

# **Pest Control Advisor (PCA) Listening Sessions**

B. Grafton-Cardwell, M. Rivera, P. Adams, J. Zaninovitch and Sara Garcia Figuera

Feb 25, Exeter: 10 PCAs, 3 GLs, 1 Farm Advisor

Feb 26, Fallbrook: 8 PCAs, 4 GLs, 1 Farm Advisor

Feb 27, Ventura: 14 PCAs, 2 GLs

## **Introductions**

Status of ACP/HLB (Beth)

## **Discussion**

- Pest status in each region
- What methods/tactics are currently being employed for ACP?
- What's working, what's not?
- Potential solutions
- Where might we need more research?
- What sorts of extension products are needed?

# Statewide Summary of February 2020 PCA listening sessions

## IPM research needs summarized by IPM categories

**Monitoring:** better ACP trap, standardized sampling methods, threshold treatments versus calendar treatments, canine alert follow up

**Biological control:** efficacy of natural enemies, determination of efficacy of biocontrol relative to a chemical control program, control of ants, ground covers that provide insectaries, fungal pathogens

**Chemical control:** efficacy of electrostatic, aerial, aerofan, water volumes, seasonality, rates of oils and other pesticides, pesticide resistance monitoring, organic insecticide combinations, uptake of systemics, secondary pest outbreaks,

**Cultural control:** netting, protectants (kaolin, DE, etc.), barriers, windbreaks, flush control (PGRs, nitrogen), pruning to eliminate Clas, trap crops, fertility and phosphites

**Post harvest:** fumigants to replace spray and move treatments

## Regulatory needs

A bee safe pesticide treatment for bloom

Replace spray and move with ethyl formate, grate or other system

Shift from calendar sprays to ACP density threshold triggers

## Funding needs

Funding source to provide scouts statewide to do standardized sampling for ACP/HLB

# PCA Extension Needs

- Provide a standardized ACP sampling method for PCAs to compare results of different sites.
- Distribute 3D traps for collecting and testing psyllids for CLas
- Provide sources of information for submitting plant and ACP samples for CLas testing
- Provide pictures of trees with HLB symptoms and psyllids photos: both hard copy and web app (preloaded so it doesn't depend on the internet)
- Give PCAs access to real-time scouting data on the web
- Alert PCAs to DATOC website and reports
- Develop demonstration orchard plots for PCAs to observe natural enemy control of ACP and ant management
- Provide field trips from SJV to S. California to observe psyllids
- Develop webinars for training
- Provide details of how ethyl formate treatments will be done and who is responsible
- Statewide training on regional seasonality, concentration and water volume of oil sprays
- Biannual PCA Listening sessions

# SOUTHERN DISTRICT HLB TREATMENT UPDATE

MARCH 26, 2020



# HLB Treatment

| HLB AREA    | TREATMENT DATES      | TOTAL PROPERTIES | PROPERTIES TREATED | REFUSALS | PERCENT COMPLETE | COMMENTS                  |
|-------------|----------------------|------------------|--------------------|----------|------------------|---------------------------|
| Duarte 1    | 3/02 – 3/18/20       | 335              | 206                | 12       | 100%             |                           |
| Montclair 1 | 11/18/19-<br>2/29/20 | 429              | 292                | 5        | 100%             | Pending-<br>Montclair 2-5 |
| Ontario 1   | 1/14-2/29/20         | 469              | 250                | 5        | 100%             | Non-mandatory             |

# HLB Treatment

| HLB AREA            | TREATMENT DATES | TOTAL PROPERTIES | PROPERTIES TREATED | REFUSALS | PERCENT COMPLETE | COMMENTS                      |
|---------------------|-----------------|------------------|--------------------|----------|------------------|-------------------------------|
| Colton 1- 3         | 2/26-3/5/20     | 220              | 125                | 3        | 86%              |                               |
| Santa Ana<br>32 -35 | 3/04 - 3/18/20  | 1,267            | 469                | 17       | 37%              | Pending –<br>Santa Ana 37, 41 |
| Whittier 26         | 1/29 -3/23/20   | 63               | 33                 | 1        | 92%              | Pending- Whittier<br>29-30    |

# Area Wide Treatment

| AREA    | TREATMENT DATES  | TOTAL PROPERTIES | PROPERTIES TREATED | REFUSALS | PERCENT COMPLETE | COMMENTS |
|---------|------------------|------------------|--------------------|----------|------------------|----------|
| Ventura | 12/10/19-3/10/20 | 9,970            | 4,502              | 1,247    | 100%             |          |

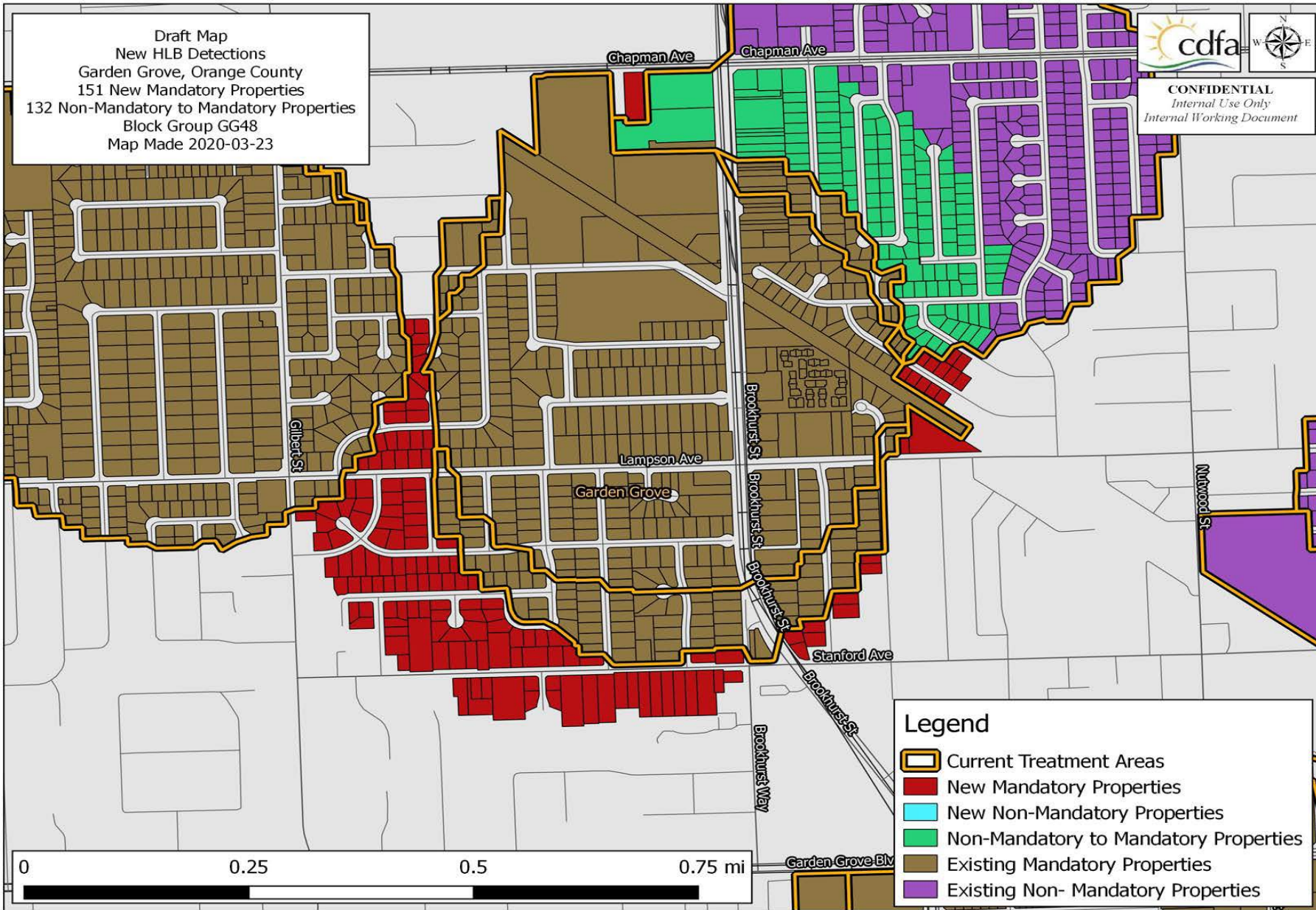
The next cycle of Area Wide treatments will start in July/August.

# Pending HLB Treatment Areas

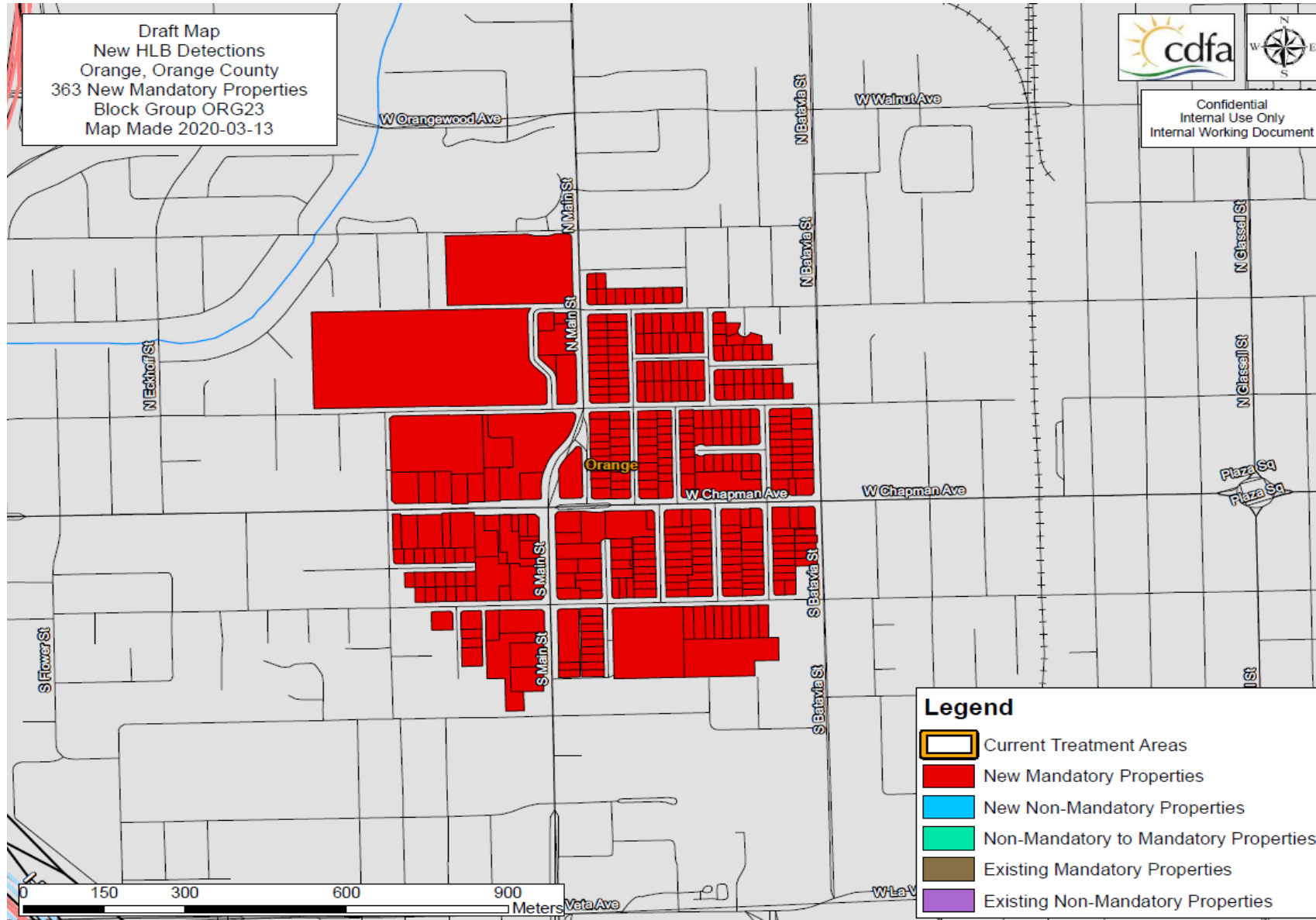
All in-person public meetings were canceled due to COVID-19. Online webinars have been scheduled to accommodate the pending meetings.

| Orange - <b>April 2</b> | Los Angeles- <b>April 7</b> | Riverside- <b>Pending</b> | San Bernardino- <b>Pending</b> |
|-------------------------|-----------------------------|---------------------------|--------------------------------|
| Huntington Beach 6      | La Mirada 1, 2              | Corona 5                  | San Bernardino 1               |
| Anaheim 75, 76          | Pico Rivera 33              |                           | Montclair 2-5                  |
| City of Orange 23, 24   | Whittier 29, 30             |                           |                                |
|                         | Lakewood                    |                           |                                |
|                         |                             |                           |                                |

# Garden Grove 48

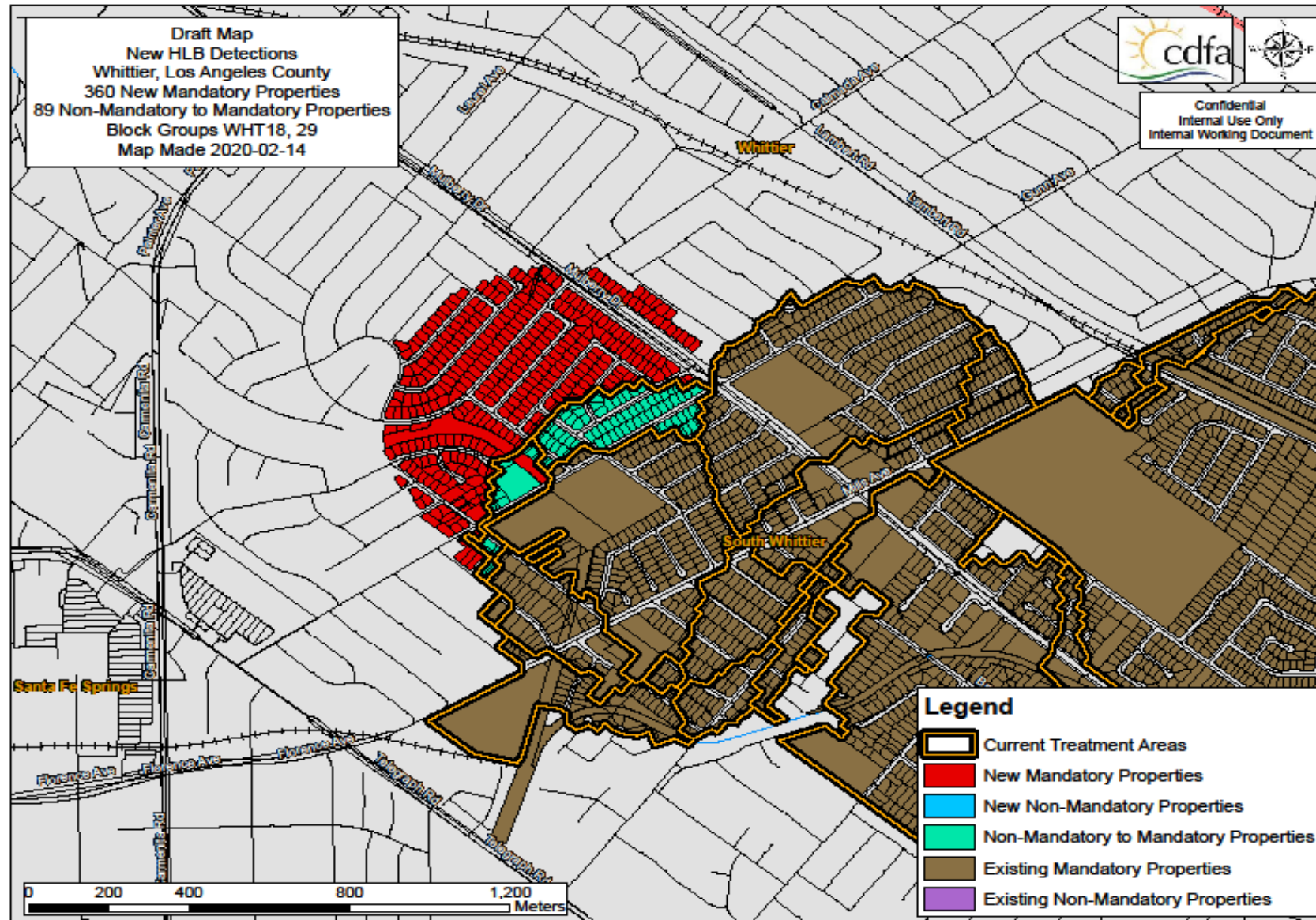


# Orange 23

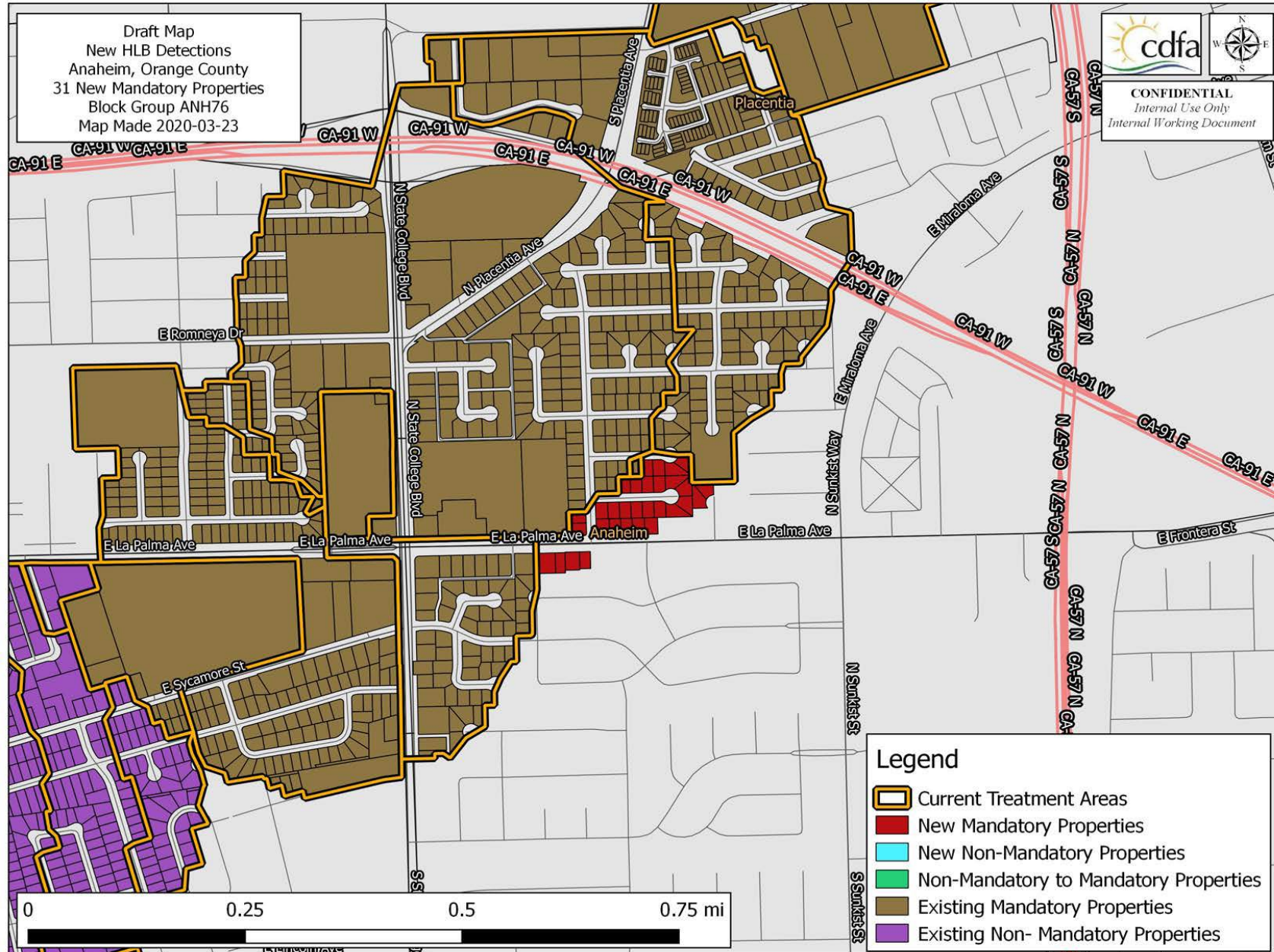




## Whittier 29-30



# Anaheim 76





**County Bulk Citrus Regulatory Activity**  
**July 2019 - January 2020**

| <b>County</b>       | <b>Grower<br/>Inspections</b> | <b>Transporter<br/>Inspections</b> | <b>Packer / Processor<br/>Inspections</b> | <b>Fruit Seller<br/>Inspections</b> | <b>NOVs Issued</b> | <b>NOPAs Issued</b> |
|---------------------|-------------------------------|------------------------------------|---|-------------------------------------|--------------------|---------------------|
| Fresno (*1)         | 0                             | 0                                  | 3   | 0                                   | 0                  | 0                   |
| Imperial            | 38                            | 27                                 | 9   | 0                                   | 2                  | 0                   |
| Kern (*5)           | 0                             | 0                                  | 0   | 0                                   | 0                  | 0                   |
| Kings (*1)          | 0                             | 1                                  | 26  | 0                                   | 0                  | 0                   |
| Los Angeles         | 0                             | 0                                  | 123                                       | 0                                   | 0                  | 0                   |
| Monterey (*1)       | 0                             | 0                                  | 0   | 0                                   | 0                  | 0                   |
| Orange (*3)         | 8                             | 2                                  | 2   | 0                                   | 0                  | 0                   |
| Riverside           | 290                           | 2,853                              | 105                                       | 0                                   | 29                 | 0                   |
| San Bernardino (*1) | 1                             | 1                                  | 2   | 0                                   | 0                  | 0                   |
| San Diego (*1)      | 74                            | 88                                 | 96  | 97                                  | 6                  | 0                   |
| San Luis Obispo     | 23                            | 2                                  | 0   | 0                                   | 0                  | 0                   |
| Santa Barbara       | 4                             | 0                                  | 1   | 0                                   | 0                  | 0                   |
| Tulare              | 0                             | 1,438                              | 39  | 2                                   | 288                | 32                  |
| Ventura (*2)        | 2                             | 85                                 | 4   | 0                                   | 5                  | 1                   |
| <b>Totals</b>       | <b>440</b>                    | <b>4,497</b>                       | <b>410</b>                                | <b>99</b>                           | <b>330</b>         | <b>33</b>           |

(\*#) = number of invoices missing from reporting period



# **Central District Operations Update**

**April 8, 2020**



# Central District Operations Update as of 3/26

- Surveys
  - Citrus Commodity
  - High Risk
- Trapping
  - Detection Trapping
  - County Trapping
  - CASS Grove Trapping
- Treatment
  - Area Wide
  - Monterey



# Central District Operations Update

- Surveys
  - 2020 Citrus Commodity
    - Early March-
    - On-boarding PPA's from PDEP to Citrus/Began training staff (used 2019 maps)

| County | Acres Surveyed | Samples Submitted | Completed STR | Remaining STR |
|--------|----------------|-------------------|---------------|---------------|
| Fresno | 1362*          | 21*               | 14*           | 103           |
| Kern   | 10653*/1914    | 23*/1             | 62*/2         | 10            |
| Kings  | 10*            | 0                 | 3*            | 0             |
| Madera | 0              | 0                 | 0             | 19            |
| Tulare | 2598           | 0                 | 8             | 149           |

\*Work completed by PDEP in 2019



# Central District Operations Update

- Surveys
  - High Risk Survey
    - Training with Magally
    - High Risk folders to So-Cal first (priority), Central Valley next
    - Received folder info 3/25
      - Assembling, organizing, prepping for survey
      - Survey to start beginning of April
        - Covid-19 strategies implemented



# Central District Operations Update

- High Risk Survey  
Cycle 1-2020

| County        | STR Maps | Possible Sites to Survey |
|---------------|----------|--------------------------|
| Fresno        | 121      | 5255                     |
| Kern          | 84       | 2880                     |
| Kings         | 8        | 90                       |
| Madera        | 23       | 270                      |
| Merced        | 2        | 35                       |
| Monterey      | 1        | 25                       |
| San Benito    | 1        | 5                        |
| Santa Barbara | 8        | 150                      |
| Tulare        | 120      | 4070                     |
| Ventura       | 48       | 2175                     |

# Central District Operations Update

- Trapping
  - Traps serviced by CDFA staff

| County | Month | Deployed | Serviced |
|--------|-------|----------|----------|
| Fresno | March | 783      | 553      |
| Madera | March | 518      | 358      |



# Central District Operations Update

- County Trapping
  - As of Feb 2020

| County        | Co Ag<br>office-<br>detection | Co Ag<br>office-<br>delim | CDFA-<br>detection | CDFA-<br>delim | Grove | GWSS in<br>citrus | Total ACP<br>traps |
|---------------|-------------------------------|---------------------------|--------------------|----------------|-------|-------------------|--------------------|
| Butte         | 155                           | 0                         | 0                  | 0              | 0     | 0                 | 155                |
| Contra Costa  | 952                           | 0                         | 0                  | 0              | 0     | 0                 | 952                |
| Colusa        | 50                            | 0                         | 0                  | 0              | 0     | 0                 | 50                 |
| El Dorado     | 49                            | 0                         | 0                  | 0              | 0     | 0                 | 49                 |
| Glenn         | 50                            | 0                         | 0                  | 0              | 0     | 0                 | 50                 |
| Fresno        | 3039                          | 76                        | 774                | 0              | 1038  | 437               | 5364               |
| Kern          | 4119                          | 0                         | 0                  | 0              | 1309  | 1047              | 6475               |
| Kings         | 275                           | 0                         | 0                  | 0              | 15    | 1                 | 291                |
| Lake          | 47                            | 0                         | 0                  | 0              | 0     | 0                 | 47                 |
| Madera        | 0                             | 0                         | 519                | 0              | 176   | 22                | 717                |
| Marin         | 0                             | 0                         | 315                | 0              | 0     | 0                 | 315                |
| Merced        | 619                           | 0                         | 0                  | 0              | 0     | 0                 | 619                |
| Monterey      | 339                           | 96                        | 0                  | 0              | 53    | 0                 | 488                |
| Napa          | 118                           | 0                         | 0                  | 0              | 0     | 0                 | 118                |
| Placer        | 382                           | 0                         | 0                  | 0              | 65    | 0                 | 447                |
| Sacramento    | 1300                          | 179                       | 0                  | 0              | 0     | 0                 | 1479               |
| San Benito    | 410                           | 0                         | 0                  | 0              | 0     | 0                 | 410                |
| San Francisco | 0                             | 0                         | 178                | 0              | 0     | 0                 | 178                |
| San Joaquin   | 658                           | 0                         | 0                  | 0              | 0     | 0                 | 658                |
| San Mateo     | 650                           | 0                         | 0                  | 0              | 0     | 0                 | 650                |
| Santa Clara   | 0                             | 0                         | 1303               | 0              | 0     | 0                 | 1303               |
| SLO           | 1592                          | 271                       | 59                 | 0              | 119   | 0                 | 2041               |
| Solano        | 287                           | 0                         | 0                  | 0              | 0     | 0                 | 287                |
| Sonoma        | 387                           | 0                         | 0                  | 0              | 0     | 0                 | 387                |
| Stanislaus    | 594                           | 0                         | 0                  | 0              | 0     | 0                 | 594                |
| Tehama        | 124                           | 0                         | 0                  | 0              | 0     | 0                 | 124                |
| Tulare        | 2097                          | 113                       | 0                  | 0              | 2435  | 3181              | 7826               |
| Yolo          | 157                           | 0                         | 0                  | 0              | 0     | 0                 | 157                |
| Yuba          | 51                            | 0                         | 0                  | 0              | 0     | 0                 | 51                 |
|               |                               |                           |                    |                |       | <b>Total</b>      | <b>32282</b>       |





# Central District Operations Update

- Grove Trapping

| Grove Trapping  |             |                |                     |             |
|-----------------|-------------|----------------|---------------------|-------------|
| Feb-20          |             |                |                     |             |
| County          | Type        | Traps Serviced | Traps with ACP PDRs | ACP Trapped |
| Fresno          | CPDPC Grove | 1929           | 0                   | 0           |
| Imperial        | CPDPC AW    | 54             | 1                   | 2           |
| Kern            | CPDPC Grove | 2381           | 0                   | 0           |
| Kings           | CPDPC Grove | 29             | 0                   | 0           |
| Madera          | CPDPC Grove | 347            | 0                   | 0           |
| Monterey        | CPDPC Grove | 106            | 0                   | 0           |
| Orange          |             |                |                     |             |
| Placer          | CPDPC Grove | 127            | 0                   | 0           |
| Riverside       | CPDPC AW    | 118            | 11                  | 96          |
| San Benito      |             |                |                     |             |
| San Bernardino  | CPDPC AW    | 72             | 24                  | 110         |
| San Diego       | CPDPC AW    | 40             | 23                  | 206         |
| San Luis Obispo | CPDPC Grove | 228            | 0                   | 0           |
| Santa Barbara   | CPDPC AW    | 34             | 1                   | 2           |
| Tulare          | CPDPC Grove | 4256           | 0                   | 0           |
| Ventura         | CPDPC AW    | 171            | 48                  | 421         |
|                 |             | 9892           | 108                 | 837         |



# Central District Operations Update

- Treatment
  - Area Wide treatment- Ventura

- | Month/<br>Year | Total<br>Properties | Properties<br>Treated | Refusals | Prop. With<br>No Host | No<br>Contact |
|----------------|---------------------|-----------------------|----------|-----------------------|---------------|
| Jan 2020       | 4887                | 2183                  | 554      | 2001                  | 58            |
| Feb 2020       | 3572                | 1807                  | 494      | 1158                  | 51            |
| March<br>2020  | 349                 | 0                     | 10       | 323                   | 16            |
| 2020<br>Totals | 8808                | 3990                  | 1058     | 3482                  | 125           |

- PMA's 4, 5, 6, 7 and 12 are reported to be at 90% participation



# Central District Operations Update

- Monterey
  - No active treatments
    - Treatment (Tempo & Merit) was conducted Dec 2018 to March 2019
    - Tempo only treatment was conducted Sept & Oct 2019
    - No new trap finds since October 2019

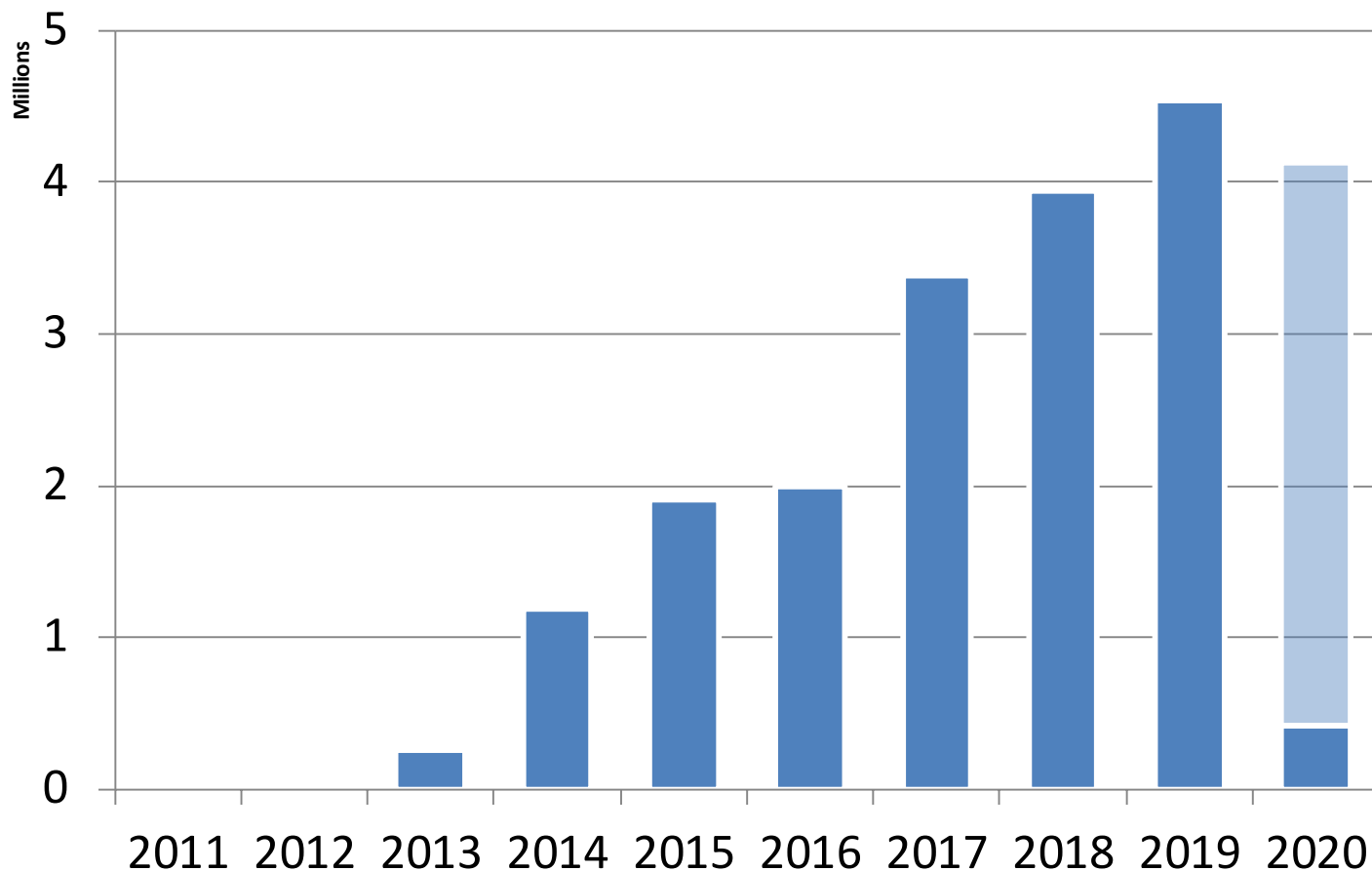
# Asian Citrus Psyllid Biocontrol Update



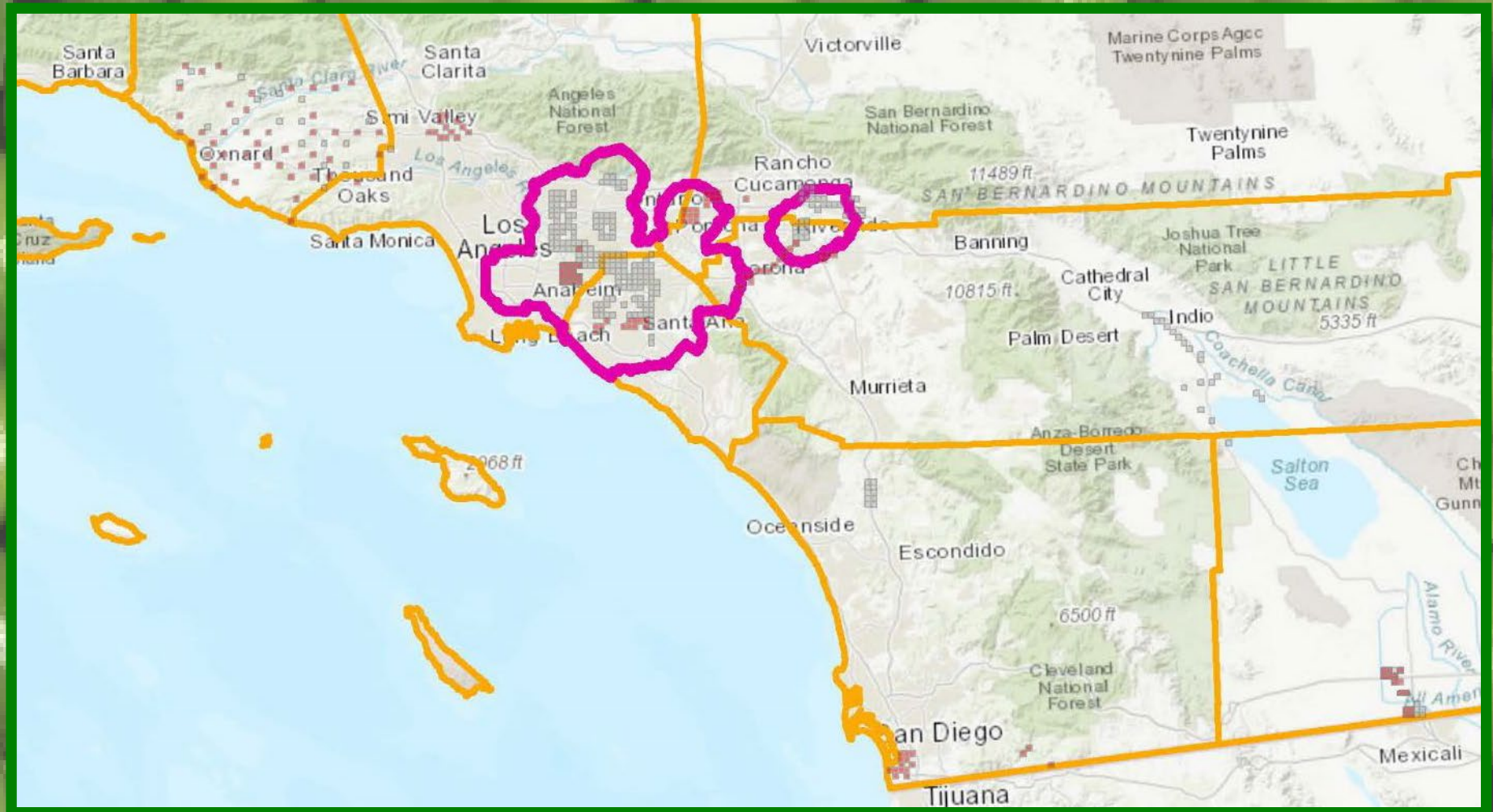
California Department of Food and Agriculture  
March 2020

# Released ACP Biocontrol Agents

**# AGENTS RELEASED**



# Biological Control Agent Release Areas



# Biological Control Agent Releases

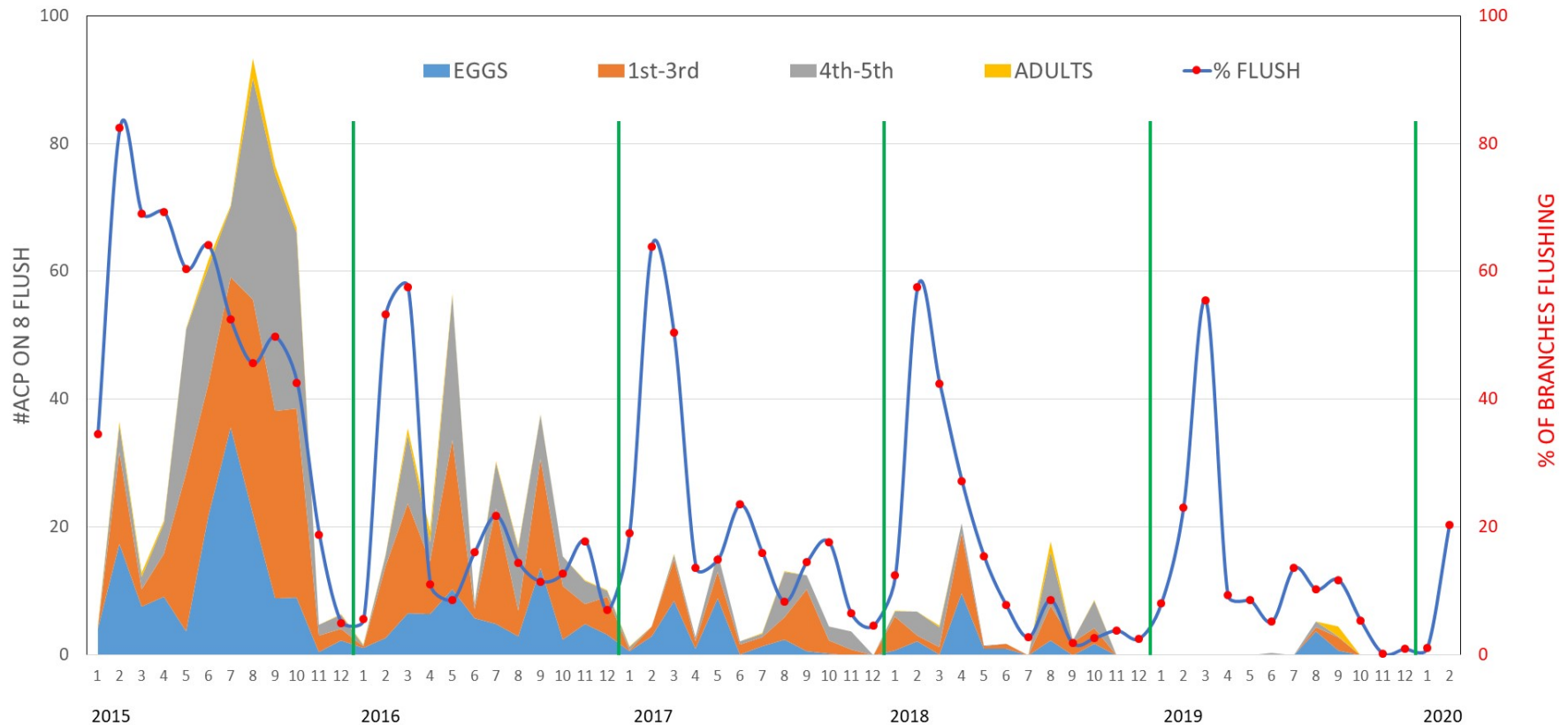
## December 2011 – February 2020

| County          | Releases, 2020                |                                    | Releases 2011-2019            |                                    |
|-----------------|-------------------------------|------------------------------------|-------------------------------|------------------------------------|
|                 | <i>T. radiata</i><br>Released | <i>D. aligarhensis</i><br>Released | Tamarixia<br>Released         | <i>D. aligarhensis</i><br>Released |
| Imperial        | 21,700                        | 0                                  | 386,054                       | 10,295                             |
| Los Angeles     | 106,800                       | 0                                  | 4,847,043                     | 107,734                            |
| Orange          | 66,000                        | 0                                  | 3,184,934                     | 71,179                             |
| Riverside       | 46,156                        | 0                                  | 2,810,447                     | 127,739                            |
| San Bernardino  | 34,400                        | 0                                  | 1,255,538                     | 57,252                             |
| San Diego       | 22,400                        | 0                                  | 2,221,772                     | 86,403                             |
| Ventura         | 52,000                        | 0                                  | 1,329,021                     | 16,830                             |
| Santa Barbara   | 0                             | 0                                  | 150,082                       | 12,012                             |
| Kern            | 0                             | 0                                  | 126,309                       | 0                                  |
| Santa Clara     | 0                             | 0                                  | 33,637                        | 0                                  |
| Placer          | 0                             | 0                                  | 3,400                         | 0                                  |
| San Luis Obispo | 0                             | 0                                  | 105,500                       | 0                                  |
| Tulare          | 0                             | 0                                  | 36,000                        | 0                                  |
| Monterey        | 0                             | 0                                  | 14,400                        | 0                                  |
| Arizona         | 6,000                         | 0                                  | 90,800                        | 0                                  |
| Mexico          | 63,000                        | 0                                  | 117,000                       | 0                                  |
| TOTAL           | 418,456                       | 0                                  | 16,711,937                    | 489,444                            |
|                 | TOTAL (2019): 418,456         |                                    | TOTAL (2011-2019): 17,201,381 |                                    |



# Monitoring Results

## January 2015 – November 2020





# Statewide GL Coordinator Update 4/8/20

## GL Web Meeting 3/25/20

### 25+

At the meeting we discussed the 25+ citrus tree properties, how do we communicate with them. A recent survey by NST showed at the last CPDPC Meeting that the 25+ properties accounted for 1/3 of the trees in these residential areas, but 3% of the growers. The GLs discussed how difficult and how much of their time is required to find and communicate with them. CDFA crews find a significant number of the total, when they are doing the HLB or ACP surveys. NST's survey and questionnaire showed that their opinions were changed little by the messaging used. We are working on how to better identify these growers and how to motivate them to treat.

It raises the question of whether this is an 80/20 problem, where 80% of your time is spent to achieve <20% of your goal. I think we should discuss what we do with them in each situation. PCDs can include them as commercial growers and assess them. This might make them decide whether to treat or cut down some trees to be 24 or less. But this raises the question of what we do with these if they are outside the 400-meter buffers near commercial groves or outside the 400-meter treatment areas around HLB or ACP responses. If they are in the middle of LA or other residential areas, away from commercial groves, do we care anymore than any other residential citrus property? We need parameters for where we should do more than just inform them of the problem and the timing of the commercial treatments near them.

## Mapping/GIS

The GLs reviewed the maps and owner/operator information that we have and what we want/need. Victoria reported that a working group is reviewing these assets to see gaps and any possible duplications. The GLs in the area-wide treatment portion of the State report that they get good cooperation from the CACs on permits and grower locations.

## AB5

Victoria discussed the GL positions and the review by the legal staff to see if we, as contractors meet the exemptions of the law or if a change will be required in the contract or if the positions need to be State employees. The GLs agreed to review the law and provide information to help Victoria and Legal to find a solution. Until then, the SD GL will remain unfilled.

## Winter Treatment Statistics

Fortunately, things have stayed quiet in the San Joaquin Valley and San Luis Obispo.

The Area-wide Treatment Counties are mostly still tallying their percentages and I will have a full report at Meeting time.

## Neglected/Abandoned Groves

I will have update figures for the Meeting.

| County          | BOS<br>Sup<br>(Y/N) | Co<br>Coun<br>Sup<br>(Y/N) | #Groves<br>Report'd | #Groves<br>Confrmd<br>N/A | Total<br>Acs (100<br>trees/ac)<br>Confrmd | #owners<br>contactd | #1st<br>Letrs | #2nd<br>Letrs | #3rd<br>Letrs | #Heard   | Hears<br>won | #Hears<br>lost | Groves<br>Remvd | Total<br>Acres<br>Remvd | #Groves<br>Rem'd | Acres<br>Rem'd | #Groves<br>Pndg | Total<br>Acres<br>Pndg |
|-----------------|---------------------|----------------------------|---------------------|---------------------------|---|---------------------|---------------|---------------|---------------|----------|--------------|----------------|-----------------|-------------------------|------------------|----------------|-----------------|------------------------|
| Fresno          |                     |                            |                     |                           |   |                     |               |               |               |          |              |                |                 |                         |                  |                |                 |                        |
| Kern            | Y                   | Y                          |                     |                           |   |                     |               |               |               |          |              |                |                 |                         |                  |                |                 |                        |
| Madera          |                     |                            |                     |                           |   |                     |               |               |               |          |              |                |                 |                         |                  |                |                 |                        |
| SLO             | Y                   | Y                          |                     |                           |   |                     |               |               |               |          |              |                |                 |                         |                  |                |                 |                        |
| Tulare          | Y                   | Y                          | 88                  | 88                        | 1148                                      | 88                  | 44            |               |               | 1        | 1            | 0              | 66              | 908                     | 9                | 79             | 13              | 161                    |
| <b>Subtotal</b> |                     |                            | <b>88</b>           | <b>88</b>                 | <b>1148</b>                               | <b>88</b>           | <b>44</b>     |               |               | <b>1</b> | <b>1</b>     | <b>0</b>       | <b>66</b>       | <b>908</b>              | <b>9</b>         | <b>79</b>      | <b>13</b>       | <b>161</b>             |
| Imperial        | Y                   | Y                          | 1                   | 1                         | 6   | 1                   |               |               |               |          |              |                | 1               | 6                       |                  |                |                 |                        |
| LA              |                     |                            |                     |                           |   |                     |               |               |               |          |              |                |                 |                         |                  |                |                 |                        |
| OC              |                     |                            |                     |                           |   |                     |               |               |               |          |              |                |                 |                         |                  |                |                 |                        |
| Riverside       | Y                   | Y                          | 92                  |                           | 264.81                                    | 43                  | 43            | 43            | 11            |          |              |                | 22              |                         |                  |                | 35              |                        |
| San Brdo        |                     |                            |                     |                           |   |                     |               |               |               |          |              |                |                 |                         |                  |                |                 |                        |
| SD              | Y                   | Y                          | 108                 | 61                        | 1693                                      | 61                  | 39            | 28            | 24            |          |              |                | 37              | 774                     |                  | 71             | 919             |                        |
| Sta Barb        |                     |                            |                     |                           |   |                     |               |               |               |          |              |                |                 |                         |                  |                |                 |                        |
| Ventura         | Y                   | Y                          |                     |                           |   |                     |               |               |               |          |              |                |                 |                         |                  |                |                 |                        |
| <b>Subtotal</b> |                     |                            | <b>108</b>          | <b>62</b>                 | <b>1963.81</b>                            | <b>105</b>          | <b>82</b>     | <b>71</b>     | <b>35</b>     | <b>0</b> | <b>0</b>     | <b>0</b>       | <b>60</b>       | <b>780</b>              | <b>0</b>         | <b>71</b>      | <b>954</b>      | <b>0</b>               |
| <b>Total</b>    |                     |                            | <b>289</b>          | <b>150</b>                | <b>3111.81</b>                            | <b>193</b>          | <b>126</b>    | <b>71</b>     | <b>35</b>     | <b>1</b> | <b>1</b>     | <b>0</b>       | <b>126</b>      | <b>1688</b>             | <b>9</b>         | <b>150</b>     | <b>967</b>      | <b>161</b>             |



# Data Analysis and Tactical Operations Center (DATOC)

**“Evidence-based criteria for reducing the delimitation  
radius around Clas-positive trees in Southern California”**

*CPDPC Operations Subcommittee  
April 8, 2020*

*Brianna McGuire, Holly Deniston-Sheets, Neil McRoberts*

# Background

- Before summer 2018, 800 m delimitation zone around HLB+ trees

## Activities in delim zone:

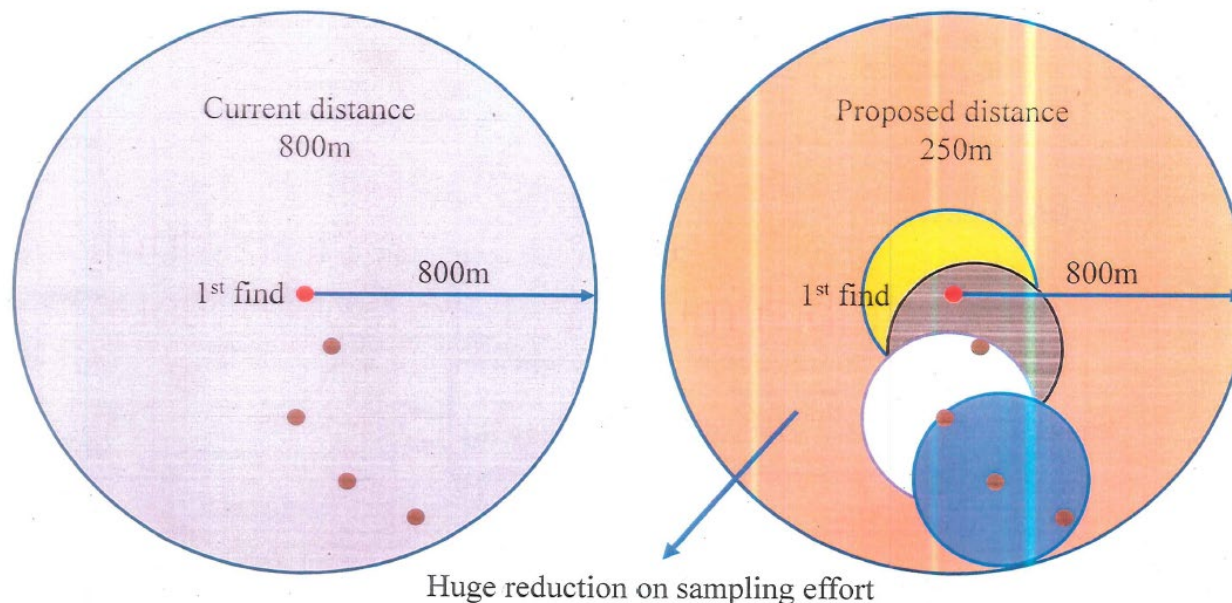
- Tissue samples collected from all hosts (quadrant sampling for find sites & adjacents)
- All ACP collected
- All hosts treated with a foliar and a systemic insecticide (generally Tempo and Merit)
  - Subsequent annual applications (if psyllids are present)

# Background

- Summer 2018, change to 400 m based on distribution and probability of finding positive trees

## Suitable delimited distance (reduction from 800 to 250m radii)

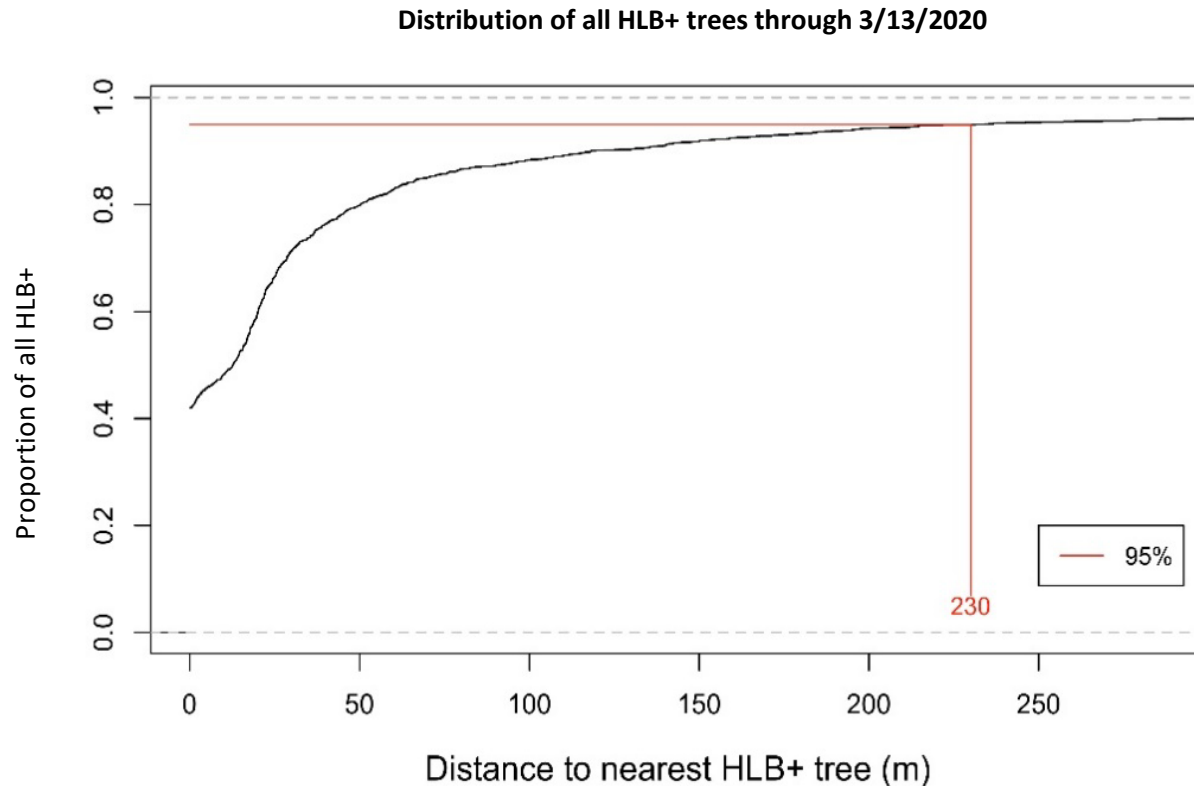
Example: Imagining there are only 5 HLB+ locations within the 800m delimited survey radius  
Reduce radius to 250m



Source: presentation by Dr. Tim Gottwald to the Science Subcommittee July 10, 2018

# Current Situation

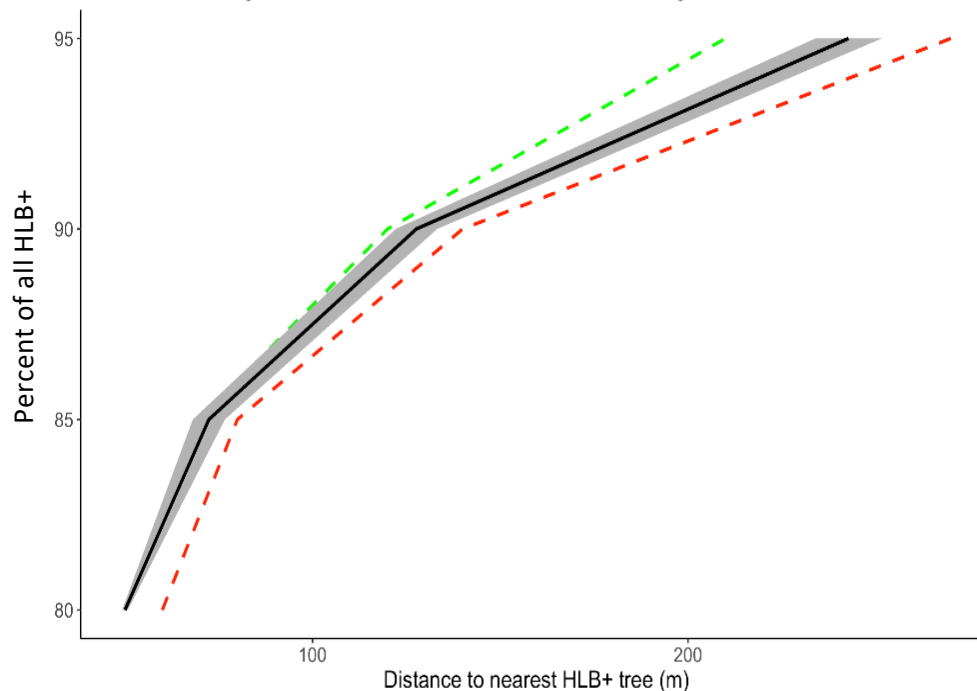
- 95% of all HLB+ trees are within 230 m of another HLB+ tree (~760 ft)
- Distribution of HLB+ trees near other HLB+ trees seems relatively stable



# Validation

- Randomized the detection order 500 times.
- Reanalyzed the first 95% of the data for each new sequence
- The distance needed to find 95% of all positive trees stayed between 210 and 270m in all randomizations

In 500 randomly ordered runs, once 95% of the finds (1763 trees) are analyzed the average distance to find 95% of nearest neighbors is 243 m +/- 9 m



- *Green = min (210m)*
- *Red = max (270m)*
- *Black = average (243m)*
- *Grey = error*

# Recommendation

- Reduce survey radius to 300 m
- Consider maintaining 400 m insecticide treatment radius
- Redirect labour resources to other priorities

| Radius (m) | Area (km <sup>2</sup> ) | Reduction in area/workload | Detected Infection |
|------------|-------------------------|----------------------------|--------------------|
| 400        | 0.50                    | -                          | 97.5%              |
| 350        | 0.39                    | 23%                        | 96.9%              |
| 300        | 0.28                    | 44%                        | 96.0%              |
| 270        | 0.23                    | 54%                        | 95.6%              |
| 250        | 0.18                    | 61%                        | 95%                |



# Additional Data/Considerations

## Trees & Labor

- ~1,048 trees found since 250 m info presented July 10, 2018
- Almost 95% of those were  $\leq 250\text{m}$  from another HLB+ tree, meaning we only found about 56 trees in the last ~1.5 years further than 250m.
  - ~40% of survey labor (in terms of area covered) found 95% of all the trees,
  - The majority of the survey labor only found 5%.

# Additional Data/Considerations

## **ACP Distribution**

- 90% of all Clas+ ACP samples have been found within 400 m of an HLB+ tree, but only 4 were between 300 and 400 m.
  - Of these, only 2 could have been from delimitation surveys based on confirmation/detection dates

# Data Department Update

Rick Dunn

CRB Director of Data and Information Management

4/8/2020

## Data Management Department Activity,

April 8, 2020

Richard Dunn - Data, Information & Management Director

### UCKAC GIS Facility

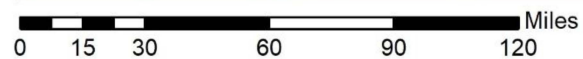
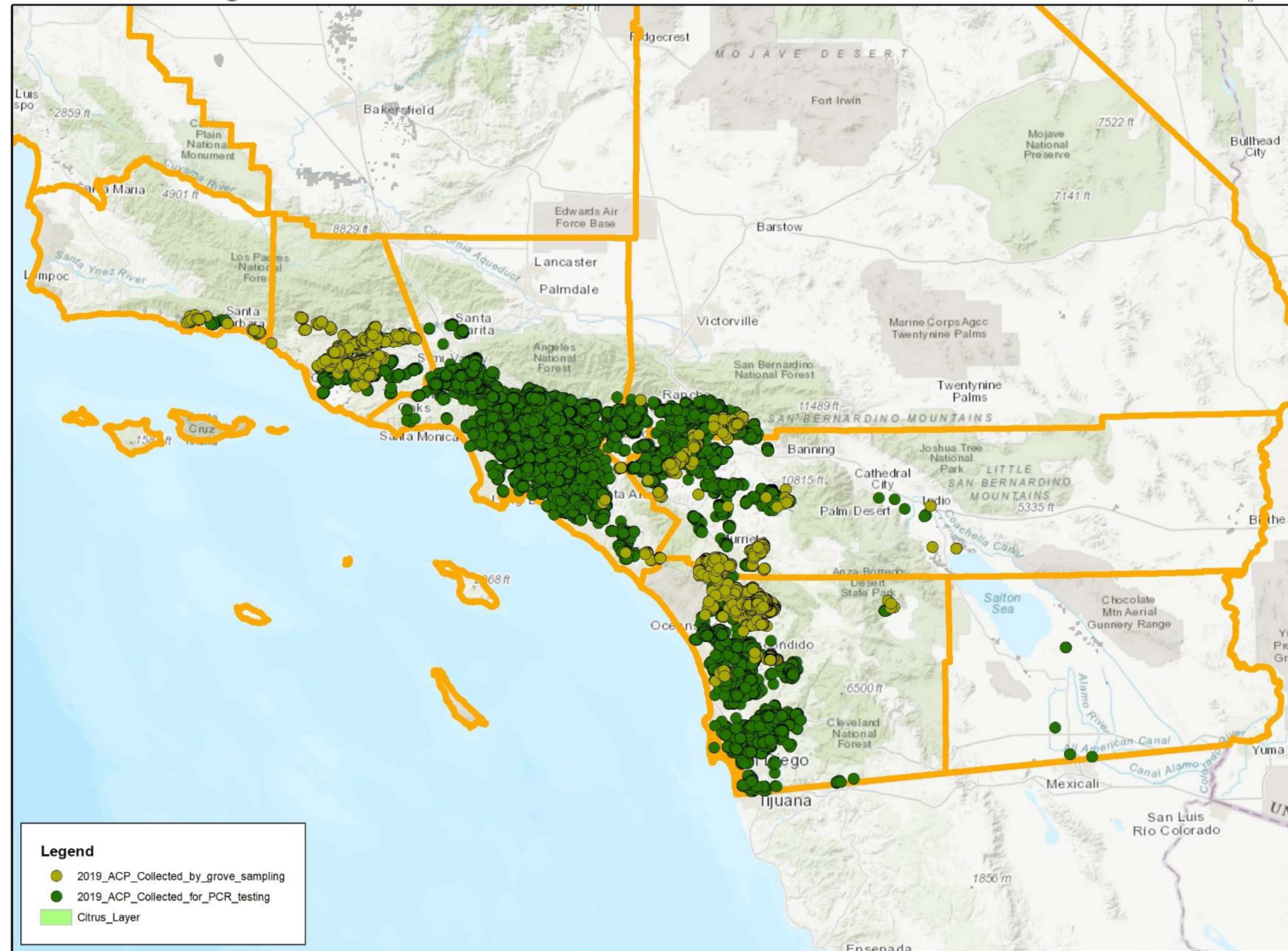
- Robert Johnson continues to assist with Statewide Citrus Layer maintenance and keeping the UCANR interactive web map updated with ACP, Biocontrol, CLas+ACP, and HLB detection data. <http://ucanr.edu/acpmap>

### CRB Data Department

- Director is supporting Psyllid Management Area group activities and regional ACP / HLB Task Force groups in various counties with mapping support services. Revising the Statewide Commercial Citrus Layer as information is received. San Diego and Imperial counties completed. Riverside county is in progress. Researching modern handheld hardware and software to replace the NOMAD data collection system. Revised presentation on ACP sample collection effort and CLas+ACP detection to include all data from 2019.
- GIS Analyst Nancy Ying is conducting routine data scrubbing, quality control, and map production tasks.
- DATOC Coordinator Holly Deniston-Sheets is updating content on both the public and restricted DATOC websites as well as facilitating the expert panel as they address requests for analysis.
- Staff continue to support the CPDPP commercial grove trapping / sampling program. Supplying trappers with individualized GIS Trapsite and Samplesite layers updated weekly for use on their NOMADs. We produce and distribute ACP / HLB detection overview maps, PDR 800M maps, Biocontrol I Workgroup activity maps, CPDPP Trapping progress maps, CPDPP Sampling progress maps, Trapping catch per day maps, Sampling close-up maps, and ArcGIS Online detection / collection heat maps, as well as monthly summary data, ACP situation data, and statistical reports.



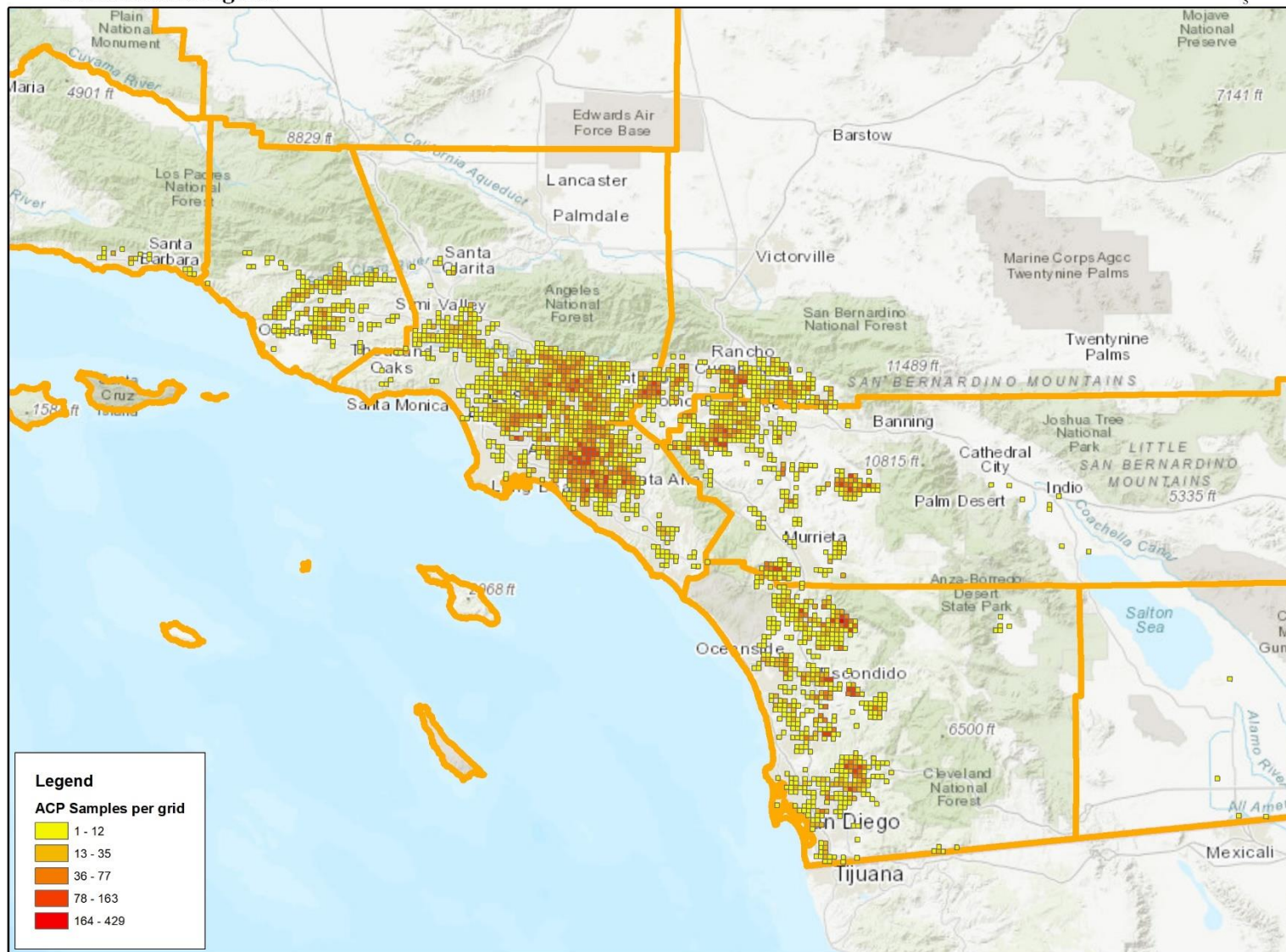
# 2019 Suspect ACP Collections Southern California 1/1 - 12/31/2019





## ACP Samples Collected for PCR testing in 2019

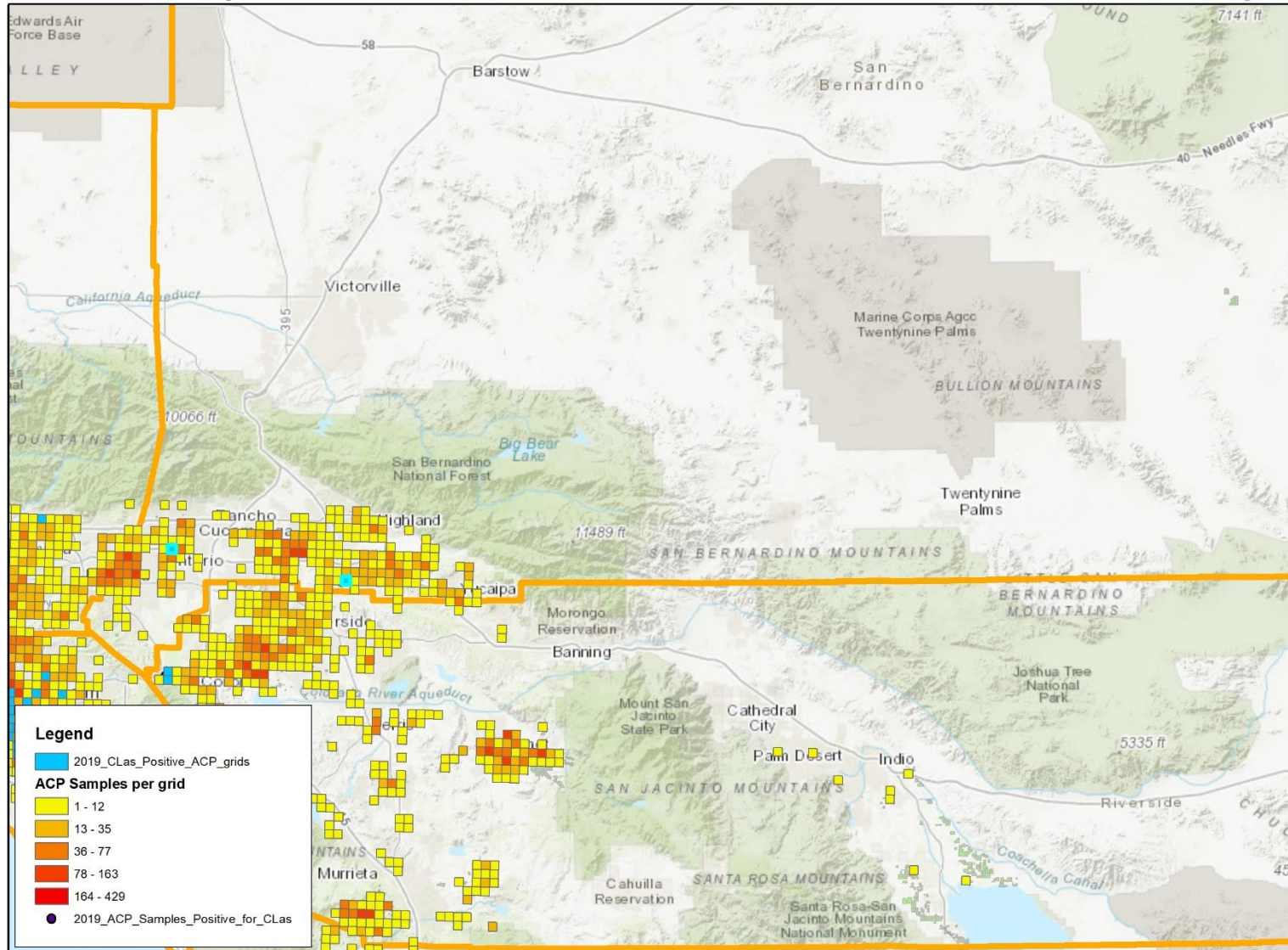
36,493 total



Note that this presentation does not depict the 19 suspect ACP samples collected in Santa Clara County and 57 collected in Monterey County in 2019. Those all tested negative for the CLas bacteria.



## Suspect ACP Samples Collected for PCR testing in 2019 3362 in San Bernardino County, 2 positive for CLas

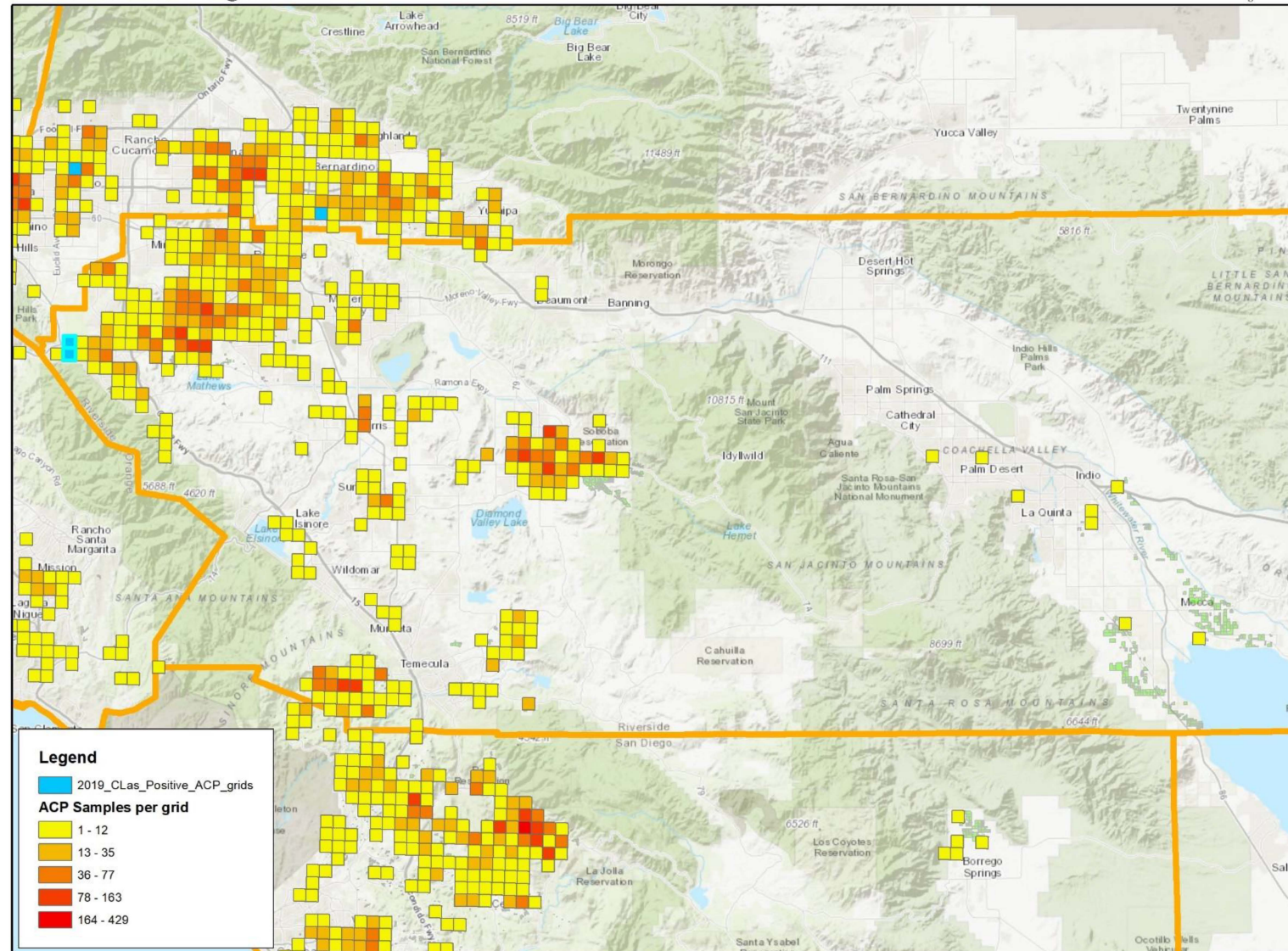


0 5 10 20 30 40 Miles

RADunn 2/25/2020

Blue grids contained CLas+ACP.  
Highlighted grids fall within the county indicated.

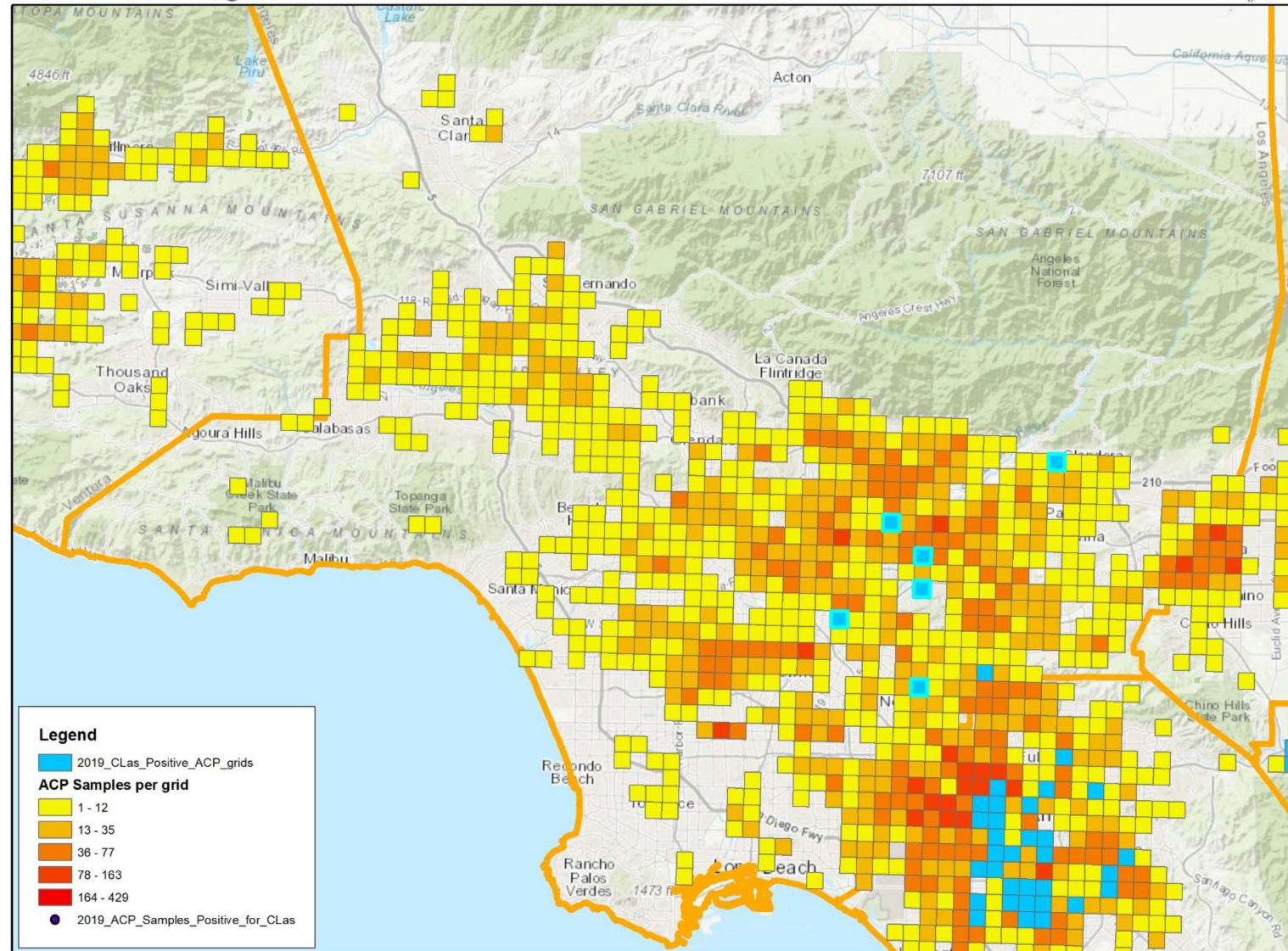
# Suspect ACP Samples Collected for PCR testing in 2019 5,296 in Riverside County, 9 positive for CLAs



0 5 10 20 30 40 Miles



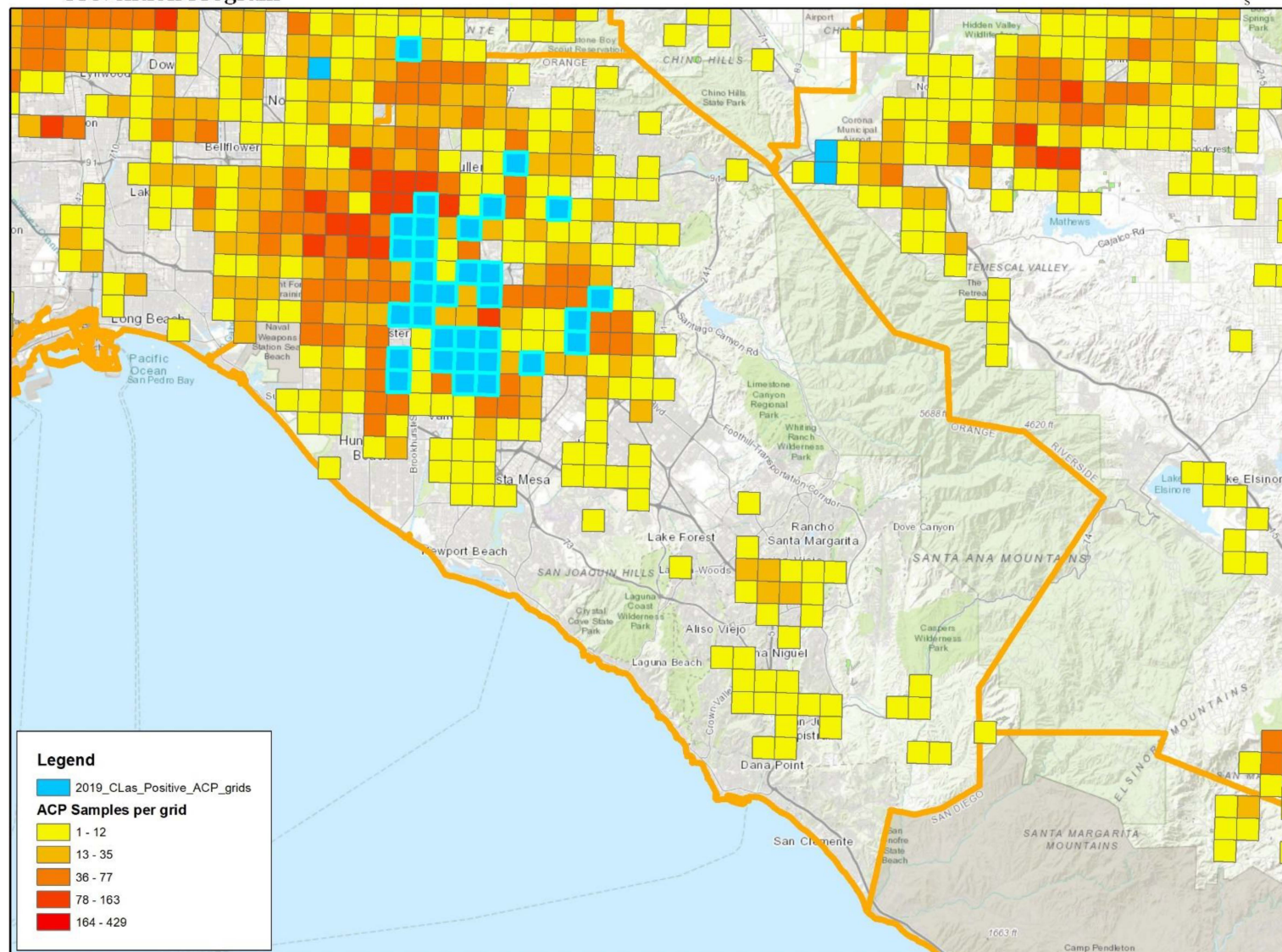
# Suspect ACP Samples Collected for PCR testing in 2019 11,011 in Los Angeles County, 8 positive for CLas



0 3.75 7.5 15 22.5 30 Miles



# Suspect ACP Samples Collected for PCR testing in 2019 7,852 in Orange County, 56 positive for CLAs



0 2.75 5.5 11 16.5 22 Miles



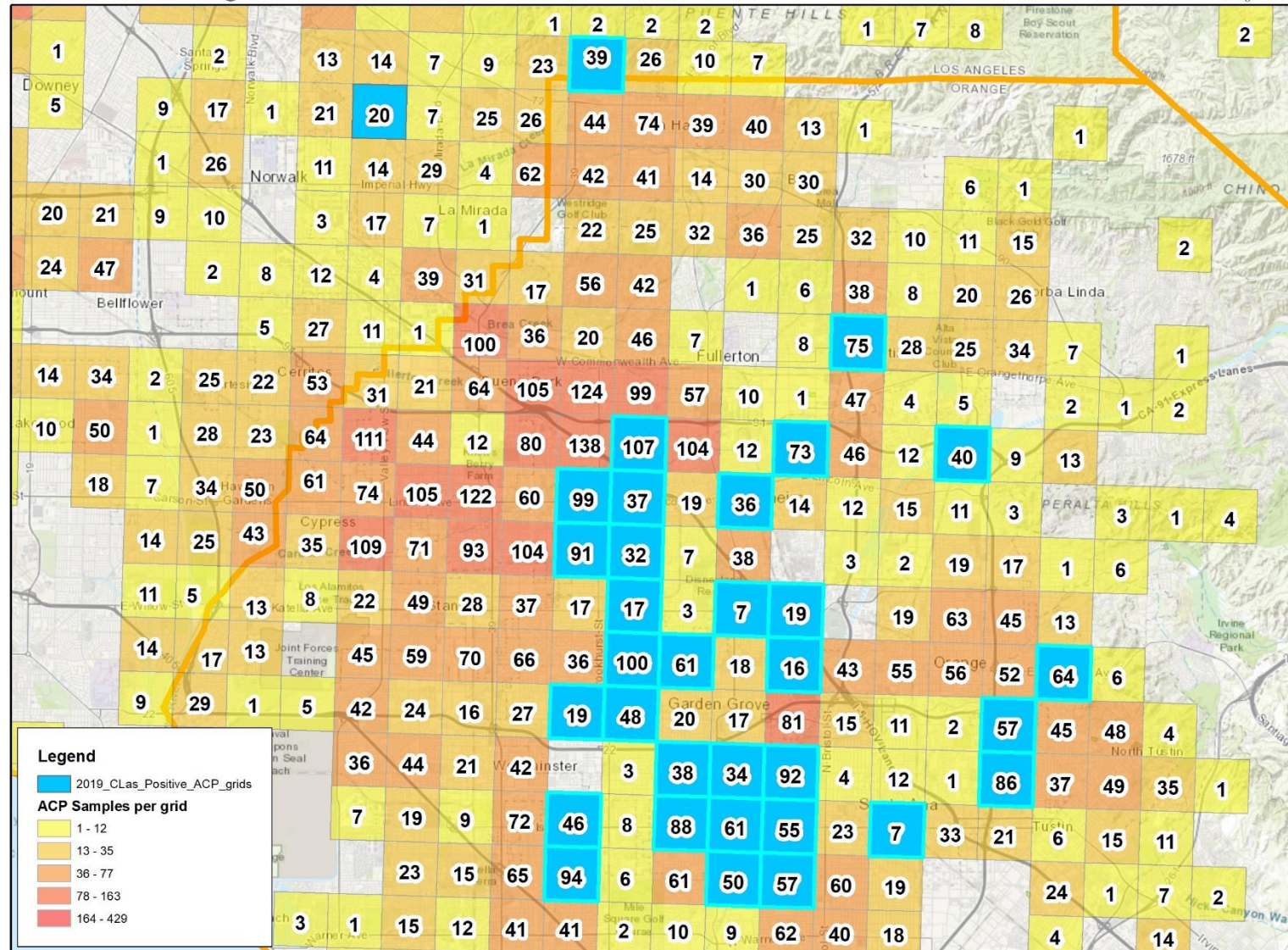


Citrus Pest & Disease  
Prevention Program

# Suspect ACP Samples Collected for PCR testing in 2019

## Orange County

56 samples positive for CLas



This slide labels the number of suspect ACP samples collected in each grid.

0 1 2 4 6 8 Miles

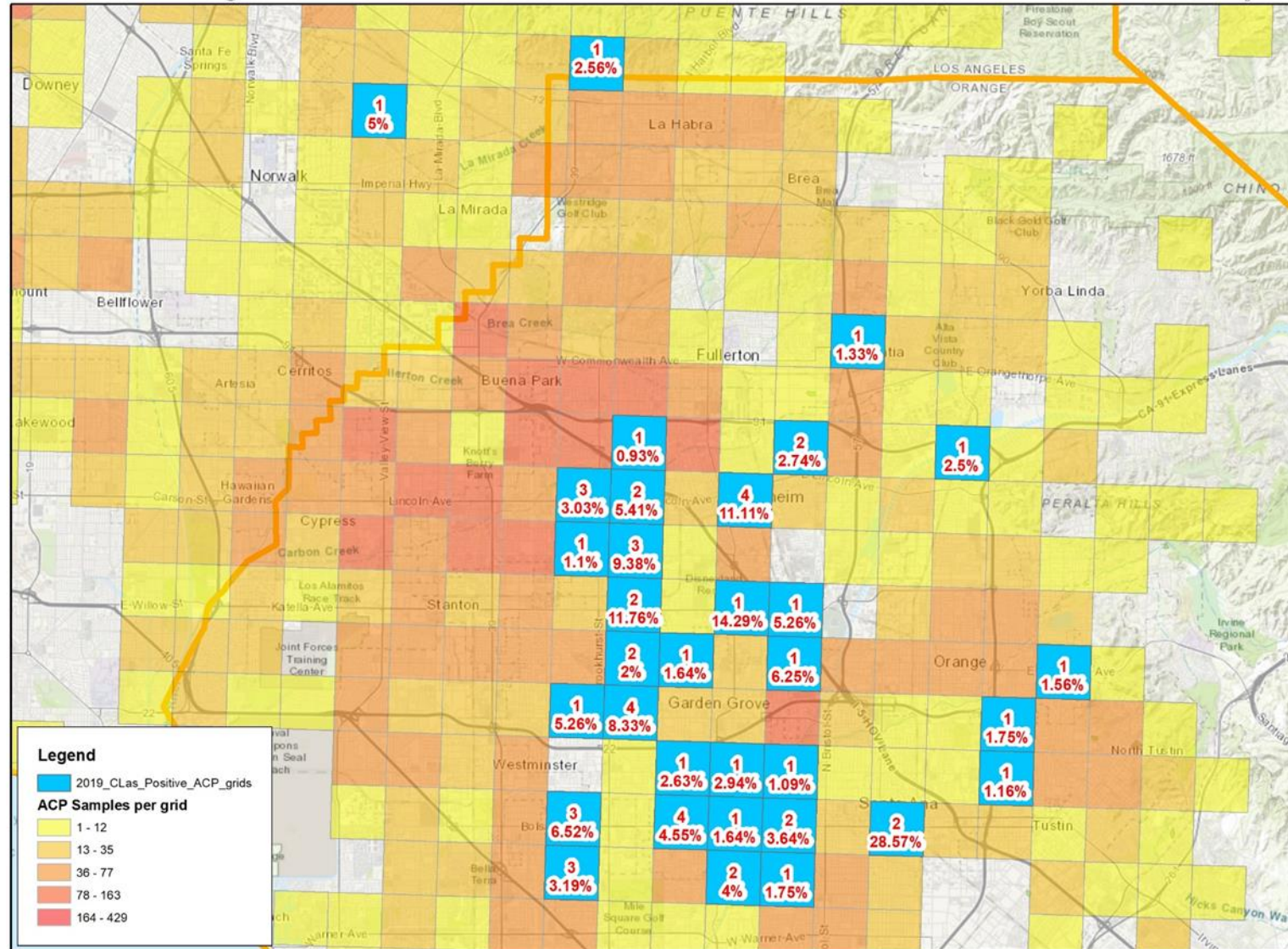
RADunn 2/27/2020



# Suspect ACP Samples Collected for PCR testing in 2019

## Orange County

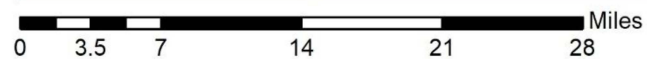
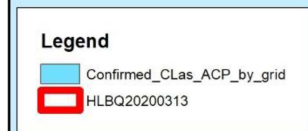
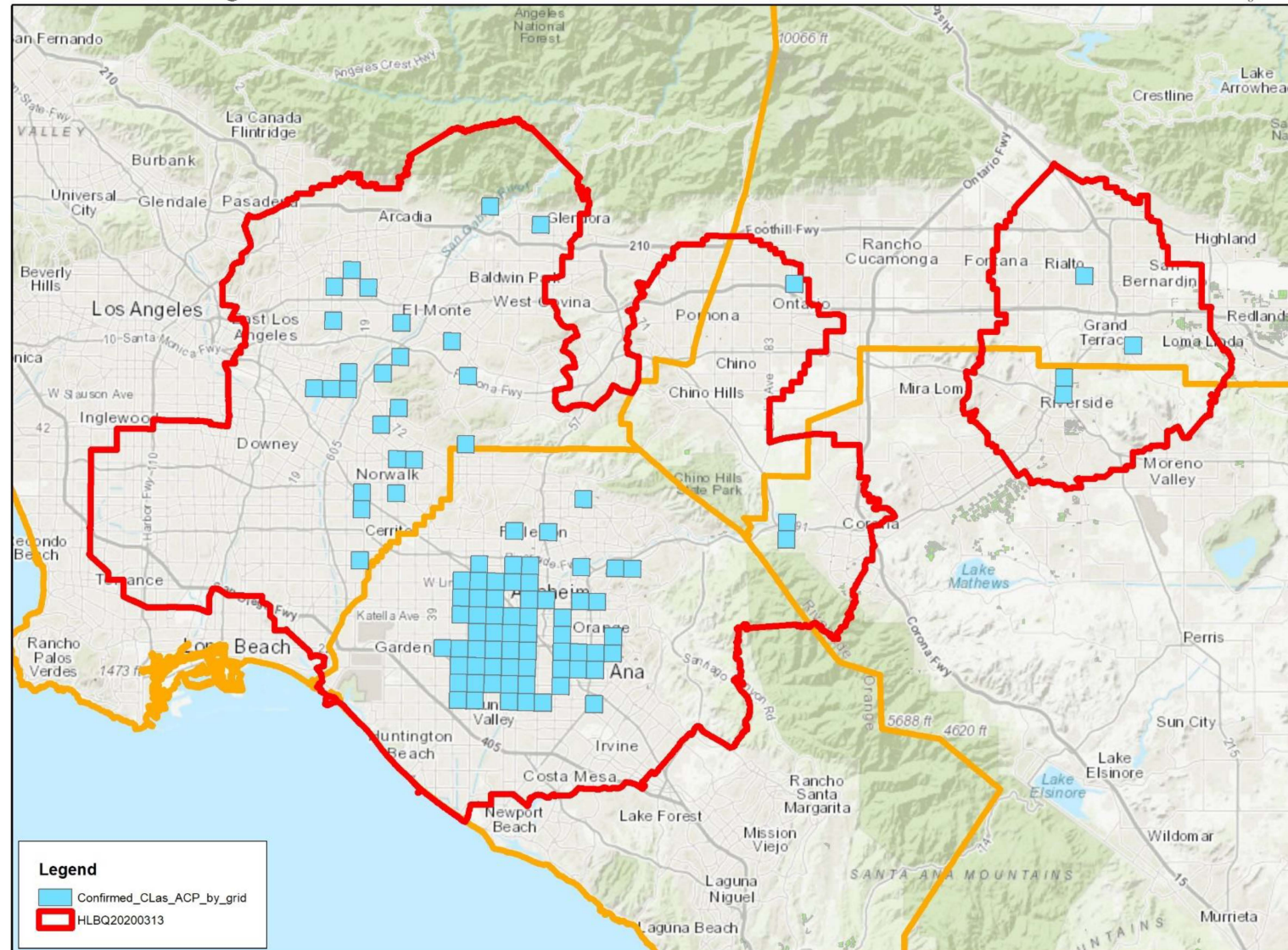
### 56 samples positive for CLas



This slide labels the number and percentage of suspect ACP samples testing positive for CLas in each grid.

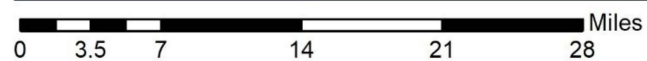
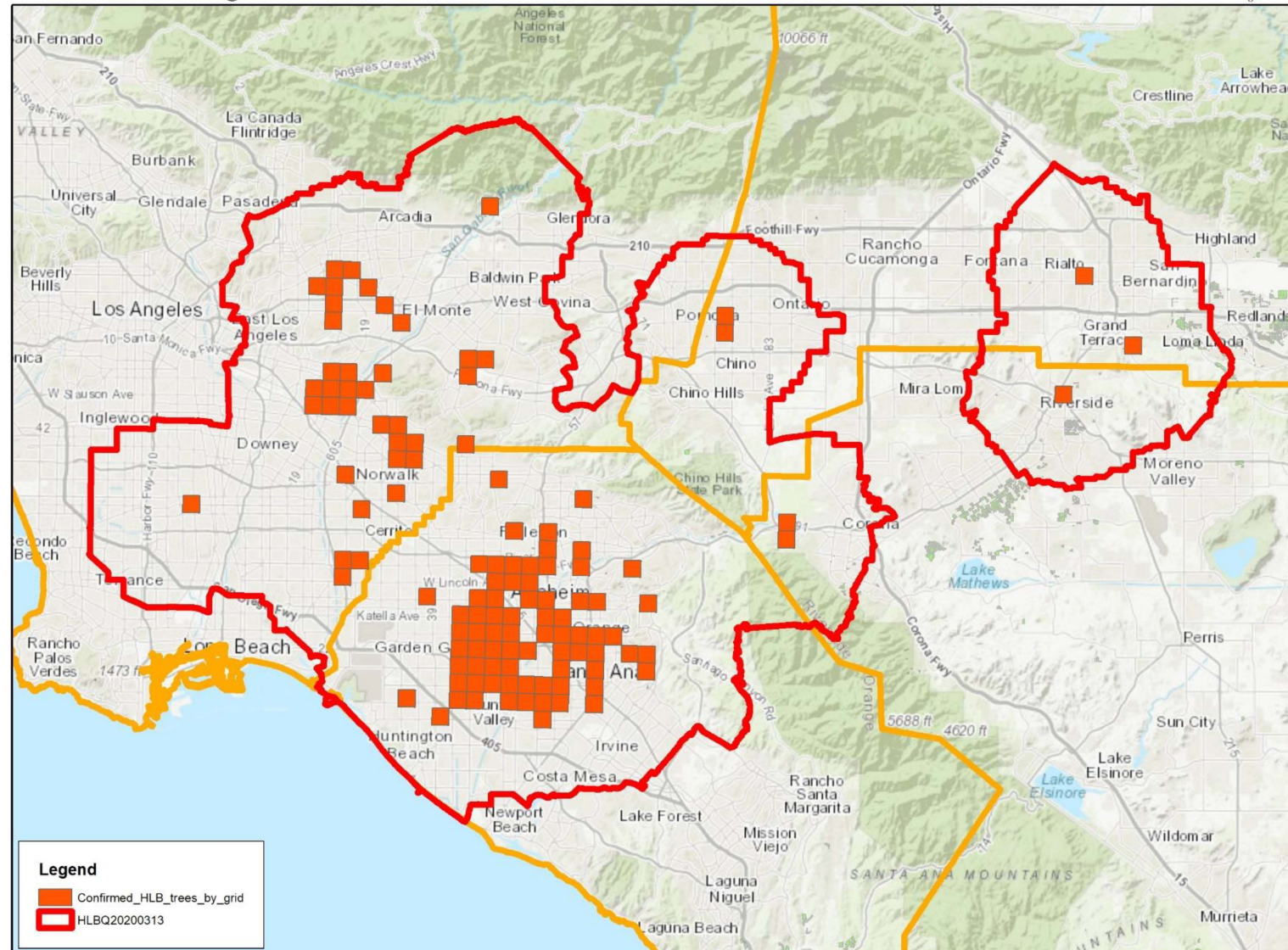


# Suspect ACP Testing Positive for CLas Collected 12/20/2011 - 3/3/2020



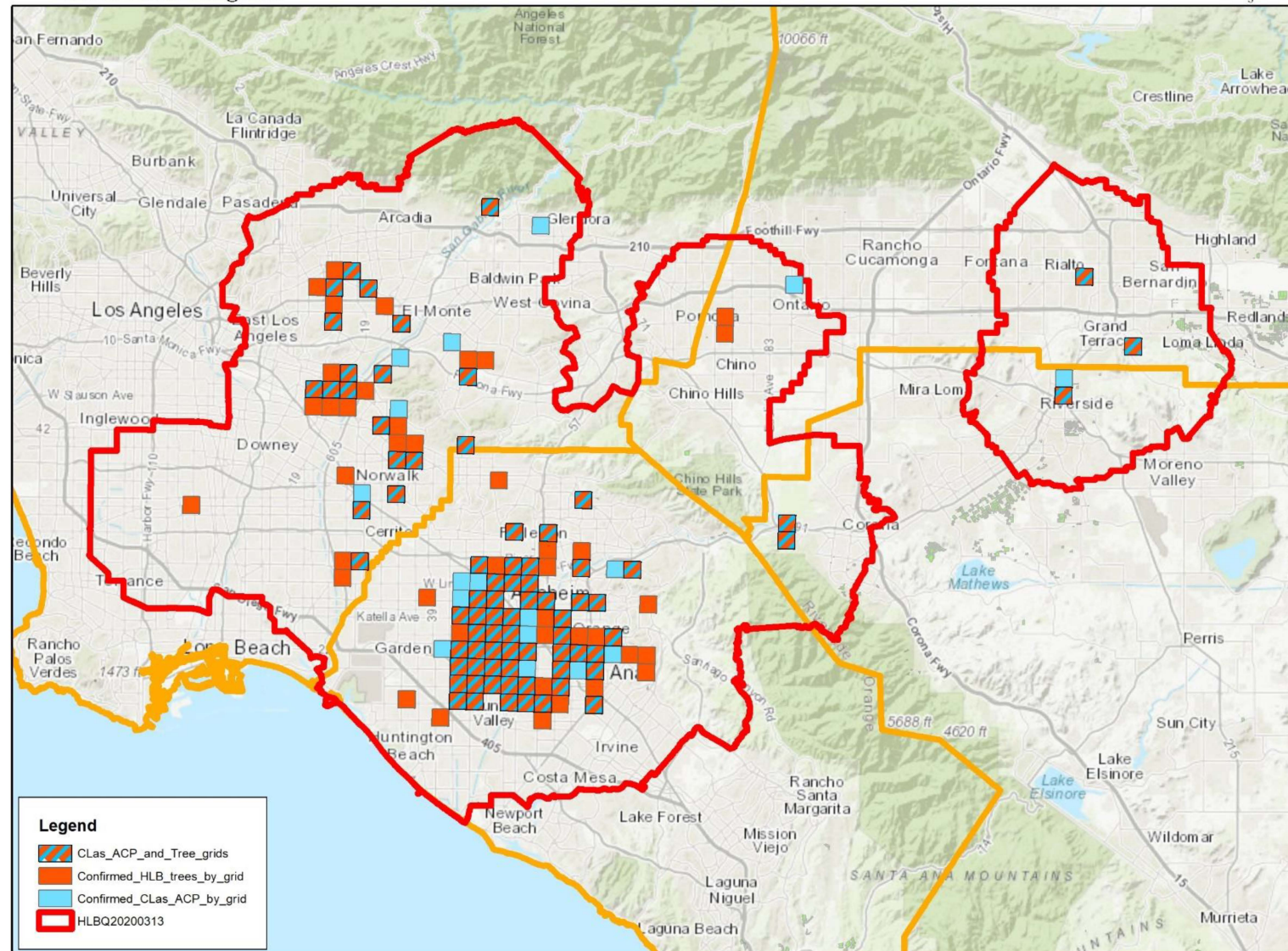


# Trees Testing Positive for CLas Collected 3/23/2012 - 3/9/2020





# Trees and ACP Testing Positive for CLas Collected as of 3/23/2020



0 3.5 7 14 21 28 Miles

March 26, 2020, Rick Dunn, CRB Data, Information, and Management Director

**Preliminary Executive Summary: Proposed replacement of NOMAD data collection system**

**Background-** The California Citrus Industry's Grove Trapping and Sampling program has relied on the use of Trimble NOMAD handheld data loggers since inception in 2009. Inevitable technological changes, hardware and software attrition has made it imperative that we convert to a more modern system for this purpose.

Over the last several months I have researched and tested alternatives that employ mobile telephones and Bluetooth enabled high-accuracy GNSS GPS receivers.

I believe the optimal replacement system will consist of Android or iPhone cellphones paired with Juniper Systems GEODE GNSS receivers running the ESRI apps "Explorer for ArcGIS" and "Survey123 for ArcGIS". In order to use this system for the CPDPP Grove Trapping/Sampling program we must modify data handling workflows by implementing an Enterprise GIS and Portal housed behind the firewall of CRB's servers in Visalia. This can be implemented over the next few years and the new hardware phased in as we get maximum use out of the remaining NOMADs and transition to the new workflow.

The advantages of this system include lower hardware replacement costs, improved interface for the field crews and more reliable dataflow. In addition, the Enterprise portal will also replace our current ArcGIS Online subscription without losing any map viewing functionality for non-trapper users like the Grower Liaisons.

Our ArcGIS Online subscription has been allowed to lapse as I propose to use that money to partially defray startup costs of the new system.

Prior to the 2020 – 21 budget I will demonstrate the new system and finalize this executive summary, including estimated costs for committee and board approval.