



**UC DAVIS**

**VETERINARY MEDICINE**

# Poultry Ponderings



Edition 15 • Fall 2018

A quarterly newsletter detailing poultry related work at the UC system



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## New Mobile Coop for the UC Davis Pastured Poultry Farm



*The new mobile coop designed by Ruby Chen*

Meet Ruby Chen, a recent graduate of the UC Davis' civil and environmental engineering program. Ruby is now working for the Fundamentals of Engineering exam. Good luck Ruby! During her last two years of school, Ruby served as the 'lead engineer' at the UC Davis Pasture Poultry Farm where she fixed electric fences, installed solar panels, repaired a mobile coop and dozens of other assorted hands-on engineering duties. But where Ruby really excelled was her design and construction of the Farm's newest mobile coop.

In the continuing quest for the best possible mobile coop – that is, one that is strong, lightweight, inexpensive, and sustainable –

Ruby and her civil engineering team members, Lj Tullo and Torynne Dillon, designed a new mobile coop as part of their senior year design experience. Ruby then went on to actually build the coop over the summer. And what a coop it turned out to be!

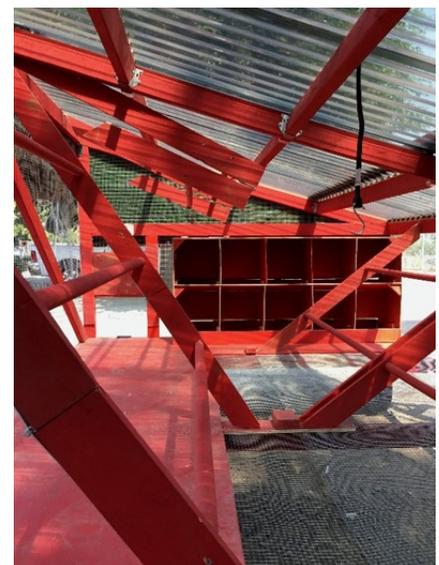
Strong, lightweight enough that it can be moved by two people, and roomy enough to hold 50 hens. And it is just beautiful to look at. The coop is roughly 12 by 8 feet. It's made of wood, with wire mesh floors to protect the hens from predators while also allowing easy cleaning. The eggs can be quickly harvested using the outer access to the nest boxes and there are enough nest boxes that every hen can be accommodated during the day.

The plans and pictures of critical design features will be available in early fall.

—Deb Niemeier



*Accessible nest boxes speed up egg collection*



*The newest mobile coop design includes a hybrid floor and removable perches for easier cleaning!*

## Questions or Comments?

Contact Maurice Pitesky at [mepitesky@ucdavis.edu](mailto:mepitesky@ucdavis.edu) or 530-752-3215

Editor: Anny Huang



## Using Social Network Analysis to Better Understand Live Bird Movement in California

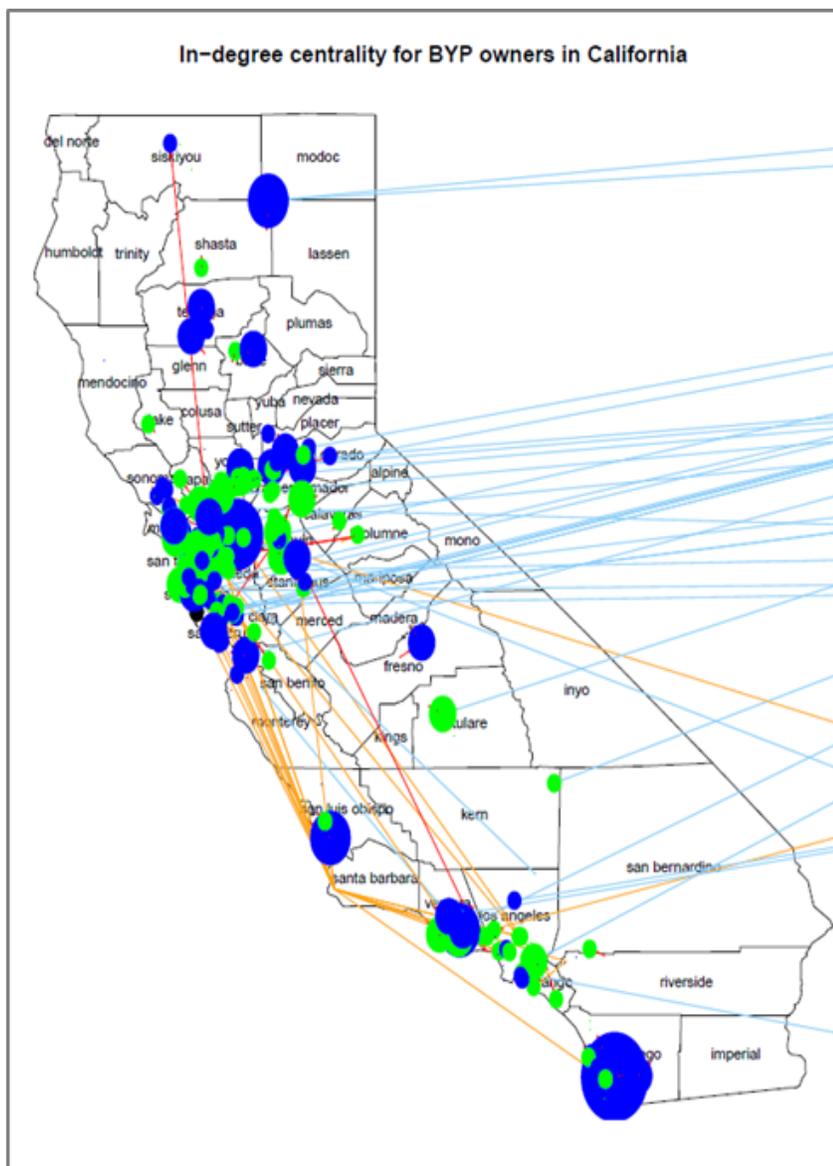
Last year the Cooperative Extension Poultry laboratory at the UC Davis School of Veterinary Medicine asked backyard poultry (BYP) owners where or whom they purchase live poultry from along with questions related to their husbandry practices through an online survey. The goal was to 1) visualize and link live poultry movement

to husbandry practices to better understand disease transmission in backyard poultry flocks and 2) design and execute effective and efficient BYP outreach programs. In total, there were 356 survey participants from 40 out of 58 counties.

Using social network analysis (SNA), a scientific and quantitative way of

studying relationships, a network was built with nodes representing people or places (ie. BYP owner, feed store) and links representing live bird movement (see figure). Based on the network, live poultry movement occurs between Northern and Southern California. This is important to keep in mind especially with the virulent Newcastle Disease (vND) outbreak that is currently occurring in Southern California. In fact, one backyard poultry owner from San Joaquin County indicated they purchased poultry from a feed store located in Los Angeles County (a county affected by the vND). While this purchase did not occur during the time of the vND outbreak, results from this study suggest that risky live poultry movement can occur between Northern and Southern California. Therefore, from an outreach perspective, notifying all BYP owners about a disease outbreak should be highly considered as opposed to only notifying BYP owners from regions where an outbreak has occurred. Next steps include working with feed stores that are popular among BYP owners to disseminate outreach material related to disease prevention (ie. biosecurity) to BYP owners. Overall, these findings suggest that SNA is an important tool that can allow our extension efforts to be more targeted and robust.

—Myrna Cadena and Maurice Pitesky





## Understanding and Communicating the Risks of Urban Fires on Eggs Produced from Backyard Chickens in California

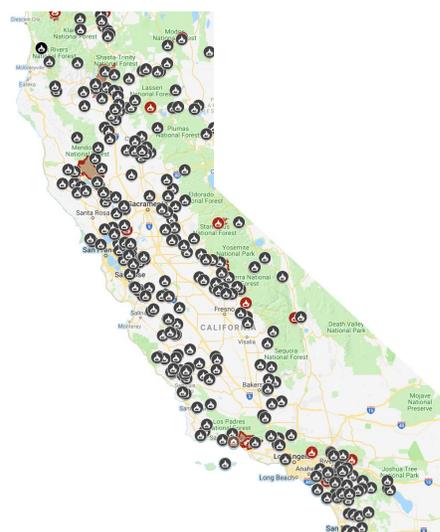


In the fall and winter of 2017-18, over 250 fires erupted in California, producing damage on an unprecedented scale. While wildfires are a longstanding threat to California, recent fire events may portend the “new reality” of increased wildfire incidence within urban areas, that can result in distribution of ash debris including household hazardous waste, building materials, pesticides, and fire retardants. Such ash debris has been shown to contain toxic levels of various heavy metals, and constitute a mechanism by which these are spread throughout the environment. In many cases these urban fires geographically overlap with backyard poultry, which has become a growing phenomenon due to their relative ease to raise and their ability to produce eggs for human consumption. These poultry are typically raised outdoors where they

spend daylight hours foraging off the ground, potentially leading to the ingestion of toxic substances present in urban wildfire ash. Once ingested, toxic chemicals can be deposited into their eggs and effect human health if consumed daily. As part of our ongoing research we are assessing the exposure of eggs from backyard poultry from fire affected areas to several heavy metals including lead and cadmium. Using a “citizen science” based approach we collected table eggs from over 300 backyard premises in California. Preliminary results found that eggs in sampled regions contained lead ranging from 0.001 ppm to 0.173 ppm. Overall, 17.6% (40% of the total premises) of the eggs submitted surpassed the California Proposition 65 Maximum Allowable Dose Level (MADL) of lead consumption associated with reproductive harm (0.5 ug/day). Most eggs were found to be

well below toxic levels. Concentrations of other metals such as arsenic, copper, nickel, and mercury were well below toxic levels for all eggs tested. Our preliminary results, in combination with the scientific literature, demonstrate the need for science based extension efforts for all backyard chicken owners with respect to the risk of toxic contamination of eggs from the urban environment. Supported by a 2-year USDA grant, extension and outreach efforts will focus on training and outreach of various stakeholder groups in urban areas affected by fires in California. Analysis of toxic substances in eggs from backyard poultry is ongoing and will include quantification of fire retardants (PBDEs) and previously banned chemicals such as PCBs.

—Anny Huang, Oscar Martinez,  
Claire O’Brien, Sarai Acosta,  
Todd Kelman, Birgit Puschner,  
and Maurice Pitesky



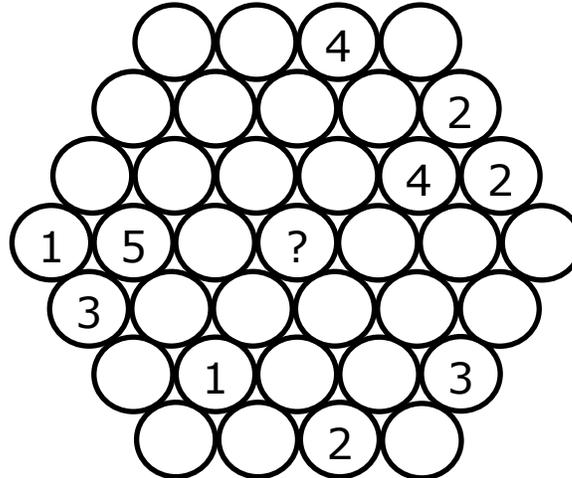
This map of CA shows the location of all 2018 fires as gray or red circles.



### Dr. Cluck's Trivia

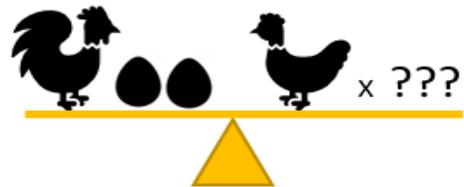
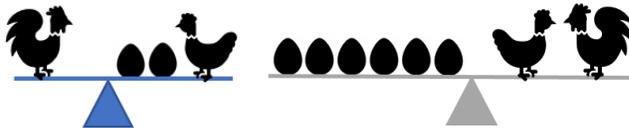


Dr. Cluck's flock will only lay eggs in a certain pattern in their circular nest boxes. Can you figure out how many eggs were laid in the center?



Email [mepitesky@ucdavis.edu](mailto:mepitesky@ucdavis.edu) with your answer!

Last quarter's trivia: How many hens would you need to add on the right to balance the yellow scale? (Assume the first two scales are perfectly balanced)



**Answer:** You would have to add two hens for a total of three!

#### 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!



Visit our website at [ucanr.edu/sites/poultry](http://ucanr.edu/sites/poultry) to learn more!

**These workshops will include** talks from experts in the field (including other farmers) about husbandry, marketing, profitability, regulations, and more! We will also have hands-on labs, local farm tours, and plenty of time to network!

#### The 2019 workshops will take place:

- 1/7, 1/15, 1/23, 1/31, 2/8 @ Davis, CA (also online!)
- 2/22 - 2/23/19 @ Corvallis, OR
- 3/13/19 @ San Diego, CA
- 4/10/19 @ Santa Rosa, CA
- 5/15/19 @ Santa Rosa, CA
- 6/5/19 @ Salinas, CA
- 7/11/19 @ Davis, CA

*Dates subject to change. Please check the website for all updated dates and locations.*

If you are interested in registering or learning more about these workshops, email Anny at [asahuang@ucdavis.edu](mailto:asahuang@ucdavis.edu)!



Visit our website for more poultry information: [www.ucanr.edu/sites/poultry](http://www.ucanr.edu/sites/poultry)