

Interim Core Map Documentation for the Contra Costa Wallflower

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

Species Summary

The Contra Costa wallflower (*Erysimum capitatum* var. *angustatum*; Entity ID #712) is an endangered biennial terrestrial plant. This species is restricted to the riverine dune habitat associated with the Antioch Dunes ecosystem. This variety prefers open, sandy and well-drained soils. This species blooms between March and August with peak bloom in April and is pollinated by a variety of insect groups, including bees and possibly hawkmoths. There is a designated critical habitat for this species. Additional information is provided in **Appendix 1**.

Description of Core Map

The core map for the Contra Costa wallflower is based on biological information. This species is endemic to the Antioch Dunes National Wildlife Refuge (ADNWR), which is supported by literature from the U.S. Fish and Wildlife Service (FWS) provided in **Appendix 1**. Long-term recovery actions include preservation of the Antioch Dunes National Wildlife Refuge and propagate new Contra Costa wallflower populations within this ecosystem. **Figure 1** depicts the interim core map for the Contra Costa wallflower. The critical habitat is also depicted; however, it was not selected as the primary basis of the interim core map as it overlaps with aquatic areas and areas outside the Antioch Dunes ecosystem, which conflicts with FWS information that unequivocally states that this species is only found in the ADNWR. The core map represents approximately 63 acres.

The Contra Costa wallflower is endemic to the riverine dune habitat associated with the Antioch Dunes ecosystem, and thrives on wind-blown sand, often on north-facing slopes, with some plants found in shaded locations near taller vegetation. Landcover categories within the core map area are included in **Table 1**. Landcover within the core map is predominantly open space and low intensity developments, which is consistent with the habitat of this species.

The core map developed for the Contra Costa wallflower is considered interim. This core map will be used to develop pesticide use limitation areas (PULAs) that include the Contra Costa wallflower. 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 a "limited" (2) best professional judgment classification because it is limited to the Antioch Dunes ecosystem to which the species is endemic, without additions or subtractions.

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

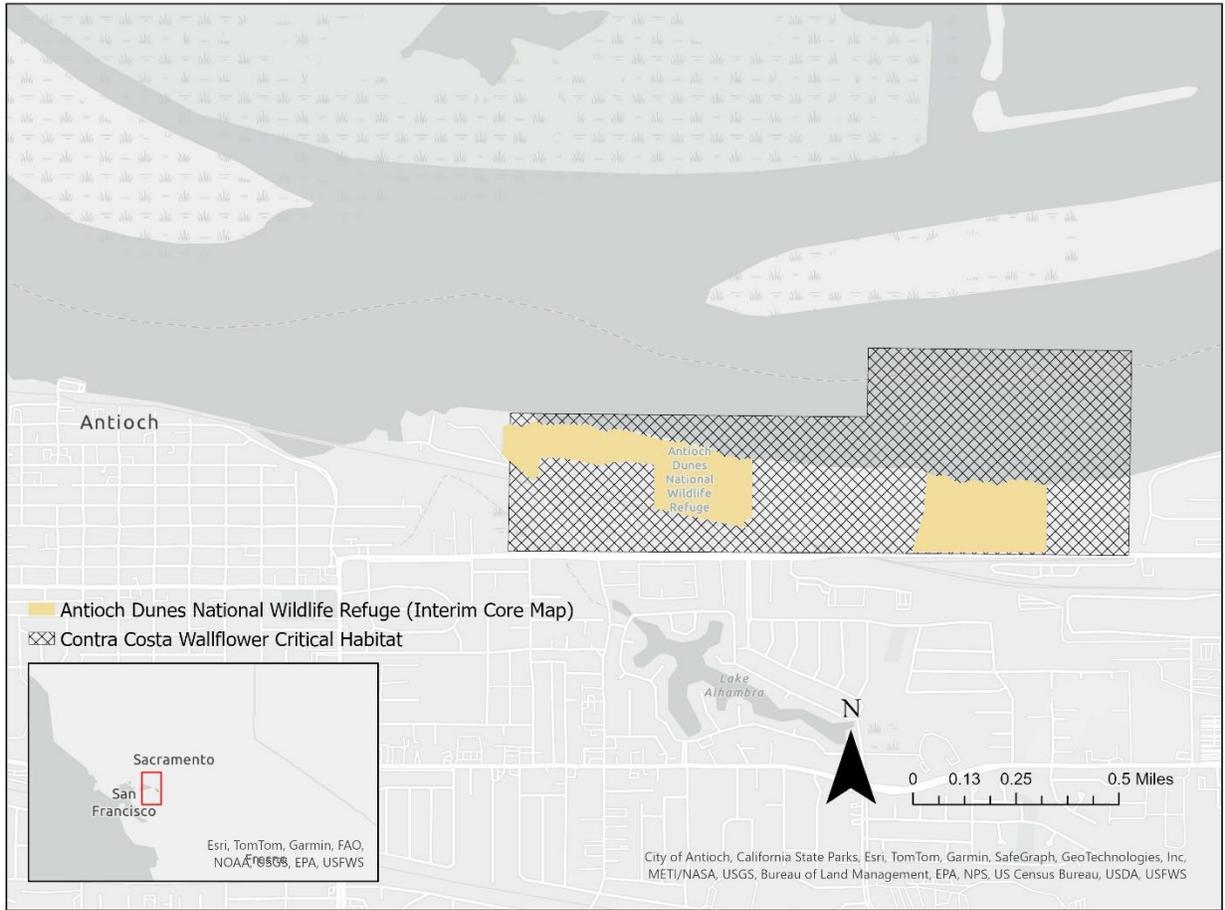


Figure 1. Interim core map for the Contra Costa wallflower. The total acreage of the core map is approximately 63 acres.

Table 1. Percentage of Interim Core Map Represented by NLCD¹ 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%	0%
Agriculture	Cultivated Crops (82)	0%	0%
Mosquito adulticide, residential	Developed Open Space (21)	58%	89%
Mosquito adulticide, residential	Developed Low Intensity (22)	20%	89%
Mosquito adulticide, residential	Developed Medium Intensity (23)	9%	89%
Mosquito adulticide, residential	Developed High Intensity (24)	2%	89%
Invasive species control	Woody Wetlands (90)	0%	11%
Invasive species control	Emergent Herbaceous Wetlands (95)	2%	11%
Invasive species control	Open Water (11)	8%	11%
Invasive species control	Grassland/Herbaceous (71)	2%	11%
Invasive species control	Shrub/Scrub (52)	0%	11%
Invasive species control	Barren Land (31)	0%	11%
Total Acres	Interim Core Map Acres	63 acres	100%

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)
- Occurrence locations included in NatureServe

EPA evaluated these four sets of data before selecting the type of and developing the core map. FWS' 2019 Recovery Plan detailed known locations of this species. FWS described 726 documented occurrences within ADNWR. iNaturalist had 54 research grade observations. NatureServe provided one distribution. GBIF contained no additional data that were not already included in iNaturalist or NatureServe. The NatureServe data had a coarse resolution, and EPA could not determine conclusively if these data fell within the ADNWR; however, it generally appears to be consistent with the locations of the range and ADNWR habitat. All but one of the iNaturalist observations fell outside out of the species range, critical habitat, and ADNWR; however, it is likely that the coordinates of these observations were masked, so these data were not considered when making the interim core map. **Appendix 1** includes more information on the available known location information.

¹ "Data Access | U.S. Geological Survey," October 24, 2024. <https://www.usgs.gov/centers/eros/science/data-access>.

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”). This core map was developed by EPA and was developed 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 Contra Costa wallflower from FWS as well as observational information available from various publicly available sources (discussed in previous section). The information compiled for the Contra Costa wallflower is included in **Appendix 1**. Influential information that impacted the development of the core map included:

- The species is endemic to the Antioch Dunes National Wildlife Refuge and is not found anywhere else.
- The species has a highly refined critical habitat.

For step 2, EPA used the compiled information to identify the core map type, including the species range, critical habitat, and known location information. EPA compared known location data to the range and critical habitat and found that the FWS known locations of currently existing (extant) populations are mostly outside of the designated critical habitat and the ADNWR. The species range is much larger than the ADNWR, which is the only habitat in which FWS says the species occurs. The critical habitat occurs overlaps with the ADNWR but also falls outside its boundaries and overlaps with open water. Based on this information, EPA used biological information, specifically the ADNWR area, as the core map.

For step 3, EPA used the Antioch Dunes National Wildlife Refuge layer provided by FWS from FWS National Realty Tracts Simplified spatial data. EPA downloaded this layer from FWS’s National Wildlife Refuge System GIS Data and Mapping Tools website (<https://www.fws.gov/service/national-wildlife-refuge-system-gis-data-and-mapping-tools>).

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

Alternative approaches and data not already described in this documentation were not explored in the development of this interim core map.

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

Appendix 1. Information Compiled for Species During Step 1

1. Recent FWS Documents

- [2019 Recovery Plan](#)
- [2021 Five-Year Review](#)
- [1978 Determination of Critical Habitat](#)

2. Background information on Species

- **Status:** Listed as Endangered in 1978
- **Taxonomy:** Terrestrial plant (Brassicaceae; mustard family); dioecious, biennial herb
- **Resiliency, Redundancy, Representation**
 - *Oenothera deltooides* subsp. *howellii* and *E.c. var. angustatum* are threatened by few and small populations that are limited to a small and localized distribution, which increases the risk of extirpation and extinction due to: (1) Reduced resiliency (the ability of a species to withstand stochastic disturbance; resiliency is positively related to population size and growth rate and may be influenced by connectivity among populations); (2) Low redundancy (spreading risk among multiple populations or a large area to minimize the potential loss of the species from catastrophic events); and (3) Low representation (the breadth of genetic and environmental diversity within and among populations that influences the ability of a species to adapt to changing environmental conditions over time)." (2019 Recovery Plan)
- **Habitat Description**
 - "*Erysimum capitatum* var. *angustatum* is endemic to the riverine dune habitat associated with the Antioch Dunes ecosystem, and thrives on wind-blown sand, often on north-facing slopes, with some plants found in shaded locations near taller vegetation (Pavlik and Manning 1993; Pavlik et al. 1993; Euing and Tom 2016). This variety prefers open, sandy and well-drained soils (Pavlik and Manning 1993, Pavlik et al. 1993)." (Five-Year Review)
- **Relevant Life History Information:**
 - "*Erysimum capitatum* var. *angustatum* is an herbaceous, short-lived perennial (Service 1984, 2002; Price 1987) characterized by small yellow flowers and long, thin stems. Seeds that germinate and develop into immature seedlings in their first year typically develop into mature plants in their second year and flower, produce seeds, senesce, then die shortly thereafter." (Five-Year Review)
- **Ecology**
 - "*Erysimum capitatum* var. *angustatum* blooms between March and August, with the peak bloom period tending to occur in late April (Pavlik and Manning 1993, Pavlik et al. 1993, Euing and Tom 2016). This variety is historically only known from the Antioch Dunes ecosystem near the confluence of the Sacramento and San Joaquin rivers, California (Greene 1896; Rossbach 1958; 3 Service 1984, 2002, 2008). *Erysimum capitatum* var. *angustatum* is considered to be self-incompatible (Whittall 2014; individual plants do not usually successfully pollinate themselves) and is pollinated by a variety of insect groups, including bees and possibly hawkmoths (Service 1984, Whittall 2014)." (Five-Year Review)

- **Threats**

- All below information is from the [Contra Costa wallflower Five-Year Review](#):

- Habitat loss and degradation:

- The acquisition by the Service of properties containing sand dunes and the establishment of the ADNWR has substantially reduced habitat loss and degradation (Service 2008). Thus, habitat loss is not currently considered a major threat to populations of *Erysimum capitatum* var. *angustatum* at ADNWR, but habitat degradation due to invasive species and other anthropogenic factors likely continue to influence these populations.
- Unintentional changes to habitat, such as by unauthorized human visitors, continue to be a threat to this species—mainly through the threat of unintentional wildfire. A key conservation strategy used at ADNWR has been to restrict human access by erecting chain link fences and gates, which prevents unauthorized people from entering the Antioch Dunes area. Since 1986, the Refuge has been fenced with a chain-link fence and gated at key access points along the roads (Service 2008). However, the Refuge can be accessed from the river, and the various fences and gates can be breached by people who are motivated to access the site without authorization, and when these fences and gates are damaged. Refuge staff continue to find evidence of unauthorized visitation (Service 2019a), and these visits have occasionally resulted in habitat degradation (Service 1984, Service 2008), including fires (see below). Although human traffic is not currently a significant driver of habitat degradation, it is a continuing threat (Service 2019a), especially when unauthorized visitors are not aware of the harm they can cause to *Erysimum capitatum* var. *angustatum* and other species. Habitat fragmentation—Prior to human exploitation, the Antioch Dunes ecosystem consisted of a continuous sand dune system on the southern banks of the San Joaquin River (Service 2002, McNally 2014), and it likely that *Erysimum capitatum* var. *angustatum* occurred throughout these dunes (Service 1984, 2002, 2008). Sand mining, agricultural, residential, and industrial development and activities in and near the Antioch Dunes have combined to fragment the Antioch Dunes system into two core areas, now known as the Stamm and Sardis Units of the ADNWR (**Figure 2**). This bifurcation and fragmentation of the spatial distribution of *Erysimum capitatum* var. *angustatum* has decreased the quantity and quality of suitable habitat available, and separated suitable habitat patches from each other. This fragmentation has also dramatically reduced rates of dispersal among the wallflower populations at the refuge.

- Habitat fragmentation:

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- Invasive Species

- In recent years biologists and managers have become increasingly concerned about habitat degradation caused by invasive plant species on *Erysimum capitatum* var. *angustatum*. Service (2002) discussed the establishment of invasive plant species at ADNWR, including the impacts of non-native plant and grass species, on *Erysimum capitatum* var. *angustatum*, and emphasize the role these plants can play in reducing germination and seedling survival rate, changing dune disturbance regimes, and competing for resources. Thomson (2005a, 2005b) considered and analyzed the impacts of invasive plant species at Antioch Dunes, with a focus on the invasive grass riggut brome (*Bromus diandrus*). Thomson (2005a) developed a stage-structured population dynamics model for Antioch Dunes evening-primrose, which is another endangered plant species at Antioch Dunes, and estimated the various survival, growth, and recruitment parameters associated with this model, including under the influence of invasive plants. Thomson (2005a, 2005b) and Beck (2014) concluded that invasive plants have the potential to have important influences on endemic plants at Antioch Dunes, including competing with endangered plants for resources (e.g., space, sunlight, water, and nutrients; Service 2002) and changing sand dune dynamics and reducing sand disturbance, which in turn can reduce seed germination and seedling recruitment (Service 2002, Thomson 2005b). Service (2002, 2019b) 13 conclude that *Erysimum capitatum* var. *angustatum* benefits from control and removal of nonnative plants.

- Dust deposition

- A riverfront gypsum-based manufacturing and processing facility is located between the Stamm and Sardis Units of ADNWR. This facility is currently owned and operated by Georgia-Pacific L.L.C. and focuses on producing interior and exterior gypsum panels for residential and commercial buildings (Georgia-Pacific 2012). Service (2002, 2008, 2019a, 2019b), and McNally (2014) have all highlighted that dust from the gypsum plant has been, and continues to be, a source of habitat degradation, and that this dust can settle on leaves and other plant material and may reduce exposure to sunlight and decrease rates of photosynthesis. Addition of gypsum-based dust to sand and soil can also potentially change soil mineral composition (especially calcium and sulfates), which could in turn influence and negatively affect plant growth and physiology. Georgia-Pacific strives to keep gypsum dust wetted down during production activities (Service 2008) and is in the process of installing mitigation for the dust (Georgia-Pacific 2016; personal communication, L. Terrazas; April 15, 2020).

- Pollinators

- Service (1984) considered the proposal that the Antioch Dunes ecosystem experienced a reduction in pollinator populations and species diversity due to habitat degradation and sand mining activities. At that time, it was not clear which species pollinated *Erysimum capitatum* var. *angustatum*, and whether the populations of those species had experienced declines. The most recent 5-year review for *Erysimum capitatum* var. *angustatum* (Service 2008) also considered whether reduced pollinator populations might have negative impacts on wallflower populations. However, it was not yet clear which species pollinated

Erysimum capitatum var. *angustatum*, and whether the populations of those species were stable, decreasing, or increasing. It is still not clear which species assemblage pollinates *Erysimum capitatum* var. *angustatum* and how the abundance and diversity of this assemblage has changed over time. The Service cannot currently draw inferences about the current status of these populations, and this continues to be an open question.

- Inadequacy of existing regulatory mechanisms
 - Service (2019a) reviewed the federal regulatory mechanisms related to ADNWR and *Erysimum capitatum* var. *angustatum*, which include: the Endangered Species Act; The National Wildlife System Administration Act; designation of the Antioch Dunes National Wildlife Refuge; listing of *Erysimum capitatum* var. *angustatum* as an endangered species; the Refuge Recreation Act; the Clean Water Act; and other federal mechanisms. Service (2019a) also reviewed the State of California regulatory mechanisms related to ADNWR and *Erysimum capitatum* var. *angustatum*, which includes: The California Endangered Species Act and the California Environmental Quality Act. *Erysimum capitatum* var. *angustatum* is listed as an endangered species by the state of California (<https://wildlife.ca.gov/Conservation/Plants/Endangered>). The Service is not aware of regulatory mechanisms associated with Contra Costa County or the City of Antioch that specifically relate to *Erysimum capitatum* var. *angustatum*.
- Wildfire
 - Prior to modern human settlement, wildfires probably did not substantially impact *Erysimum capitatum* var. *angustatum*, given the lower density vegetation that characterized this riverine sand dune system (Service 2019b). Since modern human settlements, wildfires that have occurred at Antioch Dunes and nearby areas have been started unintentionally, and perhaps intentionally, by unauthorized visitors and possibly by sparks from passing trains and other sources (Service 2008). These wildfires can have negative consequences for *Erysimum capitatum* var. *angustatum* populations. The revised recovery plan (Service 1984) does not mention wildfires as a threat to wallflower on the Refuge, but does briefly discuss the impact of wildfires on buckwheat stands. The most recent 5-year review for *Erysimum capitatum* var. *angustatum* (Service 2008) briefly discusses the possible influences of wildfires on wallflower and concludes that this subspecies is most vulnerable to fire from winter through summer, which is the period from germination to deposition of seeds. However, that review also concluded that plants that are native to the Antioch Dunes ecosystem likely recover relatively quickly from wildfires (Service 2008). Gilliss and Smith (2012) considered how collaboration and planning among stakeholders, along with associated educational efforts, can reduce the occurrence and impacts of wildfires in a variety of locations, including at ADNWR. These authors concluded that collaboration and educational efforts at ADNWR have reduced the prevalence and impacts of wildfires at the Refuge. However, unintended fires can be difficult to prevent on relatively small properties, such as ADNWR, especially given that the total refuge size is small (~55 acres). The Refuge also consists of two separate management units (the Stamm and Sardis Units), each of which is adjacent to industrial and residential areas with over 100,000 people living in Antioch.
- Changing climate conditions

- Develop MOU with Domtar
 - Develop MOU with McCullough
 - Protect other essential habitat for Lange's metalmark butterfly, Contra Costa wallflower, and Antioch Dunes evening-primrose
 - Develop protective alternatives and actions with landowner
 - Develop MOU with landowner of other essential habitat
 - Identify other essential habitat
- Restore Antioch Dunes ecosystem, and increase numbers and improve habitat for Lange's metalmark butterfly, Contra Costa wallflower, and Antioch Dunes evening-primrose
 - Implement ADEP habitat restoration plan
 - Increase numbers and restore habitat for the Contra Costa wallflower
 - Conduct annual census of population and monitor habitat of the Contra Costa wallflower
 - Propagate plants and outplant (if necessary)
 - Develop and implement the Contra Costa wallflower habitat restoration plan
 - Complete life-history studies
 - Conduct reproduction history studies
 - Conduct autecological studies
 - Implement the Contra Costa wallflower habitat restoration plan
 - Rebuild the natural dune substrate and topography to the degree feasible
 - Receive COE sandy dredging spoils
 - Negotiate with COE and Port of Stockton for spoils
 - Prepare sites for spoils
 - Survey sites for candidate and listed species which may be affected by spoils and reduce temporary negative effects of spoils on resident native species
 - Monitor progress of site renovation
 - Reduce or eliminate exotic vegetation
 - Remove vineyard
 - Select best means for vineyard removal
 - Study various means for vineyard removal
 - Remove other exotic vegetation
 - Select best means for removing exotic vegetation
 - Study various means for removing exotic vegetation
- Initiate information and education program
 - Erect interpretive signs
 - Print and distribute leaflets explaining need for refuge and restoration of dune ecosystem
 - Develop environmental education program

- *Erysimum capitatum* var. *angustatum* will be considered for downlisting when:
 - There are at least five separate self-sustaining (all plants are naturally recruiting*) populations of: at least three populations, each with a 15-year moving median of at least 7,000 flowering plants; and least two populations, each with a 15-year moving median of at least 4,000 flowering plants.
 - A distance of at least 1,500 feet and a natural and/or man-made firebreak separates individual populations. Populations should be protected and have in place a long-term management plan for the conservation of *E.c. var. angustatum* and commitment for implementation of the plan. Delisting Recovery Criteria *Erysimum capitatum* var. *angustatum* will be considered for delisting when: 22 1. There are at least seven separate self-sustaining (all plants are naturally recruiting*) populations of: at least five populations, each with a 15-year moving median of at least 7,000 flowering plants; and at least two populations, each with a 15-year moving median of at least 4,000 flowering plants. Or, population viability analysis determines that *E.c. var. angustatum* has a range-wide 95% probability of persistence over a 100-year period. a. A distance of at least 1,500 feet and a natural and/or man-made firebreak separates individual populations.
 - Populations should be protected and have in place a long-term management plan for the conservation of *E.c. var. angustatum* and commitment for implementation of the plan.
 - A post-delisting monitoring plan for the species has been developed.

*Any flowering individuals counted as naturally recruiting would have to be \geq two flowering seasons post-outplanting. This would indicate the individual has completed the life cycle in situ.

Description of Species Range

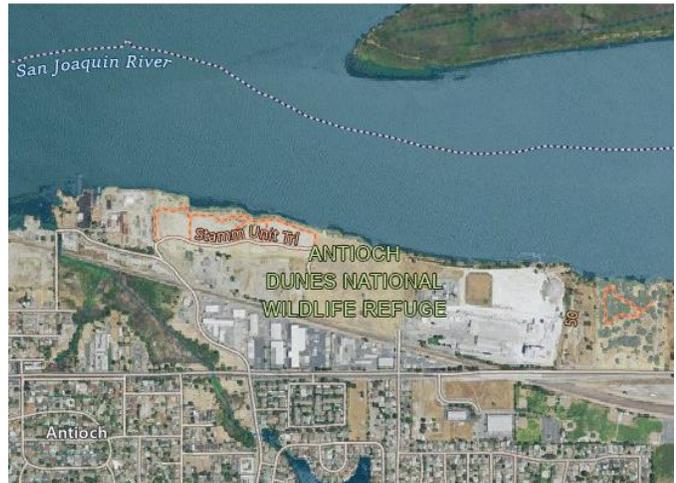
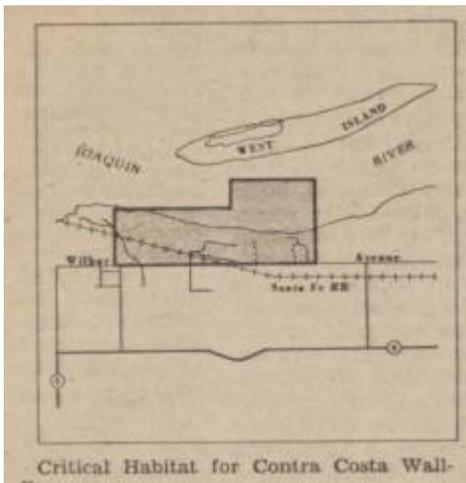
- This species is confined to the Antioch Dunes National Wildlife Refuge in Contra Costa County, CA.
- Range is less than or equal to 40 square miles or 25,600 acres ([https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.130400/Erysimum capitatum var angustatum](https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.130400/Erysimum_capitatum_var_angustatum))
- **Figure A1-1** depicts the current FWS species range (last updated 11-1-2021).



Figure A1-1. FWS Species Range from <https://ecos.fws.gov/ecp/species/7601#recovery>

3. Critical Habitat

- Contra Costa wallflower critical habitat (300 acres) was designated in 1978.
- “Based on this review, the Critical Habitat for the Contra Costa wallflower (*Erysimum capitatum* var. *angustatum*) and Antioch Dunes evening primrose (*Oenothera deltoides* ssp. *howellii*) is determined to include the following area (exclusive of those existing man-made structures of settlements which are not necessary to the normal needs or survival of the species): (1) California, Contra Costa County—T. 2 N., R. 2 E. SW ¼ of section 17, E 2/3 of S 1/3 of section 18.” (Critical Habitat Determination)



Figures A1-2. (a) Critical Habitat for Contra Costa wallflower from 1978 Critical Habitat Designation and (b) FWS critical habitat of Contra Costa wallflower from <https://ecos.fws.gov/ecp/species/7601#rangeInfo>

4. Known Locations

- According to the California Natural Diversity Database (CNDDDB) (2018b), *Erysimum capitatum* var. *angustatum* is known from four EOs, all of which are presumed extant (Table 3). Of the four EOs, three are considered natural occurrences and one is considered transplanted outside of native habitat and/or range. The two CNDDDB EOs that occur at the ADNWR (EO #1, which includes the Stamm Unit and EO #3, which includes the Sardis Unit) represent the majority of, and possibly the entire, known rangewide natural/native population. Nearly annual plant counts have been conducted in at least some of the subunits of the Stamm and Sardis Units since about 1985.

EO# (a)	County (a)	Presence (a)	Occurrence Type (a)	Ownership (a)	Most Recent Observation	Most Recent Survey Plant Count (year)
1	Contra Costa	Presumed Extant	Natural/Native	USFWS (ADNWR-roughly Stamm)	2017 (b)	726 total; 609 flowering (2017; b)
2	Contra Costa	Presumed Extant	Natural/Native	Private	2001 (a)	unknown
3	Contra Costa	Presumed Extant	Natural/Native	USFWS, Private (ADNWR-roughly Sardis)	2017 (b)	8,561 total; 3,602 flowering (2017; b)
4	Contra Costa	Presumed Extant	Transplant outside of native habitat range	Unknown (Browns Island)	1979 (a)	unknown

Notes: (a) CNDDDB 2018b; (b) Service 2018a.

Figure A1-3. Table of Contra Costa wallflower occurrences from FWS Recovery Plan.

- Occurrences in iNaturalist (current as of 4/25/2025)
 - 54 research grade observations in iNaturalist dating back to 2013.
 - **Figure A1-4** depicts all observations in iNaturalist.

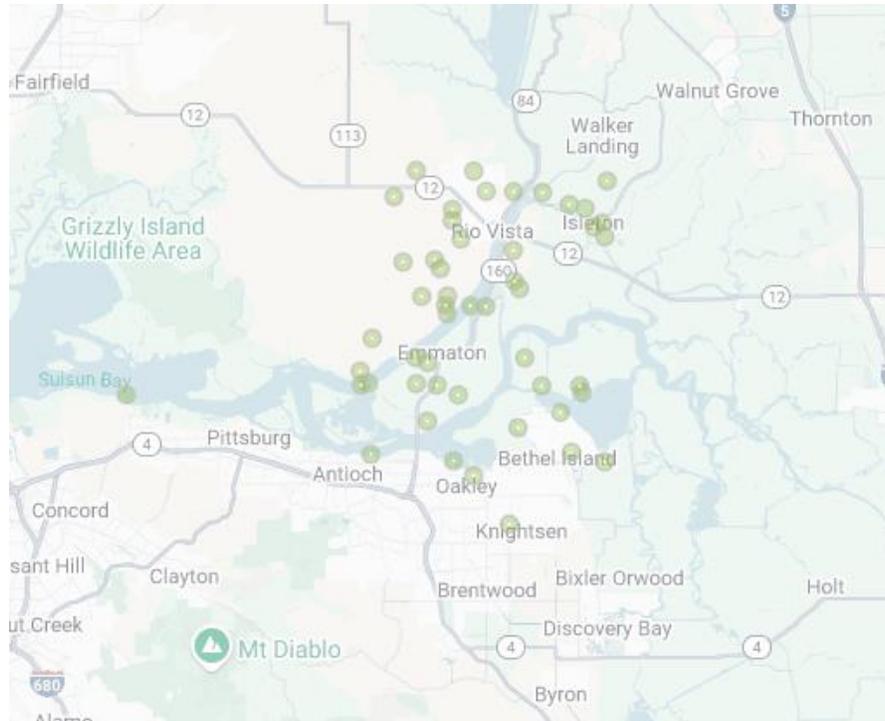


Figure A1-4. 54 research grade occurrences in iNaturalist from
https://www.inaturalist.org/observations?subview=map&taxon_id=119564

- Occurrences in NatureServe
 - searched on 4/25/2025
 - https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.130400/Erysimum_capitatum_var_angustatum
- Occurrences in GBIF
 - Current as of 4/25/2025
 - 39 research grade observations
 - **Figure A1-6** depicts occurrences from GBIF (sourced from iNaturalist)

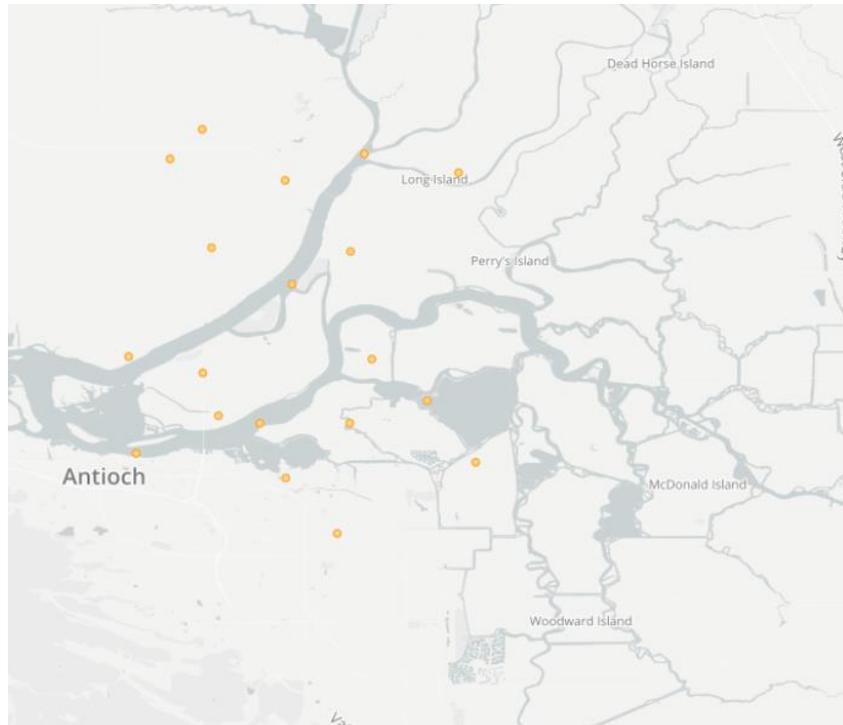


Figure A1-6. 39 research grade occurrences in GBIF from
https://www.gbif.org/occurrence/map?basis_of_record=HUMAN_OBSERVATION&country=US&has_coordinate=true&has_geospatial_issue=false&taxon_key=3048577&year=2006,2025&occurrence_status=present

- Occurrence data support expanding the core map beyond designated critical habitat.

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

This core map was created based on biological information, including the species only occupied location in the Antioch Dunes National Wildlife Refuge.

1. Dataset References and Software

- FWS's National Wildlife Refuge System GIS Data and Mapping Tools (<https://www.fws.gov/service/national-wildlife-refuge-system-gis-data-and-mapping-tools>).

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 used the Antioch Dunes National Wildlife Refuge layer provided by FWS from FWS National Realty Tracts Simplified spatial data. EPA downloaded this layer from FWS's National Wildlife Refuge System GIS Data and Mapping Tools website.