

Interim Core Map Documentation for the Sneed Pincushion Cactus

Version 1

Review Completed: April 2026

Core Map Developer: EPA's Office of Pesticide Programs (OPP)

Species Summary

The Sneed pincushion cactus (*Coryphantha sneedii* var. *sneedii*), Entity ID 683) is an endangered terrestrial plant (monocot). The U.S. Fish and Wildlife Service (FWS) has not designated a critical habitat for the Sneed pincushion cactus. This species grows in semi-desert grassland habitats (Service 1986, p. 8) on or near limestone and/or dolomite. The Sneed pincushion cactus is found in 3-5 populations in El Paso County, Texas and Doña Ana County, New Mexico. Specifically, the Sneed pincushion cactus is restricted to the Franklin and Organ mountains and adjacent foothills (Five Year Review 2023). Three of the populations are morphologically distinct (Webb Gap, Bishop's Gap and Rattlesnake Ridge), which results in taxonomic uncertainty. There is ongoing genetic research to confirm the taxonomy of these populations, and thus the species range. Additional information on the species is provided in **Appendix 1**.

Description of Core Map

The core map for the Sneed pincushion cactus is based on biological information. The outer extent of this core map is defined by areas containing sites known to be occupied by the Sneed pincushion cactus. There are five populations of Sneed pincushion cactus plants. EPA developed the core map using spatial extent of Texas's Franklin Mountain State Park, the Bureau of Land Management's (BLM) Organ/ Franklin Mountain Area of Critical Concern, and the Caster Range National Monument at Fort Bliss, which are all known to be occupied by the cactus. EPA also developed a buffered area around the Sneed pincushion cactus population at Rattlesnake Ridge based on the FWS-identified location and habitat size (see **Appendix 2** for Geographic Information System (GIS) development process).

Populations previously identified as "Sneed" in the Guadalupe mountains are now considered to be Lee pincushion cactus (Amendment to Recovery Plan, 2019), which could contribute to misidentification in publicly available datasets. Additionally, there is taxonomic uncertainty associated with the five populations currently identified as part of this species. Three of the five populations have "genetically and morphologically diverged" from the other two populations of the Sneed pincushion cactus and may represent a unique taxon (Five Year Review 2023). However, genetic sequencing research is ongoing (Five Year Review 2023). Therefore, EPA assumed all five populations were part of the same species/taxon for development of this core map. EPA did not include observations from public datasets that occurred outside the FWS range in the core map due to uncertainty. This uncertainty should be considered when this core map is formally reviewed by FWS.

Figure 1 depicts the resulting interim core map for the Sneed pincushion cactus. The size of this core map is approximately 67,533 acres. Landcover categories within the core map area are included in **Table 1**. Landcover is predominantly Grassland/Herbaceous and Shrub/Scrub. Since this species occurs in semi-desert grassland habitats, the area identified in the core map potentially represents habitat.

The core map developed for the Sneed pincushion cactus is considered interim. This core map will be used to develop pesticide use limitation areas (PULAs) that include the Sneed pincushion cactus. 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 an “average” (3) best professional judgment classification to describe major uncertainties/limitations. The map is based on known locations described by FWS. This core map does not replace or revise any range or designated critical habitat developed by FWS for this species.

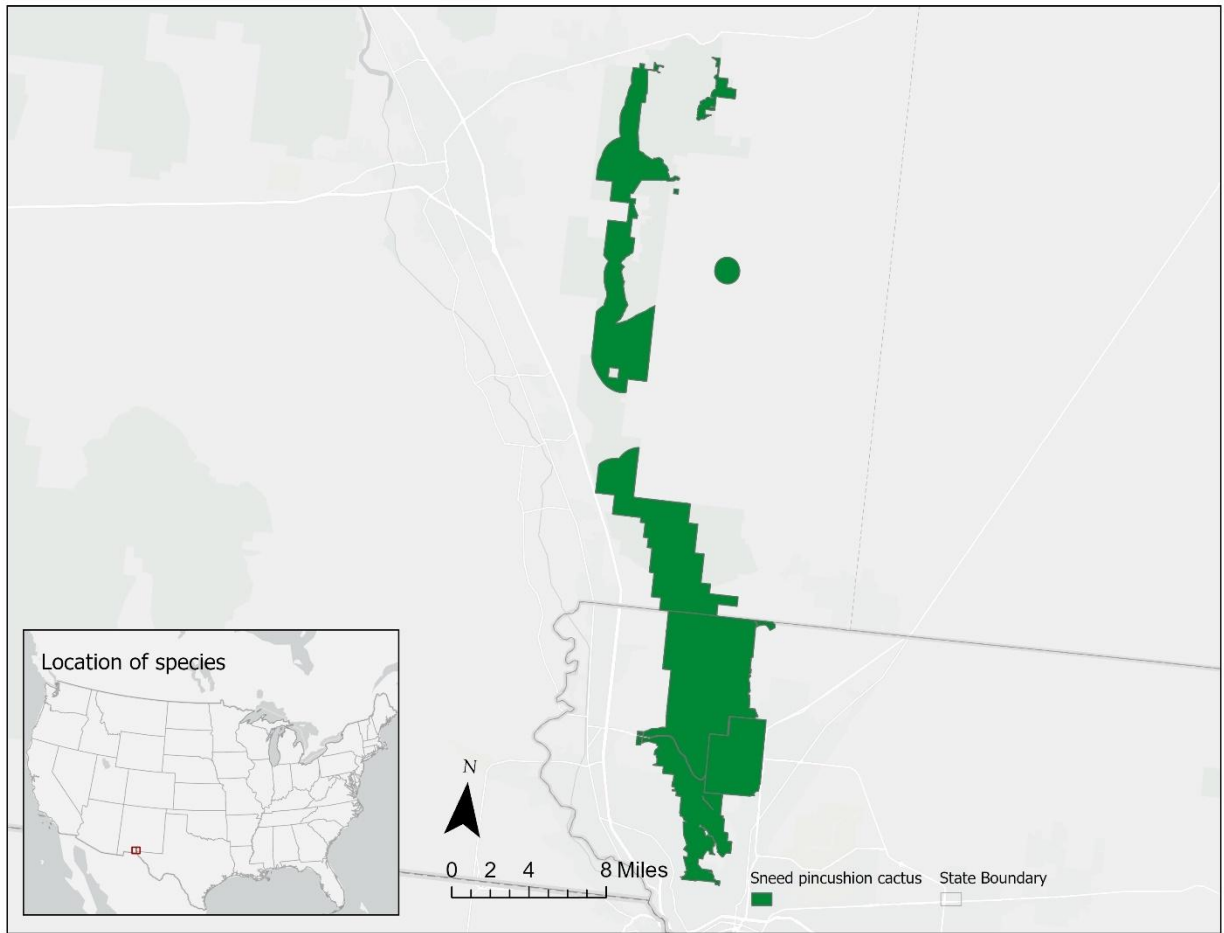


Figure 1. Interim core map for the Sneed pincushion cactus.

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 Class/Value	% Area
Forestry	Deciduous Forest (41)	0%
Forestry	Evergreen Forest (42)	1%
Forestry	Mixed Forest (43)	0%
Agriculture	Pasture/Hay (81)	0%
Agriculture	Cultivated Crops (82)	0%
Mosquito adulticide, residential	Developed Open Space (21)	1%
Mosquito adulticide, residential	Developed Low Intensity (22)	0%
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)	19%
Invasive species control	Shrub/Scrub (52)	79%
Invasive species control	Barren Land (31)	0%
Total Acres	Interim Core Map Acres	~ 67,533

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
- Occurrence locations in the Global Biodiversity Information Facility (GBIF)

EPA evaluated these sets of data before selecting the type of and developing the core map. FWS appeared to have the most descriptive site information, providing names and descriptions of current known locations. However, the most recent figure containing the Sneed pincushion cactus populations was published in the 1986 Recovery Plan (**Figure A1-2** in **Appendix 1**). Since the 1986 Recovery Plan, there have been taxonomic changes resulting in changes to the species range and occupied areas. However, updated maps of the species occupied areas has not been published since 1986. Therefore, EPA relied on the descriptions of occupied areas provided in more recent FWS documentation (Five Year Review 2023, Amendment to Recovery Plan 2019). Occurrences in public datasets (iNaturalist, GBIF, and NatureServe) were located outside the species range. However, EPA did not support developing the core map to account for these observations because of the taxonomic uncertainty and frequent misidentification associated with the species (Five Year Review 2023). **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”). 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
4. Document the core map

For step 1, EPA compiled available information for the Sneed pincushion cactus from FWS, as well as observation information available from various publicly available sources (including iNaturalist, NatureServe, and GBIF). The information compiled for the Sneed pincushion cactus is included in

Appendix 1. Influential information that impacted the development of the core map included:

- Lack of designated critical habitat
- Large, unrefined range
- Descriptions of known occurrences/ populations in FWS documentation
- Taxonomic uncertainty and potential for misidentification of the species

For step 2, EPA used the compiled information to identify the core map type including species range and known location information. 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.³ For this core map, EPA used data from the FWS, U.S. Bureau of Land Management (BLM), Texas Parks & Wildlife State Parks Division, and Texas Department of Transportation. **Appendix 2** provides more details on the GIS analysis and data used to generate the core map.

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

³ 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, https://www.epa.gov/system/files/documents/2024-12/core_map_process.pdf

Appendix 1. Information Compiled for the Sneed Pincushion Cactus

1. Recent FWS documents/links and other data sources

- Five Year Review (2023) ([Sneed pincushion cactus 5 Year Status Review](#))
- Five Year Review (2015) ([Sneed pincushion cactus\(Coryphantha sneedii var. sneedii\) 5-Year Review](#))
- Recovery Plan (1986) ([Sneed/Lee Pincushion Cactus \(2 spp.\)](#))
- Recovery Plan Amendment (2019) ([Amendment 1 - Sneed/Lee Pincushion Cactus](#))

2. Background information

- **Status:** Federally listed as endangered in 1979
- **Resiliency, redundancy, and representation** (the 3Rs): no species status assessment for this species.

Resiliency:

- The Sneed pincushion cactus appears to have been declining range-wide, except the North Franklin Mountains population, which was increasing (Five Year Review 2023).
- Habitat has not been developed but overall habitat suitability might be gradually decreasing due to grassland conversion to shrub steppe (Five Year Review 2023).

Redundancy:

- The Sneed pincushion cactus occupies 2–5 geographically isolated population areas, depending on phylogenetic analysis results (Five Year Review 2023).
- The Sneed pincushion cactus range extends approximately 40 km (25 mi) north/south based on our current interpretation of taxonomic identities but is reduced to 19 km (12 mi) north/south if Sneed pincushion cactus plants in the Webb Gap, Bishop’s Cap, and Rattlesnake Ridge populations represent a different taxon (Five Year Review 2023).
- Isolation among populations decreases the likelihood that one event could catastrophically affect all species, but also reduces ability of potential for populations to rescue one another following catastrophic events, especially given that seeds are primarily dispersed by small mammals and not designed to attract bird (Five Year Review 2023).
- While there are Sneed pincushion cactus plants in ex-situ collections, the quality and diversity of ex-situ germplasm is likely inappropriate and inadequate for successful reintroduction (Five Year Review 2023).
- The total size of range (25 miles or 12 miles) is not sufficient to ensure redundancy in the face of regional drought (Five Year Review 2023).

Representation:

- The Sneed pincushion cactus currently occupies 2–5,⁴ geographically isolated and genetically distinct representation areas (Five Year Review 2023).
 - Genetic diversity within and between sites is unknown (Five Year Review 2023).
 - Based on small population size, FWS suspects the Sneed pincushion cactus is experiencing a loss of evolutionary potential from loss of diversity through genetic drift, except, potentially, in the Bishop’s Cap population (Five Year Review 2023).
- **Habitat**
 - Semi-desert grassland habitats on or near limestone and/or dolomite (Recovery Plan 1986 and Five Year Review 2023)
 - rugged terrain in relatively remote natural areas that have been historically used for recreation, ranching, and military training (Five Year Review 2023)
 - **Pollinator/reproduction** (Recovery Plan, 1986).
 - Fruit formation is from August to November (Recovery Plan, 1986).
 - Unknown if plants can self-pollenate (Recovery Plan, 1986).
 - The only observed pollinators have been members of the halictid bee family.
 - **Taxonomy**
 - Terrestrial Plant
 - FWS Category: Flowering dicot plants
 - Some areas of the historical range have been taxonomically reclassified (including Guadalupe Mountains) and are therefore no longer part of the species (Five Year Review 2023).
 - Three of the five populations are morphologically distinct (relative to the plants of the other two populations in the Franklin Mountains) and may represent a unique taxon (Five Year Review 2023).
 - Phylogenetic research is ongoing to determine if these three populations are distinct (Five Year Review 2023)
 - **Relevant Pesticide Use Sites**
 - Species known to occur on rugged terrain in relatively remote natural areas that have been historically used for recreation, ranching, and military training (Five Year Review 2023). Specific pesticide use is not mentioned but land use suggests potential uses in the species habitat.
 - Invasive plants are described as a threat (Five Year Review 2023); However, invasive plant control was not documented by FWS in the area.
 - **Recovery Criteria/Objectives (1986 Recovery Plan and 2019 Amendment to the Recovery Plan)**

⁴ Number of populations dependent on taxonomic identification, discussed in Description of Core Map section of this document and in the most recent Five Year Review (2023).

- At the time of listing, criteria for delisting the Sneed pincushion cacti could not be established without more information about their habitat and abundance (Recovery Plan, 1986)
- With new information, the Service released an amendment to the Recovery Plan in 2019 with the following objectives/ criteria:
 - All core populations demonstrate stable or increasing trends in abundance over a 20- year period.
 - Maintain a minimum of three geographically separated core populations for each species over a 20-year period.
 - Maintain genetic diversity within all core populations and Maintain presence in 80 percent of subpopulations over 20-year monitoring period and outside of the core populations.
 - Develop and implement a Habitat Management Plan (HMP) for Sneed and Lee pincushion cacti conservation.
 - A Service approved post-delisting monitoring plan will be implemented.

3. Description of Species Range

- Figure A1-1 depicts the FWS range. The range was last updated on 6/24/2025. The total acreage of the range is 204,888 acres.

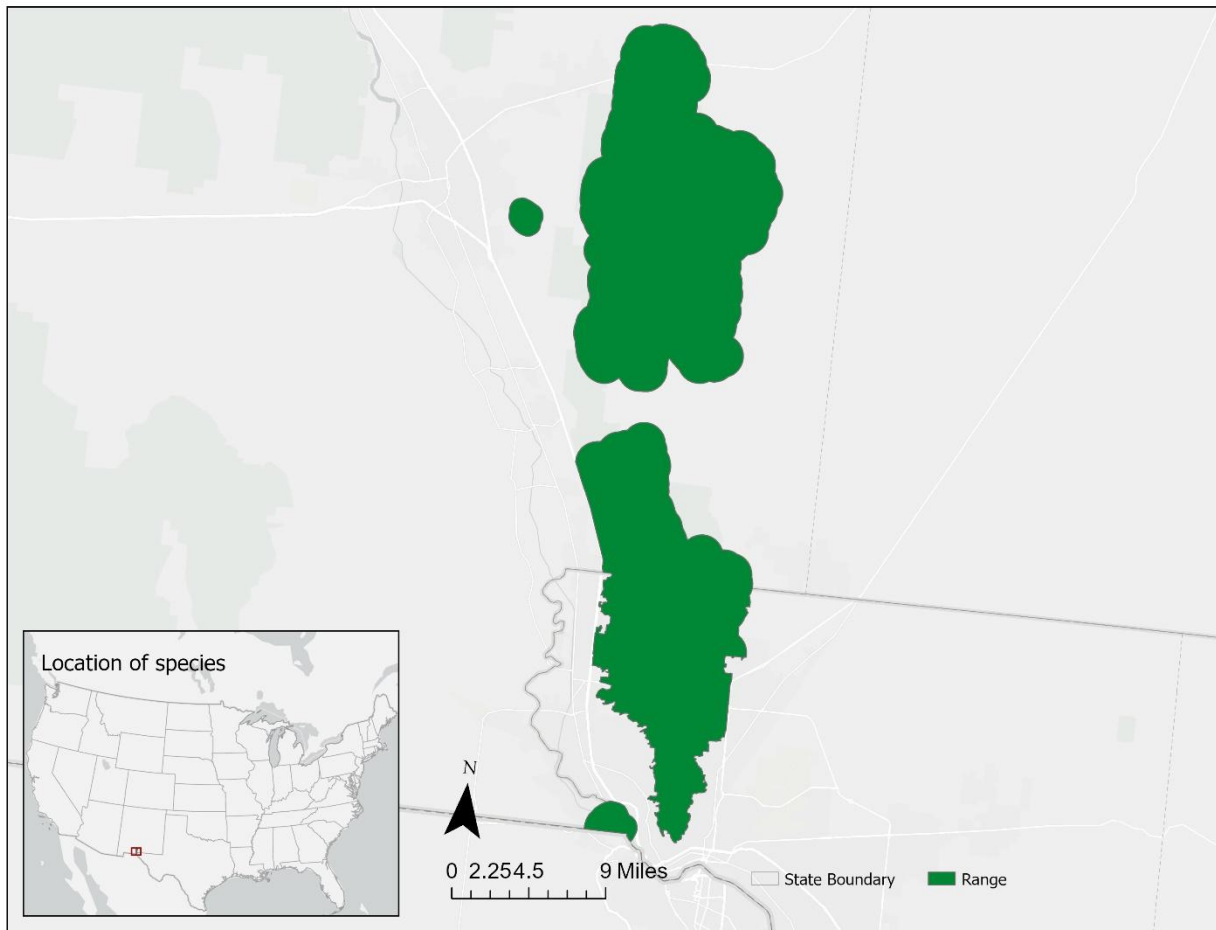


Figure A1-1. FWS range for the Sneed pincushion cactus. Total acreage of range is around 205,000 acres.

4. Critical Habitat

- FWS has not designated a critical habitat for this species (<https://ecos.fws.gov/ecp/species/4706>)

5. Known Locations

- **Occurrences FWS Documentation** (Five Year Review 2023)
 - The historical range (depicted in **Figure A1-2**) has been refined due to taxonomic revisions.
 - Sneed pincushion cactus plants in Guadalupe Mountains National Park in the Guadalupe Mountains were subsequently assigned to a new taxon
 - The plants in these areas are therefore no longer *Coryphantha sneedii* var. *sneedii*.
 - The Sneed pincushion cactus occurs in 2–5 populations.
 - Of the five populations, three are morphologically distinct (relative to the plants of the other two populations) and may represent a unique taxon.
 - A phylogenetic investigation of these populations is in progress and preliminary results suggest these populations may be genetically distinct.
 - Due to the taxonomic uncertainty and the ongoing phylogenetic investigation, all five populations were considered Sneed pincushion cactus for the purpose of development of this core map.
 - FWS has identified sites within each of the five populations. Populations, sites and land ownership are summarized in **Table A1-1** and synthesized from information in the 2023 Five Year Review.
 - The five populations are:
 - South Franklin Mountains (3–4 sites, depending on site separation distance and the rigor with which one accepts valid records)
 - North Franklin Mountains (4 sites)
 - Webb Gap (one site)⁵
 - Bishop’s Cap (three sites)⁵
 - Rattlesnake Ridge (one site)⁵
 - All sites except Hook Ranch and possibly the Canutillo, Texas site, are within special land use designation areas.
 - **Figure A1-2** depicts the general known locations from FWS’s 1986 Recovery Plan. More recent documentation did not contain updated maps of occurrences but the 2023 Recovery plan notes that the Guadalupe Mountains populations are now part of a new taxon.

Table A1-1: Sneed Pincushion Cactus Known Populations Summary Table (information extracted and summarized from the 2023 Five Year Review)

⁵ Population is morphologically distinct, relative to the plants in the Franklin Mountains populations. The taxonomic identity in these populations is uncertain. A phylogenetic investigation including samples from these populations is in progress and may clarify this uncertainty. Preliminary results suggest these populations may be genetically distinct (Five year Review 2023).

Site Name/ Description	Population Name	Land Ownership	Special Land Use Designation	Notes
McKelligon Canyon	South Franklin Mountains	Franklin Mountains State Park		
south of Fusselman Canyon	South Franklin Mountains	Department of Defense (Castner Range National Monument)	Castner Range National Monument	
site at the low point of the crest of Franklin Mountain	South Franklin Mountains	Franklin Mountains State Park		same coordinates as the McKelligon Canyon site
east of Coronado Country Club	South Franklin Mountains	Franklin Mountains State Park		
site near Canutillo, Texas	South Franklin Mountains	Private or possibly Franklin Mountains State Park		
Anthony's Nose	North Franklin Mountains	Franklin Mountains State Park		
Hook Ranch	North Franklin Mountains	Private		ridge south of Anthony Gap
Anthony's Cave	North Franklin Mountains	BLM		ridge south of Anthony Gap
Section 33	North Franklin Mountains	BLM		ridge south of Anthony Gap
Webb Gap	Webb Gap	Fort Bliss	Organ/Franklin Mountains Area of Critical Environmental Concern	
South Hill	Bishop's Gap	Fort Bliss	Organ/Franklin Mountains Area of Critical Environmental Concern	
North Hill	Bishop's Gap	Fort Bliss	Organ/Franklin Mountains Area of Critical Environmental Concern	
site at the third ridge east of Bishop's Cap	Bishop's Gap	Fort Bliss	Organ/Franklin Mountains Area of Critical Environmental Concern	
Rattlesnake Ridge	Rattlesnake Ridge	Fort Bliss		

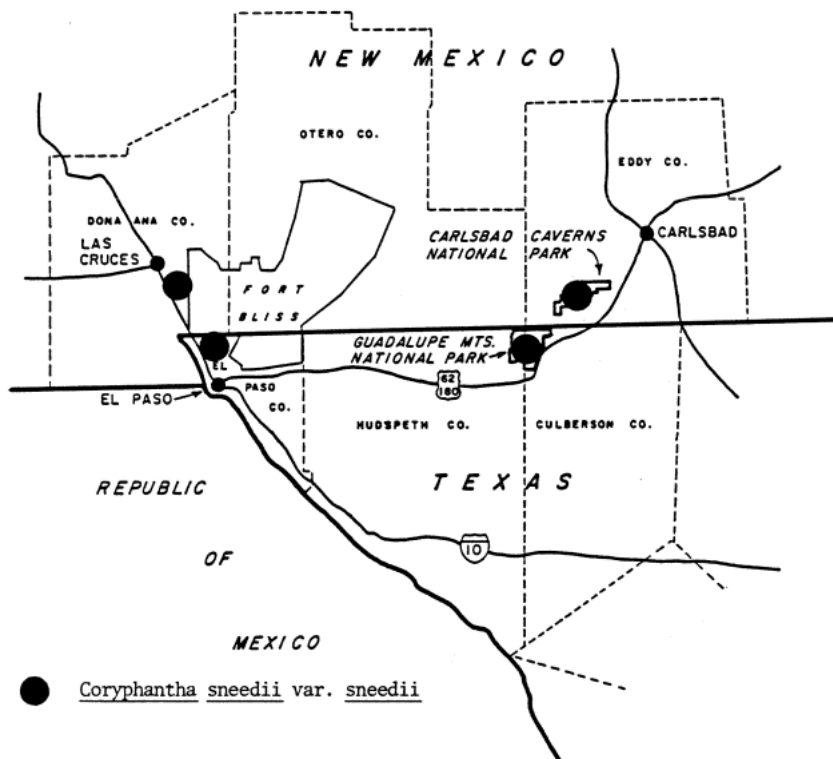


Figure 1. General location of *Coryphantha sneedii* var. *sneedii*.

Figure A1-2. Known location information from FWS. Map reproduced from the 1986 Recovery Plan.⁶

- **Occurrences Included in Public Databases**

EPA queried iNaturalist, GBIF, and NatureServe. Occurrences in NatureServe were consistent with other occurrence data (linked [here](#)). There were many observations in the public datasets that occurred outside the species range. However, given the taxonomic uncertainty, frequent misidentification associated with the species (Five Year Review 2023), and positional accuracy of the public occurrences, EPA did not expand the core map to include these observations. These observations should be considered when this core map is formally reviewed by FWS.

iNaturalist (available [here](#)) had 42 research grade observations for this species (using the common name Sneed’s foxtail cactus rather than Sneed pincushion cactus) between November 2018 and February 2025. The precision of the points has been obscured or hidden. Of the observations where coordinates were not hidden, many of the locations appear to coincide with the species range. However, many observations (23) also appear to occur outside the species range. Due to the positional accuracy of the points and the taxonomic uncertainty associated with the species, EPA could not determine if these observations warranted expansion of the core map.

GBIF (available [here](#)) did not include any observations.

⁶ More recent maps of occurrence or distribution were not included in any FWS documentation.

Species distribution in NatureServe were consistent with other occurrence data (linked [here](#)) but covered the entire states of Texas and New Mexico.

Appendix 2. GIS Data Review and Method to Develop Core Map

This core map was created based on biological information, specifically areas of known known to be occupied by the species. EPA used the descriptions of occurrence locations and land ownership provided in FWS documentation to refine the range to areas where the species is known to occur.

1. Dataset References and Software

- Software used: ArcGIS Pro 3.2
- FWS Species Range – last updated on 6/24/2025

2. Datasets Used in Core Map Development

- FWS Range for the Sneed pincushion cactus, last updated on 6/24/2025 accessed [here](#).
- Texas Military Boundaries, Texas Department of Transportation, last updated 3/17/2025 accessed [here](#).
- Texas State Parks Boundaries, Texas Parks & Wildlife State Parks Division, last updated 5/8/2025 accessed [here](#).
- BLM NM Areas of Critical Environmental Concern, Bureau of Land Management, last updated 11/30/2023 accessed [here](#).

3. Core Map Development

- EPA imported the Sneed pincushion cactus range data and created a layer “range.”
- EPA imported Texas Military Boundaries from the path provided [here](#) and named the layer “Military Boundary.” EPA used the select by attribute tool to select where “Military Name” equals “Fort Bliss Castner Range.” EPA exported the selected features as a new layer called “Fort Bliss in Range.”
 - The resulting polygon encompassed Caster Range National Monument
 - Since the polygon is not completely contained by the range (see **Figure A2-1**), EPA used the ESRI pairwise clip tool with “Fort Bliss Castner Range” as input feature and “range” as the clip feature to eliminate areas that exist outside the species range. The resulting layer was named “FortBlissCaster_PairwiseClipRange.”
 - The “FortBlissCaster_PairwiseClipRange” layer includes the Sneed pincushion cactus site “south of Fusselman Canyon” part of the South Franklin Mountains Population.
- EPA imported BLM NM Areas of Critical Environmental Concern from the path provided [here](#) and named the layer “ACEC Designated Polygons”
 - EPA used select by attribute where “ACEC Name” is equal to “ORGAN/FRANKLIN MOUNTAINS.” EPA made a new layer from the selected featured and named the layer “Organ/Franklin Mountains ACEC.”
 - Since the Organ/ Franklin ACEC are not completely contained by the range, EPA used the ESRI pairwise clip tool with “Organ/Franklin Mountains ACEC” as input feature and “range” as the clip feature to eliminate areas that exist outside the species range (see **Figure A2-2** for overlap of range and ACEC). The resulting layer was named “OrganFranklinACEC_PairwiseClipRange.”
 - The “OrganFranklinACEC_PairwiseClipRange” layer includes several Sneed pincushion cactus sites:
 - Webb Gap population
 - “South Hill” site of the Bishop’s Gap population

- “North Hill” site of the Bishop’s Gap population
 - “site at the third ridge east of Bishop’s Cap” site of the Bishop’s Gap population
- EPA imported Texas State Parks Boundaries from the path provided [here](#) and named the layer “Park Boundary”
 - EPA used select by attribute where “Park Name” is equal to “Franklin Mountain.” EPA made a new layer from the selected featured and named the layer “Franklin Mountain State Park.”
 - The “Franklin Mountain State Park” layer includes the following Sneed pincushion cactus sites:
 - “McKelligon Canyon” site of South Franklin Mountain population
 - “site at the low point of the crest of Franklin Mountain” of South Franklin Mountain population
 - “the site east of Coronado Country Club” of South Franklin Mountain population
 - “site near Canutillo, Texas” of South Franklin Mountain population⁷
 - “the site east of Coronado Country Club” of South Franklin Mountain population
 - “the site at Anthony’s Nose” of the North Franklin Mountain population
 - and “sites south of Anthony Gap that are south of the Texas border are all within this park” (Five Year Review 2023).⁸
 - Anthony’s Gap is north of the Texas border in New Mexico.
 - Sites south of Anthony’s Gap include “Hook Ranch,” “Section 33,” and “Web Gap.”
 - EPA is uncertain which of these sites are south of the border in Texas and which are in New Mexico. However, the core map is contiguous from the State Park in Texas to Anthony’s Gap in New Mexico (**Figure A2-3**).
- EPA identified the location of Rattlesnake Ridge within the species range using Google Maps.⁹ EPA identified approximate coordinate borders of the ridge area and created a .csv file of the coordinates (see **Table A2-1**).
 - EPA imported the .csv file as a XY Table to Point (“rattlesnakeridecorners_XYTableToPoint2”).
 - EPA created a graphics layer and drew a polygon using the points in “rattlesnakeridecorners_XYTableToPoint2.”
 - EPA used the ESRI Graphics to Feature tool to convert the graphics layer to a polygon and named the layer “rattlesnakeridgepolygon.”
 - FWS documentation indicates that there is the potential for 326 ha of habitat on Rattlesnake Ridge (Five Year Review 2023). Therefore, EPA created a 326 ha (approximately 806 acres) buffer around the Rattlesnake Ridge polygon.
 - EPA calculated the radius of an 806 acre circle, which is approximately 3,343 feet.

⁷ FWS documentation includes uncertainty regarding the location of this site. The site is described as either on private land or within the state park. Given the uncertainty, EPA assumed the site is within the state park unless additional information is provided.

⁹ <https://maps.app.goo.gl/XyCNGcbSVqe2Ufma7>

- EPA created a planar buffer from the “rattlesnakeridgepolygon” using the ESRI pairwise buffer tool. The resulting layer was named “rattlesnakeridge_buffer.”
 - Because EPA buffered from the “rattlesnakeridgepolygon,” the resulting buffer area is slightly larger than 806 acres.
- EPA used the ESRI Merge the following layers:
 - “rattlesnakeridge_buffer,”
 - “Franklin Mountain State Park,”
 - “OrganFranklinACEC_PairwiseClipRange,” and
 - “FortBlissCaster_PairwiseClipRange.”
- The resulting layer was named “SneedCoreMap.”

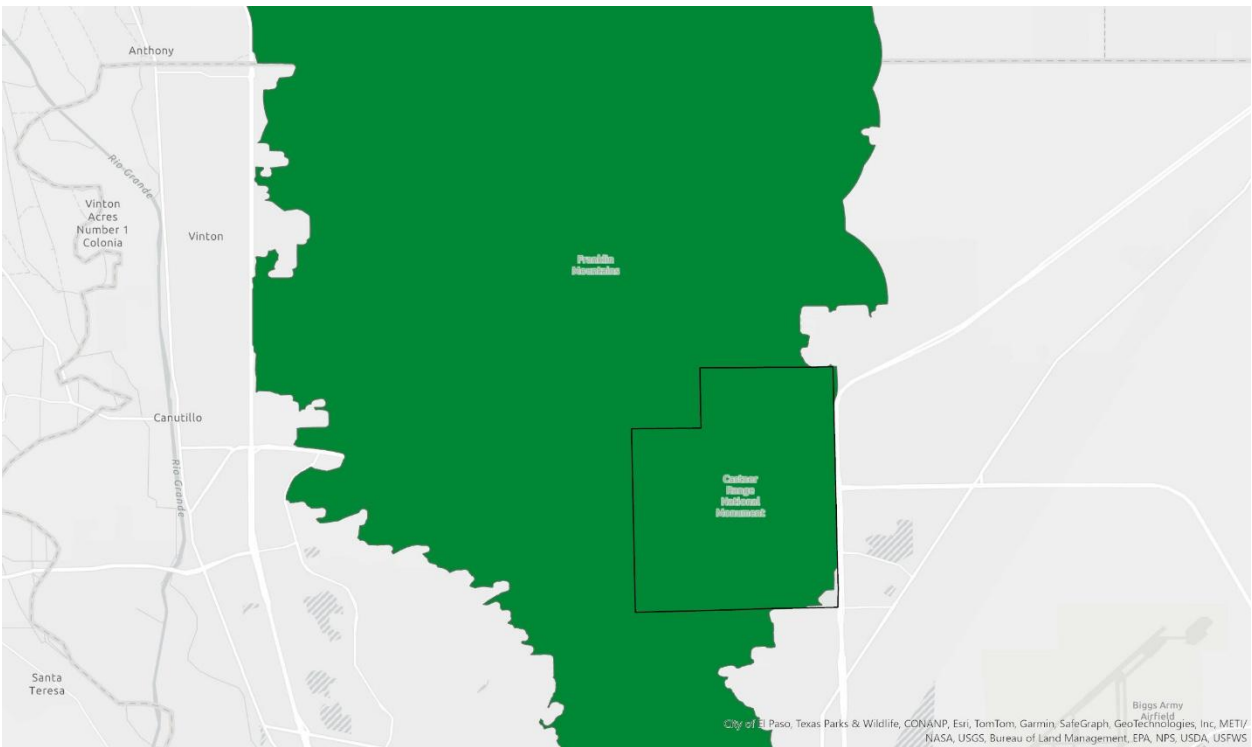


Figure A2-1: Overlap of Fort Bliss Castner Range (black outline) and the FWS range for the Sneed Pincushion.

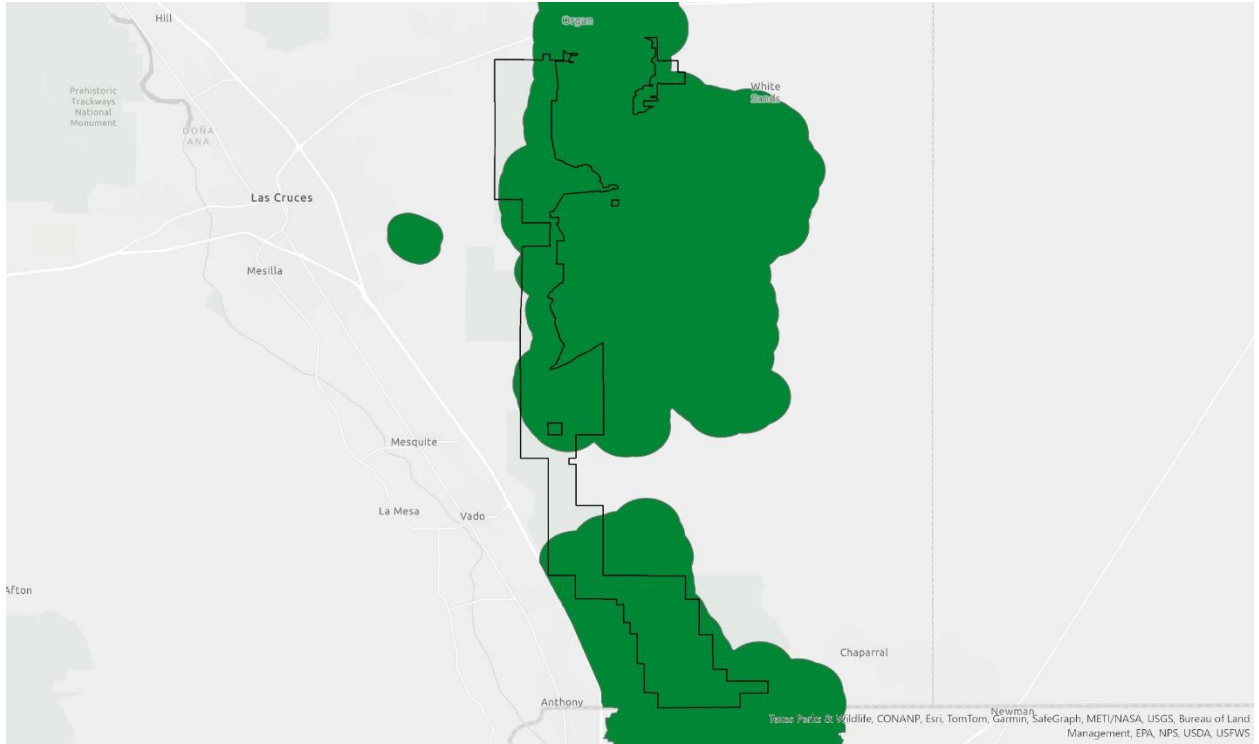


Figure A2-2: Overlap of BLM’s Organ/ Franklin Mountain ACEC (black outline) and the FWS range for Sneed Pincushion Range (green)

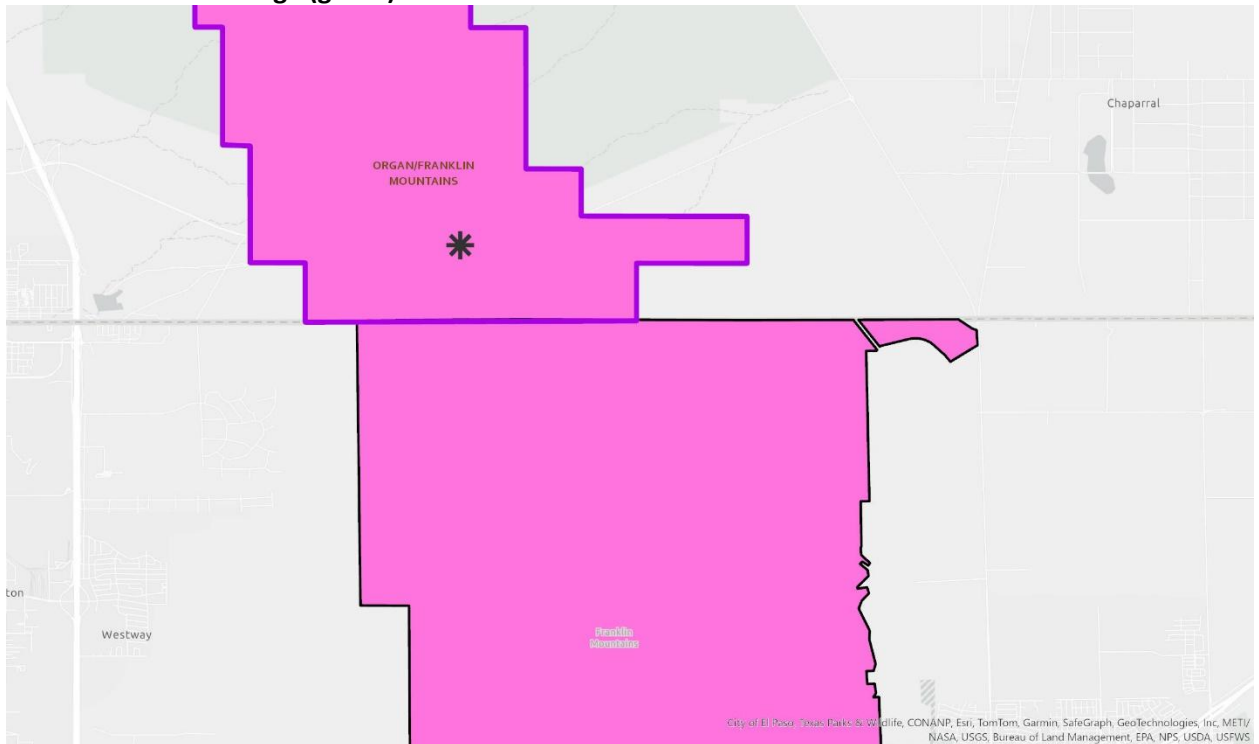


Figure A2-3: Depiction of Anthony’s gap (black star), Organ/ Franklin Mountain ACEC (purple outline), and Franklin Mountain State Park (black outline) within core map (pink area)

Table A2-1: Coordinates Used to Estimate the Rattlesnake Ridge Area

Latitude	Longitude
32.259699	-106.521268
32.258941	-106.521408
32.258333	-106.521381
32.258088	-106.520576
32.258837	-106.520641