

# Core Map Documentation for the Wide-Leaf Warea

ArcGIS Pro 3.3 was used to perform all spatial operations.

**Date Uploaded to EPA's GeoPlatform:** October 2025

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**This core map has been reviewed by the U.S. Fish and Wildlife Service (FWS).**

## EPA Review Notes

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

The core map developed for this species can be used to develop pesticide use limitation areas (PULAs). This core map incorporates information developed by FWS and made available to the public and has been reviewed by a FWS species expert. This core map may be revised in the future to incorporate information for this species that becomes available.

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

**Basis for Core Map:** The core map for this species is the same as the species range with cultivated areas removed because this species does not live on cultivated lands.

**Level of Best Professional Judgement (EPA scale):** 3- Average. Some areas were removed from the core map based on habitat preferences for this species.

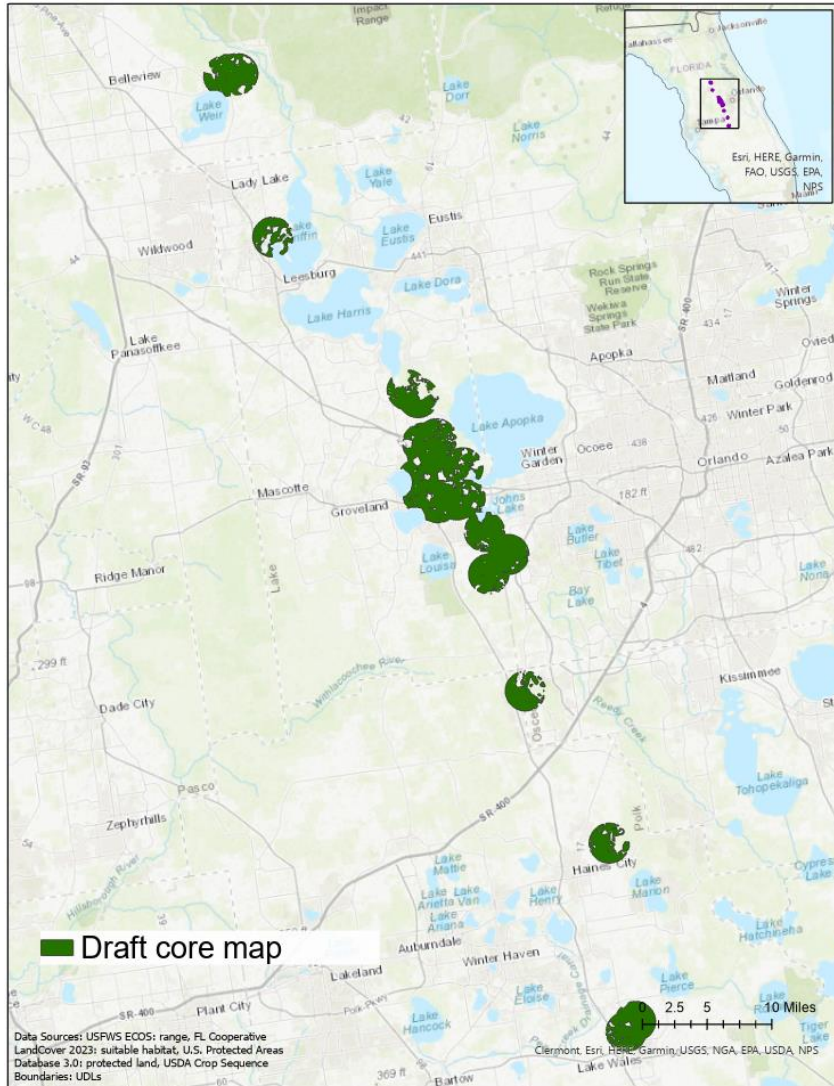


Figure 1. Core map for the wide-leaf warea based on the range with cultivated lands removed.

Percentage of Core Map Represented by NLCD<sup>1</sup> 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	11
Forestry	Evergreen Forest (42)	10	11
Forestry	Mixed Forest (43)	1	11
Agriculture	Pasture/Hay (81)	28	32

<sup>1</sup> Dewitz, J., 2023, National Land Cover Database (NLCD) 2021 Products: U.S. Geological Survey data release, <https://doi.org/10.5066/P9JZ7AO3>

Example pesticide use sites/types	NLCD Class/Value	% Area	Total area for landcover type
Agriculture	Cultivated Crops (82)	3	32
Mosquito adulticide, residential	Open space, developed (21)	16	43
Mosquito adulticide, residential	Developed, Low intensity (22)	13	43
Mosquito adulticide, residential	Developed, Medium intensity (23)	11	43
Mosquito adulticide, residential	Developed, High intensity (24)	2	43
Invasive species control	Woody Wetlands (90)	5	14
Invasive species control	Emergent Herbaceous Wetlands (95)	1	14
Invasive species control	Open water (11)	0	14
Invasive species control	Grassland/herbaceous (71)	2	14
Invasive species control	Scrub/shrub (52)	3	14
Invasive species control	Barren land (rock/sand/clay; 31)	3	14
<b>Total Acres</b>	<b>Core Map Acres</b>	<b>~ 51,403 acres</b>	

## Key Core Area Inputs

Sourced from most up-to-date documentation available on [ECOS](#).

Habitat	Descriptions/Datasets
Range	Last updated 2024, appears to be buffer around suitable habitat.
Cultivated Lands layer	EPA's version of the 2023 cultivated land layer from U.S. Department of Agriculture (USDA) National Agricultural Statistics Service (NASS) ( <a href="https://www.nass.usda.gov/Research_and_Science/Cropland/Release/">https://www.nass.usda.gov/Research_and_Science/Cropland/Release/</a> ) converted to a polygon, then limited to contiguous areas of >=25 acres.
Critical habitat	None
Suitable habitat	2017 5-year review: The wide-leaf warea is endemic to high-pine ecosystems, known as sandhills. <i>Warea amplexifolia</i> occurs on well-drained, sterile, yellow sands and is typically widely scattered in the sunny openings of the sandhills.
Known locations (General Descriptions)	2022 5-year review: nine populations are known to exist, four on public lands and five on private lands. The Florida Forest Service Warea Tract in Lake County and the Ocklawaha Corridor in Marion County (Duke Energy and private ownership) are the largest populations and account for ~95% of the plants range-wide
Element occurrences	Global Biodiversity Information Facility (GBIF)- 39 human observation occurrences within last 30 years. Majority are outside the range, locations fuzzed. GBIF, iNaturalist, and NatureServe were searched for occurrence data, however the occurrences found did not impact the core map.

Habitat	Descriptions/Datasets
Relevant recovery criteria	Recovery plan (1993): Delisting could be considered when 20 populations are protected and managed

## Datasets Used in Core Map Development

- ECOS Datasets:
  - Most recent species range: [https://ecos.fws.gov/docs/species/shapefiles/usfws\\_Q2M9\\_P01\\_Warea\\_amplexifolia\\_current\\_range.zip](https://ecos.fws.gov/docs/species/shapefiles/usfws_Q2M9_P01_Warea_amplexifolia_current_range.zip)
  - Wide-leaf warea (Warea amplexifolia) 5-Year Review: 2017 [https://ecosphere-documents-production-public.s3.amazonaws.com/sams/public\\_docs/species\\_nonpublish/2521.pdf](https://ecosphere-documents-production-public.s3.amazonaws.com/sams/public_docs/species_nonpublish/2521.pdf)
  - Wide-leaf warea (Warea amplexifolia) 5-Year Review: 2022 [https://ecosphere-documents-production-public.s3.amazonaws.com/sams/public\\_docs/species\\_nonpublish/3766.pdf](https://ecosphere-documents-production-public.s3.amazonaws.com/sams/public_docs/species_nonpublish/3766.pdf)
  - Recovery Plan Clasp (Wide-leaf) Warea: 1993 [https://ecos.fws.gov/docs/recovery\\_plan/930217.pdf](https://ecos.fws.gov/docs/recovery_plan/930217.pdf)
- Other GIS Datasets:
  - Protected Areas Database of the U.S. <https://maps.usgs.gov/padusdataexplorer/>
  - Florida Cooperative Landcover dataset v3.7 <https://myfwc.com/research/gis/wildlife/cooperative-land-cover/>
  - EPA's version of the 2023 cultivated land layer from USDA NASS ([https://www.nass.usda.gov/Research\\_and\\_Science/Cropland/Release/](https://www.nass.usda.gov/Research_and_Science/Cropland/Release/)) converted to a polygon, then limited to contiguous areas of  $\geq 25$  acres.

## Deciding Factors for Core Map Formation

- Species is endemic to high pine and sandhill ecosystems in Florida.
- The nine extant populations are listed in Figure 2 below.
- Two populations account for 95% of the plants:
  - Florida Forest Service Warea Tract in Lake County, section of Seminole State Forest
  - Ocklawaha Corridor in Marion County (Duke Energy and private ownership)
- Some of the smaller populations are on private land where the locations cannot be easily identified.
- The FL Cooperative Landcover dataset is highly detailed and includes all the habitat types the species uses as habitat (Sandhill, Upland Coniferous, Upland Pine, Upland Mixed Woodland, Upland Glade), however the known locations that can be spatially identified don't appear to line up well with these landcover classes, so suitable habitat may or may not be helpful for the core map.
- This species does not live on cultivated lands.
- Because the known locations cannot all be spatially identified, and because the range is fairly refined, the range (with cultivated lands subtracted) will serve as the core map.

## Core Map Development

- The most recent range shapefile downloaded from ECOS with overlapping cultivated lands subtracted is used as the core map.

EOR	Site	County	Ownership	Plants 2006	Plants 2016
#1	Lake Griffin State Recreation Area	Lake	Florida State Park	300 (2003)	36 (2014) 0 (2016)
#3	Castle Hill	Lake	Private Ownership	Not reported (2006)	Extirpated
#6	Warea Tract	Lake	Florida Forest Service	2,034 (2005) 53 (2006)	8,793 (2016)
#7	Bok Tower Sandhill (HBS)	Polk	Private Conservation Land	8 (2004) 0 (2006)	Extirpated
#9	Sugarloaf Mountain	Lake	St. Johns River Water Management District	Not reported (2006)	7 (2015)
#10	Lake Davenport	Osceola	Private Ownership	Not reported (2006)	Extirpated
#11	Schofield Sandhill	Lake	City of Orlando and Orange County	Not reported (2006)	40 (2015)
#13	Ferndale Ridge	Lake	Private Ownership	Not reported (2006)	1 (2015)
	Mountain Lake Scrub	Polk	Florida Fish and Wildlife Conservation Commission	Not reported (2006)	Extirpated
	Hills of Minneola	Lake	Private Ownership	Not reported (2006)	Extirpated
#23	Bissett Property	Polk	Private Ownership Conservation Easement		~10 (2015)
#26	Mountain Lake Estates	Polk	Private Ownership		61 (2016)
#27	Twin Lakes	Lake	Private Ownership and Utility Easement		27 (2015)
#28, #30	Ocklawaha North and South	Marion	Private Ownership		2,600 (2014)

**Figure 2. Extant and extirpated populations from the 2017 5-year review.**

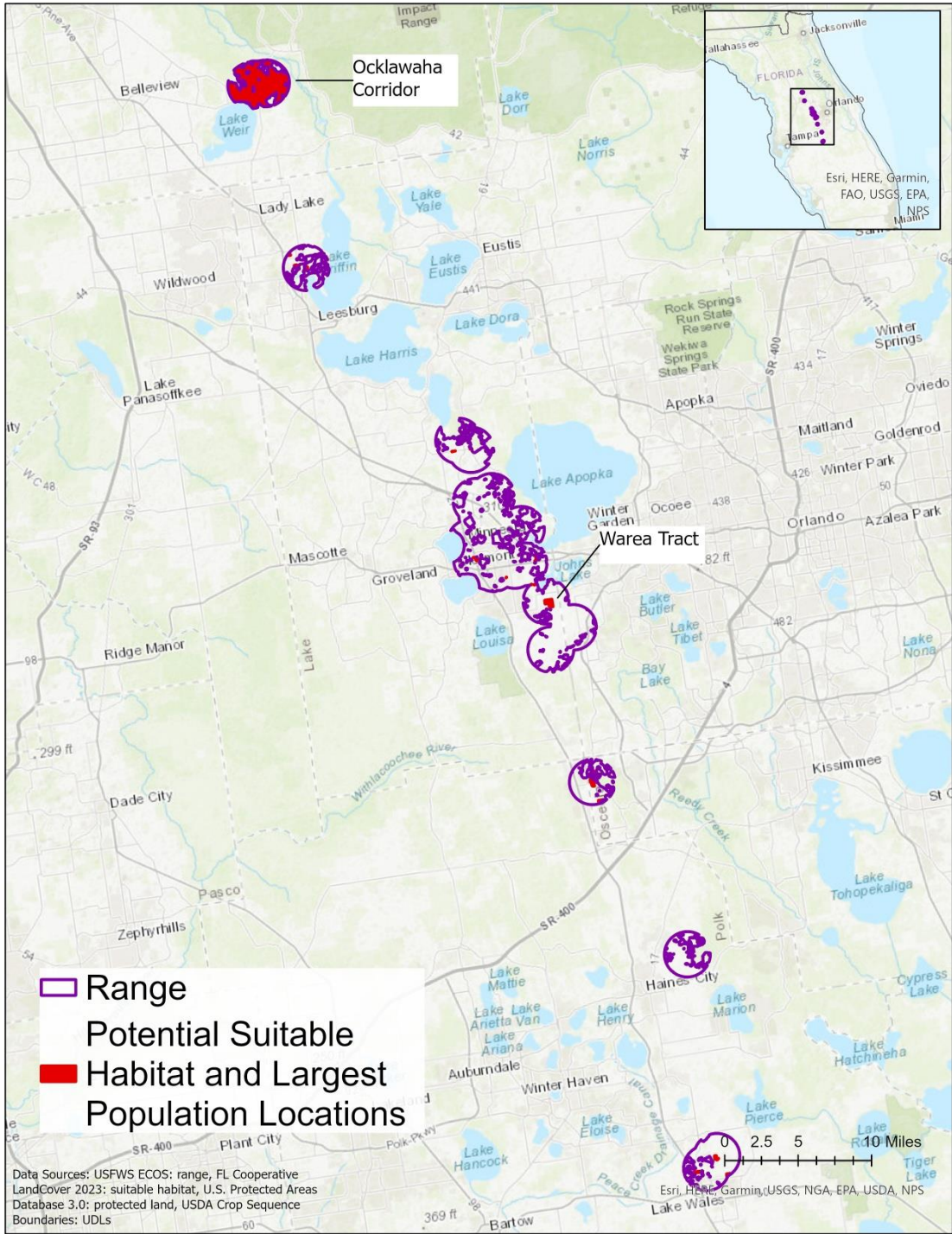


Figure 3. Range and the largest two population locations (accounting for 95% of the plants) for the wide-leaf warea.