Orange County
Emergent Invasive Plant Program

Successes, Failures
. . . and Lessons Learned

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Our Niche? `

- Expert knowledge of Orange County plants
- Unencumbered by boundaries, jurisdictions or procedural constraints
- Existing organizational structure
- Existing partnerships with land managers & agencies
- Large body of members and volunteers
- Ability to act quickly

Orange County CNPS

?

Invasive Plants in Orange Co.

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Our Niche? `

- No money
- Volunteer driven
- Advice, but no authority
- Challenges dealing with jurisdictions

Orange County CNPS

?

Invasive Plants in Orange Co.

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Our Niche? `

- ✔ **Our strengths**
- ✔ **Our limitations**

Where do we fit?

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?

Invasive Plants in Orange Co.

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Our Niche? `

The early detection and facilitation of effective management of specific emergent invasive weeds

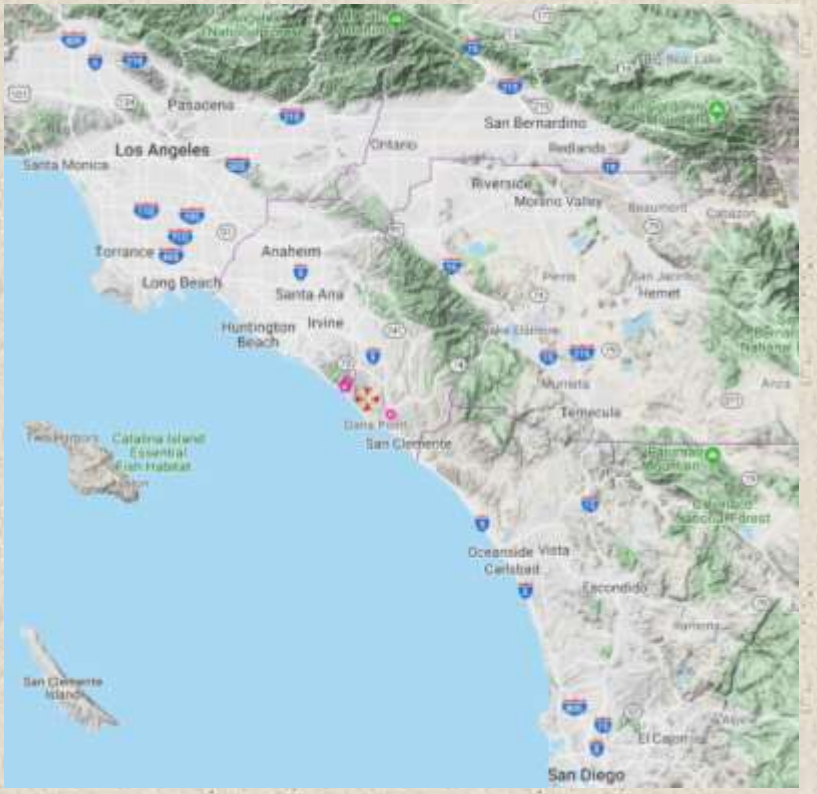
Orange County CNPS

?

Invasive Plants in Orange Co.

What is an Emergent Invasive Plant?

- Newly arrived in the region or of limited distribution
- High potential for invasiveness
- High probability of significant ecological disruption



Calflora, Hypericum canariense

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Prioritize the Emergent Invasive Plants In Orange County

- Must be emergent
- Candidates suggested
- Data – driven review process, using scoring
- A dynamic list
- Published annually

Senecio linearifolius var. *linearifolius*

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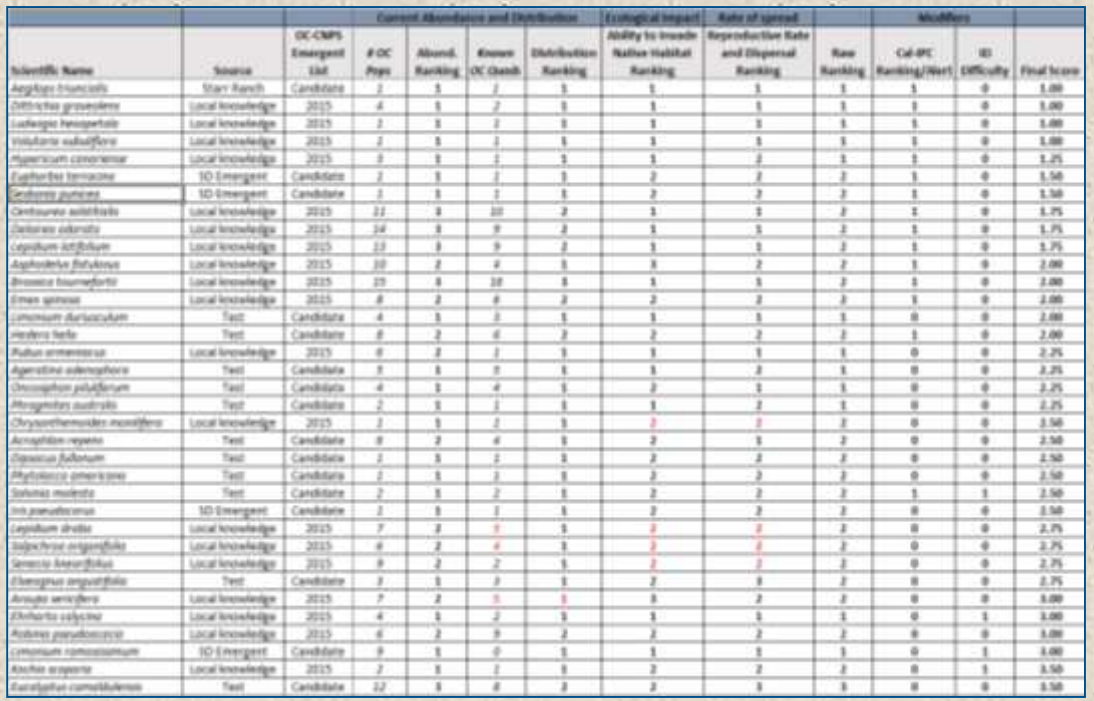
Scoring Protocol:

- Abundance
- Distribution
- Ecological Impact
- Rate of Spread
- Variables:
  - Cal-IPC ranking/alert
  - ID difficulty



		Current Abundance and Distribution				Ecological Impact	Rate of spread		Modifiers		
Scientific Name	Source	OC-CNPS Emergent List	# OC Pops	Abund. Ranking	Known OC Quads	Distribution Ranking	Ability to Invade Native Habitat Ranking	Reproductive Rate and Dispersal Ranking	Raw Ranking	Cal-IPC Ranking/Alert	ID Difficulty	Final Score
Aegilops triuncialis	Starr Ranch	Candidate	1	1	1	1	1	1	1	1	0	1.00
Dittrichia graveolens	Local knowledge	2015	4	1	2	1	1	1	1	1	0	1.00
Ludwigia hexapetala	Local knowledge	2015	1	1	1	1	1	1	1	1	0	1.00
Volutaria subuliflora	Local knowledge	2015	1	1	1	1	1	1	1	1	0	1.00
Hypericum canariense	Local knowledge	2015	3	1	1	1	1	2	1	1	0	1.25
Euphorbia terracina	SD Emergent	Candidate	1	1	1	1	2	2	2	1	0	1.50
Genista pumila	SD Emergent	Candidate	1	1	1	1	2	2	2	1	0	1.50
Centaurea solstitialis	Local knowledge	2015	11	3	10	2	1	1	2	1	0	1.75
Delairea odorata	Local knowledge	2015	14	3	9	2	1	1	2	1	0	1.75
Lepidium latifolium	Local knowledge	2015	13	3	9	2	1	1	2	1	0	1.75
Asphodelus fistulosus	Local knowledge	2015	10	2	4	1	1	2	2	1	0	2.00
Brassica tournefortii	Local knowledge	2015	19	3	10	1	1	1	2	1	0	2.00
Erica spinosa	Local knowledge	2015	8	2	6	2	2	2	2	1	0	2.00
Limonium duriusculum	Test	Candidate	4	1	3	1	1	1	1	0	0	2.00
Hedera helix	Test	Candidate	8	2	6	2	2	2	2	1	0	2.00
Rubus armeniacus	Local knowledge	2015	6	2	3	1	1	1	1	0	0	2.25
Ageratina adenophora	Test	Candidate	3	1	3	1	1	2	1	0	0	2.25
Oncosiphon piluliferum	Test	Candidate	4	1	4	1	2	1	1	0	0	2.25
Carpobrotus edulis	Test	Candidate	2	1	2	1	1	2	1	0	0	2.25
Chrysanthemoides monilifera	Local knowledge	2015	2	1	2	1	2	2	2	0	0	2.50
Acrostichum aureum	Test	Candidate	8	2	4	1	2	1	2	0	0	2.50
Oxalis pes-caprae	Test	Candidate	2	1	2	1	2	2	2	0	0	2.50
Phytolacca americana	Test	Candidate	2	1	2	1	2	2	2	0	0	2.50
Solanum nigrum	Test	Candidate	2	1	2	1	2	2	2	1	1	2.50
Iris pseudacorus	SD Emergent	Candidate	1	1	1	1	2	2	2	0	0	2.50
Lepidium draba	Local knowledge	2015	7	2	3	1	2	2	2	0	0	2.75
Salpichroa origanifolia	Local knowledge	2015	4	2	4	1	2	2	2	0	0	2.75
Senecio linearifolius	Local knowledge	2015	9	2	2	1	2	2	2	0	0	2.75
Elaeagnus angustifolia	Test	Candidate	3	1	3	1	2	3	2	0	0	2.75
Arundo donacifera	Local knowledge	2015	7	2	3	1	3	2	2	0	0	3.00
Ehrharta calycina	Local knowledge	2015	4	1	2	1	1	1	1	0	1	3.00
Robinia pseudoacacia	Local knowledge	2015	6	2	3	2	2	2	2	0	0	3.00
Limonium ramosissimum	SD Emergent	Candidate	3	1	0	1	1	1	1	0	1	3.00
Kochia scoparia	Local knowledge	2015	2	1	1	1	2	2	2	0	1	3.50
Eucalyptus camaldulensis	Test	Candidate	12	3	8	2	2	3	3	0	0	3.50

A data driven score - using objective measurements

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Knowledge Base:

- Published data
  - Cal-IPC scores
  - Online data
- Other unpublished data
- Local knowledge
  - Land managers
  - Biologists
  - Active field experts

Cal-IPC

Calflora

CCH

CalWeedMapper

WHIPPET
whippet.cal-ipc.org

What we Did:

- Established a Committee

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Invasive Plant Committee

- Ron Vanderhoff, co-chair, OC CNPS
- Josie Bennett, co-chair, Laguna Canyon Foundation
- Celia Kutcher, OC CNPS Conservation Chair
- Dave Pryor, CA State Parks
- Dan Songster, OC CNPS
- Matt Major, OC Parks
- Erin Andreatta, Irvine Ranch Conservancy
- Joan Miller, South Coast Wilderness Area
- Bob Huttar, OC CNPS
- Thea Gavin, OC CNPS

What we Did:

- Established a Committee
- Created a Website

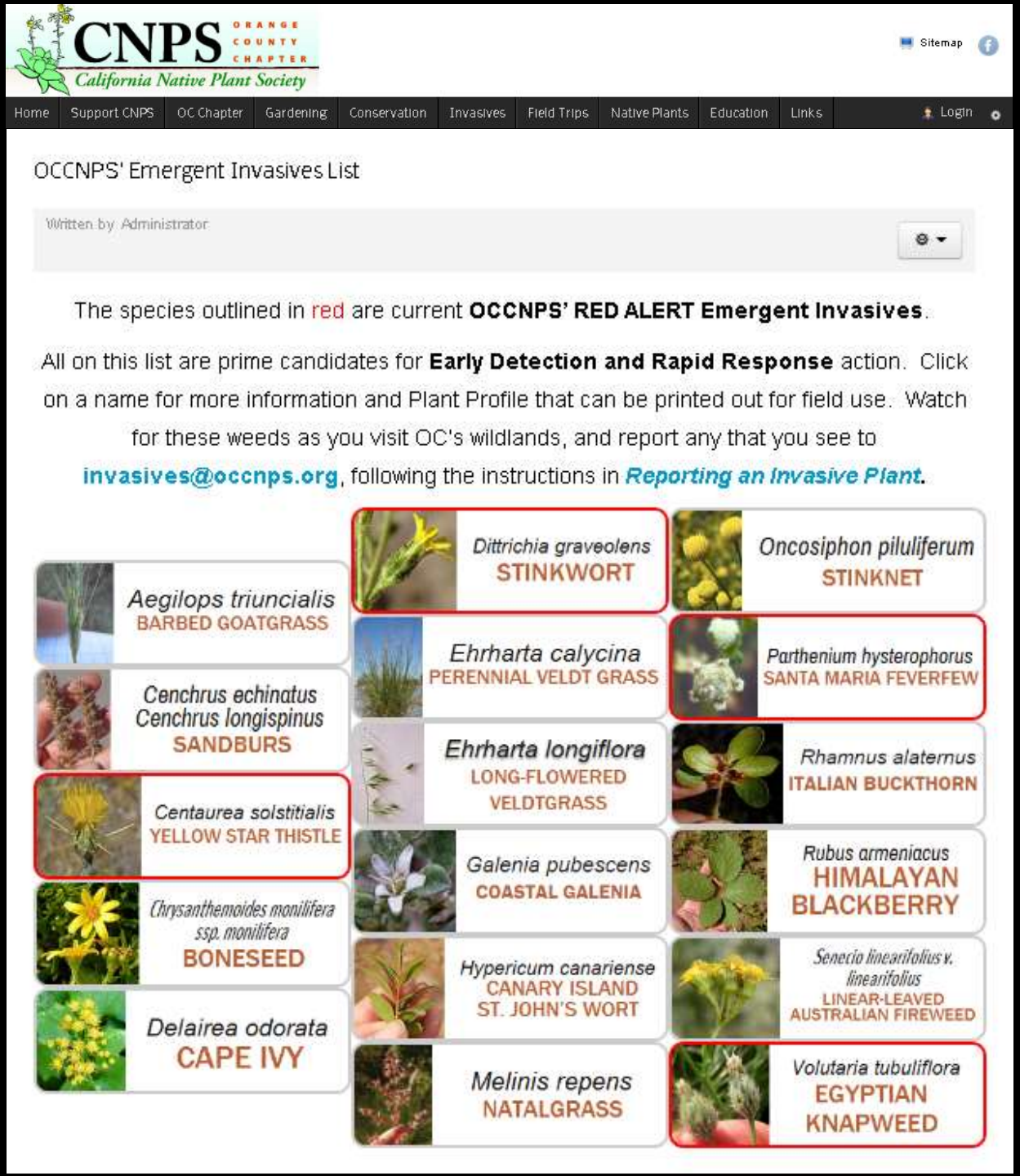
Website

Current Emergent Species
Retired Emergent Species
Watch List Species

Downloadable Plant Profiles
Picture & ID Resources
Reporting Protocols
Status & Distribution

Program Overview
Updates and Invasive News
What is EDRR
Links and Resources

Training Program



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What we Did:

- Established a Committee
- Created a Website
- Established a Scoring Algorithm

		Current Abundance and Distribution				Ecological Impact	Rate of spread		Modifiers		
Scientific Name	Source	OC-CNPS Emergent List	# OC Pops	Abund. Ranking	Known OC Dandr	Distribution Ranking	Ability to Invade Native Habitat Ranking	Reproductive Rate and Dispersal Ranking	Raw Ranking	Cal-IPC Ranking/Alert	ID Difficulty	Final Score
Aegilops triuncialis	Starr Ranch	Candidate	1	5	1	5	5	5	5	5	0	5.00
Dittrichia graveolens	Local knowledge	2015	4	5	2	5	5	5	5	5	0	5.00
Ludwigia hexapetala	Local knowledge	2015	1	5	1	5	5	5	5	5	0	5.00
Volutaria subaffinis	Local knowledge	2015	1	5	1	5	5	5	5	5	0	5.00
Hypericum canariense	Local knowledge	2015	3	5	1	5	5	2	5	5	0	5.25
Euphorbia terracina	SD Emergent	Candidate	1	5	1	5	2	2	2	5	0	5.50
Sesbania punicea	SD Emergent	Candidate	1	5	1	5	2	2	2	5	0	5.50
Centaurea solstitialis	Local knowledge	2015	11	3	10	2	5	5	2	5	0	5.75
Delairea odorata	Local knowledge	2015	14	3	9	2	5	5	2	5	0	5.75
Lepidium latifolium	Local knowledge	2015	13	3	9	2	5	5	2	5	0	5.75
Asphodelus fistulosus	Local knowledge	2015	10	2	8	5	5	2	2	5	0	6.00
Brassica tournefortii	Local knowledge	2015	15	3	10	5	5	5	2	5	0	6.00
Erica spinosa	Local knowledge	2015	8	2	6	2	2	2	2	5	0	6.00
Limonium duriusculum	Test	Candidate	4	5	3	5	5	5	5	0	0	2.00
Hedera helix	Test	Candidate	8	2	6	2	2	2	2	5	0	2.00
Rubus armeniacus	Local knowledge	2015	6	2	3	5	5	5	5	0	0	2.25
Ageratina adenophora	Test	Candidate	5	5	5	5	5	2	5	0	0	2.25
Ehrosophon pilulifera	Test	Candidate	4	5	4	5	2	5	5	0	0	2.25
Pittosporum undulatu	Test	Candidate	2	5	2	5	5	2	5	0	0	2.25
Chrysanthemoides monilifera	Local knowledge	2015	1	5	1	5	2	2	2	0	0	2.50
Acroptilon repens	Test	Candidate	6	2	4	5	2	5	2	0	0	2.50
Opuntia ficus-indica	Test	Candidate	1	5	1	5	2	2	2	0	0	2.50
Phytolacca americana	Test	Candidate	1	5	1	5	2	2	2	0	0	2.50
Solanum mauritianum	Test	Candidate	2	5	2	5	2	2	2	5	1	2.50
Iris pseudacorus	SD Emergent	Candidate	1	5	1	5	2	2	2	0	0	2.50
Lepidium draba	Local knowledge	2015	7	2	5	5	2	2	2	0	0	2.75
Euphorbia oblongifolia	Local knowledge	2015	4	2	4	5	2	2	2	0	0	2.75
Senecio kenrdfolius	Local knowledge	2015	9	2	7	5	2	2	2	0	0	2.75
Elaeagnus angustifolia	Test	Candidate	3	5	3	5	2	5	2	0	0	2.75
Arctotheca calendula	Local knowledge	2015	7	2	5	5	5	2	2	0	0	3.00
Ehrharta calycina	Local knowledge	2015	4	5	2	5	5	5	5	0	1	3.00
Pennisetum pseudocistis	Local knowledge	2015	6	2	3	2	2	2	2	0	0	3.00
Limonium ramosissimum	SD Emergent	Candidate	9	5	6	5	5	5	5	0	1	3.00
Arctotheca calendula	Local knowledge	2015	2	5	1	5	2	2	2	0	1	3.50
Eucalyptus camaldulensis	Test	Candidate	12	5	8	2	2	5	5	0	0	3.50

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=1+L6-M6-N6

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What we Did:

- Established a Committee
- Created a Website
- Established a Scoring Algorithm
- Crunched the Data
- Published the First Priority Emergent List

Orange County Emergent Invasive Plants

Aegilops triuncialis	Barbed goatgrass	2016-2019
Cenchrus echinatus	Southern Sandbur	2017-2019
Cenchrus longispinus	Mat sandbur	2017-2019
Centaurea solstitialis	Yellow starthistle	2015-2019
Chrysanthemoides monilifera	Bitou bush	2015-2019
Delairea odorata	Cape ivy	2015-2019
Dittrichia graveolens	Stinkwort	2015-2019
Ehrharta calycina	Perennial veldt grass	2015-2019
Galenia pubescens	Coastal galenia	2017-2019
Hypericum canariense	Canary Island St. John's Wort	2015-2019
Melinis repens	Natal grass	2016-2019
Oncosiphon piluliferum	Stinknet	2017-2019
Parthenium hysterophorus	Santa Maria feverfew	2017-2019
Rhamnus alaternus	Italian buckthorn	2018-2019
Rubus armeniacus	Himalayan blackberry	2015-2019
Senecio linearifolius	Linear-leafed Australian fireweed	2015-2019
Volutaria tubuliflora	Egyptian Knapweed	2015-2019

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What we Did:

- Established a Committee
- Created a Website
- Established a Scoring Algorithm
- Crunched the Data
- Published the First Priority Emergent List
- Published a Watch List

Invasive Plant Watch List

OC CNPS EMERGENT INVASIVES - NOT IN COUNTY or PENDING

Scientific Name	Common Name	Source	Current Abundance and Distribution				Ecological Impact		Rate of spread		Raw Ranking	Modifiers		Final Score
			# Near Pops	Abund. Ranking	Known Near Quads	Distribution Ranking	Ability to Invade Native Habitat		Reproductive Rate & Dispersal			Ranking/Alert		
							Cal-IPC	OCCNPS	Cal-IPC	OCCNPS		Cal-IPC	OCCNPS	
Centaurea stoebe	Spotted Knapweed	Watch Candidate	7	2	4	1	1		2		1.50	1		2.50
Enchylaena tomentosa	Ruby Saltbush	Watch Candidate	3	1	1	1		2		2	1.50		1	2.50
Genista monspessulana	French broom	Watch Candidate	10	2	10	2	1		1		1.50	1		2.50
Alternanthera philoxeroides	Alligatorweed	Watch Candidate	1	1	1	1	1		2		1.25	1		2.25
Elymus caput-medusae	Medusahead	Watch Candidate	7	2	2	1	1		1		1.25	1		2.25
Phragmites australis	Common reed	Watch Candidate	3	1	3	1		1		2	1.25		1	2.25
Sesbania punicea	Rattlebox	Watch Candidate	1	1	1	1	1		2		1.25	1		2.25
Centaurea iberica	Iberian knapweed	Watch Candidate	0	0	0	0		1		3	1.00		1	2.00
Lythrum salicaria	Purple loosestrife	Watch Candidate	2	1	1	1	1		1		1.00	1		2.00
Cortaderia jubata		Watch Candidate	20	3	14	3	1		1		2.00			2.00
Dipsacus sativus	Indian teasel	Watch Candidate	7	2	7	2	2		2		2.00	0		2.00
Dipsacus fullonum	Teasel	Watch Candidate	6	2	3	1	2		2		1.75	0		1.75
Helichrysum petiolare	Licorice plant	Watch Candidate	4	1	3	1	3		2		1.75	0		1.75
Lathyrus tingitanus	Tangier pea	Watch Candidate	6	2	4	1		2		2	1.75		0	1.75
Ammophila arenaria	European beachgrass	Watch Candidate	0	0	0	0	1		2		0.75	1		1.75
Hydrilla verticillata	Hydrilla	Watch Candidate	0	0	0	0	1		2		0.75	1		1.75
Ludwigia hexapetala	Crp. water primrose	Watch Candidate	0	0	0	0	1		2		0.75	1		1.75
Myriophyllum aquaticum	Millfoil	Watch Candidate	0	0	0	0	1		2		0.75	1		1.75
Ulex europaeus	Gorse	Watch Candidate	0	0	0	0	1		2		0.75	1		1.75
Myriophyllum spicatum	Millfoil	Watch Candidate	0	0	0	0	1		1		0.50	1		1.50
Chondrilla juncea	Skeleton weed	Watch Candidate	5	1	2	1	2		2		1.50	0		1.50
Cirsium arvense	Canada thistle	Watch Candidate	1	1	1	1	2		2		1.50	0		1.50
Heliotropium supinum	Drawf Heliotrope	Watch Candidate	1	1	1	1		2		2	1.50		0	1.50
Arctotheca calendula	Cape weed	Watch Candidate	0	0	0	0	2		3		1.25	0		1.25
Pentameris airoides	Annual Pentachistis	Watch Candidate	1	1	1	1	2		1		1.25	0		1.25
Phytolacca americana	American pokeweed	Watch Candidate	0	0	0	0	3		2		1.25	0		1.25
Centaurea calcitrapa	Purple star thistle	Watch Candidate	0	0	0	0	2		2		1.00	0		1.00
Perilla frutescens	Perilla	Watch Candidate		0		0					0.00			0.00
Brassica fruticulosa	Mediterranean cabbage	Watch Candidate		0		0					0.00			0.00
Leucaena leucocephala	White leadtree	Watch Candidate		0		0					0.00			0.00
Raphanus rhaphanistrum	Jointed charlock	Watch Candidate		0		0					0.00			0.00

Watchlist Scoresheet

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What we Did:

- Established a Committee
- Created a Website
- Established a Scoring Algorithm
- Crunched the Data
- Published the First Priority Emergent List
- Published a Watch List
- Developed Resources and Tools
- Promoted Internally and Externally
- Established Training (later)

- **Started Finding Emergent Invasive Plants!**

Successes

Detections

Dittrichia graveolens Stinkwort	1st Orange County detection
Volutaria tubuliflora Volutaria	1st Orange County detection (1st CA?)
Chrysanthemoides monilifera Boneseed	1st CA wildlands detection
Parthenium hysterophorus Santa Maria Feverfew	2nd CA and Orange County detection
Galenia pubescens Coastal Galenia	1st Orange County detection
Hypericum canariense Canary Island St. John's Wort	3rd Orange County detection
Senecio leptophyllus	1st CA(?) and Orange County detection

Many more

Emergent Invasive Plant Program

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Volutaria tubuliflora

Volutaria

Emergent Invasive Plant Program

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Hypericum canariense

Canary Island St. John's Wort

Emergent Invasive Plant Program

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Chrysanthemoides monilifera var monilifera

Boneseed

Emergent Invasive Plant Program

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Parthenium hysterophorus
Santa Maria Feverfew

Emergent Invasive Plant Program

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Senecio leptophyllus

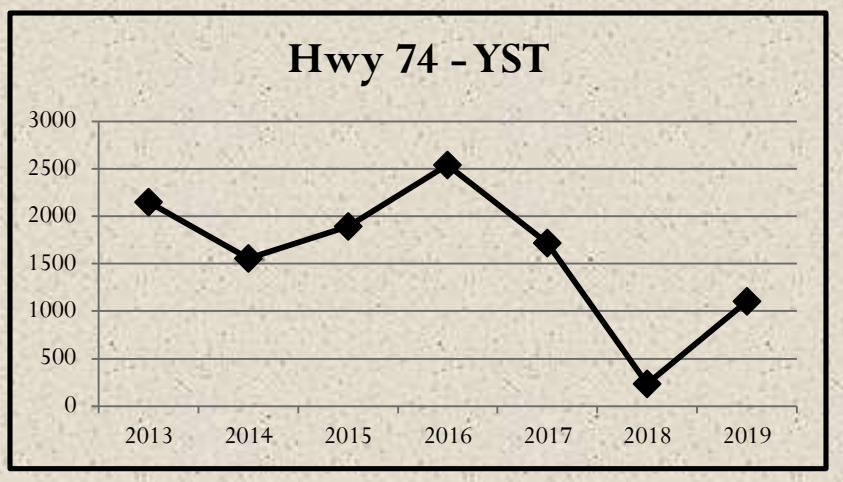
Management

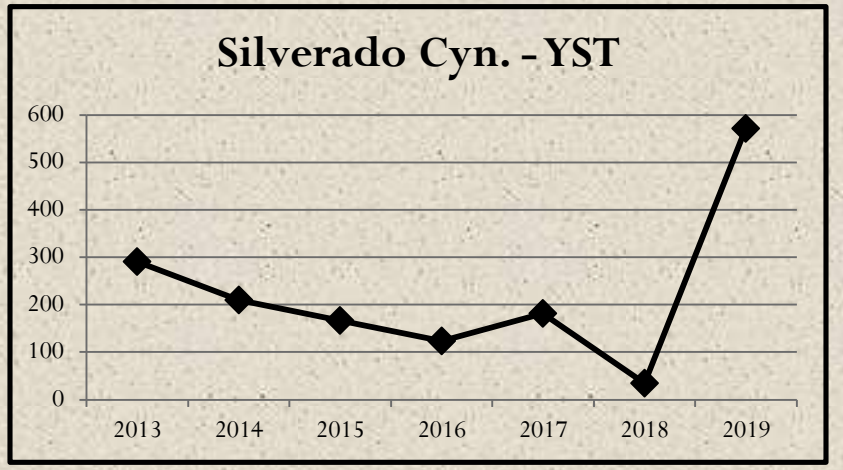
Centaurea solstitialis

Yellow Star Thistle

YST Management, Upper Silverado Cyn., Santa Ana Mts.

Pull Counts





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Calflora

Orange County

Cal-IPC Listed Species

Pre 2016: 3,064 records

2016-Present: 8,736 records

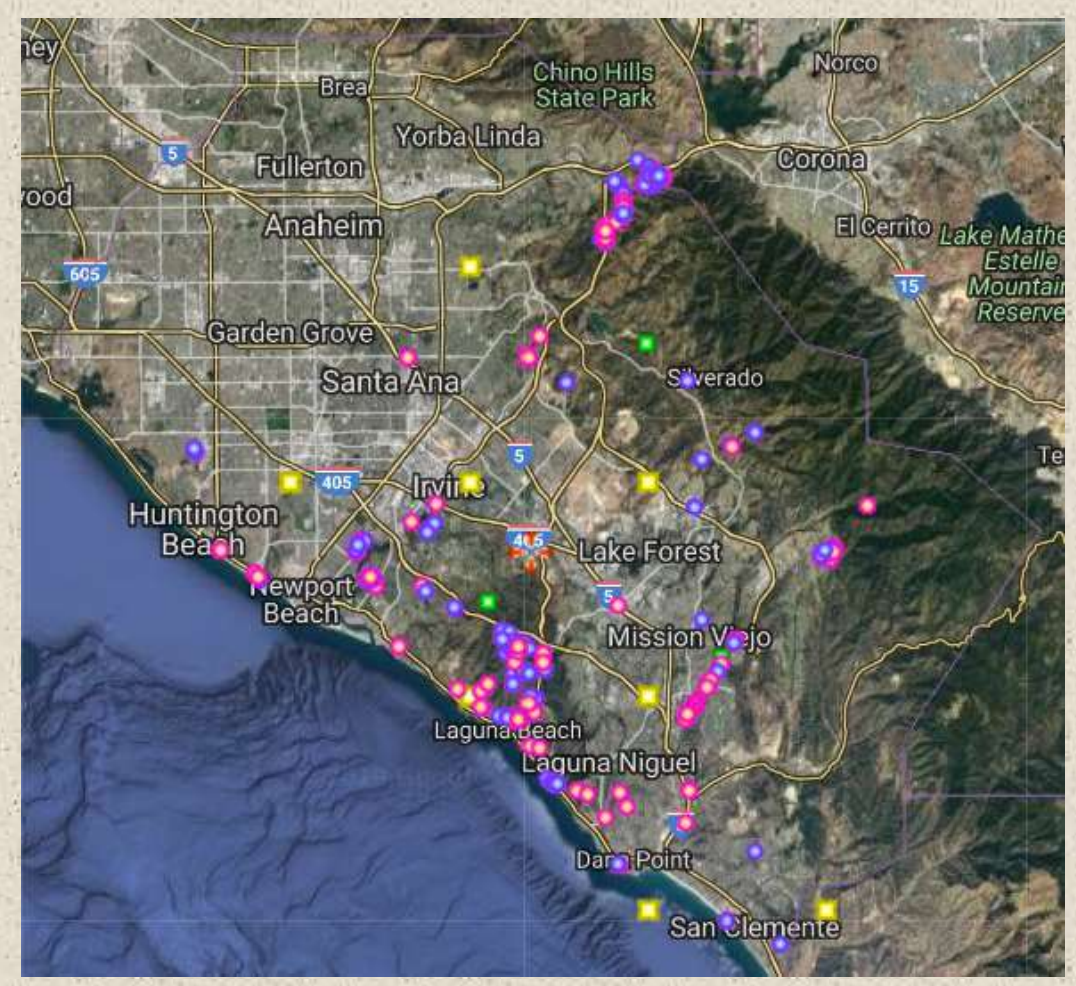
285% Increase

All Species

Pre 2016: 4,175 records

2016-Present: 12,745 records

305% Increase



Calflora OC CNPS Emergent Species Detections. 2018-19

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Trainings

- 3-5 hours
- Priority Species
- Identification
- Reporting
- Vouchering
- Sanitation
- Resources
- A paid program

Biologists
Land Managers
Rangers
Volunteers

Newport Bay Conservancy Training, 2018

200 trained

Emergent Invasive Plant Program

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Tools

Printable profiles for each Emergent Species


HAVE YOU SEEN THIS PLANT?
It is an Emergent Invasive in Orange County

MOROCCAN KNAPWEED
aka Egyptian or Mediterranean Desert Knapweed

Volutaria tubuliflora

Known OC Sites & Status Updates

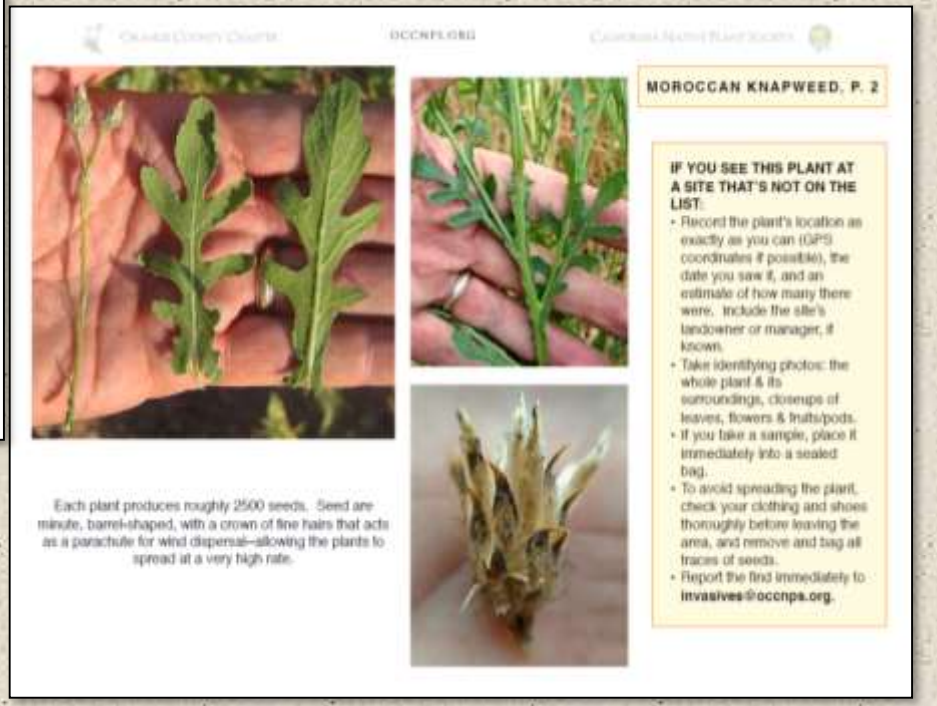
Distribution map & info:

- calflora.org/cgi-bin/species_query.cgi?where-calrecnum=13655
- cal-ipc.org/symposia/archives/pdf/2011/26elch.pdf

Can be confused with Volutaria canariensis, Canary Island Knapweed

Moroccan knapweed is an erect, openly branched, robust annual that grows from a soon-deciduous basal rosette. It grows best in disturbed ground & seasonally flooded sites, where it can grow to 3+ ft. high & wide. It forms a stout deep taproot & many fine, water-absorbing, surface roots.

It has become widespread in the Anza-Borrego area, & has recently been added to California's Noxious Weed List.


MOROCCAN KNAPWEED, P. 2

IF YOU SEE THIS PLANT AT A SITE THAT'S NOT ON THE LIST:

- Record the plant's location as exactly as you can (GPS coordinates if possible), the date you saw it, and an estimate of how many there were. Include the site's landowner or manager, if known.
- Take identifying photos: the whole plant & its surroundings, closeups of leaves, flowers & fruits/pods.
- If you take a sample, place it immediately into a sealed bag.
- To avoid spreading the plant, check your clothing and shoes thoroughly before leaving the area, and remove and bag all traces of seeds.
- Report the find immediately to **invasives@occnps.org**.

Each plant produces roughly 2500 seeds. Seed are minute, barrel-shaped, with a crown of fine hairs that acts as a parachute for wind dispersal--allowing the plants to spread at a very high rate.

Pocket ID Cards

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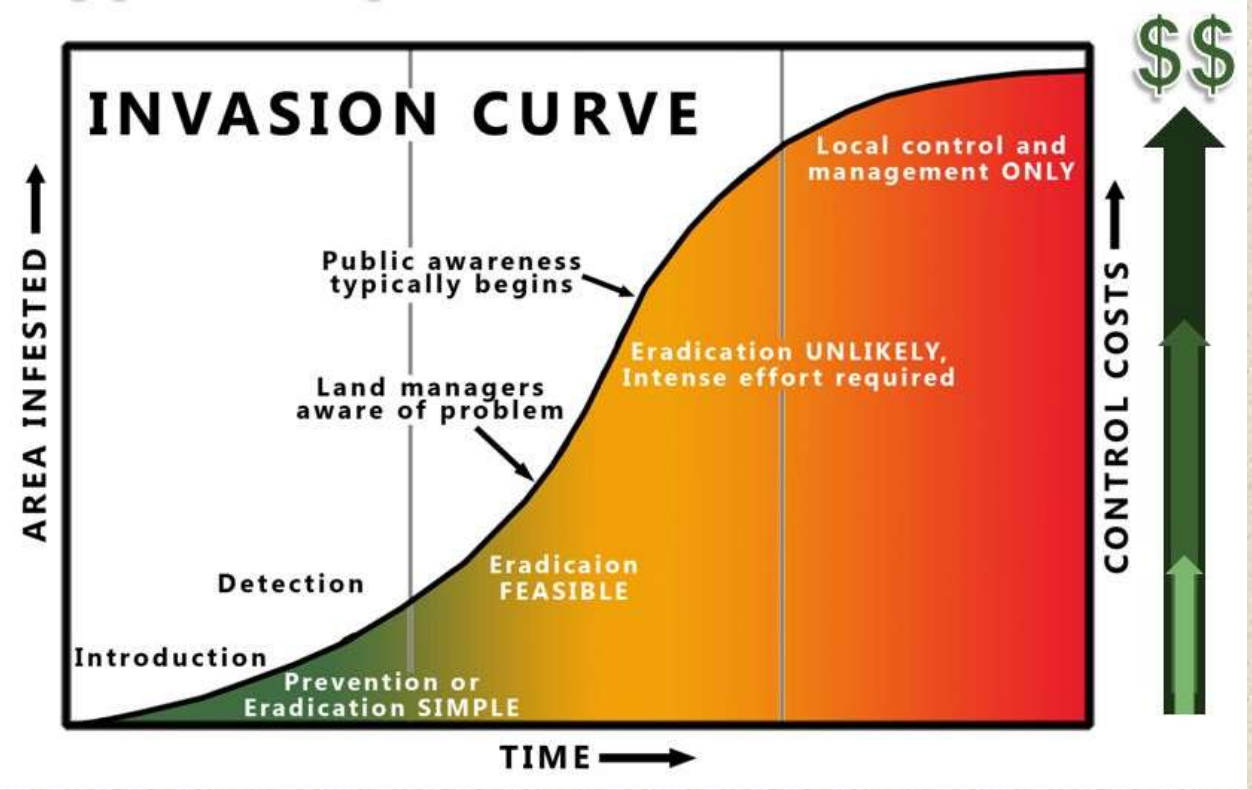
Successes:

- Lots of new Detections
- 1000's of new Calflora Records
- 200 People Trained
- Helpful Tools
- Intangibles:
  - Collaboration – Building a Community
  - Communication
  - Awareness
  - Engagement

Failures:

Species no longer Emergent

Website overkill



Lessons Learned:

- Find your Niche - and Stay There
- Prioritize the Weeds
- Provide Resources
- Learn the Invasive "People" Community
- Don't be Redundant
- Embrace a Data Sharing Platform
- Create a Feedback Loop for the People
- Train, Train, Train

CNPS ORANGE COUNTY CHAPTER occnps.org
California Native Plant Society

Thank you . . .

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