



Keeping Stinkwort At Arm's Length

Tactics for Management of
Dittrichia graveolens at
OC Parks

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MOST UNWANTED



STINKWORT

- Flowering & almost-immediate seed dispersal take place from September through December.
- Leaves and stems are very sticky. When touched or brushed the plants release a very noticeable aroma, reminiscent of Pine-Sol and butane.
- Grows along roadsides, trail edges, railroad sidings, levees and other disturbed areas.
- Plants are usually 2-4 ft. high, but can flower and set seed when as small as 1.5 inches.

Dittrichia graveolens Stinkwort

- Aster family
- Annual
- Germinates in early summer
- Slow growing through summer, then bolts and flowers in late summer
- Profuse flowerer
- Stems and leaves are glandular. Pungent Pine-sol like aroma released when touched
- Likes disturbed areas

Look-Alikes

Stinkwort
(*Dittrichia graveolens*)



All parts sticky.
Fall flowering.
Strong odor.

Fleabane
(*Pulicaria hispanica*)



Never sticky.
Flowers w/o rays.
No odor.

Horseweeds
(*Erigeron* sp.)



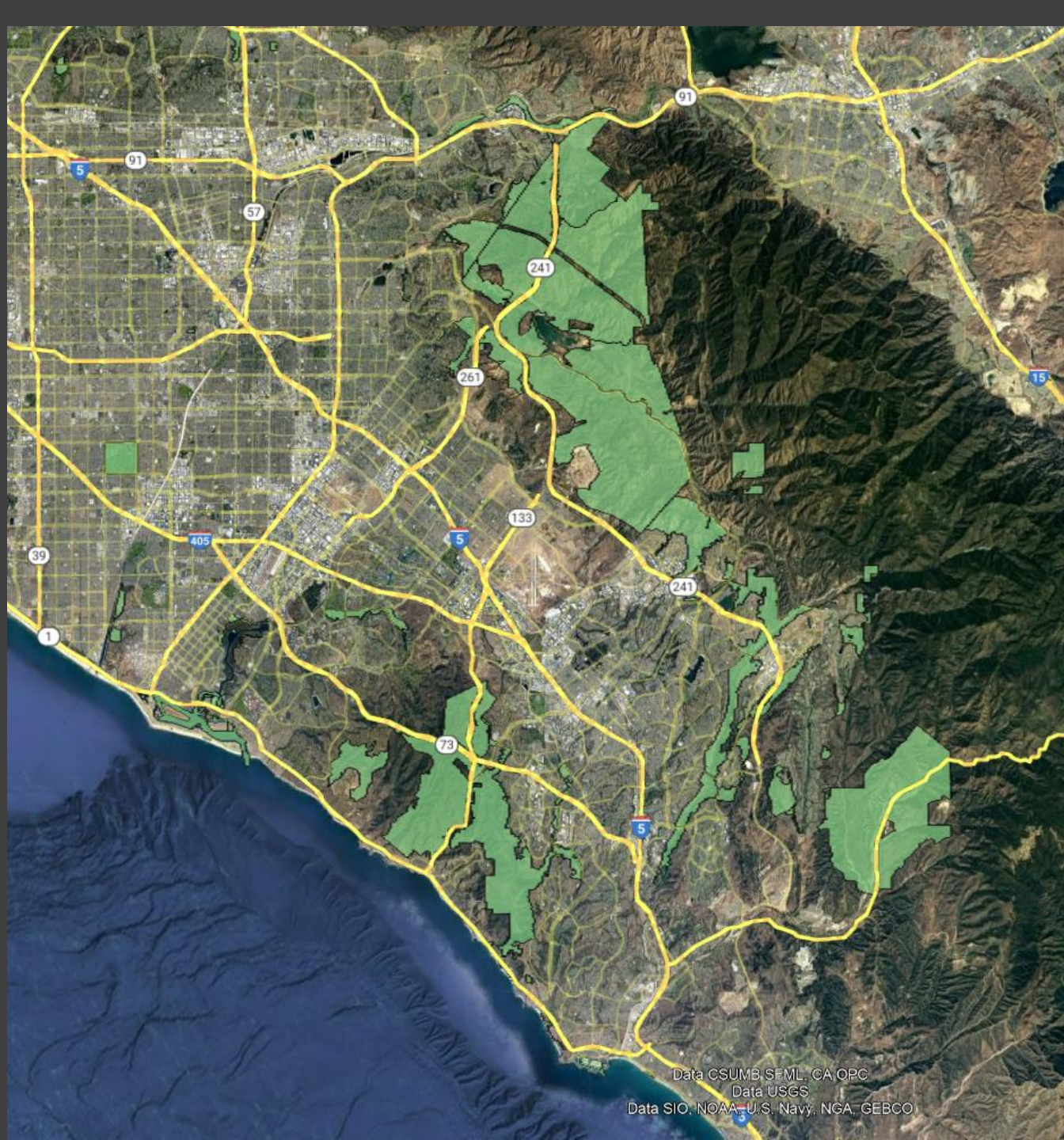
Never sticky.
Flowers w/o rays or very short.
No odor.
White, not yellow..

Slender madia
(*Madia gracilis*)



Often sticky
Flower body rounded, fat.
No odor. Uncommon.

Courtesy of
OCCNPS, Ron
Vanderhoff



OC Parks

- 60,000 acres of parkland, open space and shoreline

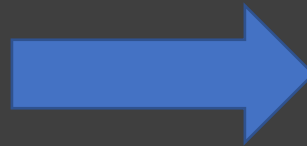
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Data CSUMB, SFML, CA OPC
Data USGS
Data SIO, NOAA, U.S. Navy, NGA, GEBCO

PARTNERS

- Audubon Starr Ranch
- Bolsa Chica Conservancy (BCC)
- California Department of Fish and Wildlife (CDFW)
- California State Parks
 - Crystal Cove State Park (CCSP)
 - Bolsa Chica State Park (BCSP)
- Coal Canyon Ecological Reserve
- Irvine Ranch Conservancy (IRC)
- Irvine Ranch Water District
- Laguna Canyon Foundation (LCF)
- Natural Communities Coalition (NCC)
- Newport Bay Conservancy (NBC)
- OC Ag Commissioner
- OC Public Works
- OC Waste & Recycling
- Orange County Transit Authority
- Rancho Mission Viejo (RMV)
- The Nature Conservancy (TNC)
- University of California Irvine Ecological Preserve (UCI)

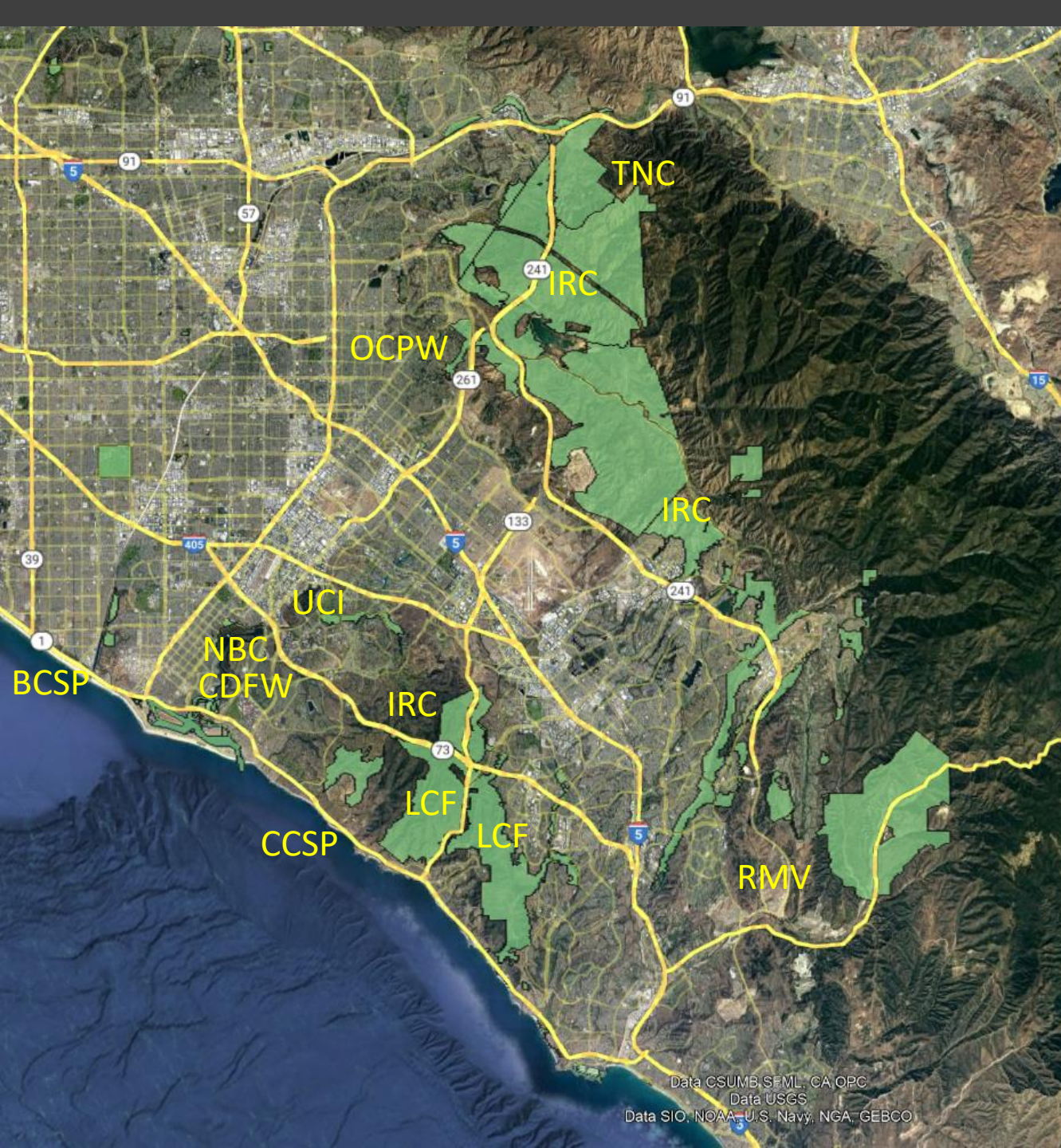


COLLABORATING GROUPS

- Calflora Weed Manager Group
- SAROC WMA
- NCCP Reserve Land Managers

OC Parks Partners

- OC Public Works (OCWP)
- Crystal Cove State Park (CCSP)
- Irvine Ranch Conservancy (IRC)
- Newport Bay Conservancy (NBC)
- Bolsa Chica Conservancy (BCC)
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Data CSUMB, SML, CA OPC
Data USGS
Data SIO, NOAA, U.S. Navy, NGA, GEBCO

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This conceptual figure illustrates the complexities of land management in Orange County (OC). The light gray box, in which all other components are nested within, represents the whole of Orange County. OC California Native Plant Society (CNPS) operates at this scale, surveying all areas at the County level. Nested within Orange County are the lands included within Central/Coastal Orange County Natural Communities Conservation Plan (NCCP; medium gray). Lands covered by the NCCP have several land owners/managers, the most prominent shown in dark gray: OC Parks, California Department of Fish and Wildlife (CDFW), and the City of Newport Beach (CONB). Nonprofit entities that contribute to land management efforts include Laguna Canyon Foundation (LCF), Irvine Ranch Conservancy (IRC), and Newport Bay Conservancy (NBC), whose management extents are represented by translucent green boxes. Blue boxes represent specific parks, sites, or landmarks that are supported by the NCCP and various land managers/owners.

Orange County

OCCNPS

(EDRR, rare plant surveys)

NCCP

OC Waste & Recycling
Frank R. Bowerman
Landfill

Toll Roads
Bonita Canyon,
Coyote Canyon
Landfill

OC Parks

Talbert Regional Park, Whiting Ranch
Wilderness Park, Irvine Regional Park,
Peters Canyon Regional Park, Santiago
Oaks Regional Park

CDFW

Coal Canyon
Ecological
Reserve

UNB
Ecological
Reserve

UNB Nature
Preserve

Irvine Ranch,
Irvine Ranch
Open Space

IRWD
San Joaquin Reservoir
Syphon Reservoir

UC Irvine
UCI Ecological
Preserve/Reserve

COI
Open Space Preserve
South/North

CONB

Buck Gully

Newport
Aquatic
Center

Big Canyon

Others??

NBC

OC Public Works, CalTrans, others
San Diego Creek, Delhi Channel

IRC

LCF

COLB
Laguna Coast

CA State Parks
Crystal Cove State
Park

Aliso and Woods
Canyon, Laguna Coast

MAPPING

- 2019- OC Parks along with IRC and Crystal Cove form a Calflora Weed Manager Group
- Mapping was key to getting the management started



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MAPPING

OC Parks decided to use Calflora because:

- Collaboration!
- Had already been field tested by IRC
- Originally funded by NCC
- Is a platform that can be viewed by all and shared the across county and even surrounding counties
- Can be used easily on mobile devices
- Didn't need the training and expertise ESRI products require



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Dittrichia graveolens Mapping

- 2020- Training Weed Manager Group
 - Coordinating Partners and volunteers invited to document/map



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Dittrichia graveolens Mapping

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Quickly identify

- We need mapping procedures and protocols that can be adopted by all partners.
- We need to have Calflora training
- We need to have EDRR Training

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OC Coordinating Group Mapping Standards

- 10 – 10 – 100 rule
- a polygon with a 10-foot (3-meter) radius is automatically generated as the smallest unit
- larger custom-drawn polygons should have a minimum density of 10% cover, otherwise they should be broken into smaller, separate units
- any populations more than 100-feet (31-meters) apart should be broken into smaller, separate units
- Separate polygons by clear changes in the pattern of infestation
- if a population of weeds is small, do not break the polygon apart into smaller, separate units
- if a population of weeds is medium to large, break the polygons into separate units for easier management and tracking, using:
 - density gradients
- Separate polygons by man-made features
- if a population of weeds is small, do not break the polygon apart into smaller, separate units
- if a population of weeds is medium to large, break the polygons into separate units for easier management and tracking, using:
 - roads
 - singletrack trails
 - fencelines
 - gates
- Separate polygons by natural features
- if a population of weeds is small, do not break the polygon apart into smaller, separate units
- if a population of weeds is medium to large, break the polygons into separate units for easier management and tracking, using:
 - top of slope
 - bottom of slope
 - stream channels
 - drainage feature
- Separate polygons by size and shape
- if a population of weeds is small, do not break the polygon apart into smaller, separate units
- if a population of weeds is medium to large, break the polygons into separate units for easier management and tracking, using:
 - excessive length
 - significant differences in polygon shape (e.g., a linear polygon leading to a round polygon)

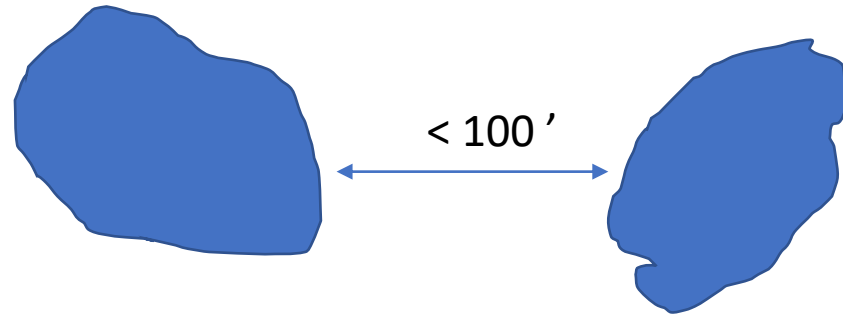
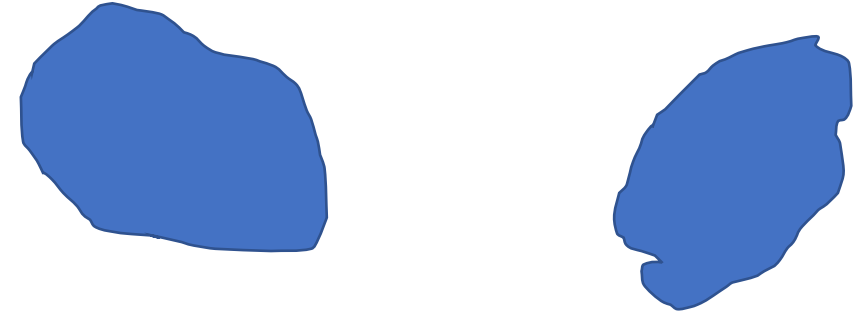
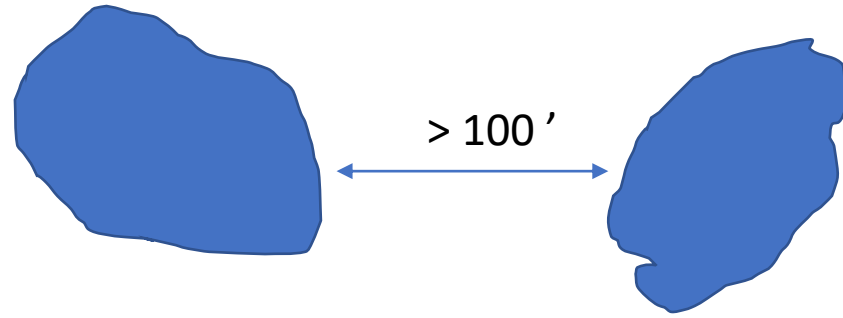
OC Coordinating Group Mapping Standards

10 – 10 – 100 rule

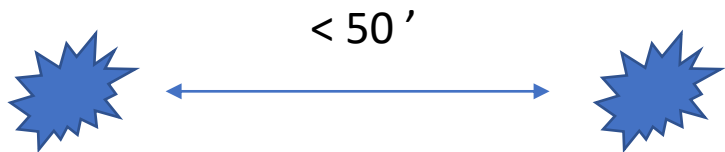
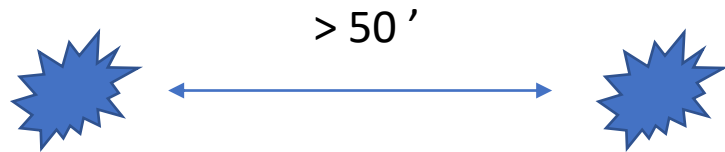
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Spacing

Polygons



Points



*Stinkwort (*Dittrichia graveolens*) in Orange County Mapping and Management*

- Showcases our unique scenarios
 - Complex landscape
 - Lots of players
- Identifies how mapping is a key component for partner communication
- Highlights the evolution of our management

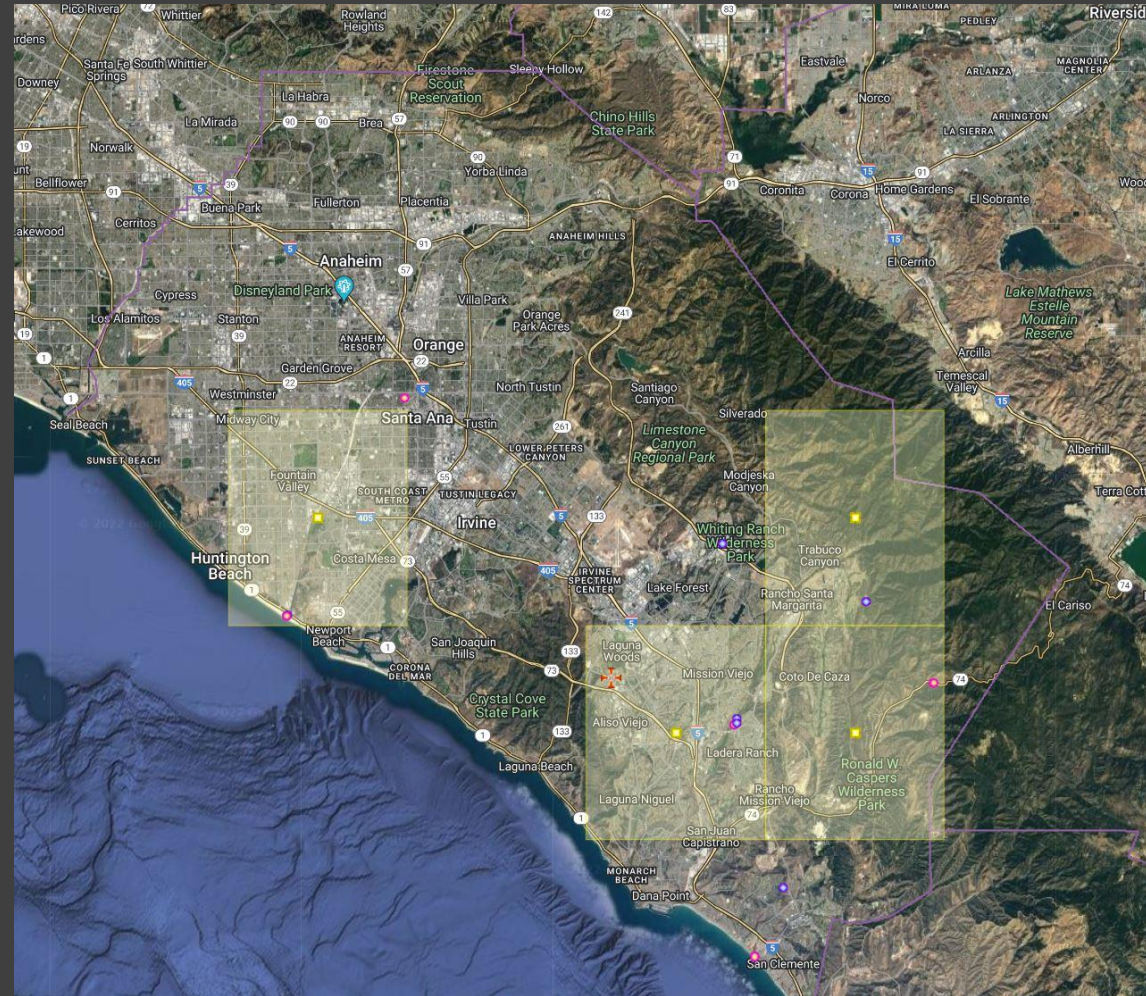
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Dittrichia graveolens in Orange County

2019

- 2018- OC Parks actively starts mapping using Calflora and treating
- Ten Observations County wide
 - One on OC Parks land in O'Neill Regional



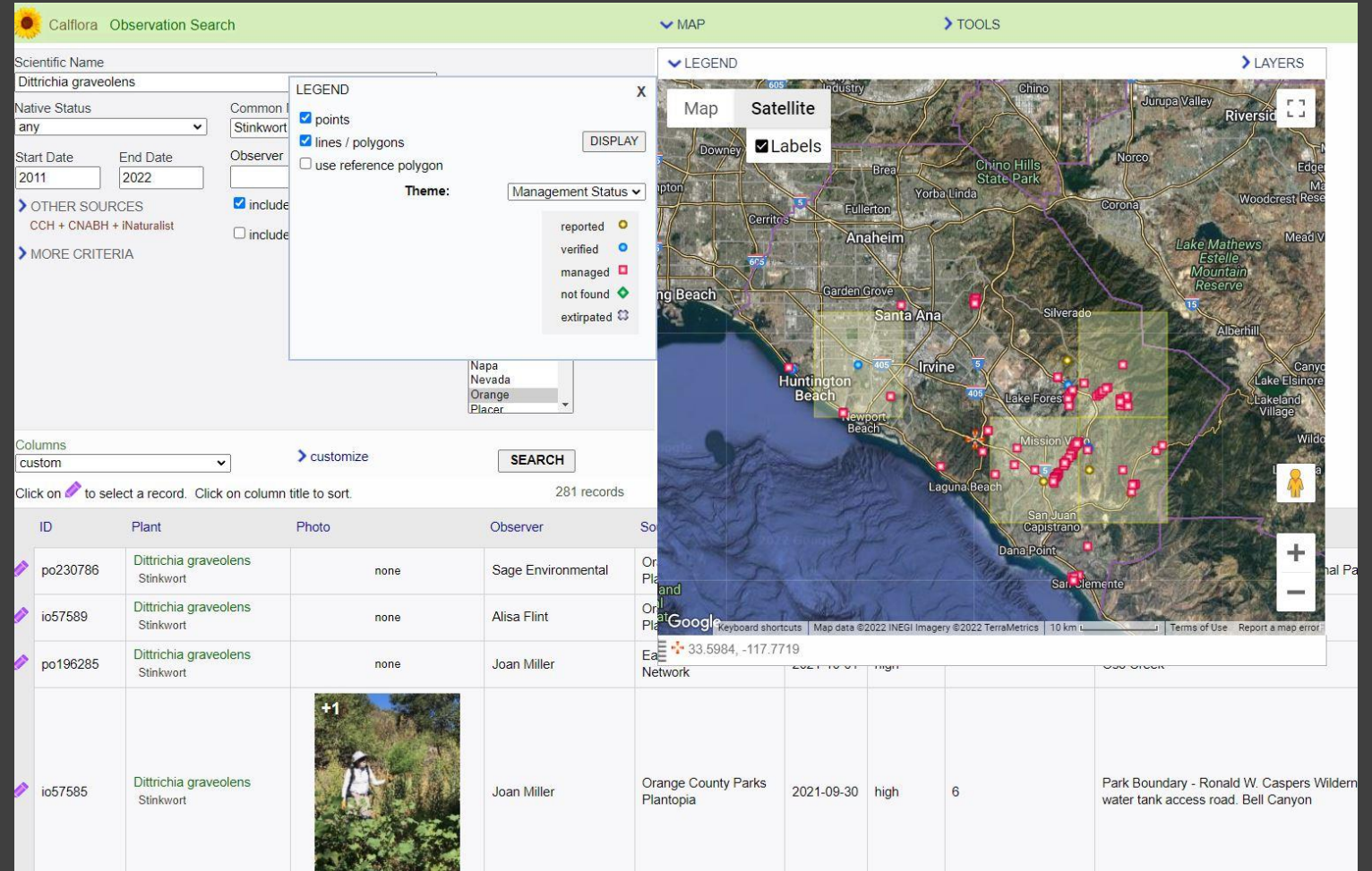
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Dittrichia graveolens in Orange County

2022

- Four years of mapping and management
- 281 records
- In 6 OC Parks
 - O'Neill
 - Peters Canyon
 - Upper Newport Bay Preserve
 - Whiting
 - Caspers

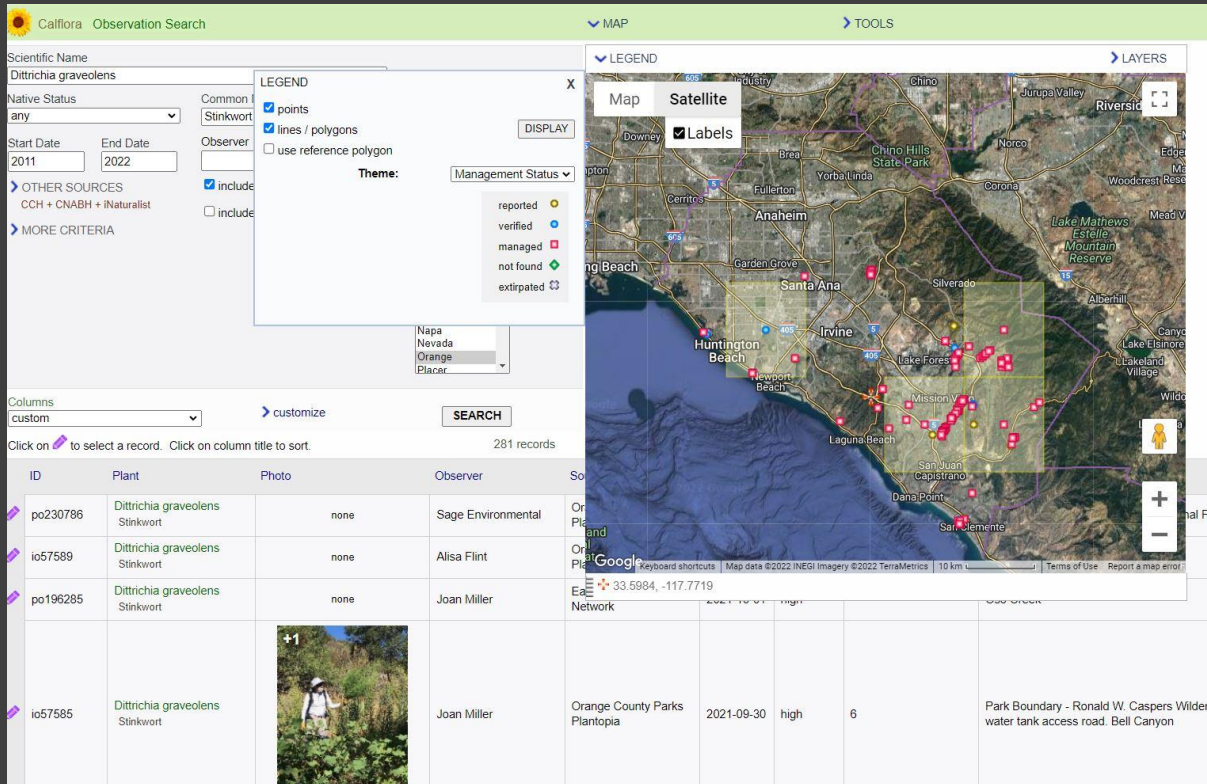


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Dittrichia graveolens in Orange County

2022



California Observation Search

Scientific Name: *Dittrichia graveolens*

Native Status: any

Start Date: 2011, End Date: 2022

Other Sources: CCH + CNABH + iNaturalist

Legend:

- points
- lines / polygons
- use reference polygon


Theme: Management Status

- reported
- verified
- managed
- not found
- extirpated

Columns: custom

SEARCH

281 records

ID	Plant	Photo	Observer	Source	Location	Date	Time	Count	Notes
po230786	<i>Dittrichia graveolens</i> Stinkwort	none	Sage Environmental	Orange County Parks	Plantopia	2021-09-30	high	6	Park Boundary - Ronald W. Caspers Wildern water tank access road, Bell Canyon
io57589	<i>Dittrichia graveolens</i> Stinkwort	none	Alisa Flint	Orange County Parks	Plantopia				
po196285	<i>Dittrichia graveolens</i> Stinkwort	none	Joan Miller	Orange County Parks	Plantopia				
io57585	<i>Dittrichia graveolens</i> Stinkwort		Joan Miller	Orange County Parks	Plantopia	2021-09-30	high	6	Park Boundary - Ronald W. Caspers Wildern water tank access road, Bell Canyon

- EDRR training for more parks staff and partners has helped us identify and treat previously unknown populations.
- Huge challenge is that many occurrences are not within OC Parks land.
 - Need to engage neighboring land managers
- Consistent mapping is needed to continue to identify new populations.

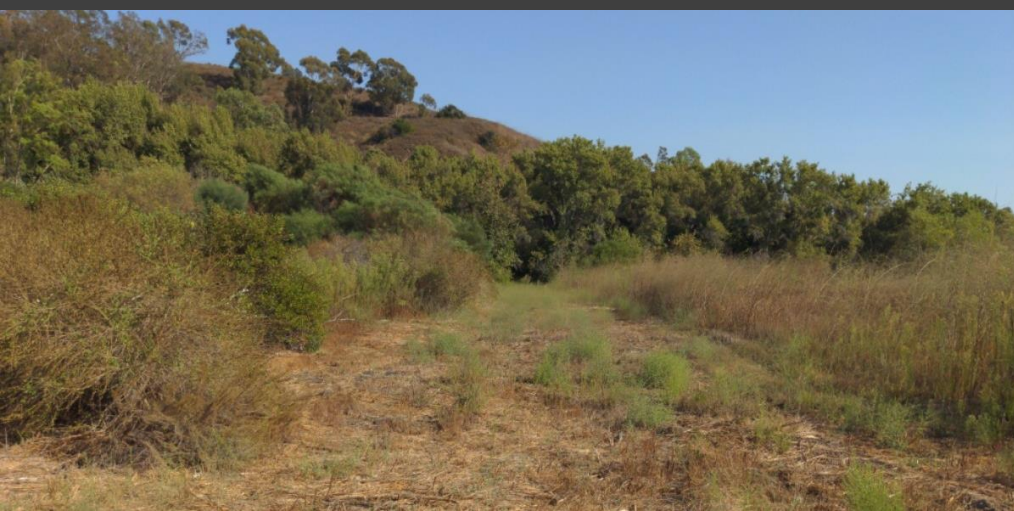
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Stinkwort in Peters Canyon

- Partnering with OCPW/ Flood to get flood control basin treated
- Work with Parks Staff and Contractors to treat stinkwort
- Requires multiple surveys and treatments during growing season





Stinkwort at Peters Canyon

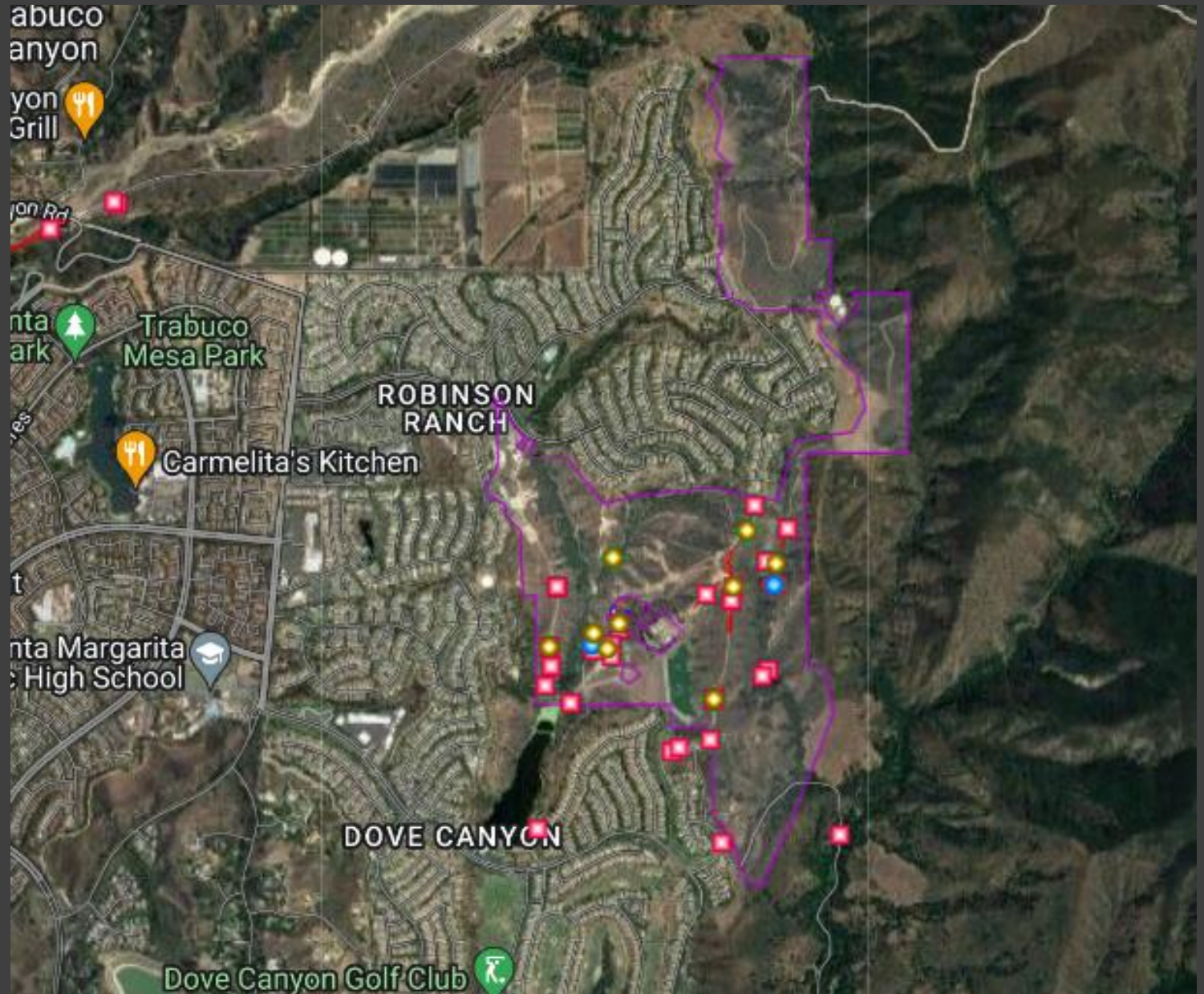
Stinkwort in Harriet Wieder Park and Bolsa Chica Ecological Preserve

- Partnering with State Parks and BCC to map and treat populations in 2022



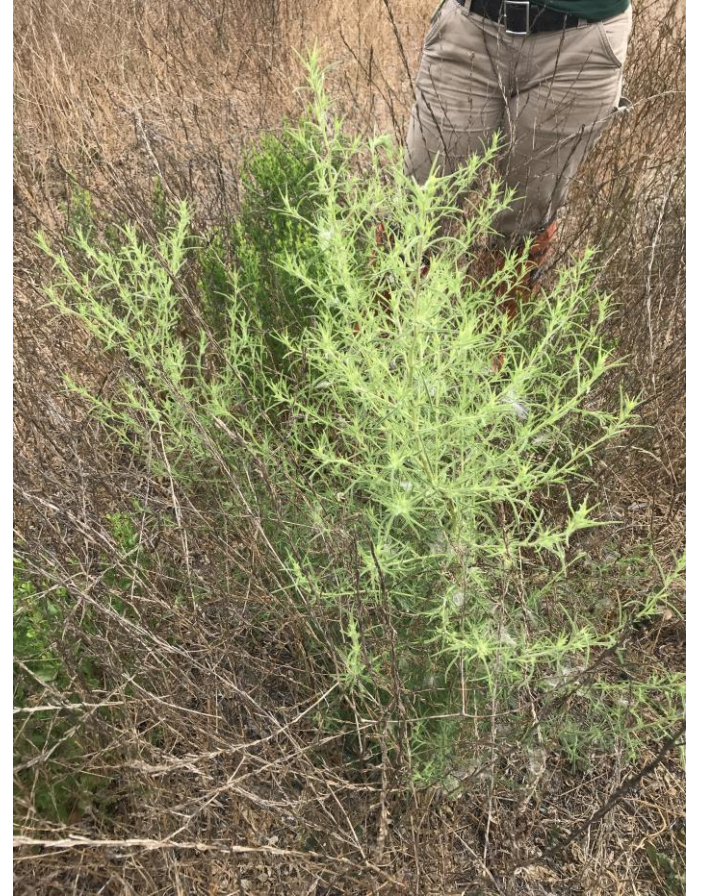
Stinkwort in Caspers Wilderness Park

- Partnering with NCC (for mapping), OC volunteers and Dove Canyon Water District (access)
- Sharing intel with Starr Audubon Ranch (neighbor)
- Work with Parks Staff and Contractors to treat stinkwort
- Requires multiple surveys and treatments during growing season
- Came on OC Parks radar due to independent Calflora observation



Lessons learned... and still learning

- Collaboration and Coordination are key
- Start surveying in July
- Save budget for late season plants
- Search farther than you think
- Calflora history stacking



IT IS ALL ABOUT TEAMWORK



**AND
MAPS**

