San Diego Regional Invasive Plant Early Detection and Rapid Response (EDRR) Program :

Work Update and a few Plants To Be On The Look Out For

San Diego County, Department of Agriculture Weights & Measures (AWM)

Funded by: SANDAG Transnet Funding & CDFA

Presented: August 10th 2021

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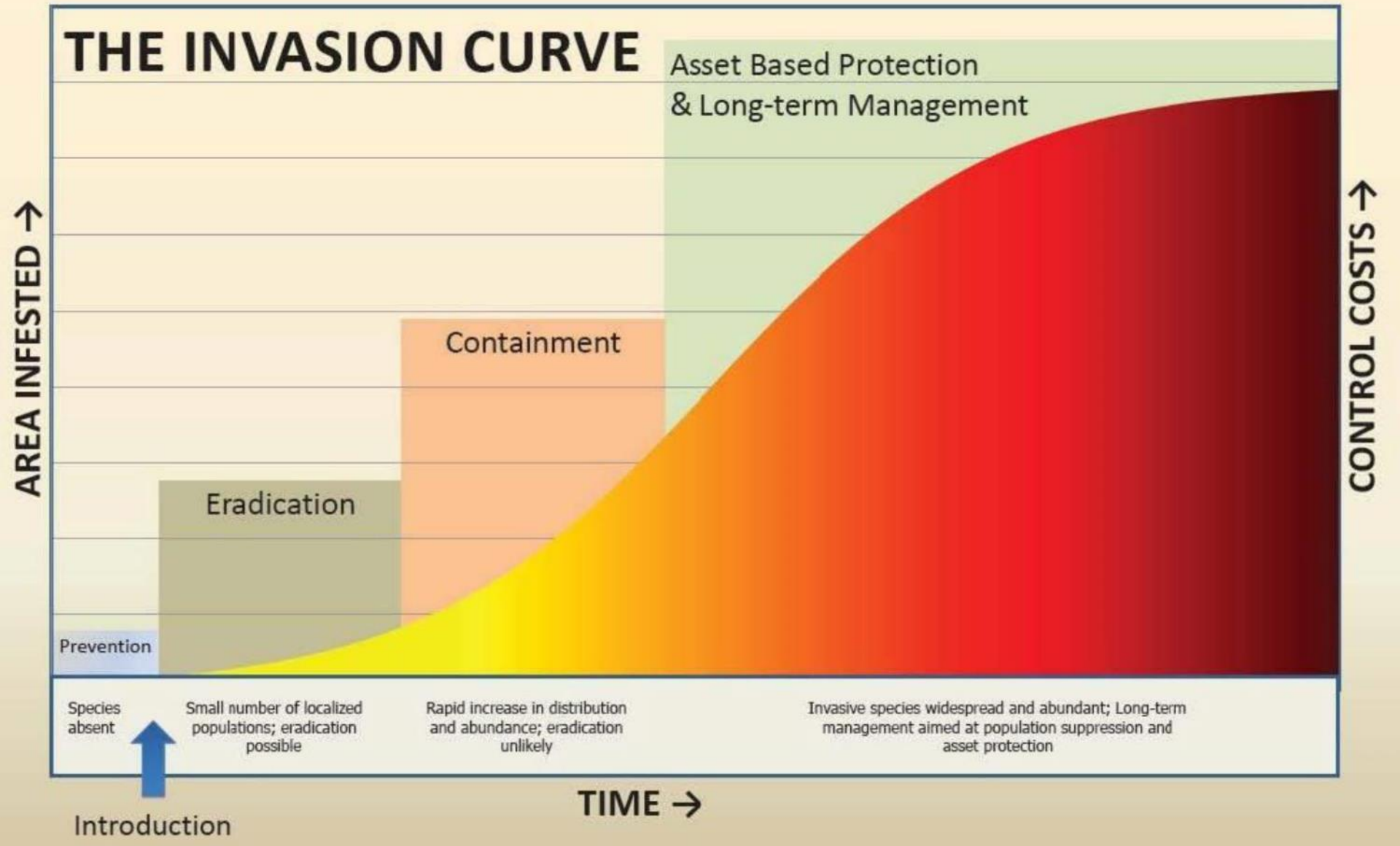
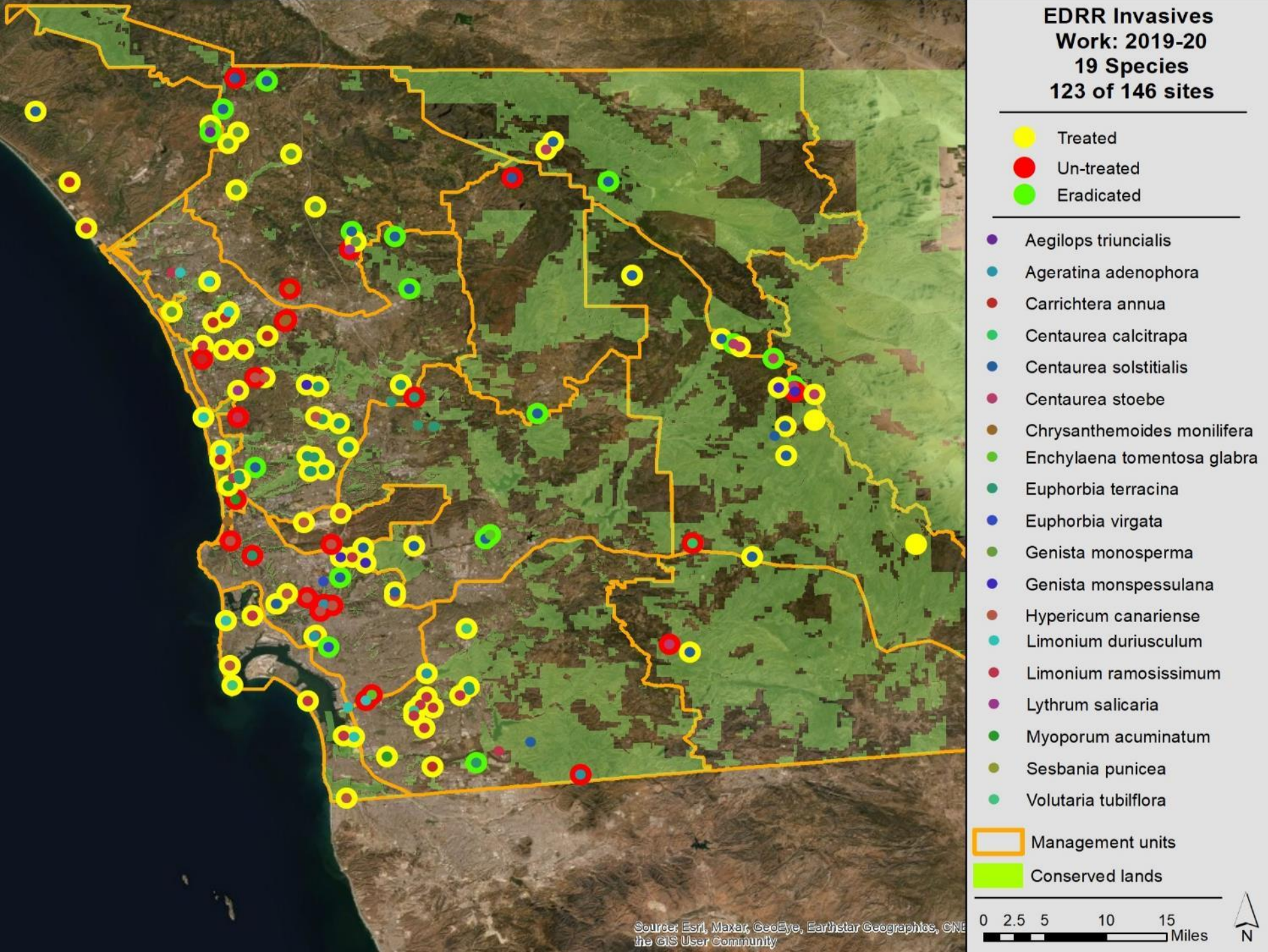


Report new sightings to iNaturalist
New report/workplan will soon be on SDMMP.com


EDRR Invasives
Work: 2019-20
19 Species
123 of 146 sites
Treated
Un-treated
Eradicated
Aegilops triuncialis
Ageratina adenophora
Carrichtera annua
Centaurea calcitrapa
Centaurea solstitialis
Centaurea stoebe
Chrysanthemoides monilifera
Enchylaena tomentosa glabra
Euphorbia terracina
Euphorbia virgata
Genista monosperma
Genista monspessulana
Hypericum canariense
Limonium duriusculum
Limonium ramosissimum
Lythrum salicaria
Myoporum acuminatum
Sesbania punicea
Volutaria tubilflora
Management units
Conserved lands
0 2.5 5 10 15
Miles
N
Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNE
the GIS User Community

County AWM work:

CDFA WMA Grants:

- 2 Year grant funding: completed
- Some additional Gas Tax funding secured by County Ag in 2020/21

1) Spotted knapweed (3) and barbed goatgrass (1)
2) Volutaria (desert knapweed) (2)
3) Ward's weed (1)

SANDAG Trans Net/EMP Program

1) 13 Species worked on at 46 sites

EDRR: 19 Species worked on at 123 of 146 sites across region

Scientific Name	Common Name	Growth form	Known populations (active)	Populations worked on 2019-2020 by AWM	Work planned in 2021-2022
Aegilops triuncialis	Barbed goatgrass	Annual grass	1	1	1
Ageratina adenophora	Eupatory	Perennial forb	4	2	2
Carrichtera annua	Ward's weed	Annual forb	8	4	4
Centaurea solstitialis	Yellow star thistle	Annual forb	24	9	9
Centaurea stoebe	Spotted knapweed	Annual forb	4	3	3
Chrysanthemoides monilifera ssp monilif	Boneseed	Perennial shrub	2	0	2
Euphorbia terracina	Carnation spurge	Annual forb	12 (+ sub sites)	6	6
Genista monosperma	Bridal broom	Perennial shrub	3	2	2
Genista monspessulana	French broom	Perennial shrub	5	3	3
Hypericum canariense	Canary Island St. John's wort	Perennial shrub	14	3	3
Myoporum acuminatum	Waterbush	Perennial shrub	2	0	1 (Nat Col)
Limonium duriusculum	European sea lav.	Perennial forb	8	4	4
Limonium ramosissimum	Algerian sea lav.	Perennial forb	14	6	6
Sesbania punicia	Rattlebox	Perennial shrub	1	0	1 (Nat Col)
Volutaria tubuliflora	Volutaria knapweed	Annual forb	2	2	2

Successes:

- Working on a broad range of plants (19 species) at 123 of 146 sites
- Good success controlling mature plants
- Good control of seedbank for a few species (pre-emergent)
- Have leveraged funding
- Reporting observation increasing (iNaturalist)
- Good access/ROE permission to date

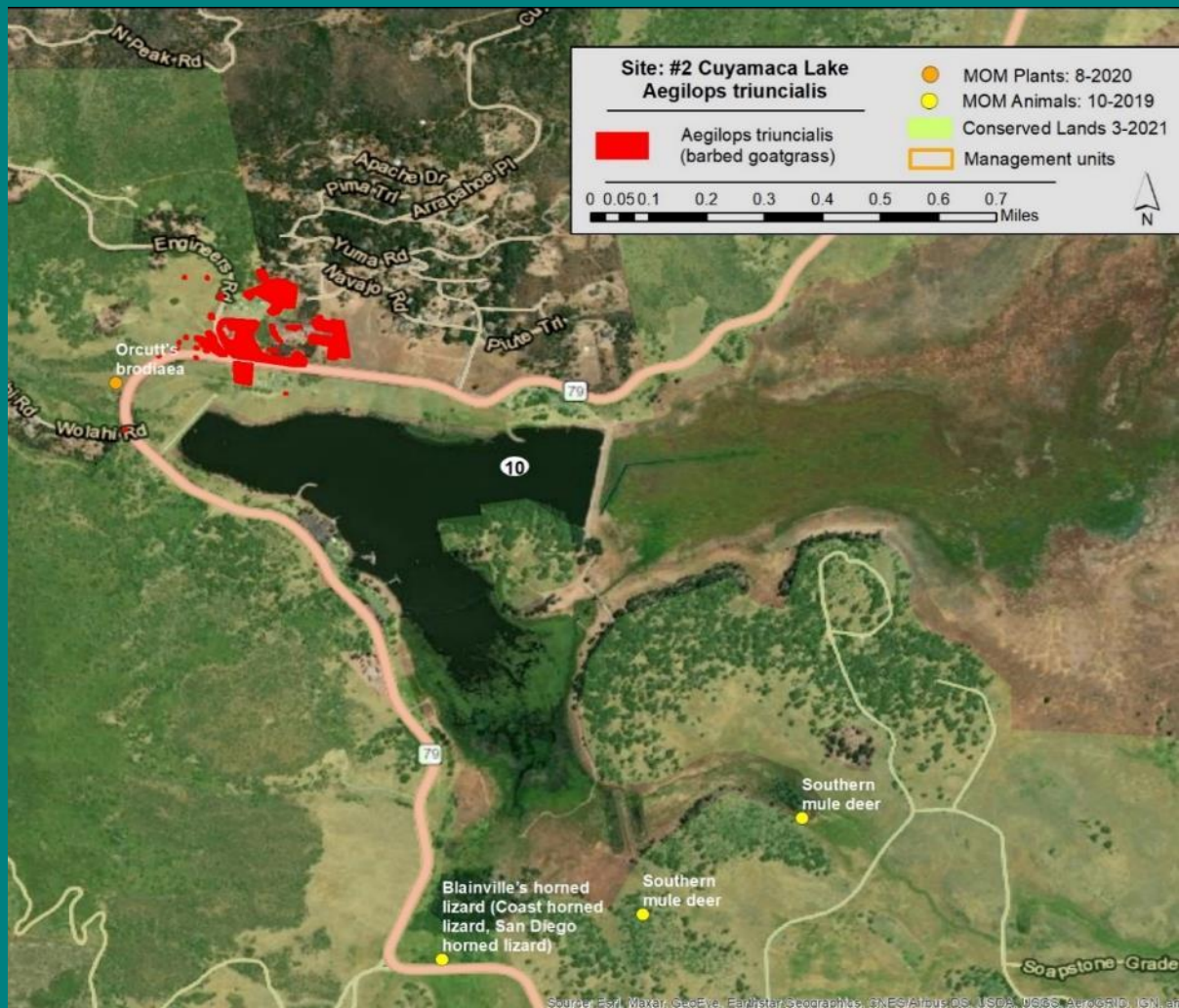
Struggles:

- Some plants may be too widespread? (*Euphorbia terracina*)
- Seedbank is resilient for some species (*Limonium, Hypericum, Euphorbia terracina*) with limited pre-emergent options
- COVID
- Weather- tight windows for work: spring too short 2021, winter rains too heavy and early 2020

Barbed Goatgrass:

- No new reports

Site	Size of population	Treated in:	Treated by:	Funding status
Fallbrook NWS, DoD	2.0 ac	Started in 2011, eradicated. Monitoring is ongoing	DoD	Funded: DoD
Lake Cuyamaca	6.4 ac	2019, 2020, 2021	County AWM	CDFA WMA Grant, now SANDAG EMP



Invasive Non-Native:

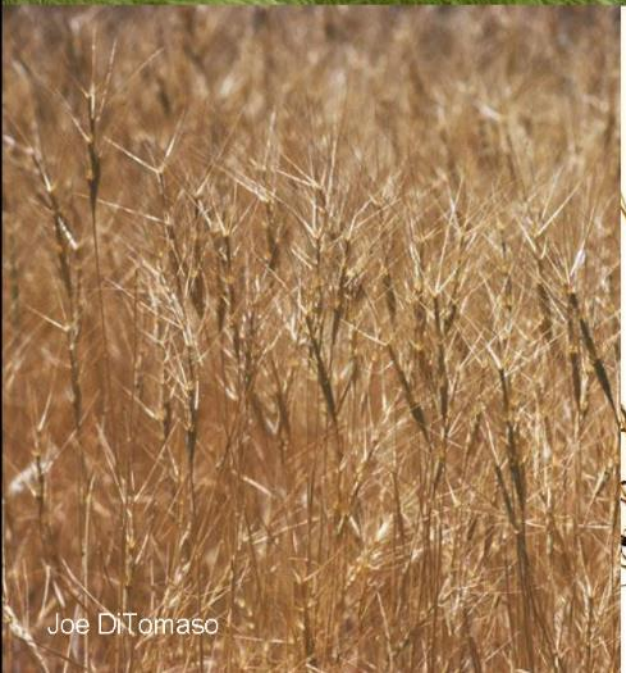
Barbed goat grass

(*Aegilops triuncialis*)

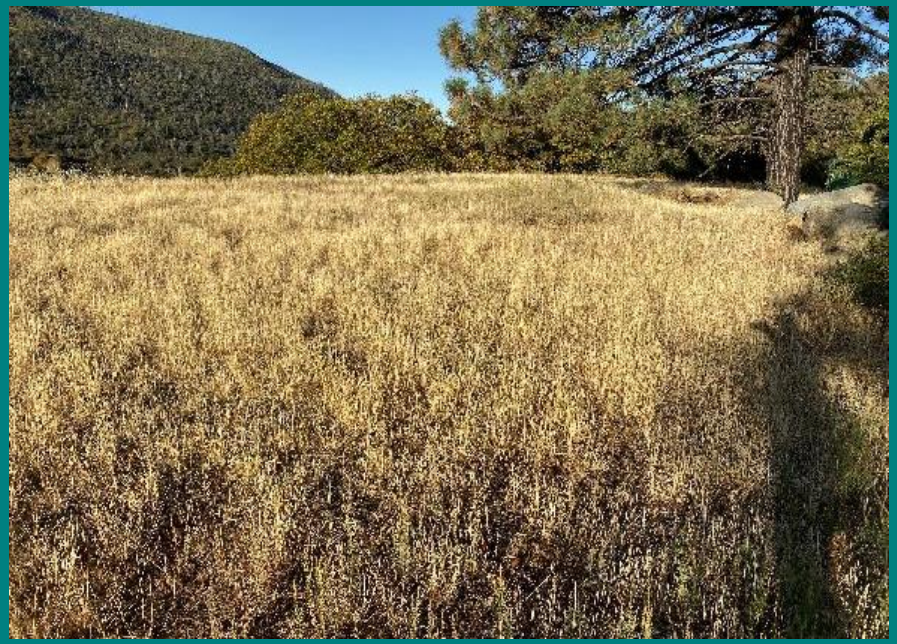
Description: annual grass, 17-45cm ht, leaf blade 1.5-7cm, 2-3mm wide; infloresence 2-5.5c, spike like; fertile spikelet 2-3 awned, dital spikelet 3-awned or 1-awned with 2 lateral teeth.

Ecology: rangelands, grasslands, and oak woodlands. Cattle/rangelands are areas of greatest risk for introduction/invasion.

Similar to (see back): Three-awned goat grass *Aegilops neglecta* (non-native)



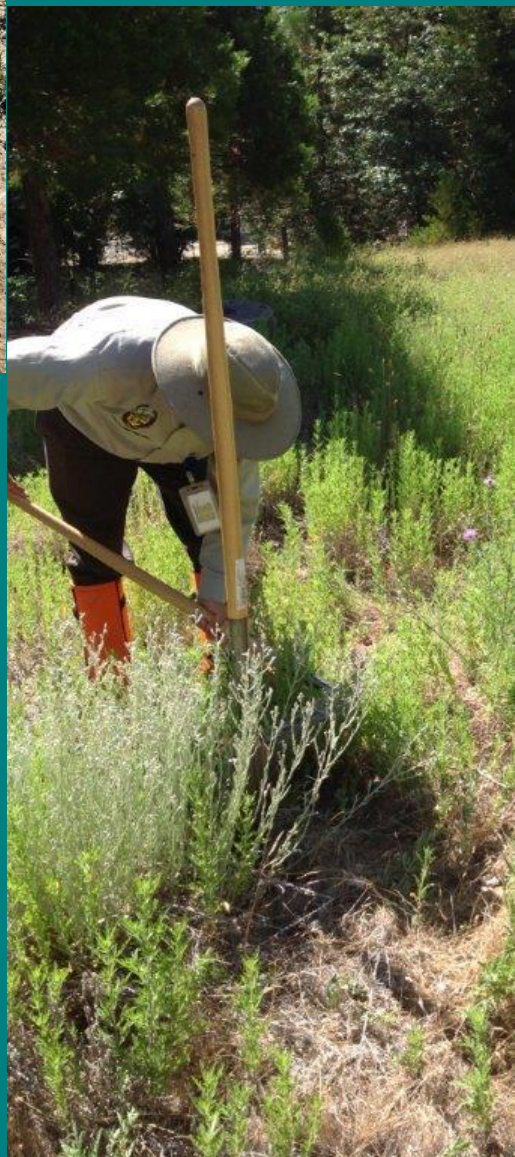
Barbed goatgrass

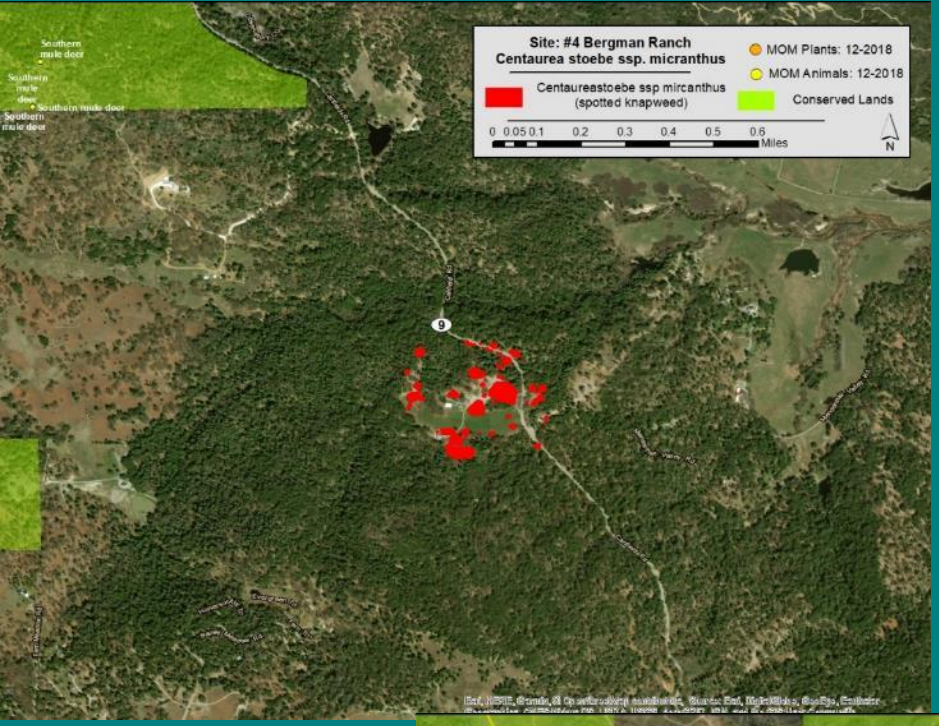


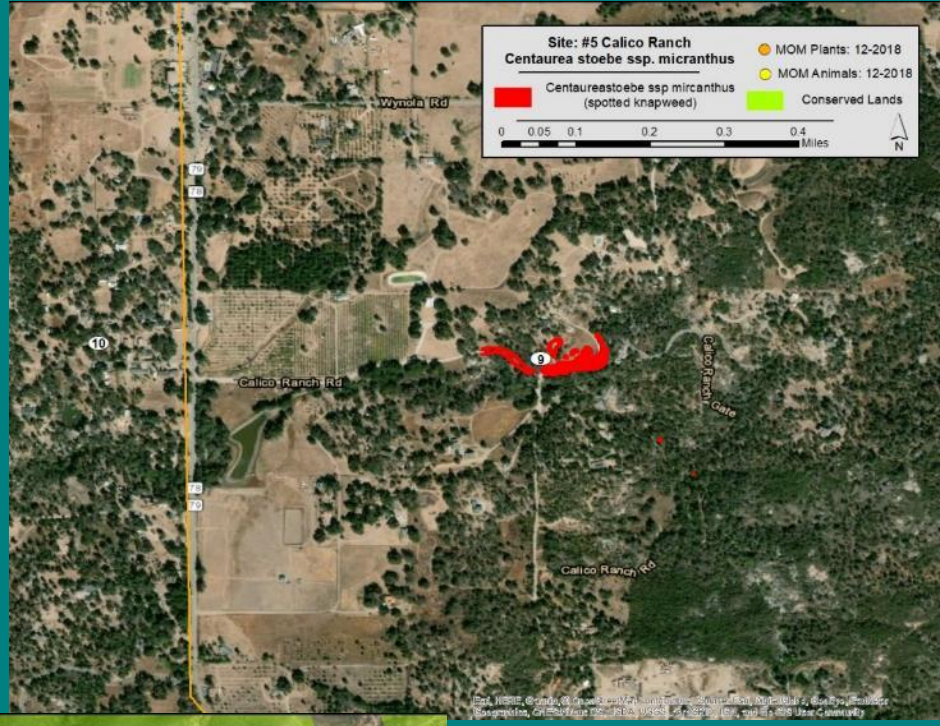
Spotted Knapweed:

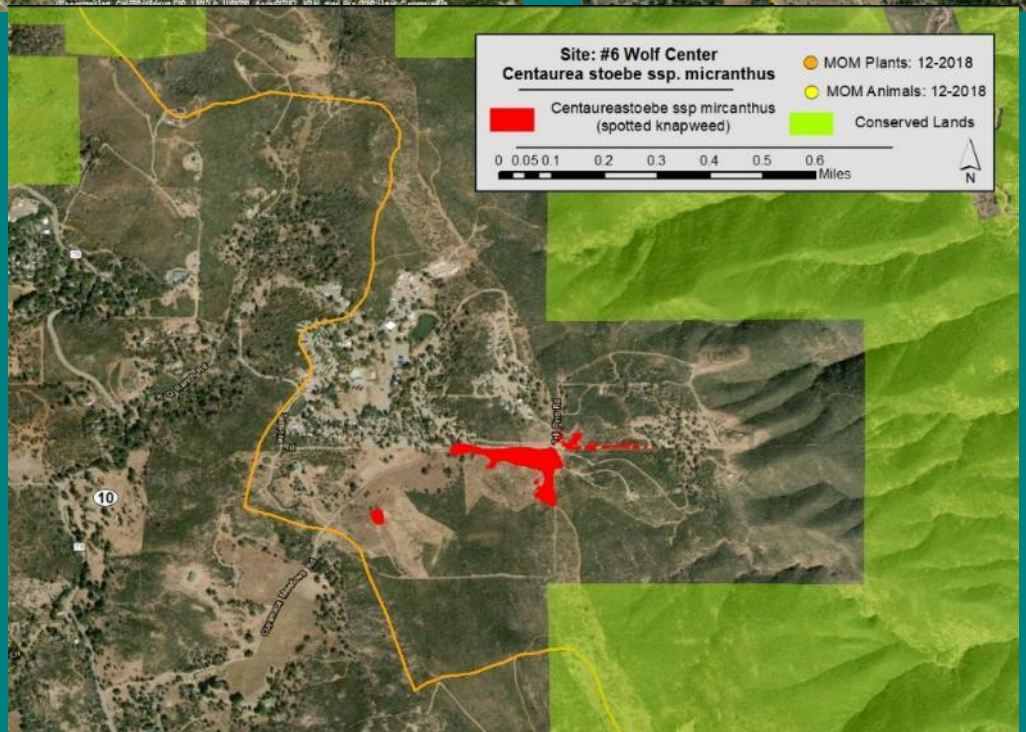
- one new report (USFS)

Site	Size of population	Treated:	Treated by:	Funding status
Bergman Ranch	4.2 acres	2014-2020	County AWM	**CDFA, now SANDAG EMP**
Calico Ranch	1.7 acres	2018-2020	County AWM	**CDFA, now SANDAG EMP**
Wolf Center	7.1 acres	2015-2020	County AWM	**CDFA, now SANDAG EMP**




Site: #4 Bergman Ranch
Centaurea stoebe ssp. micranthus
Centaureastoebe ssp mircanthus
(spotted knapweed)
MOM Plants: 12-2018
MOM Animals: 12-2018
Conserved Lands
0 0.05 0.1 0.2 0.3 0.4 0.5 0.6
Miles
N
Southern mule deer
9

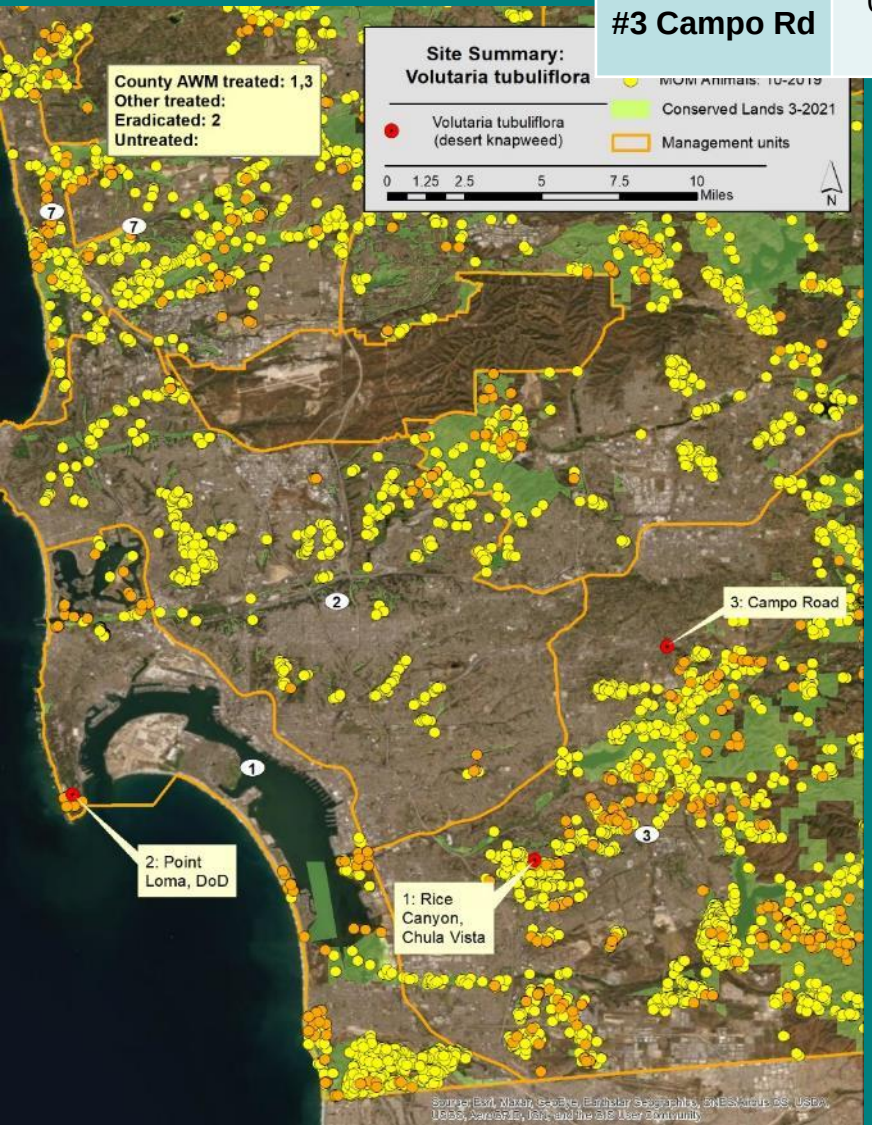

Site: #5 Calico Ranch
Centaurea stoebe ssp. micranthus
Centaureastoebe ssp mircanthus
(spotted knapweed)
MOM Plants: 12-2018
MOM Animals: 12-2018
Conserved Lands
0 0.05 0.1 0.2 0.3 0.4
Miles
N
Wynola Rd
Calico Ranch Rd
Calico Ranch Gate
9
10

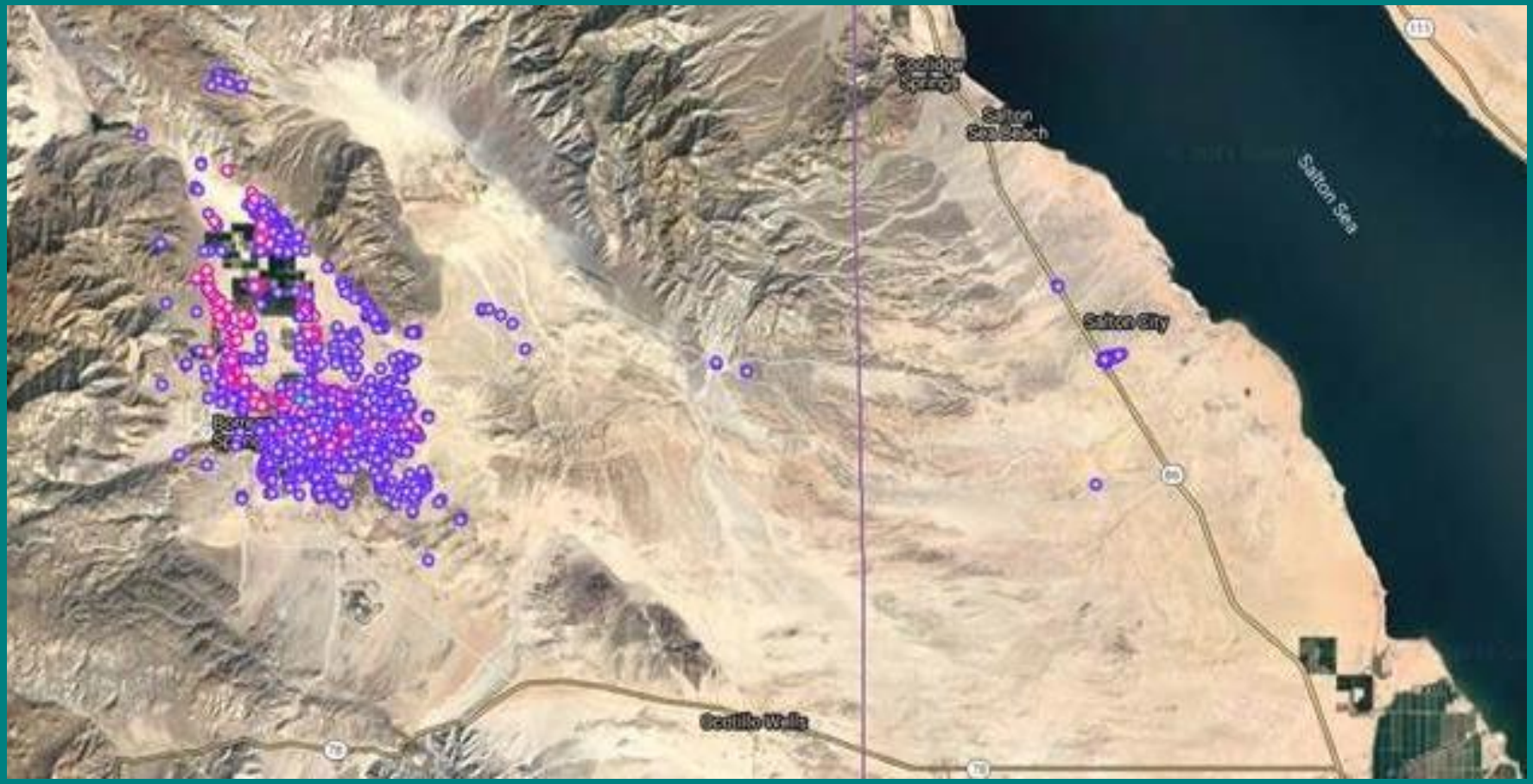

Site: #6 Wolf Center
Centaurea stoebe ssp. micranthus
Centaureastoebe ssp mircanthus
(spotted knapweed)
MOM Plants: 12-2018
MOM Animals: 12-2018
Conserved Lands
0 0.05 0.1 0.2 0.3 0.4 0.5 0.6
Miles
N
10

Desert Knapweed

- one new report

Site	Size of population	Treated:	Treated by:	Funding status
#1 Rice Canyon	2.1 acres	2016-2021	County AWM	**CDFA, now SANDAG EMP**
#2 Point Loma	0.1 acres	Eradicated	DoD	**DoD**
#3 Campo Rd	0.1 acres, 20 plants	2021	County AWM	**CDFA, now SANDAG EMP**




Salton Sea
Salton City

Invasive Non-Native:
Volutaria knapweed
(*Volutaria tubuliflora*)


Photo by Ron Vanderhoff


Photos by Tom Chester

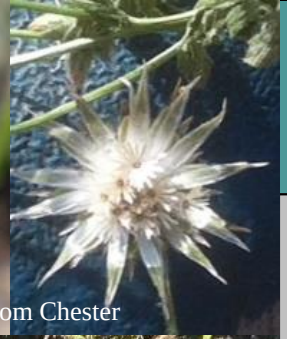



Photo by Jason Giessow

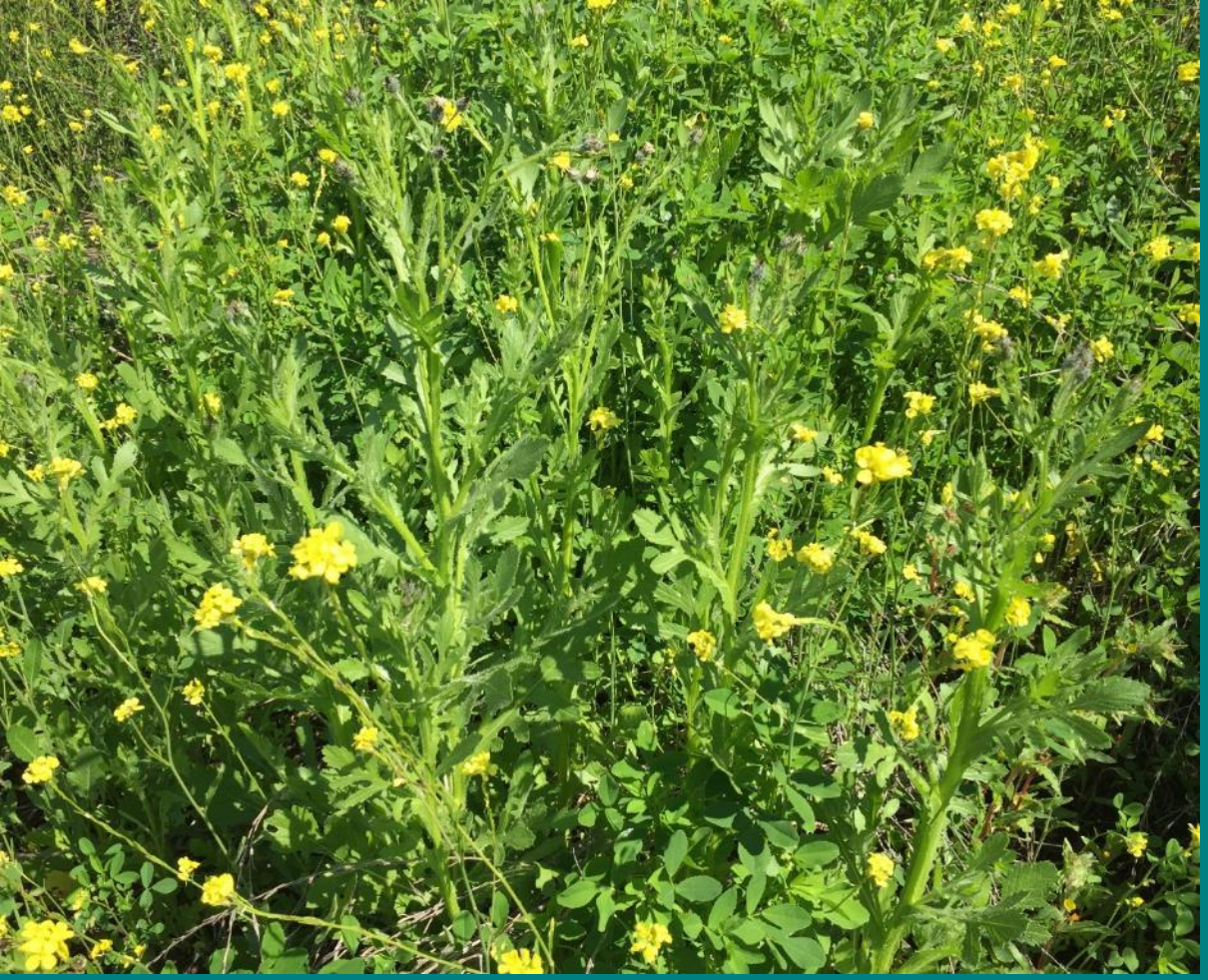
Description: Stem: < 15 dm. **Leaf:**1-2 pinnately lobed or divided, lobes +/- dentate, lobes angled forward. I**nflorescence:** heads solitary or in small clusters; phyllaries with wide flat flexible spine tips 1.5--2 mm, inner with membranous, spineless tips. **Flower:** corolla of sterile flower +/- 10 mm; corolla of fertile flower 5.5--6 mm, +/- white. **Fruit:** 3--3.5 mm, pale gray-brown, ascending-hairy, faces not pitted.

Ecology: Disturbed areas, non-native grassland, into coastal sage scrub

Similar to (see back): *Centaurea mellitensis* (tocalote), *Centaurea maculosa* (spotted knapweed)


Photo by Jason Giessow

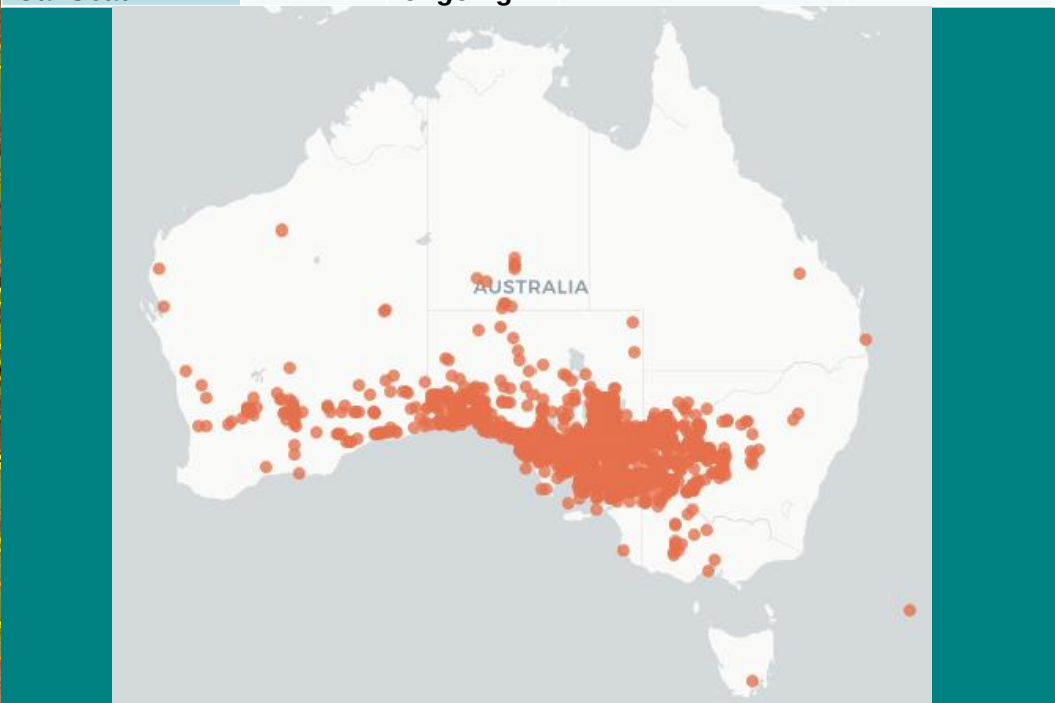

Photos by Ron Vanderhoff

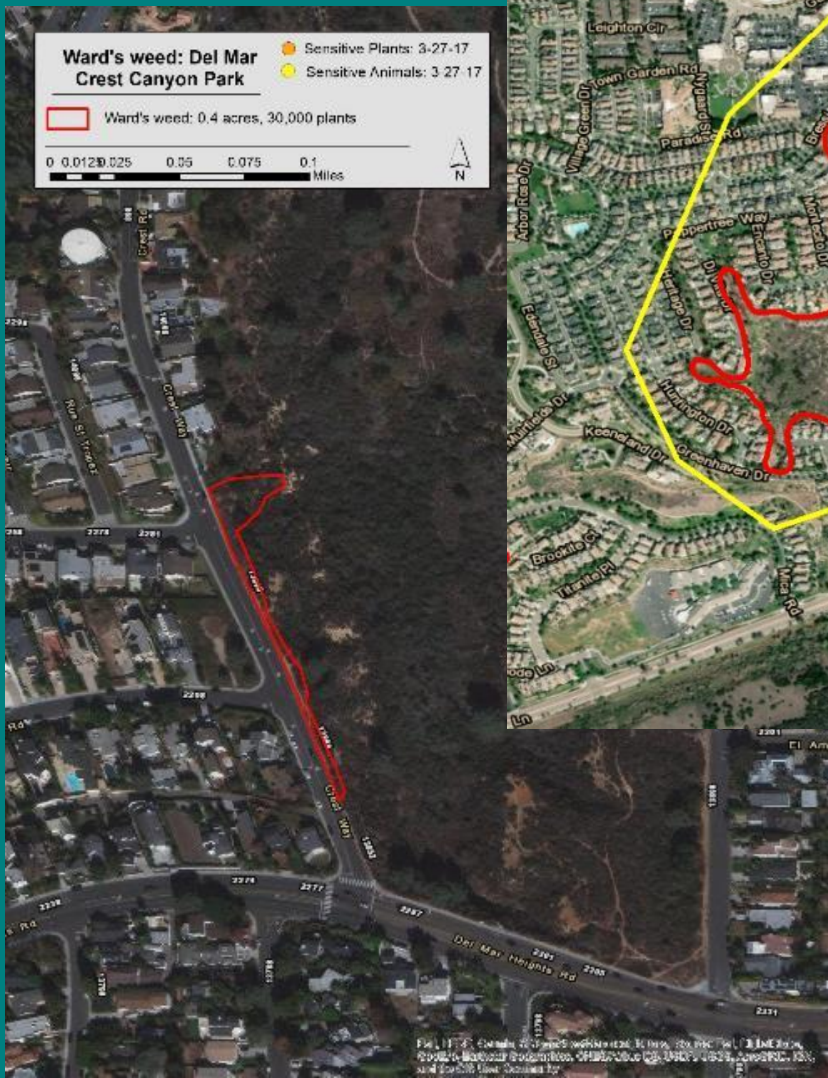


Ward's Weed

- 3 new reports (and Baja)

Site	Size of population	Treated in	Treated by	Funding status
DoD	1.0 ac	2012-ongoing	DoD	DoD
La Costa Greens	11.8 ac	2012-ongoing	CNLM and County AWM	CNLM and SANDAG
Bressi Ranch	178 ac	2019-ongoing	City CB, County AWM, Nature Coll	City CB,WCB, CDFA WMA
Crest Canyon, Del Mar	0.9 ac	2019-ongoing	County AWM	SANDAG
Robinhood Ridge, Otay	0.2 ac	2019-ongoing	City of San Diego	City of San Diego
Encinitas Ranch	2.8 ac	Untreated	Nature Collective	SANDAG
San Elijo Hills	0.02 ac	2020-ongoing	County AWM	SANDAG
La Costa, Carlsbad	0.6 ac	2021-ongoing	County AWM	SANDAG




Ward's weed: Del Mar Crest Canyon Park
Sensitive Plants: 3-27-17
Sensitive Animals: 3-27-17
Ward's weed: 0.4 acres, 30,000 plants
0 0.0125 0.025 0.05 0.075 0.1 Miles
N
Del Mar Heights Rd


Ward's weed: Treatment Teams
Treat area: Ward's weed 1-50% cover
N
0 0.05 0.1 0.2 0.3 0.4 0.5 Miles
ACS Work Area
County Work Area

Invasive Non-Native:
Ward's weed
(*Carrichtera annua*)

Description: Plant size varies from small to multi-branched 0.5m ht; Stems branched basally and distally; form similar to a small tumbleweed; Basal leaves: petiole 1–4.5 cm; blade 3-6 lobes each side, 1.5-4 cm, terminal lobe linear to oblong, margins entire. Flowers white or creamy yellow petals 6.5-8 x 1-2 mm ; Fruits short reflexed pods.

Ecology: Plant size varies greatly depending on environmental conditions; prefers disturbed areas, but readily invades between and under shrubs; coastal sage, maritime chaparral, grasslands




Euphorbia terracina: Carnation spurge

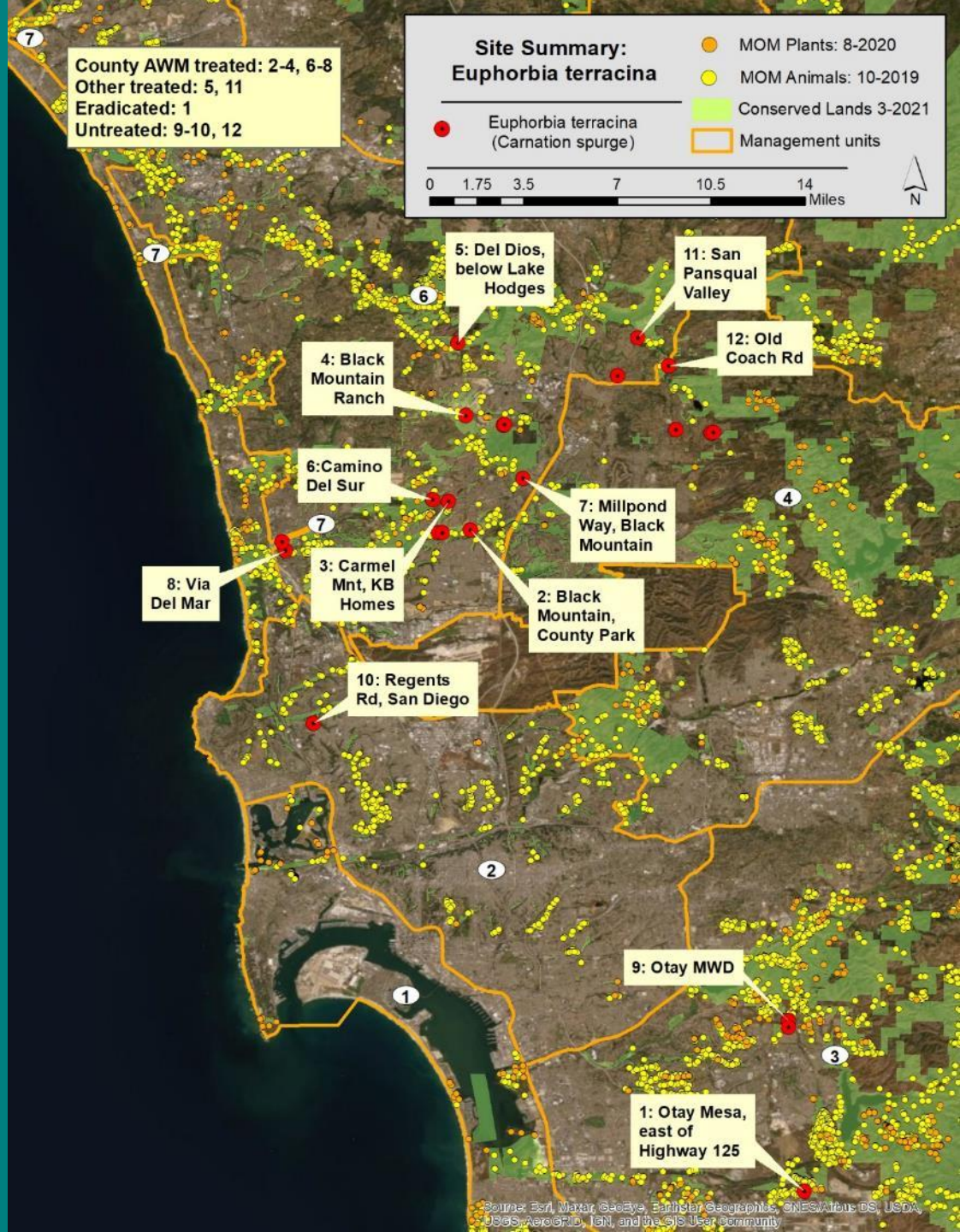
12 sites (with several sub-sites):
6 under treatment,
2 tracked, 1 eradicated

- Several new iNaturalist reports

Additional sites are being found in North County areas

Very difficult seedbank, need a good pre-emergent (Gallery?)

Eradication not achievable? Now suppression….



Invasive Non-Native:
Carnation spurge
(*Euphorbia terracina*)

Description: annual or short lived perennial; upright stems several to numerous from base, up to 120cm ht, often reddish; sessile leaves 2.5-6cm, linear to narrowly lanceolate blades, leaf tip acute; at top of stem broader and yellowish green; inflorescence open, inconspicuous greenish or yellowish flowers at tips with ovary forming deeply lobed 3 sided capsule (3-5 mm long and 4-5 mm wide); milky sap (eye and skin irritant)

Ecology: disturbed areas, coastal sage scrub, grasslands, chaparral edges, salt marsh, riparian, oak woodlands; shade or sun; massive germination after fire; toxic sap

Similar to (see back): Other weedy spurge species

All photos Jason Giessow


Euphorbia terracina: Site #3, Carmel Mountain
Treated: Euphorbia terracina (carnation spurge)
Survey lines
0 25 50 100 150 200 250 Yards
N
Dufrensne
Deer Canyon
KB Homes
Stage Coach Pl
Sundance Ave
Carmel Mountain Rd
Ted Williams Pkwy
Esri, HERE, Garmin, © OpenStreetMap contributors, Source: Esri, DigitalGlobe, GeoEye, Earthstar

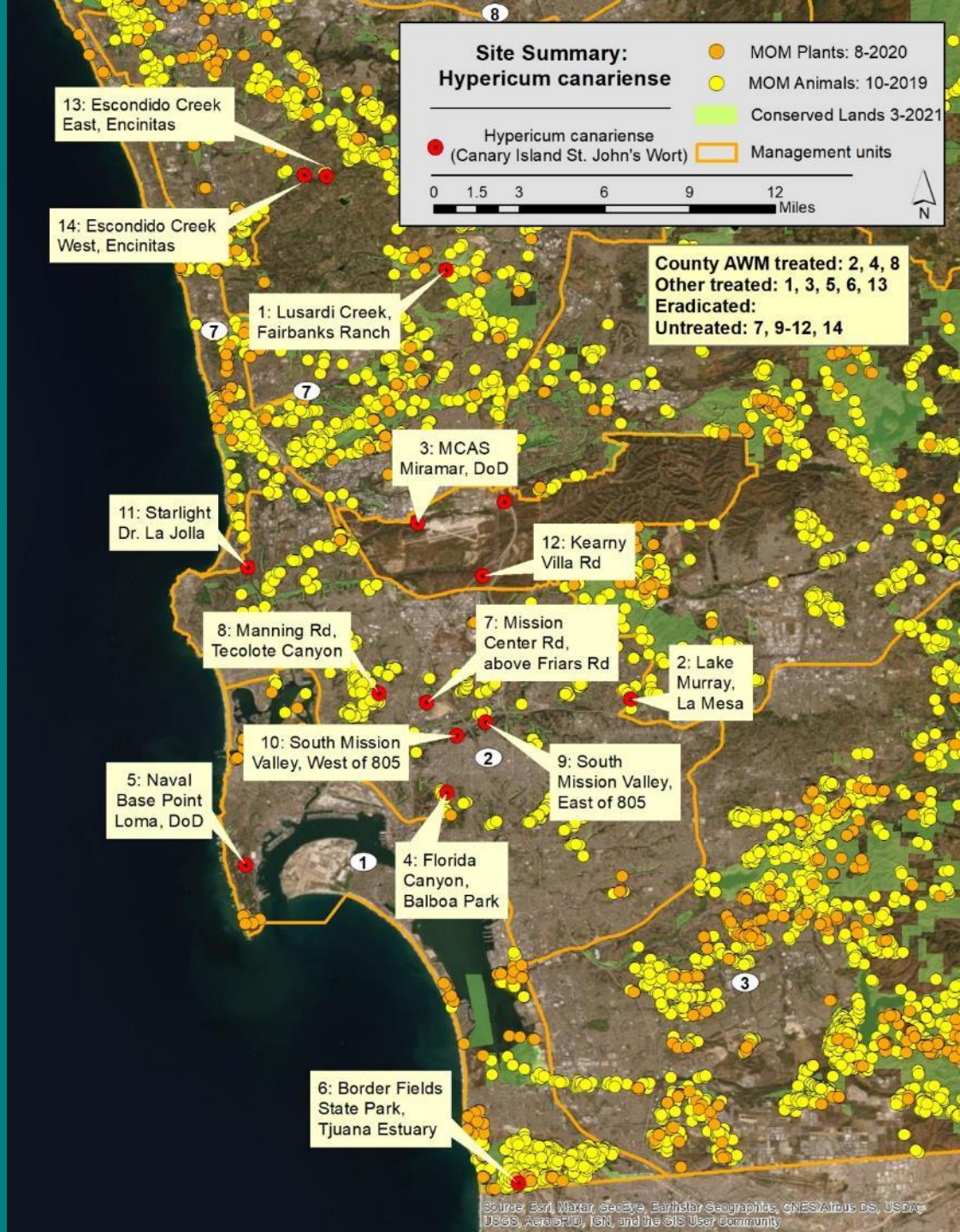
Hypericum canariense: Canary Island St John's Wort

14 sites:
3 under treatment, 5 tracked
6 sites left to start on

- 1 new iNaturalist site

- control at sites appears good to fair, but many seedlings, need better seedbank control

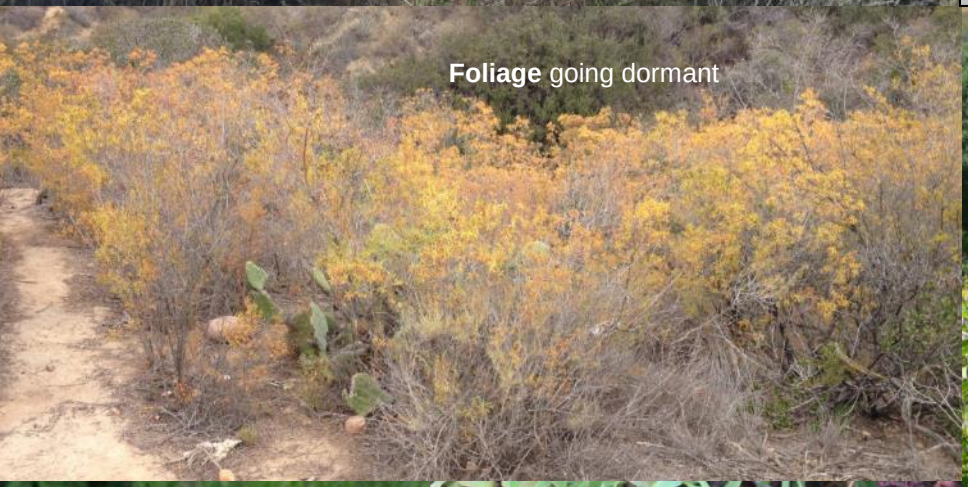
Eradication seems feasible, but two sites very steep.



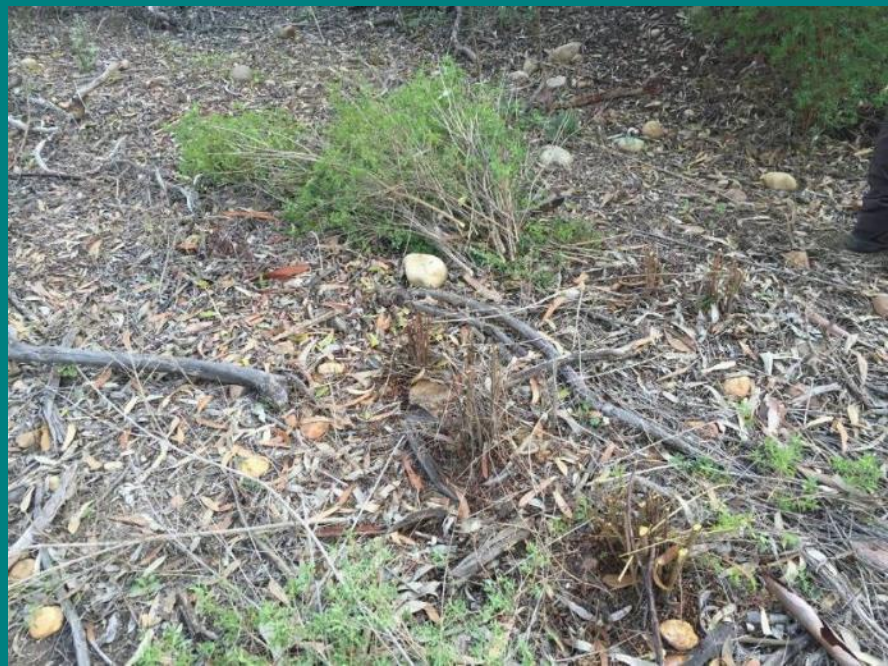
Invasive Non-Native:
Canary Island St. John's Wort
(*Hypericum canariense*)

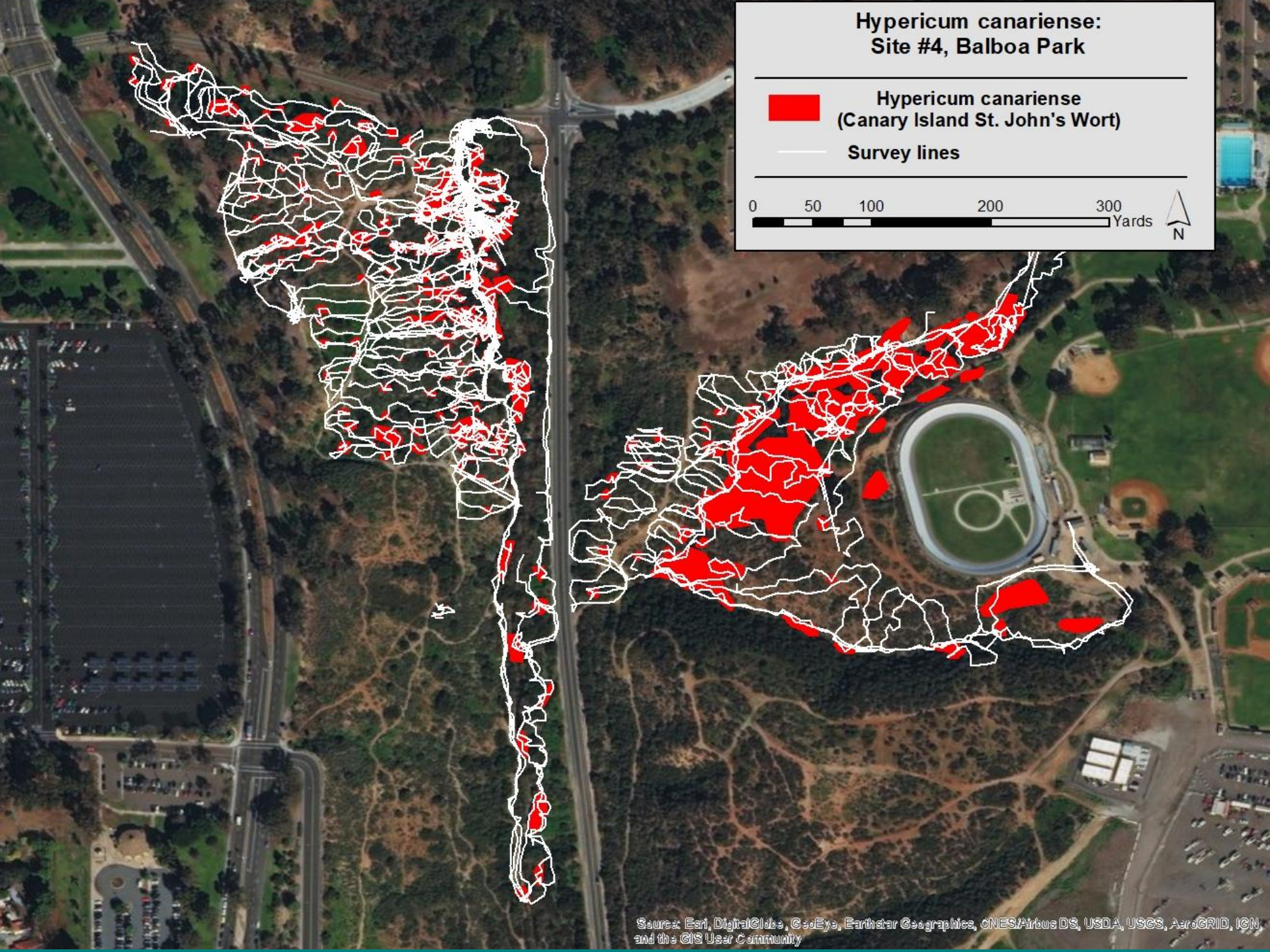
Description: multi-stemmed perennial rhizomatous shrub up to 3m ht; leaves opposite, waxy, lanceolate and bright green; terminal clusters of yellow flowers; leaves yellow early in season and generally drop in summer; capsule fruits dry and dehisce tiny seeds.

Ecology: disturbed areas, coastal sage scrub and grassland habitats. Can form dense stands that exclude native species.



Balboa Park




Hypericum canariense:
Site #4, Balboa Park
Hypericum canariense
(Canary Island St. John's Wort)
Survey lines
0
50
100
200
300
Yards
N
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

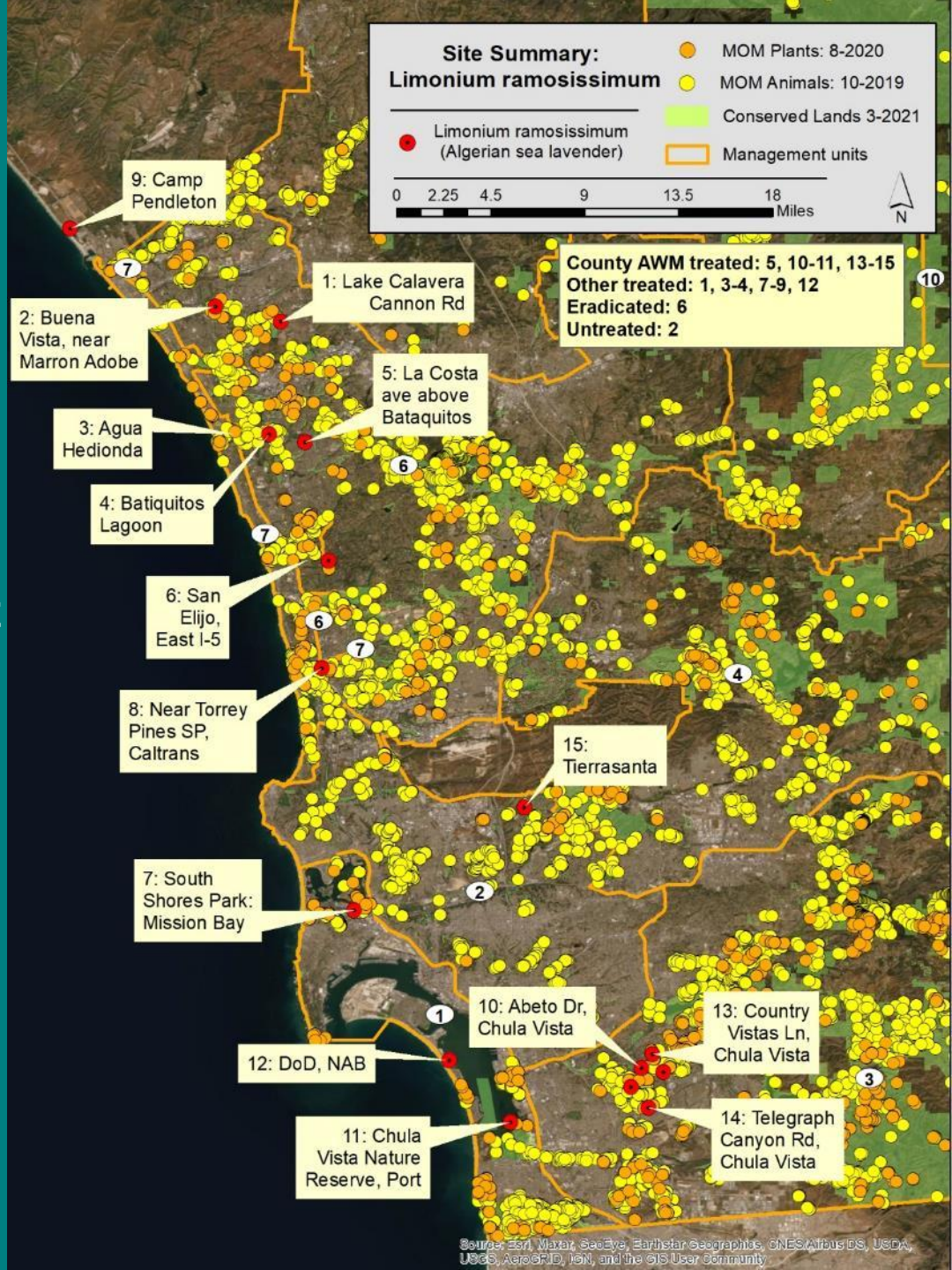
Limonium ramosissimum: Algerian sea lavender

15 sites:
6 under treatment, 7 tracked
1 eradicated,
1 untreated

Lots of seedlings- pre-emergent in aquatic areas restricted.

Control feasible, but upland sources likely (sources found on four watersheds).

Eradication may not be realistic on all watersheds



Invasive Non-Native:
Algerian Sea Lavender
(*Limonium ramosissimum*)

Description: perennial herb 6-12" (20-50 cm) tall in flower, lower leaves in dense rosettes 1-4" (3-10 cm) long, ¼–¾" (7-20 mm) wide, spoon shaped, tip acute to rounded. Flower: delicate multi-branched, tight clusters. Flower: calyx (outer flower part) white < ¼" (4-6mm), corolla (inner flower part) pale pink to purple < ¼" (5-7 mm).

Ecology: salt-tolerant, coastal salt marsh as well as riparian habitat (even grassland & disturbed areas).

Similar to (see back): European sea lavender (non-native) has rounded leaves and flowers are evenly spaced. Perez's sea lavender (common non-native used in landscaping) is a larger species with wider, longer, bright green leaves. California sea lavender (native) has longer leaves and stouter taproot.

SCWRP

Report sightings to: eddrsd@gmail.com and database at www.Calflora.org

Cal-IPC


Site: #10 Abeto Dr, Chula Vista
Limonium ramosissimum (Algerian sea lavender)
MOM Plants: 8-2020
MOM Animals: 10-2019
Conserved Lands 3-2021
Management units
0 0.05 0.1 0.2 0.3 Miles
N
Otay Lakes Rd
Coastal cactus wren
Coastal California gnatcatcher

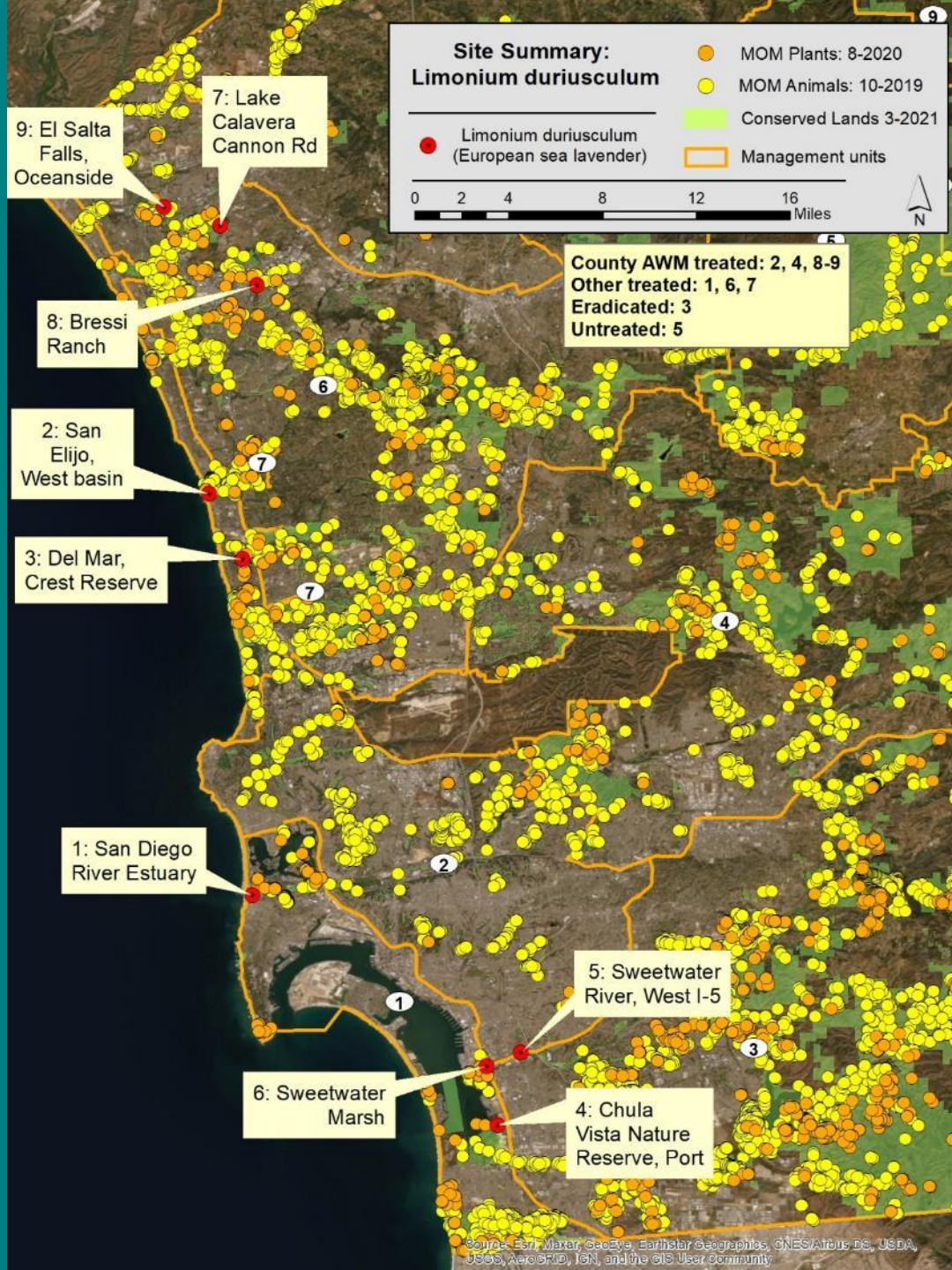

Site: #13 Country Vistas Ln, Chula Vista
Limonium ramosissimum (Algerian sea lavender)
MOM Plants: 8-2020
MOM Animals: 10-2019
Conserved Lands 3-2021
Management units
0 0.05 0.1 0.2 Miles
N
Otay tarplant
Coastal California gnatcatcher
Coastal cactus wren
San Diego thornmint
Country Vistas Ln

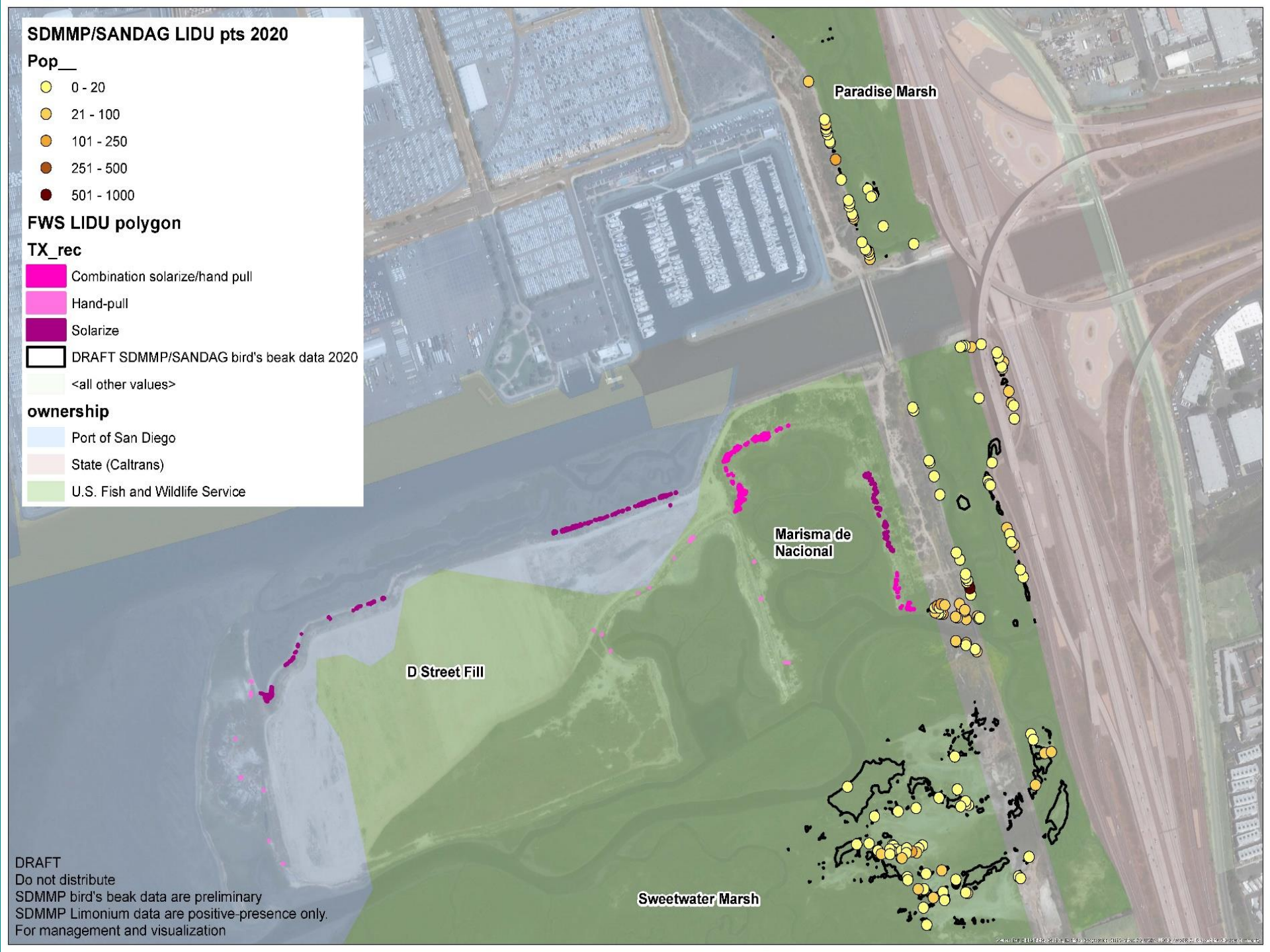
Limonium duriusculum: European sea lavender

9 sites:
4 under AWM treatment,
3 tracked,
1 eradicated,
1 untreated

Control feasible, but upland sources likely (sources found on four watersheds).

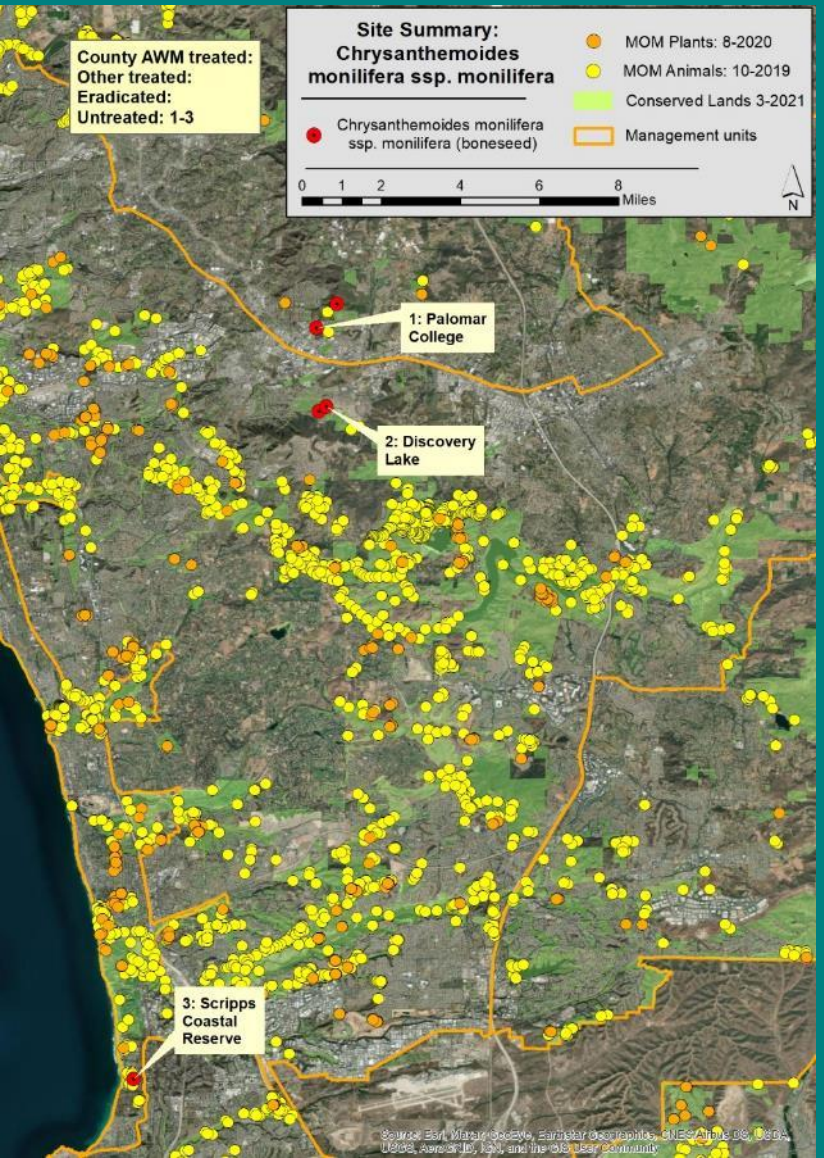
Eradication may not be realistic on all watersheds

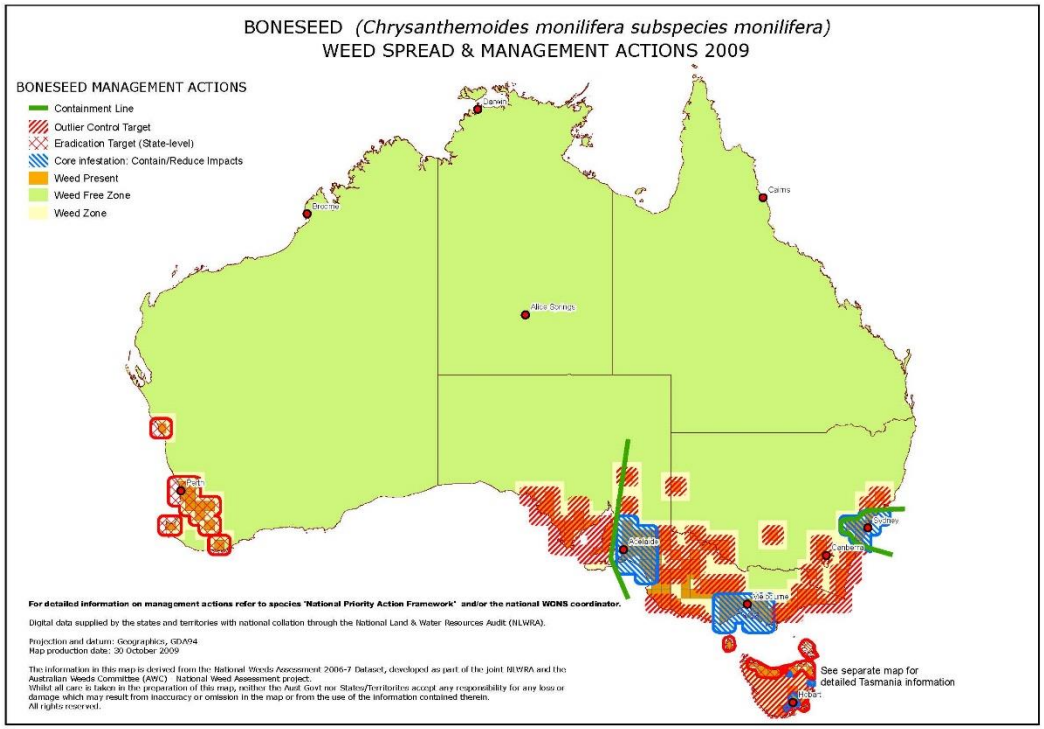


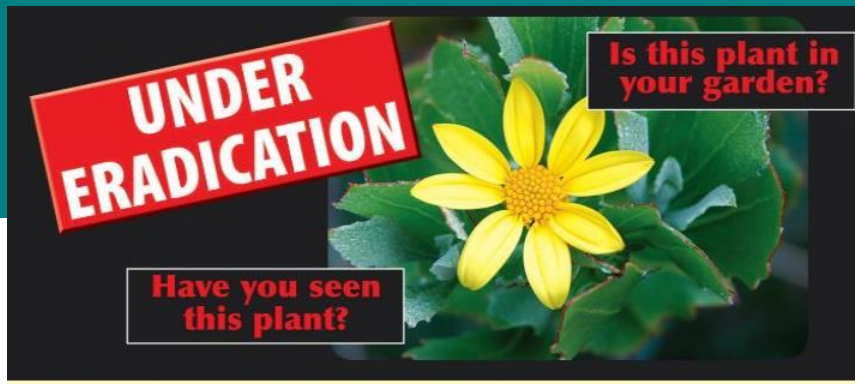

SDMMP/SANDAG LIDU pts 2020
Pop__
0 - 20
21 - 100
101 - 250
251 - 500
501 - 1000
FWS LIDU polygon
TX_rec
Combination solarize/hand pull
Hand-pull
Solarize
DRAFT SDMMP/SANDAG bird's beak data 2020
<all other values>
ownership
Port of San Diego
State (Caltrans)
U.S. Fish and Wildlife Service
Paradise Marsh
Marisma de Nacional
D Street Fill
Sweetwater Marsh
DRAFT
Do not distribute
SDMMP bird's beak data are preliminary
SDMMP Limonium data are positive-presence only.
For management and visualization

Boneseed

- 2 reports
- One false







BONESEED

Chrysanthemoides monilifera subsp. *monilifera*

is a Weed Of National Significance (WONS)

Why Is Boneseed A Problem?

Boneseed is one of the worst weeds in Australia because of its environmental impacts, invasive ability, and serious potential to spread. Boneseed, a South African shrub, was introduced to Australia as a garden plant in the late 1800s. This fast growing, aggressive plant has no natural enemies in Australia, and it has spread from gardens to become a damaging environmental weed.

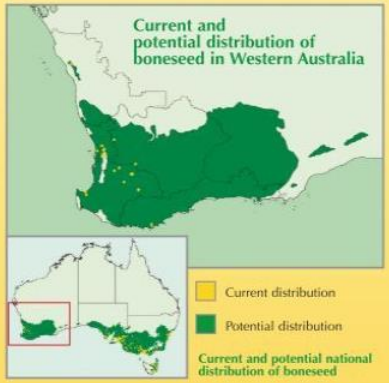
Boneseed invades native bushland and forms dense thickets that smother native plants and prevent regeneration. In Western Australia, boneseed has the potential to endanger threatened plants and ecological communities throughout the Southwest and surrounding regions. Boneseed:

- invades forests, woodlands, shrublands, dunes, coastal areas, heathlands, riparian areas, sclerophyll forest and mallee
- grows in most soil types and tolerates a wide range of climates
- rapidly colonises after disturbance such as clearing or burning
- alters habitat and displaces food plants of native birds and animals
- replaces native nectar plants important to bee-keepers, and
- can restrict access to beaches, parks, and trails.

Where Is It And How Does It Spread?

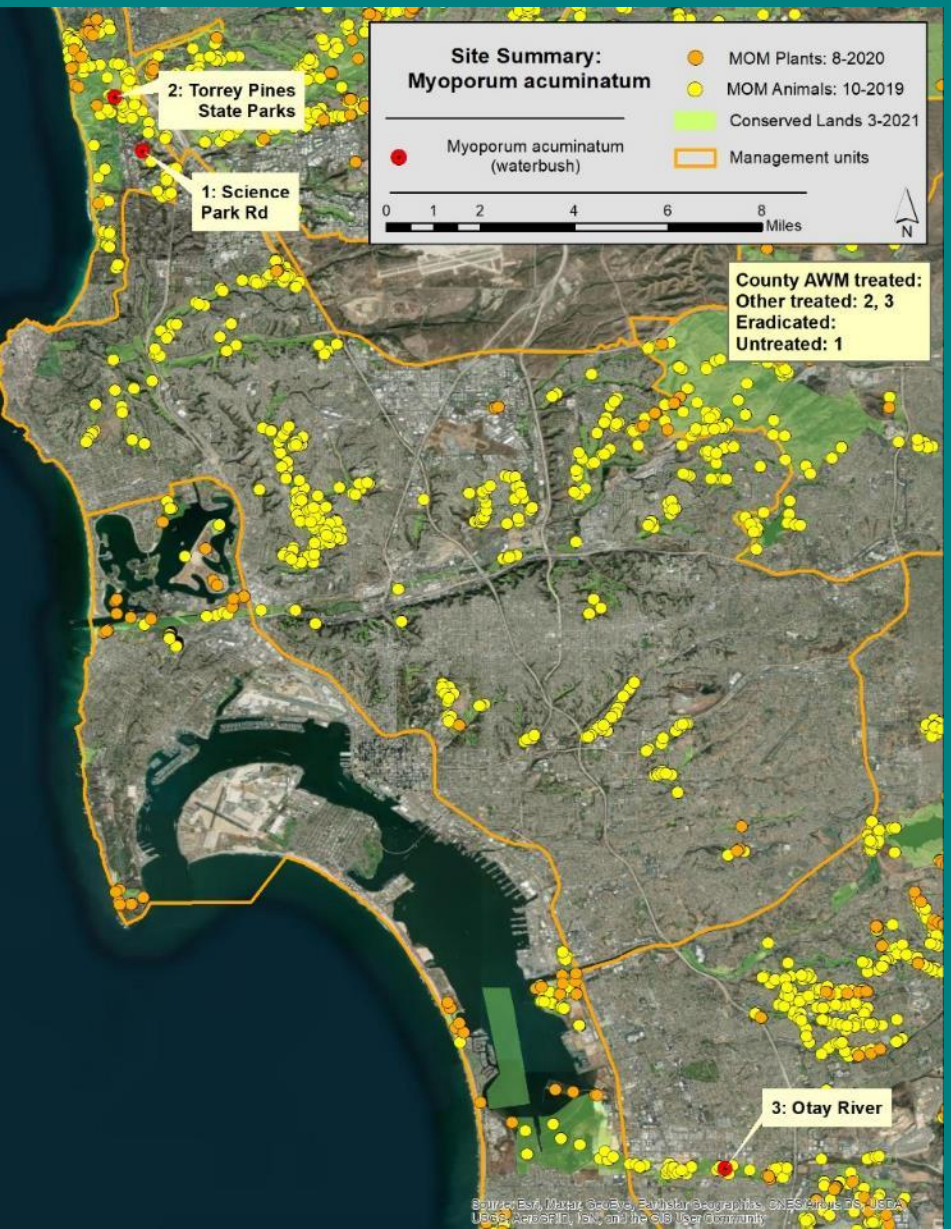
Boneseed is a serious weed in South Australia, Tasmania and Victoria. If not controlled, boneseed has the potential to spread throughout southwest Western Australia (see map). Several small infestations around Perth and in the southwest are under eradication.

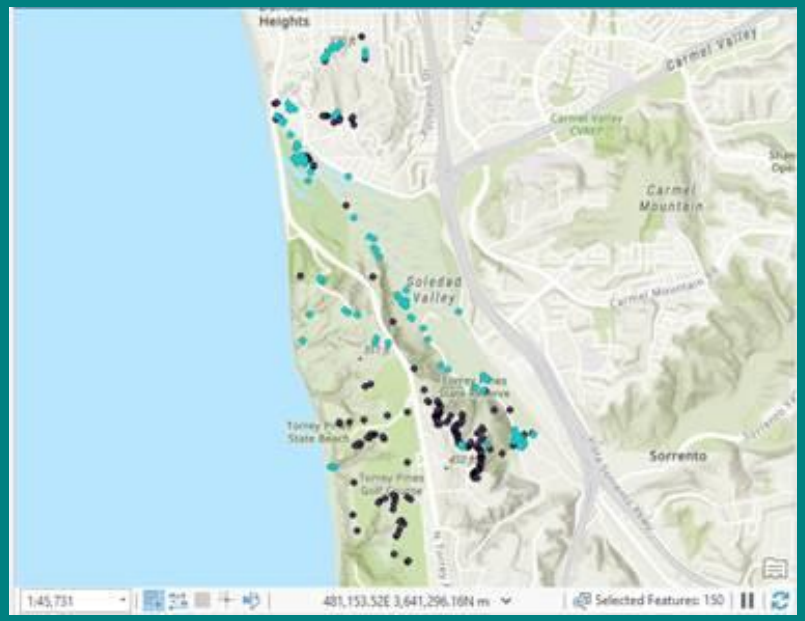
Boneseed reproduces by seeds that are spread into bushland by birds, rabbits, foxes, emus, livestock and other animals. Seeds can also spread via fresh or salt water, in soil or dumped garden waste, and on vehicles and equipment. Plants can produce enormous amounts of seed (up to 50,000 seeds per plant!) that germinate readily.



Waterbush: *Myoporum acuminatum*

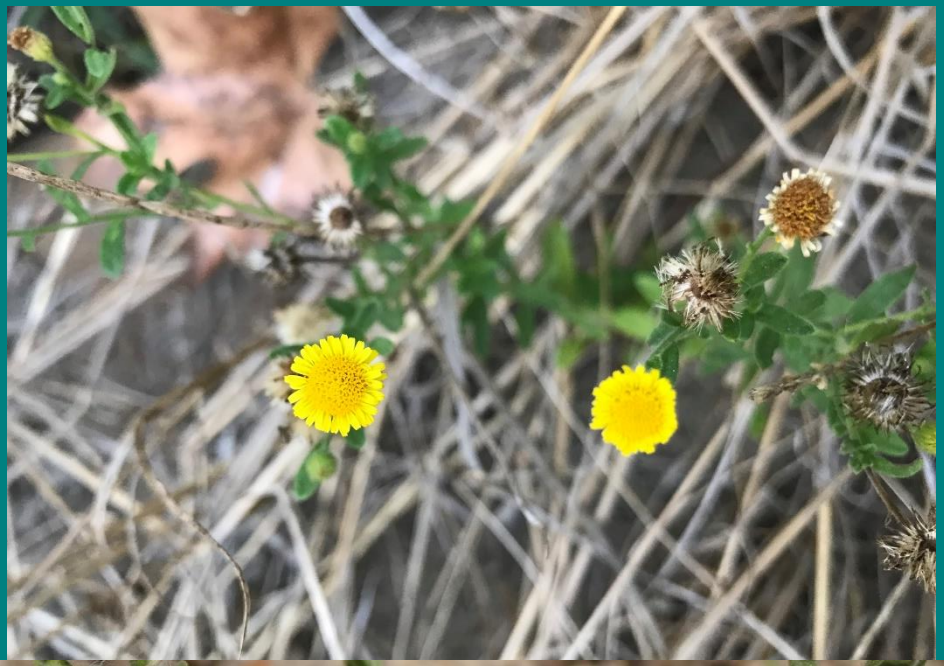
- 2 areas



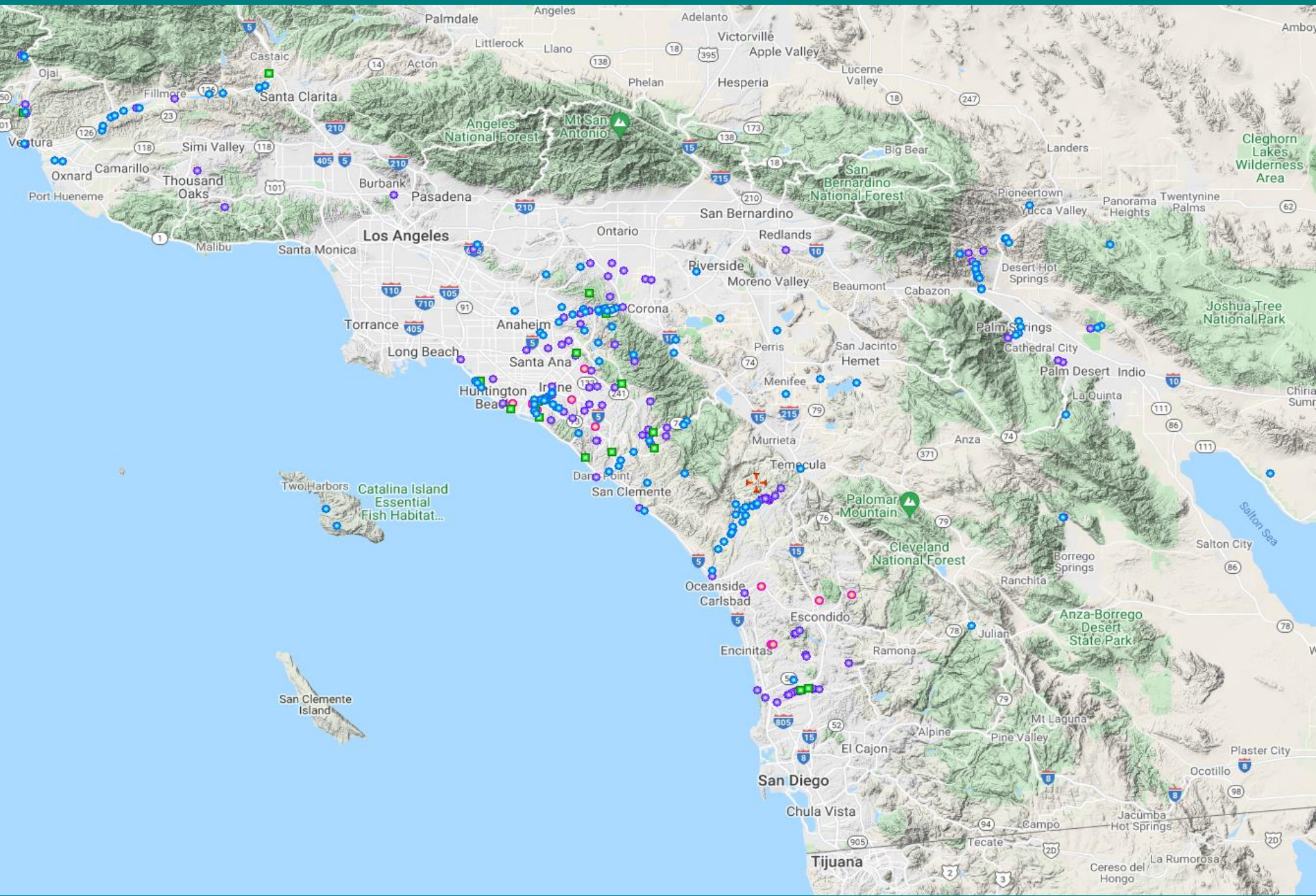


Spanish fleabane
Pulicaria paludosa

Saw this monitoring in OC…iNat worked in ID



Spanish Fleabane: *Pulicaria paludosa*



Spanish Fleabane
Pulicaria paludosa

Stinkwort
Dittrichia graveolens

Sesbania punicea: Rattlebox

1 site:
1 under treatment,

Eradication realistic in region

Arundo re-treatments: Nature Collective