

Interim Core Map Documentation for the Carson Wandering Skipper (*Pseudocopaeodes eunus obscurus*, Entity ID 462)

Version 1

Review Completed: April 2026

Core Map Developer: Corteva AGriscience, LLC.

Review Notes

The developers created this core map using the U.S. Environmental Protection Agency's (EPA) process available at: <https://www.epa.gov/endangered-species/process-epa-uses-develop-core-maps-pesticide-use-limitation-areas>. EPA reviewed the draft interim map and documentation and evaluated if: (1) the map and documentation are consistent with the agency's process; (2) areas included or excluded from the interim core map are consistent with the biology, habitat, and/or recovery needs of the species; (3) data sources are documented and appropriate; and (4) the Geographic Information System (GIS) data and mapping process are consistent with the stated intention of the developer. EPA agrees that this map is a reasonable depiction of core areas for this species based on the available data and was consistent with the agency's mapping process. This documentation was not prepared by EPA, and EPA may have edited this documentation for clarity or other purposes. Some views in this documentation may not necessarily be the views of EPA or its staff.

The core map developed for this species is considered interim and can be used to develop pesticide use limitation areas (PULAs). 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 core map does not replace or revise any range or designated critical habitat developed by FWS.

Species Summary

- **Location:** The Carson wandering skipper is found in a small region east of the Sierra Nevada in northwestern Nevada and northeastern California.
- **Critical habitat designated:** No
- **Habitat preferences:** The Carson wandering skipper is a small butterfly found in lowland grassland habitats on alkaline substrates. These areas are characterized by having an elevation of less than 1524 m (5000 ft) elevation and presence of saltgrass (*Distichlis spicata*), nectar sources in open areas near springs or other water sources, and a possible association with geothermal activity.
- **Diet information:** The Carson wandering skipper is dependent on desert saltgrass (*Distichlis spicata*) to complete its life cycle. Eggs are laid on saltgrass leaves. Native mustard (*Thelypodium*

crispum), racemose golden-weed (*Pyrrcoma racemosus*), bird's-foot trefoil (*Lotus corniculatus*), fiddleleaf hawksbeard (*Crepis runcinata*), western sea purslane (*Sesuvium verrucosum*), cinquefoil (*Potentilla* sp.), salt heliotrope (*Heliotropium curassavicum*), *Cleomella parviflora*, and others are known nectar sources

- **Dispersal:** Skippers find and occupy small habitat patches up to a few kilometers from major ones but are very often absent from small or recently created habitats five kilometers or more from good habitats or even over shorter distances separated by highly unsuitable habitats.
- **Timing considerations:** Females lay eggs in June and July on desert saltgrass (*Distichlis spicata*), the larval host plant. Succulent, green desert saltgrass leaves are required from March through June to complete their life cycle. Pupae emerge as adults in May or June and the adult life stage lasts 1-2 weeks. A single brood is produced during the June to mid-July flight season.
- **Notable relevant pesticide use sites:** Alfalfa fields are located adjacent to the Warm Springs Valley site. Cattle and horse grazing are threats at other sites.

Evaluation of Known Location Information

Two extant populations were known at the time of listing, one in Washoe County, NV and one in Lassen County, CA. During the 2012 five-year review period, there were four known extant populations, two in Washoe County (Warm Springs Valley and Spanish Springs Valley), one in Douglas County, NV (Carson River), and one in Lassen County (Honey Lake). Updated locations were summarized in the 2022 five-year review. The Spanish Springs Valley sites was assumed extirpated as of 2016.

The Warm Springs Valley site is located about 37 km (23 mi) north of Reno, NV. It includes Bureau of Land Management (BLM) land. The Carson River site (Douglas County) is located along the Carson River on BLM land about 3.2 km (2 mi) south of Carson City. Additional suitable habitat is said to exist on City of Incline Village land and Northern Nevada Correctional Center land. However, the City of Incline Village is not located in this area or in Douglas or Carson City Counties. Therefore, we assume that the documentation was incorrect, and the City of Indian Hills was intended.

The Lassen County population is located at Honey Lake, approximately 56 km (35 mi) southeast of Susanville, CA. It is a shallow, ephemeral lake about 25,090 ha in size (FWS, 2012).

Approach Used to Create Core Map

The core map for the Carson wandering skipper is biological information type based on known locations. This decision was driven by:

- No designated critical habitat for the species
- Only three known locations exist where the species is currently present
- The three known locations are described well enough to generate a representative map

The generalized GIS steps for the Carson wandering skipper included:

- Obtaining the range data
- Reviewing the area descriptions
- Obtaining the relevant data for each area
 - Honey Lake Valley – Lake polygon from National Hydrography Dataset (NHD)¹
 - Warm Springs Valley – Protected areas from Protected Areas Database US 4.0 (PADUS)² because it contains the BLM conservation area
 - Carson River – City limits, county boundaries and relevant protected areas from PADUS.
- Buffer selected features
 - Buffer Honey Lake
 - Buffer the Carson City limits
- Clip features to range
 - Clip the 5-km zone around Honey Lake to the range
 - Clip the 5-km zone around Carson City to limit the range and erase features outside Douglas County
- Merge the three areas into a core map

Description of Core Map

The core map for the Carson wandering skipper is biological information type based on known locations and covers 175,728 acres. Known locations include three areas within the range:

- Carson River site, which is based on a 5-km buffer south of city limits of Carson City and is bordered by an easement to the west and extended to state land in the north
- Warm Springs Valley site is defined by BLM's Carson Wandering Skipper Area of Critical Environmental Concern³
- Honey Lake Valley site is defined as an area with a 5-km buffer around Honey Lake within the range of the species

To generate the core map for the Carson wandering skipper (Figure 1), FWS location descriptions were used and amended by county boundaries, NHD data for relevant hydrological features (Honey Lake, Carson River), the Protected Area Database (Easements, Conservation Areas), and NatureServe species descriptions.

¹ <https://www.usgs.gov/national-hydrography/national-hydrography-dataset>

² <https://www.sciencebase.gov/catalog/item/65294599d34e44db0e2ed7cf>

³ Bureau of Land Management (BLM), Carson City District, Nevada, 2013. Areas of Critical Environmental Concern Report on the Application of the Relevance and Importance Criteria. Available from https://eplanning.blm.gov/public_projects/lup/22652/42662/45450/ACEC-Report_CCDO_final_Mar2013.pdf

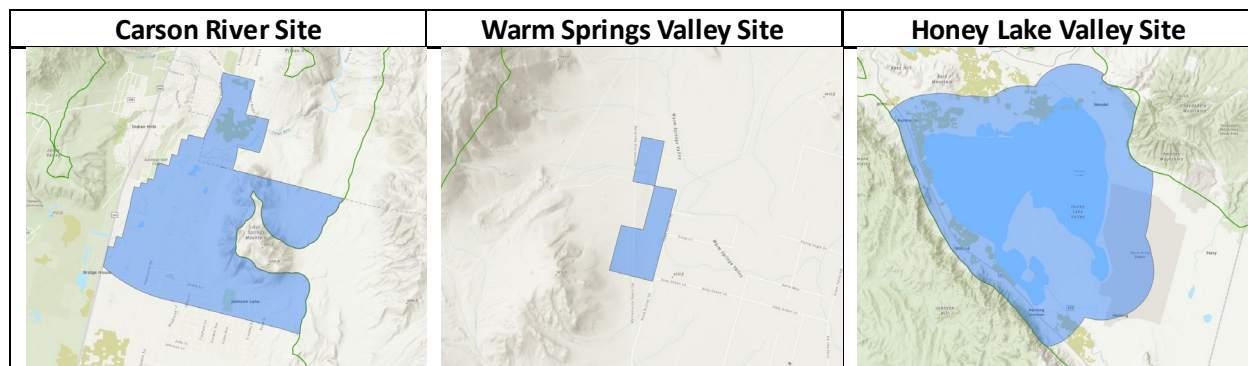


Figure 1. Interim core map for the Carson wandering skipper.

Land Use Assessment

Using the CDL 2024 dataset, an overlap assessment was conducted to determine the acres and overall percent overlap of agricultural crops with the developed core map. The results are presented in Table 1. The three sites are dominated by shrubland, and the Carson River and Honey Lake Valley sites have over 1,000 and 770 ac, respectively, of developed/open space developed lands. This initial overlap analysis shows that at the core map level the total percent overlap with agricultural crops is 4.15%.

Table 1. Land use assessment using 2024 Cropland Data Layer within the Carson wandering skipper core map

CDL 2024 Class	Carson River	Honey Lake Valley	Warm Springs	Core Map
ALFALFA*	97.2	4,013.7	0.0	4,110.9
APPLES*	0.6	74.8	0.0	75.4
BARLEY*	0.0	211.3	0.0	211.3
BARREN	16.5	13,032.0	0.4	13,049.0
DECIDUOUS_FOREST	0.0	3.9	0.0	3.9
DEVELOPED_HIGH_INTENSITY	26.8	108.1	0.0	134.9
DEVELOPED_LOW_INTENSITY	566.3	470.6	0.8	1,037.7
DEVELOPED_MED_INTENSITY	341.3	130.7	0.0	471.9
DEVELOPED_OPEN_SPACE	148.0	63.3	0.0	211.4
EVERGREEN_FOREST	116.3	545.3	0.0	661.6
FALLOW_IDLE_CROPLAND	0.0	35.3	0.0	35.3
GARLIC*	0.4	0.0	0.0	0.4
GRAPES*	0.2	0.0	0.0	0.2
GRASSLAND_PASTURE	191.2	21,440.5	18.9	21,650.5
HERBACEOUS_WETLANDS	173.8	4,276.2	0.0	4,450.0
OPEN_WATER	77.8	55.6	0.0	133.3

CDL 2024 Class	Carson River	Honey Lake Valley	Warm Springs	Core Map
OTHER_CROPS*	13.6	302.0	0.3	315.9
OTHER_HAY_NON_ALFALFA*	16.1	1,219.2	0.0	1,235.3
RYE*	1.3	316.5	0.1	317.9
SAFFLOWER*	0.0	26.3	0.0	26.3
SHRUBLAND	6,805.8	118,591.2	305.2	125,702.2
SOYBEANS*	0.0	183.6	0.1	183.7
SWEET_CORN	0.0	264.9	0.2	265.1
TRITICALE*	0.2	14.7	0.0	14.9
WINTER_WHEAT*	28.9	501.2	0.0	530.1
WOODY_WETLANDS	92.6	806.2	0.0	898.8
Total	8,715.0	166,687.0	326.1	175,728.1
*Agricultural crops (total acres)	158.6	7,128.1	0.7	7,287.4
Percent of area	1.82%	4.28%	0.22%	4.15%

Appendix 1. Species Information for the Carson wandering skipper

1. References

- BLM. 2013. Areas of Critical Environmental Concern Report on the Application of the Relevance and Importance Criteria. Bureau of Land Management (BLM), Carson City District, NV. Available from https://eplanning.blm.gov/public_projects/lup/22652/42662/45450/ACEC-Report_CCDO_final_Mar2013.pdf
- NatureServe. 2025. *Pseudocopaesodes eunus obscurus*, Carson wandering skipper https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.114336/Pseudocopaesodes_eunus_obscurus
- FWS. 2007. Recovery Plan for the Carson wandering skipper (*Pseudocopaesodes eunus obscurus*). US Fish and Wildlife Service, California/Nevada Operations Office, Sacramento, CA. https://ecos.USFWS.gov/docs/recovery_plan/070913b.pdf
- FWS. 2012. Carson wandering skipper (*Pseudocopaesodes eunus obscurus*) 5-Year Review: Summary and Evaluation. US Fish and Wildlife Service, Nevada Fish and Wildlife Office, Reno, NV. https://ecosphere-documents-production-public.s3.amazonaws.com/sams/public_docs/species_nonpublish/1946.pdf
- FWS. 2022. 5-Year Review: Carson wandering skipper (*Pseudocopaesodes eunus obscurus*). US Fish and Wildlife Service, Nevada Fish and Wildlife Office, Reno, NV. https://ecosphere-documents-production-public.s3.amazonaws.com/sams/public_docs/species_nonpublish/3908.pdf

2. Background information

Status:

The Carson wandering skipper was listed as endangered in 2001.

Resiliency, redundancy, and representation (the 3Rs):

No Species Status Assessment for this species.

Habitat, Life History, and Ecology

Habitat:

Habitat is generally characterized as lowland grassland habitats on alkaline substrates. Suitable habitat is less than 1524 m (5000 ft) elevation, east of the Sierra Nevada, and has ample green saltgrass (*Distichlis spicata*) cover with a flowering nectar source available May through July near springs or other water sources.

Life History:

Females lay eggs in June and July on desert saltgrass (*Distichlis spicata*), the larval host plant. Succulent, green desert saltgrass leaves are required from March through June to complete its life cycle. Pupae emerge as adults in May or June and the adult life stage lasts 1-2 weeks. A single brood is produced during the June to mid-July flight season (FWS, 2012). Pupae rest in silked-leaf nests and larvae hibernate during the winter (FWS, 2007).

Diet:

The Carson wandering skipper is dependent on desert saltgrass (*Distichlis spicata*) to complete its life cycle. Eggs are laid on saltgrass leaves. Native mustard (*Thelypodium crispum*), racemose golden-weed (*Pyrracoma racemosus*), bird's-foot trefoil (*Lotus corniculatus*), fiddleleaf hawksbeard (*Crepis runcinata*), western sea purslane (*Sesuvium verrucosum*), cinquefoil (*Potentilla* sp.), salt heliotrope (*Heliotropium curassavicum*), *Cleomella parviflora*, and others are known nectar sources (FWS, 2012).

Pollination Type and Pollinator:

N/A

Migrations/Movement:

“Separation Justification: These (skippers) are mostly potentially strong fliers and the weaker ones like least skipper are often still very good colonizers probably because they fly persistently. Few species fly slower than 20 km per hour but they do not often seem to sustain flight for very long. A few are migratory and move hundreds of kilometers. Even some of the rarest taxa such as *Atrytone arogos arogos* and *Hesperia attalus slossonae* (both of which have individual Specs) are documented as moving several kilometers and implied to move much farther. *Hesperia leonardus* still shows up as singles in gardens and on roadsides ten kilometers or more from at least one of its three remaining large occurrences in New Jersey. Skippers do find and occupy small habitat patches up to a few kilometers from major ones but are very often absent from small or recently created habitats five kilometers or more from good habitats or even over shorter distances separated by highly unsuitable habitats. Schweitzer notes adults of several species readily fly over forests which obviously would allow them to move between habitats. Most of them will move at least a few hundred meters to find nectar. While exceptions do occur, in general hesperiine skipper colonies occupy nearly all or none of a given suitable habitat or habitat complex. However very often mere presence of the larval foodplant does not mean suitable habitat.” (NatureServe, 2025)

Taxonomy:

The Carson wandering skipper is a small butterfly in the subfamily Hesperinae (grass skippers).

Relevant Pesticide Use Sites:

Alfalfa fields are located adjacent to the Warm Springs Valley site. Cattle and horse grazing are threats at other sites (FWS, 2012).

Relevant Recovery Criteria and Actions:

- **Objective:**
 - Recommend measures needed to improve and secure the subspecies' status so that it may be removed from the Federal list of endangered and threatened species.
- **Criteria:**
 - Downlisting the skipper to threatened status can be considered when:
 - Management of Lassen County population and one other population to eliminate threats in perpetuity; 50% management of Lassen County population; patches must be occupied for six of most recent 10 years with no downward trend in abundance
 - Adaptive management plans have been developed and implemented with adequate long-term funding for the Lassen County population and one other population
 - Delisting the skipper can be considered when:
 - Management of Lassen County population and two other populations to eliminate threats in perpetuity; 75% management of Lassen County population; patches must be occupied for six of most recent 10 years with no downward trend in abundance; appropriate landscape connectivity must exist among patches
 - Adaptive management plans have been developed and implemented with adequate long-term funding for the Lassen County population and two other populations

- If additional populations exist - management of one additional population to eliminate threats in perpetuity
- Invasion of *Lepidium latifolium* into known and presumed suitable habitat has been eliminated or reduced and managed at levels that do not pose a threat
- A long-term conservation plan and conservation agreements have been developed to guide management throughout the range of the skipper after it has been delisted.
- A monitoring plan to cover a minimum of five years post-delisting
- Recommendations for Future Actions/Actions Needed:
 - Map, control and monitor *Lepidium latifolium* in skipper habitat
 - Develop and implement a management plan for the Warm Springs Valley and Carson River sites
 - Develop and implement a monitoring program for known populations and habitats to track trends and threats
 - Implement research to determine the complete ecological requirements and life history of the skipper

2.1. Range

The range for the Carson wandering skipper extends from western Nevada into Lassen County, CA (Figure 2) and covers 921,160 acres.

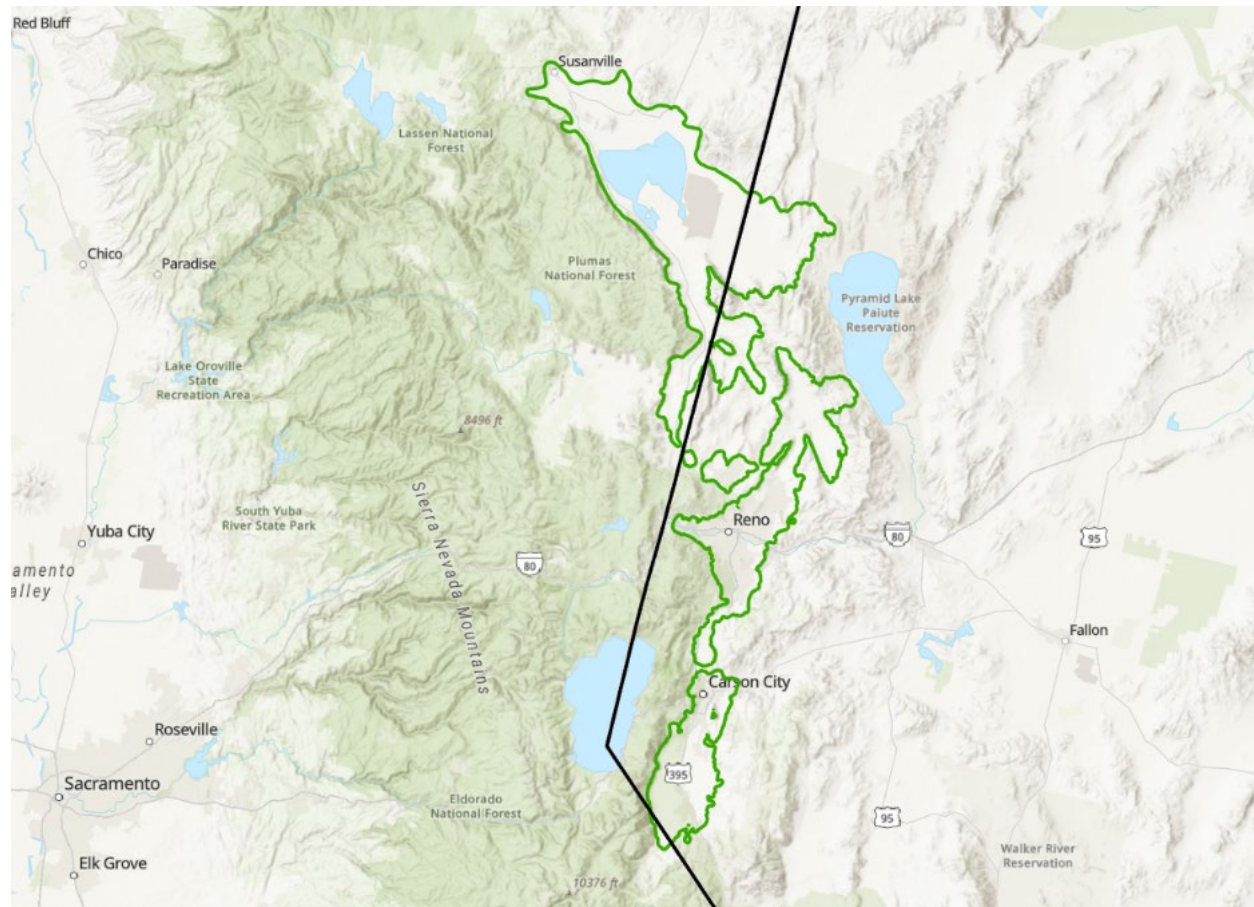


Figure 2. Map depicting the range for the Carson wandering skipper (<https://ecos.USFWS.gov/ecp/species/674>). The total area of the range is approximately 912,160 acres.

2.2. Critical Habitat

No critical habitat has been described or designated for the Carson wandering skipper.

2.3. Known Locations

The Carson City and Spanish Springs Valley #2A nectar sites are considered extirpated and have not been observed since before 2009. In 2016, the FWS also concluded that the Spanish Springs Valley #2B population was also likely extirpated.

As of 2022, there were three extant populations (FWS, 2022):

- Warm Springs Valley #1, Washoe County, NV
- Carson River, Douglas County, NV
- Honey Lake, Lassen County, CA

From FWS, 2012: At the time of listing in 2001, two extant populations were known, one in Washoe County, Nevada, and one in Lassen County, California. A third known population, from Carson City, Carson City County, Nevada, is considered extirpated as of 1998. In 2004, one additional population was located south of Carson City, along the Carson River in Douglas County, Nevada. In 2005, a second population in Washoe County was confirmed. Therefore, there are four extant populations of the CWS.

The Warm Springs Valley #1 site occurs on BLM land and is approximately 321 acres. This site is an Area of Critical Environmental Concern (ACEC, BLM 2013). Originally discovered in 1999, the nectar site was estimated to include about 10 to 12 hectares (25 to 30 acres), with approximately half of the site occurring on Bureau of Land Management lands and half on private lands (FWS, 2007). “The existing Carson wandering skipper ACEC is a 240-acre site consisting of two separate parcels located approximately 25 miles north of the Reno-Sparks area along Winnemucca Ranch Road. The ACEC was designated (January 2001) to protect the Carson wandering skipper habitat prior to its listing as an endangered species by the US Fish and Wildlife Service (FWS) in November 2001. The Carson wandering skipper is a small butterfly that occupies grassland habitat on alkaline substrate in California and Nevada.

Threats to the habitat include agricultural use and the expanding residential and commercial development. Private lands containing core habitat for the Skipper adjacent to the ACEC have been acquired since the ACEC designation and are included in the recommended ACEC through boundary adjustments” (BLM, 2013). In 2005, 32 ha (80 ac) of private property with the nectar site were acquired by the BLM through Southern Nevada Public Land Management Act (Public Law 105-263) funding (FWS, 2012). The site is currently listed as being 321 ac (Table 1, FWS, 2012).

The Carson River site in Douglas County occurs on BLM lands and is said to likely extend into adjacent Nevada State lands and City of Incline Village lands. However, the City of Incline Village is not located in this area or in Douglas or Carson City Counties. Therefore, we assume that the documentation was incorrect, and the City of Indian Hills was intended. The Carson River site is approximately 57 hectares (140 acres).

The Lassen County site is a metapopulation in Honey Lake Valley. The population occurs on public (California Department of Fish and Game, Honey Lake Conservation Team, BLM, and state lands) and private lands.

2.4. Additional Information (Include when applicable)

N/A

Appendix 2. Core Map Development

1. References and Software

Software used: *ArcGIS Pro 3.4.0*

2. Datasets Used in Core Map Development

- Tiger line/shape: US Counties 2022:
https://www2.census.gov/geo/tiger/TIGER2022/COUNTY/tl_2022_us_county.zip
- Tiger line/shape: US Places for Nevada 2023:
https://www2.census.gov/geo/tiger/TIGER2023/PLACE/tl_2023_32_place.zip
- Protected Area Data base US 4.0:
<https://www.sciencebase.gov/catalog/item/65294599d34e44db0e2ed7cf>
- National Hydrography Dataset High Resolution (NHD-R) Waterbodies:
<https://www.usgs.gov/national-hydrography/national-hydrography-dataset>
- ESRI, US Detailed Rivers and Streams:
<https://www.arcgis.com/home/item.html?id=1e29e33360c8441bbb018663273a046e>
- Cropland Data Layer 2024:
https://www.nass.usda.gov/Research_and_Science/Cropland/Release/datasets/2024_10m_cdl.zip

2.1. Range

Range data was extracted from

https://ecos.USFWS.gov/docs/species/shapefiles/usUSFWS_complete_species_current_range.zip which was downloaded on Feb 5, 2025.

2.2. Critical Habitat

N/A

2.3. Tiger line/shape: US Counties 2022

The Tiger line/Shape counties layer represent the counties boundaries within the USA. The 2022 data was used for map display and erasing buffered features within the Carson City, Washoe and Lyon counties. This data was readily available in-house and was originally downloaded on November 15, 2022.

2.4. Tiger line/Shape: NV Places 2023

The places dataset represents the current city/place limits for places in Nevada. The dataset was used to buffer the Carson City limits to determine the region south of the city where the skipper is present. This data was readily available in-house and was originally downloaded on July 25, 2024.

2.5. Protected Area Data base US 4.0 (PADUS)

The USGS Protected Areas Database of the United States (PADUS) is the nation's inventory of protected areas, including public land and voluntarily provided private protected areas, identified as an A-16 National Geospatial Data Asset in the Cadastre. The PAD-US is an ongoing project with several published versions of a spatial database including areas dedicated to the preservation of biological diversity, and other natural (including extraction), recreational, or cultural uses, managed for these purposes through legal or other effective means. The database was originally designed to support biodiversity assessments; however, its scope expanded in recent years to include all open space public and nonprofit lands and waters. Most are public lands owned in fee (the owner of the property has full and irrevocable ownership of the land); however, permanent and long-term easements, leases, agreements,

Congressional (e.g. 'Wilderness Area'), Executive (e.g. 'National Monument'), and administrative designations (e.g. 'Area of Critical Environmental Concern') documented in agency management plans are also included. PADUS strives to be a complete inventory of U.S. public land and other protected areas, compiling “best available” data provided by managing agencies and organizations. The dataset was downloaded on April 7, 2025.

This database was used to extract the Warm Springs Valley conservation area and the prison lands in the northern region of the Carson River site.

2.6. National Hydrography Dataset High Resolution (NHD-R) Waterbodies

The National Hydrography Dataset (NHD), Watershed Boundary Dataset (WBD), and NHDPlus High Resolution (NHDPlus HR) are digital geospatial datasets that map and model the surface water of the United States. The dataset was downloaded on Nov 17, 2022.

The NHD dataset was used to obtain a spatial representation of Honey Lake, which forms the nucleus of the Honey Lake Valley area.

2.7. ESRI, US Detailed Rivers and Streams

This layer presents detailed rivers and streams in the United States. It provides a database of linear water features that interconnects and identifies the stream segments or reaches that comprise the surface water drainage system of the United States.

This layer was used to visualize the Carson River, but it was not otherwise used in the development of the core map.

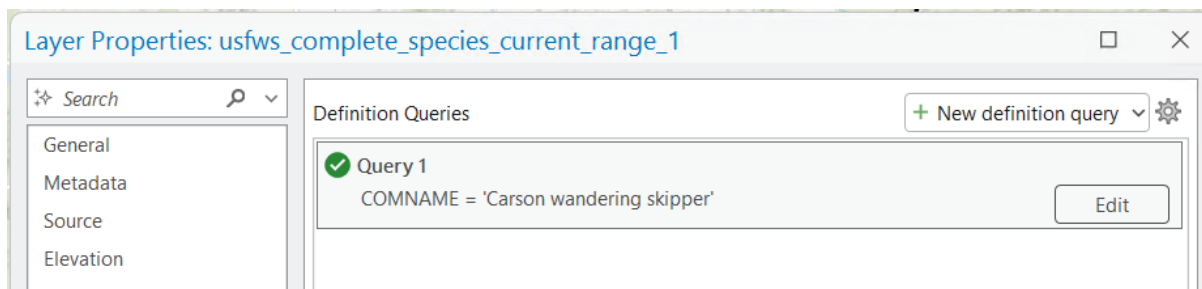
2.8. Cropland Data Layer 2024

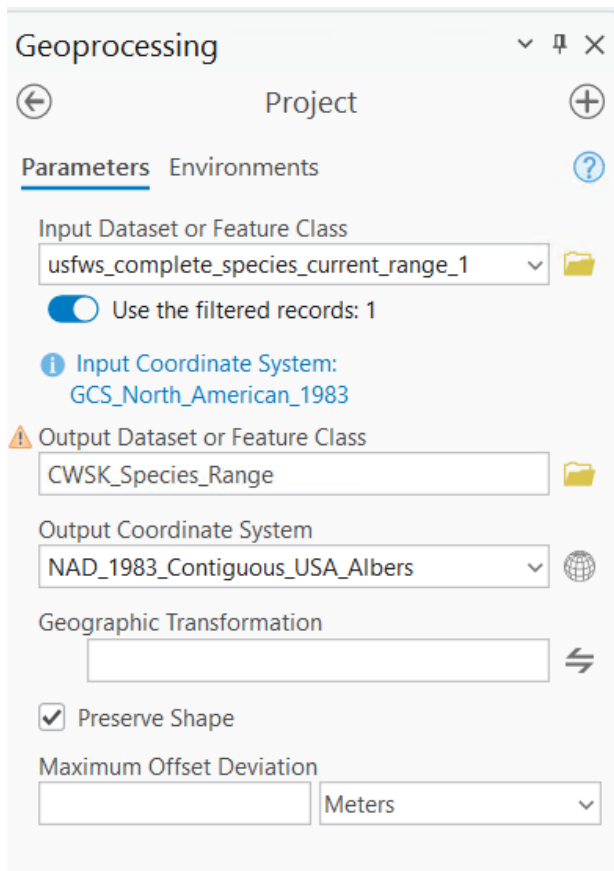
The U.S. Department of Agriculture (USDA) National Agricultural Statistics Service (NASS) Cropland Data Layer (CDL) is an annual raster, geo-referenced, crop-specific land cover data layer produced using satellite imagery and extensive agricultural ground reference data. This layer was used to determine the land use and agricultural crop production within the developed core map as to estimate the potential overlap with the species. This layer was downloaded on Feb 27, 2025.

3. Core Map Development

Processing the range data consisted of setting up a definition query within the FWS species range file and reprojecting it to the NAD 1983 Contiguous USA (CONUS) Albers Coordinate Reference System (CRS).

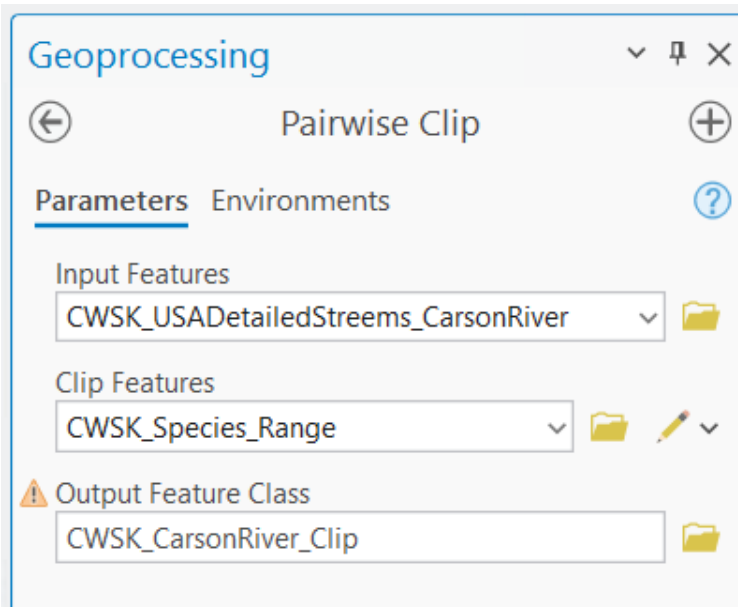
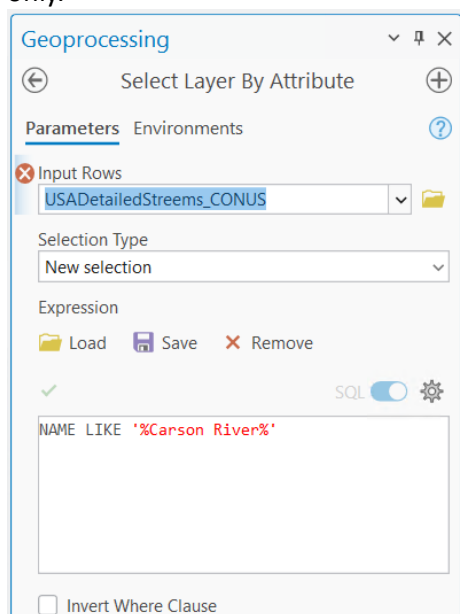
This CSR is used by default to represent the CONUS area for ES assessments. The results files, representing the range is named CSWK_Species_Range.





3.1. Carson River

The second step was to develop the Carson River site area. First the Carson River was extracted from USA Detailed Rivers and Streams and clipped to Douglas County, NV. This was done for visualization purposes only.



The Carson River site is described as located along the Carson River on BLM land about 3.2 km (2 mi) south of Carson City in Douglas County. According to FWS documentation, additional suitable habitat exists on City of Incline Village land and Northern Nevada Correctional Center land. However, the City of Incline Village is not located in this area or in Douglas or Carson City Counties. Therefore, we assume that the documentation was incorrect, and the City of Indian Hills was intended.

To generate a representative “area” for the Carson River site the following process was followed:

- Obtain the city/place limits for Carson City from the 2023 Census Place name dataset and extract the city
- Reproject the data to the standard CONUS projection
- Buffer the city limits by 5 km to represent the movement range of the skipper
- Clip the buffer to the range (Figure 3)
- Remove (erase) the areas of the buffer that overlap with the counties including Carson City, Washoe and Lyon
- Split the remaining buffered features along the western boundary of the Kirman Tract Easement Acquisition (Figure 4)
- From the PADUS 4.0 database extract land on which the prison is located (Figure 5)

Using this approach, the Carson River site (Figure 5) is represented as an area extending 5 km south of Carson City and includes the Prison land within the city limits. The 5-km buffer includes land owned by BLM, the state of NV, The Nature Conservancy and other unknown entities. The Hot Springs Mountain area falls outside the range because the elevation is greater than 5000 ft.

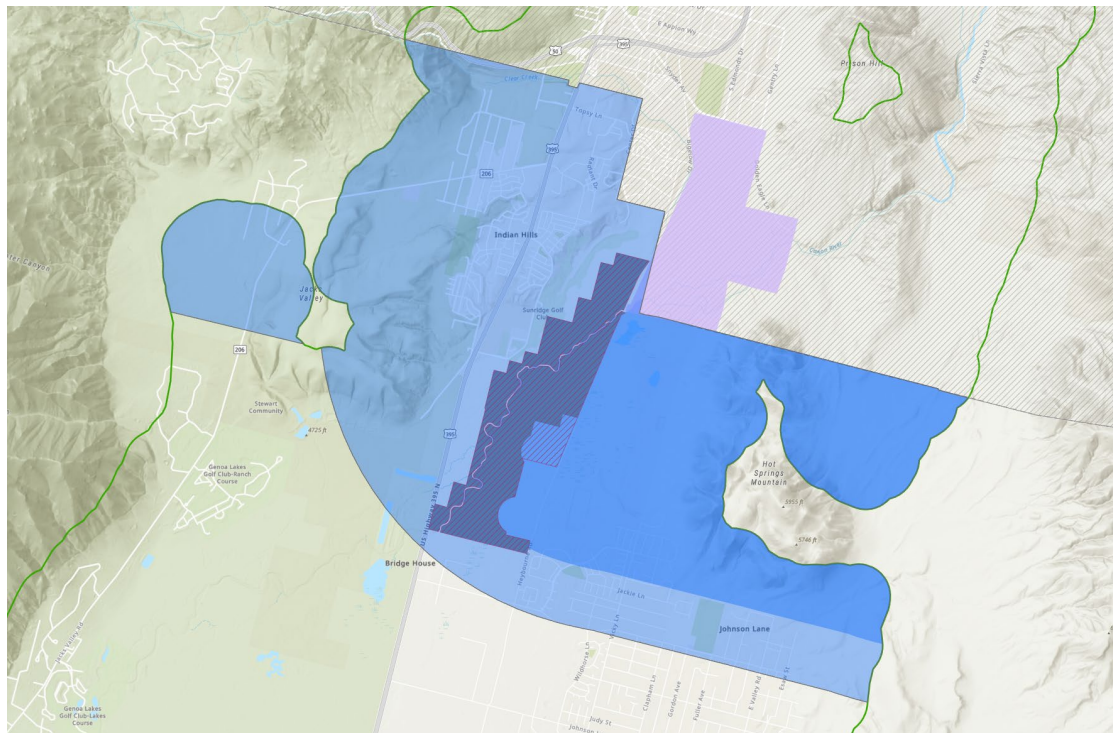


Figure 3. Intermediate to the Carson River site erase all features outside the range and those overlapping Carson City, Washoe County and Lyon County.

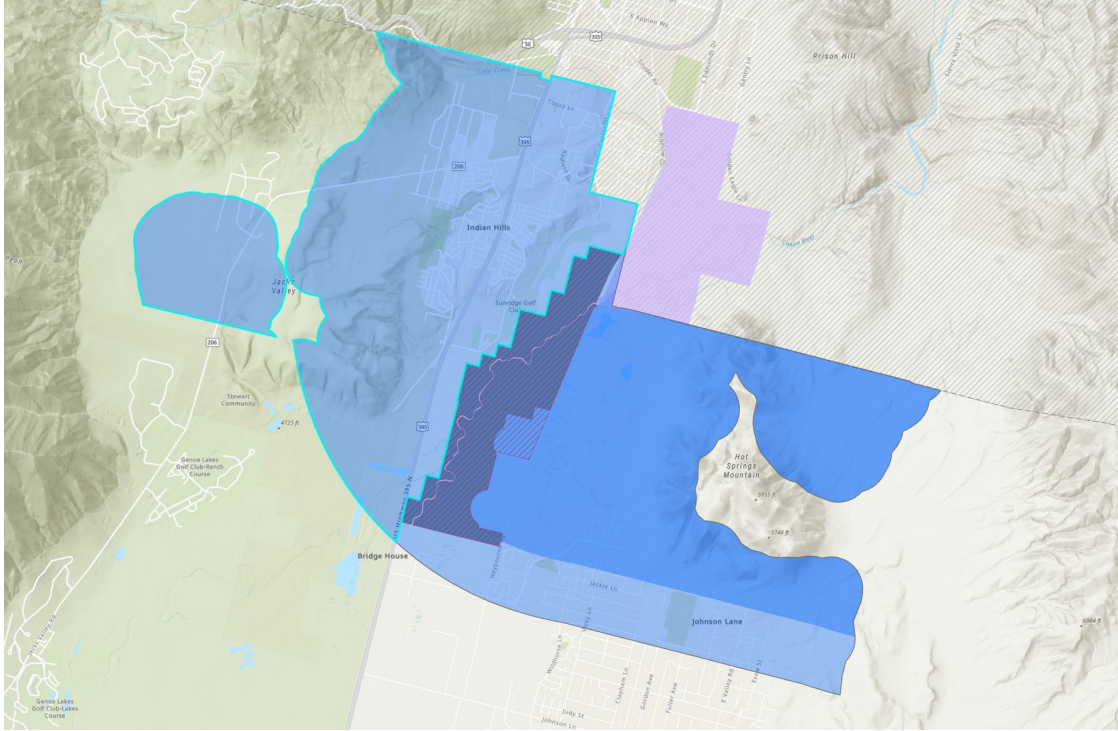


Figure 4. Editing (split) of the Carson River Area. Blue outlined section left of river will be deleted. The area was split in such a manner that the western boundary of the Kirman Tract Easement Acquisition (darker gray/red hash area) was used as the outline and forms the western boundary of the Carson River site. The split line followed US 395 until the boundary of the 5-km buffer.

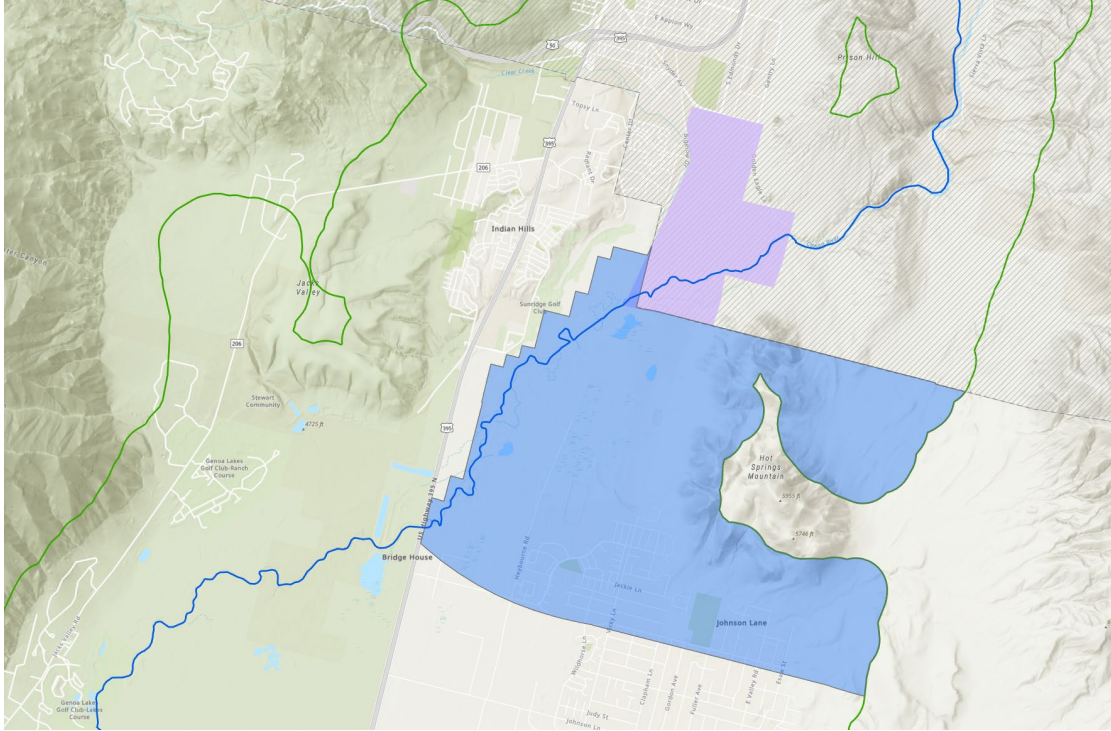


Figure 5. The Carson River site consists of the buffered area south of Carson City and the prison area within the city limits. The area also includes the Kirman Tract Easement Acquisition. The Hot Springs Mountain area falls outside the range because the elevation is higher than 5000 ft.

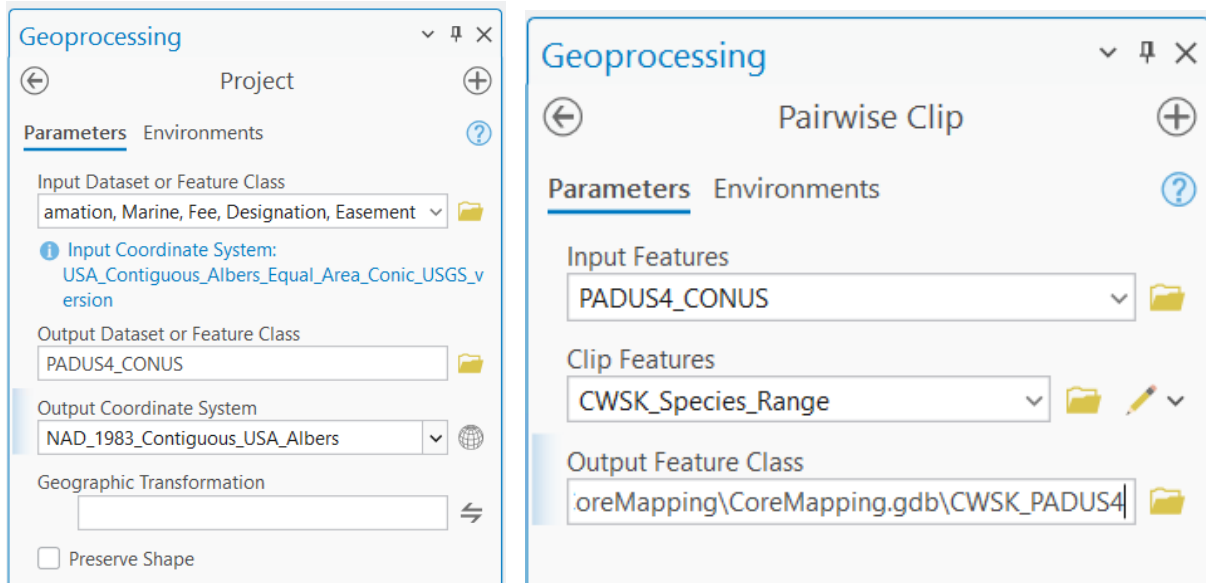
The area description of the Carson River population contains several errors or outdated information, including:

- City of Incline Village. The FWS documentation incorrectly identified the City of Incline Village for this area. This city is located along the northeastern shores of Lake Tahoe. It is likely that the authors meant the city of Indian Hills.
- Northern Nevada Correctional Center land. Land used by the Nevada State Medium Security Prison overlaps with the Carson River but the land is owned by Nevada Department of Conservation and Natural Resources as per PADUS 4.
- Carson City – The city limit is the same as the county boundary. It is unknown what the authors used as the point of reference for 2 mi south of Carson City.

3.2. Warm Springs Valley

Based on Table 1 in the 2012 5-yr assessment document (FWS, 2012), it was concluded that only one population exists in Warm Springs Valley. This site is approximately 321 ac. The PADUS 4.0 database contains one record for the CWS ACEC in Warm Springs. The record has a GIS area of 326 ac. This area is considered the representative area for the CWS Warm Springs Valley #1 site.

To create the site, PADUS 4.0 data was reprojected into the NAD 1983 Contiguous USA Albers CSR and clipped to the species range to limit the number of features for faster display and query.



Next, extract the Carson wandering skipper ACEC from the PADUS database using the select layer by attribute geoprocessing tool in the GIS and export the selected features to a new layer named CWSK_PADUS4_WarmValley_ACEC (Figure 6).

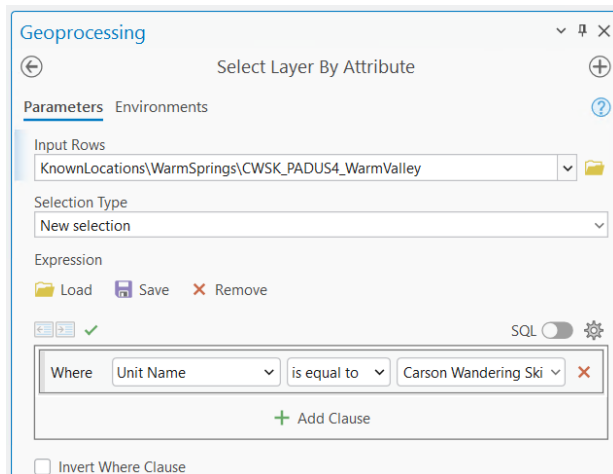




Figure 6. Warm Springs Valley site is represented by the BLM’s Carson wandering skipper Area of Critical Environmental Concern

3.3. Honey Lake Valley

The maximum extent of the Honey Lake Valley site is defined as the 5-km buffer around Honey Lake within the range of the species. The 5-km buffer was selected based on separation distances because “Skippers do find and occupy small habitat patches up to a few kilometers from major ones, but are very often absent from small or recently created habitats five kilometers or more from good habitats or even over shorter distances separated by highly unsuitable habitats” (NatureServe, 2025).

Honey Lake is well represented with data from the NHD-H waterbodies layer. As such the lake was selected from the dataset and buffered with 5 km. Next the buffered layer was clipped to the range of the species. The resulting area is considered the Honey Lake Valley site (Figure 7).

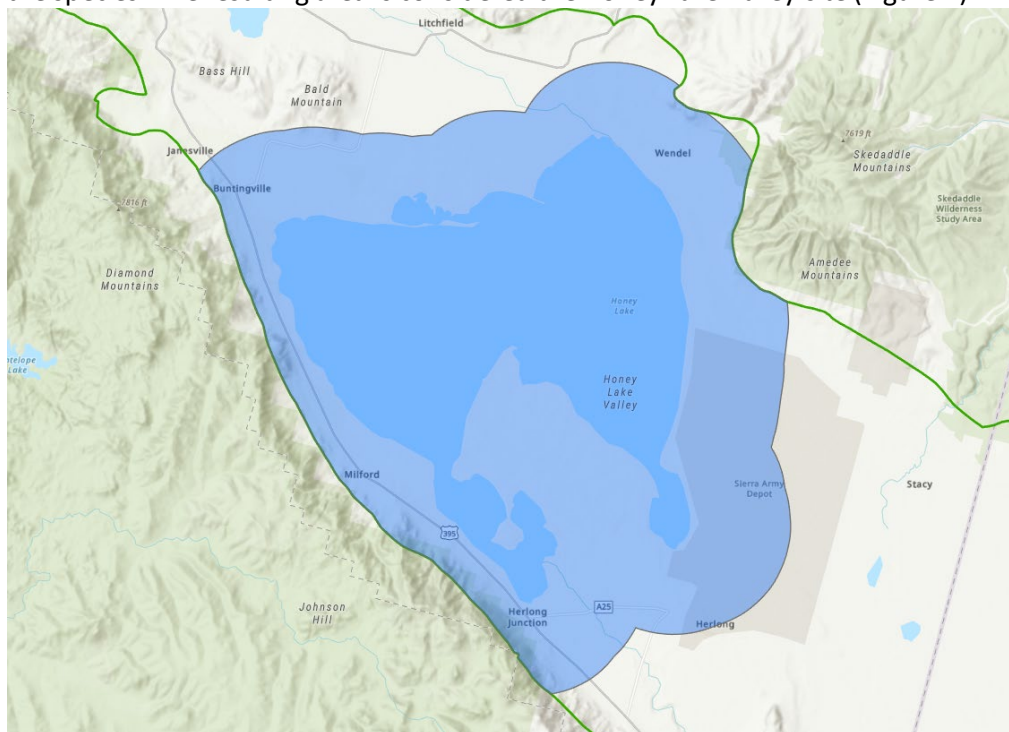


Figure 7. Honey Lake Valley area represented via 5-km buffer around the NHD-H Honey Lake area

3.4. Data Reviewed but not Used in Development

Data from the NatureServe Pro explorer was reviewed but due to the coarseness of the data, this dataset was not used in the assessment.

California Natural Diversity Database

The California Natural Diversity Database (CNDDDB) is an inventory of the status and locations of rare plants and animals in California. CNDDDB staff work with partners to maintain current lists of rare species, as well as to maintain an ever-growing database of GIS-mapped locations for these species.

The CNDDDB public data viewer was queried to show the USGS 7.5 min quad sheets that have observations of the Carson wandering skipper. Five quads were listed (Figure 8). Due to the coarseness of the data, the CNDDDB was not used in the development of the core map.

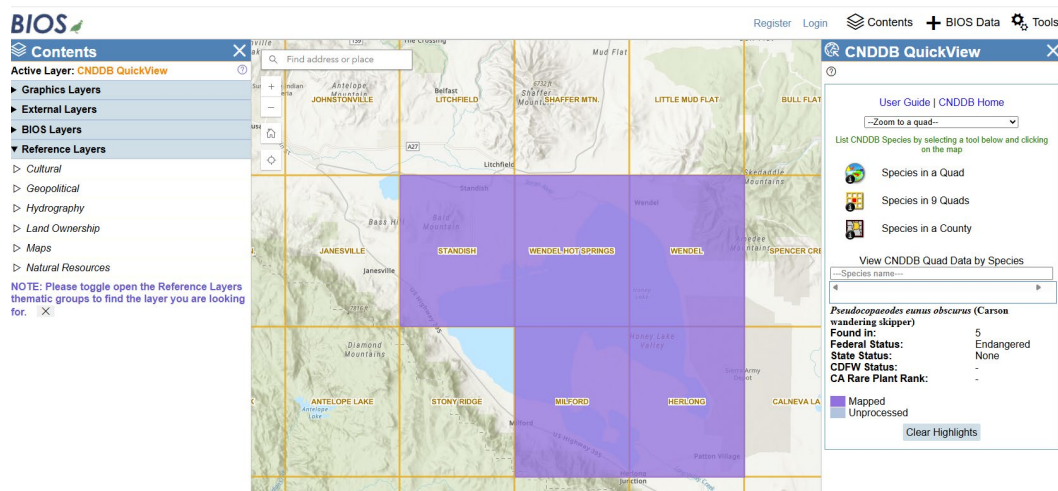


Figure 8. Quad sheets having known observations of the Carson wandering skipper based on CNDDB data from <https://apps.wildlife.ca.gov/bios6/?tool=cnddbqv>

Global Biodiversity Index Facility/iNaturalist

Data for the Carson wandering skipper was extracted from the Global Biodiversity Information Facility (GBIF). A total of 26 occurrence records are available. Of these records, five have location information (Figure 9) but the positional accuracy is listed as 27,969 m. This indicates that the location data is fuzzed. As such, no useable data points are available to determine locations.

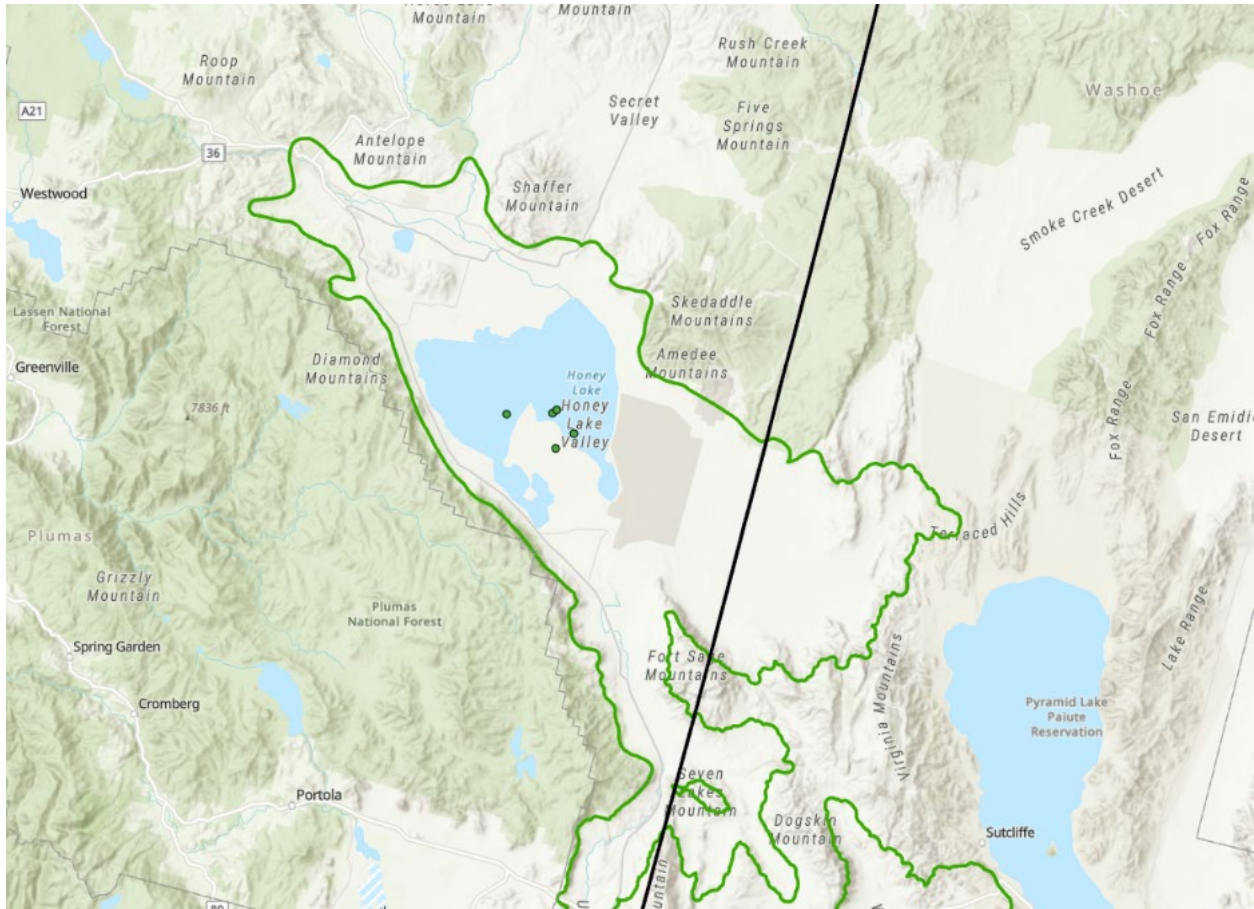
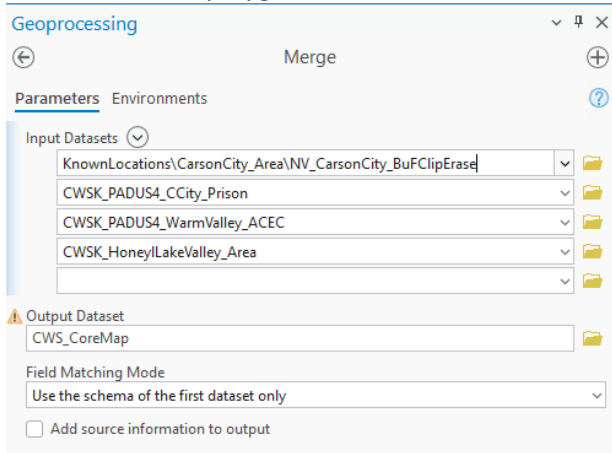


Figure 9. GBIF data for the Carson wandering skipper. All data have poor locational accuracy and cannot be used.

iNaturalist data was reviewed as well. Of the 15 available records only 5 were considered “research grade” and those observations are included in the GBIF dataset. As such it was not needed to include iNaturalist observations separately.

4. Proposed Core Map

The final step in generating the core map was to merge the different area features into a new data layer and dissolve the polygons based on “area name”.

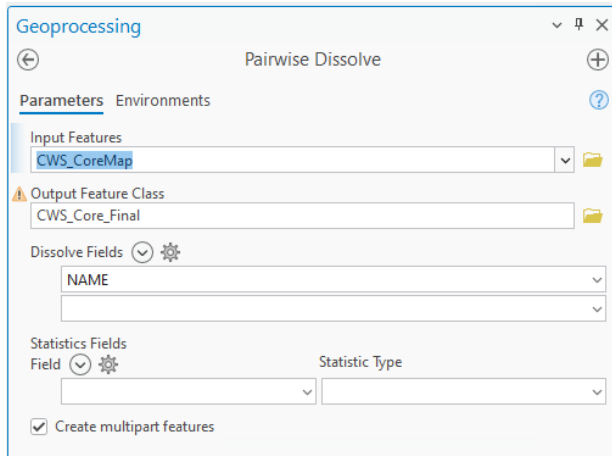


Following the merge, a new field (Name) was added to the feature dataset and the area names were manually added to the four records.

OBJECTID *	Shape *	NAME	Shape_Length	Shape_Area
1	Polygon	Carson River	34349.57937	30612634.903112
2	Polygon	Carson River	10895.095184	4771129.909482
3	Polygon	Warm Springs	7321.415846	1320424.930154
4	Polygon	Honey Lake Valley	105753.757594	674558418.583949

Click to add new row.

Next the features were dissolved on “Name” and the final core map was generated and named CWS_Core_Final.



The final core map is shown in Figure 10 below.



Figure 10. Core map for the Carson wandering skipper (*Pseudocopaedes eunus obscurus*, Entity ID 674)