Lakela's Mint (*Dicerandra immaculata*): TKI Draft

Draft Core Map Development for the species; no designated critical habitat

ArcGIS Pro 3.3 was used to perform all spatial operations.

Basis for Core Map: The draft core map for this species is based on the range and supported by suitable habitat locations and known locations

Level of Best Professional Judgement (U.S. Environmental Protection Agency ((EPA)) scale): 1-None; the core map is based directly on the range

Uncertainties/Needs: U.S. Fish and Wildlife Service (FWS) species lead review

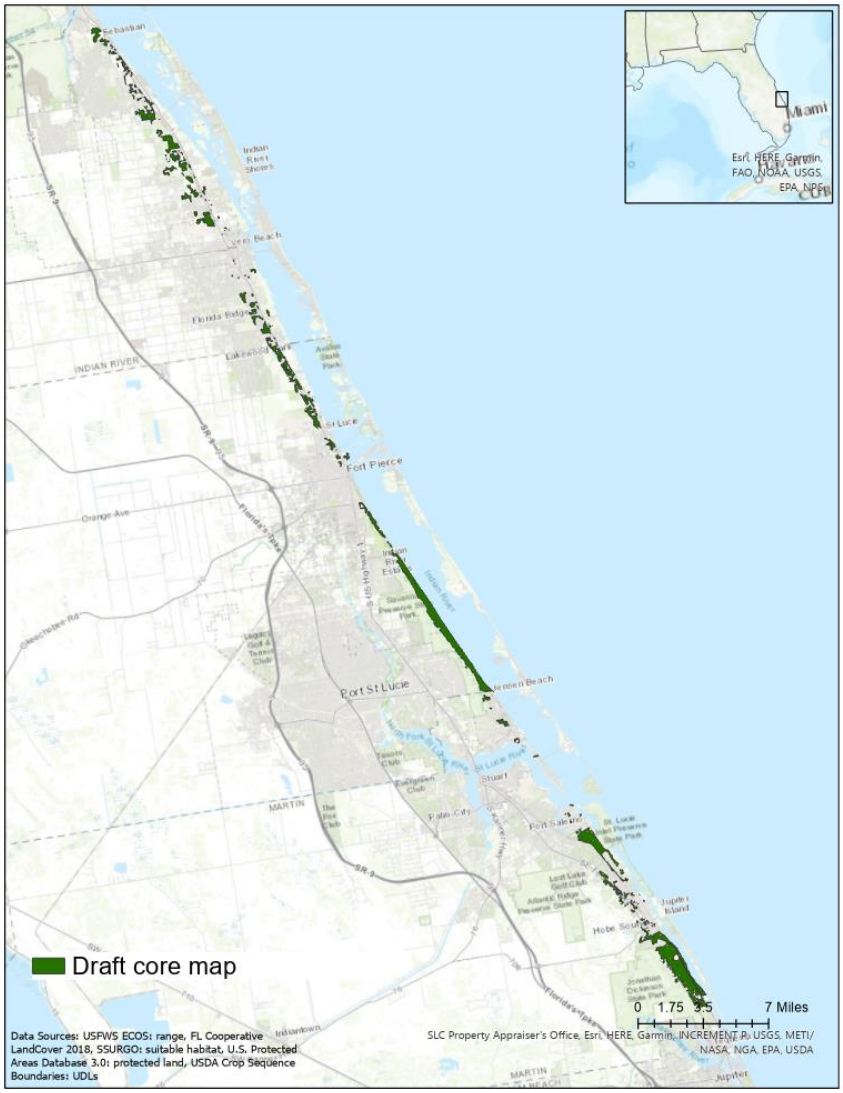

Figure 1. Draft core map for the LM based on range

Percentage of Interim Core Map Represented by NLCD[1] 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	14
Forestry	Evergreen Forest (42)	14	14
Forestry	Mixed Forest (43)	0	14
Agriculture	Pasture/Hay (81)	2	3
Agriculture	Cultivated Crops (82)	1	3
Mosquito adulticide, residential	Open space, developed (21)	21	59
Mosquito adulticide, residential	Developed, Low intensity (22)	32	59
Mosquito adulticide, residential	Developed, Medium intensity (23)	6	59
Mosquito adulticide, residential	Developed, High intensity (24)	0	59
Invasive species control	Woody Wetlands (90)	15	22
Invasive species control	Emergent Herbaceous Wetlands (95)	0	22
Invasive species control	Open water (11)	0	22
Invasive species control	Grassland/herbaceous (71)	0	22
Invasive species control	Scrub/shrub (52)	7	22
Invasive species control	Barren land (rock/sand/clay; 31)	0	22
Total Acres	**Interim Core Map Acres**	**~ 5,242 acres**	

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

Key Core Area Inputs

Sourced from most up-to-date documentation available on ECOS.

Habitat	Descriptions/Datasets
Range	Last updated 2023. Aligns closely with suitable habitat (according to the FL Cooperative Landcover dataset sand and scrub landcover types)
Critical habitat	None
Suitable habitat	Sand and scrub with Astatula, Paola, or St. Lucie sands
Known locations (General Descriptions)	Listed in Table 1 in 2021 5-yr review (shown below). Currently known to occur within 14 populations (five natural and nine introduced) on the Atlantic Coastal Ridge in Indian River, St. Lucie, and Martin Counties. 11 of the 14 populations occur on protected lands.
Element occurrences	Five naturally occurring populations and two introduced populations distributed across the species' range GBIF, iNaturalist, and NatureServe were searched for occurrence data, however the occurrences found did not impact the core map.
Relevant recovery criteria	5-yr review (2021): At least 20 populations exhibit a stable or increasing trend, pops in coastal and sand pine scrub habitat are distributed across the historical range of the species, populations must be protected via a conservation mechanism such that enough suitable habitat is present for the species to remain viable for the foreseeable future

Datasets Used in Core Map Development

- ECOS Datasets:
  - Most recent species range: https://ecos.fws.gov/docs/species/shapefiles/usfws_complete_species_current_range.zip
  - Lakelas Mint Recovery Plan Amendment (2019): https://ecos.fws.gov/docs/recovery_plan/Lakela_s%20Mint%20Recovery%20Plan%20Amendment.pdf
  - Lakela's Mint 5-Year Review (2021): https://ecosphere-documents-production-public.s3.amazonaws.com/sams/public_docs/species_nonpublish/940.pdf

    - Lakela's Mint 5-Year Review (2008): https://ecosphere-documents-production-public.s3.amazonaws.com/sams/public_docs/species_nonpublish/1284.pdf

- Other GIS Datasets:
    - Florida Cooperative Landcover dataset v3.7 https://myfwc.com/research/gis/wildlife/cooperative-land-cover/
    - U.S. Department of Agriculture (USDA) Florida SSURGO Soil Survey Database https://www.nrcs.usda.gov/resources/data-and-reports/soil-survey-geographic-database-ssurgo

Deciding Factors for Core Map Formation

- Species range has been updated in 2023 to include only suitable habitat for the species (sand and scrub with Astatula, Paola, or St. Lucie sands). Formerly the range was county-wide.
- To determine if range matched up well with suitable habitat, two datasets were filtered for suitable habitat, then combined and compared with range:
    - The Florida Cooperative Landcover[2] dataset v3.7 (NAME_SITE = "Beach dune", "Sand beach", Sand pine scrub", "Scrub", or "Scrubby flatwoods")
    - FL SSURGO[3] dataset (COMPNAME = "Astatula", "Paolo", or "St. Lucie")
- Range can be used as the basis for the core map.

Core Map Development

- Most recent range was downloaded from ECOS and used as the core map.

[2] https://myfwc.com/research/gis/wildlife/cooperative-land-cover/
[3] https://www.nrcs.usda.gov/resources/data-and-reports/soil-survey-geographic-database-ssurgo

Table 1: Summary of the status and trends of the known Lakela's and Savannas mint populations (Peterson et al. 2009; Peterson 2017a, 2018, 2019, 2020, 2021a, 2021b, 2021c; Eastwick 2020).

Natural Populations	Site Name	County	Ownership	Most Recent Population Estimate	Last Observation	Trend
Dixie Heights	N/A	Indian River	Private	Extirpated	2005	
Hallstrom Farmstead	N/A	Indian River	County	1,068	2021	Declining
Rose/Collada/ Novurania of America (formerly O'Conner Lumberyard)	Rose	Indian River	Private	100	2018	Declining
Rose/Collada/ Novurania of America (formerly O'Conner Lumberyard)	Collada	Indian River	Private	Extirpated	2009	
Rose/Collada/ Novurania of America (formerly O'Conner Lumberyard)	Novurania of America	Indian River	Private	100	2020	Declining
Coconut Cove	Coconut Cove	St. Lucie	Private	200	2014	Declining
Coconut Cove	Moon Garden	St. Lucie	Private	Extirpated	1991	
Lakela's mint Preserve (previously Harbor Branch Preserve)	N/A	St. Lucie	County	2,678	2021	Declining to Stable
Indrio Scrub	Indrio Scrub	St. Lucie	County	100	2019	Stable to Increasing
Indrio Scrub	Chalmers	St. Lucie	Private	Extirpated	2009	
Florida East Coast Rail	N/A	St. Lucie	Private	Extirpated	2006	
Eden Creek*	N/A	St. Lucie	Private	Extirpated	2020	
Introduced Populations						
North Sebastian Conservation Area	N/A	Indian River	County	485	2020	Established in 2020 (too soon to tell)
John's Island Golf Course	N/A	Indian River	Private	Extirpated	1994	

Introduced Populations continued						
Indrio Savannas	N/A	St. Lucie	County	180	2020	Declining To Stable
Savanna's Preserve State Park (SPSP-1)*	N/A	St. Lucie	State	775	2021	Declining
Savanna's Preserve State Park (SPSP-2)*	N/A	St. Lucie	State	18	2020	Declining
Savanna's Preserve State Park (SPSP-3)*	N/A	St. Lucie	State	973	2020	Established in 2015 (too soon to tell)
Savanna's Preserve State Park (SPSP-4)*	N/A	St. Lucie	State	68	2020	Established in 2016 (too soon to tell)
Hobe Sound National Wildlife Refuge Sand Pit	N/A	Martin	Service	2,920	2019	Stable
Hobe Sound National Wildlife Refuge Visitor Center	N/A	Martin	Service	139	2018	Declining
Estimated Total Plant Count				9,804		

*Indicates populations of the Savannas mint variety (Dicerandra immaculata var. savannarum)

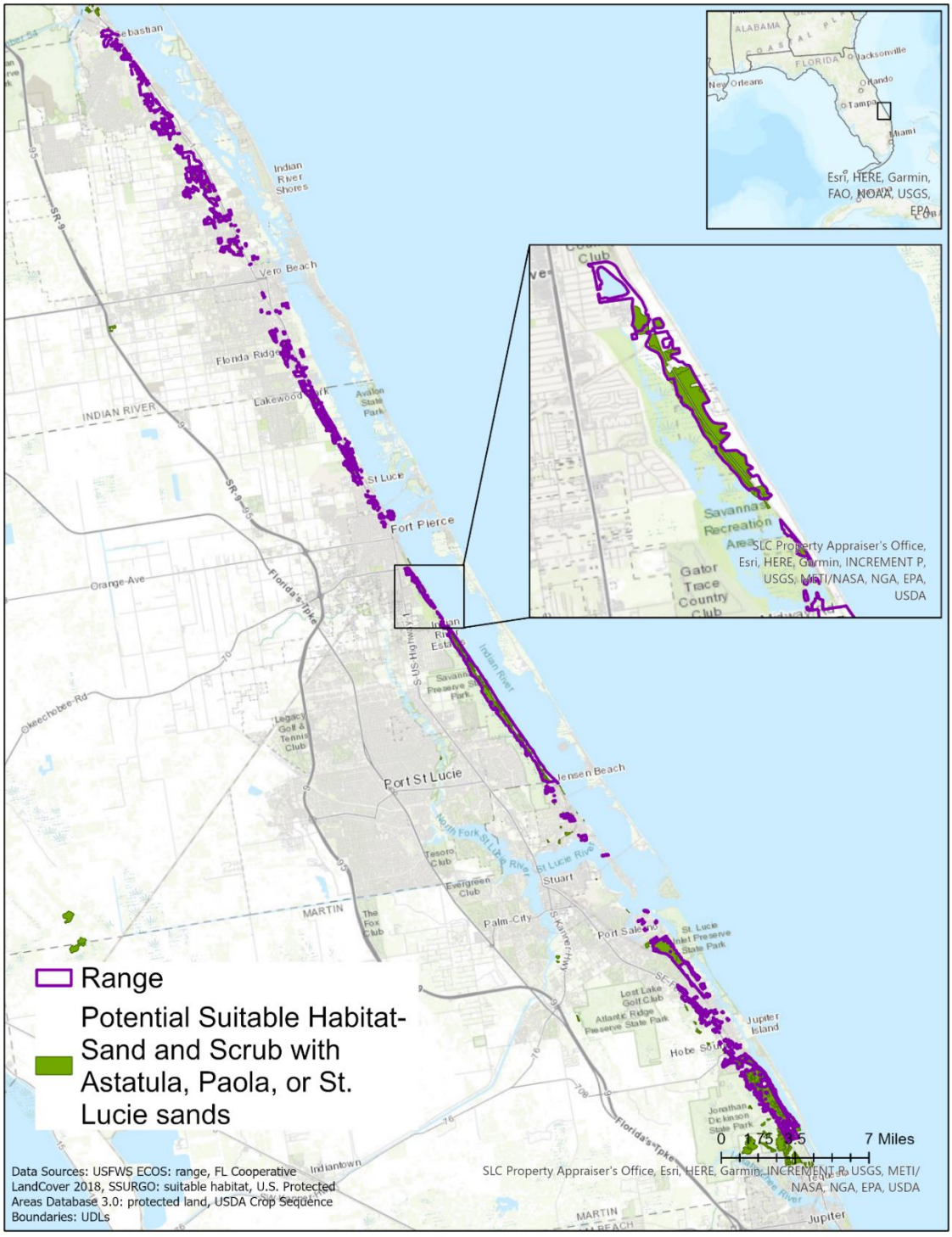

Figure 2. Range in relation to suitable habitat (sand and scrub landcover types with Astatula, Paola, or St. Lucie sands). Suitable habitat does not match up exactly with range, but it does appear to be a close match. The draft core map for this species is the range.