



Asian Citrus Psyllid & Huanglongbing

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Topics

1. Asian citrus psyllid (ACP) pest
2. Huanglongbing (HLB) disease
3. Issue
4. Spread of ACP/HLB
5. Best Practices

The Issue

The ACP pest transmits the bacteria that causes the HLB disease.



HLB kills citrus trees. No cure for HLB!

California is a fresh fruit state.

How HLB Is Spread



ACP

- Transmits CLas bacteria during feeding & carries it in its body for life.
- ACP flies from tree to tree.



Artificially moved via transportation



Grafting

- Use certified budwood

Pest

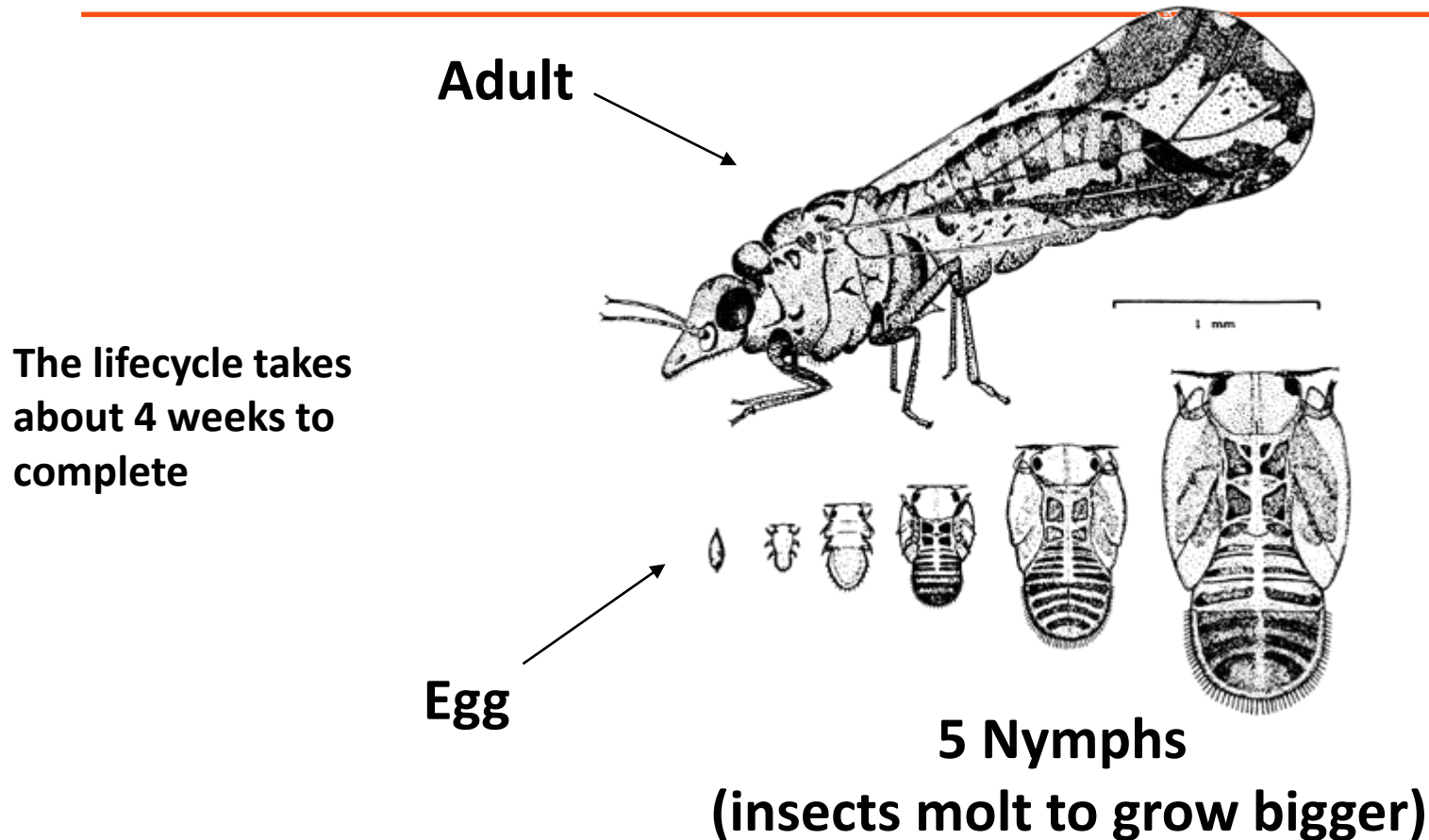
Asian Citrus Psyllid (ACP)

ACP – the Pest



A small insect, about the size of an aphid

ACP Lifestages



Egg, 5 wingless nymph stages, and a winged adult.

Egg Stage



Juvenile/Nymph Stage



Nymphs feed on young, tender leaves and stems.



Nymphs produce waxy tubules that direct honeydew away from their bodies.

Adult Stage



When feeding, the adult leans forward on its elbows and tips its rear end up in a very characteristic 45° angle.

ACP Signs



Injects a salivary toxin when feeding, causing tips of new leaves to breakoff.



Twisted, notched leaves can be a sign that ACP has been there.

Host Plants

All citrus and related plants in the Rutaceae family

- *Citrus* (limes, lemons, oranges, grapefruit, mandarins...)
- *Fortunella* (kumquats)
- *Citropsis* (cherry orange)
- *Murraya paniculata* (orange jasmine)
- *Bergera koenigii* (Indian curry leaf)
- *Severinia buxifolia* (Chinese box orange)
- *Triphasia trifolia* (limeberry)
- *Clausena indica* (wampei)
- *Microcitrus papuana* (desert-lime)
- Others.....

Calamondin



Natural Enemies

Biocontrol – *Tamarixia radiata*



Tamarixia radiata

Parasitic wasp specific to ACP.

Lays egg inside ACP nymph.

Emerges from an ACP nymph & leaves an exit hole.



Control Ants!

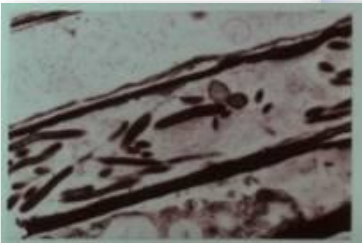
Ants protect ACP by feeding on honeydew and prevent biocontrol.



Disease

Huanglongbing (HLB)

HLB Signs - Tree



Candidatus
Liberibacter
asiaticus



**CLas blocks
phloem/nutrient
flow.**

**Tree stops bearing
fruit & dies in as little
as 5 years.**

**Huanglongbing
means 'yellow shoot
disease' in Chinese.**

HLB Signs - Leaves



HLB Signs - Fruit



- **HLB prevents fruit from developing properly.**
- **Lower half is green (why it is called Citrus Greening).**
- **Small fruit, crooked midrib, aborted seeds.**
- **Bad/bitter tasting fruit**

How HLB Is Found

- **CDFA Surveys/Sampling**
 - Routine Risk-Based Surveys
 - Delimitation Surveys
 - Plant & ACP Samples are tested
 - Confirmed via PCR testing



- **CDFA Hotline**

⚠ Pest Hotline: 1-800-491-1899



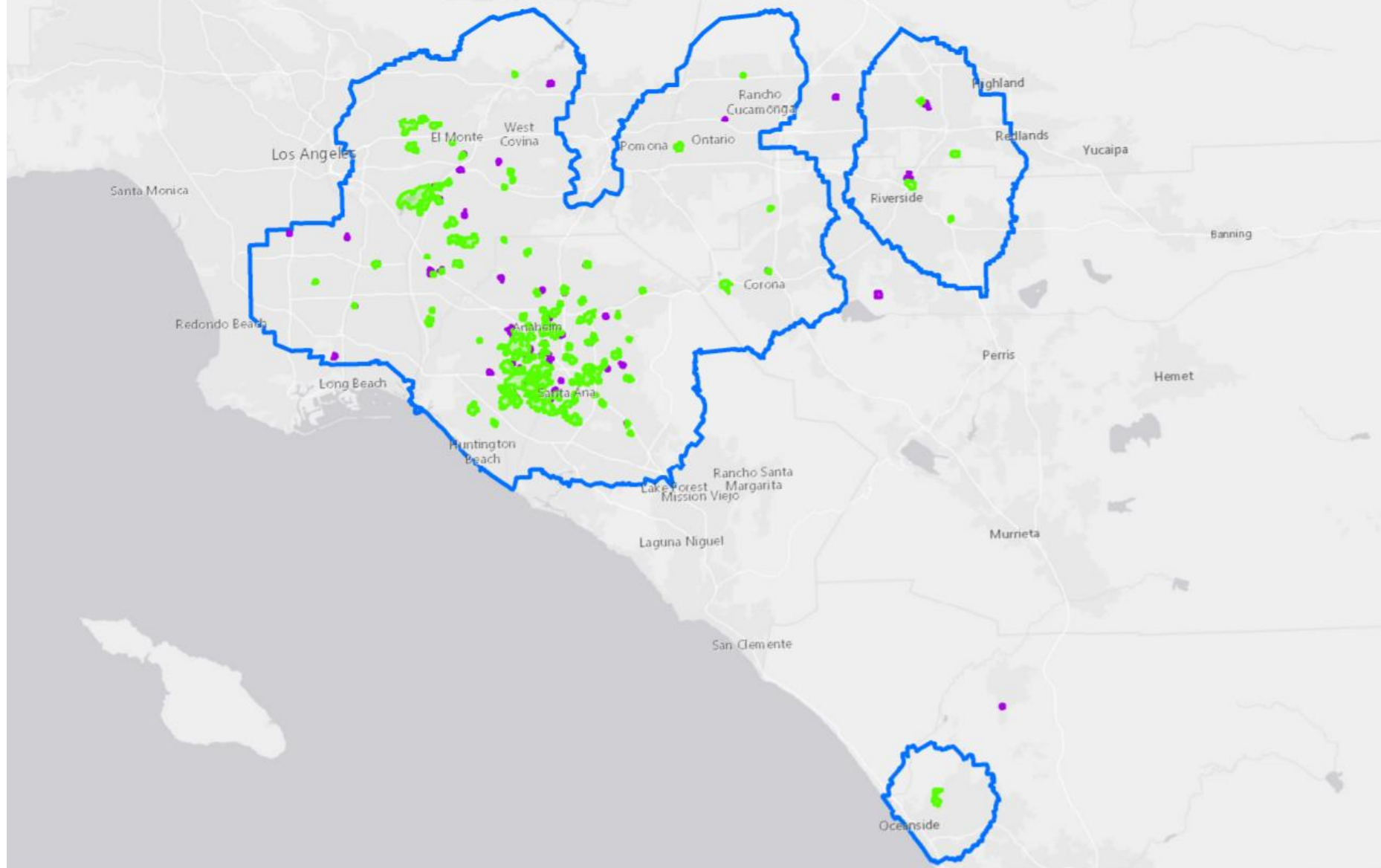
HLB Regulatory Actions

- **HLB Positive Tree Removal**
- **Survey Properties (250-meters)**
- **Public Meeting for residential citrus**
- **Mandatory citrus treatments (250-meters)**
- **HLB Quarantine (5-mile)**
 - Restrict citrus movement
 - Destroy or enclose nursery citrus

HLB Positive Samples





As of 10/29/2021

Region	# of <u>S</u> ites	# of <u>T</u> rees	# of <u>ACP</u> Samples
Los Angeles Co.	457	555	92
Orange Co.	1,330	1,943	239
Riverside Co.	45	49	14
San Bernardino Co.	23	29	15
San Diego Co.	6	9	5
Fallbrook	1	0	1
Oceanside	5	9	4
Grand Total	1,861	2,585	365

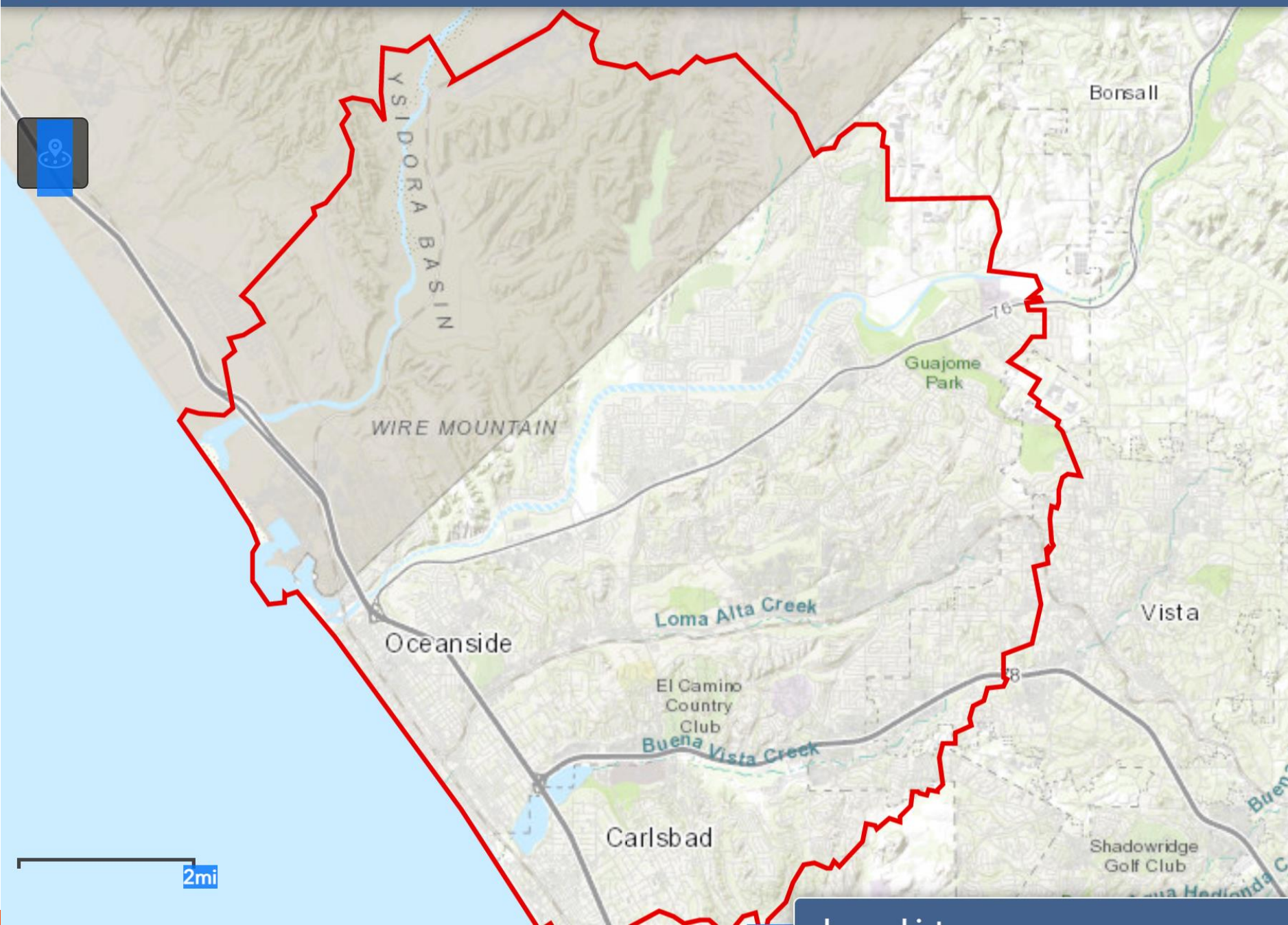


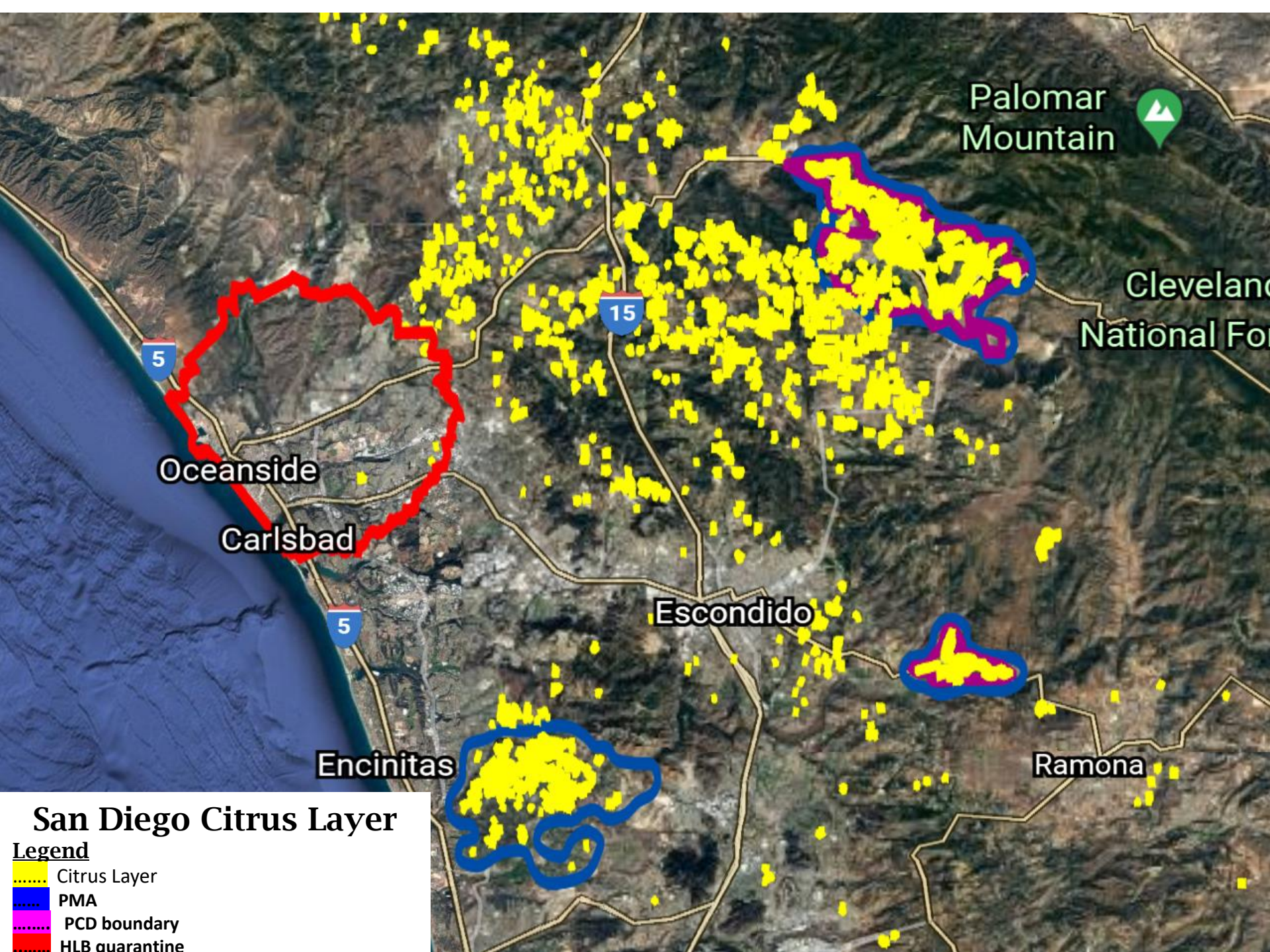
HLB Quarantine and Treatment Area

9/17/2021

-  HLB Quarantine Area
-  HLB Treatment Area
-  Mandatory
-  Non-mandatory





0 5 10
Miles





San Diego Citrus Layer

Legend

-  Citrus Layer
-  PMA
-  PCD boundary
-  HLB quarantine

Best Practices

- **Manage your citrus – <https://ucanr.edu/acp>**
 - Learn to recognize ACP and HLB
 - Regularly inspect your citrus trees
 - **Control ACP by follow ACP area wide treatment protocols!**
 - **Control Ants!**
- **Know where the HLB quarantines are**
 - www.CitrusInsider.org/maps-and-quarantines
 - <https://gis2.cdfa.ca.gov/Plant/CitrusQuarantines/>



Best Practices

- **Keep citrus local**
 - Buy citrus plants from reputable nurseries
 - Don't move citrus trees out of an HLB quarantine
- **Properly remove green waste**
 - Dry out for 2 weeks before disposing OR
 - Double bag OR
 - Chip and shred
- **Remove uncared/unloved citrus trees**

Area-Wide Treatments

- IPM strategy for effectively suppressing or eradicating single pest populations in a geographical area or zone.
- Greater pest suppression achieved as area-wide vs. individual orchard treatment (*sum is greater than its parts*).
- Coordinated treatments
 - **ACP treatments applied to all citrus at the same time**
 - **2-3 week treatment windows**
 - **Treat when most effective (3x a year)**

Commercial ACP Area-Wide Treatments

- **San Diego Citrus Pest Control District**
 - Pauma, San Pasqual, Borrego
 - Fall, Winter, Summer (except Borrego)
 - 2-3 week treatment windows using materials recommended by UC and local pest control advisors.
- **Psyllid Management Areas (PMAs)**
 - Rancho Santa Fe
 - Fall, Winter, Summer
 - 2-3 week treatment windows using recommended materials from UC and local pest control advisors.
- **Non-PMA Areas**
 - Fall, Winter, Summer
 - 2-3 week treatment windows using recommended materials from UC and local pest control advisors.

Residential ACP Area Wide Treatments

- **Residential ACP Treatment Zone**
 - 250-meters from a commercial citrus orchard.
- **Qualifying for Residential Citrus Treatments**
 - Fall and Winter **commercial (25+ trees)** ACP treatments in a psyllid management area (PMA) must reach 90% or more.
 - 2 out of 3 PMA treatments must reach 90% or more treated.
- **No cost to residential citrus (less than 25 trees)**

ACP/HLB Resources & Info

Commercial Citrus Website – www.CitrusInsider.org

Residential Citrus Website – www.cacitrusthreat.org

CDFA website - www.cdfa.ca.gov/citrus

University of California - <https://ucanr.edu/ACP>

Thank You!

ACP/HLB Grower Liaison

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