

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



Maurice Pitesky

Todd Kelman, Claire O'Brien, Julia Van Soelen, Anny Huang, Maryse Suppiger & Birgit Puschner

UC Davis School of Veterinary Medicine-Cooperative Extension

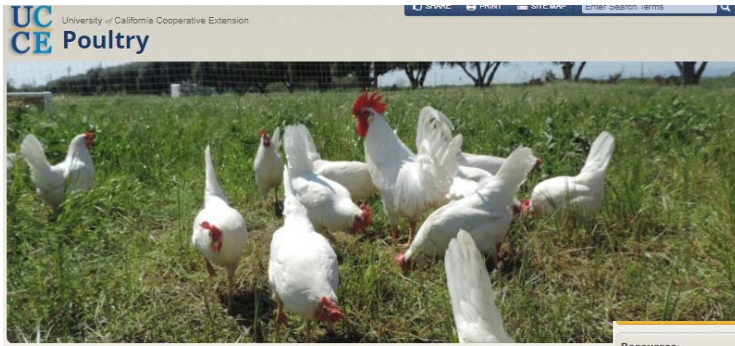
June 4th 2019



Questions?



UCCE Poultry Website



UC Cooperative Extension Poultry

Welcome, poultry enthusiasts!

This website is designed to help you find information and resources for all of you.

[Backyard Poultry](#) [Small-Scale Commercial Production](#) [Large-Scale Commercial Production](#)

[Register for our beginning pastured poultry farmer workshop](#)

BEGINNING FARMER & RANCHER DEVELOPMENT PROGRAM

PASTURED/FREE-RANGE POULTRY

Want to improve your free-range poultry operation? Join us at our workshops for beginning free-range and pastured poultry producers in California and Oregon!

Backyard Chicken Egg Study

We are no longer accepting submissions for our backyard egg study.

The UC Davis School of Veterinary Medicine (UCD SVM) provided free egg contaminant testing for backyard chicken owners in the state of California from January to September 2018. Eggs were tested for two different types of contaminants, depending on what county the hens resided in.

Results will be shared individually with each owner, and cumulative results will be summarized and made available to the general public.

Heavy Metal Contaminant Testing

Due to the recent fires, there is concern about backyard chickens ingesting contaminants from the ground and transmitting these to their eggs. UCD SVM is interested in testing eggs from these backyard flocks for various contaminants such as heavy metals, building materials, chemicals, etc.

Preliminary results can be found [here](#).

Fire Contaminant Testing

Due to observation of high environmental lead levels in parts of California, there is concern that backyard chickens are being exposed to a level that could pose a public health risk. UCD SVM is interested in testing eggs from these birds for various contaminants such as Pb, PCBs, and PBDEs.

Poultry Ponderings

UC DAVIS VETERINARY MEDICINE

Edition 14 - Spring 2018

A quarterly newsletter detailing poultry related work at the UC system

Keeping Your Birds Safe from Virulent Newcastle Disease

The California Department of Food and Agriculture (CDFA) has identified several cases of backyard birds in Los Angeles and San Bernardino Counties. The initial case was detected at the UC Davis School of Veterinary Medicine's California Animal Health & Food Safety Laboratory (CAHFS) when a private practitioner submitted a sick bird for testing. All detections are confirmed at the United States Department of Agriculture (USDA) Animal and Plant Health Inspection Services (APHIS) National Veterinary Services Laboratory (NVSL) in Ames, Iowa. This was the first case of virulent Newcastle disease, previously referred to as exotic Newcastle disease, in the U.S. since 2003. CDFA is working with federal and local partners as well as poultry owners to respond to the incident. State officials have quarantined potentially exposed birds and are testing for the disease.

Virulent Newcastle disease is a highly contagious and deadly virus in birds; the virus is found in respiratory discharges and fecal signs in birds include: sneezing, nasal discharge, green watery diarrhea, neck twisting, circling, muscle paralysis, decreased egg production around eyes and neck, and sudden death. It is essential that all poultry owners practice good biosecurity practices to help protect birds from infectious diseases such as Newcastle. These include simple steps like cleaning hands and scrubbing boots before entering a poultry area; cleaning and disinfecting tires and equipment before and after use on/off the property; and isolating sick birds. New or returning birds from other areas should be isolated for 30 days before placing them with the rest of the flock. For backyard flock owners, biosecurity measures also include using dedicated shoes and clothes when caring for birds and not wearing those clothes/shoes in other areas.

In addition to practicing good biosecurity, all bird owners should report sick birds or unusual bird deaths through California's Sick Bird Hotline at 866-922-BIRD (2473). Additional information on VND and biosecurity for backyard flocks can be found at www.cdffa.ca.gov/ahfs/AnimalHealth/Newcastle_Disease_Info.html

Sick or dead backyard birds can be submitted to CAHFS laboratories for post-mortem examination (\$20 plus shipping and handling). Information on this program can be found at: cdffa.ca.gov/ahfs/AnimalHealth/pdf/CAHFS_NecropsyFactsheet.pdf

For additional information on who to contact for issues regarding backyard poultry, see: ucanr.edu/sites/poultry/contact

Inside this issue:

- Vaccinating Against Virulent Newcastle Disease 2
- New UCCE Spanish Poultry Website 2
- Avian Influenza Testing in "Bridge Species" 3
- Jimsonweed Toxicity 4
- 4H Backyard Poultry Workshop 5

Questions or Comments?
Contact Maurice Pitesky at: mpitesky@ucdavis.edu or 530-752-3215

Editor: Anny Huang

Thoughts on vaccination against virulent Newcastle Disease (vND) from UC Davis School of Veterinary Medicine-Cooperative Extension

First and foremost focus on good management and biosecurity to protect your backyard birds. This is the "lowest hanging fruit" with respect to protecting your flock. The virus can easily spread easily from contaminated birds to your birds via feces, respiratory excretions, feed, clothing, and equipment. Tips for preventing disease transmission via biosecurity can be found [here](#).

If you purchase poultry internationally, poultry should be bought only from suppliers who can certify that the birds have been imported legally or bred in the U.S., and are healthy.

In short use common sense and good biosecurity!

In addition to biosecurity, vaccines are appropriate to consider if you live in affected areas and want an extra level of protection. However, vaccines are not a "bandaid" for poor management.

The LaSota and B1 vaccines are often available from feed stores. Make sure they are licensed in the U.S. In addition follow the instructions and/or consult a veterinarian. A list of small animal veterinarians who treat poultry in California by county can be found [here](#).

The best way to deliver the vaccine is via the eye drop method.

Be aware that the vaccines can produce some mild clinical signs including a drop in egg production and some mild respiratory signs.

Be aware that vaccinations against vND often need to be given at least 2x a year to remain efficacious.

Again, vaccination is not a substitute for good biosecurity which is the best way to prevent your flock from getting infected from all infectious diseases including vND.

Lastly, use your [network](#). If you suspect you have a sick bird (vND or other) UC Davis, the California Department of Food and Agriculture (CDFA) and the California Animal Health and Food Safety Lab (CAHFS) have resources to help answer questions. Feel free to contact Dr. Maurice Pitesky from the UC Davis School of Veterinary Medicine-Cooperative Extension at mpitesky@ucdavis.edu or 530-219-1407 if you have questions, comments or suggestions.

Also available in Spanish!

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:

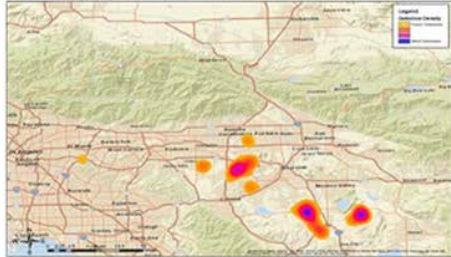
Compton and Whittier (Los Angeles County)
Menifee, Mira Loma/Jurupa Valley, Norco, Nuevo, Perris, and Riverside City (Riverside County)
Hesperia, Muscoy, and Ontario (San Bernardino County)

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.

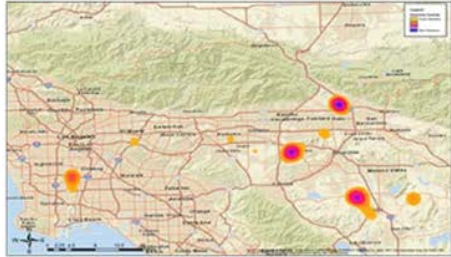
While this action is difficult for all involved, it MUST be done to eradicate vND. Otherwise, the disease will continue to spread and kill additional flocks.

For more information please refer to: [Virulent Newcastle Disease FAQs](#) or call the Sick Bird Hotline at 866-922-2473

Most Recent Detections

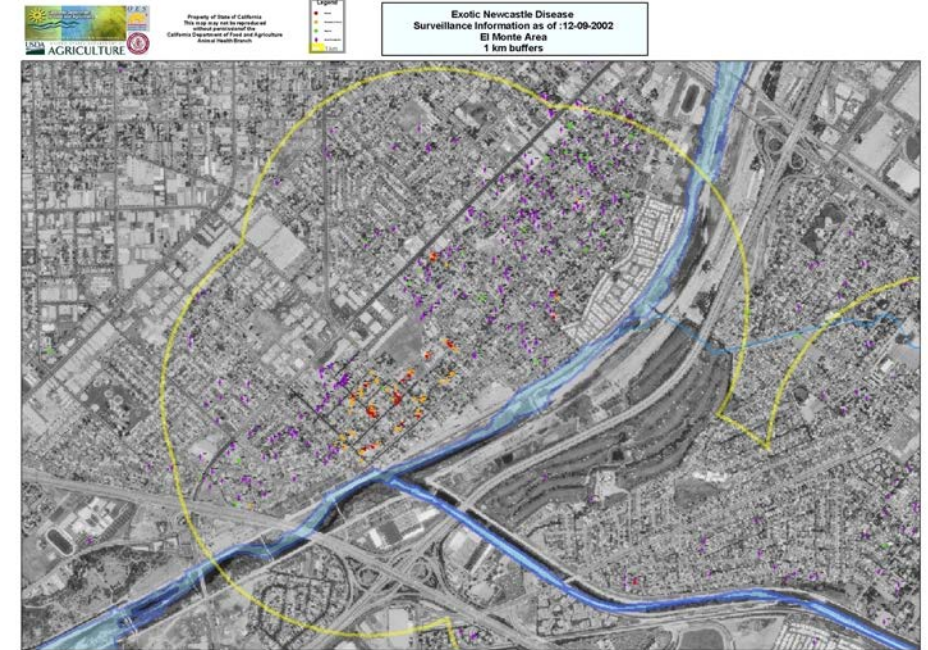


Overall Detections



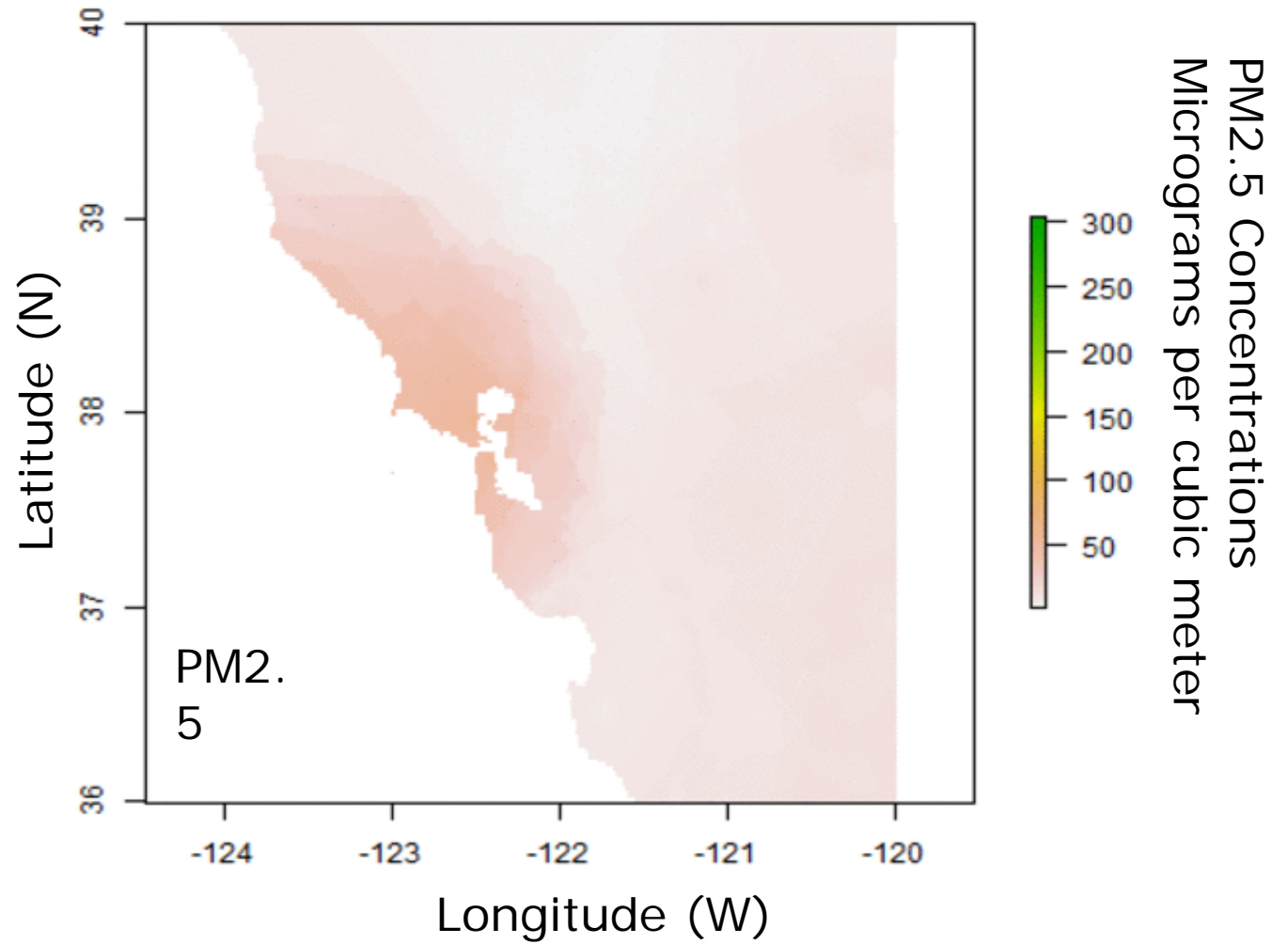
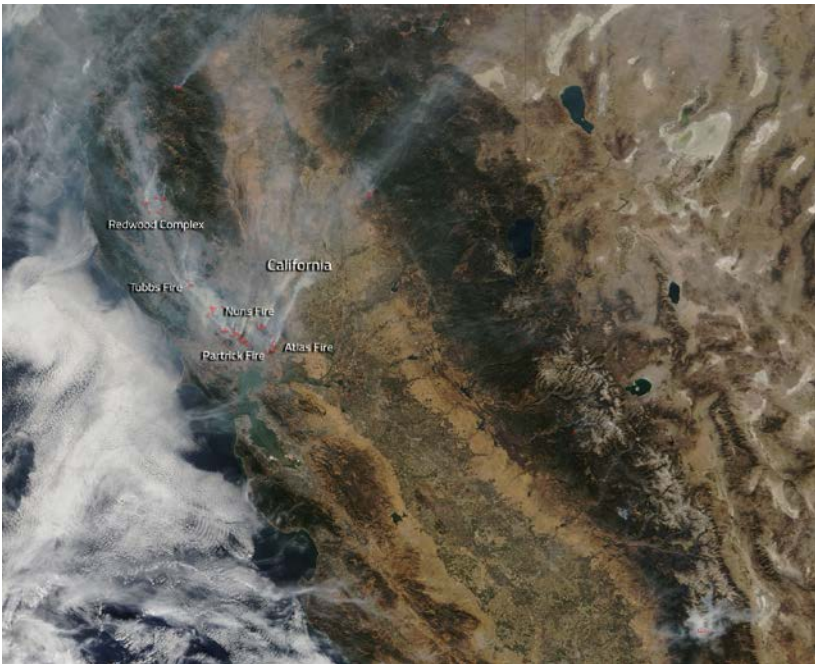
How do you Control a Highly Infectious Poultry Disease in a Urban Area?

- Education
- Communication
- Quarantine
- Vaccination
- Depopulation



Smoke Carries Chemicals

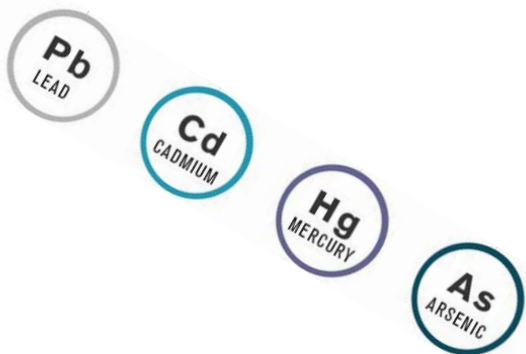
"Smoke" Measured as Particulate Matter (PM) Carries Other Chemicals



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

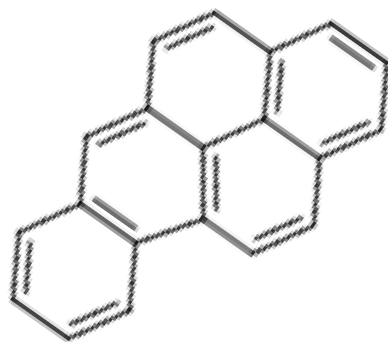


Toxins we tested for



Heavy metals

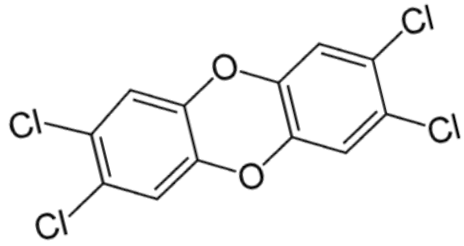
- Can exist naturally in soil but can also be emitted in toxic levels from industrial activities
- Can be present in smoke from burning buildings and cars
- Can be carcinogenic, toxic to many organ systems, and cause developmental effects on fetuses and children



Polycyclic Aromatic Hydrocarbons (PAHs)

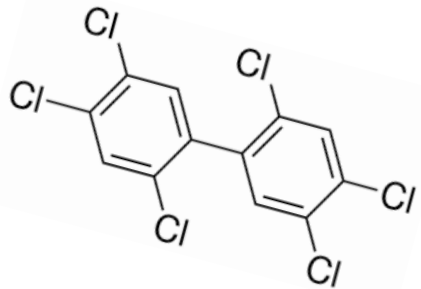
- Come from the combustion of organic materials
- Traffic-related air pollution is a common source. They also enter the diet through grilling, drying, and smoking foods
- Generally have a lower degree of concern about *acute* toxicity in humans with more know about their chronic effects (cancer)
- Can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

Toxins we tested for cont...



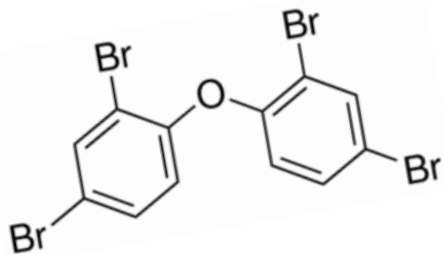
Dioxins and Furans

- 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

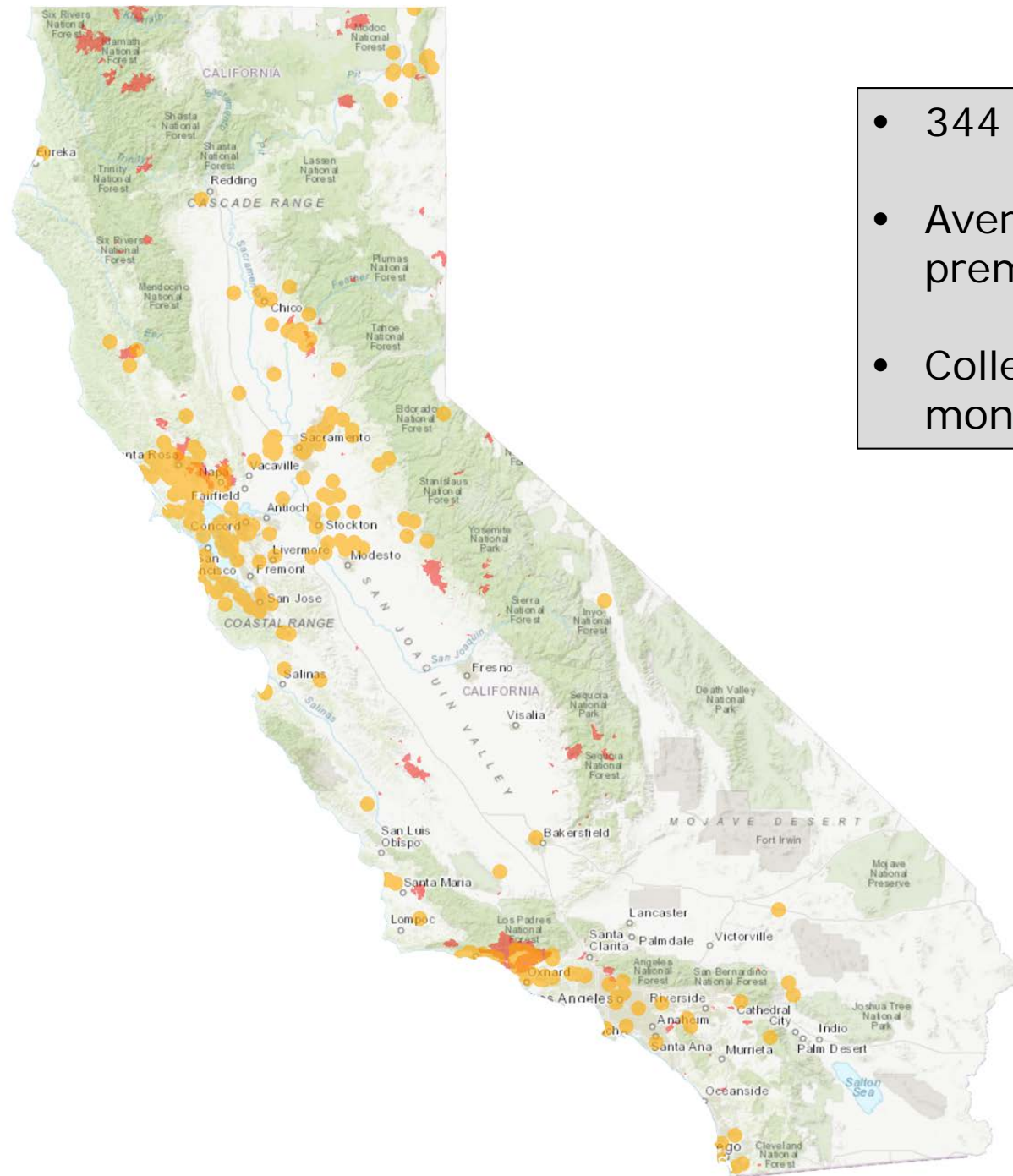
EPA



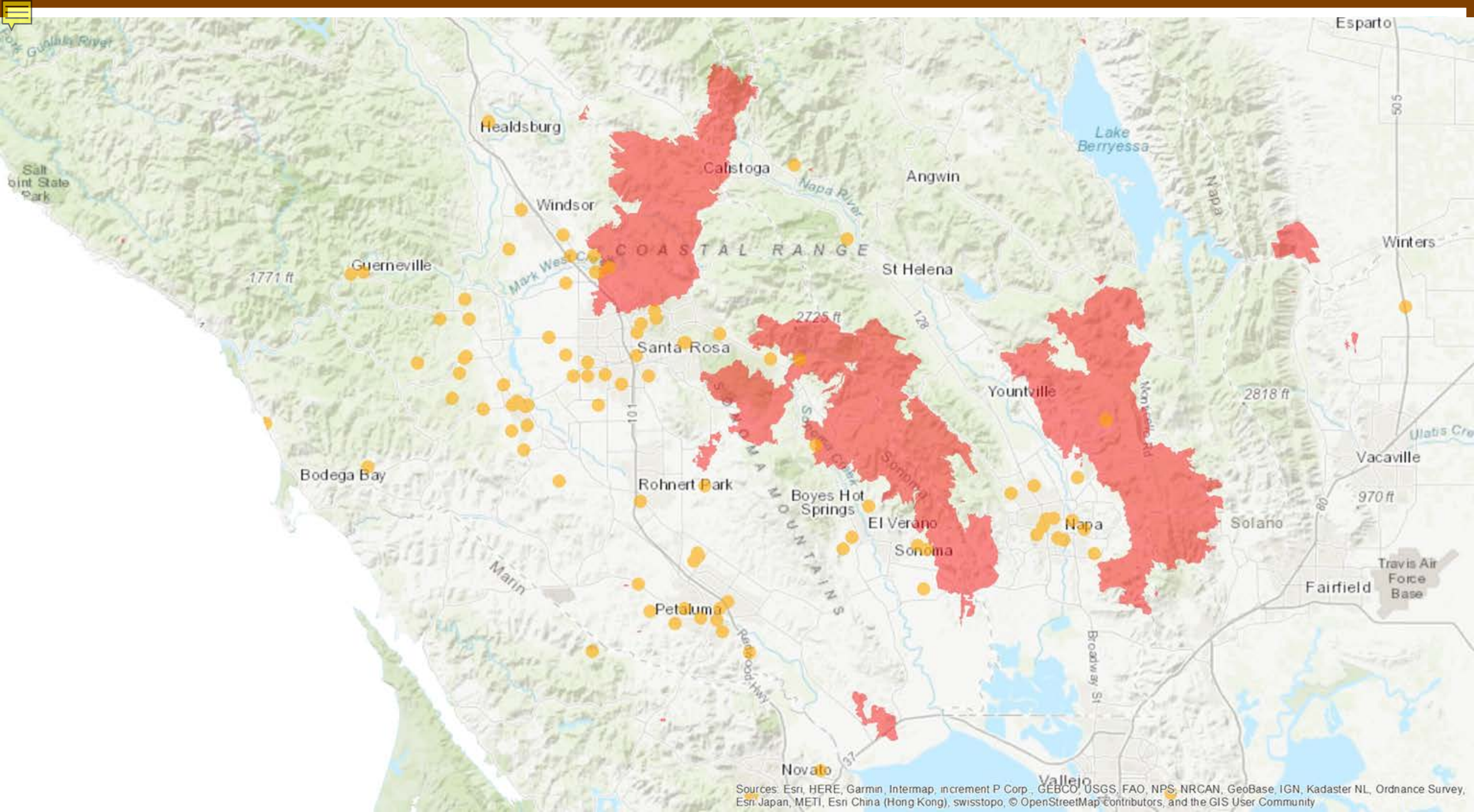
	Mean lead values per average sized egg (micrograms)
	● 0-1
FDA Child Threshold	● >1-3
FDA Adult Threshold	● >3-6
	● >6-12
	● >12-28
	■ Wildfires 2017



Where did the eggs come from?



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



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

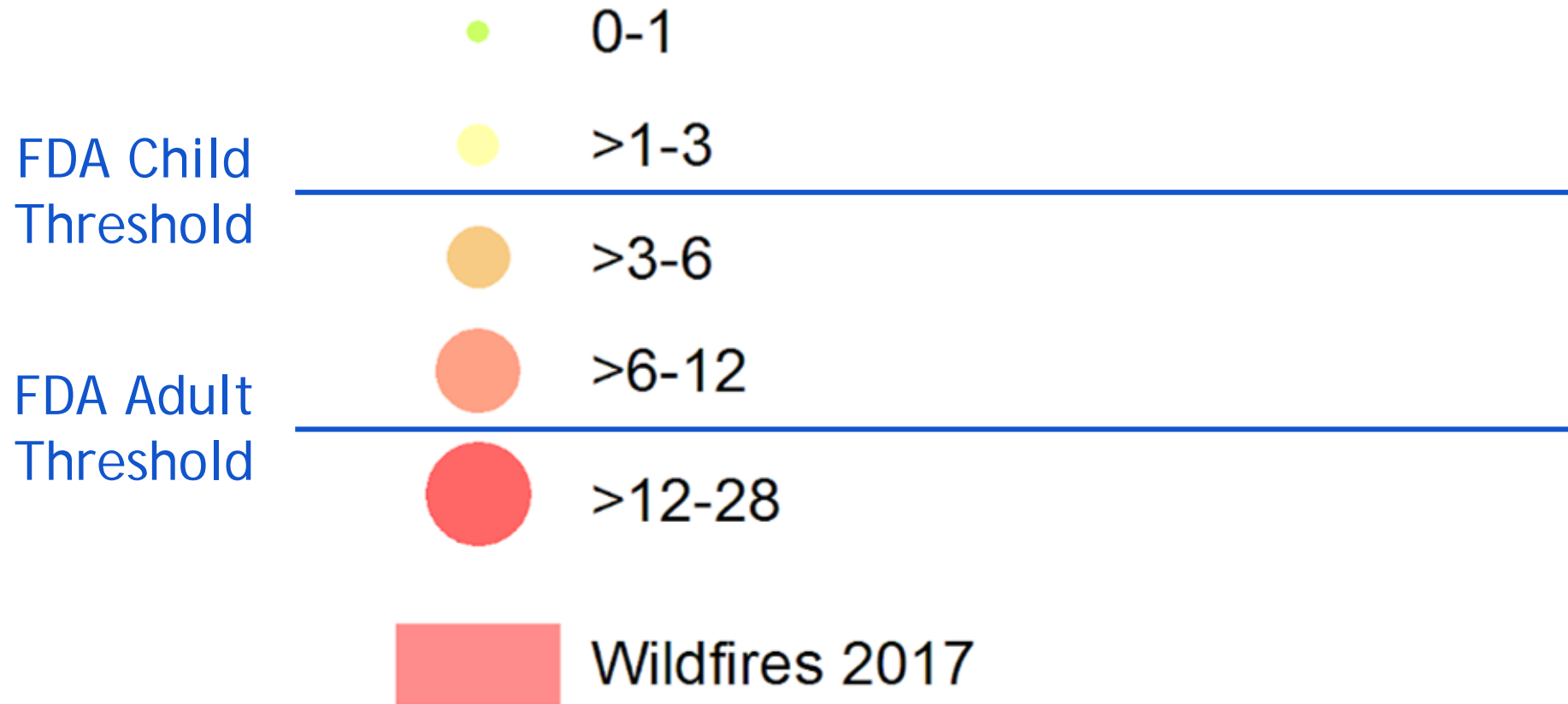




So what did we find?

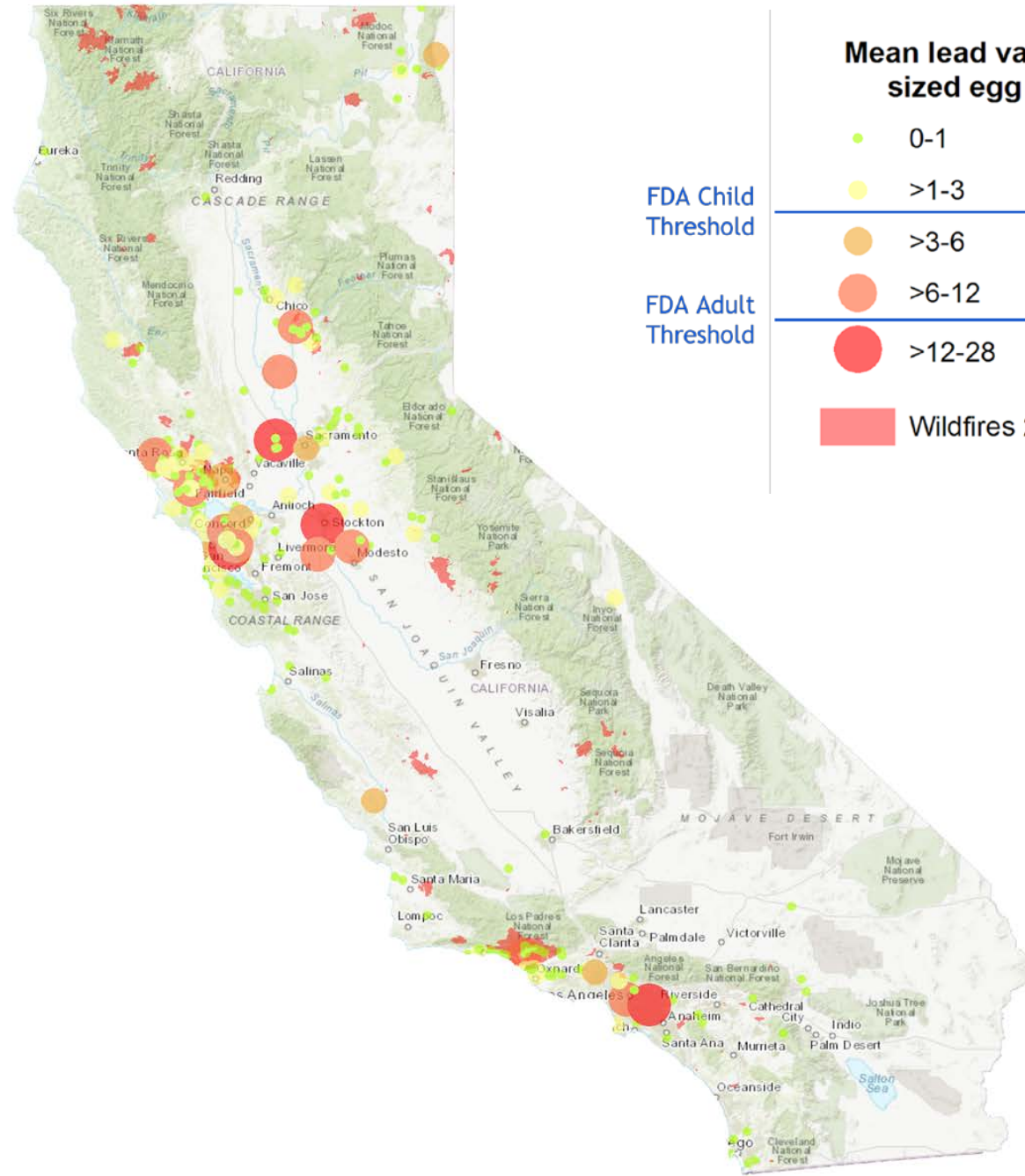
A quick guide to interpreting lead results

Mean lead values per average sized egg (micrograms)



Highest values:

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

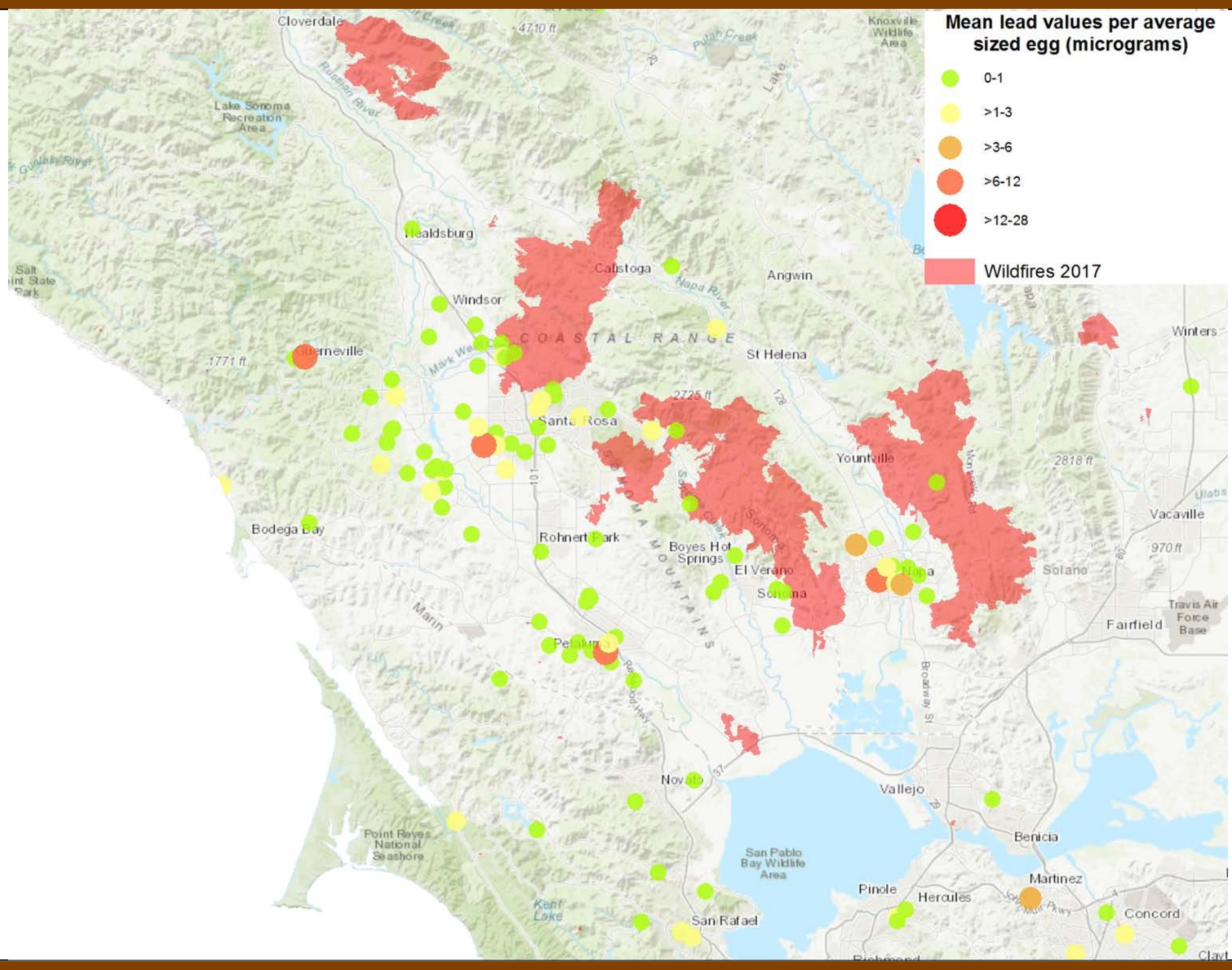


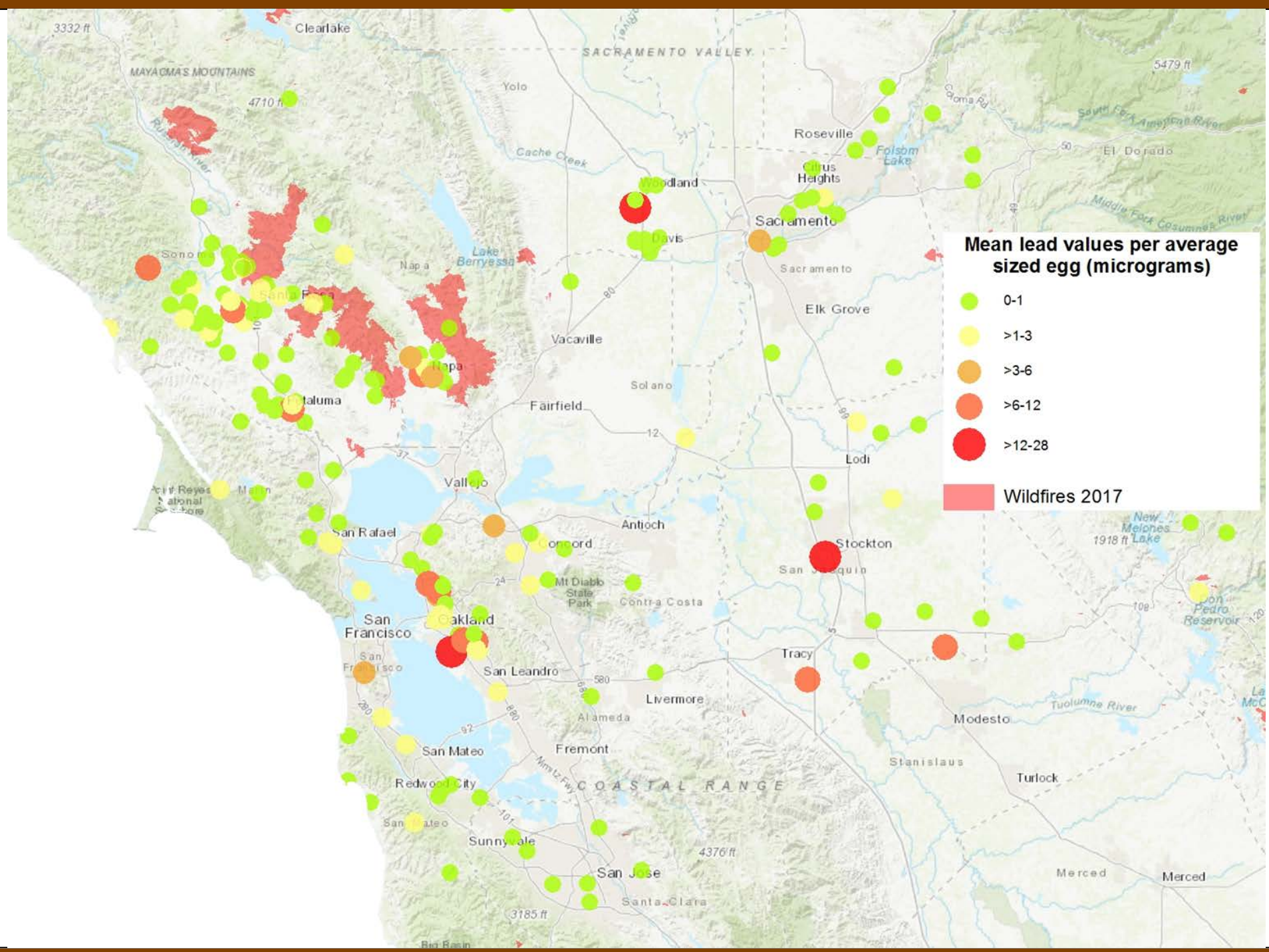
Mean lead values per average sized egg (micrograms)

- 0-1
- >1-3
- >3-6
- >6-12
- >12-28

FDA Child Threshold
FDA Adult Threshold

Wildfires 2017



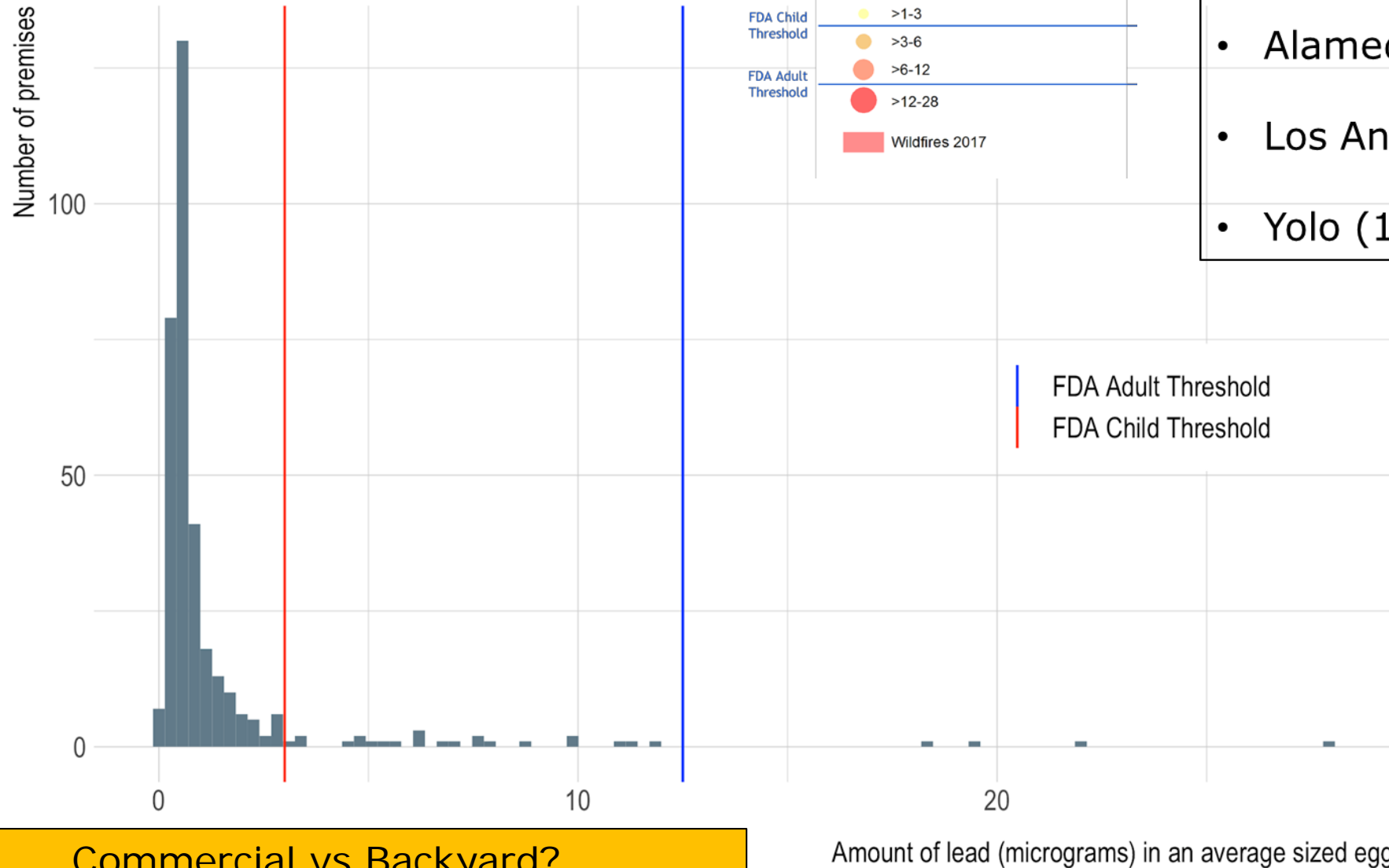




So how many properties had a
problem?

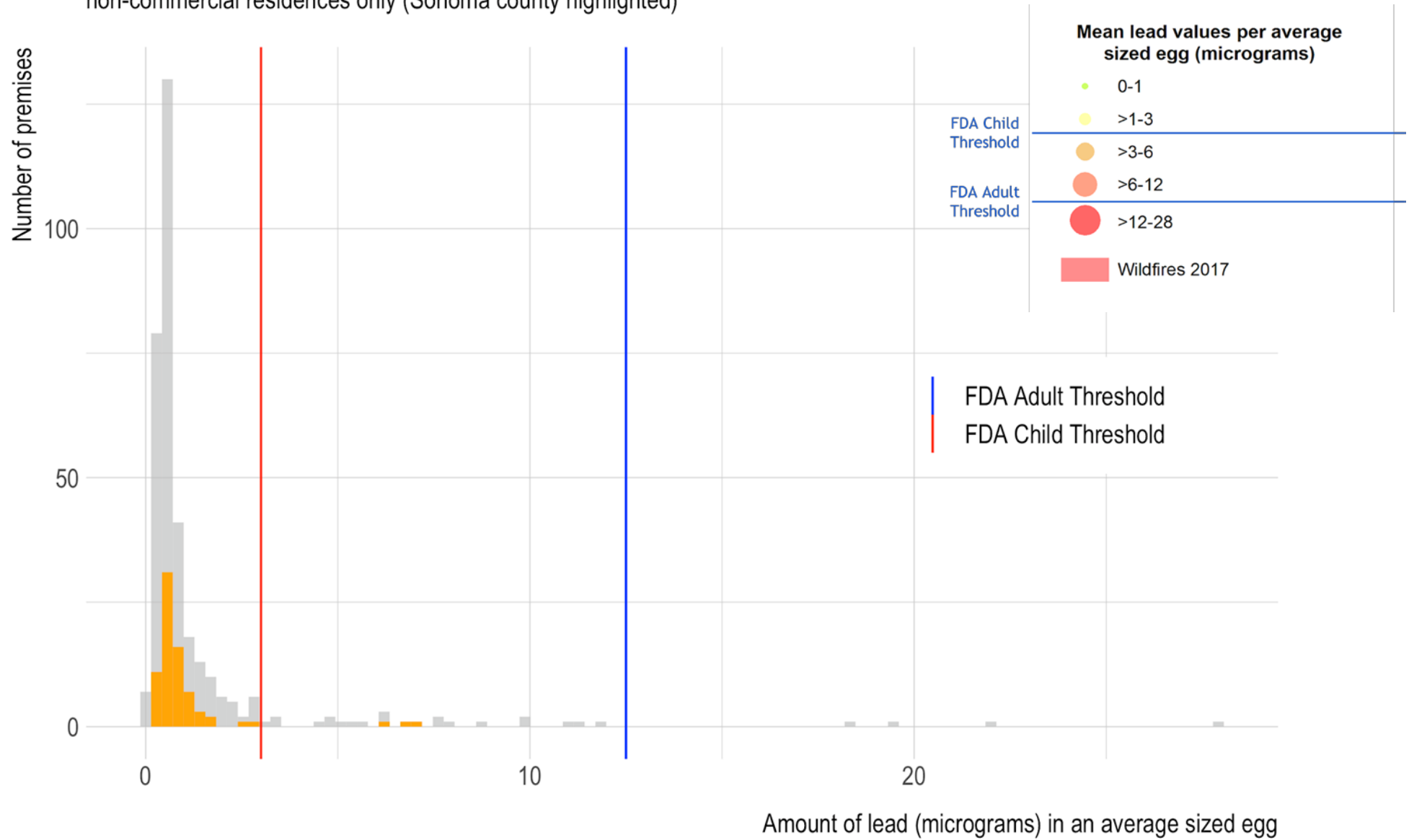
Mean lead values per premise

non-commercial residences only



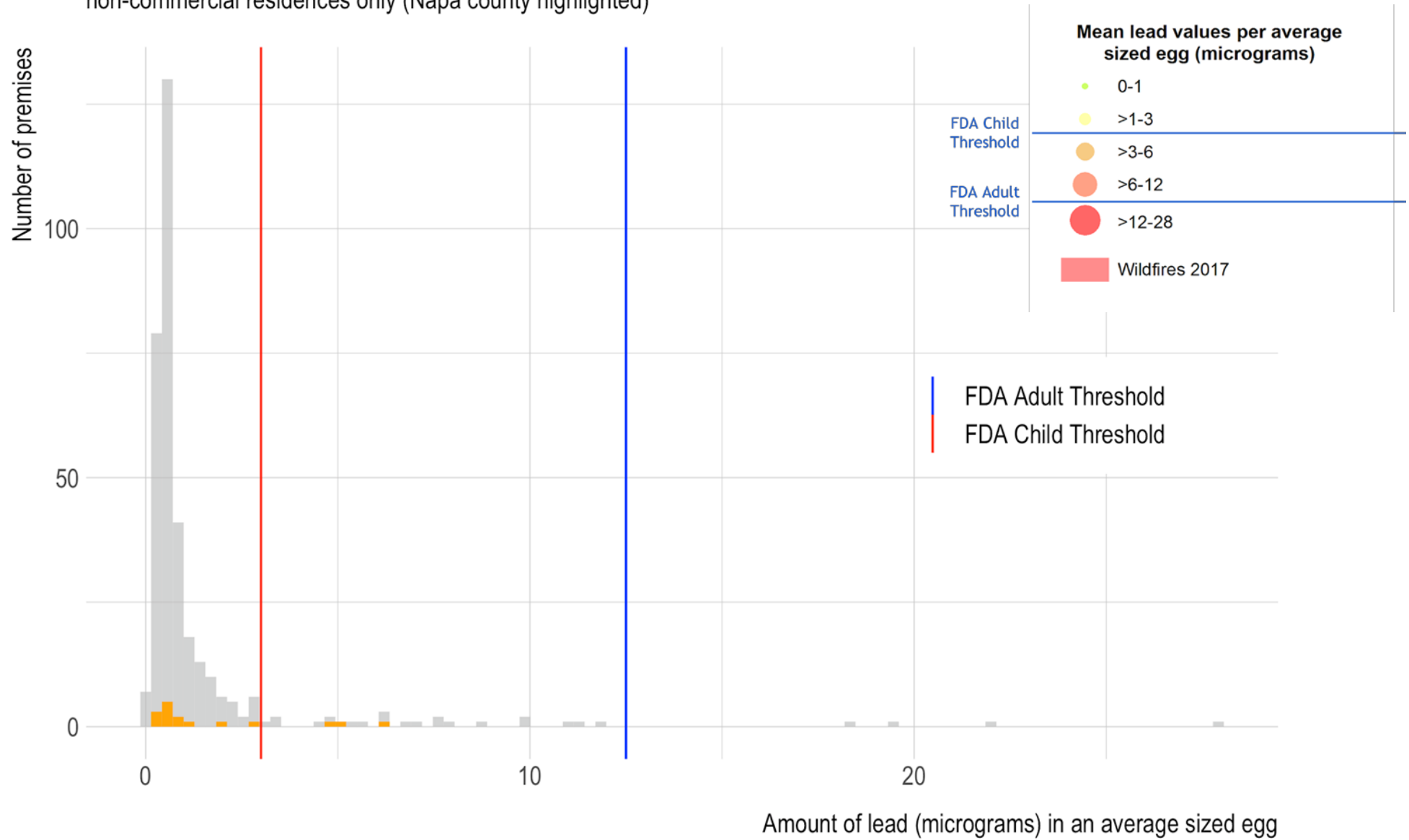
Mean lead values per premise

non-commercial residences only (Sonoma county highlighted)



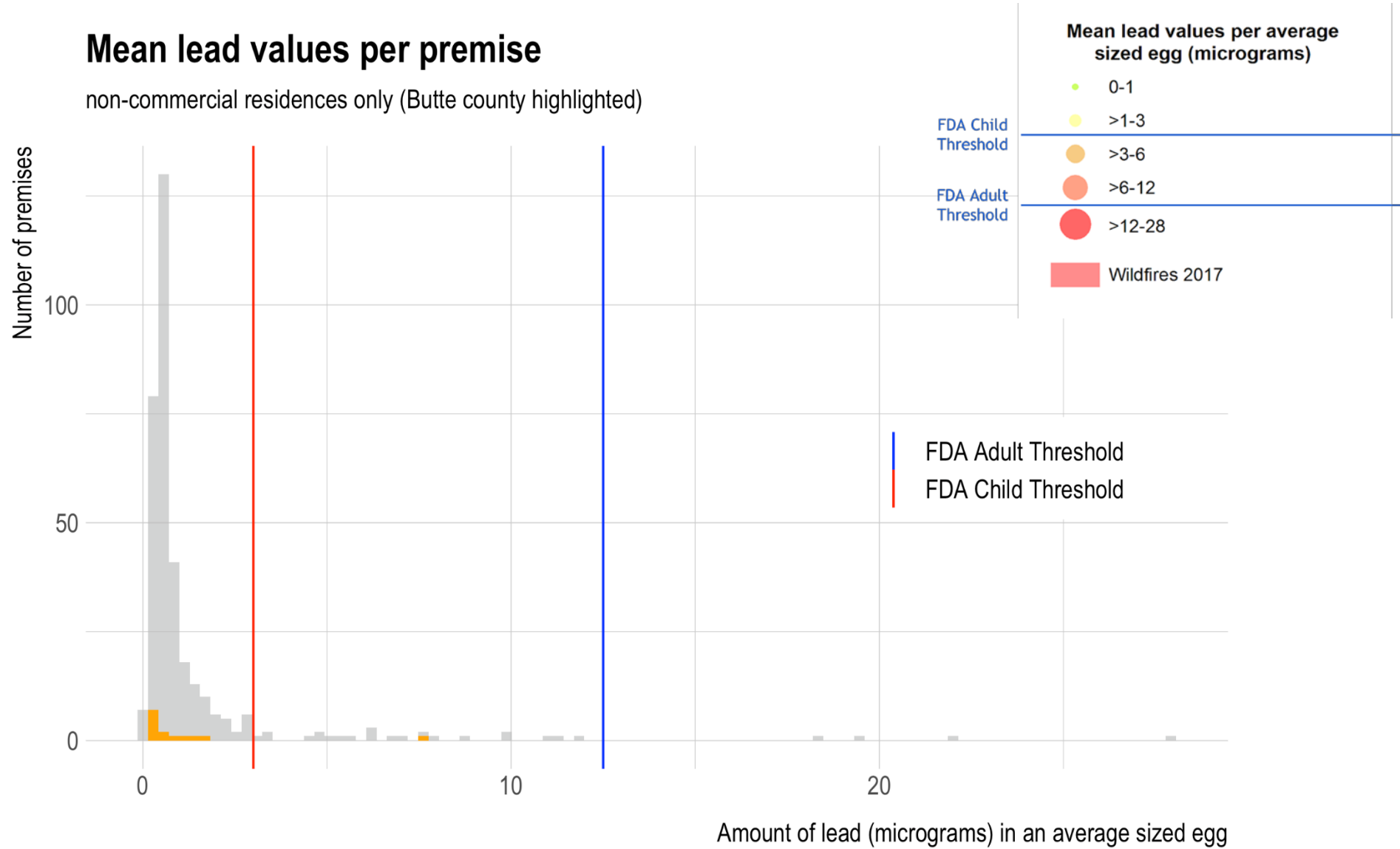
Mean lead values per premise

non-commercial residences only (Napa county highlighted)



Mean lead values per premise

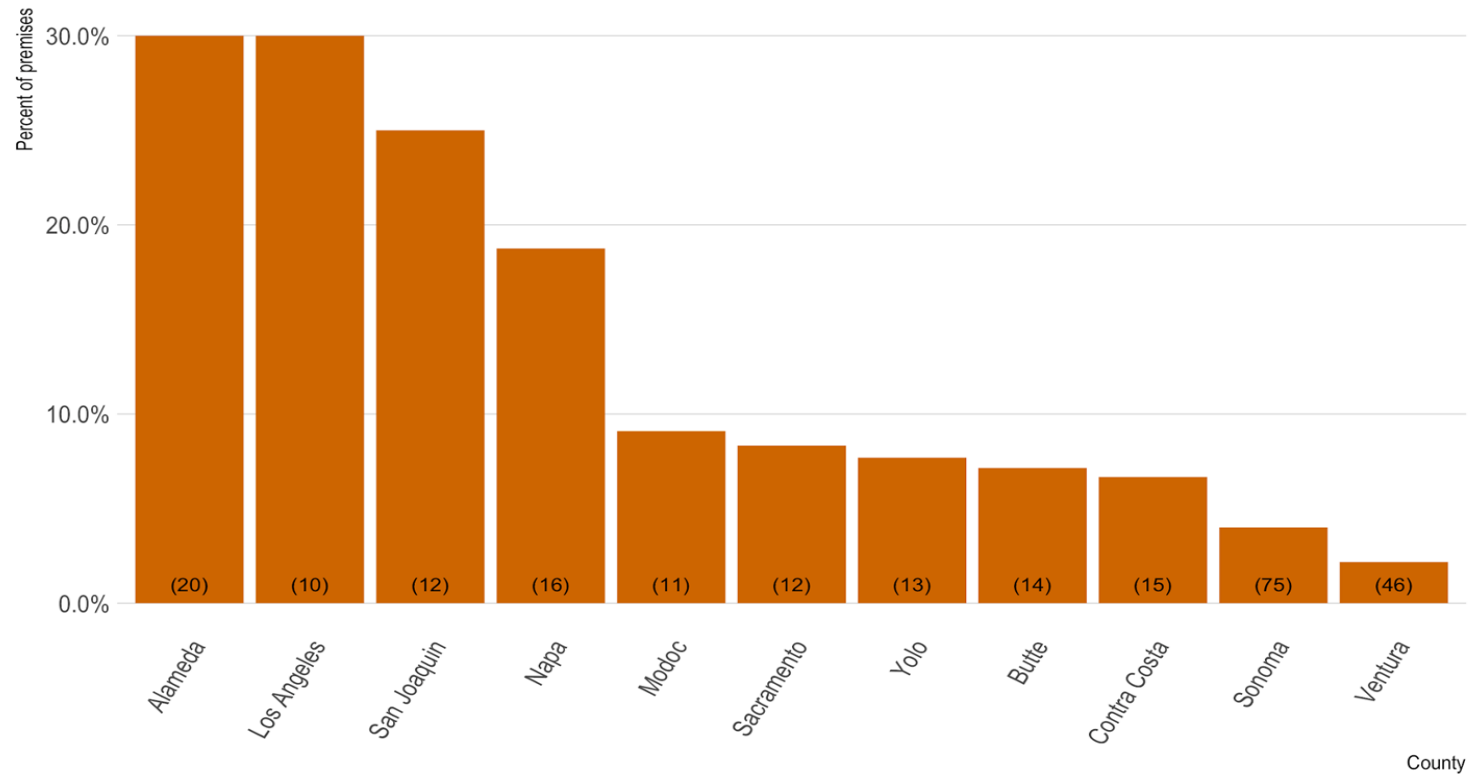
non-commercial residences only (Butte county highlighted)



So which counties had the biggest problem?

Percent of premises per county exceeding FDA lead threshold

total number of premises from each county in parenthesis (at least 10 to qualify)



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

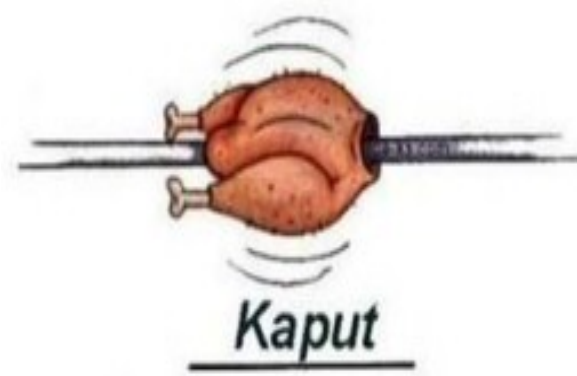
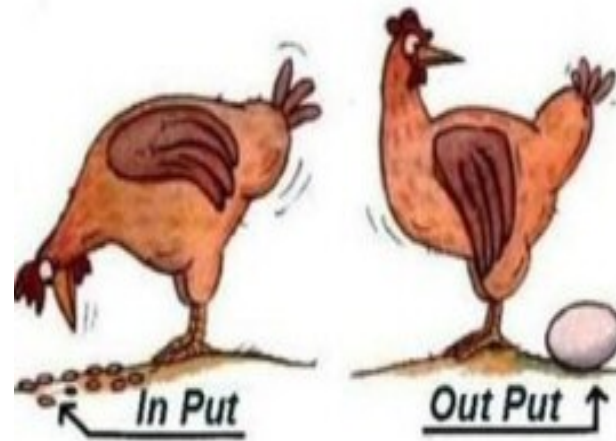
Complete the testing for organic pollutants in eggs

Site survey of premises with high lead levels in eggs

Controlled withdrawal study of lead and PBDEs

Questions?

Chicken Lifestyle



Thank You!

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



UC
ANR



UC DAVIS
VETERINARY MEDICINE

USDA 
Smith Lever Special Needs
Competitive Grants Program