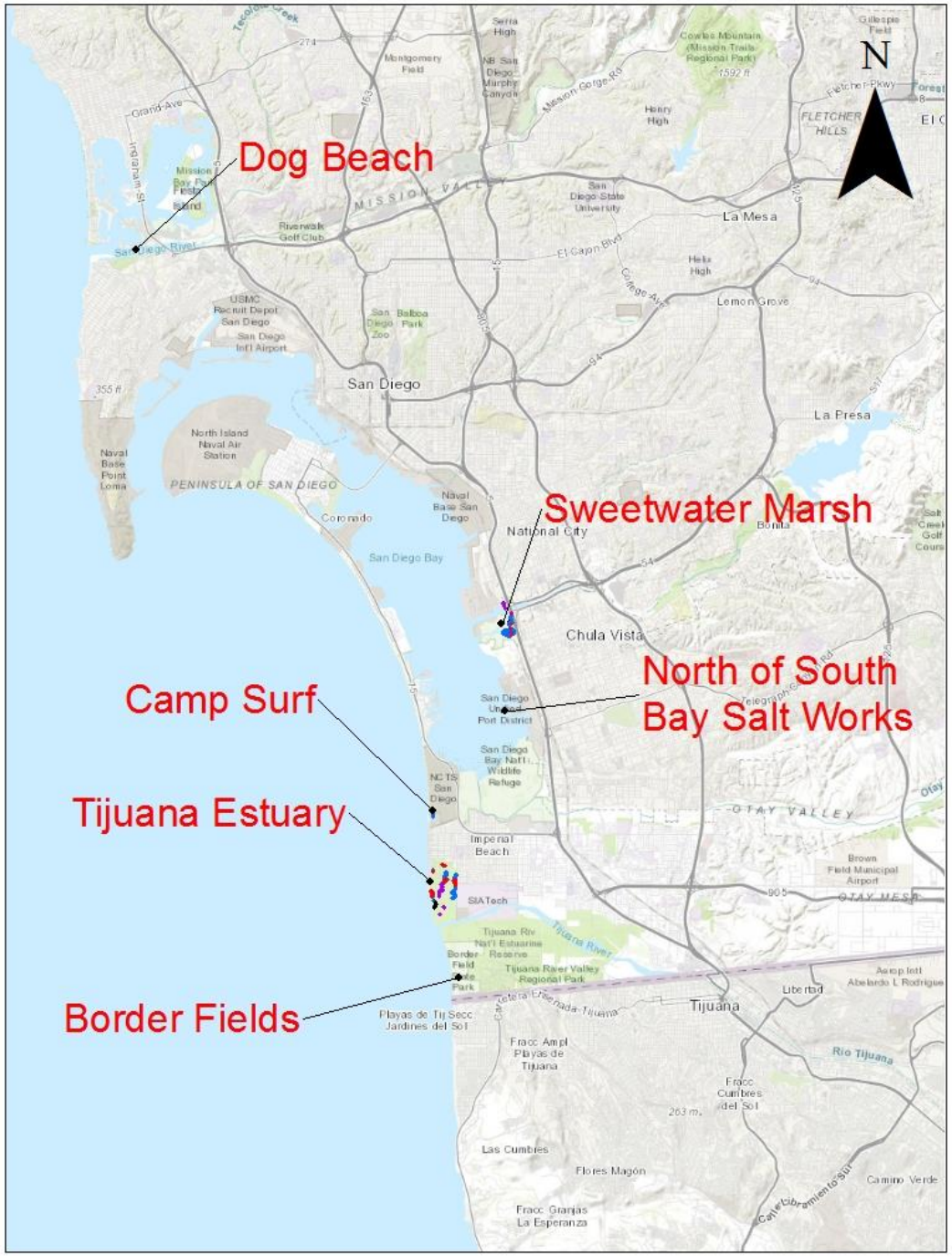
Status of Salt Marsh Bird's-beak in San Diego County, California and Baja California, Mexico in 2022

Jessie Vinje and Margie Mulligan

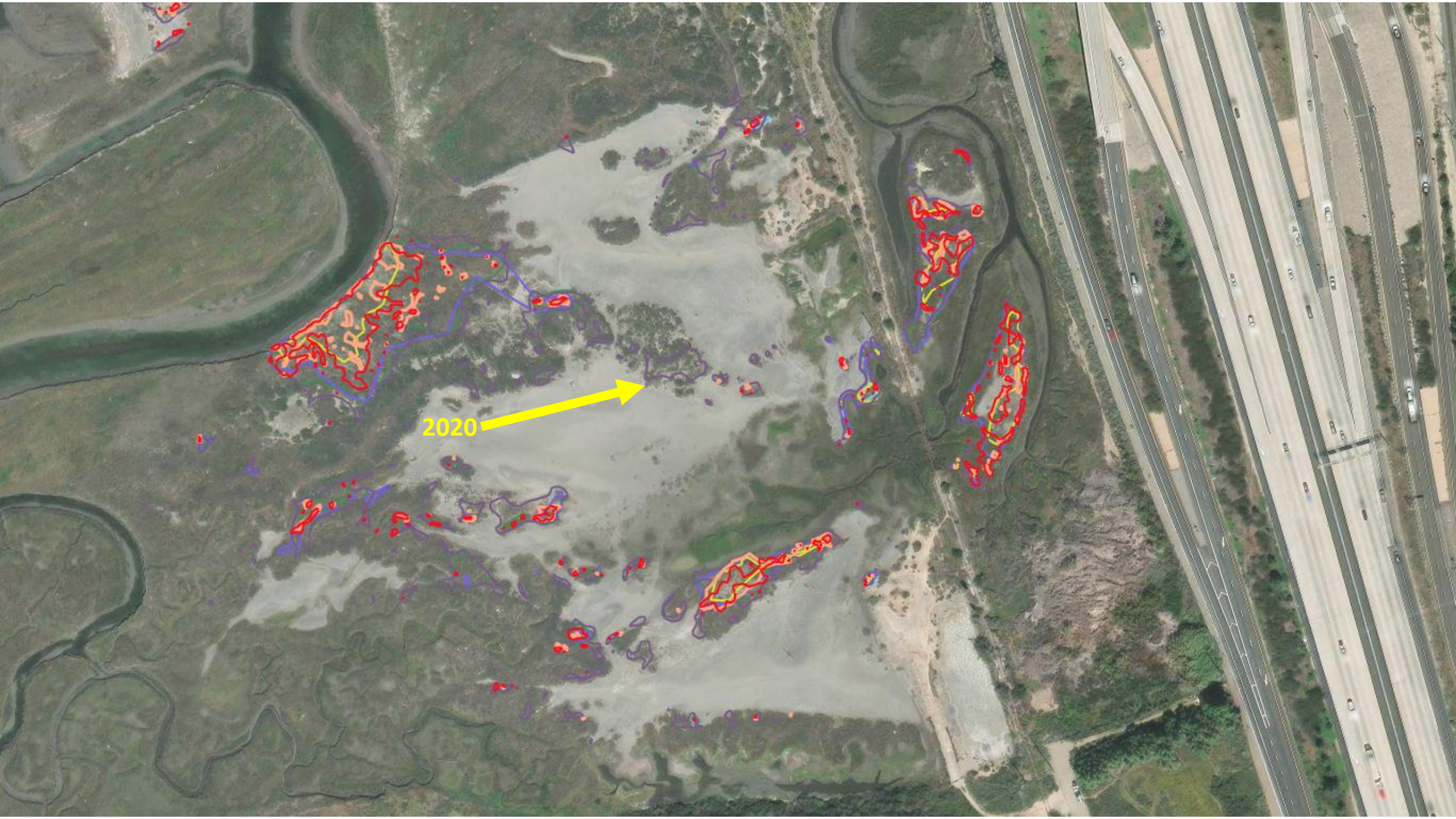
Status of *Chloropyron maritimum* subsp. *maritimum* in San Diego County



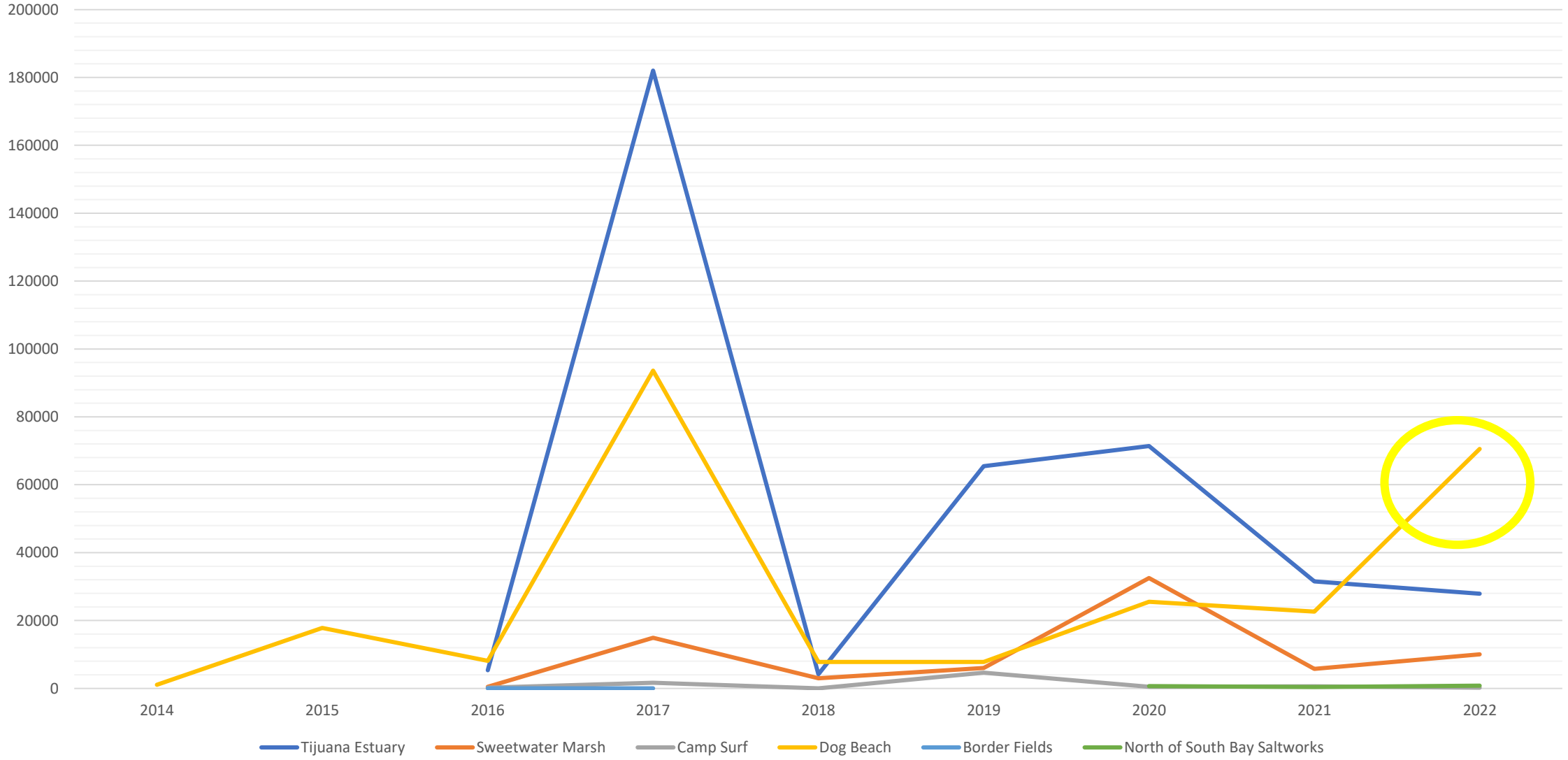
Chloropyron Maximum Extent Data

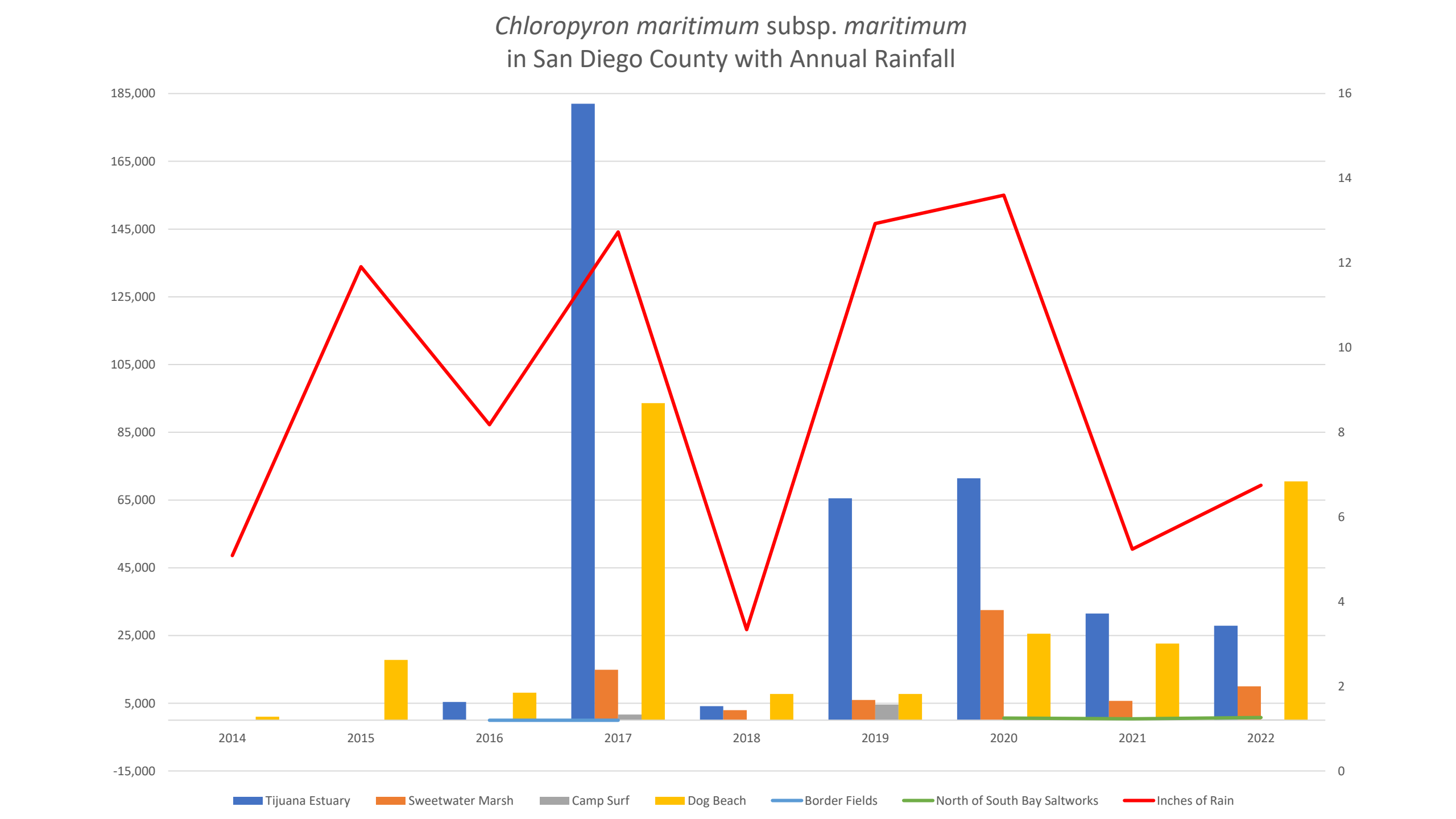
Year	Tijuana Estuary	Sweetwater Marsh	Camp Surf	Dog Beach	Border Fields	North of South Bay Saltworks
2014	---	---	---	1,042	---	---
2015	---	---	---	17,793	---	---
2016	5,381	494*	200	8,130	0	---
2017	182,000	14,900	1,685	93,589	0	---
2018	4,142	2,958	4	7,771	---	---
2019	65,494	5,979	4,625	7,761	0	---
2020	71,418	32,500	481	25,542	---	648
2021	31,527	5,737	589	22,626	---	395
2022	27,881	10,000	226	70,533	---	800

* Incomplete population count


2020

Chloropyron maritimum subsp. *maritimum* in San Diego County 2014–2022




Chloropyron maritimum subsp. *maritimum*
in San Diego County with Annual Rainfall
185,000
165,000
145,000
125,000
105,000
85,000
65,000
45,000
25,000
5,000
-15,000
16
14
12
10
8
6
4
2
0
2014
2015
2016
2017
2018
2019
2020
2021
2022
Tijuana Estuary
Sweetwater Marsh
Camp Surf
Dog Beach
Border Fields
North of South Bay Saltworks
Inches of Rain

- New population mapped in 2022 – USS Midway Museum Property – 1,000s of plants.

- New populations mapped on islands in Sweetwater Marsh, Connector Marsh and Paradise Marsh during the San Diego Bay-wide nonnative *Limonium* project.

Threats


No Limonium 2022
Limonium Point 2022
Limonium Polygon 2022
Chloropyron maritimum subsp. mari
USS Midway Museum Boundary
0
100
200

U.S. Pacific coastal wetland resilience and vulnerability to sea-level rise

Thorne et al. 2018

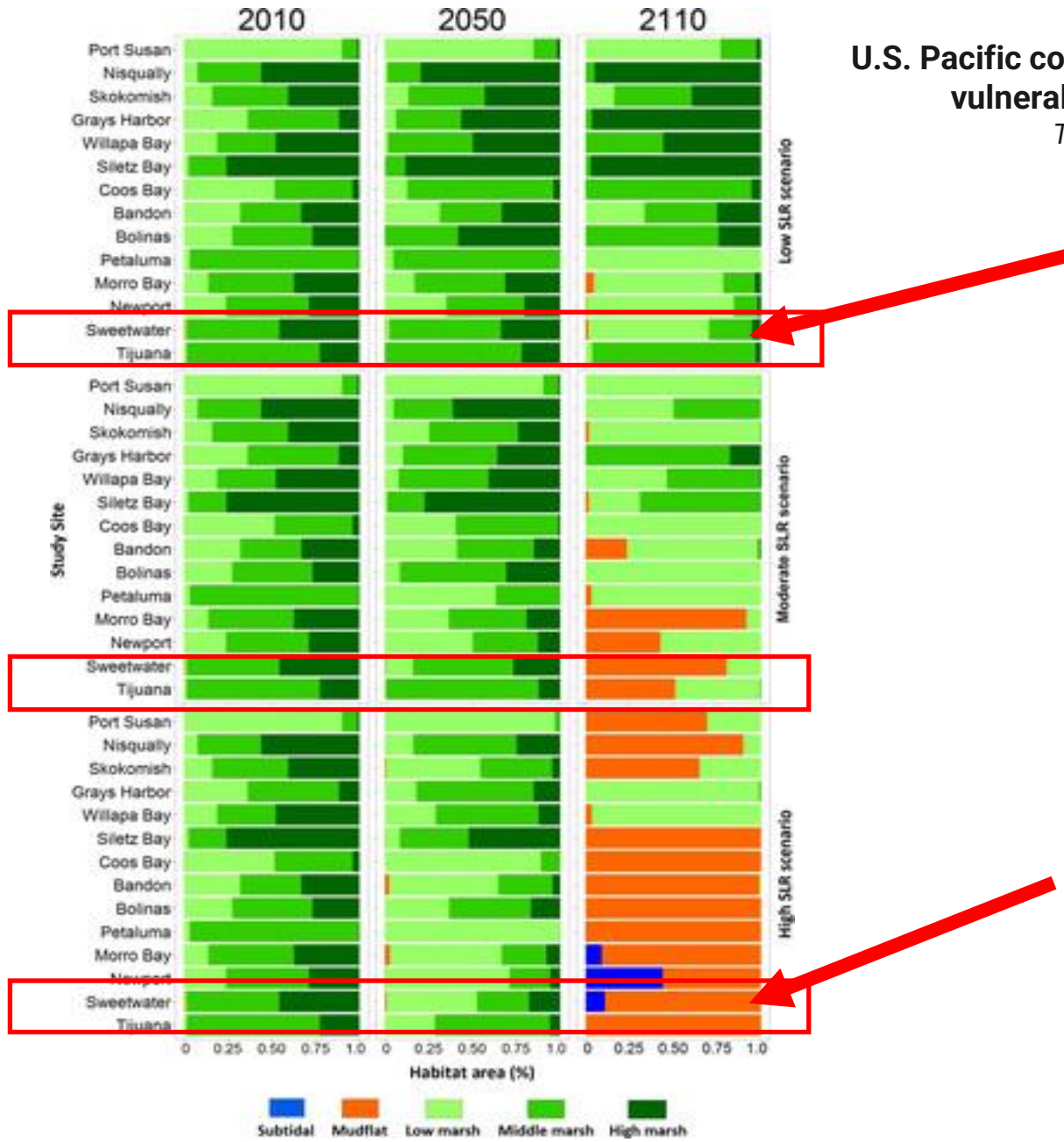


Fig. 3. Habitat projections from WARMER modeling under three SLR scenarios

Recommendations

1. Remove trash from all occupied habitat.

2. Install new fencing and signs in areas with repeated off-trail use.

3. Continue ongoing nonnative *Limonium* spp. treatment and initiate treatment on other properties.

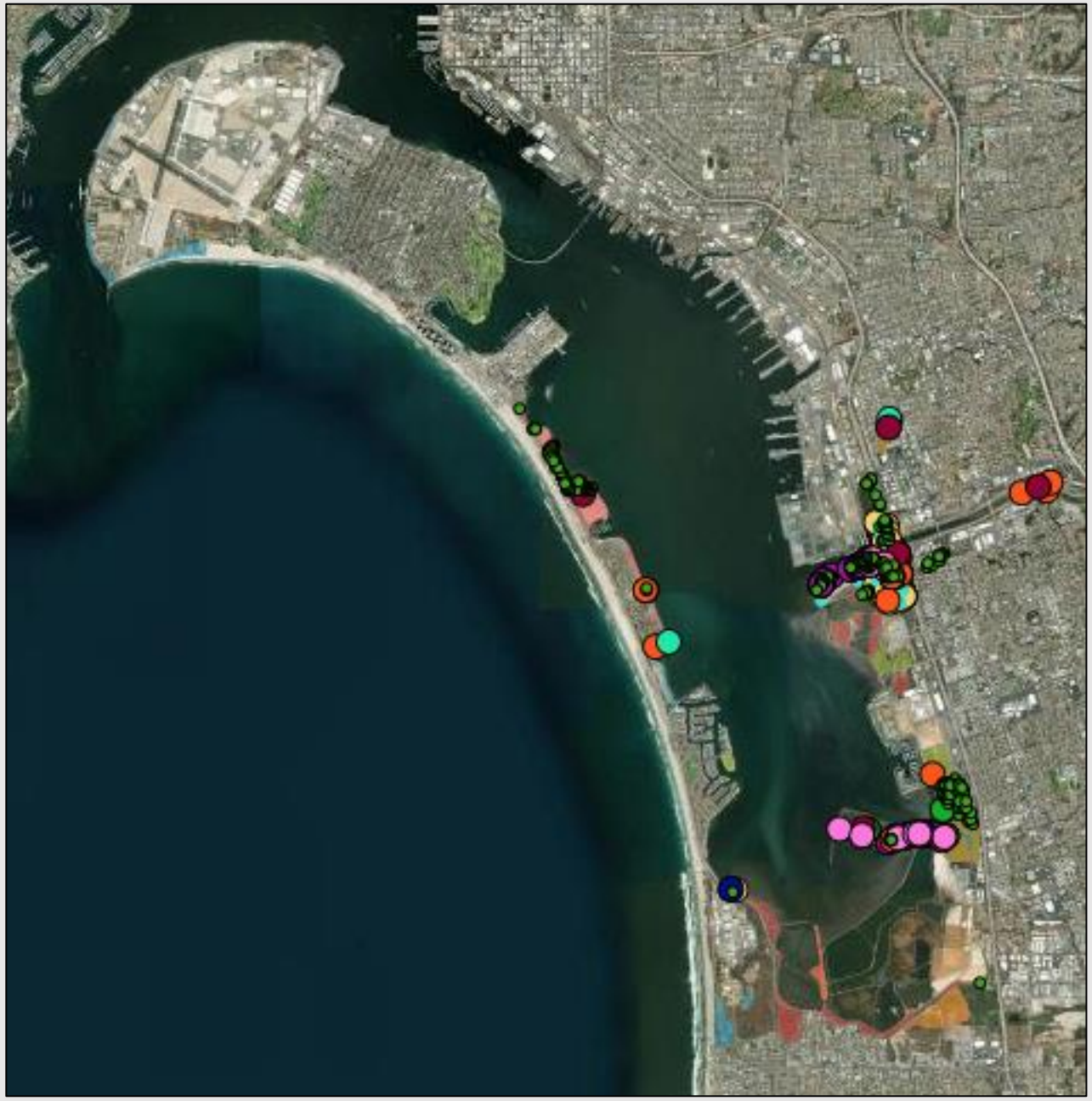
4. Continue regional monitoring effort.

5. Conduct additional surveys in potentially suitable habitat.

6. Create new occurrences to withstand sea level rise and erosion.

San Diego Bay Nonnative *Limonium* Surveys and Treatment

- USFWS supported and funded bay-wide surveys of areas not occupied by nonnative *Limonium*.
- Partners include USFWS, State Parks, US Navy, Port of San Diego, Caltrans, SANDAG and SDMMP (Jason Giessow).
- Existing data gathered from many sources.
- Survey areas prioritized and distributed between partners.
- Created project-specific ESRI Field Maps project and trained partners.

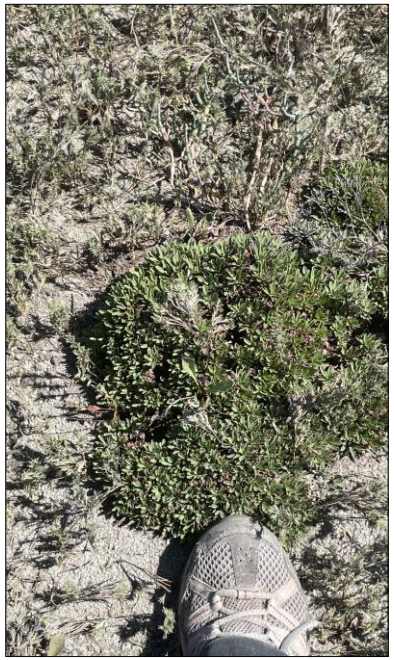


- Conducted surveys May – December 2022.

- Located and mapped approximately 196,000 new *L. duriusculum* plants, 52,000 new *L. ramosissium* plants, and 10,400 new *Limonium* spp. plants (mixed populations) around the San Diego Bay.

- Treated in December on USFWS, Port, and Caltrans property.

- Solarized 38 populations and hand-pulled from 166 populations.



Recommendations

1. Fund additional treatments 2023 – 2027.

2. Expand treatments to include property owned by other project partners.

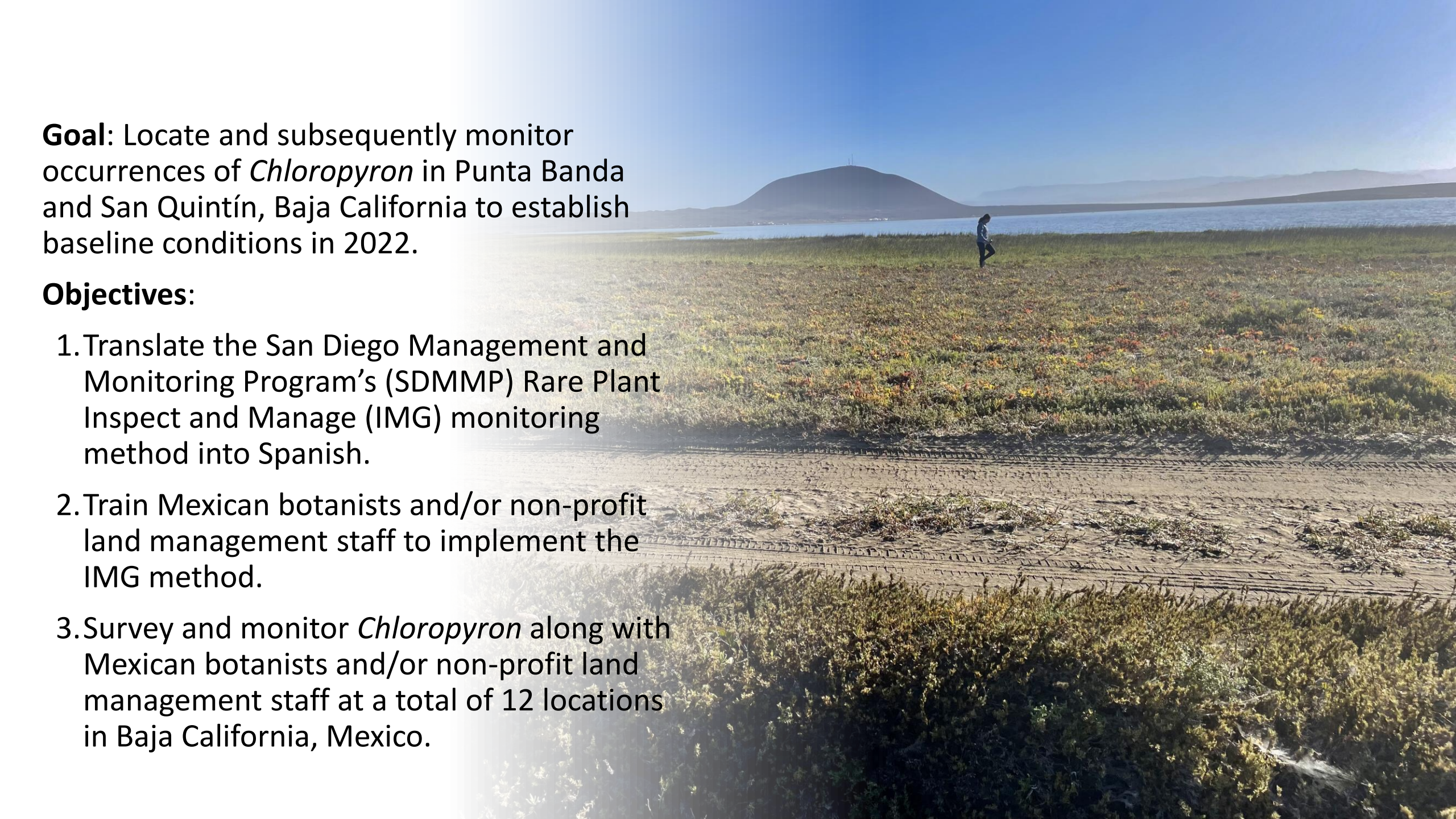
3. Conduct additional surveys in 2023 and 2024 to locate upstream sources (Sweetwater River, Paradise Creek, Otay River) of nonnative Limonium.

Status of *Chloropyron maritimum* subsp. *maritimum* in Baja California, Mexico

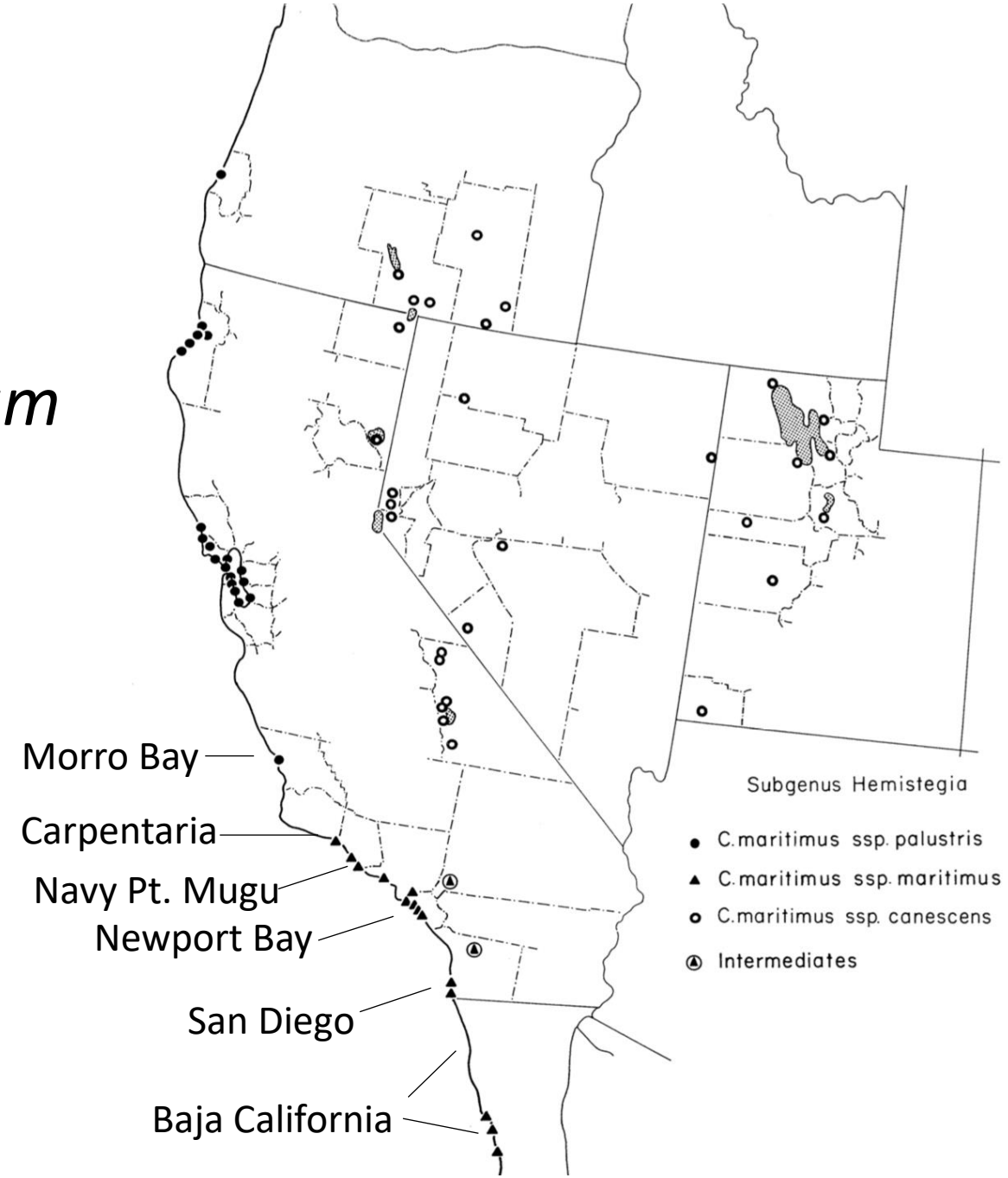
Goal: Locate and subsequently monitor occurrences of *Chloropyron* in Punta Banda and San Quintín, Baja California to establish baseline conditions in 2022.

Objectives:

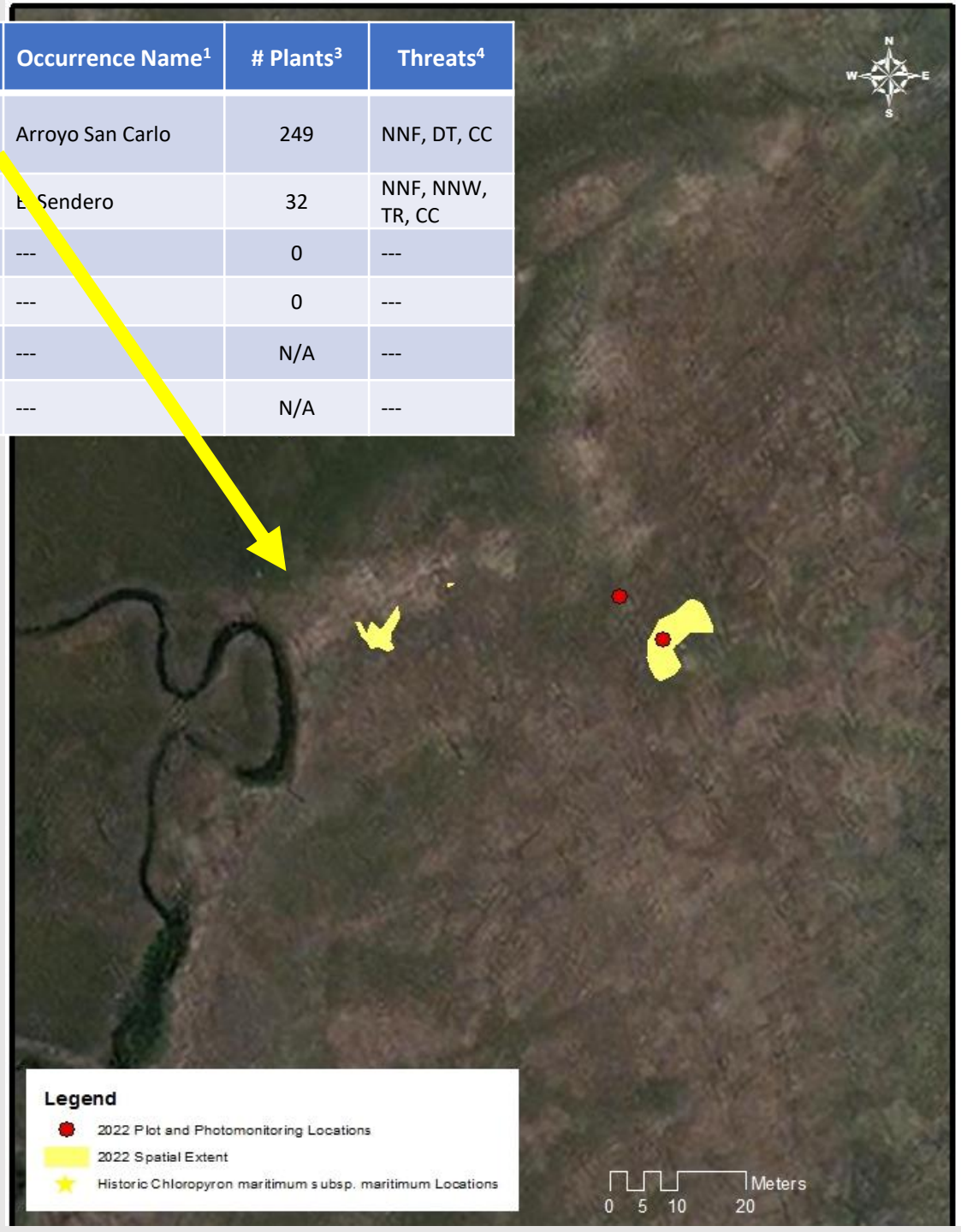
1. Translate the San Diego Management and Monitoring Program's (SDMMP) Rare Plant Inspect and Manage (IMG) monitoring method into Spanish.
2. Train Mexican botanists and/or non-profit land management staff to implement the IMG method.
3. Survey and monitor *Chloropyron* along with Mexican botanists and/or non-profit land management staff at a total of 12 locations in Baja California, Mexico.



Chloropyron maritimum Group Range

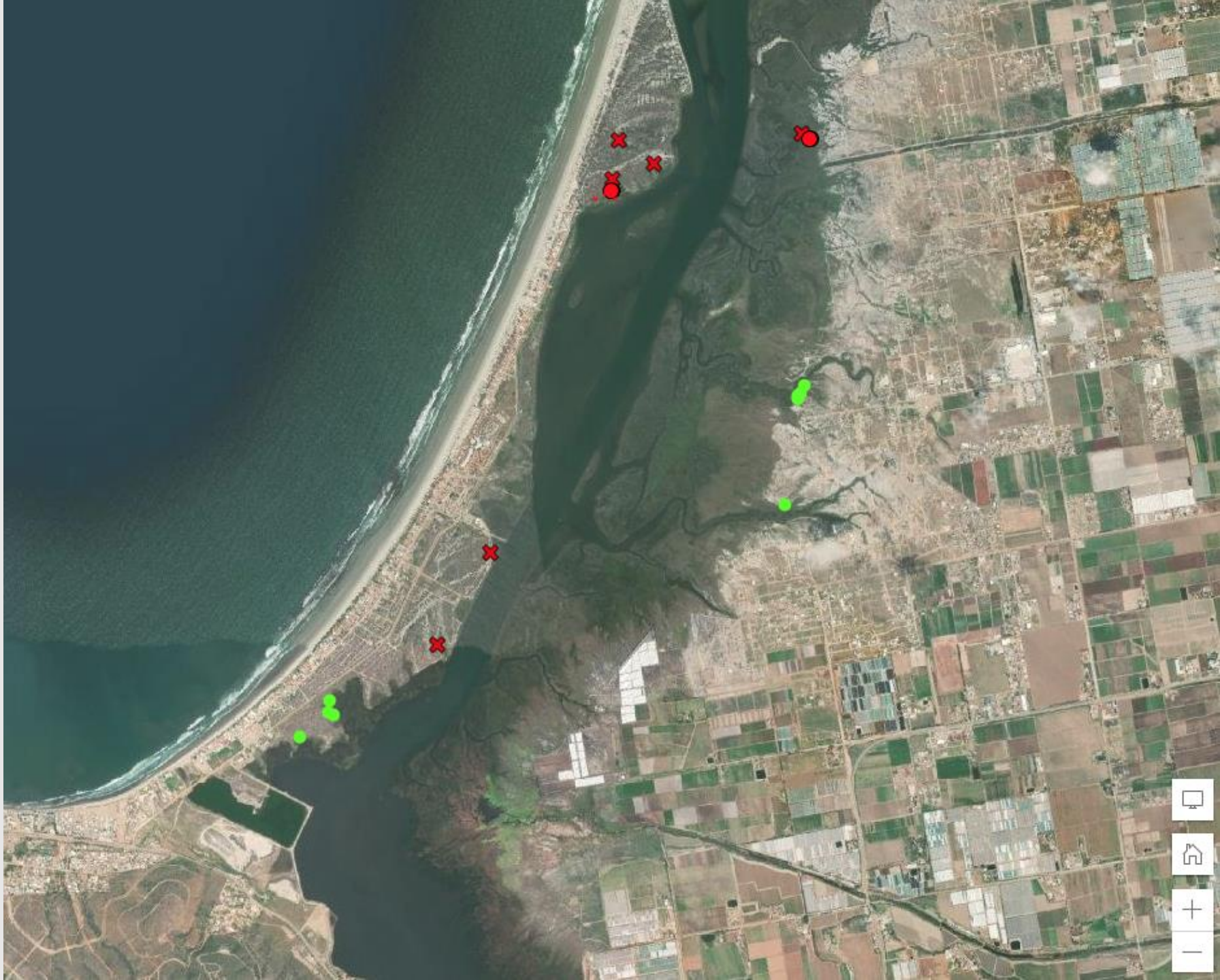


Regional Location	General Location	Occurrence Name[1]	# Plants[3]	Threats[4]
Santa Banda	Arroyo San Carlo - 1	Arroyo San Carlo	249	NNF, DT, CC
	El Sendero - 1	El Sendero	32	NNF, NNW, TR, CC
	El Sendero - 2	---	0	---
	El Sendero - 3	---	0	---
	Lengüeta Arenosa - 1	---	N/A	---
	Lengüeta Arenosa - 2	---	N/A	---

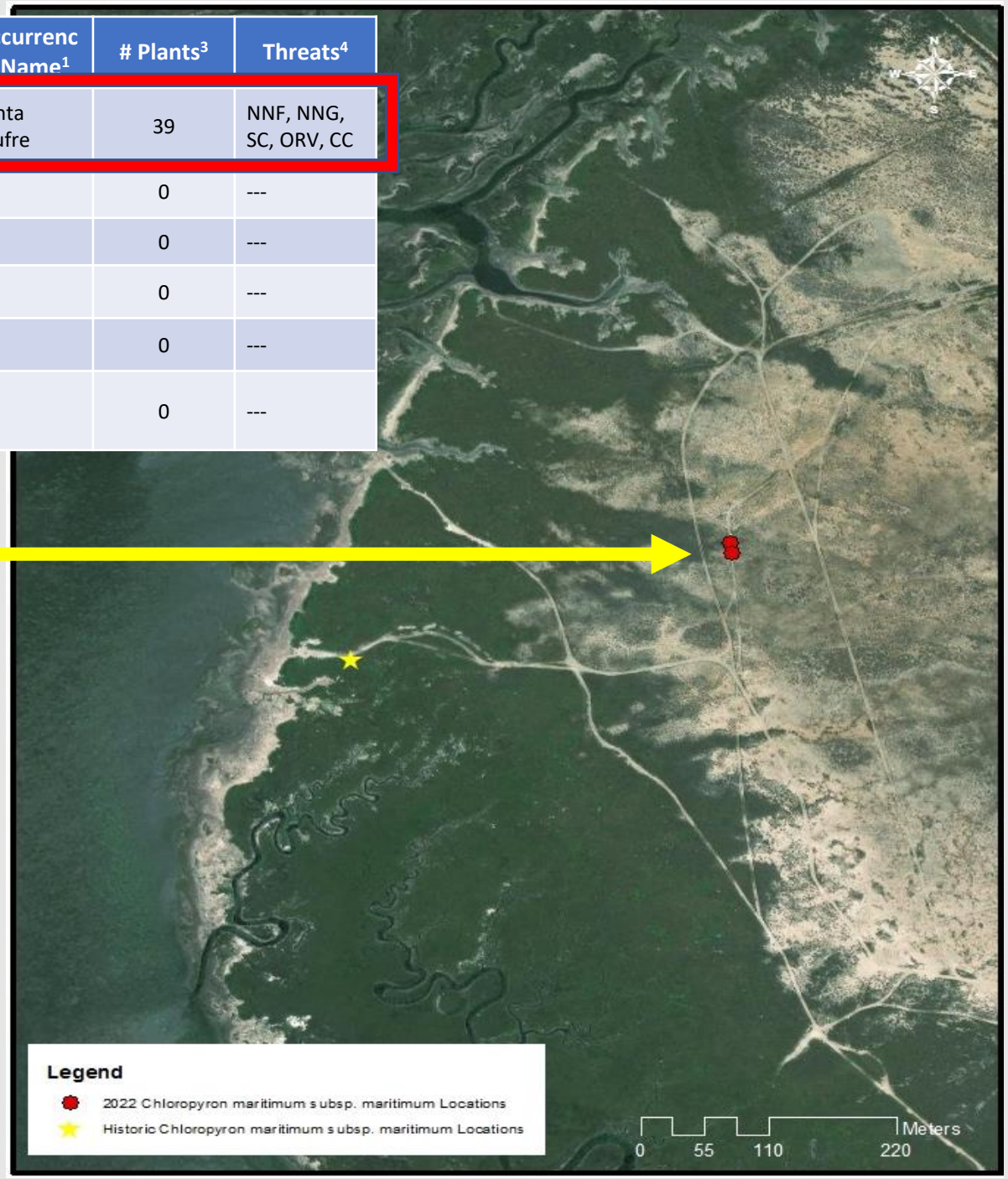


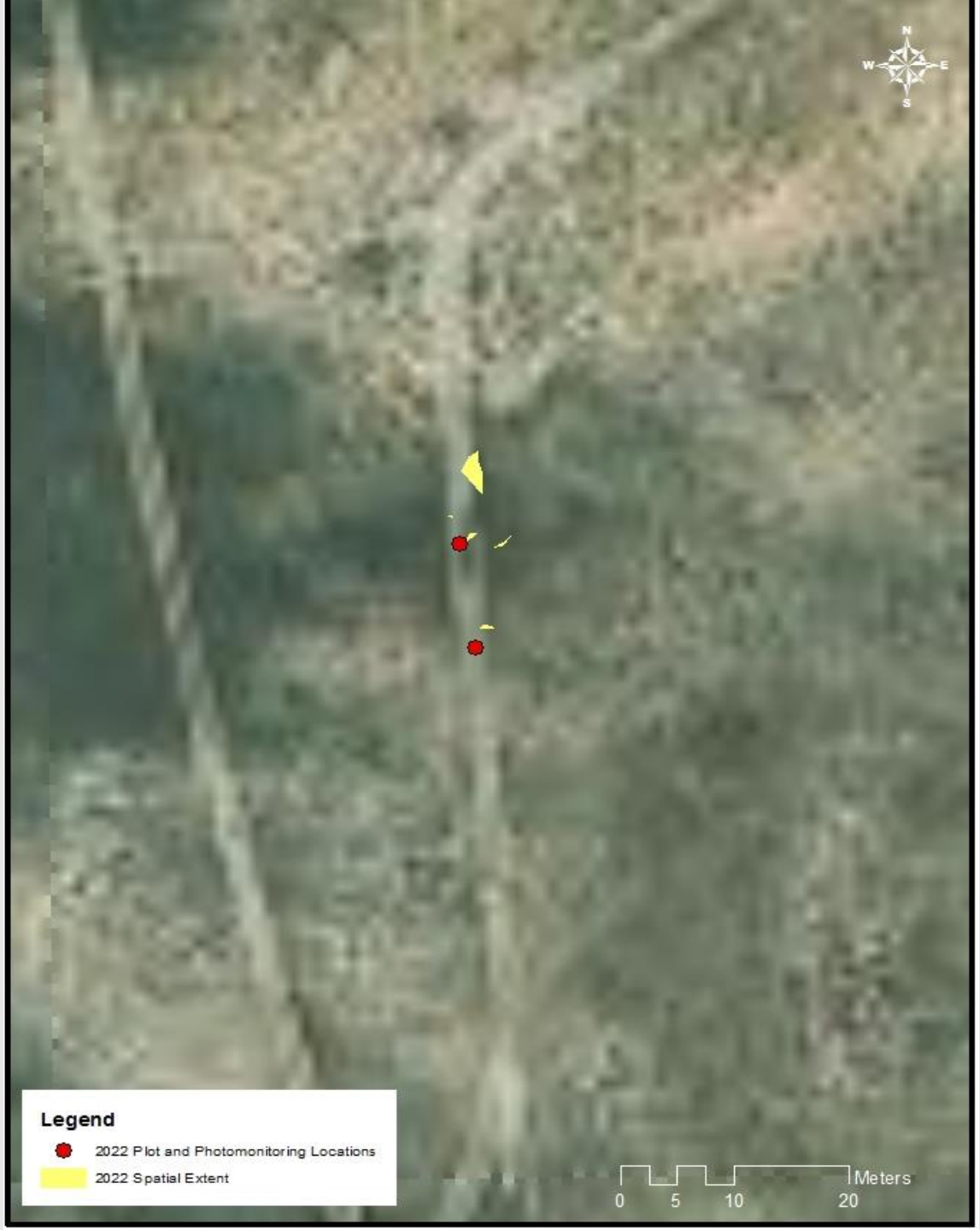

N
W
E
S
Camino a Zona Hotelera
Camino a Zona Hotelera
Legend
2022 Plot and Photomonitoring Locations
2022 Spatial Extent
Historic Chloropyron maritimum subsp. maritimum Locations
Meters
0
12.5
25
50

Populations detected in Punta Banda by Pro Esteros in August 2022



Regional Location	General Location	Occurrence Name[1]	# Plants[3]	Threats[4]
San Quintín	Punta Azufre - 1	Punta Azufre	39	NNF, NNG, SC, ORV, CC
	Punta Azufre - 2	---	0	---
	Bahia Falsa	---	0	---
	Campo la Chorera -1	---	0	---
	Campo la Chorera - 2	---	0	---
	Reserva Natural Punta Mazo	---	0	---




N
W
E
S
Legend
2022 Plot and Photomonitoring Locations
2022 Spatial Extent
0
5
10
20
Meters

Recommendations

1. Survey in 2023 and continue annually through 2026 to ensure that surveys occur during drought, normal, and above-average rainfall years.
2. Conduct additional surveys in potentially suitable habitat at San Quintín and Punta Banda.
3. Locate a source of perpetual funding to support Pro Esteros and local botanist Mr. González in the monitoring and management of *Chloropyron* in Punta Banda.
4. Threats identified require ongoing management and outreach to ensure *Chloropyron* persists over time.
5. Purchase and/or protect the land that supports the Punta Azufre *Chloropyron* location if possible, since it is currently on private land.

Thank you!

- San Diego Association of Governments
- San Diego Management and Monitoring Program
- USFWS: Mary Crawford, Carolyn Lieberman, Brian Collins, Andy Yuen, Debby Good, Victoria Apaldetti-Marquez
- Nonnative Limonium Project Partners
- Recon Environmental Staff
- Pro Esteros: Liliana Ortiz Serrato
- Terra Peninsular: Héctor Manuel Sánchez Márquez & Vitza Cabrera Manrique
- Carlos González
- Sula Vanderplank
- Landowners and managers!