# Interim Core Map Documentation for the Steamboat Buckwheat

**Version 1**

**Review Completed:** April 2026

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

## Species Summary

The Steamboat buckwheat (*Eriogonum ovalifolium var. Williamsiae;* Entity ID 1026) is an endangered terrestrial plant (dicot). This species is only found in Washoe County, Nevada, and is endemic to substrates derived from hot springs deposits in the Steamboat Hills. The Steamboat buckwheat is gynodioecious and pollinated by insects. There is no designated critical habitat for this species. Additional information is provided in **Appendix 1**.

## Description of Core Map

The core map for the Steamboat buckwheat is based on species range. The species range is refined and represents areas important for this species' conservation. There is no designated critical habitat. **Figure 1** depicts the interim core map for the Steamboat buckwheat. The core map represents approximately 460 acres spread out along the Steamboat Hills.

The Steamboat buckwheat is found only in Washoe County, Nevada, and is endemic to substrates derived from hot springs deposits in the Steamboat Hills. Landcover categories within the core map area are included in **Table 1.** Landcover is predominantly shrub/scrub which are generally consistent with the habitat of this species.

The core map developed for the Steamboat buckwheat is considered interim. This core map will be used to develop pesticide use limitation areas (PULAs) that include the Steamboat buckwheat. This core map incorporates information developed by the U.S. Fish and Wildlife Service (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.

This core map does not replace or revise any range or designated critical habitat developed by FWS for this species.

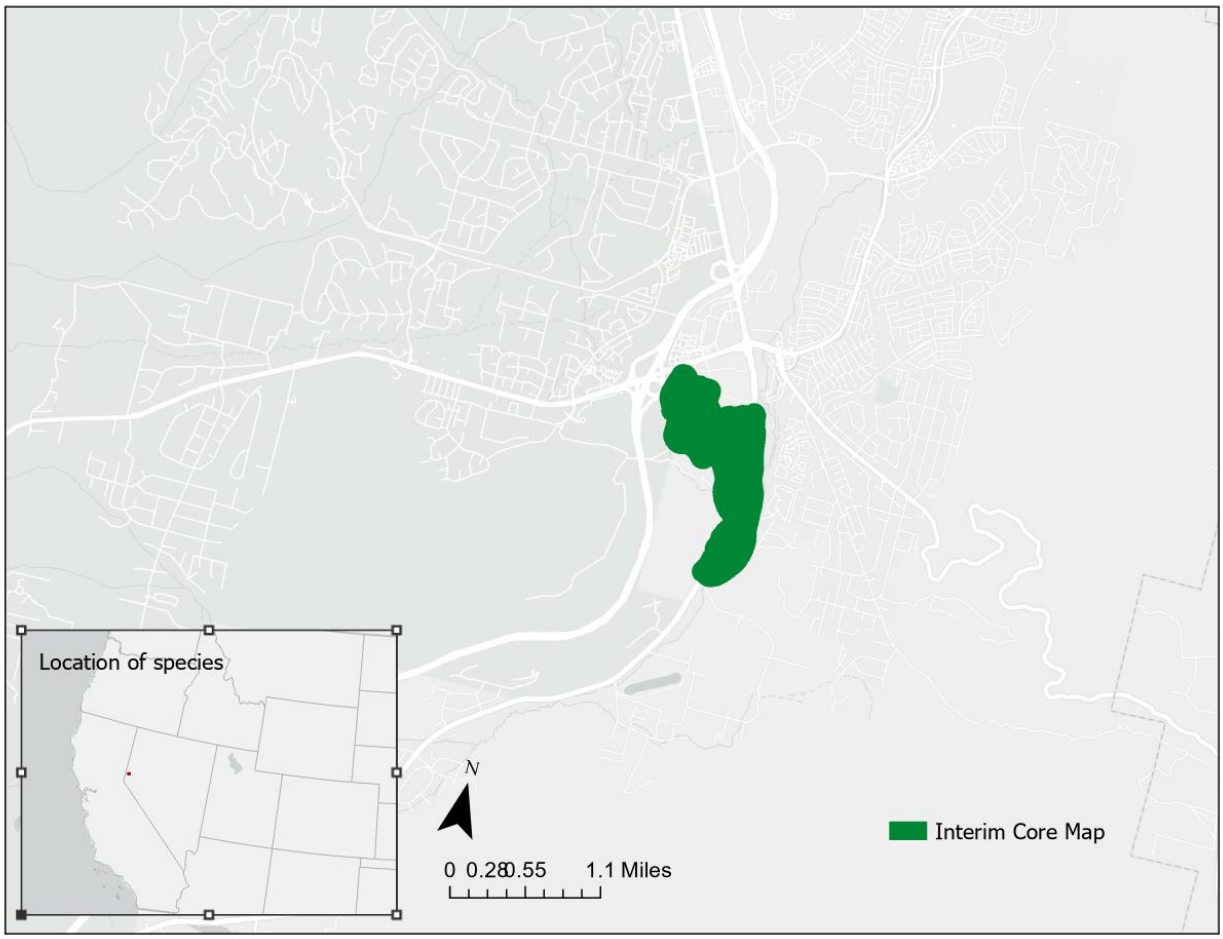


**Figure 1. Interim core map for the Steamboat buckwheat. The total acreage of the interim core map is approximately 460 acres.**

**Table 1. Percentage of Interim Core Map Represented by National Land Cover Database (NLCD) 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) | 0% |
| Forestry | Evergreen Forest (42) | 0% |
| Forestry | Mixed Forest (43) | 0% |
| Agriculture | Pasture/Hay (81) | 0% |
| Agriculture | Cultivated Crops (82) | 0% |
| Mosquito adulticide, residential | Developed Open Space (21) | 3% |
| Mosquito adulticide, residential | Developed Low Intensity (22) | 12% |
| Mosquito adulticide, residential | Developed Medium Intensity (23) | 9% |
| Mosquito adulticide, residential | Developed High Intensity (24) | 3% |
| Invasive species control | Woody Wetlands (90) | 0% |

| Example pesticide use sites/types | NLCD Landcover (Value) | % of core map represented by landcover |
|---|---|---|
| Mosquito adulticide, residential | Emergent Herbaceous Wetlands (95) | 0% |
| Mosquito adulticide, residential | Open Water (11) | 0% |
| Mosquito adulticide, residential | Grassland/Herbaceous (71) | 0% |
| Mosquito adulticide, residential | Shrub/Scrub (52) | 64% |
| Mosquito adulticide, residential | Barren Land (31) | 10% |
| **Total Acres** | **Interim Core Map Acres** | **~460** |

## 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 Global Biodiversity Information Facility (GBIF)
- Occurrence locations included in NatureServe

EPA evaluated these sets of data to inform or support the core map. FWS provided the most refined descriptions of the occurrence information and confirmed that all known locations of extant populations are located within the range. **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" (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 Steamboat buckwheat from FWS, as well as observation information available from various publicly available sources. The information compiled for the Steamboat buckwheat is included in **Appendix 1**. Influential information that impacted the development of the core map included:

- The Steamboat buckwheat is found only in Washoe County, Nevada, and is endemic to substrates derived from hot springs deposits in the Steamboat Hills.
- The species range is highly refined and follows the Steamboat Hills closely.
- Occurrence data from other sources are generally 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 Steamboat buckwheat.

## 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.

# Appendix 1. Information Compiled for Species

**Recent FWS Documents**

- Five Year Review (2022) https://ecosphere-documents-production-public.s3.amazonaws.com/sams/public_docs/species_nonpublish/3930.pdf
- Five Year Review (2009) https://ecosphere-documents-production-public.s3.amazonaws.com/sams/public_docs/species_nonpublish/1342.pdf
- Recovery Plan Amendment (2019) https://ecos.fws.gov/docs/recovery_plan/Recovery%20Plan%20Amendment_EROVW.pdf
- Recovery Plan (1995) https://ecos.fws.gov/docs/recovery_plan/950920b.pdf

**Background Information on Species**

- **Status:** Federally listed as endangered in 1986.
- **Taxonomy:** Terrestrial Plant
- **Habitat**
  - "*Eriogonum ovalifolium var. williamsiae* is restricted to shallow to moderately deep, siliceous hot springs deposits known as sinter (CH2M Hill 1986). The extensive deposits of opal and chalcedony sinter in the Steamboat Hills originated from the discharge of hot-spring waters and thermal ground water saturated with amorphous silica. Plants grow in areas distant from actively flowing springs and do not tolerate moist soils, thus moisture available for uptake by the species is thought to be derived from precipitation rather than spring sources (CH2M Hill 1986). *Eriogonum ovalifolium var. williamsiae* habitat is relatively low-density and non-diverse with respect to other plants species." (Recovery Plan, 1995)
- **Reproduction and Pollination**
  1. "Gynodioecious taxa contain two types of plants; plants either have all female flowers (i.e., nectar-producing and potentially seed-producing) or are hermaphroditic (with both male [pollen-producing] and female flowers on the same plant). Research has shown that Eriogonum ovalifolium var. williamsiae is gynodioecious, with roughly half the population in either category." (Recovery Plan, 1995)
  2. "Over 50 species of insects were recorded visiting the flowers of Eriogonum ovalifolium var. williamsiae for nectar and pollen. Flower visitors may or may not be pollinators. Bees and flies were especially common, all of which may be pollinators of the small, easily accessed flowers. Only 12 species were judged abundant enough to be consistent pollinators. Insects were more common on hermaphroditic than on female flowers, perhaps because the former supply both pollen and nectar and the latter nectar only, and more abundant on the flowers in mid-morning than in the later afternoon (Tepedino et al. 2000, FWS 2009)." (Recovery Plan, 1995)
- **Relevant Pesticide Use Sites**
  Pesticides are not listed as a stressor.
- **Resiliency, Redundancy and Representation**
  No information available on the 3Rs.

- **Delisting Recovery Criteria**
    - "Threats are reduced or eliminated so that the species is capable of persisting without substantial human intervention or perpetual endowments are secured for management necessary to maintain the continued existence of the species. Outstanding management needs include: a) implementing the monitoring protocol, b) updating and renewing the Steamboat buckwheat Management Plan (Knight 1997), c) controlling competition with nonnative weeds, and d) exploring potential methods of restoration of geothermal processes that maintain and create habitat.
    - All size classes are represented, the population is increasing or stable, and management objectives identified in the monitoring protocol are achieved (Pavlik 2002, Pavlik and Stanton 2003). Monitoring objectives were developed to detect and document 1) trends in the numbers of *Eriogonum ovalifolium var. williamsiae* plants in characteristic habitats, 2) the frequency and contribution of episodic reproduction to population stability, and 3) successional changes in common species that comprise the plant community of Steamboat Hills. Monitoring objectives are as follows:
        - *Eriogonum ovalifolium var. williamsiae* in the Main Terrace and Central Drainage habitats are within ± 15% of their 2003 baseline levels after five and ten consecutive years of monitoring with a 95% level of confidence.
        - *Eriogonum ovalifolium var. williamsiae* in the Main Terrace and Central Drainage habitats each produce a significant cohort of seedlings (20% of the mean density in a given subpopulation in a given year is contributed by "seedlings") at least once during five consecutive years of monitoring (or twice in ten years) with a 95% level of confidence.
        - Total live absolute cover by subpopulations of common shrubs [e.g. Artemisia tridentata (sagebrush), *Atriplex confertifoli*a (shadscale), *Chrysothamnus nauseosus* (rabbitbrush), *Purshia tridentata* (bitterbrush)], perennial grasses [e.g. Poa secunda (bluegrass), *Leymus cinereus* (Great Basin wildrye)], and weeds [e.g. Bromus tectorum (cheatgrass)], as well as *E. ovalifolium var. williamsiae* are within ± 15% of their 2003 baseline levels after five and ten consecutive years of monitoring with a 95% level of confidence.
    - The *ex situ* seedbank is maintained through the collection of fresh seed from *Eriogonum ovalifolium var. williamsiae* plants every 10 years. Collections that are spread over time produce lower extinction risk to wild populations, while maintaining a species' genetic variation within an *ex situ* seedbank (Menges et al. 2004). The *ex situ* seedbank is currently maintained with Center for Plant Conservation-affiliated botanic garden, the Rae Selling Berry Seed Bank and Plant Conservation Program at Portland State University (formally the Berry Botanic Garden). Currently, the *ex situ* seedbank holds approximately 23,000 viable seeds from collections made from 1992-1995 in long-term 6 storage (i.e. freezer). In 1999, a germination trial on a sample of these seeds found greater than 70% germination (E. Guerrant, Rae Selling Berry Seed Bank, pers. comm. 2018a, E. Guerrant, unpubl. data, 2018b)." (Recovery Plan Amendment, 2019)

**Description of Species Range**

- "Eriogonum ovalifolium var. williamsiae is found only in Washoe County, Nevada and is endemic to substrates derived from hot springs deposits in the Steamboat Hills, located approximately 10 miles (mi) (15 kilometers (km)) south of Reno." (Five Year Review, 2009)
- **Figure A1-1** depicts the FWS range. The range was last updated on 10/26/2022. The total acreage of the range is around 460 acres.

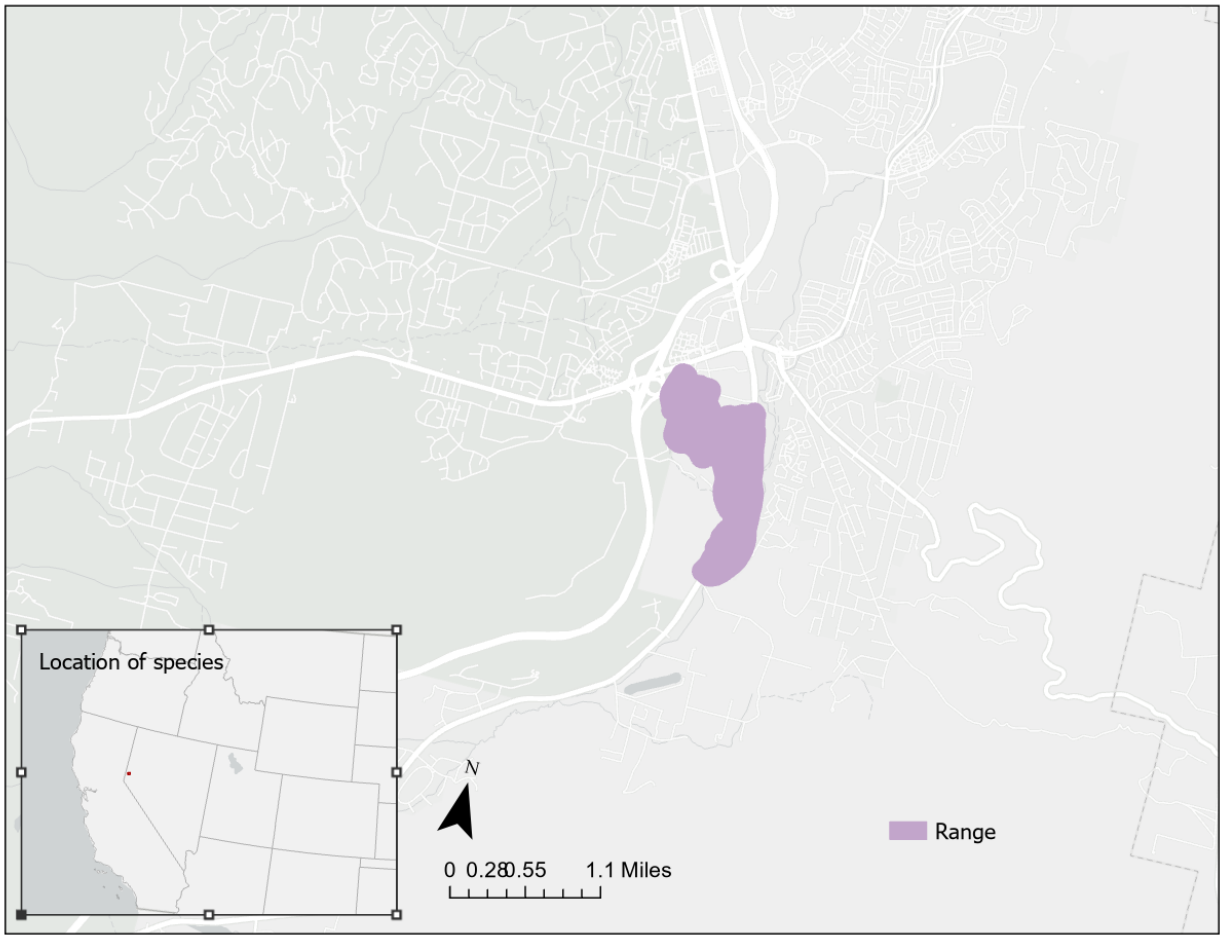


**Figure A1-1. FWS range for the Steamboat buckwheat. The total acreage of the range is approximately 460 acres.**

**Critical Habitat**

- FWS has not designated a critical habitat for this species.

**Known Locations**

- **Known locations Described in FWS Documents**
  - "[The] Steamboat buckwheat is restricted to substrates derived from hot springs deposits in the Steamboat Hills. At the time it was listed as an endangered species in 1986, the Steamboat buckwheat was thought to consist of a single population of seven colonies, all located within an area of approximately 40 ha (100 ac) (Williams 1982; 51 Federal Register 24669). In an effort to better define its distribution, the Steamboat buckwheat was subsequently mapped (CH2M Hill 1986). The information derived from

this effort suggests that all known habitat and potential habitat of the buckwheat were restricted to an area of approximately 150 ha (375 ac) in 1986. Within that area, approximately 20 ha (50 ac) were actually occupied by Steamboat buckwheat plants (BLM 1993). More recent and definitive information on extent and distribution are lacking but will be needed to advance recovery of the taxon." (Recovery Plan, 1995)

- "The overall distribution of the Steamboat buckwheat has changed little since the time of listing in 1986 (Figure 1). A geothermal facility constructed in one portion of the site eliminated about 0.15 ac (0.06 ha) of occupied habitat. In 1992, prior to the construction of the facility, 17,000 plants were removed from the impact area and transplanted to other areas, with an estimated overall survival rate of 40 percent (Knight 1996). These mitigation areas were visited in June 2006, during a Service overall survey of the distribution of the species (Caicco 2006). Thousands of plants were present in these areas, although it was not possible to tell whether any of them had persisted after transplanting or were descendants of the original transplants. On sites where plants were transplanted to revegetate into two-track dirt roads, plants now exist within larger colonies and do not differ obviously from their (presumably) naturally-occurring neighbors other than by the faint tracks that persist from the old road." (Five Year Review, 2009)

- **Occurrences Included in Public Databases**
  EPA queried iNaturalist, GBIF, and NatureServe. Collectively, the occurrence data are consistent with the interim core map.
  - iNaturalist (available here) had 34 research grade observations for this species from 2016-2025.
  - GBIF (available here) included 32 occurrences and human observations from 2006 to 2025.
  - Occurrences in NatureServe were consistent with other occurrence data (linked here).