occurrence data (linked here). Collectively, the occurrence data are consistent with the three watersheds used to identify the core map.

     - iNaturalist (available here) had one research grade observations for this species.

- GBIF (available here) included three human observations. Of the three observations, one is also included in iNaturalist and the other two are also included in NatureServe. The one location with coordinates was the observation also included in iNaturalist. The observation is south of Calistoga outside the known extant occurrences of the species. However, GBIF noted the observation as having a coordinate uncertainty of 28240 meters (~17.5 miles). Thus, the observation was not included in the core map as the exact location could not be determined.

- Occurrences in NatureServe were consistent with other occurrence data (linked here).

Appendix 2. GIS Data Review and Method to Develop Core Map (Step 3)

This core map was created based on biological information, including known extant locations.

1. **Dataset References and Software**

- NLCD 2019
- Software used: ArcGIS Pro 3.2
- FWS Species Range – last updated on 1/27/2018
- https://app.regrid.com/us/ca#t=property

2. **Datasets Used in Core Map Development**
   Datasets i. through iii. are described in EPA's process document. The "regrid" website (iv.) was used to verify property boundaries. The "yelp" website (v.) was used to verify address of the old Myrtledale Hot Springs. The "experience.arcgis" website (vi.) was used to verify that there is a known hotspring in the area. The "airfields-freeman" website (vii.) was used to verify the coordinates of the old Calistoga Gliderport.

3. **Core Map Development**

- EPA started with the range identified by FWS.
- This species only has two known extant populations, both located in Calistoga, CA (Myrtledale Hot Springs and the former Calistoga glider airport location). EPA searched for these locations and then crossed referenced the identified locations with the county property lines (https://app.regrid.com/us/ca#t=property) to create the interim core map.