

# Interim Core Map Documentation for the Ashy Dogweed

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

## Species Summary

The ashy dogweed (*Thymophylla tephroleuca*; entity ID 615) is an endangered perennial terrestrial plant and was federally listed as endangered in 1984. There is no critical habitat established for this species. The species is found on the border of the United States and Mexico along the Rio Grande in Webb and Zapata Counties in Texas. The ashy dogweed inhabits grassland and scattered shrub-dominated habitats with fine sandy loam soils. The ashy dogweed typically flowers between March and May but can flower as early as February depending on rainfall. They are obligate outcrossers and have non-specialist pollinators. Additional information on the species is in **Appendix 1**.

## Description of Core Map

The core map for the ashy dogweed is based on biological information. The range of the ashy dogweed in Texas historically included Starr, Webb, and Zapata Counties on the border of Texas and Mexico along the Rio Grande; the species is currently only found in Webb and Zapata Counties. The U.S. Fish and Wildlife Service (FWS) identified six extant populations of ashy dogweed and four populations with unknown status (Five-Year Review, 2011). All FWS-documented occurrences fall within the range. The core map was developed to encompass the FWS known occurrences. EPA identified locations of occurrences using literature cited by FWS in their Five-Year Review (2011). The outer extent of the map is defined by buffers around point and line locations of known occurrences, land parcels containing known occurrences, and element occurrence polygons for the ashy dogweed from the Texas Natural Diversity Database (TXNDD).<sup>1</sup> When buffers were developed, they were based on documented acreage of point locations in the literature or (if specific acreage was not provided) minimum patch size for plants identified by U.S. Department of Agriculture (USDA) National Agroforestry Center Conservation Buffers.<sup>2</sup>

**Figure 1** depicts the resulting interim core map for the ashy dogweed. The size of this core map is approximately 61,911 acres in Webb and Zapata Counties. Landcover categories within the core map area are included in **Table 1**. Land cover within the core map was assessed using the National Land Cover Database (NLCD).<sup>3</sup> Landcover in the core map is predominantly scrub/shrub. The core map also contains grassland herbaceous lands, pasture/hay, and some low intensity developed land. Additional information on GIS steps used is in **Appendix 2**.

The core map developed for the ashy dogweed is considered interim. This core map will be used to develop pesticide use limitation areas (PULAs) that include the ashy dogweed. This core map incorporates information developed by FWS and made available to the public; however, the core map

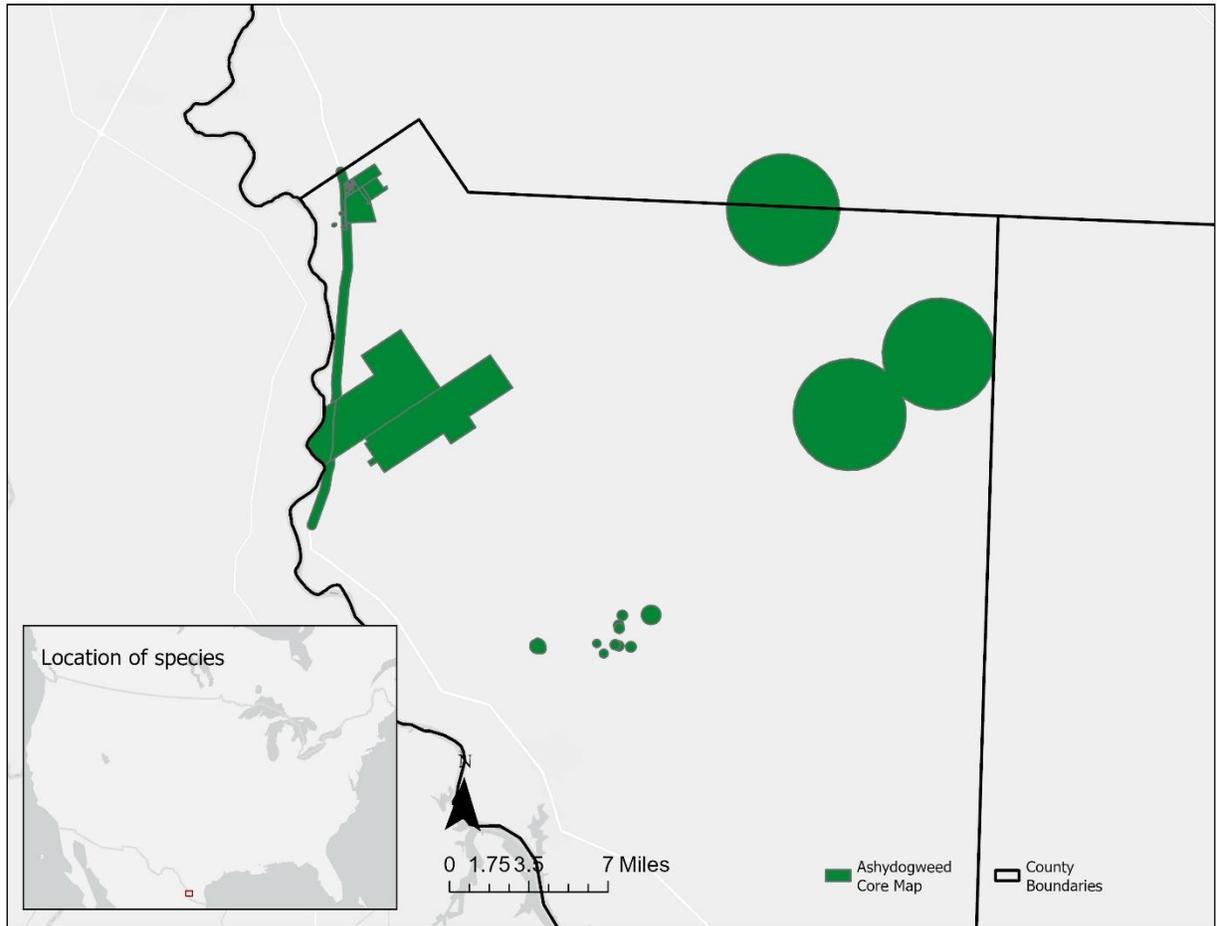
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<sup>1</sup> [https://tpwd.texas.gov/huntwild/wild/wildlife\\_diversity/txndd/](https://tpwd.texas.gov/huntwild/wild/wildlife_diversity/txndd/)

<sup>2</sup> [https://www.fs.usda.gov/nac/buffers/guidelines/2\\_biodiversity/2.html](https://www.fs.usda.gov/nac/buffers/guidelines/2_biodiversity/2.html)

<sup>3</sup> Dewitz, J., 2023, National Land Cover Database (NLCD) 2021 Products: U.S. Geological Survey data release, <https://doi.org/10.5066/P9JZ7AO3>

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” best professional judgment classification to describe major uncertainties/limitations around the known location data upon which the map is based. 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 ash dogweed. The total acreage is approximately 61,911 acres.**

**Table 1. Percentage of Interim Core Map Represented by NLCD<sup>4</sup> Land Covers and Associated Example Pesticide Use Sites/Types.**

Example pesticide use sites/types	NLCD Class (Value)	% Area <sup>5</sup>	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)	10	12%
Agriculture	Cultivated Crops (82)	1	12%
Mosquito adulticide, residential	Open space, developed (21)	0	1%
Mosquito adulticide, residential	Developed, Low intensity (22)	1	1%
Mosquito adulticide, residential	Developed, Medium intensity (23)	0	1%
Mosquito adulticide, residential	Developed, High intensity (24)	0	1%
Invasive species control	Woody Wetlands (90)	0	87%
Invasive species control	Emergent Herbaceous Wetlands (95)	0	87%
Invasive species control	Open water (11)	0	87%
Invasive species control	Grassland/herbaceous (71)	11	87%
Invasive species control	Scrub/shrub (52)	75	87%
Invasive species control	Barren land (rock/sand/clay; 31)	0	87%
<b>Total Acres</b>	<b>Interim Core Map Acres</b>	<b>61,911 acres</b>	

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

EPA evaluated these four sets of data before selecting the type of and developing the core map. FWS appeared to have the best available occurrence information. The FWS known occurrences are located within the species range, including the historical occurrence (in Webb, Zapata, and Starr Counties; **Figure A1-2** in **Appendix 1**). Occurrences in iNaturalist, GBIF, and NatureServe did not support further expanding the core map outside of the FWS range and known occurrences. **Appendix 1** includes more information on the available known location information.

<sup>4</sup> Dewitz, J., 2023, National Land Cover Database (NLCD) 2021 Products: U.S. Geological Survey data release, <https://doi.org/10.5066/P9JZ7AO3>

<sup>5</sup> Rounded to the nearest percent.

## 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 FWS and their Designated Critical Habitats”<sup>6</sup> (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 ashy dogweed from FWS, as well as observation information available from various publicly available sources (including iNaturalist, GBIF, and NatureServe). The information compiled for the ashy dogweed is included in **Appendix 1**. Influential information that impacted the development of the core map included:

- The species range of the ashy dogweed
- The FWS descriptions of known occurrences of the ashy dogweed, which are all within the species range (included here in **Figure A1-2** and **A1-3**)
- TXNDD data for the ashy dogweed (cited by FWS in the Five-Year Review, 2011)
- Occurrence coordinates extracted from Price et al. 2006 (cited by FWS in the Five-Year Review, 2011)<sup>7</sup>

For step 2, EPA used the compiled information to identify the core map type including species range and known location information. The six FWS-identified extant populations are located within the species range (**Figures A1-2 and A1-3**). The species range includes the geopolitical extent of three counties in Texas (Webb, Zapata, and Starr Counties) but includes area that are not habitat for this species. The historical occurrence in Starr County was not included as it is not an extant population.

Therefore, EPA based the core map on known locations. The entire range of the species was not used as the core map because the range contains areas and habitats 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 detail in **Appendix 2**. For this core map, EPA used the known occurrence information provided in FWS documentation, as well information in the literature cited by FWS. The known occurrences were incorporated into the core map in three ways: (1) developing a buffered polygon around the relevant portion of U.S. Highway 83 rights of way (ROWs), (2) incorporating ashy dogweed data from TXNDD,<sup>8</sup> and (3) incorporating coordinate locations of ashy dogweed occurrences extracted from Price et al. 2006.<sup>9</sup> To incorporate these coordinate locations in the core map, EPA either developed buffer polygons around the coordinates or extracted polygons from land parcel data (depending on the information available). See **Appendix 2** for details on the methods used and rationale.

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<sup>6</sup> Dated 2024, available online at: <https://www.epa.gov/endangered-species/process-epa-uses-develop-core-maps-pesticide-use-limitation-areas>

<sup>7</sup> Price, J., G. Janssen, and L. Williams. 2006. Final Report: Lower Rio Grande Valley Candidate Plant Conservation Agreement. Texas Parks and Wildlife Department, November 2006. [https://tpwd.texas.gov/business/grants/wildlife/section-6/docs/plants/e28\\_final\\_report.pdf](https://tpwd.texas.gov/business/grants/wildlife/section-6/docs/plants/e28_final_report.pdf).

<sup>8</sup> [https://tpwd.texas.gov/huntwild/wild/wildlife\\_diversity/txndd/data.phtml](https://tpwd.texas.gov/huntwild/wild/wildlife_diversity/txndd/data.phtml)

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

Alternative approaches and data were not considered in the development of this interim core map.

### Appendix 1. Information Compiled for the Ashy Dogweed During Step 1

#### 1. Recent FWS documents/links and other data sources

- [Ashy dogweed \(\*Thymophylla tephroleuca\*\) 5-Year Review \(2011\)](#)
- [Ashy dogweed \(\*Thymophylla tephroleuca\*\) 5-Year Review \(2022\)](#)
- [Ashy Dogweed \(\*Thymophylla tephroleuca\*\) Recovery Plan \(1988\)](#)
- [Supplemental Finding for Ashy dogweed \(\*Thymophylla tephroleuca\*\) Recovery Plan \(2019\)](#)

#### 2. Background information

- **Status:** Federally listed as endangered in 1984
- **Resiliency, redundancy, and representation** (the 3Rs)
  - No species status assessment or specific reference to the 3Rs in FWS documentation.
  - “Several *T. tephroleuca* populations are considered meta-populations based on relative distance between sites; therefore threats to the plants from the loss, fragmentation, and/or alteration of habitat may be exacerbated at these sites as opposed to plants in populations that are farther apart. Invasion by non-native grasses, oil and gas development, highway development and roadside projects, and climate change (e.g. more frequent and/or extended droughts) threaten the species” (Five-Year Review, 2011).
- **Habitat**
  - Endemic to south Texas and is currently found only in Webb and Zapata counties. The status of this species in Mexico is unknown (Five-Year Review, 2022).
  - Grassland and scattered shrub-dominated habitats with fine sandy loam soils (Five-Year Review, 2011).
- **Diet** (Five-Year Review 2011).
  - The species is a plant that requires sunlight.
- **Reproduction** (Five-Year Review 2011).
  - “Obligate outcrosser that has non-specialist pollinators from members of the families Buprestidae (beetles), Bombyliidae (bee flies), and Megachilidae (bees).”
  - Flower heads are yellow to bright yellow. Flowering timing is dependent on rainfall and can happen as early as February but typically occurs between March and May.
- **Taxonomy**
  - Short, woody-based, perennial sub-shrub plant in the sunflower family (Asteraceae)
- **Relevant Pesticide Use Sites**  
**Five-Year Review, 2011**

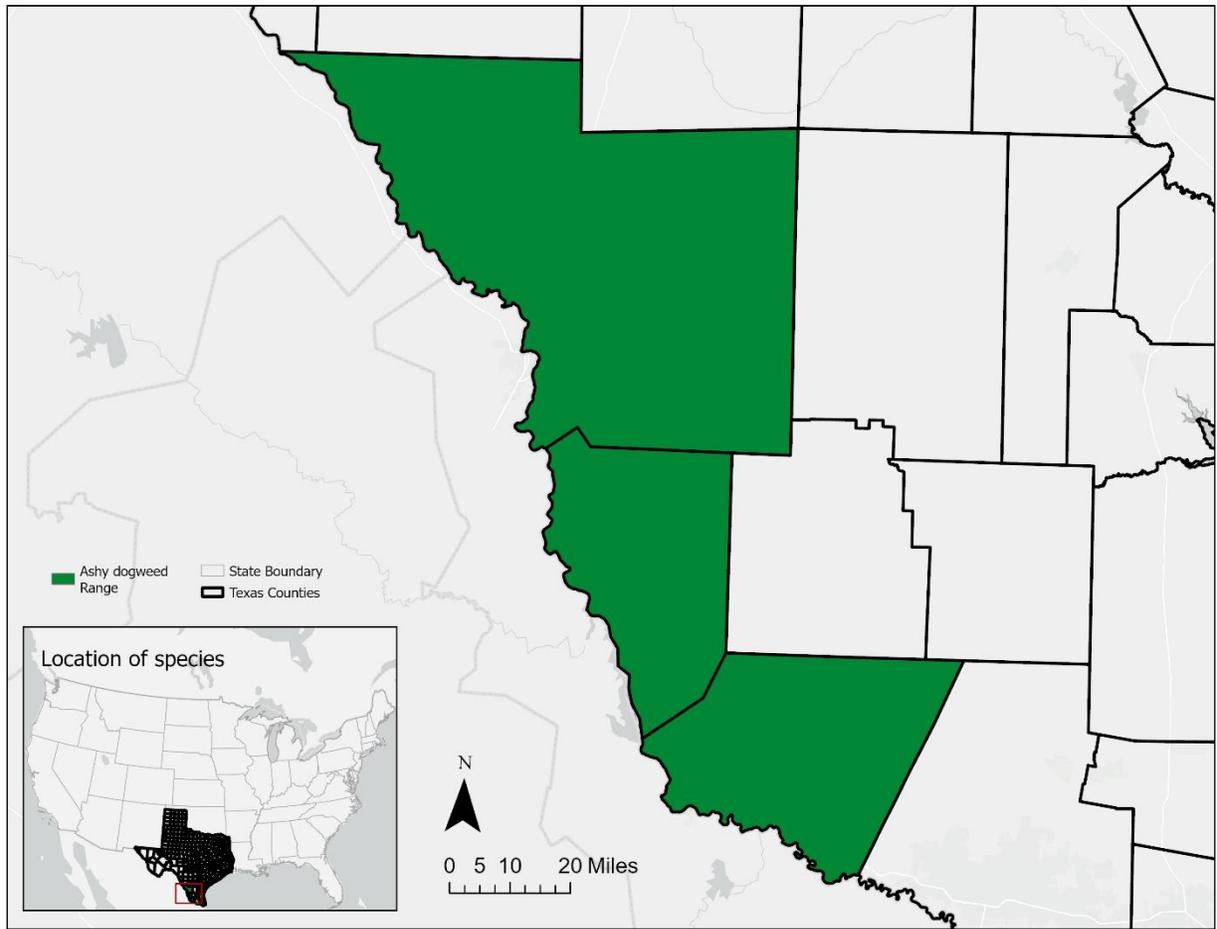
- “The use of herbicides to maintain [right-of-way] species may inadvertently cause species mortality (USFWS 1988), but the response of *T. tephroleuca* to herbicides and the extent of herbicide use in occupied habitat is unquantifiable.”
- Herbicides or insecticides that are used with proximity to ashy dogwood could directly harm the plant, their pollinators, or the pollinator’s host plants
- There is no documentation of herbicide use for control of noxious weeds or whether ashy dogweed has been affected. However, the species occurs near agriculture and spray drift is a potential threat
- Because of the seasonal timing of pesticide applications and the difficulty connecting adverse effects of pesticides on pollinator communities to the secondary effects to pollinated plants, it is uncertain whether pesticides directly or indirectly affect the survival of ashy dogweed.

**Five-Year Review, 2022**

- “In the past, much of the private land in Starr, Zapata, and Webb counties in the area where *T. tephroleuca* occurs was used for row-crop agriculture; however, much of this land has been converted to ranchlands. With this conversion, there is less likelihood that herbicides and pesticides will be used on these properties. Because we do not have open communication with the landowners, and some have been unwilling in the past to allow surveys on their properties, management activities are unknown. To the best of our knowledge, herbicide drift incidents have not occurred at *T. tephroleuca* sites, but it is possible that any such instances were simply not reported. The projected threat from pesticides is projected to be minimal at best and is not likely to increase in the future.”
- **Recovery Criteria/Objectives (5-Year Review, 2011)**
  - When the Recovery Plan was completed in 1988, little was known about the species biology and life history, which made developing specific measurable Recovery Criteria difficult.
  - Due to the lack of information on the species, the following non-specific criteria were listed in the 1988 Recovery Plan:
    - Maintain present populations through landowner cooperation and habitat management
    - Establish new populations in suitable habitats (Factor A)
    - Obtain biological information needed for effective management
    - Develop public support for preservation of ashy dogweed
  - FWS noted in 2019 that insufficient information is available to develop informed delisting criteria due to the inability to conduct follow-up studies to known populations (Supplemental Finding for Ashy dogweed (*Thymophylla tephroleuca*) Recovery Plan, 2019).

**3. Description of Species Range**

- **Figure A1-1** depicts the FWS range. The range was last updated on 1/26/2018. Total acreage of range is approximately 3,625,522 acres.
- The range represents the entire extent of Webb, Zapata, and Starr counties.



**Figure A1-1. FWS range for the ashy dogweed. Total acreage of range is approximately 3,625,522 acres. From north to south, the range includes Webb, Zapata, and Starr Counties.**

**4. Critical Habitat:** there is no critical habitat established for this species.

**5. Known Locations**

- **Known Locations Described in FWS Documentation:**

- Ashy dogweed is found in Webb and Zapata counties in Texas. Unknown status in Mexico (Five-Year Review 2022).
- There was a historical (1932) occurrence in Starr County which has not been reverified (Five-Year Review 2011).
- In the 2022, there were no updates to the known populations since the 2011 Review (Five-Year Review 2022).
  - The only regularly monitored population and only population on public land partially occurs within U.S. Highway 83 ROW (Five-Year Review, 2022).
- **Figure A1-2** is a map of the FWS known extant populations of ashy dogweed and **Figure A1-3** is a table of all recorded populations of ashy dogweed, both extracted from the 2011 FWS Five-Year Review.

- The information depicted in **Figure A1-3** was retrieved by FWS from Price et al. 2006,<sup>9</sup> Dodson 2001,<sup>10</sup> and Williamson 2002.<sup>11</sup>
  - Dodson 2001 and Williamson 2002 included coarse maps (county level) of three population locations, but did not document specific location and biological information for the populations.
  - Price et al. 2006 included coordinates for 22 occurrences of ashy dogweed and information regarding the site.
- In 2011, there were six presumed extant populations were known by FWS (Five-Year Review, 2011) and there was no update in the most recent Review (Five-Year Review, 2022). Information on occurrences is included in **Figure A1-3** and occurrences are mapped in **Figure A1-2**.
- Of the 11 populations documented by FWS in **Figure A1-3**, the presumed extant populations include population 2a, 2b, 5, 6, 7 and 8. Populations 3, 4, 9 and 10 are considered “unknown” due to lack of land access and surveying.
- Both populations in Webb County (3 and 9) have unknown status due to lack of land access, but FWS notes that “much of the southwestern part of Webb County with potential for *T. tephroleuca* had been converted to pastures and cropland.” (Five-Year Review 2011).
  - FWS thought that Population 3 was an erroneous report, but later determined that it was possible that Ashy dogweed could occur at this location. The occurrence has not been verified (Five Year Review, 2011).
  - Population 9 (“12 mi southeast of Laredo”) is the northernmost occurrence but land practices are unknown because access has not been granted. No other location information is available and its status is unknown with last observation in 2001 (Five-Year Review, 2011).
- **Occurrences Included in Public Databases:**
  - EPA queried iNaturalist, GBIF, and NatureServe.
- iNaturalist (available [here](#)) included 20 research-grade observations from October 2020-November 2023. The exact coordinates of these observations were obscured due to protect the geoprivacy of the species, so the coarse location of the observations were reviewed. All observations appear to be within the range and are concentrated south of Laredo, Texas, which is within Webb county. The place of observation listed for each observation is Texas. However, in the map view only nine of the observations coarse locations fall on the United States side of the border. This is because iNaturalist obscures coordinates due to geoprivacy concerns.
  - GBIF (available [here](#)) included 0 occurrences with or without geographic coordinates.
  - NatureServe (available [here](#)) was searched but no occurrences with georeferenced data were available.

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<sup>9</sup> Price, J., G. Janssen, and L. Williams. 2006. Final Report: Lower Rio Grande Valley Candidate Plant Conservation Agreement. Texas Parks and Wildlife Department, November 2006.

<sup>10</sup> Dodson, D. 2001. Life History Traits and the Effects of Disturbance on the Ashy Dogweed (*Thymophylla tephroleuca*), a narrow Texas endemic. Master of Science thesis, SWTU. December 10, 2001.

<sup>11</sup> Williamson, P. 2002. Final Report: The Effects of Disturbance on the Ashy Dogweed (*Thymophylla tephroleuca*) and the Prostrate Milkweed (*Asclepias prostrata*). Texas Parks and Wildlife Department, July 2002.

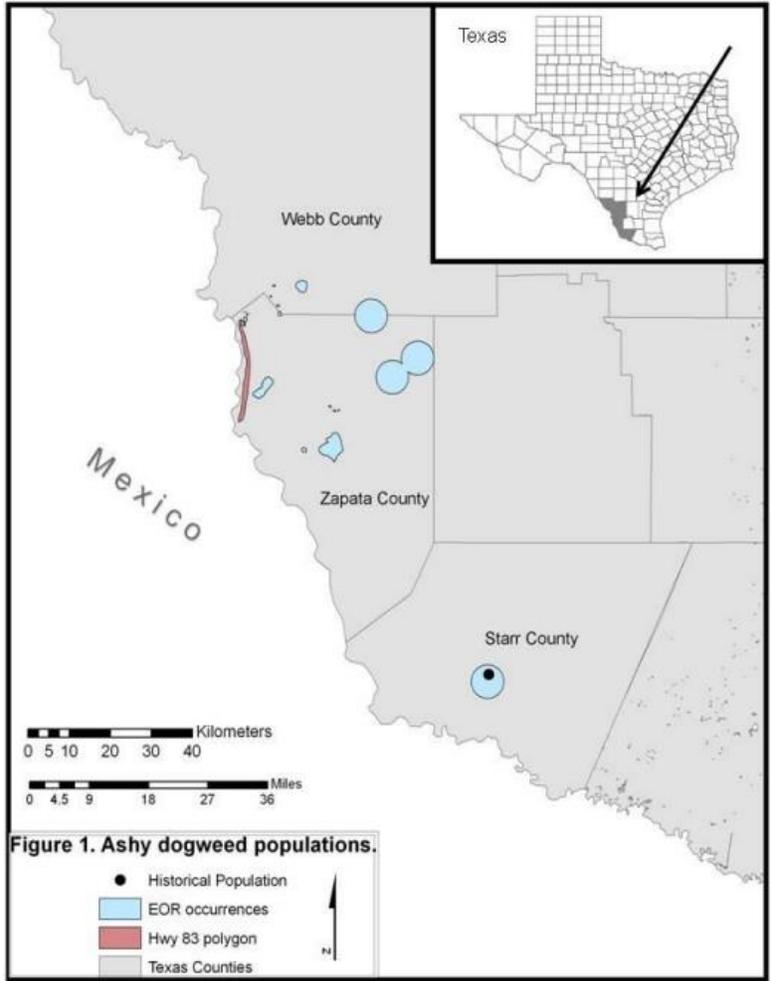


Figure A1-2. Known populations of ashy dogweed extracted from 2011 FWS Five-Year Review

**Figure A1-3. All recorded populations of ashy dogweed extracted from 2011 FWS Five-Year Review**

Population Numbers	EO#	First Obs.	Observer/s	Last Obs.	County	Population Description	Voucher	Population Size and Observations	Status	Land Ownership	VCA signed?
1	2	1932	Elzada Clover	1932	Starr	Eight miles north of Rio Grande City.		Unknown	H	Unknown	No
2a	1	1965	Dr. S. Correll, G. Janssen, C. Best	2007	Zapata/Webb county line	Within U.S. Hwy 83 ROW and adjacent private properties. Extending from northern part of county south to San Ygnacio. Includes the Dolores subdivision on the east side of Hwy 83 (12 separate tracts) with large ranch to the east. Heads south from Hwy 83. Private ranch is on both east and west sides of Hwy 83, between 18-19 miles south of Laredo.	TSU (formerly SWTSU) (1999)	1,000 individuals (1980); 250 individuals (1984); 500 individuals (1986); 1,300 individuals (1987); several thousand plants (1989); 284 plants on west sides and 82 plants on east side of Hwy 83; 20,000 plants (in 1993).	E-Uv.	Private	No
2b	1	1965	Dr. S. Correll, G. Janssen, FWHA	2007	Zapata	Within U.S. Hwy 83 ROW; on 425 acres approx. 1.2 miles south of Webb/Zapata line, extending south 1.5 miles.		Over 440,000 plants in existing and proposed ROW (1998)	E	State owned (ROW)	No
3		1992	A. Brooks, J. Poole, D. Dodson, P. Williamson, G. Janssen		Webb	3.5 acre lot north of Webb/Zapata County line and east of U.S. Hwy 83.	TSU (1999)	Site originally considered erroneous report; however, the soils and habitat were suitable. Now considered a true population; no surveys to verify since the late 1990s.	U	Private	No
4		2001	D. Dodson, P. Williamson	2001	Zapata	164 acre population northeast of town of Zapata (southernmost known population).	TSU (1999)	In Dodson and Williamson's published work. Unknown if this is part of the metapopulation containing Populations #6 and/or 8.	U	Private	No
5			G. Janssen	2004	Zapata	Population on two parcels of land totaling 35,000 acres along U.S. Hwy 83; about 3 miles north of San Ygnacia		Survey was conducted on both parcels of land on only 19,000-acre parcel of 35,00 acres due to limited access.	E-Uv.	Private	No
6			G. Janssen	2004	Zapata	Private ranch in northeastern part of the county. in the vicinity of Hwy 83 ROW.		From Dodson's 2001 thesis, this appears to be the same population on which he and collected seeds.	E-Uv.	Private	Yes

Population Numbers	EO#	First Obs.	Observer/s	Last Obs.	County	Population Description	Voucher	Population Size and Observations	Status	Land Ownership	VCA signed?
7			G. Janssen	2004	Zapata	Private ranch in northeastern part of the county in the vicinity of Hwy 83 ROW.			E-Uv.	Private	Yes
8			G. Janssen	2004	Zapata	Private ranch in northeastern part of the county in the vicinity of Hwy 83 ROW.			E-Uv.	Private	Yes
9		1999	G. Janssen	2001	Webb	Twelve miles southeast of Laredo.		Dodson collected seed from this site for his genetic work, published in 2001.	U	Private	No
10		2003	G. Janssen	2004	Zapata	On Chevron Rd, a caliche road- to the gate entrance of neighboring private ranch.			U	Unknown/ Private	No



Figure 7. Distribution of the 22 new and updated localities for ashy dogweed (*Thymophylla tephroleuca*) verified during this study.

Figure A1-4. Locations of ashy dogweed occurrences extracted from Price et al. 2006 (cited by Five Year Review, 2011)

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

This core map was created based on biological information, including known location information from FWS, TXNDD,<sup>12</sup> and coordinates extracted from Price et al. 2006.<sup>13</sup> Some point location data (from Price et al.) specified acreage of the plot. For these coordinates, EPA created buffers around point locations to fit identified acreage. When known location data were point data (from Price et al.) or lines (Highway 83) and acreage was not specified for the occurrence/population, buffers were added to the points or lines based on USDA's minimum patch size for plants<sup>14</sup> or from publicly available land parcel data.<sup>15</sup> The interim core map is therefore a combination of land parcels, buffers around points or line locations of occurrences, and element occurrences from TXNDD.

### 1. Dataset References and Software

- Software used: ArcGIS Pro
- FWS Species Range – last updated on 1/16/2018 (used for reference only).
- National Land Cover Database (NLCD)<sup>16</sup> (used for reference only).
- Texas Department of Transportation, TxDOT Roadways data, last updated 05/07/2025, accessed [here](#).
- Texas Natural Diversity Database data on ashy dogweed, requested from [here](#) on 05/21/2025.<sup>12</sup>
- Texas Department of Transportation, Texas County Boundaries (line) data, last updated 03/14/2025, accessed [here](#)
- Texas Geographic Information Office, Texas Water Development Board, Land Parcels 2024 (Zapata County only),<sup>17</sup> accessed [here](#) on 5/22/2025.

### 2. Datasets Used in Core Map Development

The TxDOT Roadways data set was used to identify the location and path of Highway 83 and accessed [here](#) (also linked above). TXNDD data was cited by FWS in their documentation (**Figures A1-1** and **A1-2** extracted from Five Year Review 2011) and added to core map to include element occurrences<sup>18</sup> of extant populations to the core map. This data was accessed by submitting a request for all ashy dogweed data to the TXNDD [here](#). Texas County Boundaries (line) data was used to extract data from other datasets within only relevant Texas counties (Webb and Zapata) and was accessed [here](#). Texas Geographic Information Office, Texas Water Development Board, Land Parcels 2024 (Zapata County only; henceforth referred to as “Texas Land Parcel Data”)<sup>19</sup> was used to identify land parcels with known occurrences of ashy dogweed

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<sup>12</sup> Requesting Data from Texas Natural Diversity Database, using the “Email Information Request” on 05/20/2025. Data received from TXNDD on 05/21/2025.

<sup>13</sup> Price, J., G. Janssen, and L. Williams. 2006. Final Report: Lower Rio Grande Valley Candidate Plant Conservation Agreement. Texas Parks and Wildlife Department, November 2006.

<sup>14</sup> [https://www.fs.usda.gov/nac/buffers/guidelines/2\\_biodiversity/2.html](https://www.fs.usda.gov/nac/buffers/guidelines/2_biodiversity/2.html)

<sup>15</sup> Texas Geographic Information Office, Texas Water Development Board, Land Parcels 2024 (Zapata County only), accessed here on 5/22/2025.

<sup>16</sup> Dewitz, J., 2023, National Land Cover Database (NLCD) 2021 Products: U.S. Geological Survey data release, <https://doi.org/10.5066/P9JZ7AO3>

<sup>17</sup> Using the DataHub, selected Land Parcels 2024 and downloaded only the Zapata county parcels on 5/22/2025.

<sup>18</sup> Element Occurrence for TXNDD data can be a species, a native plant community or an animal aggregation. An Element Occurrence is a specific area where a species or other element of natural diversity is, or was, present. An EO, when complete, is a representation of a population of that element.

<sup>19</sup> Using the DataHub, selected Land Parcels 2024 and downloaded only the Zapata county parcels on 5/22/2025.

and can be found [here](#) (also linked above).

### 3. Core Map Development

- **Figure A1-2** (originally accessed from Five-Year Review 2011) was added as an .jpg image to the map and georeferenced to the ashy dogweed range using ESRI's georeferencing tool.<sup>20</sup> This layer was only used as a reference for identifying patches of the core map and confirming alignment with the FWS map.
- **Highway 83 ROW populations:**
  - Several populations described by FWS are within or adjacent to the Highway 83 in Zapata county between the Webb/Zapata line and San Ignacio (described in **Figure A1-3**).
  - Texas County Boundaries (line) data was imported as a layer.
    - EPA selected by attribute where "CNTY\_NM" is equal to "Zapata" and created a new layer named "Zapata\_County\_Border"
  - Texas Department of Transportation Texas DOT, TxDOT Roadways data was imported as a layer.
    - Because FWS describes the Highway 83 population as "Extending from northern part of county south to San Ygnacio" (**Figure A1-3**), EPA used ESRI's Pairwise Clip Tool to clip the TxDOT Roadways data to create a layer containing only roadways within the extent of "Zapata County Border". The resulting layer was titled "TxDOTRoadways\_Zapata."
    - EPA identified and selected Highway 83 in the clipped "TxDOTRoadways\_Zapata" layer. The selected roadway was made into a new layer called "Highway8\_Zapata."
    - EPA trimmed the "Highway8\_Zapata" layer at the northern border of San Ygnacio (99.4366 W 27.0551 N).
    - The resulting layer contained only the portion of Highway 83 from the Zapata/Webb border (north end) to San Ygnacio (south end) and was titled "Highway8\_trimmed."
  - Since FWS documentation noted that populations were on both the east and west sides of the Highway and on private properties/ ranches, but did not identify exact distance from the highway where these populations occurred, EPA estimated the location of the populations based on plant minimum patch size for plants (5 acres or 43,560 square feet.) identified by USDA National Agroforestry Center Conservation Buffers.<sup>21</sup>
    - While an acre of area can take many shapes, a circular shaped area of an acre<sup>2</sup> would have a 235.50-foot diameter.
    - EPA multiplied the 235.5-foot diameter by 5 acres (235.5 X 5 = 1177.5 feet).
    - EPA used the ESRI Buffer tool to create a 1177.5 US Survey foot buffer around to the Highway 83 portion using ESRI Buffer tool (side type: full, end type: round, method: planer) and named this layer "Highway83Buffer."
  - "Highway83Buffer" partially accounts for spatial extent of FWS populations 2a, 2b, 7, 8 and 10 (see **Figure A2-1**)
- **Texas Natural Diversity Base Element Occurrences:**

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<sup>20</sup> <https://pro.arcgis.com/en/pro-app/latest/help/data/imagery/overview-of-georeferencing.htm>

<sup>21</sup> [https://www.fs.usda.gov/nac/buffers/guidelines/2\\_biodiversity/2.html](https://www.fs.usda.gov/nac/buffers/guidelines/2_biodiversity/2.html)

- Element Occurrence data from TXNDD<sup>Error! Bookmark not defined.</sup> was imported as a layer named “Texas\_Diversity\_Database” (**Figure A2-2**).
- **Table A2-1** contains some of the attribute data extracted from TXNDD data for ashy dogweed
- EO\_Num\* (EO Number) 2 in the TXNDD data for ashy dogweed (see **Table A2-1**) was classified by TXNDD as “Historical” and was consistent with historical FWS Population 1 (EO# 2) in **Figure A1-3**.
- EPA removed TXNDD EO\_Num = 2 from the core map given that the species no longer exists at this location and all populations are restricted to Webb and Zapata counties (Supplemental Finding for Ashy Dogweed (*Thymophylla tephroleuca*) Recovery Plan, 2019).
- The TXNDD polygons partially accounted for spatial extent of FWS populations 2a, 2b, 7, 8, and 10 (**Figure A2-2** displays element occurrences from TXNDD included in the core map).
- **Coordinates extracted from Price et al. 2006<sup>22</sup> (cited by FWS in Five Year Review 2011)**
  - Coordinates recorded in Price et al. 2006<sup>22</sup> were recorded in a .csv and imported into ArcGIS as an XY table (**Figure A2-3**)
  - Texas Land Parcel Data was imported as a layer titled “Zapata\_Land\_Parcels” (see **Figure A2-5**).
  - **“Santa Niño Ranch” Coordinates (Price et al. 2006 locality 8-13, FWS population 5):**
    - Seven coordinates are identified by Price et al. 2006 as “Santa Niño Ranch” (Price et al. 2006 localities 8-13) correspond with FWS Population 5, which is “along U.S. Hwy 83; about 3 miles north of San Ygnacio” (**Figure A1-3**).
    - FWS also describes Population 5 as “2 parcels of land totaling 35,000 acres,” and that only 19,000-acre parcel of the total 35,000 acres was surveyed (**Figure A1-3**).
    - However, EPA determined that the acreage described in the FWS documentation (35,000 acres) is likely erroneous.
      - EPA compared the georeferenced image of **Figure A1-2** (originally retrieved from Five-Year Review, 2011) with the coordinate data from Price et al. 2006<sup>22</sup> and the Texas Land Parcel Data.<sup>23</sup>
      - The Price et al.<sup>22</sup> coordinates align with the georeferenced polygon from FWS and one parcel in the Texas Land Parcel Data (“Prop\_ID” = 105683, included ; see **Figures A2-4** and **A2-5**). The parcel which is neighbored to the northwest by another land parcel of similar size (**Figure A2-5**).
      - This is consistent with FWS documentation that the “Populations are on two parcels of land... along U.S. Hwy 83; about 3 miles north of San Ygnacio” and that only one of two parcels was surveyed (Five Year Review, 2001, **Figure A1-3**).
      - However, the sizes of the two relevant Texas Land Parcel Data parcels (>10,000 acres each) are not consistent with the FWS documentation of 35,000 acres area.

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<sup>22</sup> Price, J., G. Janssen, and L. Williams. 2006. Final Report: Lower Rio Grande Valley Candidate Plant Conservation Agreement. Texas Parks and Wildlife Department, November 2006.

<sup>23</sup> Using the DataHub, selected Land Parcels 2024 and downloaded only the Zapata county parcels on 5/22/2025

- Additionally, coordinate location 12 in the Price et al. 2006 dataset indicates that “This point is where the Ashy dogweed starts. Continues northeast and south of this point for acres and acres.” Location 13 in the Price et al. 2006 dataset (about 1 mile southeast of location 12) indicates that it is a “Continuation of the population above, and plants continue to the north and northeast.” These descriptions are near the borders of property lines in the Texas Land Parcel Data (**Figure A2-5**).
    - EPA selected the land parcel from the Texas Land Parcel Data that contained all the Price et al. 2006<sup>22</sup> coordinates and the neighboring land parcel (**Figure A2-5**). The selected features were made into a new layer titled “SantoNinoRanchParcels,” which accounted for FWS Population 5 (**Figure A2-5**).
  - **“Cañada Honda Ranch” Coordinates (Price et al. 2006 locations 14-18 and 21, FWS population 4):**
    - **Coordinates with polygon sizes specified:**
      - Three coordinates in the Price et al. 2006 dataset indicate that the point is on Cañada Honda Ranch central to a polygon of a specific acreage (see **Table A2-2**)
      - EPA calculated the radius of a circular area of the polygon acreages provided in Price et al. 2006 and used those radii to buffer the coordinates and create the polygons. See **Table A2-3** for buffer sizes used.
      - EPA used the ESRI Buffer tool to create a polygon around each of the three points. Resulting layers were titled:
        - “CanadaHondaRanch64Acre”
        - “CanadaHondaRanch111Acre”
        - “CanadaHondaRanch369Acre”
        - “CanadaHondaRanch104Acre”
    - **Coordinates without polygon sizes specified:**
      - The Price et al. 2006 data contained two additional coordinates on Cañada Honda Ranch without a specified polygon size (Price et al. 2006 locations 14 and 15). The Price et al, 2006 data notes that plants are “scattered and few.”
      - Since there was no additional information on plot/population size, EPA created polygon buffers around the coordinates of Price et al. 2006 locations 14 and 15 based on minimum patch size for plants (5 acres) identified by USDA<sup>24</sup> (as described above).
      - EPA used the ESRI Buffer tool to create a 1177.5 US Survey foot buffer around to Price et al. 2006 locations 14 and 15. The resulting layer was titled:
        - “CanadaHondaRanch1177\_5”
    - All Cañada Honda Ranch occurrences are depicted in **Figure A2-6**
  - **“The Airport Ranch” Coordinates (Price et al. 2006 locations 14-18 and 21, FWS population 4):**
    - **Coordinates with polygon sizes specified:**

<sup>24</sup> [https://www.fs.usda.gov/nac/buffers/guidelines/2\\_biodiversity/2.html](https://www.fs.usda.gov/nac/buffers/guidelines/2_biodiversity/2.html)

- Two coordinates in the Price et al. 2006 dataset indicate that the point is on The Airport Ranch central to a polygon of a specific acreage (see **Table A2-2** for polygon sizes for each coordinate)
- EPA calculated the radius of a circular area of the given acreage and used those radii to buffer the coordinates and create the polygons (see **Table A2-2** for buffer sizes used for each coordinate).
- EPA used the ESRI Buffer tool to create a polygon around each of the two points. Resulting layers were titled:
  - “AirportRanch64Acre”
  - “AirportRanch76Acre”
- **Coordinates without polygon sizes specified:**
  - The Price et al. 2006 data contained two additional coordinates on The Airport Ranch without a specified polygon size (Price et al. 2006 locations 19 and 20). The Price et al, 2006 data notes that plants are “scattered and few.”
  - Since there was no additional information on plot/population size, EPA created polygon buffers around the coordinates of Price et al. 2006 locations 19 and 20 based on minimum patch size for plants (5 acres) identified by USDA<sup>25</sup> (as described above).
  - EPA used the ESRI Buffer tool to create a 1177.5 US Survey foot buffer around to Price et al. 2006 locations 19 and 20. The resulting layer was titled:
    - “AirportRanch1177\_5”
- **“Delores Subdivision” (FWS populations 2a), “Chevron Road” (FWS population 10), and “Viduarri Estate – Eddie’s Place” FWS populations 7 and 8 (Price et al. 2006 locations 1-7):**
  - The coordinates for Price et al. 2006<sup>26</sup> populations 1-5 and 7 are contained within the polygons of “Texas\_Diversity\_Database” and “Highway83Buffer” layers. While Price et al.’s locations 5 and 6 appear to be recorded on private property (“Viduarri Estate – Eddie’s Place”), these two coordinates are not contained within the “Texas\_Diversity\_Database” or “Highway83Buffer” layers (**Figure A2-7**).
  - Price et al.’s coordinates 1-4 were all collected from the roadside and not the private property where the plants were seen because the recorders could not gain access.<sup>26</sup> There is no confidence information in the TXNDD for the relevant polygon (EO\_Num = 1), so it is unknown if the extent of the TXNDD data sufficiently covers the species occurrence.
  - Therefore, EPA used Texas Land Parcel data to the core map using FWS occurrence descriptions to ensure the species occurrence areas were included in the core map.
    - **Delores Subdivision (Price et al. 2006 locations 1-3):**
      - Price et al. 2006 locations 1-3 correspond with FWS Population 2a, which “Includes the Dolores subdivision on the east side of

<sup>25</sup> [https://www.fs.usda.gov/nac/buffers/guidelines/2\\_biodiversity/2.html](https://www.fs.usda.gov/nac/buffers/guidelines/2_biodiversity/2.html)

<sup>26</sup> Price, J., G. Janssen, and L. Williams. 2006. Final Report: Lower Rio Grande Valley Candidate Plant Conservation Agreement. Texas Parks and Wildlife Department, November 2006.

- Hwy 83 (12 separate tracts) with large ranch to the east” (Five Year Review 2011; table extracted in **Figure A1-3**).
  - EPA selected all land parcels from the Texas Land Parcel Data within the Delores subdivision and the large parcel to the east of the subdivision and created a new layer from the selection titled “Delores Subdivision.” (**Figure A2-8**, see **Table A2-2** for Geo\_IDs of parcels extracted from the Texas Land Parcel Data).
- **Viduarri Estate – Eddie’s Place (Price et al. 2006 locations 5-7):**
  - Price et al. 2006 locations 5-7 correspond with FWS Population 7 and/or 8, which are on a “Private Ranch in northern Zapata County in the vicinity of Highway 83 ROW” (Five Year Review 2011; table extracted in **Figure A1-3**).
  - EPA selected the land parcel from the Texas Land Parcel Data that contained all three of these coordinates (Geo\_ID = E00002090000265, see **Table A2-2** for Geo\_IDs extracted from the Texas Land Parcel Data) and created a new layer for this selection titled “Eddies\_Place” (see **Figure A2-9**).
- **Chevron Road (Price et al. 2006 location 4):**
  - Price et al. 2006<sup>26</sup> location 4 corresponds to FWS population 10. FWS describes the occurrence as “to the gate entrance of neighboring private ranch,” (Five Year Review 2011; table extracted in **Figure A1-3**) and Price et al.<sup>26</sup> say that it is “Chevron caliche road... A few plants around the gate area and many visible to the south and east.”
  - EPA selected the land parcel from the Texas Land Parcel Data that contained all this coordinate and the two neighboring parcels that stretch southward and eastward (see **Table A2-2** Geo\_IDs extracted from the Texas Land Parcel Data).
  - EPA created a new layer for this selection titled “ChevronRoad.” (see **Figure A2-10**).
- All Texas Land Parcel Data selected for “Delores Subdivision,” “Viduarri Estate – Eddie’s Place,” “Chevron Road” are depicted in **Figure A2-11**.
- Because of lack of information on location, lack of further surveys to verify occurrences, and FWS documentation that “that much of the southwestern part of Webb County with potential for *T. tephroleuca* [to occur] had been converted to pastures and cropland,” EPA did not include any of the Webb county occurrences in the core map.
  - EPA compared the georeferenced image of **Figure A1-2** (originally retrieved from Five Year Review, 2011) with and the Texas Land Parcel Data.<sup>27</sup> Other than proximity to Laredo (“12 miles southeast”), EPA found no information to conclusively tie FWS Population 9 to a specific land parcel to include this occurrence in the core map.
  - The georeferenced image of **Figure A1-2** is not to scale, and was only used for a reference for comparison. Therefore, EPA did not use the georeferenced image of **Figure A1-2** to hand-draw the extent of Population 9. See **Figure A2-12** for depiction of Webb County land parcels with the georeferenced image of **Figure A1-2**.
- **Finalizing Core Map**

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<sup>27</sup> Using the DataHub, selected Land Parcels 2024 and downloaded only the Zapata county parcels on 5/22/2025

- EPA used ESRI’s Merge tool<sup>28</sup> to combine the following parts into a single core map layer
  - “Highway83Buffer”
  - “Texas\_Diversity\_Database”
  - “SantoNinoRanchParcels,”
  - “CanadaHondaRanch64Acre”
  - “CanadaHondaRanch111Acre”
  - “CanadaHondaRanch369Acre”
  - “CanadaHondaRanch104Acre”
  - “CanadaHondaRanch1177\_5”
  - “AirportRanch64Acre”
  - “AirportRanch76Acre”
  - “AirportRanch1177\_5”
  - “SantaNinoRanch”
  - “Delores Subdivision”
  - “Eddies\_Place”
  - “ChevronRoad.”
- Core map name: Ashydogweed\_CoreMap.

**Table A2-1 Attribute Data Extracted from TXNDD data for the ashy dogweed**

<b>Shape_ID</b>	<b>Basic_EO_R*</b> (Estimated viability (species) or ecological integrity (community))	<b>Confidence</b>	<b>Last_Obs_date</b> (last observation date)	<b>EO_Num*</b> (EO Number)
2739	Verified extant (viability not assessed)	Confident full extent of EO** is NOT known	198?	3
3491	Verified extant (viability not assessed)		2023-09-27	1
8319	Verified extant (viability not assessed)	Uncertain whether full extent of EO** is known	198?	4
9278	Historical	Uncertain whether full extent of EO** is known	1932-08-30	2
23950	Excellent or good estimated viability	Confident full extent of EO** is NOT known	1999	7

\*EO = Element Occurrence. For TXNDD data, an Element can be a species, a native plant community or an animal aggregation. An Element Occurrence is a specific area where a species or other element of natural diversity is, or was, present.<sup>29</sup>

\*\* An EO, when complete, is a representation of a population of that element.<sup>30</sup>

<sup>28</sup> <https://pro.arcgis.com/en/pro-app/latest/tool-reference/big-data-analytics/merge-layers.htm>

<sup>29</sup> Texas Natural Diversity Database (TXNDD): Methodology  
[https://tpwd.texas.gov/huntwild/wild/wildlife\\_diversity/txndd/about.phtml](https://tpwd.texas.gov/huntwild/wild/wildlife_diversity/txndd/about.phtml)

<sup>30</sup> Texas Natural Diversity Database, information document received with data from TXNDD on 05/21/2025.

**Table A2-2 Polygon Radii used to Incorporate Price et al. 2006 Coordinates in Core Map**

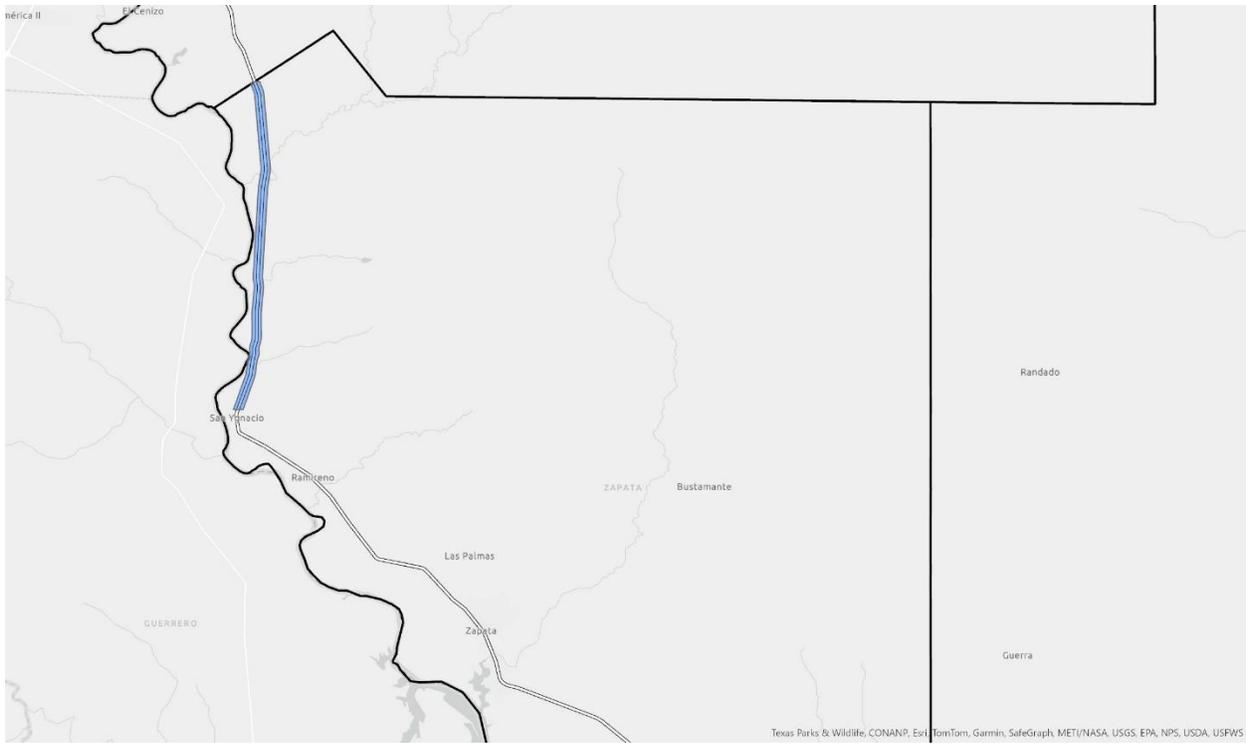
Price et al. 2006 Population #	Corresponding FWS Population (Figure A2-3)	Location Name	Polygon Size Specified in Price et al. 2006	Polygon Radius (Buffer Size) Used for Core Map	Geo_ID of Texas Land Parcels <sup>31</sup> Extracted
1	2a	Delores Subdivision	None specified	NA	000002090000131, 001000000000002, 0010000A0001000, 0010000A0002000, 0010000A0005000, 0010000B0001000, 0010000B0002000, 0010000B0003000, 0010000B0004000, 0010000B0005000, 0010000B0006000, 0010000B0009000, 0010000B0011000, 0010000B0013000, 0010000B0016000, 0010000B0018000, 0010000B0019000, 0010000B0020001, 0010000B0020003, 0010000B0020004, 0010000B0020005, 0010000B0020006, 0010000B0020007, 0010000B0020010, 0010000B0020011, 0010000B0020012, 0010000B0020013, 0010000B0020014, 0010000B0020015, 0010000B0020016, 0010000B0020017, 0010000B0020020, 0010000B0021001, 0010000B0021003, 0010000B0021005, 0010000B0021006, 0010000B0021011, 0010000C0001000, 0010000C0004000, 0010000C000Z001, 0010000C000Z003, 0010000C000Z004, 0010000C000Z005, 0010000C000Z006, 0010000C000Z007, 0010000C000Z008, 0010000C000Z009, 0010000C000Z010, 0010000C000Z011, 0010000C000Z012, 0010000C000Z013, 0010000C000Z014, 0010000B001A000, 0010000B0003000
2	2a	Delores Subdivision	None specified	NA	Same as Price et al. 2006 Population # 1
3	2a	Delores Subdivision	None specified	NA	Same as Price et al. 2006 Population # 1
4	10	Chevron Road	None specified	NA	000002090000131, 000002090000474, E00002090000698
5	7 and/or 8	Viduarri Estate – Eddie’s Place	None specified	NA	E00002090000265
6	7 and/or 8	Viduarri Estate – Eddie’s Place	None specified	NA	E00002090000265

<sup>31</sup> Using the DataHub accessed [here](#), selected Land Parcels 2024 and downloaded only the Zapata County parcels on 5/22/2025

Price et al. 2006 Population #	Corresponding FWS Population (Figure A2-3)	Location Name	Polygon Size Specified in Price et al. 2006	Polygon Radius (Buffer Size) Used for Core Map	Geo_ID of Texas Land Parcels <sup>31</sup> Extracted
7	7 and/or 8	Viduarri Estate – Eddie’s Place	None specified	NA	E00002090000265
8	5	Santa Niño Ranch	None specified	NA	105683 and 2698
9	5	Santa Niño Ranch	None specified	NA	105683 and 2698
10	5	Santa Niño Ranch	None specified	NA	105683 and 2698
11	5	Santa Niño Ranch	None specified	NA	105683 and 2698
12	5	Santa Niño Ranch	None specified	NA	105683 and 2698
13	5	Santa Niño Ranch	None specified	NA	105683 and 2698
14	4	Cañada Honda Ranch	None specified	1177.5 feet*	NA
15	4	Cañada Honda Ranch	None specified	1177.5 feet*	NA
16	4	Cañada Honda Ranch	104 acres	1202 feet	NA
17	4	Cañada Honda Ranch	369 acres	2263 feet	NA
18	4	Cañada Honda Ranch	111 acres	1241 feet	NA
19	4	The Airport Ranch	None specified	1177.5 feet*	NA
20	4	The Airport Ranch	None specified	1177.5 feet*	NA
21	4	The Airport Ranch	64 acres	943 feet	NA
22	4	The Airport Ranch	76 acres	1027 feet	NA

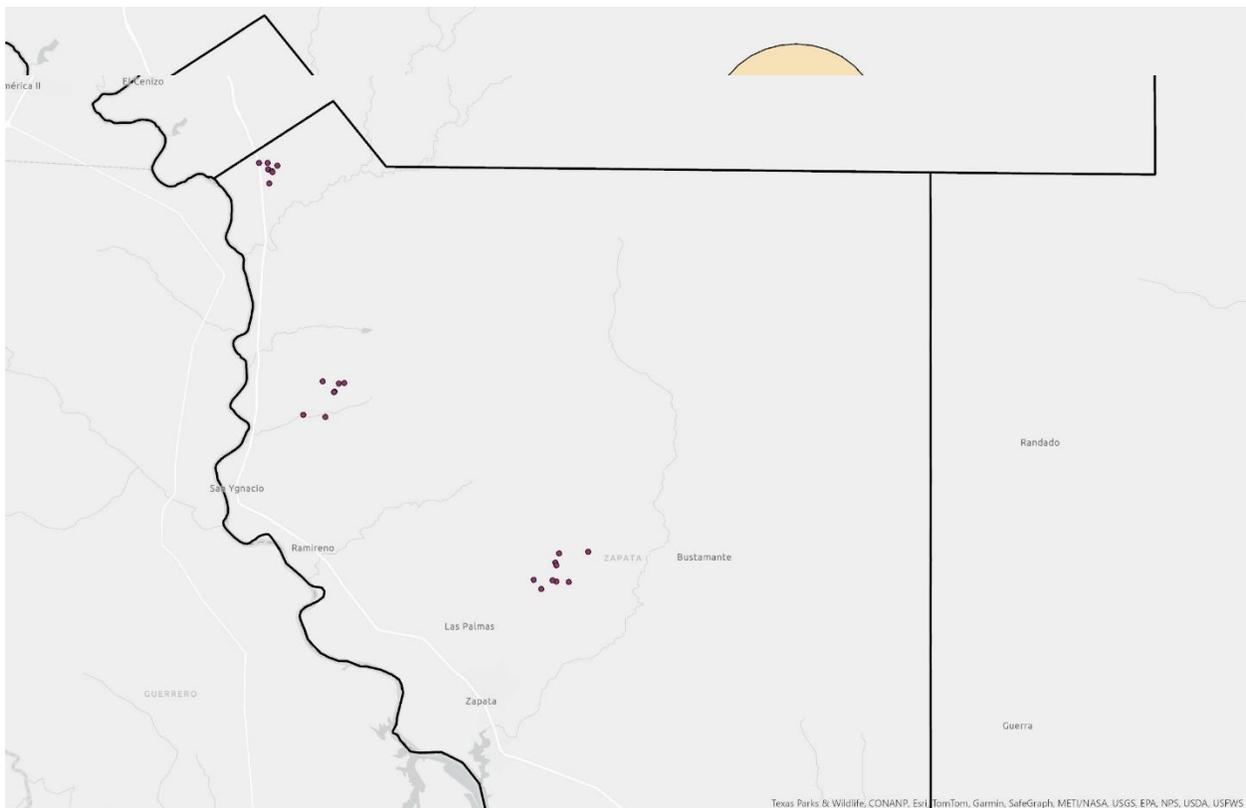
\*based on minimum patch size for plants (5 acres) identified by USDA<sup>32</sup>

<sup>32</sup> [https://www.fs.usda.gov/nac/buffers/guidelines/2\\_biodiversity/2.html](https://www.fs.usda.gov/nac/buffers/guidelines/2_biodiversity/2.html)



**Figure A2-1: Highway 83 in Webb and Zapata County (white line) and Highway 83 Buffered Area from Webb/Zapata County Border (black lines) to San Ygnacio (blue)**

**Figure A2-2: Texas Natural Diversity Database Data for ashy dogweed in Zapata County**





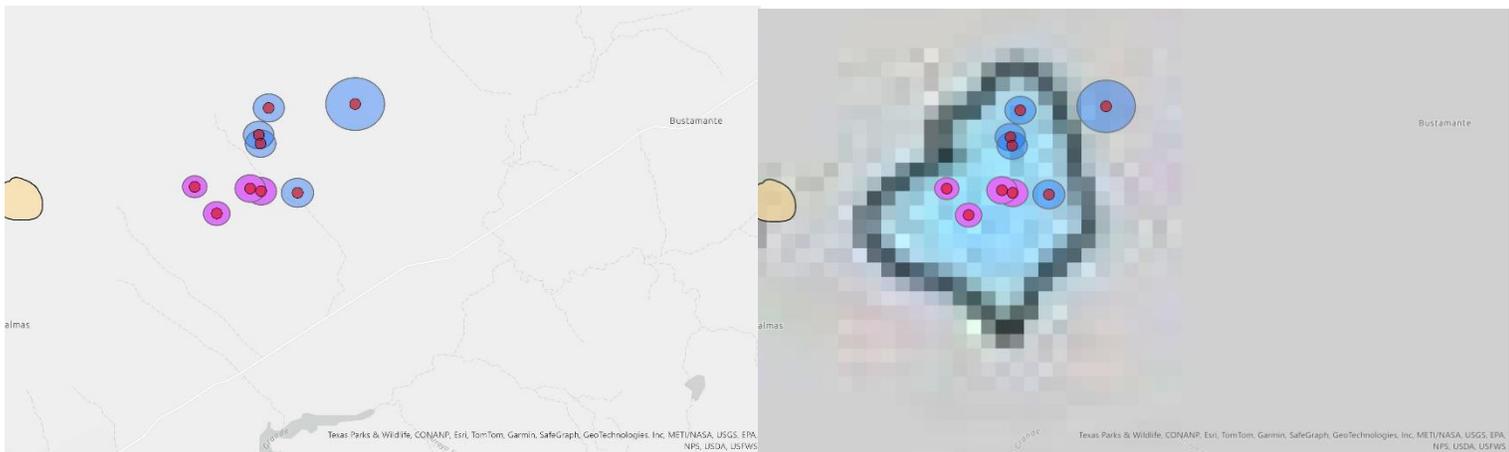
**Figure A2-4: Comparison of point data from Price et al. 2006<sup>33</sup> (red dots) at Santa Niño Ranch (identified with black arrow), TXNDD data (yellow) to georeferenced image of Figure A1-2 (extracted from Five Year Review, 2011)**



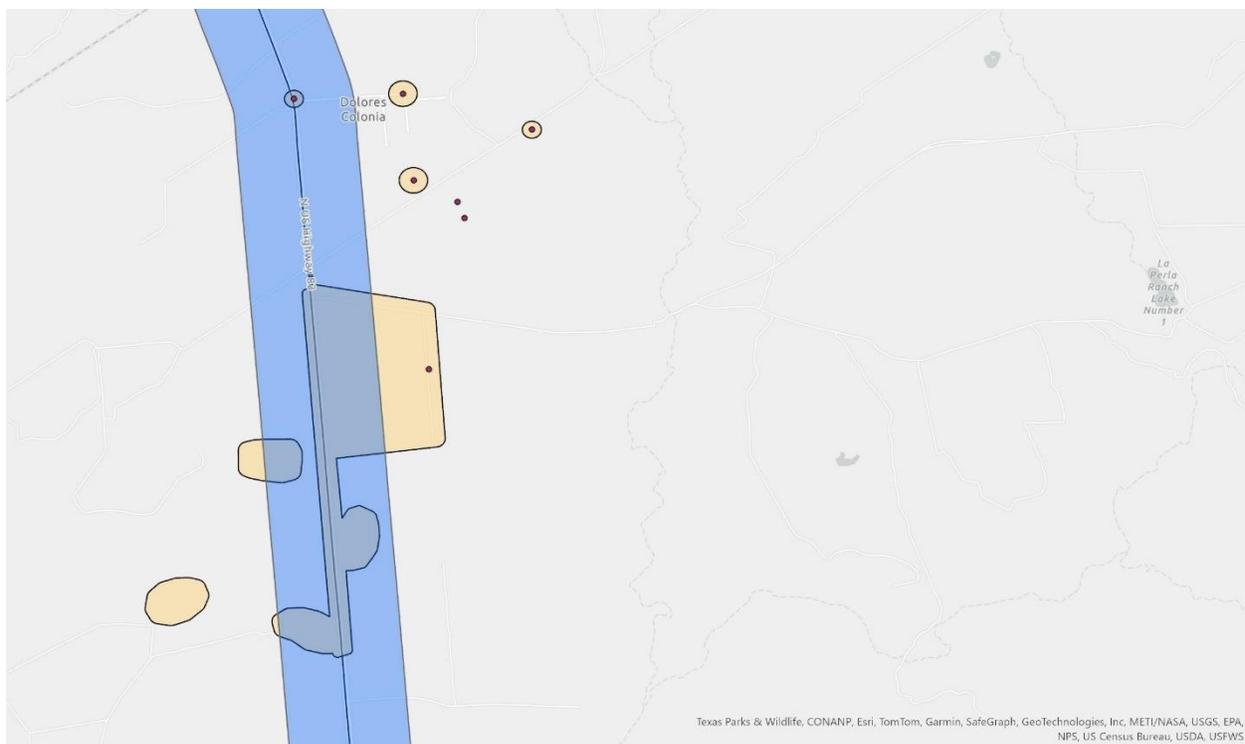
**Figure A2-5: Point data from Price et al. 2006<sup>34</sup> (red dots) at Santa Niño Ranch (identified with black arrow) with georeferenced image of Figure A1-2 (extracted from Five Year Review, 2011) and Texas Land Parcel data (light blue). Left displays all land parcels, right displays land parcels included in the core map.**

<sup>33</sup> Price, J., G. Janssen, and L. Williams. 2006. Final Report: Lower Rio Grande Valley Candidate Plant Conservation Agreement. Texas Parks and Wildlife Department, November 2006.

<sup>34</sup> Price, J., G. Janssen, and L. Williams. 2006. Final Report: Lower Rio Grande Valley Candidate Plant Conservation Agreement. Texas Parks and Wildlife Department, November 2006.

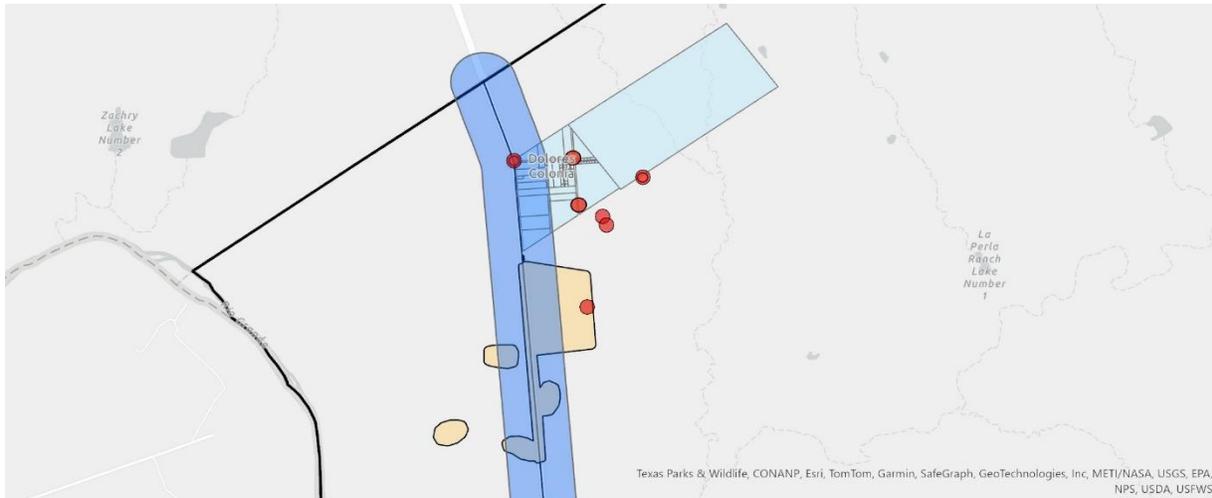


**Figure A2-6: Point data from Price et al. 2006<sup>35</sup> (red dots) at Cañada Honda Ranch (blue) and Airport Ranch (purple) and TXNDD polygon (yellow). Left displays Figure A1-3 (extracted from Five-Year Review 2011) georeferenced to the location.**

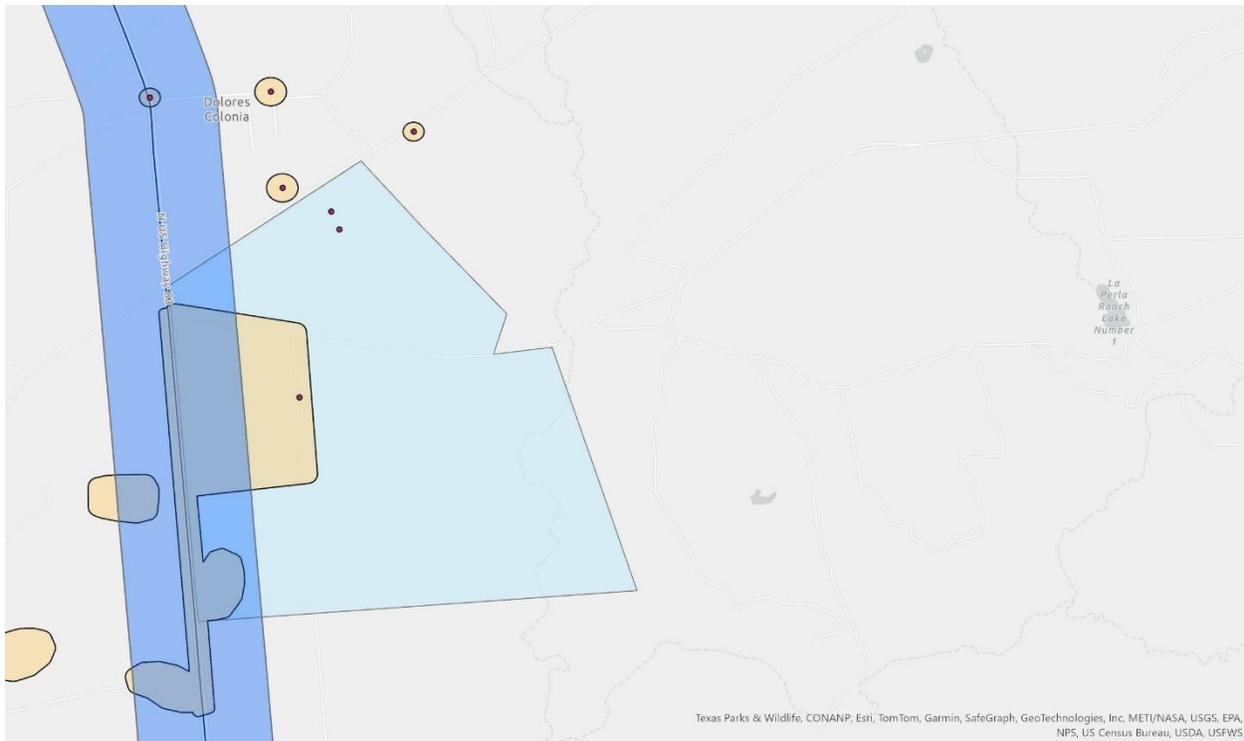


**Figure A2-7 Price et al. 2006 Coordinates 1-7 (red points), TXNDD EO1/ FID 1 for the ashy dogweed (yellow) and Highway 83 buffer (blue).**

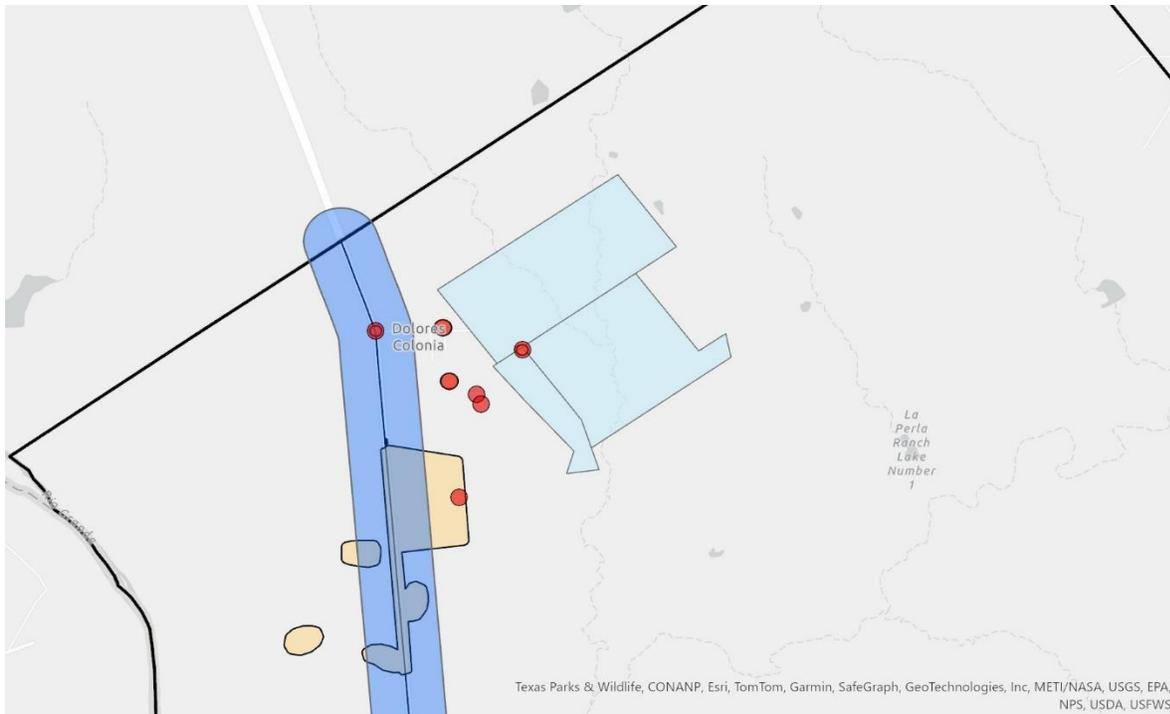
<sup>35</sup> Price, J., G. Janssen, and L. Williams. 2006. Final Report: Lower Rio Grande Valley Candidate Plant Conservation Agreement. Texas Parks and Wildlife Department, November 2006.



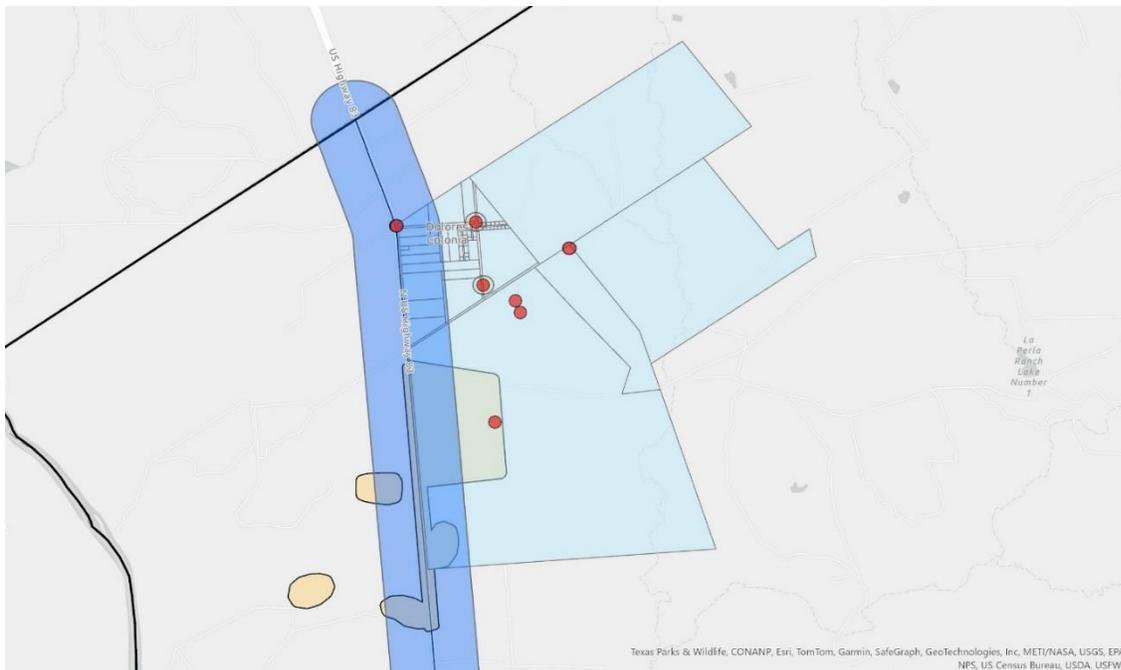
**Figure A2-8: Texas Land Parcels (light blue) selected for “Delores Subdivision” coordinates 1-3 from Price et al. 2006 (red points) and FWS Population 2A.TXNDD EO1/ FID 1 for the ashy dogweed (yellow) and Highway 83 buffer (navy blue).**



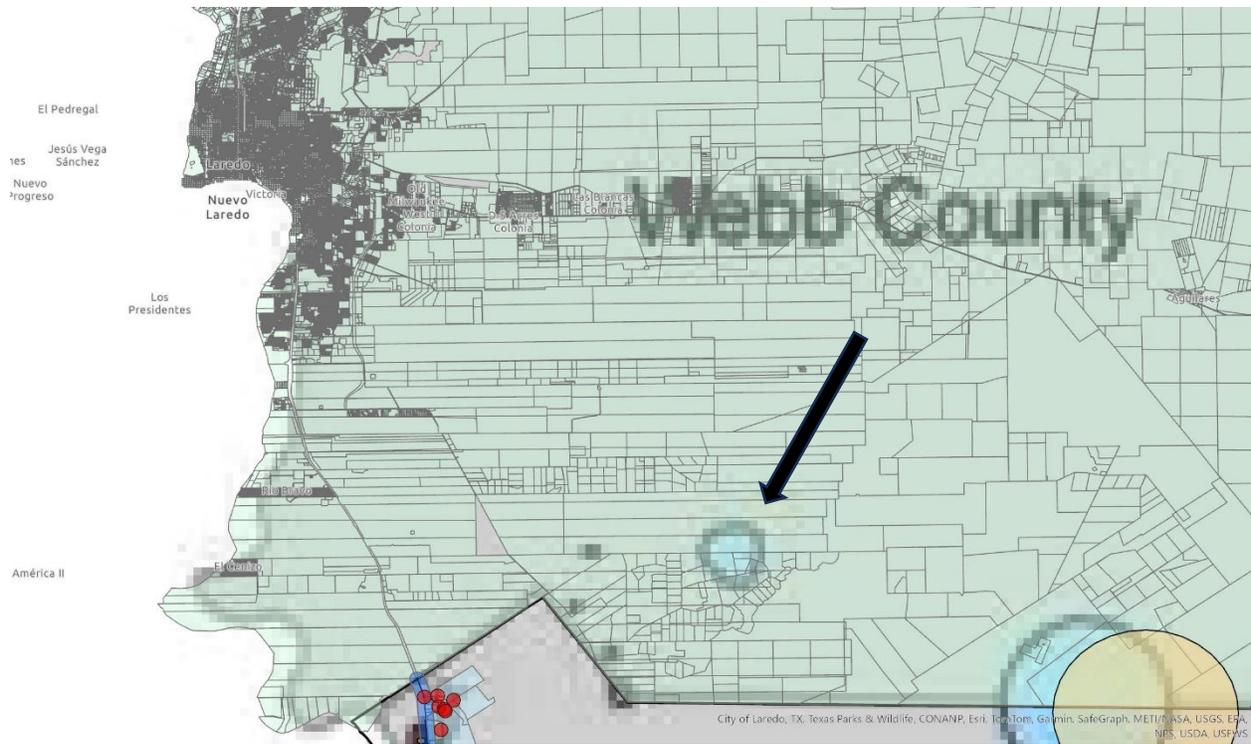
**Figure A2-9: Texas Land Parcels (light blue) selected for “Viduarri Estate – Eddie’s Place” coordinates 5-7 Price et al. 2006 (red points) and FWS Population 7 and 8. TXNDD EO1/ FID 1 for the ashy dogweed (yellow) and Highway 83 buffer (navy blue).**



**Figure A2-10: Texas Land Parcels (light blue) selected for “Chevron Road” coordinate 4 Price et al. 2006 (red points) and FWS Population 10. TXNDD EO1/ FID 1 for the ash dogweed (yellow) and Highway 83 buffer (navy blue).**



**Figure A2-11: Texas Land Parcels (light blue) selected to represent FWS Populations 2A, 2B, 7, 8 and 10 and contain Price et al. 2006 Coordinates 1-7 (red points). TXNDD EO1/ FID 1 for the ash dogweed (yellow) and Highway 83 buffer (navy blue) included.**



**Figure A2-12: Texas Land Parcels (light green) in Webb County with Georeferenced Image of Figure A1-2 (extracted from Five-Year Review, 2011).**