Understanding the Effects of Fire on Eggs from Backyard Poultry
&
Update on virulent Newcastle Disease in Poultry

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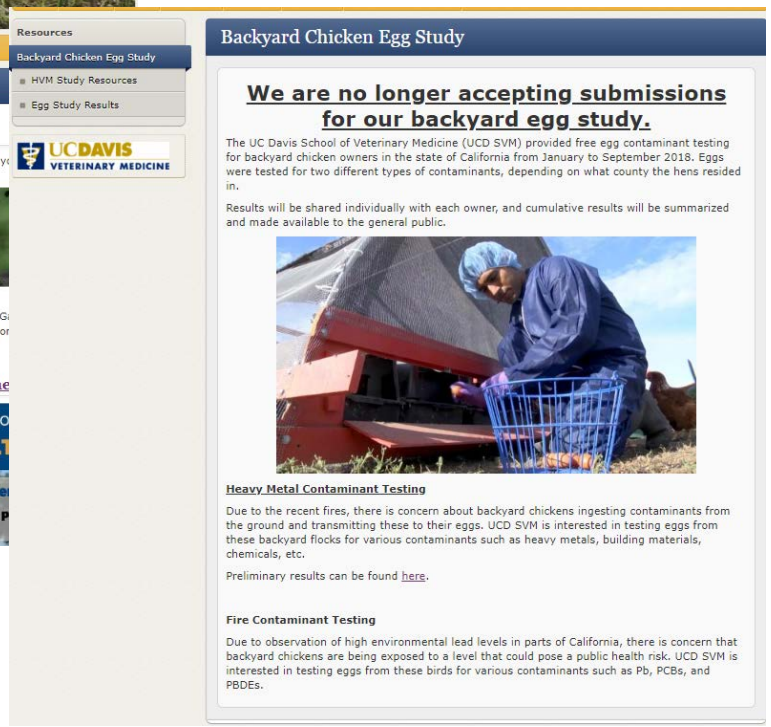
UC Davis School of Veterinary Medicine-Cooperative Extension

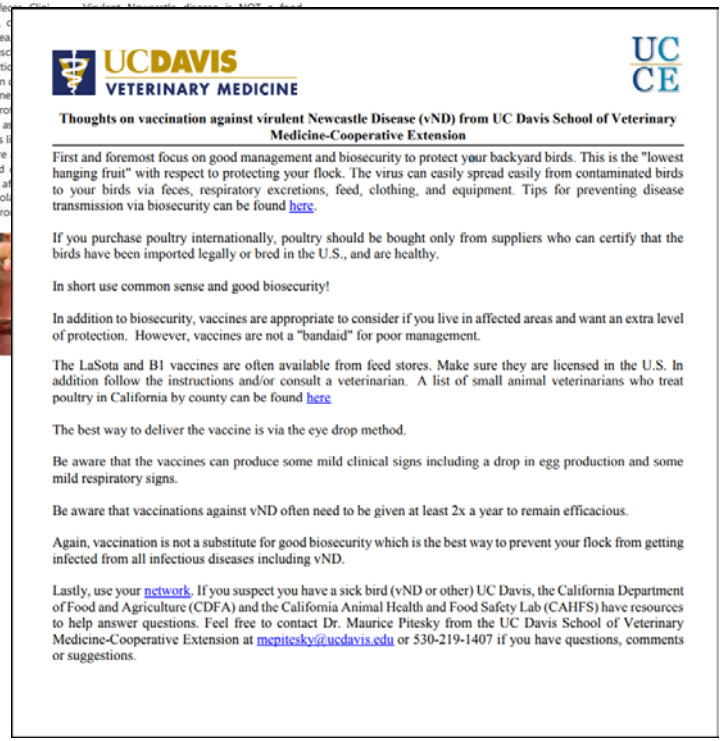
June 4th 2019

Smith Lever Special Needs Competitive Grants Program

Questions?

UCCE Poultry Website





Also available in Spanish!

Virulent Newcastle Disease: 2018-2019 Outbreak Update

Over 400+ backyards are affected in Southern California

New case in Alameda Co.

Previously also spread to Utah & Arizona

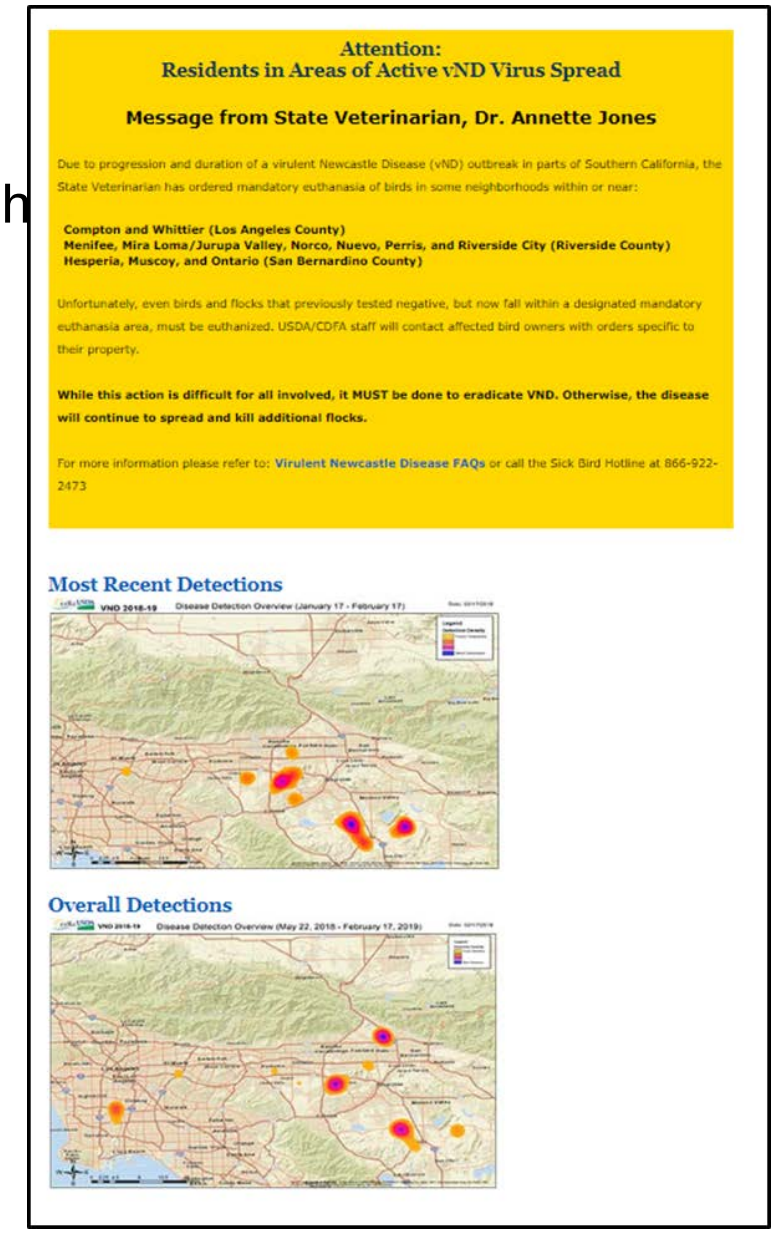
In BY, fighting and commercial poultry

IF you have sick birds call:

- California Sick Bird Hotline at 866-922-BIRD (2473)
- CAHFS Diagnostic Lab ($20 for up to 2 birds full necropsy)
- Cooperative Extension

Virulent Newcastle Disease: The Basics

- 2-15 day incubation period
- Almost all (domestic and wild) are susceptible
- Transmission via fomites, aerosol, feces and contact with infected birds (aka proximity to infected premises)
- Clinical signs:
    - Drop in egg production
    - Respiratory signs: Coughing, sneezing, tracheal rales
    - Neuro signs: circling, spasms, tremors
    - GI: Diarrhea
- Virus is sensitive to light and disinfectants
- Mild conjunctivitis in humans



Attention:
Residents in Areas of Active vND Virus Spread

Message from State Veterinarian, Dr. Annette Jones

Due to progression and duration of a virulent Newcastle Disease (vND) outbreak in parts of Southern California, the State Veterinarian has ordered mandatory euthanasia of birds in some neighborhoods within or near:

Compton and Whittier (Los Angeles County)
Menifee, Mira Loma/Jurupa Valley, Norco, Nuevo, Perris, and Riverside City (Riverside County)
Hesperia, Muscoy, and Ontario (San Bernardino County)

Unfortunately, even birds and flocks that previously tested negative, but now fall within a designated mandatory euthanasia area, must be euthanized. USDA/CDFA staff will contact affected bird owners with orders specific to their property.

While this action is difficult for all involved, it MUST be done to eradicate VND. Otherwise, the disease will continue to spread and kill additional flocks.

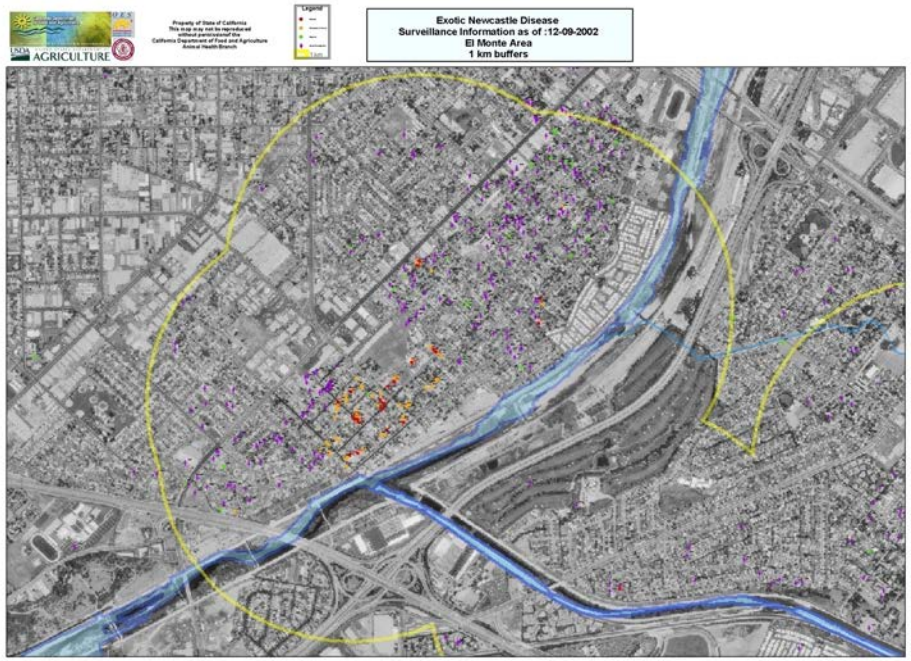
For more information please refer to: **Virulent Newcastle Disease FAQs** or call the Sick Bird Hotline at 866-922-2473

Most Recent Detections

Overall Detections

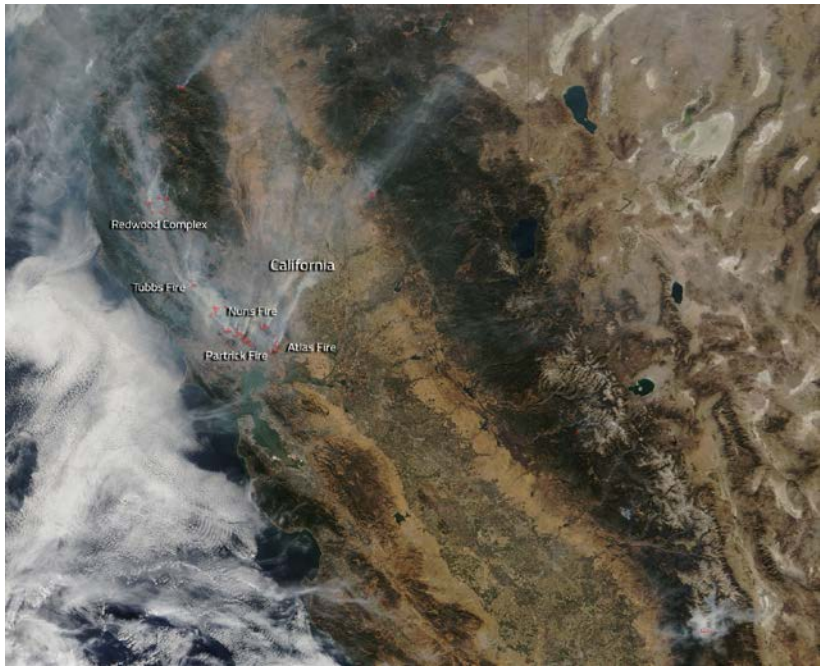
How do you Control a Highly Infectious Poultry Disease in a Urban Area?

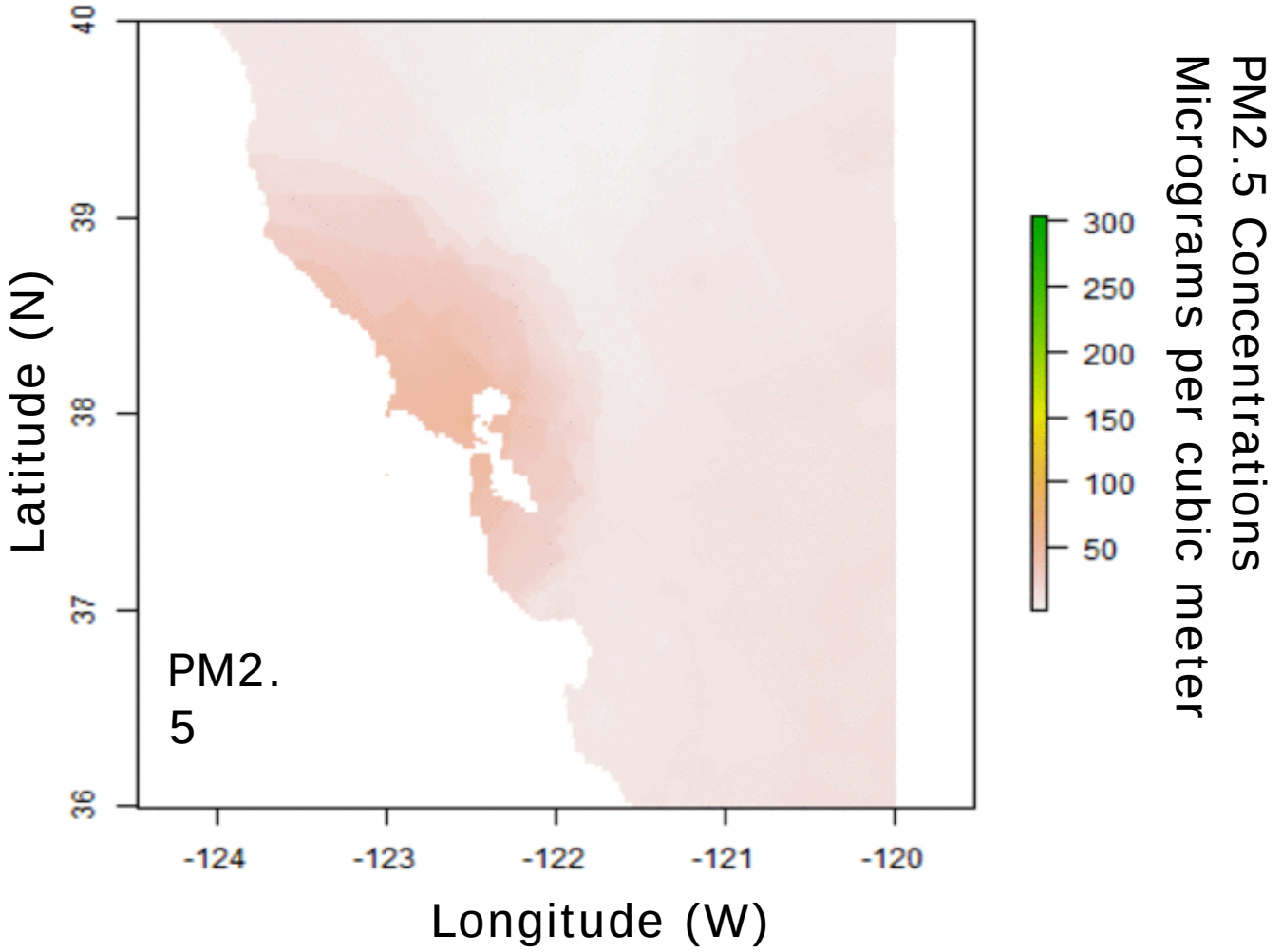
- Education
- Communication
- Quarantine
- Vaccination
- Depopulation



Smoke Carries Chemicals

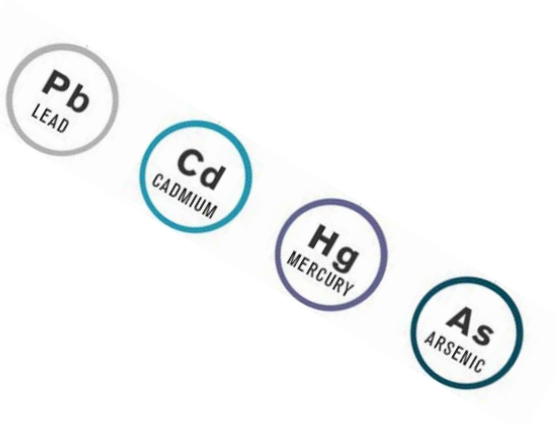
"Smoke" Measured as Particulate Matter (PM) Carries Other Chemicals





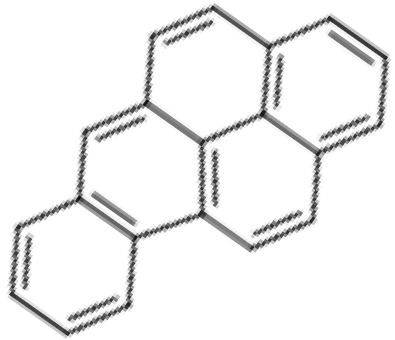
Question: Are eggs from backyard chickens raised in close proximity to fire a public health issue?

Toxins we tested for



Heavy metals

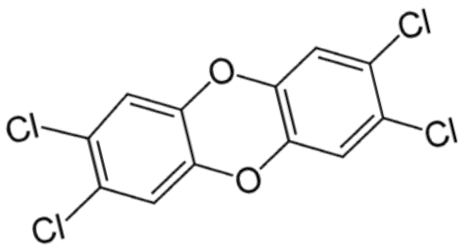
-Can exist naturally in soil but can also be emitted in toxic levels from industrial activities
-Can be present in smoke from burning buildings and cars
-Can be carcinogenic, toxic to many organ systems, and cause developmental effects on fetuses and children



Polycyclic Aromatic Hydrocarbons (PAHs)

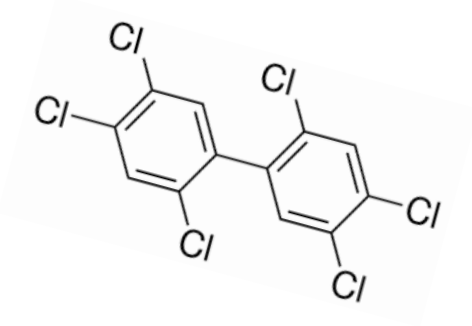
-Come from the combustion of organic materials
-Traffic-related air pollution is a common source. They also enter the diet through grilling, drying, and smoking foods
-Generally have a lower degree of concern about *acute* toxicity in humans with more know about their chronic effects (cancer)
-Can impact brain development in fetuses and children

Toxins we tested for cont...



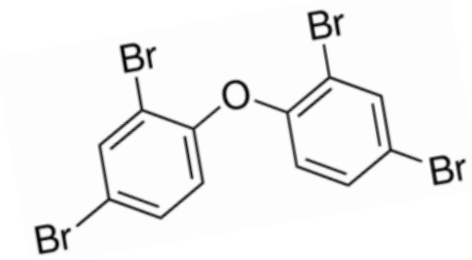
Dioxins and Furans

-Industrial byproducts & produced by combustion (eg. waste & fuel burning, wildfire)
-Toxic effects include immune toxicity, developmental & hormonal effects, cancer



Polychlorinated biphenyls (PCBs)

-Produced & used as lubricants & coolants in electronic devices until 1977
-Can be released into the environment by the combustion of old products
-Associated with neurodevelopmental & hormone disruption, liver cancer



Polybrominated diphenyl ethers (PBDEs)

-Produced & used as flame retardants in foam filled furniture, plastics, & electronic devices. In California, two major classes banned in 2006, all phased out by 2013
-Released into the environment by breakdown & combustion of household products causing soil contamination
-Associated with developmental & neurobehavioral changes & reproductive harm

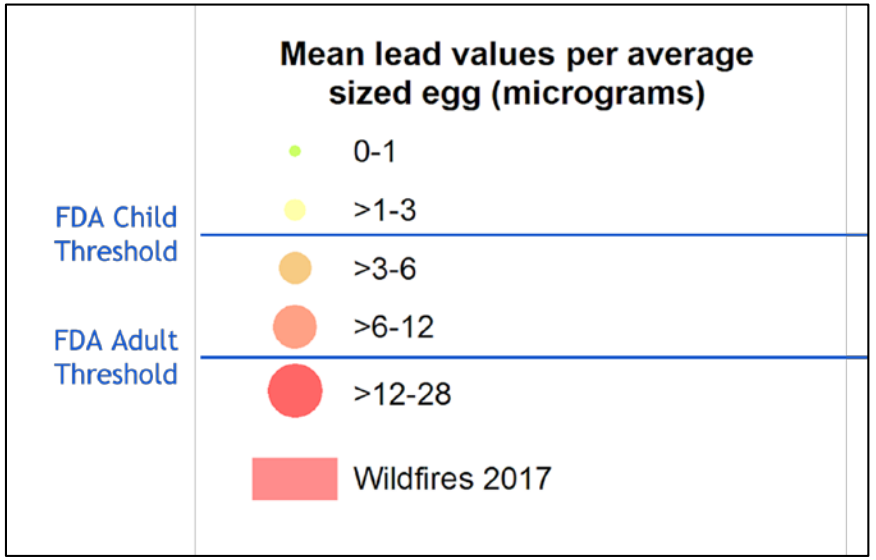
What is “Unsafe?”

Prop 65 / OEHHA

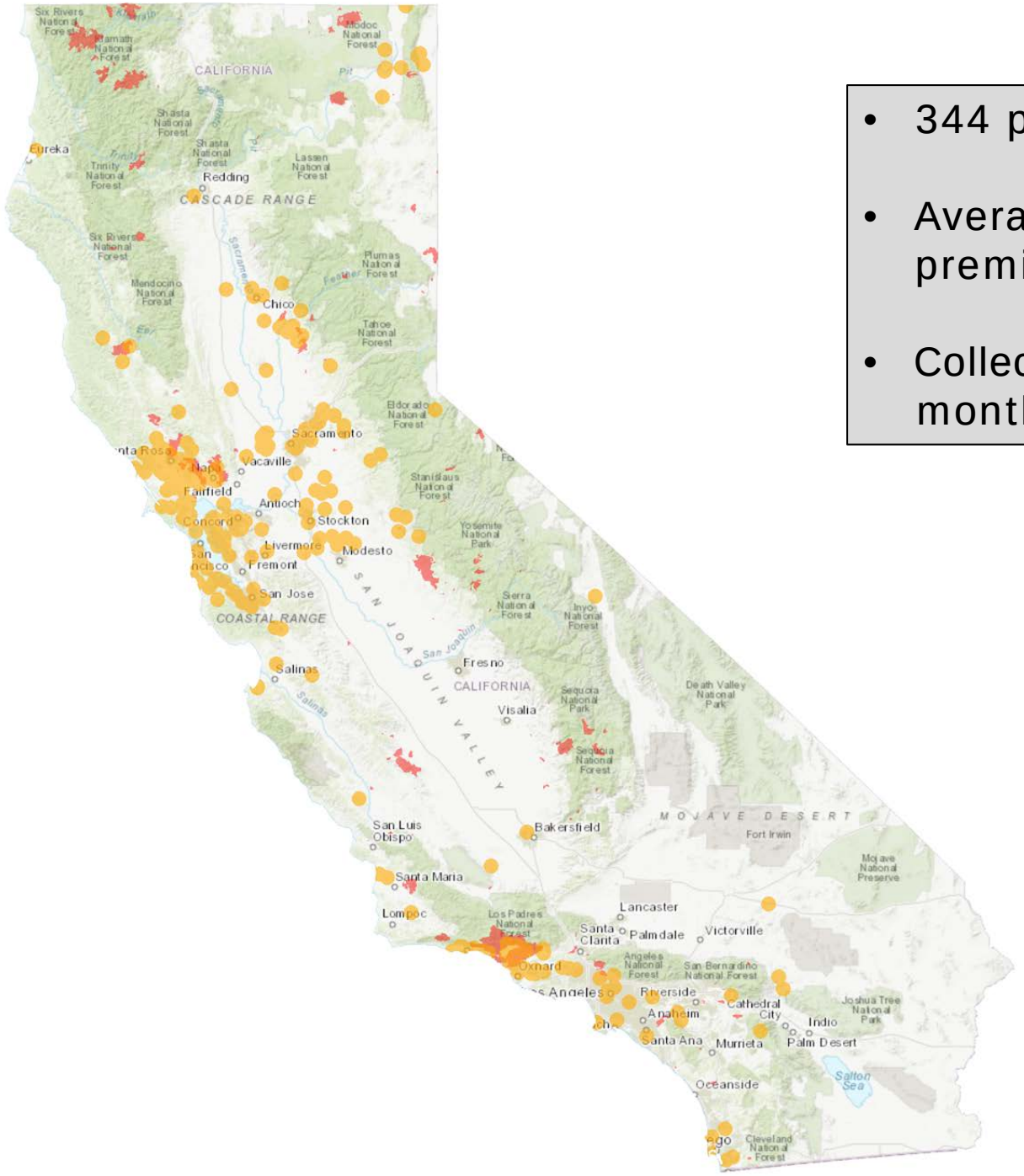
CDC

FDA

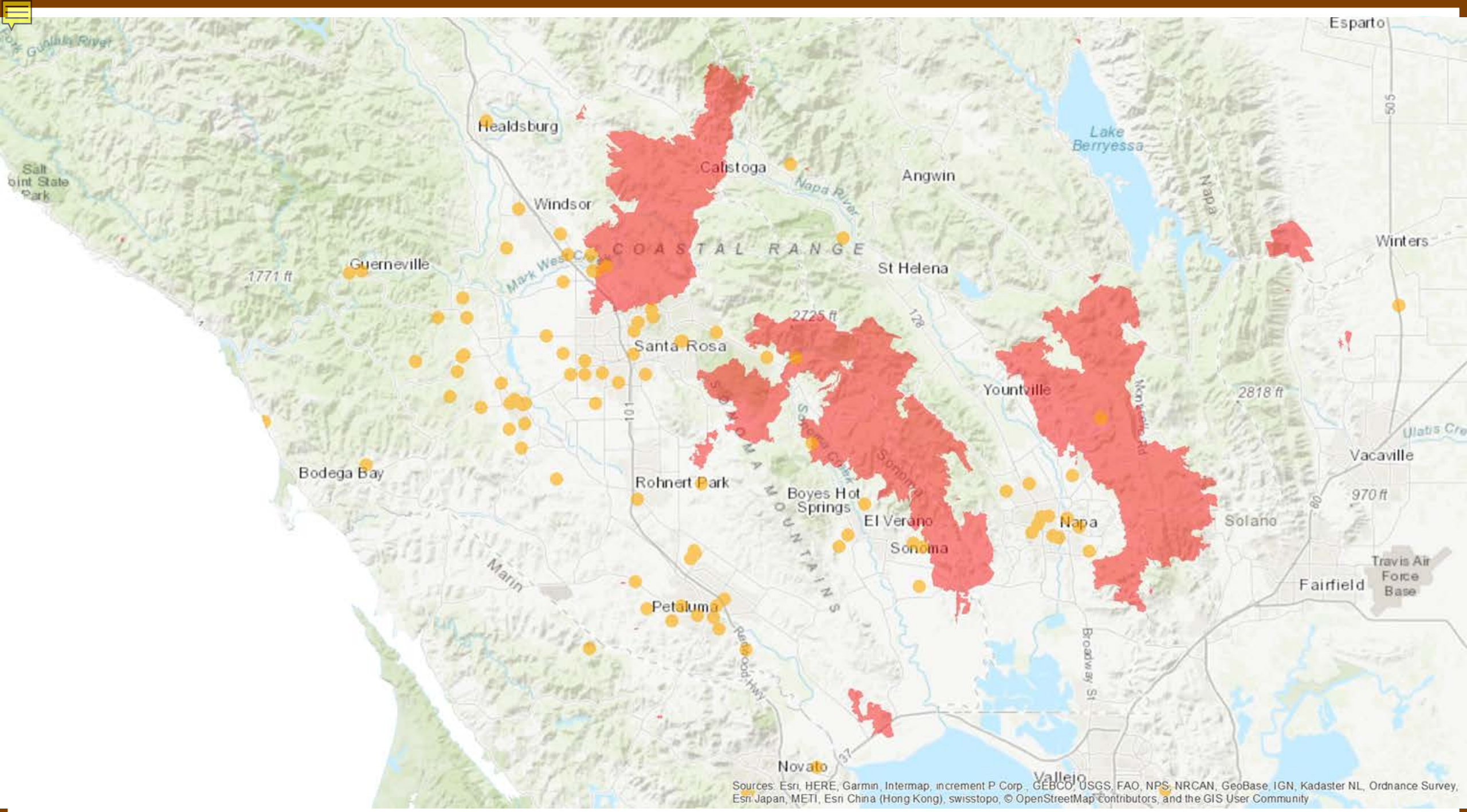
EPA



Where did the eggs come from?



- 344 premises across CA
- Average of 5 eggs per premise
- Collected during the first 4 months of 2018


Esparto
Healdsburg
Lake Berryessa
Salt Point State Park
Calistoga
Angwin
Windsor
Napa River
COASTAL RANGE
Winters
Guerneville
1771 ft
St Helena
2725 ft
Santa Rosa
Yountville
2818 ft
Vacaville
Bodega Bay
Rohnert Park
Boyes Hot Springs
El Verano
Napa
970 ft
Solano
Sonoma
Travis Air Force Base
Fairfield
Marin
Petaluma
Novato
Vallejo
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community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Napa
Sonoma
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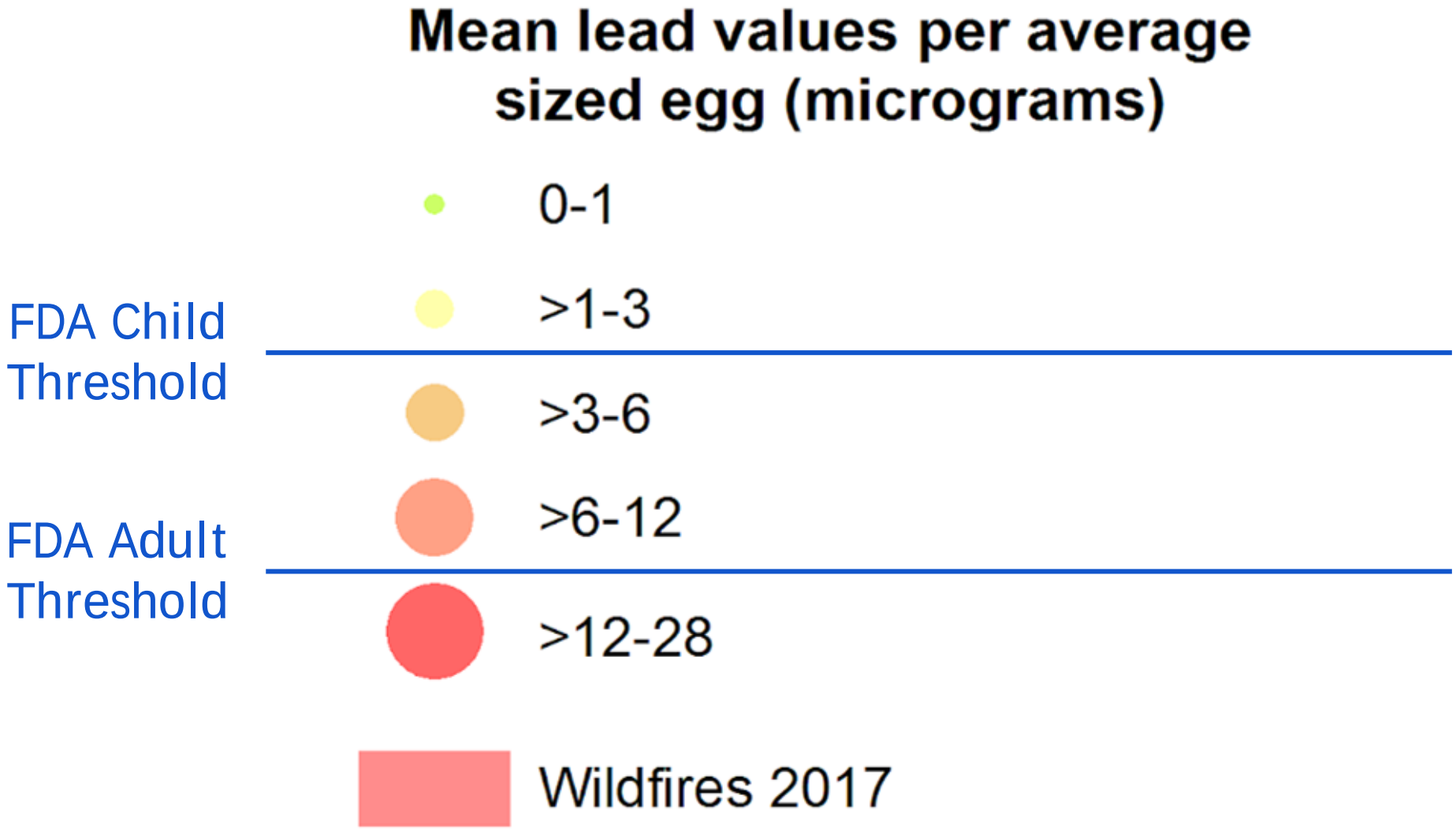
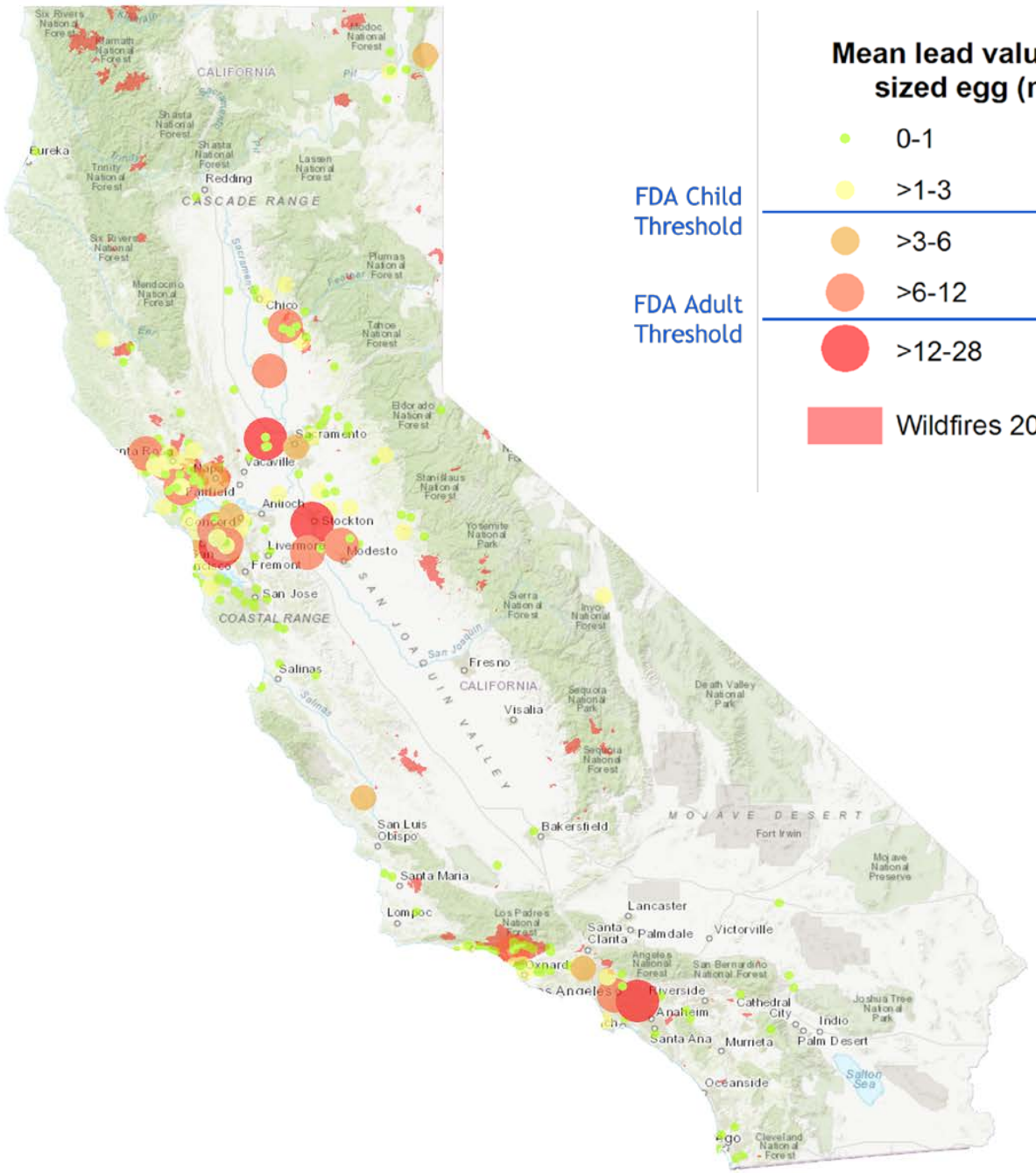
So what did we find?

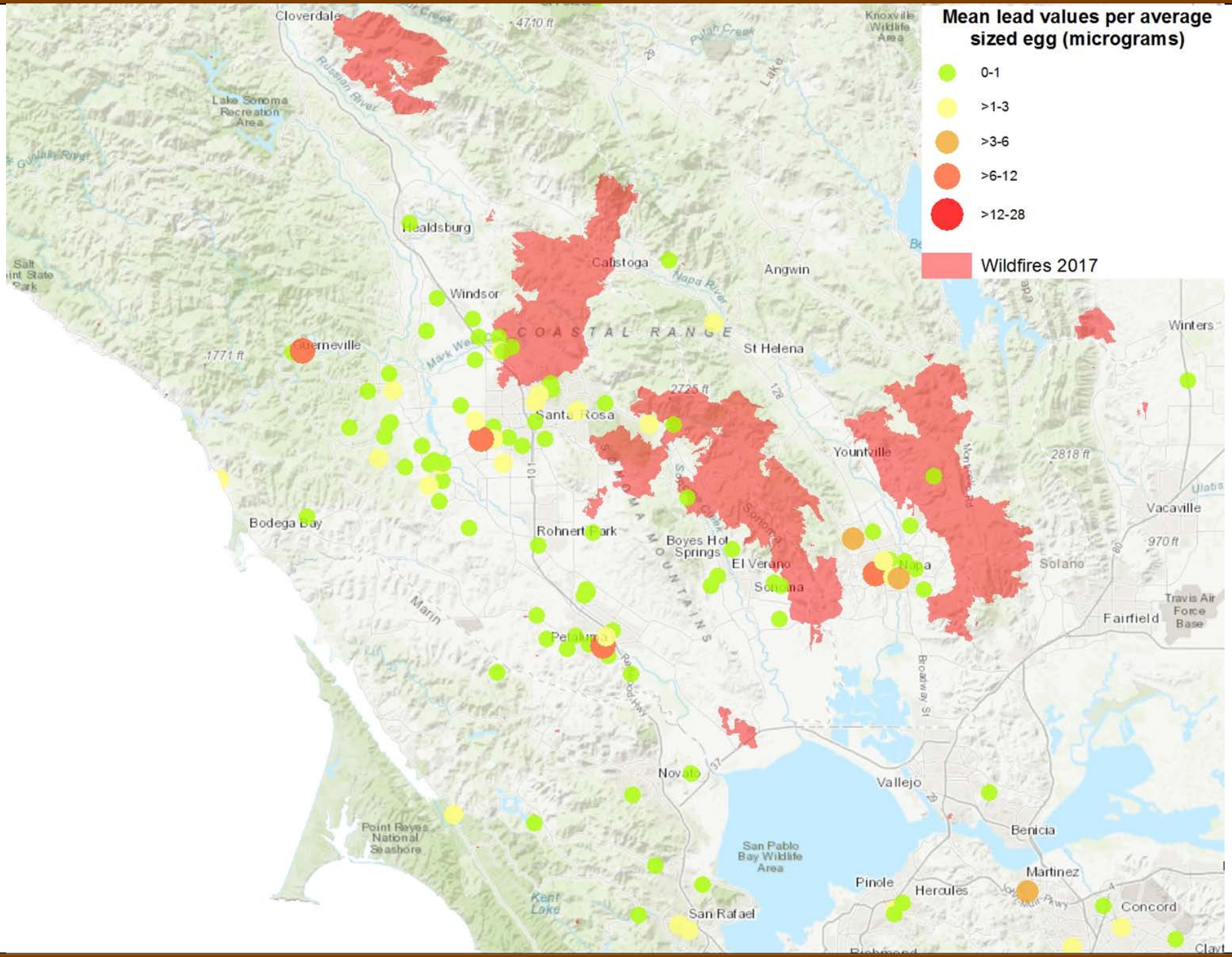
A quick guide to interpreting lead results

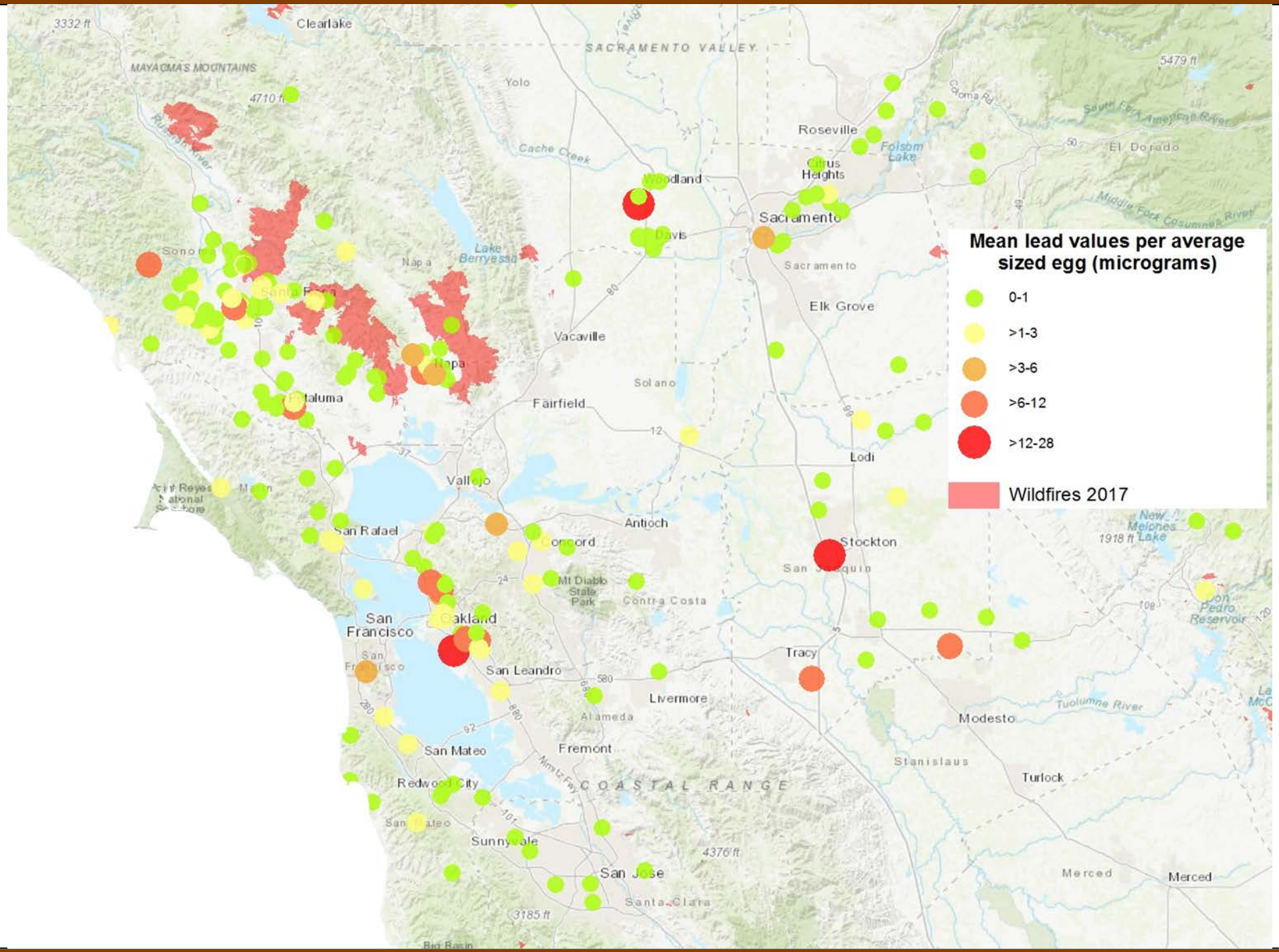


Highest values:

- Stockton (28ug)
- Alameda (22ug)
- Los Angeles (19ug)
- Yolo (18ug)




Mean lead values per average sized egg (micrograms)
0-1
>1-3
>3-6
>6-12
>12-28
Wildfires 2017
Cloverdale
Lake Sonoma Recreation Area
Healdsburg
Windsor
Calistoga
Angwin
COASTAL RANGE
St Helena
Sebastopol
Santa Rosa
Yountville
Napa
Sonoma
Boyes Hot Springs
El Verano
Rohnert Park
Bodega Bay
Petaluma
Novato
Vallejo
Benicia
Martinez
Pinole
Hercules
Concord
San Rafael
Point Reyes National Seashore
San Pablo Bay Wildlife Area
Kent Lake
Fairfield
Travis Air Force Base
Vacaville
Winters
Solano
Marin
Knoxville Wildlife Area
4710 ft
2725 ft
2818 ft
1771 ft
970 ft


Mean lead values per average sized egg (micrograms)
0-1
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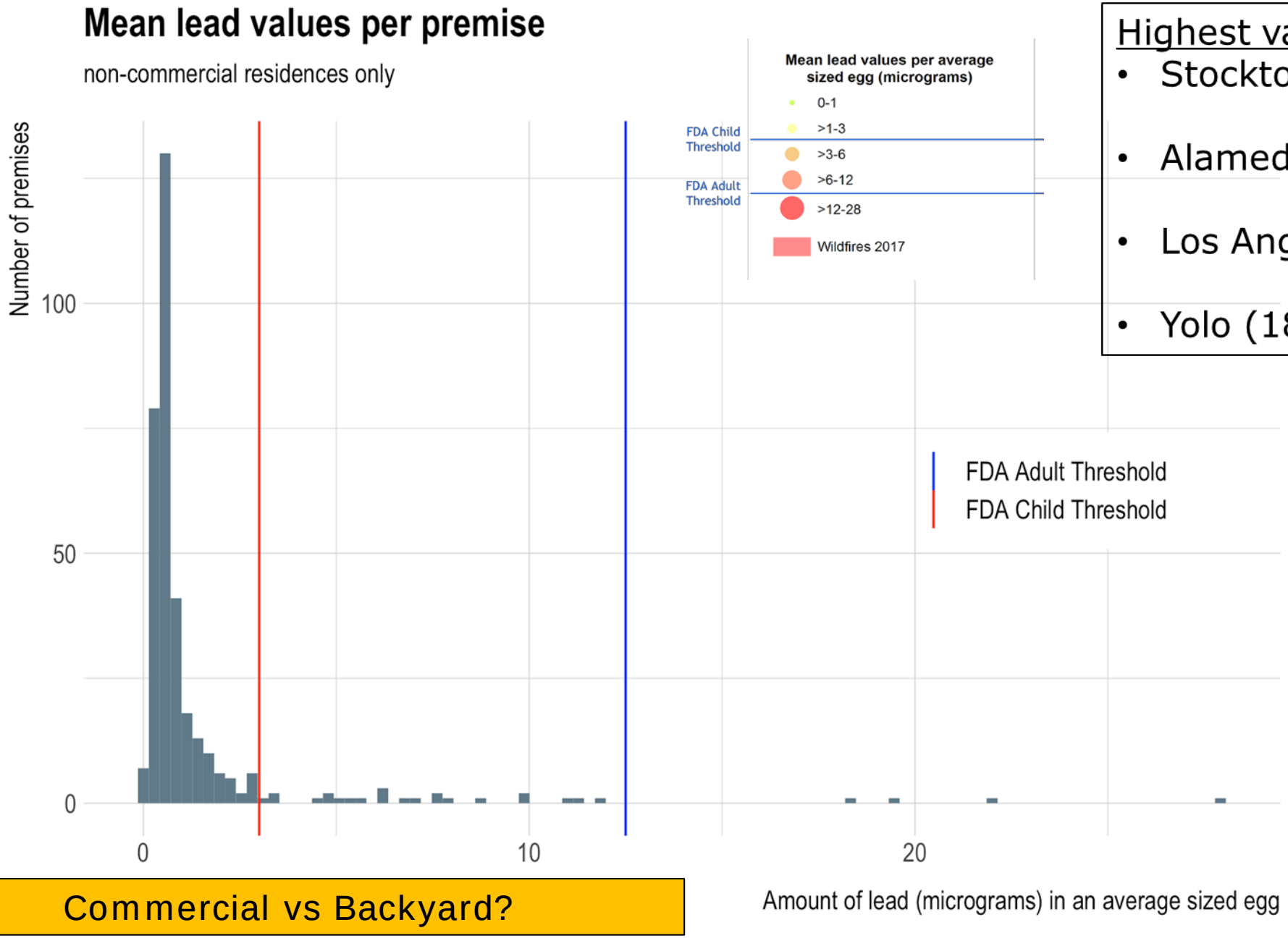
>12-28
Wildfires 2017
Clearlake
SACRAMENTO VALLEY
MAYACMAS MOUNTAINS
Yolo
Roseville
Folsom Lake
El Dorado
Cache Creek
Woodland
Citrus Heights
Sacramento
Davis
Lake Berryessa
Napa
Sonoma
Elk Grove
Vacaville
Solano
Fairfield
Lodi
Vallejo
San Rafael
Antioch
Concord
Stockton
Mt Diablo State Park
Contra Costa
San Francisco
Oakland
San Leandro
Tracy
Livermore
Alameda
Modesto
Tuolumne River
San Mateo
Fremont
Stanislaus
Turlock
Redwood City
COASTAL RANGE
Sunnyvale
San Jose
Santa Clara
Merced
Merced
3332 ft
4710 ft
5479 ft
4376 ft
3185 ft
1918 ft

So how many properties had a problem?



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- Los Angeles (19ug)
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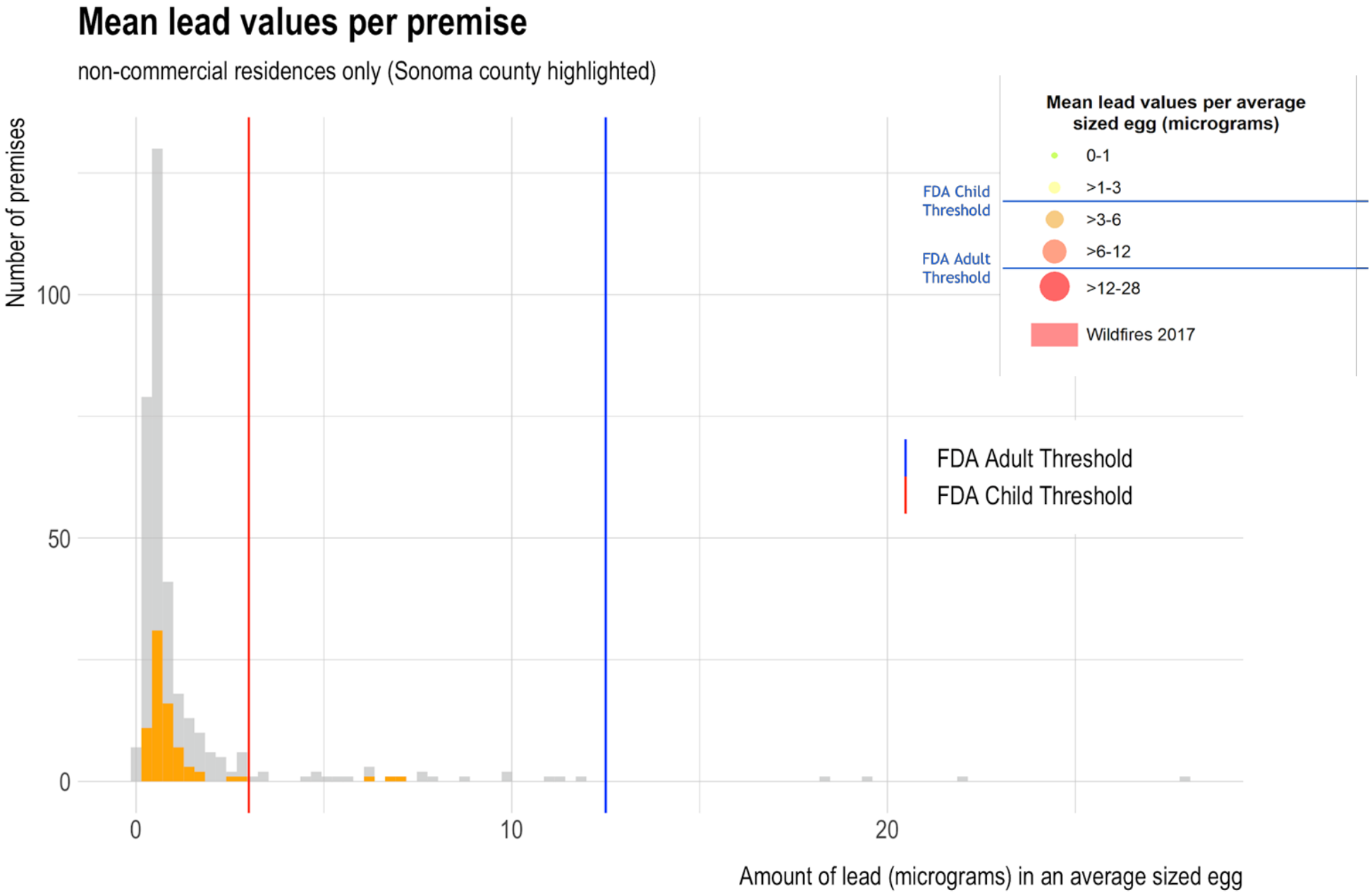
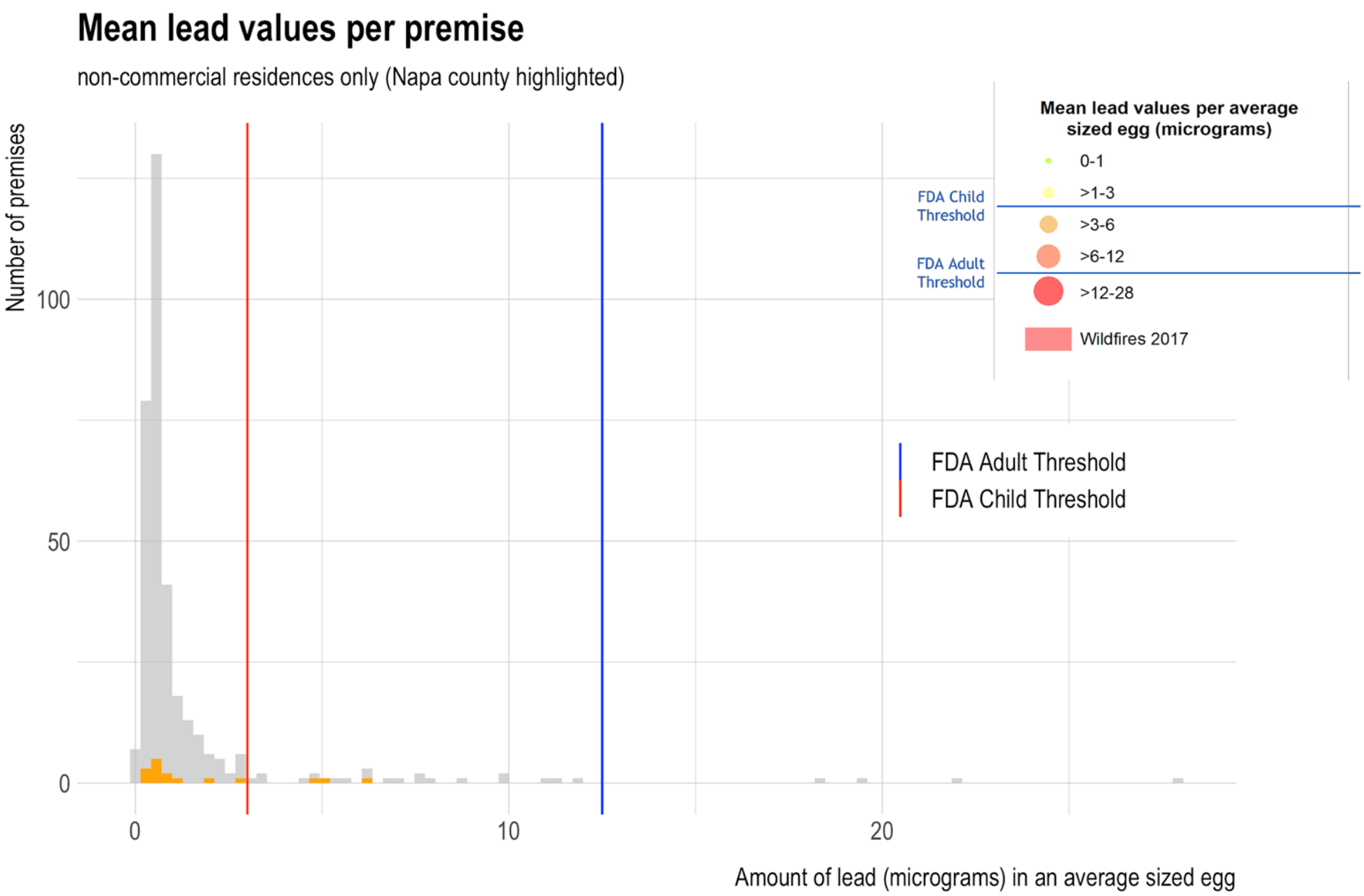
Commercial vs Backyard?


Mean lead values per premise
non-commercial residences only (Sonoma county highlighted)
Number of premises
100
50
0
0
10
20
Amount of lead (micrograms) in an average sized egg
FDA Adult Threshold
FDA Child Threshold
Mean lead values per average sized egg (micrograms)
0-1
>1-3
>3-6
>6-12
>12-28
Wildfires 2017
FDA Child Threshold
FDA Adult Threshold


Mean lead values per premise
non-commercial residences only (Napa county highlighted)
Number of premises
100
50
0
0
10
20
Amount of lead (micrograms) in an average sized egg
FDA Adult Threshold
FDA Child Threshold
Mean lead values per average sized egg (micrograms)
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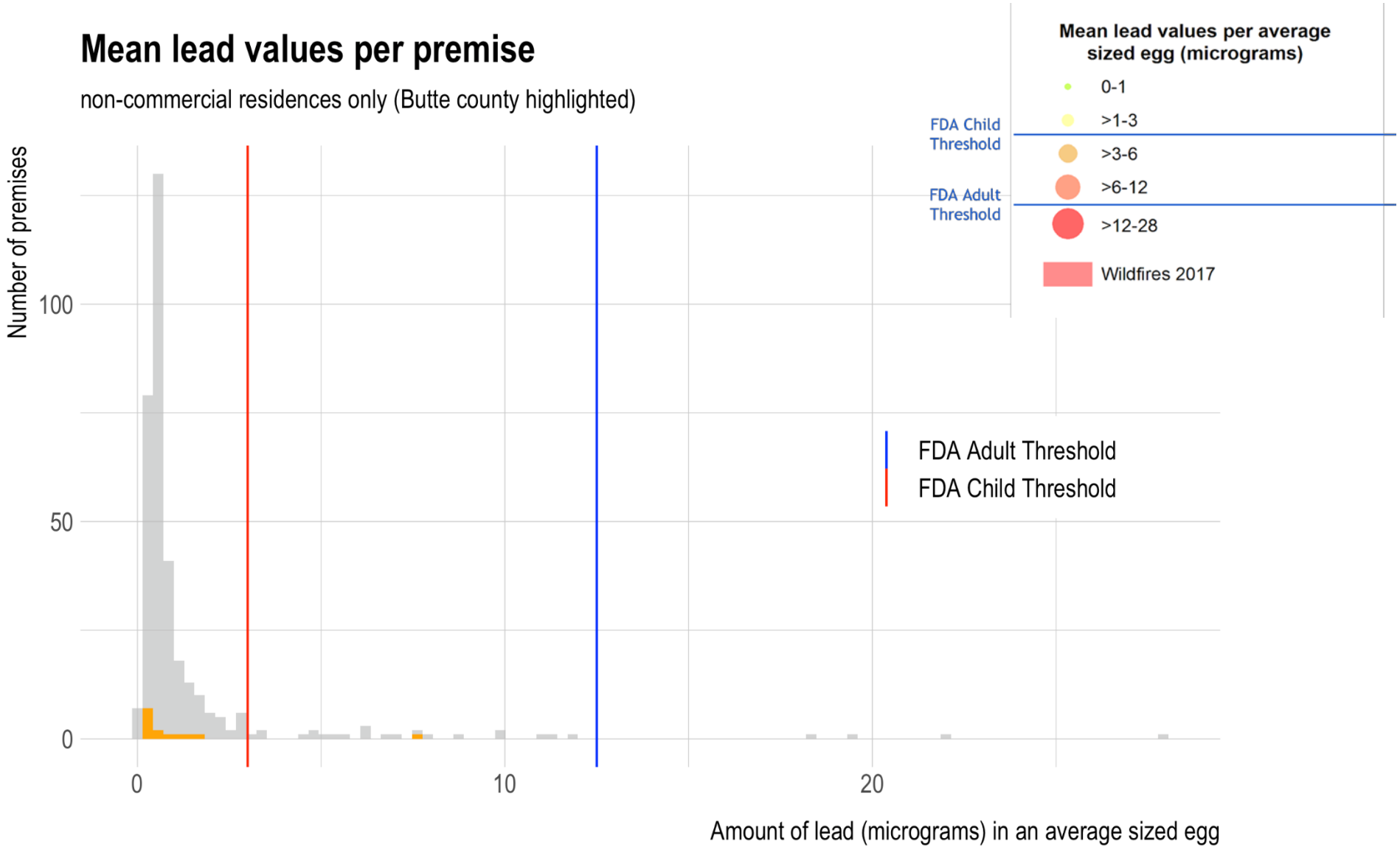
Wildfires 2017
FDA Child Threshold
FDA Adult Threshold


Mean lead values per premise
non-commercial residences only (Butte county highlighted)
Number of premises
100
50
0
0
10
20
Amount of lead (micrograms) in an average sized egg
FDA Adult Threshold
FDA Child Threshold
Mean lead values per average sized egg (micrograms)
0-1
>1-3
>3-6
>6-12
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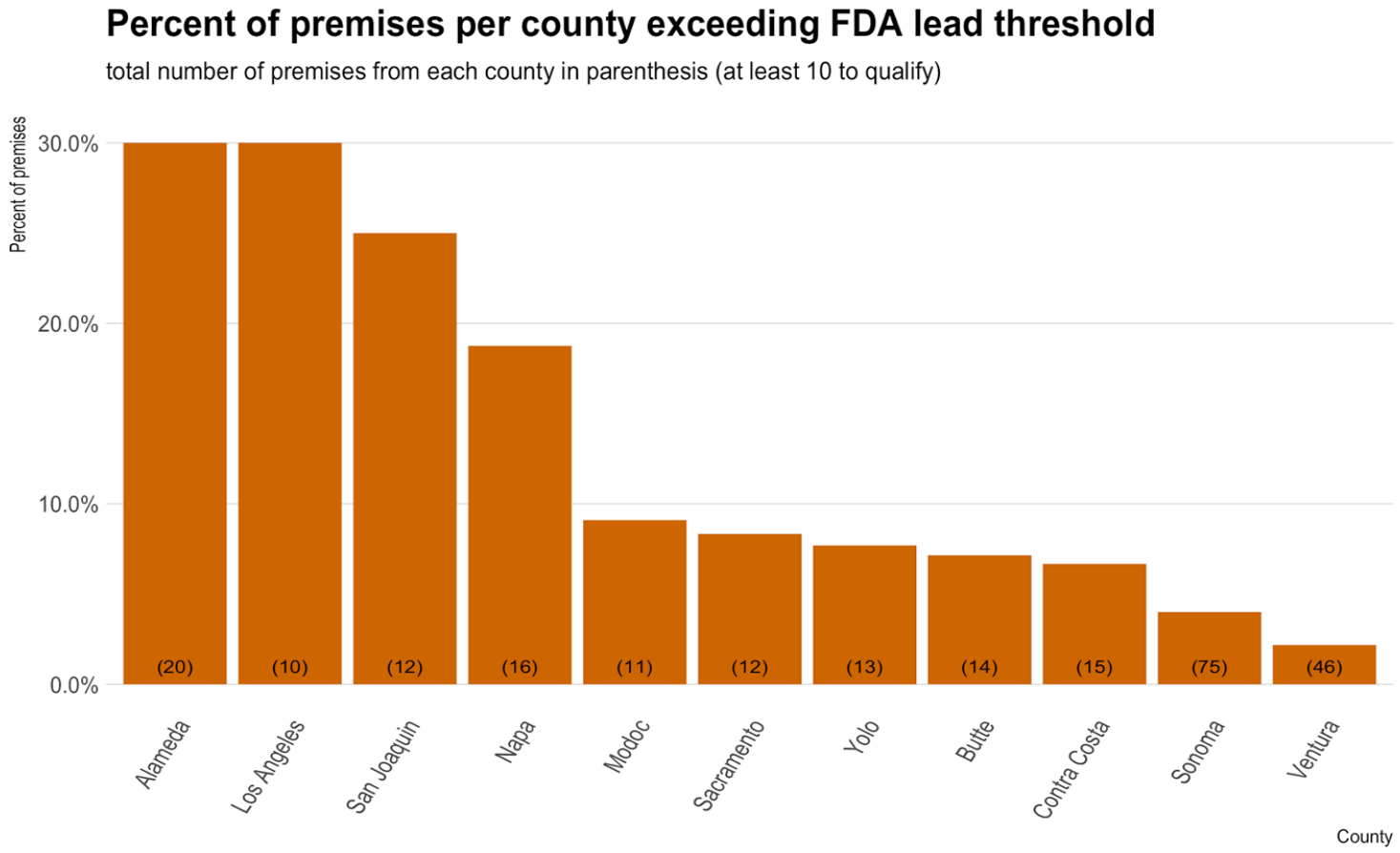
Wildfires 2017
FDA Child Threshold
FDA Adult Threshold

So which counties had the biggest problem?



What about the other toxins?

Other Heavy Metals:

- 2/344 (0.5%) premises had a concerning Mercury level
- 2/344 (0.5%) premises had a concerning Cadmium level
- PCB/PBDE/PAH initial results are being interpreted
  - Interpretation is difficult due to lack of pre-existing studies

So, is it safe to eat the eggs?!

1. A low percentage of eggs from backyard poultry show cause for concern, especially in children.

2. As of today, that concern is not wildfire related - it's a *general* concern

So, is it safe to eat the eggs?!

How can I figure out my family's personal risk from backyard eggs?

Know what's in your eggs - get them (re)tested at the CAHFS lab

Determine how often the members of your household eat the eggs

How to reduce risk - backyard eggs

Use feeders for all types of feed, including scraps!

Limit contact of hens with high risk areas of yard

Consider supplementing with calcium - but not too much!

Know what you’re being exposed to (so repetitive!)

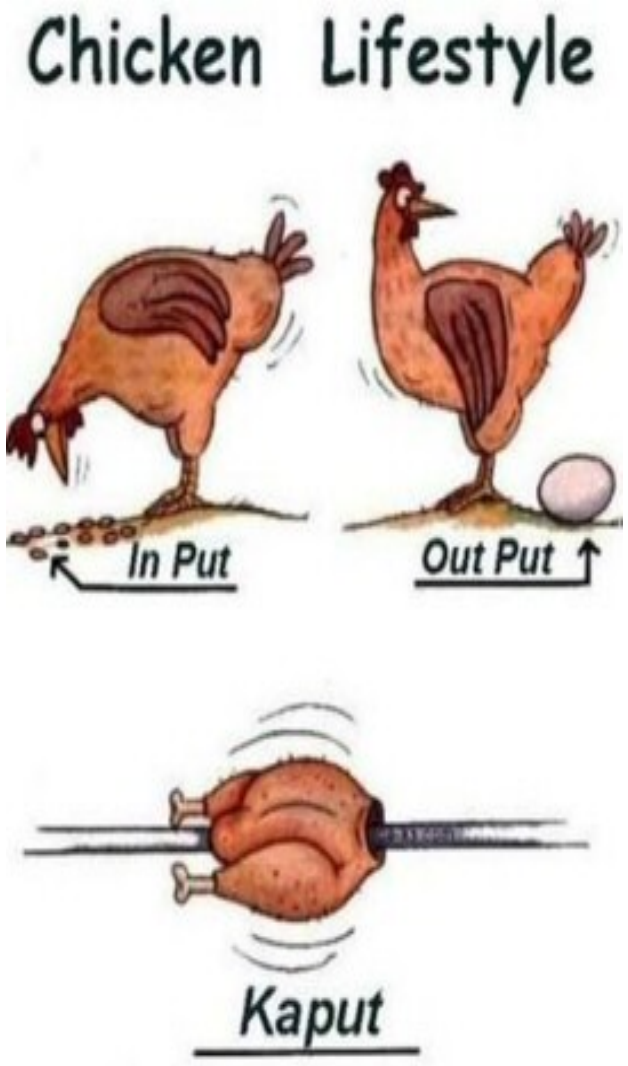
Next steps for the egg study

Complete the testing for organic pollutants in eggs

Site survey of premises with high lead levels in eggs

Controlled withdrawal study of lead and PBDEs

Questions?



Thank You!

Thank you to all those who have participated by sending in their chicken eggs or helping to get people involved!!!

UC ANR

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USDA NIFA

Smith Lever Special Needs Competitive Grants Program