

Interim Core Map Documentation for South Texas Ambrosia (*Ambrosia cheiranthifolia*)

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

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Species Summary

The South Texas ambrosia (*Ambrosia cheiranthifolia*; Entity ID #624) is an endangered terrestrial plant. There is no designated critical habitat for this species. This species inhabits open prairies, savannas, and grasslands scattered with mesquite at elevations between 8-20 m. The South Texas ambrosia reproduces vegetatively by rhizomatous growth in the upper portion of the soil, which can result in one individual being represented by several to hundreds of stems. Additional information is provided in **Appendix 1**. This species is currently included in the Herbicide Strategy.

Description of Core Map

The core map for the South Texas ambrosia is based on biological information. The core map is defined by seven locations that the U.S Fish and Wildlife Service (FWS) identified as occupied (**Figure 1**). EPA refined this species range to create the core map by removing areas of the species range that FWS does not identify as being occupied.

Figure 1 depicts the results interim core map for the South Texas ambrosia. The size of the core map is approximately 11,665 acres. Landcover categories within the core map area are included in **Table 1**. Land cover is predominately cultivated crops, developed open space, pasture/hay and developed medium intensity.

The core map developed for the South Texas ambrosia is considered interim. This core map will be used to develop pesticide use limitation areas (PULAs) that include South Texas ambrosia. This core map incorporates information developed by FWS and made available to the public; however, the core map has not been formally reviewed by FWS. This interim core map may be revised in the future to incorporate expert feedback from FWS. This interim core map has an "average" (3) best professional classification to describe major uncertainties/limitations. The map is based on known locations described by FWS, and EPA removed areas not mentioned as occupied by the species. This core map does not replace or revise any range or designated critical habitat developed by FWS for this species.

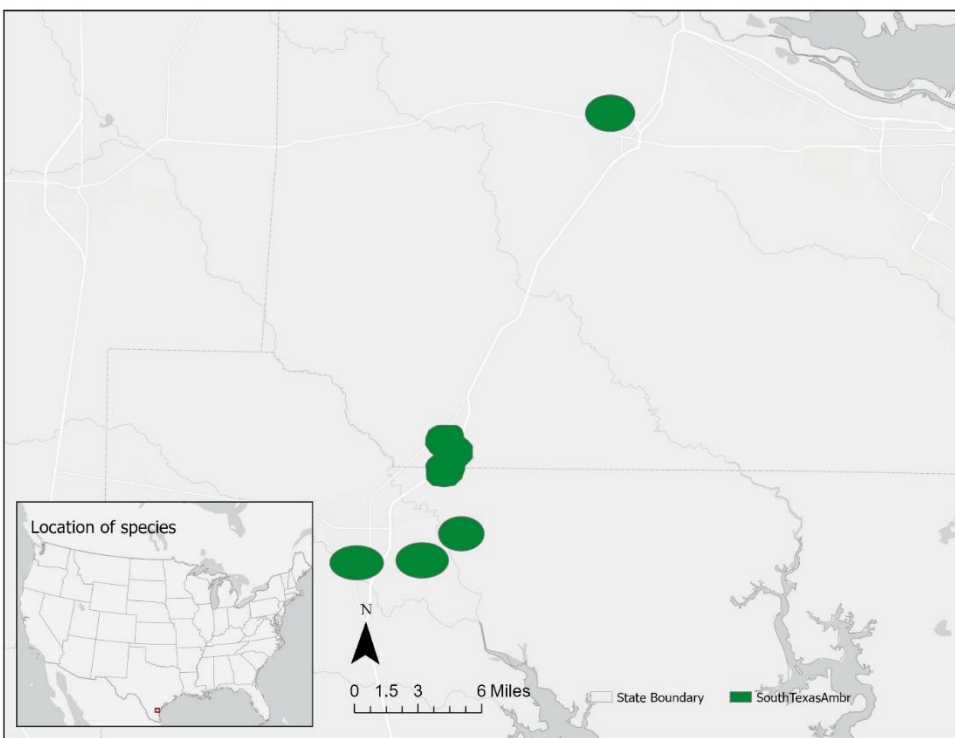


Figure 1. Interim core map for the South Texas ambrosia. The total acreage of the interim core map is approximately 11,665 acres.

Table 1. Percentage of Interim Core Map Represented by NLCD2 Land Covers and Associated Example Pesticide Use Sites/Types.

Example pesticide use sites/types	NLCD Class/Value	% Area	Total area for landcover type
Forestry	Deciduous Forest (41)	0	0
Forestry	Evergreen Forest (42)	0	0
Forestry	Mixed Forest (43)	0	0
Agriculture	Pasture/Hay (81)	0.08	0.49
Agriculture	Cultivated Crops (82)	0.41	0.49
Mosquito adulticide, residential	Open space, developed (21)	0.15	0.37
Mosquito adulticide, residential	Developed, Low intensity (22)	0.1	0.37
Mosquito adulticide, residential	Developed, Medium intensity (23)	0.09	0.37
Mosquito adulticide, residential	Developed, High intensity (24)	0.03	0.37
Invasive species control	Woody Wetlands (90)	0.01	0.14
Invasive species control	Emergent Herbaceous Wetlands (95)	0.01	0.14
Invasive species control	Open water (11)	0	0.14
Invasive species control	Grassland/herbaceous (71)	0.01	0.14
	Scrub/shrub (52)	0.1	0.14

Example pesticide use sites/types	NLCD Class/Value	% Area	Total area for landcover type
Invasive species control	Barren land (rock/sand/clay; 31)	0.01	0.14
Total Acres	Interim Core Map Acres	11,665	

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 the Global Biodiversity Information Facility (GBIF); and
- Occurrence locations included in NatureServe.

EPA evaluated these four sets of data to inform or support the core map. FWS appeared to have the finest resolution of the location information, providing a map that depicted the current known locations all within Nueces and Kleberg Counties (**Figure 2 in Appendix 1**). Occurrences in iNaturalist, GBIF, and NatureServe did not support expanding the core map outside of those 2 counties. **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 Habitats³” (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; and
4. Document the core map.

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

- There are seven known populations in FWS documentation, all of which are within the species’ range

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 these known locations to use as the species core map. For step 3, EPA used the ECOS species range for the South Texas ambrosia.

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

Alternative approaches other than those described in this document were not explored in the development of this interim core map.

Appendix 1. Information Compiled for Species During Step 1

1. Recent FWS Documents

- [South Texas ambrosia \(*Ambrosia cheiranthifolia*\) 5-Year Review \(2010\)](#)
- [South Texas ambrosia 5-Year Review \(2022\)](#)
- [Draft Texas Coastal Bend Shortgrass Prairie Multi-Species Recovery Plan: Including Slender Rush-Pea \(*Hoffmannseggia tenella*\) and South Texas Ambrosia \(*Ambrosia cheiranthifolia*\) \(2017\)](#)
- [Texas Coastal Bend Shortgrass Prairie Multi-Species Recovery Plan: Including Slender Rush-Pea \(*Hoffmannseggia tenella*\) and South Texas Ambrosia \(*Ambrosia cheiranthifolia*\) \(2018\)](#)

2. Background Information on Species

- **Status:** Federally listed as endangered in 1994 (Recovery Plan 2018)
- **Taxonomy:** Ambrosia is an herbaceous, ashy blue-gray, rhizomatous perennial in the Asteraceae Family (sunflowers; Recovery Plan 2018)
- **Resiliency:** No direct information
- **Redundancy:** No direct information
- **Representation:** No direct information
- **Habitat Description:**
 - “*Ambrosia cheiranthifolia* grows in the Gulf coastal grasslands of southern Texas at low elevations 26 to 66 feet above sea level (8 to 20 meters above sea level). The plant is found in grassland and mesquite shrubland habitat on various soils, both heavy clays to lighter-textured sandy loams, mostly of the Beaumont and Victoria Clay series (5-Year Review 2010).”
 - “Extant populations and sites are found in habitats where native short-grass prairie species have persisted (5-Year Review 2010).”
 - “The vegetative community for ambrosia consists of open prairies, savannas, and grasslands scattered with mesquite at elevations between 8-20 m (26–66 ft). Most of the sites where ambrosia is found contain only remnants of shortgrass prairie and are typically unplowed but mowed. Known sites are found within railroad and Hwy ROWs, cemeteries, mowed park fields, and erosional areas along creek systems (Recovery Plan 2018).”
- **Pollinator/Reproduction:**
 - “Often ambrosia is seen reproducing vegetatively by rhizomatous regrowth in the upper portion of the soil. As a result, a single individual may be represented by several-to hundreds of stems, depending on the age of the plant (Recovery Plan 2018).”
 - “Small patches of ambrosia may be part of the same clone, but larger patches are not composed of single clones. However, these genetic studies also suggested that some ambrosia patches were reproducing sexually or that they had in the relatively recent past (Recovery Plan 2018).”
 - “Ambrosia is wind-pollinated (Recovery Plan 2018).”
- **Relevant Pesticide Use Sites (Recovery Plan 2018):**
 - “Widespread herbicide applications in the Texas Coastal Bend occur on row-crop fields before or during plants to maximize crop productivity, or in fall to facilitate

harvesting. Any remaining shortgrass prairie patches that occur near crop fields could be negatively affected by overspray or drift.”

- “An herbicide drift incident occurred in 2008 along the east side of Hwy 77 at the top of ROW slope near the fence line and affected ambrosia plants demonstrated a color change at the tips of plants, yet no plants died. Herbicide use on cropland to maintain ROWs could constitute a threat to any undiscovered populations that may occur close enough to receive significant amounts of overspray.”
- “Herbicides are also used in other environments from which rush-pea and ambrosia are known, including suburban and urban areas where chemicals can be applied on lawns, parks, and golf courses such as NASK, St. James Cemetery, or the city or county park locations. Herbicides are also used to control woody species in rangeland and in bodies of water to control aquatic weeds and have the potential to be used in rangeland throughout the range of rush-pea and ambrosia.”
- **Threats:**
 - “Primary threats to both rush-pea and ambrosia stem from the present or threatened destruction, modification, and curtailment of habitat or range. This habitat loss results from conversion of native prairie to row crops, improved pastures, residential development, commercial development, and Federal installations. There is also ongoing, significant habitat degradation from encroachment as a result of nonnative, invasive pasture grasses; some localized disturbance from management techniques (mowing) and road construction, brush incursion, fire cessation; and minimal damage from herbicide drift incidents onto highway rights-of-ways (ROW; Recovery Plan 2018).”
- **Recovery Criteria/Objectives (2018 Recovery Plan):**
 - **Recovery Objectives:**
 - “Minimize further loss or fragmentation of native shortgrass prairie habitat within Nueces and Kleberg counties, such that there is sufficient habitat to support rush-pea and ambrosia at levels that meet recovery goals.”
 - “Obtain required biological and demographical information to perform PVA and estimate MVP sizes for both species.”
 - “Actively manage shortgrass prairie conditions at all extant population (or subpopulation) sites of rush-pea and ambrosia to sustain both species a Minimum Viable Population levels or higher.”
 - “Establish reintroduction sires within the geographic range of rush-pea and ambrosia to increase the number of protected populations.”
 - “Determine the extent and prevent depletion of rush-pea and ambrosia seeds.”
 - “Promote landowner relations and habitat management throughout the occupied and historical ranges of rush-pea and ambrosia in the United States.”
 - “Determine the genetic diversity within and among populations of rush-pea and ambrosia and prevent its loss.”
 - “Determine optimal habitat requirements for rush-pea and ambrosia.”
 - “Determine and implement best management practices (in particular mowing and invasive species control) where possible and monitor the response of rush-pea and ambrosia populations to these practices.”
 - “Monitor long-term viability of all populations of rush-pea and ambrosia.”

- “Increase knowledge of rush-pea and ambrosia abundance, distribution, and ecology.”
 - “Acquire long-term conservation easements where feasible, or conservation agreements, for occupied sites of rush-pea and ambrosia within each watershed from which the species are known.”
- “Downlisting Criteria 1: A recommended minimum of nine populations are necessary for downlisting and should have at least 7,500-15,000 mature stems per populations. Each population should be stable or increasing over the next 20 years.”
- “Downlisting Criteria 2: Each ambrosia site should be managed for and support high quality shortgrass prairie.”
- “Delisting Criteria 1: A minimum of 15 populations are necessary for delisting and should have at least 7,500-15,000 mature stems per population. Delisting may be possible if each of these populations remains stable or increasing over a period of 40 years.”
- “Delisting Criteria 2: At least seven of the populations that meet the delisting MVP minimum will be protected long-term (protection in perpetuity being optimum) via fee title acquisitions, conservation easements, or conservation agreement.”
- **Recovery Actions (2018 Recovery Plan):**
 - “Habitat protection and management of all known population sites of both species in the United States.”
 - “Establish positive working relationships with landowners and land managers of all known sites.”
 - “Cooperate with landowners and land managers to develop and implement management plans that address landowner and species goals.”
 - “Enforce applicable laws and regulations.”
 - “Monitor both species on an annual basis.”
 - “Develop a monitoring plan for ambrosia.”
 - “Use the approved monitoring plans to annually monitor rush-pea and ambrosia, their habitat, management actions, and threats at extant sites.”
 - “Monitor species and biotic communities and assess ecological integrity and conservation status of historic sites.”
 - “Initiate studies to gather biological information needed for effective management and recovery of rush-pea and ambrosia.”
 - “Determine specific habitat requirements (specifically limiting factors).”
 - “Study population dynamics.”
 - “Survey for additional populations of rush-pea and ambrosia.”
 - “Cooperatively work with landowners and land managers to restore additional shortgrass prairie sites located in one or more of the drainage areas from which rush-pea and ambrosia are known to co-occur.”
 - “Locate and acquire (fee title or permanent conservation easement) an area containing patches of existing shortgrass prairie (even if in degraded state) for purposes of restoration and long-term shortgrass prairie conservation.”
 - “Carry out restoration, including reintroductions, at this site (5.1) or other sites such that a complement of the native shortgrass prairie grasses and forbs commonly associated with rush-pea and ambrosia are present.”
 - “Introduce experimental populations of rush-pea and ambrosia.”
 - “Establish seed or propagule banks and ex-situ (botanical garden, refugium, research institute, etc.) populations for each species. These banks and ex-situ populations will

be established using approved reintroduction plans for both species (see Recovery Action 7 below)."

- "Continue experimentation with seed germination and effectiveness of ambrosia propagation from seed."
- "Continue vegetative propagation of ambrosia for purposes of reintroduction."
- "Conduct a reintroduction program on public and private lands where there are willing partners."
 - "Develop a USFWS-approved controlled propagation and reintroduction plan for ambrosia."
 - "Appoint a coordinating team to help plan and oversee the reintroduction programs."
 - "Incorporate reintroduction into applicable agency land management plans."
 - "Perform experimental planting at a selected natural site as a pilot project."
 - "Using results from Action 7.4, reintroduce populations on private and public lands, where possible."
 - "Use information gained from the long-term monitoring program to adjust both species' reintroduction plans."
- "Develop an education and outreach program."
 - "Develop any necessary educational or outreach materials."
 - "Provide educational and outreach materials to landowners and land managers."
 - "Provide educational and outreach materials to interested parties including agencies, engineering and consulting firms, developers, utilities, county road associations, and others."
- "Conduct Population Viability Analyses (PVA) and update the existing MVPs for each species based on current biological and ecological information."
 - "Investigate both species' population genetics to ensure long-term persistence."
 - "Develop traditional MVP estimates for both species."
 - "Reassess the MVP size when new information is made available."
- "Review and track recovery."
 - "Maintain the STXPRT to help review the status of both species and assess the effectiveness of the management plans and other recovery tasks."
 - "Revise the Recovery Plan as appropriate."
 - "Develop a post-delisting monitoring plan when appropriate."

3. Description of Species Range

- "As of 2014, there are seven extant, or presumed extant, ambrosia populations from north-central Kleberg County through north-central Nueces County. One site occurs on state land, on both the north and southbound ROWs of US Hwy 77. The largest population occurs on Federal land at the Naval Air Station Kingsville (NASK). There are two sites on city or county-owned lands; the Bishop City Park and the Nueces County Park in Robstown. Two sites are located on private land, including a large population at the St. James Cemetery in Bishop and a small group of plants on a lot in Kingsville (General Cavazos Boulevard). Additionally, a National Guard training area formerly leased from a private landowner, known as the KRTA, has several sites. These KRTA populations became inaccessible and thus unverifiable after

the lease expired in the mid-1990s. Observations using Google Earth show the habitat still exists and the ambrosia is assumed to be extant (Recovery Plan 2018)."

- "Although the majority of remaining ambrosia sites are concentrated in the northern part of the range, from north central Nueces County to south central Kleberg County (**Figure 5**), there were historic records that indicated the range extended from Nueces County south to San Fernando, Mexico. A number of ambrosia occurrences are now considered historic because they have not been relocated in over 20 years or a confirmation of identification (or a voucher) is lacking (Recovery Plan 2018).

4. Critical Habitat

- FWS has not designated critical habitat for this species
(<https://ecos.fws.gov/ecp/species/3331>)

5. Known Locations

- **Known Locations Described in FWS Recovery Document (2018)**
 - As of 2014, there are seven extant, or presumed extant, ambrosia populations from north-central Kleberg County throughout north-central Nueces County.

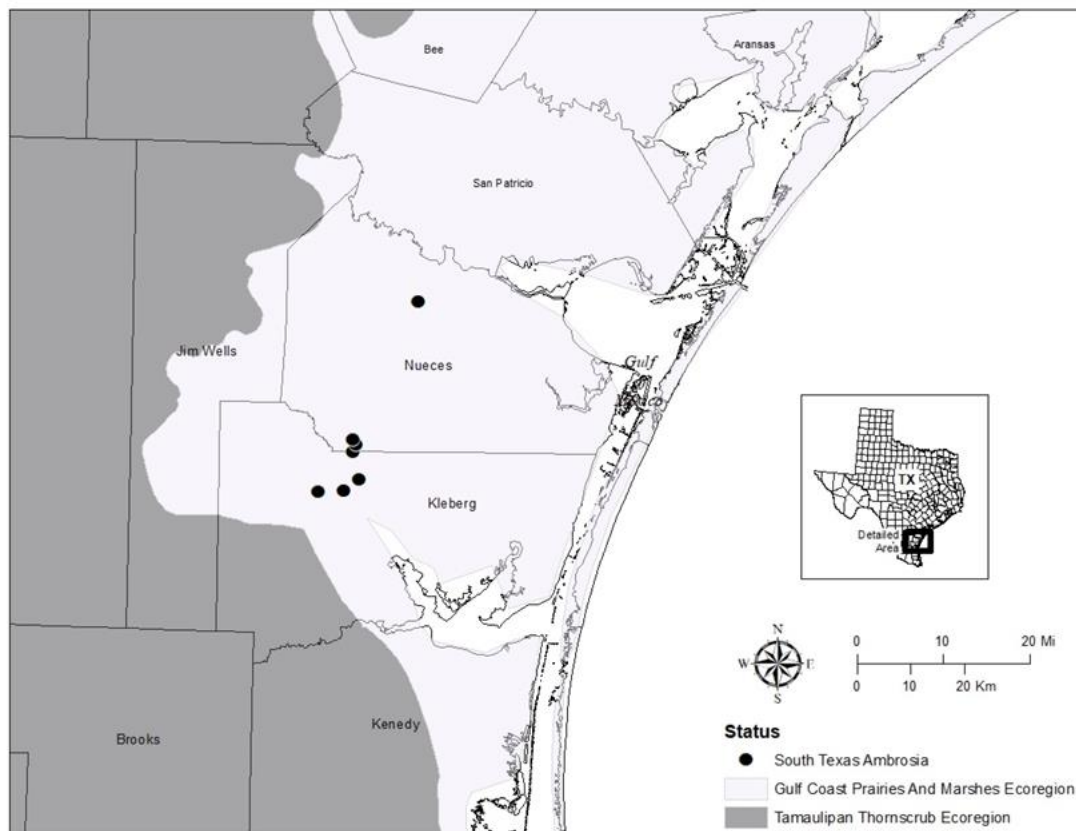


Figure 2. Map of extant populations of South Texas ambrosia in Texas from FWS 2018 Recovery Plan.

Table 2. Known extant populations of South Texas ambrosia from the FWS 2018 Recovery Plan.

Pop #	EO #	First Observer, Observation	Last Observer, Observation	County	Site Description	Watershed/Basin	Status	Ownership
1	6	R. O'Brien; 1988	R. Cobb, C. Amy; 2017	Nueces	St. James Cemetery	Chilitipin Creek-San Fernando Creek	E	Private
2		1993	R. Cobb, C. Best; 2016	Nueces	Hwy 77 ROW, southwest of Carreta Creek and immediately south of Nueces/Kleberg line; on both east and west sides of highway	Chilitipin Creek-San Fernando Creek	E	State (expanding onto private land)
3	28	D. Price and L. Pressly; 2001	R. Cobb; 2016	Nueces	Nueces County Park in Robstown	Oso Creek	E	Municipal lands
4	7	P. Clayton; 1991	Coastal Ecological Service Staff; 2014	Kleberg	NASK	Chilitipin Creek-San Fernando / Santa Gertrudis Creek	E	Federal
5	19	W. Carr; 1993	W. Carr; 1993	Kleberg	KRTA	Alazan Bay-Baffin Bay	E-Uv	Private
5a	19	W. Carr; 1993	W. Carr; 1993	Kleberg	KRTA; Pinto creek	Alazan Bay-Baffin Bay	E-Uv	Private
5b	21	W. Carr; 1993	W. Carr; 1994	Kleberg	KRTA; Pinto pasture. Contains an east and west subpopulation.	Alazan Bay-Baffin Bay	E-Uv	Private
5c	19	W. Carr; 1993	W. Carr; 1994	Kleberg	KRTA; road to Pinto Creek	Alazan Bay-Baffin Bay	E-Uv	Private
5d	19	W. Carr; 1993	W. Carr; 1995	Kleberg	KRTA; south towards Ramos Well	Alazan Bay-Baffin Bay	E-Uv	Private
5e	19	W. Carr; 1993	W. Carr; 1993	Kleberg	KRTA; southwest of Bordo Nuevo Windmill	Alazan Bay-Baffin Bay	E-Uv	Private
5f	19	W. Carr; 1993	W. Carr; 1994	Kleberg	KRTA; road through Pinto pasture	Alazan Bay-Baffin Bay	E-Uv	Private
6		A. Hempel; 2011	A. Hempel; 2016	Kleberg	Kingsville, on E. General Cavazos Blvd. west of intersection with 6th Street	Santa Gertrudis Creek	E	Private
7		W. Carr, C. Bush, R. O'Brien, R. Cobb; 1992	R.Cobb, C. Amy; 2017	Nueces	Bishop City Park on northeast side of Carreta Creek; both sides of drainage ditch	Chilitipin Creek - San Fernando Creek	E	City

- **Occurrences Included in Public Databases**

- EPA queried iNaturalist, GBIF, and NatureServe. Collectively, the occurrence data are consistent with the species range; however, they are not fully consistent with the known locations identified in the FWS 2018 Recovery Plan.
- iNaturalist (available [here](#)) had 13 research grade observations for this species. All 13 observations are within the range identified by FWS.
- GBIF (available [here](#)) included 10 occurrences and human observations (from 2010-2025). All these observations are included in iNaturalist. GBIF points are within the range identified by FWS.
- Occurrences in NatureServe were consistent with other occurrence data (linked [here](#)) for 3 documented distributions.

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

This core map was created based on biological information, including occupied location.

1. Dataset References and Software

- NLCD Landcover 2021⁴
 - 30 m raster dataset that contains percent landcover, as a continuous variable, for each pixel across all land covers and types for the conterminous US
- Software used: ArcGIS Pro 3.2
- FWS Species Range – last updated on January 27, 2018
- Map of extant populations of South Texas ambrosia in Texas from FWS 2018 Recovery Plan

2. Datasets Used in Core Map Development

All datasets used in core map development are described in EPA's process document.

3. Core Map Development

- EPA started with the FWS species range. The core map was refined using FWS known locations for the species. The map of extant populations of South Texas ambrosia in Texas from FWS 2018 Recovery Plan was cross referenced into ArcGIS to replicate the known location polygons developed by FWS for the final refined core map.
 - Each known location site was converted to a polygon derived from the map and table of extant populations of South Texas ambrosia in Texas from FWS 2018 Recovery Plan.
 - Merge all seven developed polygons into a single polygon
 - Export NLCD landcover to raster for merged polygon
 - Raster to polygon by classname
 - Dissolve by classname to get sum of each landcover category
 - Calculate acres for each landcover category

This area is also representative of other occurrence data sources including iNaturalist, GBIF and NatureServe.