

Lessons Learned After Nearly a Decade of Managing and Monitoring Stinknet (*Oncosiphon pilulifer*) across Southern California

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Lessons Learned After Nearly a Decade of Stinknet

- “Time is the wisest counselor of all” - Pericles
- With many Early Detection Rapid Response (EDRR) species we are in such a hurry
 - Rush to learn how to control it
 - Rush to stop it from spreading
 - Rush to find out where it is
- I’ll provide a longer view of what stinknet invasion has taught us

Lessons Learned

- How you can apply these lessons to your early detection rapid response (EDRR) program



Lesson #1 Identification

- Early Detect, and ID
- What is Stinknet (*Oncosiphon pilulifer*)?
- Relatively easy to detect and ID
- Winter annual weed
- Round, globe shaped flowers
- Doubly divided small leaves
- It stinks, piney, turpentine, foul smell



Lesson #1 Identification



Lesson #1 Identification



- Once you have an ID, then knowledge can start flowing
- Stinknet is native to South Africa, somewhat common weedy wildflower species in arid areas of South Africa
- Found in Eastern Australia in early 1900's, (where it currently is absent), has since been found in Western Australia in 1960's and is currently spreading and thriving
- First found in Southern California in 1981 near Perris

Lesson #2 Attend Meetings

- You'll meet great people at meetings and learn about great projects
- Build a network, reach out, share your passions
- If you can't find a meeting to attend, create your own meetings



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Lesson #3 Have Ken Find You

- Ken found me!
- When at meetings, discuss the boring, or odd, or frustrating things you are working on in the field
- Network with other people
- Find a team of interested people who share your interests and problems

OC Register

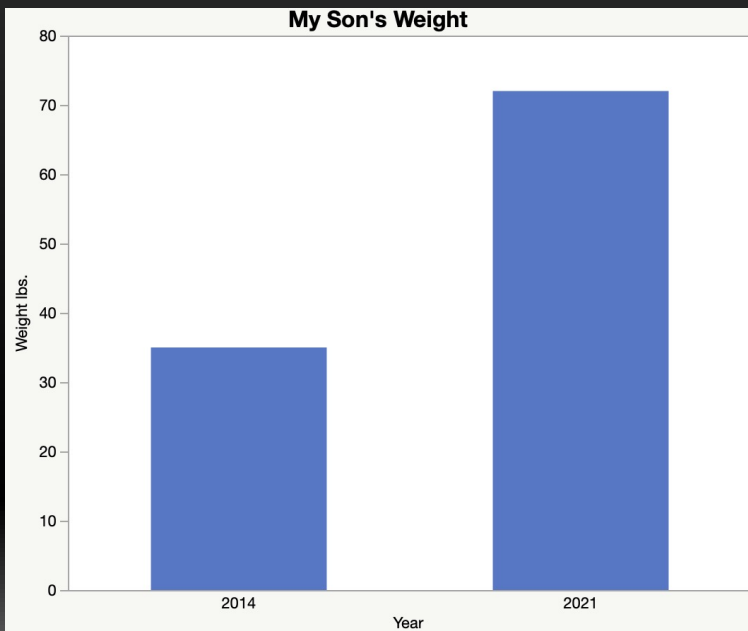


Michael Wall
RSABG/CalBG

Lesson #4 Be a part of a team

- How much can a team change in (almost) a decade?
- My son's weight

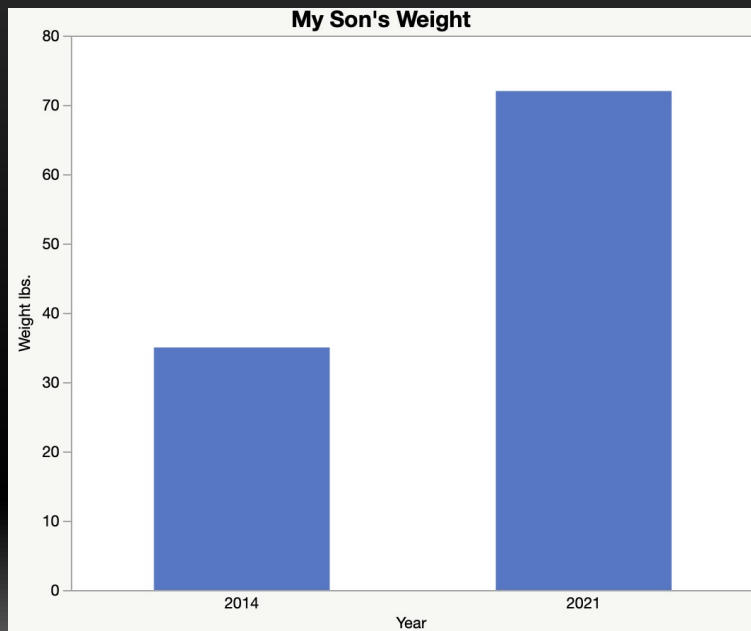
Number of Stinknet Observations



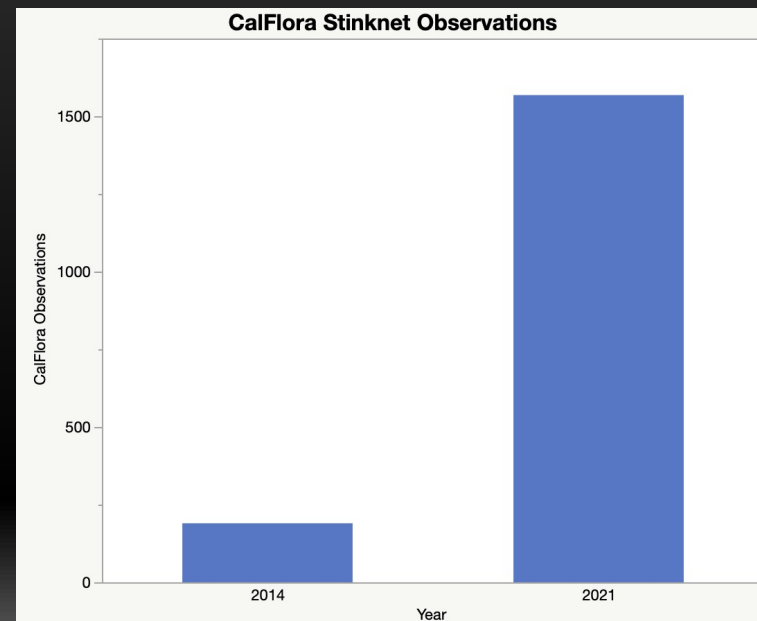
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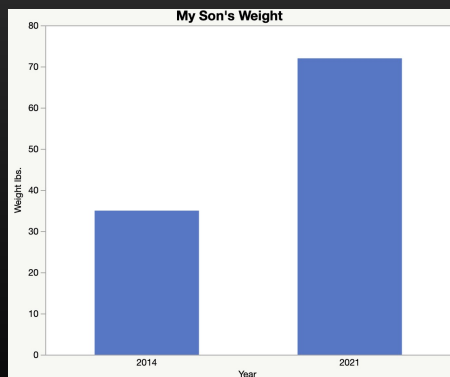


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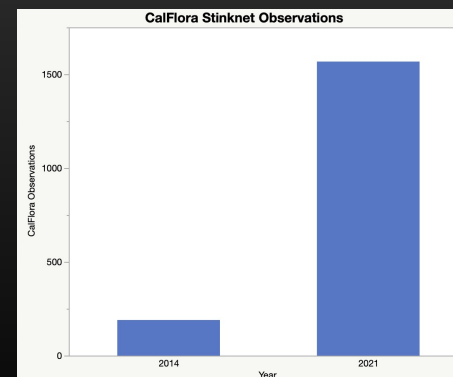


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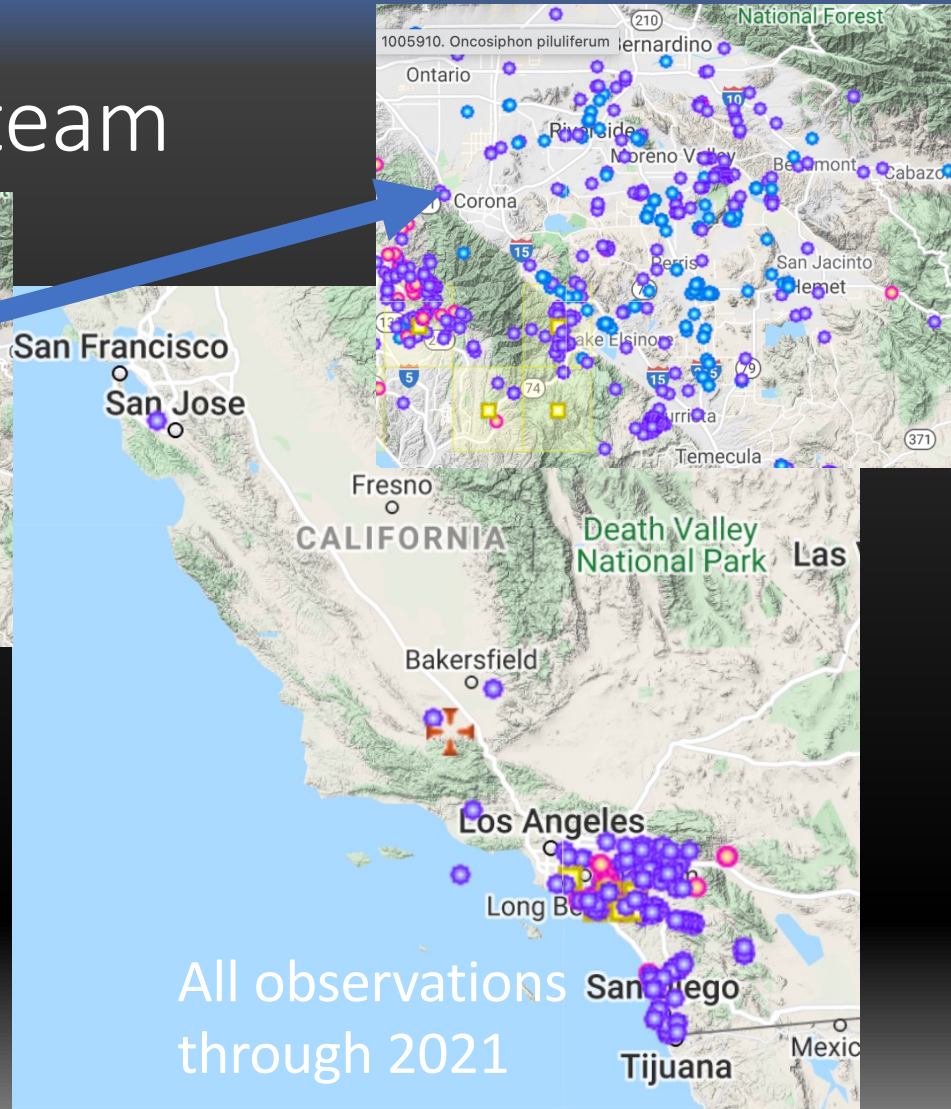
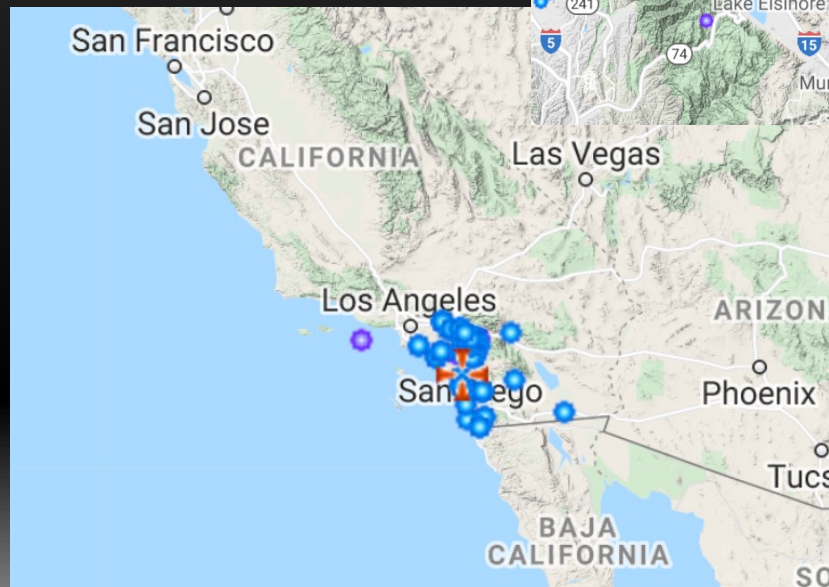
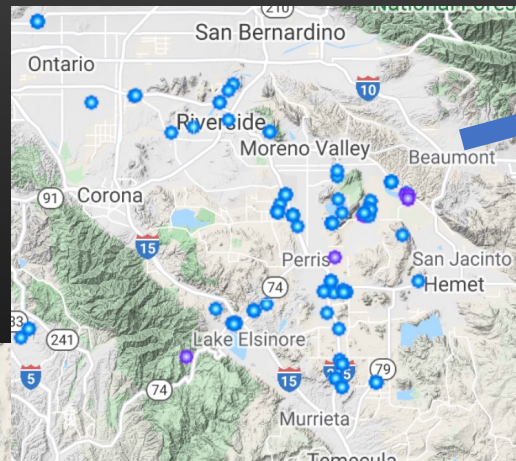
Number of Stinknet Observations



2014 was the dark ages with regard to phone app mapping, iNaturalist had launched its app a few years earlier, Calflora Observer app released in 2012

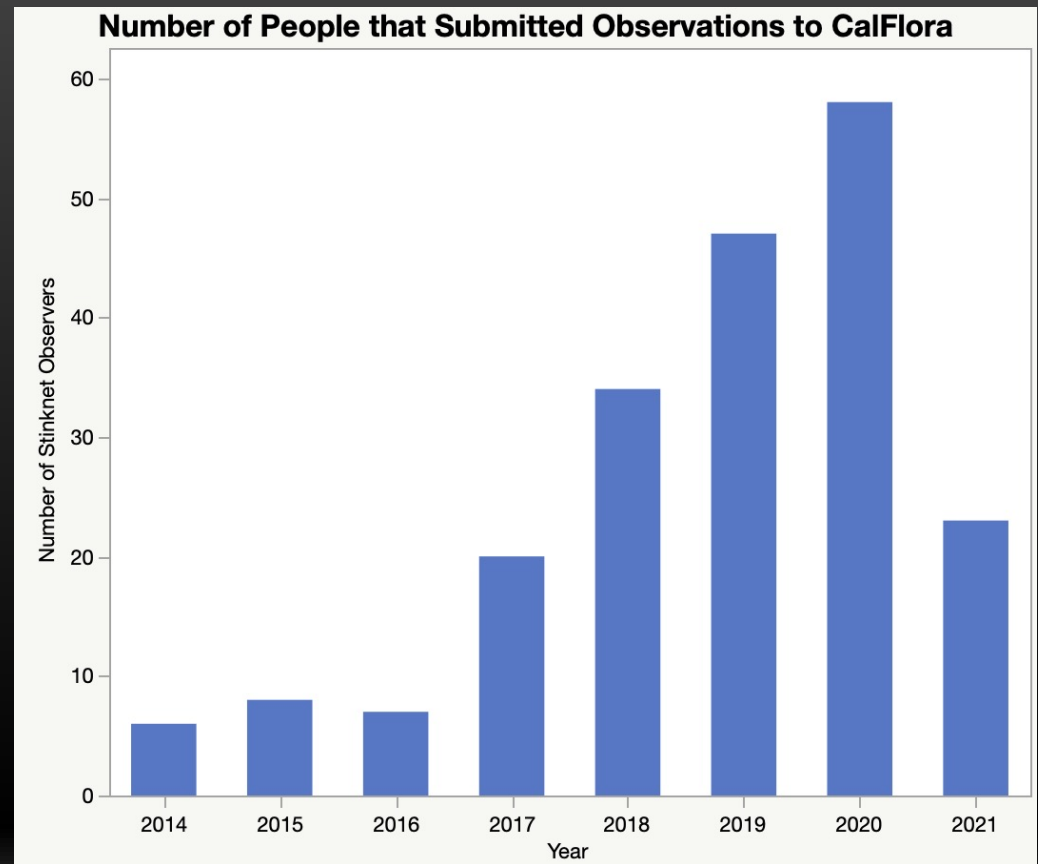
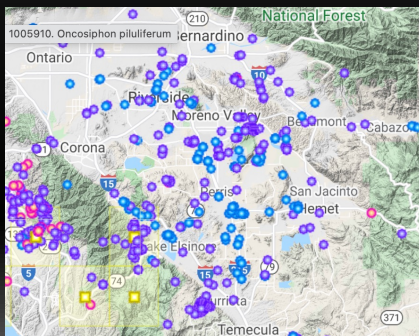
Lesson #4 Be a part of a team

2011 observations



Lesson #4 Be a part of a team

- Number of people reporting stinknet observations in CalFlora



Lesson #5 Learn Many Things

- Crucial things to know:
 - How many weeds do you have on your site?
 - How fast is it spreading?
 - How to control it?
 - How long do the seeds live?
 - What habitats does it invade?

Lesson #5 Learn many things

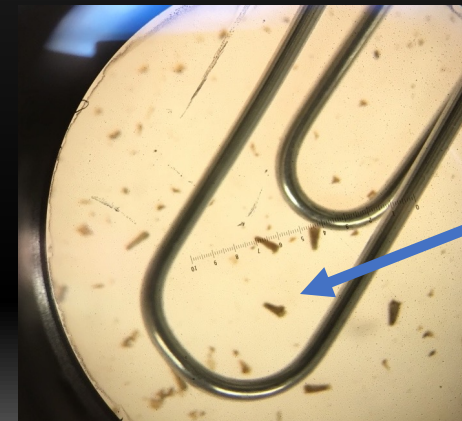
- In 40 years (1981-2021) stinknet starting to spread across SW US
- CA, AZ, NV, and N. Mex - Baja CA N. and Sonora



iNaturalist

Lesson #5 Learn Many Things

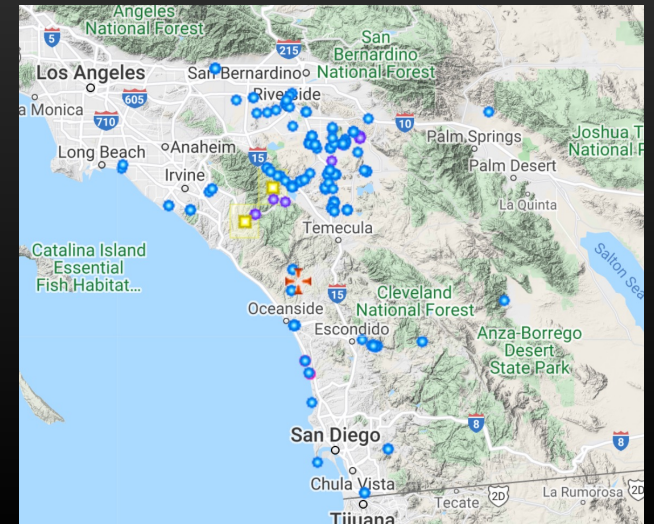
- Stinknet is spreading in a variety of ways
- Local scale - most stinknet seeds fall near the parent plant, but a few travel a few yards to hundred yards or more
- Stinknet seeds can remain on senesced plant for over a year



Seed

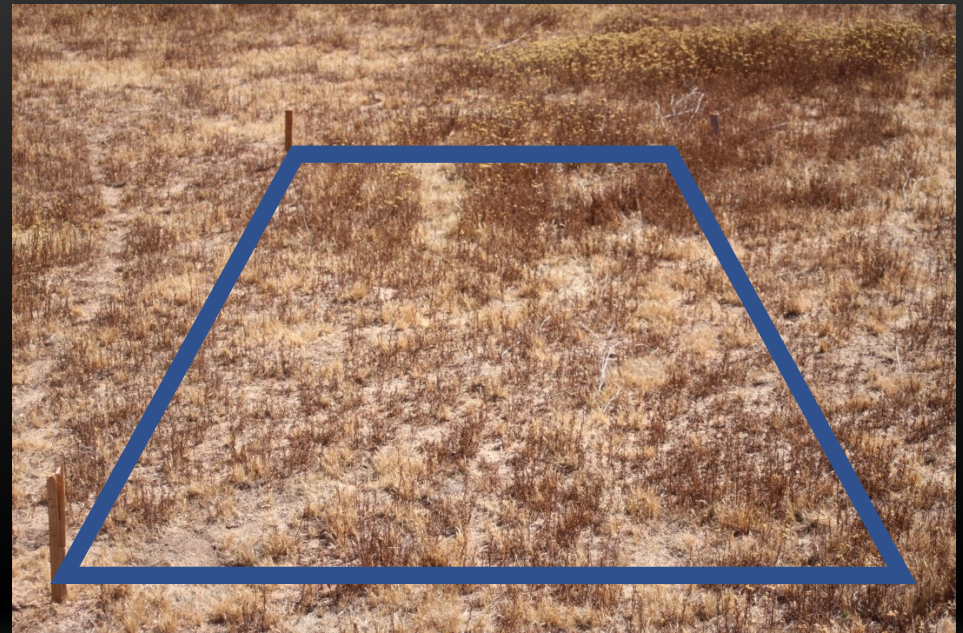
Lesson #5 Learn Many Things

- Medium-Regional scale – By 2000's and 2010's most new stinknet locations were found in new locations a few miles to hundreds of miles from known infestations
- Phoenix, Riverside, Moreno Valley, Escondido
- Long beach, Irvine, Carlsbad, Desert Hot Springs
- People are spreading stinknet!
- Clothes, boots, camping equipment, tires, pets, vehicles



Lesson #6 Become The Expert

- Started herbicide trails in Fall 2014/2015
- Results were atrocious and very informative
- Once stinknet is flowering it is very difficult to control
- Apply treatments before flowering!



Lesson #6 Become The Expert

- With partners herbicide projects continued in 2016, 2017, 2018, 2019, 2020, and 2021
 - UC Riverside - Lorelee Larios, Clarissa Rodriguez
 - San Diego Zoo Safari Park - Charlie de la Rosa, Emily Burson
- We learned: POST (but before flowering) control - glyphosate, Milestone, Capstone (Milestone/Garlon) provide excellent control
- For PRE control - Esplanade, Transline, Dimension+Gallery, Milestone all provide excellent control, and work great when stinknet cover is high
- Reach out to your network of land managers and learn from their mistakes and successes

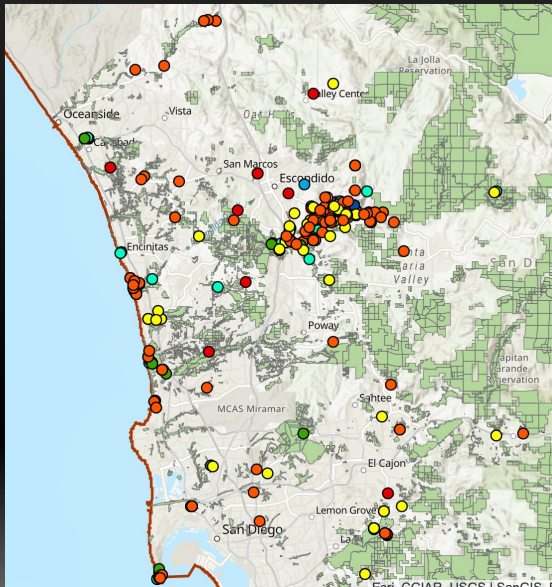
Lesson #7 Listen

- Managers had been saying how difficult stinknet control was both in US and Australia
- Conducted a study of germination in 2017 and 2018
- Stinknet cohorts germinate multiple times each year, 3-4 cohorts from Fall to Spring following each rainstorm (~1 inch)



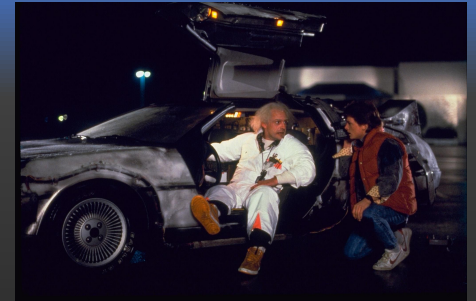
Lesson #8 Don't get buried

- We were seeing stinknet everywhere, San Diego Management and Monitoring Program (SDMMP) couldn't keep up with mapping
- Still kept looking!



Lesson #8 Don't get buried

- Eventually we could see patterns
 - It preferred disturbed areas, but also invaded “natural” habitat
 - Many sites had been spreading for years (EDRR might have worked!)
 - Spreads most often where people can move seeds
 - Some movement is far from people though
-
- Where is it was not growing?
 - Not growing in deep shade, under large shrubs (*Malosma*)



Lesson #9 Predict The Future

- Where is this species going to be in the next 2, 5, 10 and 50 years?
- We know stinknet is spreading, and it spreads quickly, how much has it spread, how much more can it spread?

1981-2021

• 1981



• 2001

• 2011

• 2018

• 2021



1981-2021

- 1981



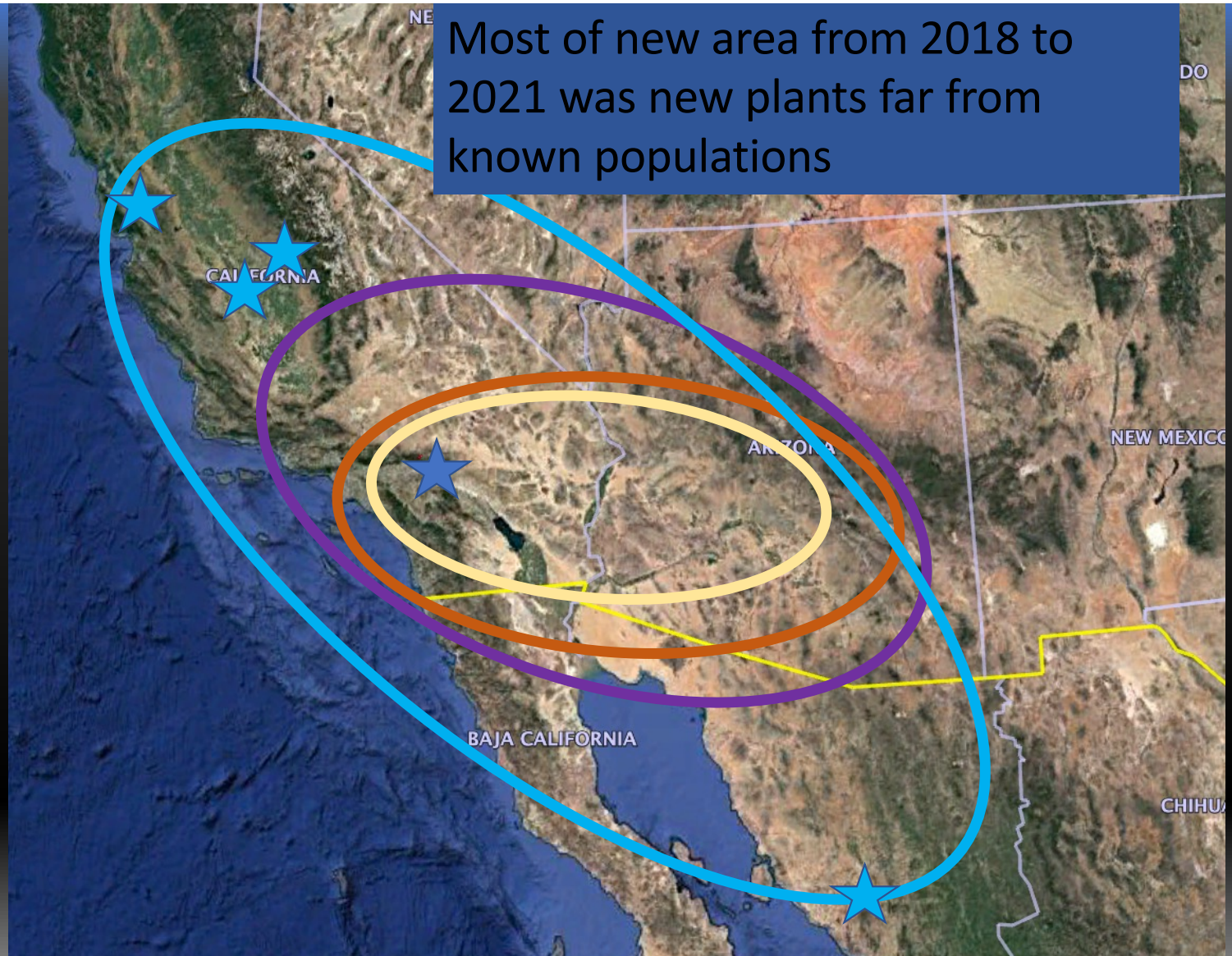
- 2001

- 2011

- 2018

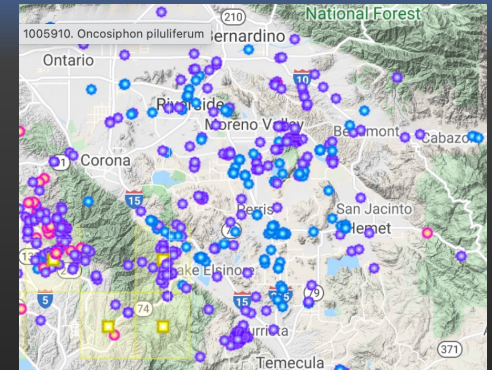
- 2021

Most of new area from 2018 to 2021 was new plants far from known populations



Lesson #9 Predict the Future

- Next 10 years we should see two patterns:
- 1- Filling in areas with and near known populations
- 2- Spread into new areas dozens to hundreds of miles from known sources
- Why not spreading East?
- UT, NM, TX , N. Mexico all have many spring wildflowers in their flora



A close-up photograph of a small, green, branching plant growing in a substrate composed of fine sand and numerous small, white, crystalline mineral grains. The plant has a central stem with several small, rounded, leaf-like structures. The substrate is a mix of light-colored sand and dark, irregular mineral fragments.

Questions?

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