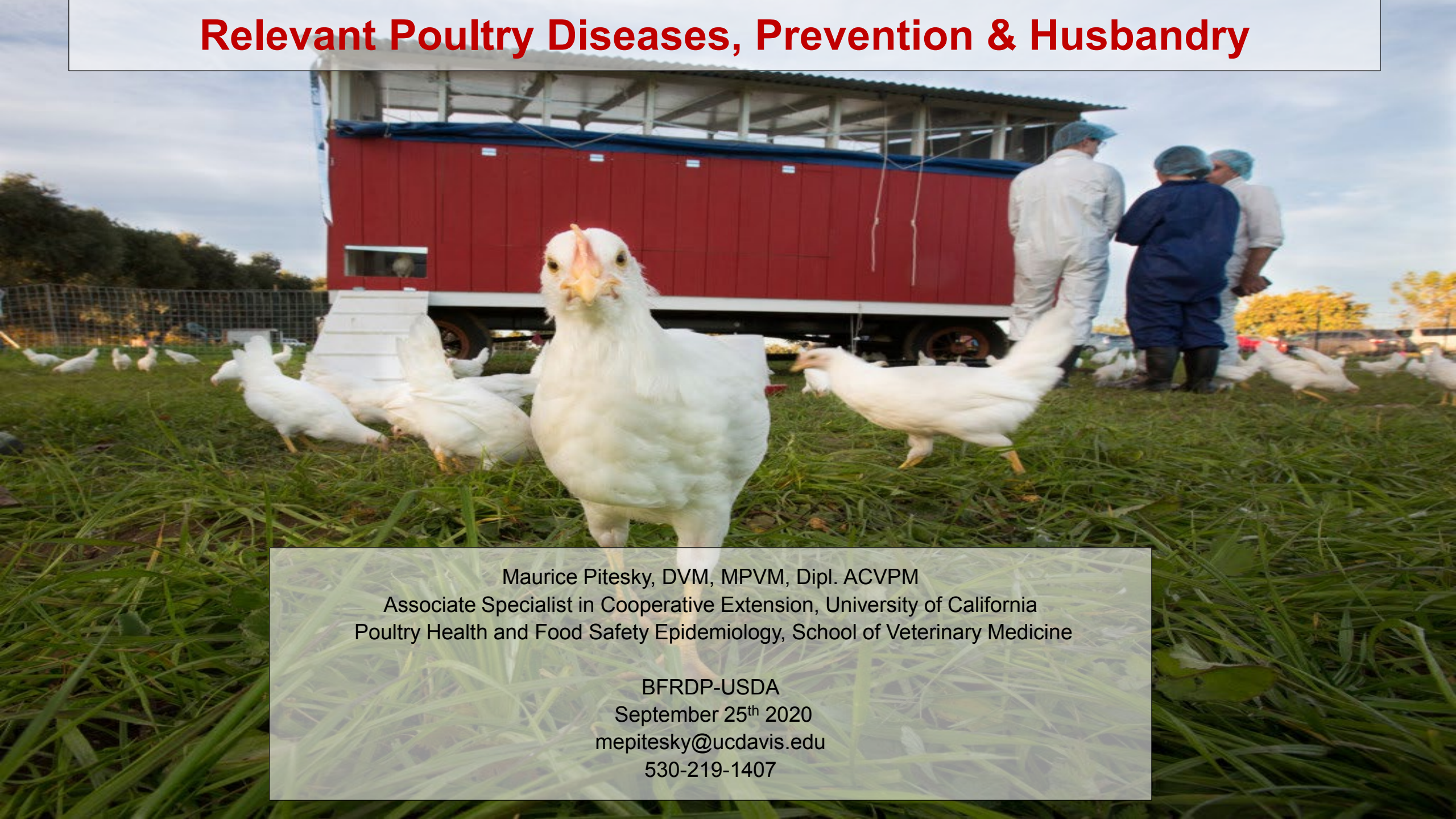
Relevant Poultry Diseases, Prevention & Husbandry

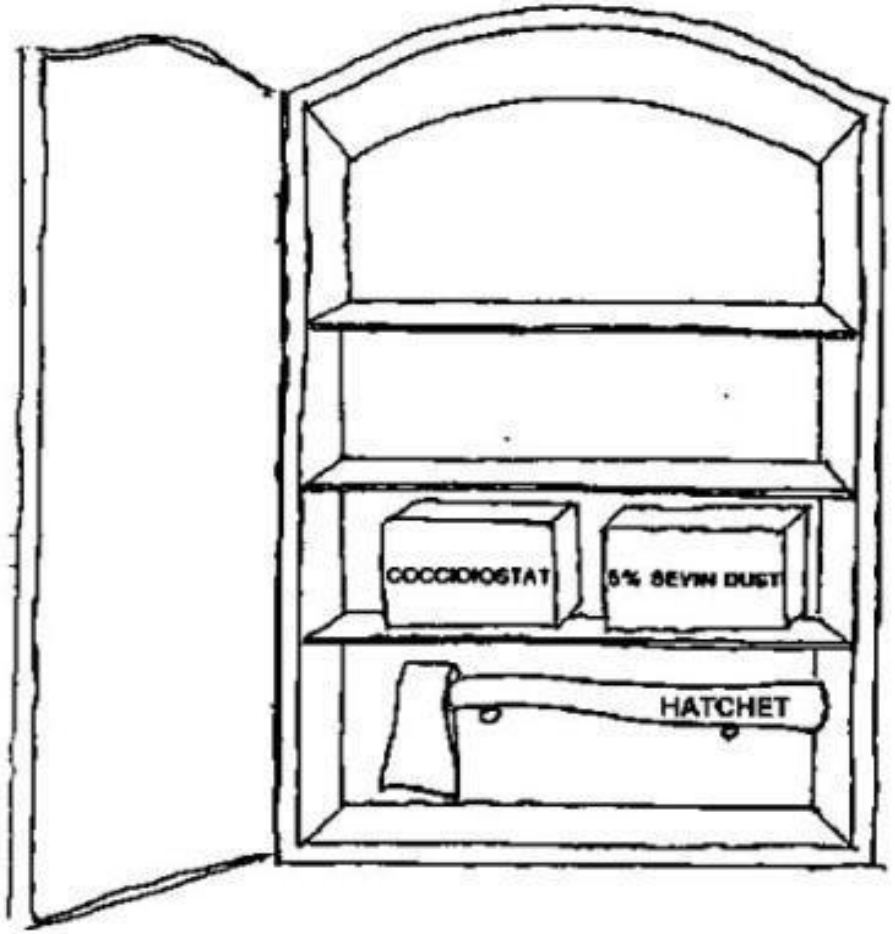


Maurice Pitesky, DVM, MPVM, Dipl. ACVPM
Associate Specialist in Cooperative Extension, University of California
Poultry Health and Food Safety Epidemiology, School of Veterinary Medicine

BFRDP-USDA
September 25th 2020

mepitesky@ucdavis.edu
530-219-1407

How to Treat Poultry…

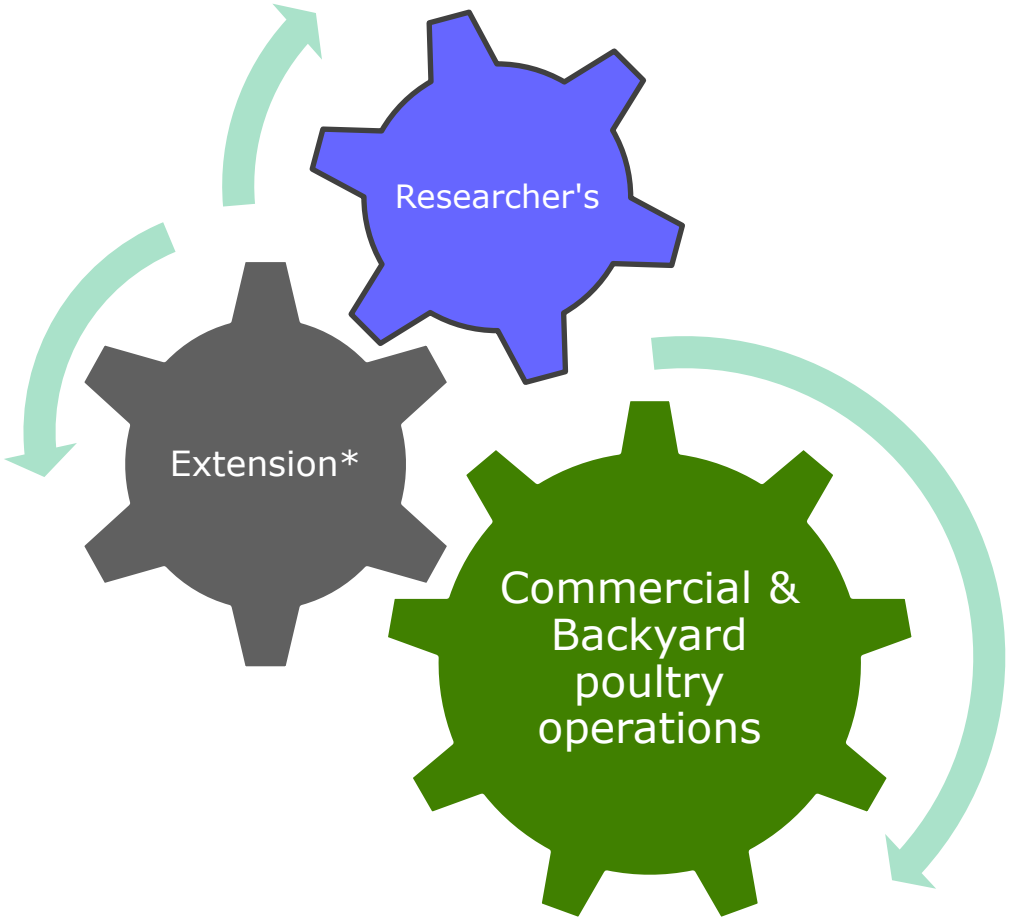


The Author's Medicine Cabinet

Missing from the shelves are fresh air, sunlight, genes for resistance to disease, soil, humus, green grass, insects, worms, commercial feed and a small container of uncommon sense.

Questions?

What is Cooperative Extension?



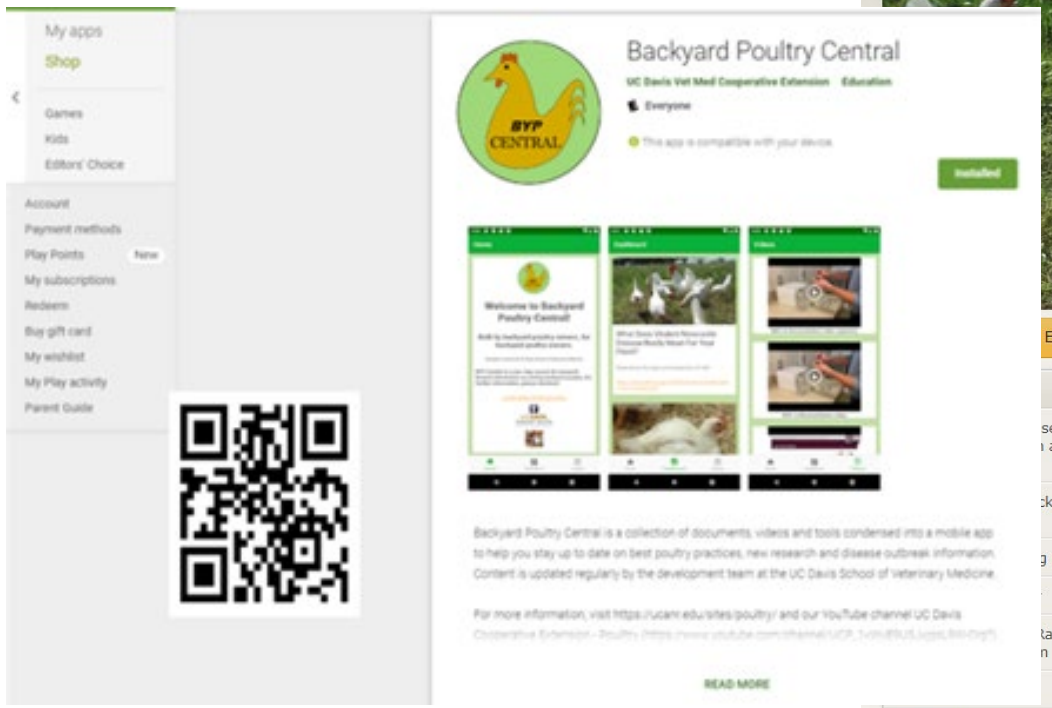
Mission Statement:
Statewide network of researchers and educators focused on the creation and application of knowledge in agriculture

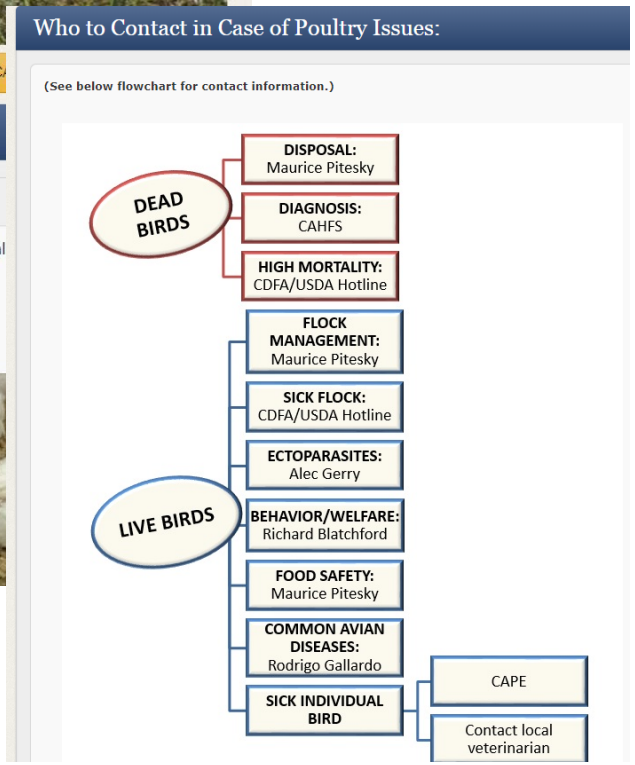
- 200 locally based CE advisors and specialists
- 57 local offices
- 130 campus based CE specialists
- 9 research and extension
- centers
- 700 academic researchers

http://ucanr.edu/

* Extension Specialists, Researchers and Farm Advisors

UCCE Poultry Website, YouTube and Backyard Poultry Central App





YouTube:

UC Davis Cooperative Extension Poultry

Quarterly Newsletter

UC CE

UCDAVIS VETERINARY MEDICINE

Poultry Ponderings

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 **virulent Newcastle disease** in small flocks 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 feces. Clinical signs in birds include: sneezing, coughing, nasal discharge, green watery diarrhea, depression , neck twisting, circling, muscle tremors, paralysis, decreased egg production, swelling around eyes and neck, and sudden death.

It is essential that all poultry owners follow good biosecurity practices to help protect their birds from infectious diseases such as virulent Newcastle. These include simple steps like washing hands and scrubbing boots before and after entering a poultry area; cleaning and disinfecting tires and equipment before and after moving them on/off the property; and isolating any sick birds. New or returning birds from shows 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.cdfa.ca.gov/ahfss/Animal_Health/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: *cdfa.ca.gov/ahfss/Animal_Health/pdfs/CAHFS_NecropsyFactsheet.pdf*

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

Virulent Newcastle disease is NOT a food safety concern. No human cases of Newcastle disease have ever occurred from eating poultry products. Properly cooked poultry products are safe to eat. In very rare instances people working directly with sick birds can become infected. Symptoms are usually very mild, and limited to conjunctivitis and/or influenza-like symptoms. Infection is easily prevented by using standard personal protective equipment.

If you have any questions, please do not hesitate to call the Animal Health Branch Tulare District Office at 559-685-3500.

—Jennifer McDougle, MVB

Inside this issue:

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

Editor: Anny Huang




UCDAVIS VETERINARY MEDICINE

Poultry Ponderings

Edition 15 · Fall 2018

A quarterly newsletter detailing poultry related work at the UC system

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

Inside this issue:

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

Editor: Anny Huang

University of California

Winter, 2016

Edition 7

POULTRY PONDERINGS

A QUARTERLY NEWSLETTER SUMMARIZING POULTRY RELATED WORK AT UC

Backyard Chicken Ecotoparasite Study

Amy Murillo and Brad Mullens
UC Riverside, Department of Entomology

We examined 100 backyard birds throughout southern California between June and August 2015 for parasites living on or near the birds. Four of 20 premises were ectoparasite free. Lice were the most common parasites found, with 6 different species detected: *Menacanthus stramineus* (chicken body louse), *Goniocotes gallinae* (fluff louse), *Lipeurus caponis* (wing louse), *Menopon gallinae* (shaft louse), *Menacanthus cornutus*, and *Cuclotogaster heterographus* (head louse). One flea species, the sticktight flea (*Echidnophaga gallinacea*) was found. Three parasitic mite species were recovered: *Ornithonyssus sylviarum* (northern fowl mite), *Knemidocoptes mutans* (scaly leg mite), and *Dermanyssus gallinae* (chicken red mite). The parasite diversity found on backyard chickens was greater than what is commonly found on commercial chicken flocks in the US. This study is published in the Journal of Medical Entomology, 2016.

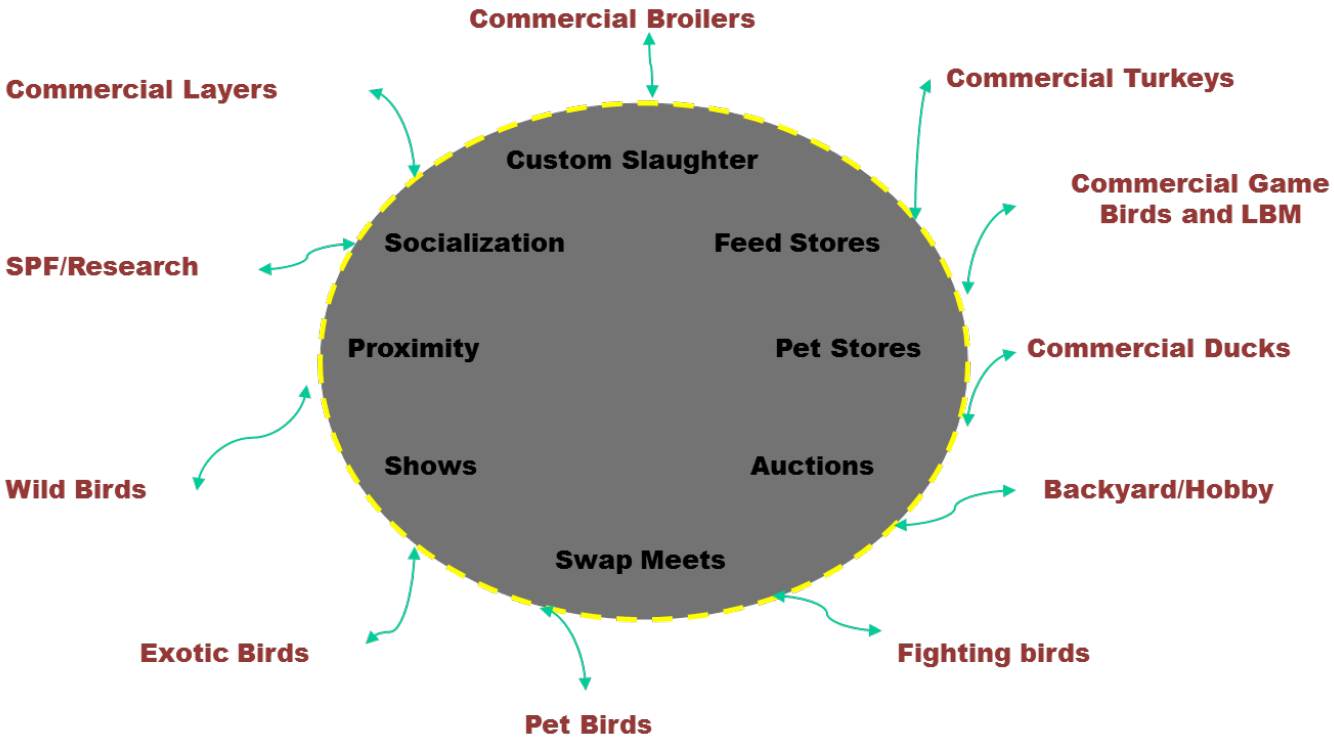
Photo of Dr. Mullens and PhD student Amy Murillio washing parasites off of a bird (photo by A. Yzaguirre)

Newsletter

Our quarterly newsletter summarizes poultry related work at the University of California. Enter your email below to subscribe!

Subscribe

Routes of Disease Transmission



Slide adapted from Dave Castellan

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:

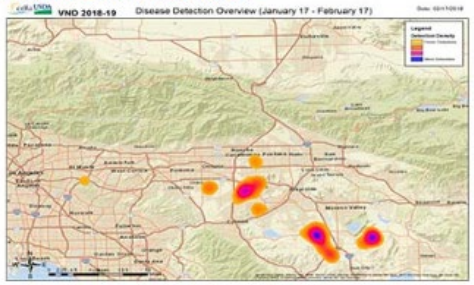
Compton and Whittier (Los Angeles County)
Menifee, Mira Loma/Jurupa Valley, Norco, Nuevo, Perris, and Riverside City (Riverside County)
Hesperia, Muscoy, and Ontario (San Bernardino County)

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.

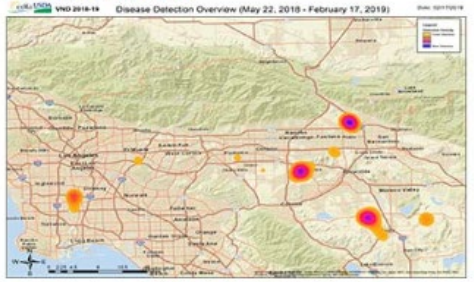
While this action is difficult for all involved, it MUST be done to eradicate VND. Otherwise, the disease will continue to spread and kill additional flocks.

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

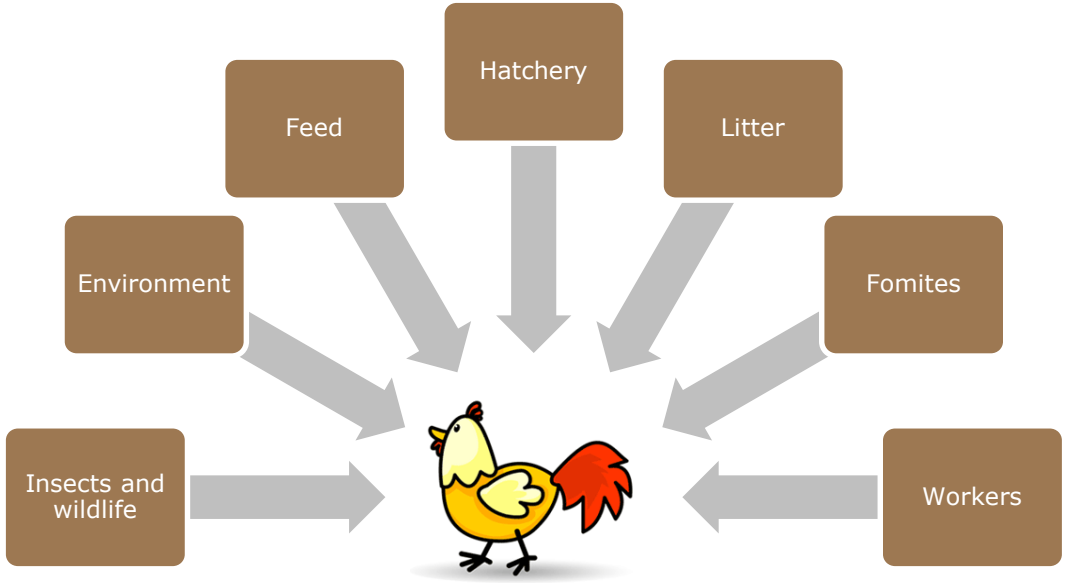
Most Recent Detections



Overall Detections

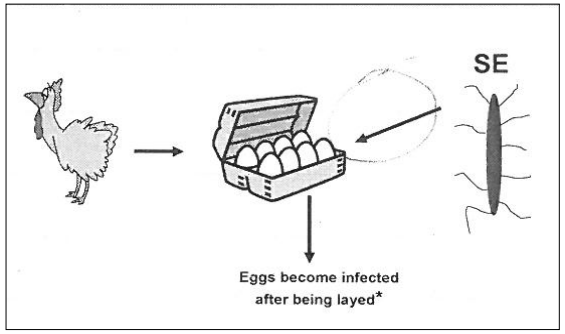


So how do Chickens get Sick?



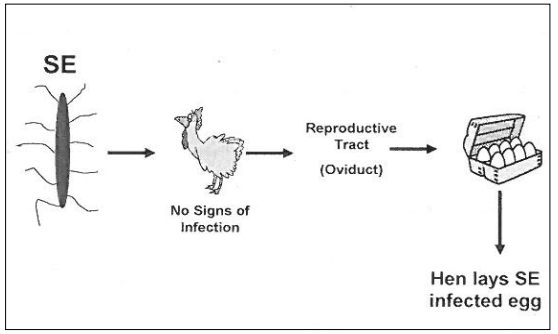
Disease transmission into eggs

Horizontal Transmission



(FDA)

Vertical Transmission



(FDA)

There are multiple hosts and multiple routes of infection

Conventional vs Alternative Poultry Production

Biosecurity

Vaccination

Antibiotics

Competitive exclusion

Pre- and pro-biotics

Feed and water hygiene

Other Additives (e.g. essential oils)

Environmental sampling

VS.

IF you could only pick one from the list what would you choose???

BIOSECURITY

Goal of **Biosecurity**: Reduce the probability of an infectious disease getting into your flock

Challenges with Alternative Systems

Operational

Feed cost	**64%**
Lack of processing facilities	40%
Navigating regulations	36%
Managing predation	32%
Managing soil/vegetation	28%
Lack of niche market for pastured raised eggs/meat	16%
Lack of poultry vets	12%
Disease control	12%

Research Note

Operational challenges and opportunities in pastured poultry operations in the United States

C. Elkhoraibi,* M. Pitesky,* N. Dailey,† and D. Niemeier†,1

*UC Davis School of Veterinary Medicine, Department of Population Health and Reproduction, University of California, Davis 95616; and †UC Davis College of Engineering, Department of Civil & Environmental Engineering, One Shields Ave, Davis, CA 95616

Mortality

Predation	**52%**
Unknown	28%
Severe feather pecking/cannibalism	20%
Disease	16%
Other (primarily spent hen processing)	~30%

Descriptive survey and *Salmonella* surveillance of pastured poultry layer farms in California

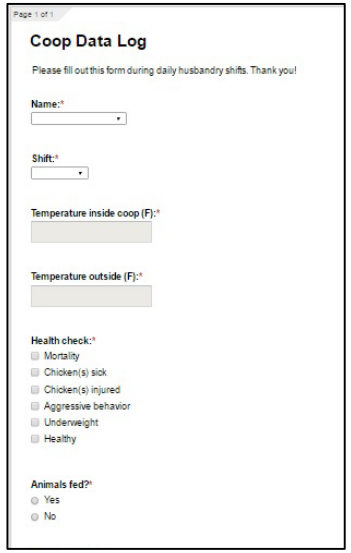
Naomi Dailey,* Deb Niemeier,† Carine Elkhoraibi,‡ C. Gabriel Sentíes-Cué,§ and Maurice Pitesky#,1

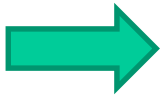
*UC Davis College of Agriculture and Environmental Sciences, Geography Graduate Group, One Shields Ave., Davis, CA 95616, USA; †UC Davis College of Engineering, Department of Civil & Environmental Engieering, One Shields Ave, Davis, CA 95616, USA; ‡UC School of Veterinary Medicine, Poultry Health and Food Safety Epidemiology, One Shields Ave, Davis, CA 95616, USA; §California Animal Health and Food Safety Laboratory System-Turlock Branch, 1550 N. Soderquist Rd. P.O. Box 1522, Turlock, CA 93274, USA; and #UC Davis School of Veterinary Medicine, Department of Population Health and Reproduction, One Shields Ave, Davis, CA 95616, USA

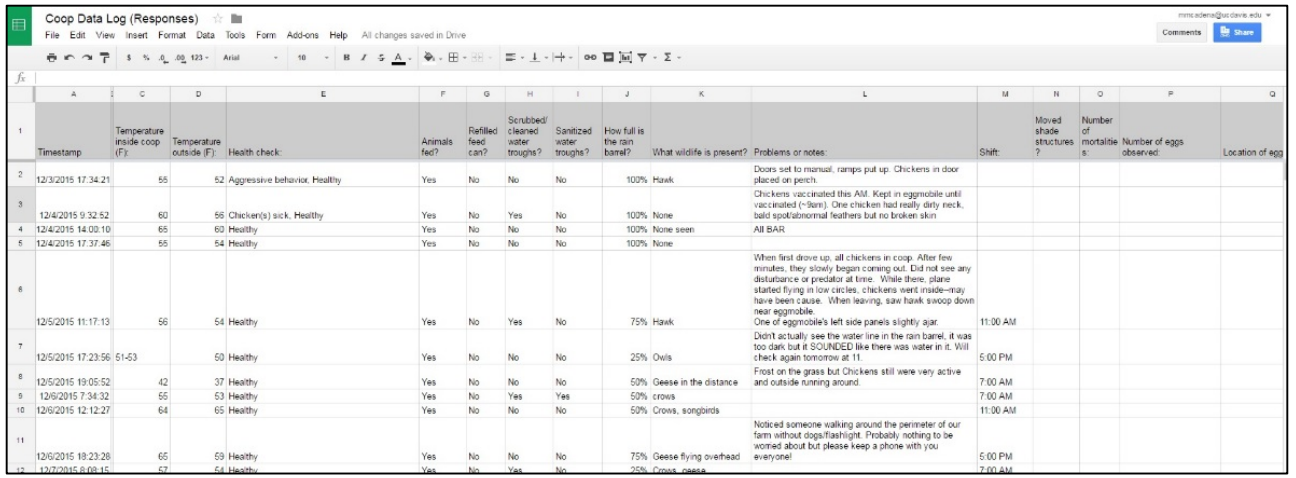
Google Forms For Data Capturing

- We used Google Forms to capture data on husbandry, production, disease status, wildlife etc.

- Detailed instructions on how to set one up available on our website at: http://ucanr.edu/sites/poultry/files/229442.pdf



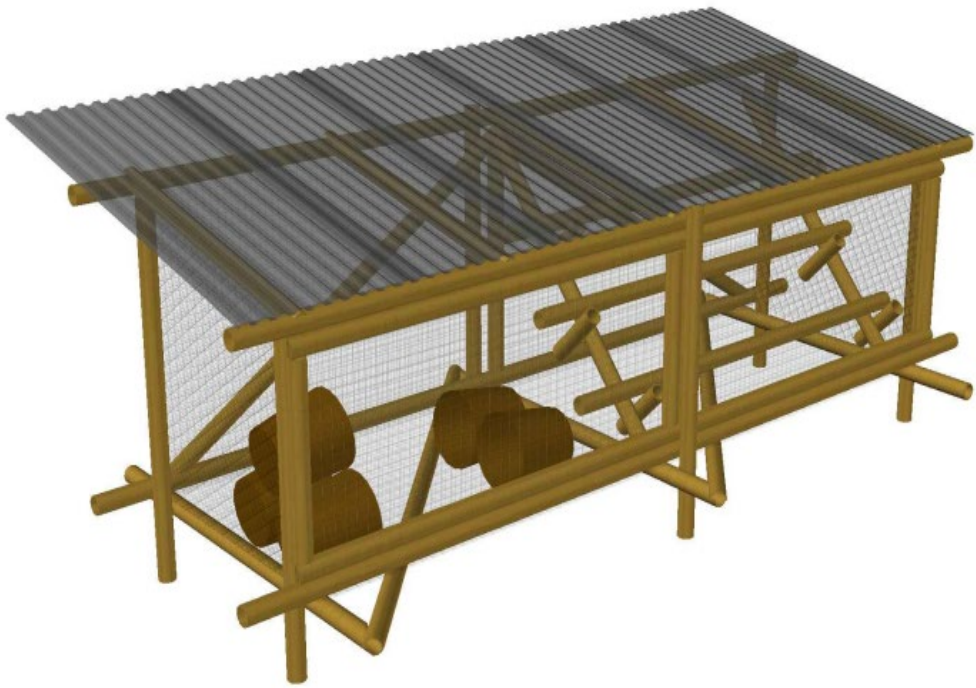




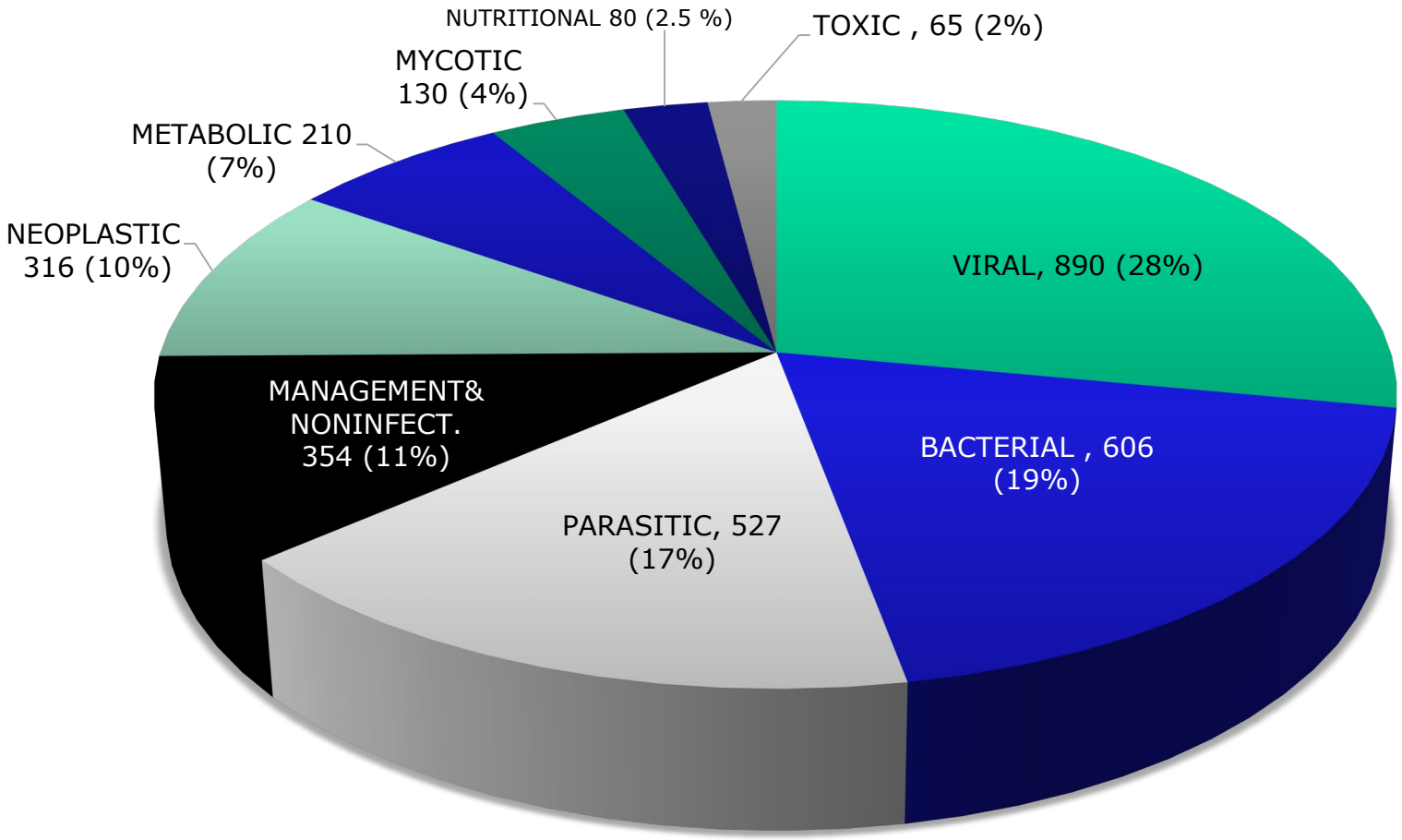
	Timestamp	Temperature inside coop (F):	Temperature outside (F):	Health check:	Animals fed?	Refilled feed can?	Scrubbed/ cleaned water troughs?	Sanitized water troughs?	How full is the rain barrel?	What wildlife is present?	Problems or notes:	Shift:	Moved shade structures ?	Number of mortalities:	Number of eggs observed:	Location of egg
2	12/3/2015 17:34:21	55	52	Aggressive behavior, Healthy	Yes	No	No	No	100%	Hawk	Doors set to manual, ramps put up. Chickens in door placed on perch.					
3	12/4/2015 9:32:52	60	56	Chicken(s) sick, Healthy	Yes	No	Yes	No	100%	None	Chickens vaccinated this AM. Kept in eggmobile until vaccinated (~9am). One chicken had really dirty neck, bald spot/abnormal feathers but no broken skin					
4	12/4/2015 14:00:10	65	60	Healthy	Yes	No	No	No	100%	None seen	All BAR					
5	12/4/2015 17:37:46	55	54	Healthy	Yes	No	No	No	100%	None						
6	12/5/2015 11:17:13	56	54	Healthy	Yes	No	Yes	No	75%	Hawk	When first drove up, all chickens in coop. After few minutes, they slowly began coming out. Did not see any disturbance or predator at time. While there, plane started flying in low circles, chickens went inside--may have been cause. When leaving, saw hawk swoop down near eggmobile. One of eggmobile's left side panels slightly ajar.	11:00 AM				
7	12/5/2015 17:23:56	51-53	50	Healthy	Yes	No	No	No	25%	Owls	Didn't actually see the water line in the rain barrel, it was too dark but it SOUNDED like there was water in it. Will check again tomorrow at 11.	5:00 PM				
8	12/6/2015 19:05:52	42	37	Healthy	Yes	No	No	No	50%	Geese in the distance	Frost on the grass but Chickens still were very active and outside running around.	7:00 AM				
9	12/6/2015 7:34:32	55	53	Healthy	Yes	No	Yes	Yes	50%	crows		7:00 AM				
10	12/6/2015 12:12:27	64	65	Healthy	Yes	No	No	No	50%	Crows, songbirds		11:00 AM				
11	12/6/2015 18:23:28	65	59	Healthy	Yes	No	No	No	75%	Geese flying overhead	Noticed someone walking around the perimeter of our farm without dogs/flashlight. Probably nothing to be worried about but please keep a phone with you everyone!	5:00 PM				
12	12/7/2015 8:09:15	57	54	Healthy	Yes	No	Yes	No	25%	Crows, geese		7:00 AM				


First Line
of
Defense
is your
coop


UC DAVIS
Pastured Poultry Farm



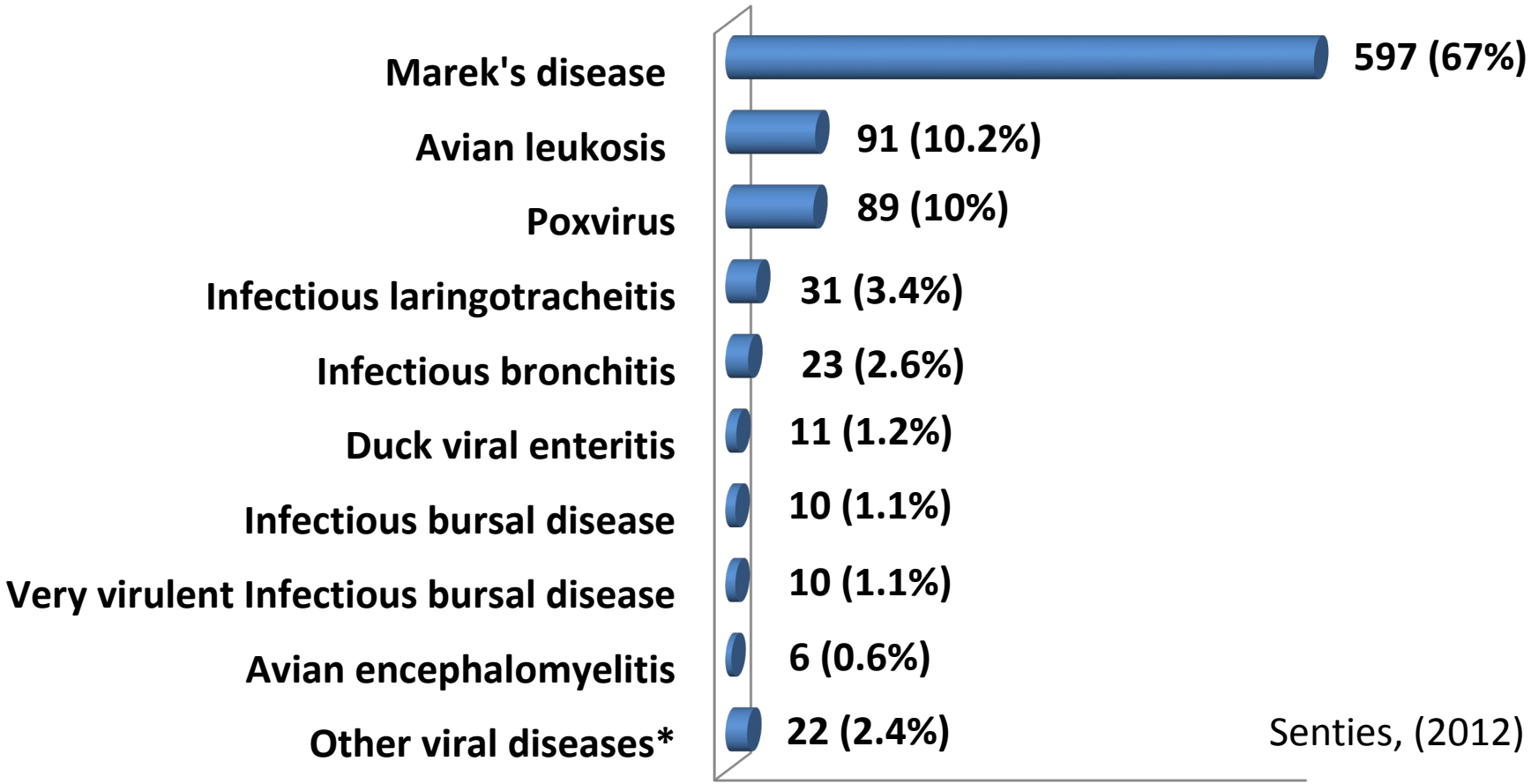
Common Poultry Diseases and How to Prevent them



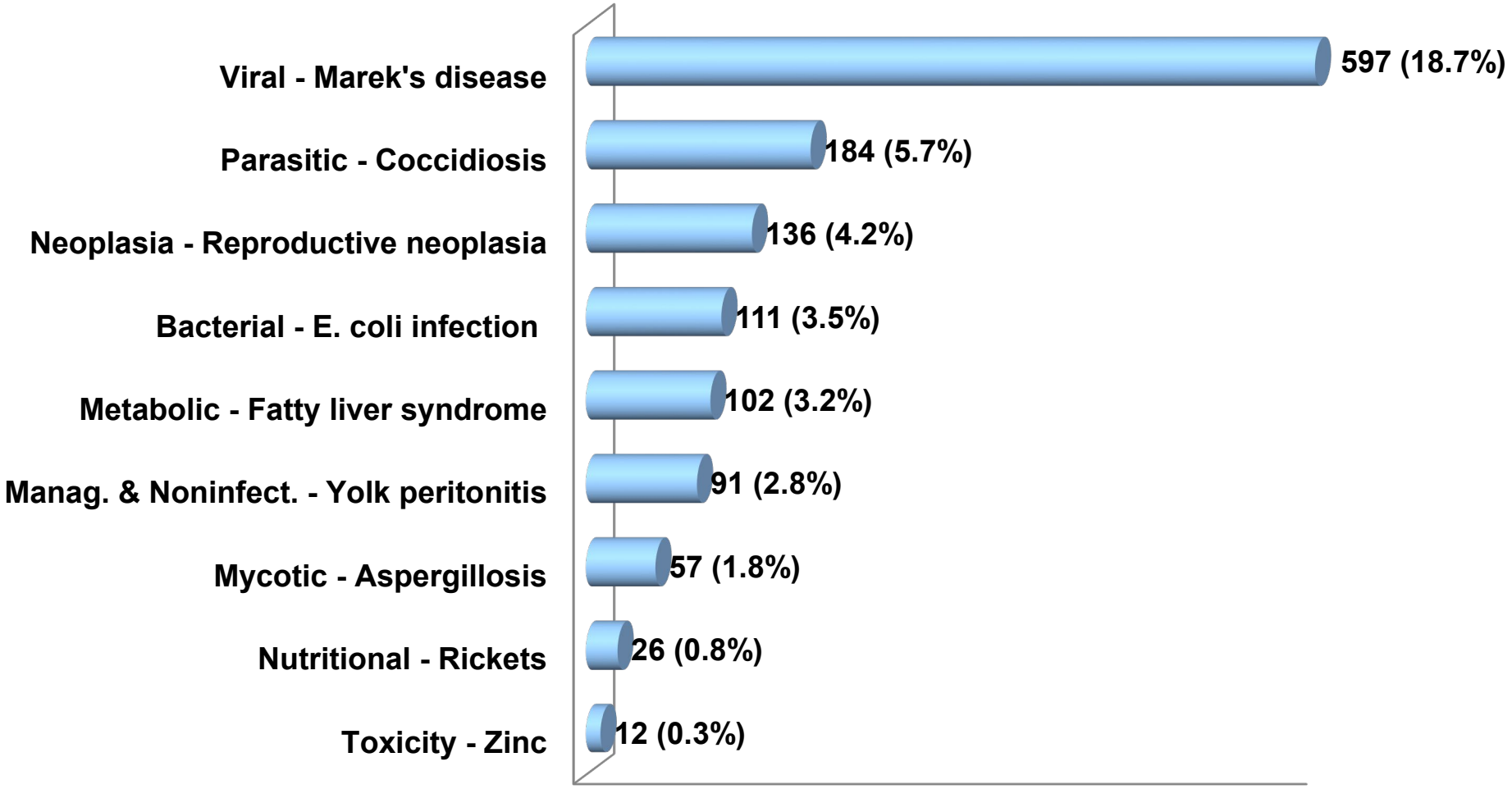
TOTAL = 3178 DIAGNOSES

Senties, (2012)

Viral Diseases



Top Backyard Poultry Diseases



Senties, (2012)

Marek's Disease

- Highly contagious epizoonotic herpesvirus (virus can be inhaled by susceptible chickens from house dust)

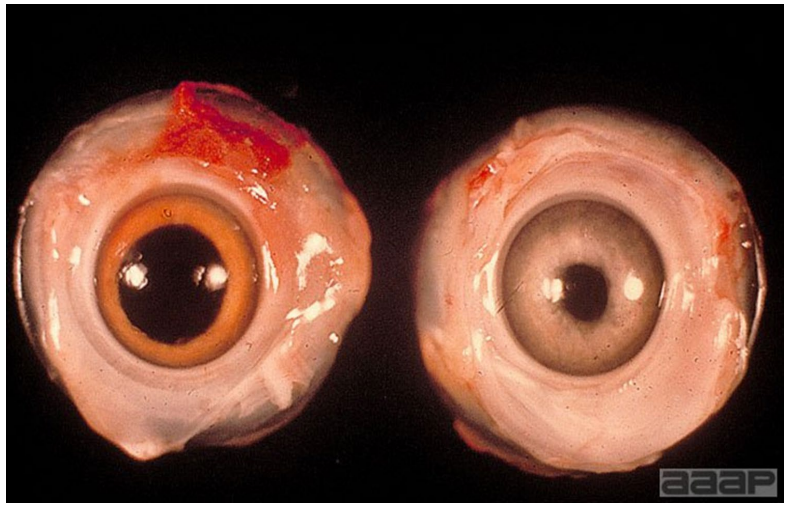
  #1 cause of BY poultry mortality in California

- Endemic in the global poultry environment

- Virus causes lesions/lymphomas in peripheral nerves and other tissues ('Classic' clinical sign is paralysis).

- MDV infects cells of the feather follicle and can remain viable in feather dander for several months

- Immunosuppression



Vaccination

- Vaccination against MD represents an outstanding example of successful diseases control in commercial poultry

- Cell associated vaccines are better than lyopholized (HVT vaccines). The HVT vaccines are less effective against virulent strains of the Herpes virus

- Because the virus is ubiquitous in nature, the vaccine is most efficaciously given in ovo or at day-1 of age

- Ask your hatchery if, how and when they vaccinate

Do it yourself Marek's Vaccination

1 ml syringe and 20 gauge needle
Reconstituted vaccine
Gloves

1. Follow instructions that come with the vaccine to dilute it.
2. Tent the skin on the chickens back
3. Pierce through the skin. Make sure to avoid any bones.

Discard reconstituted vaccine bottle after 2-3 hrs

Make sure birds are vaccinated within 24 hrs of hatch

Regardless of Vaccine Status…

it is essential to place day old chicks in houses which have been thoroughly decontaminated to allow vaccinated birds time to develop immunity. Immunity typically develops in two weeks

IF you hatch your own eggs

give the lyophilized (i.e. Rispen's) vaccine at day one of age

No treatment and no proven efficacy of vaccination post day-1 of age

Eimeria (i.e. Coccidia)

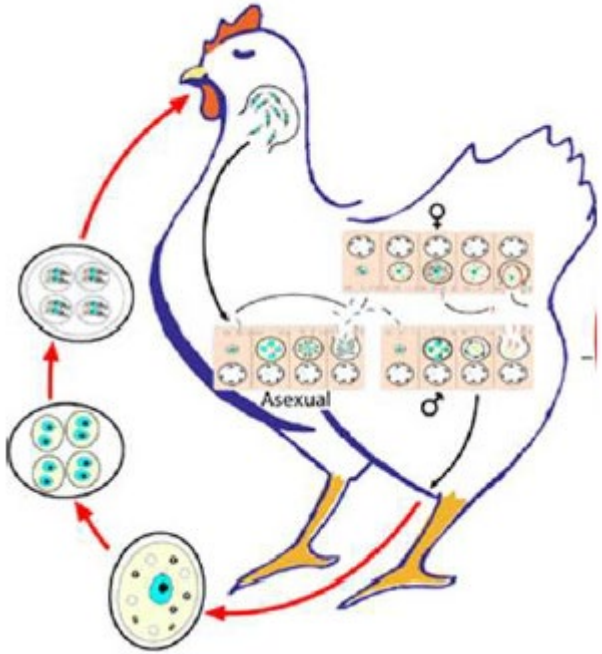
Caused by single celled coccidia that attack different parts of the intestinal tract preventing absorption of food

In minor outbreaks the birds are "droopy, ruffled feathers and lose weight"

Egg production in older birds decreases

Severity of the disease depends on the number of coccidia present and on which type of coccidia your chickens have

Coccidia oocysts can survive for over 1 year in the environment (warmth and humidity)



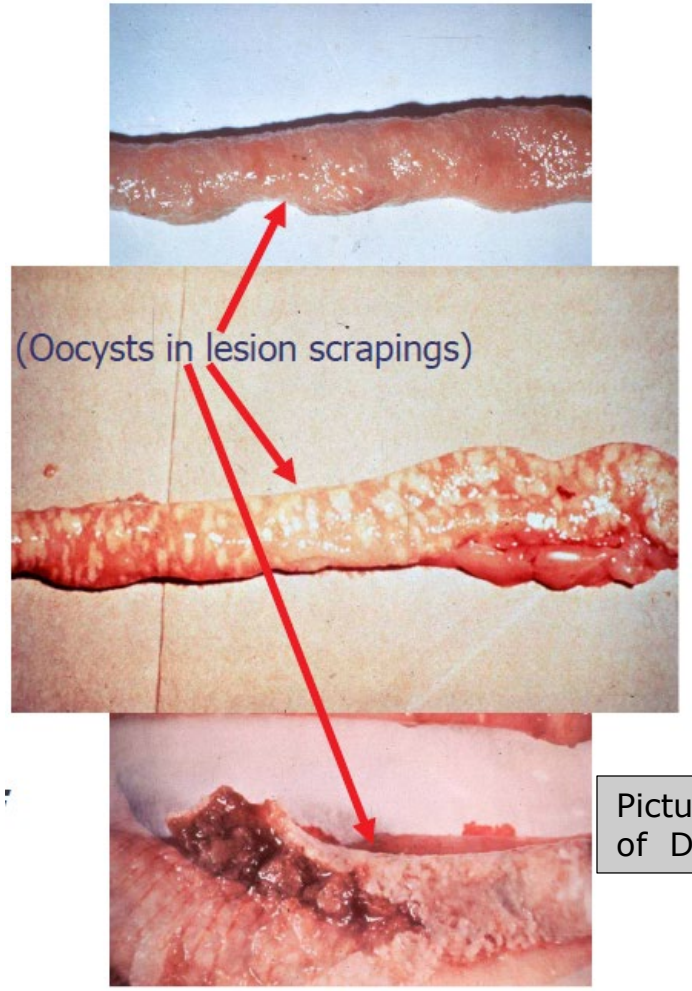
ALL poultry house litter contains coccidia. To keep the coccida load low it is important to keep litter dry and purchase feed that contains a coccidiostat

Examples of Chicken Coccidia Host Specificity

Eimeria mivati
Upper intestines
Very low mortality

Eimeria acervulina
Upper intestines
Very low mortality
Very common
(poor weight gain)

Eimeria brunetti
Lower intestines
Moderate mortality



Pictures courtesy of Dr. Mark Bland

Infection with one species of Coccidia stimulates an immune response only to that one species. The host still remains susceptible to other strians of Coccidia!

Coccidiosis

Occurs anywhere poultry are 'grown'

- Infection rate high but rate of clinical disease is low

Host and site specific

Seen primarily in young birds (3-6 weeks)

- Diarrhea (mucoid or bloody)
- Dehydration, ruffled feathers, listlessness and weakness

Characterized by diarrhea and enteritis

Occurs under conditions of warmth and humidity (e.g. wet litter)

Oocyst very resistant (can survive 18 mo in the environment)

- oocysts sporulate after being pooped out and may become infective in several days
- one sporulated oocyst can produce thousands of offspring and can become infective

Prevention of Coccidia

- 2-4 weeks of down-time
- Reduce litter moisture
- Develop "Natural" Immunization: Develop active immunity
  - Exposure to moderate number of oocysts
  - Good litter management
- Coccidia is hard to control via sanitation practices alone: Therefore, use of anticoccidial's in chicks and pullet feed is recommended:
  - coccidostats (ex. Monensin, Lasalocid, Amprolium, Salinomycin)
- Vaccination
- Good biosecurity. Coccidia can be spread by fomites

Dry Pox

One of the only Avian Diseases you can diagnose without a necropsy—histopathology etc.

Clinical signs:

- ~ 1mm pink scabs across the comb, wattles, eyelids and non-feathered portions of the body
- Lesions typically start as small blisters

Prevention

- Virus is typically spread by mosquitoes
  - Focus on mosquito control

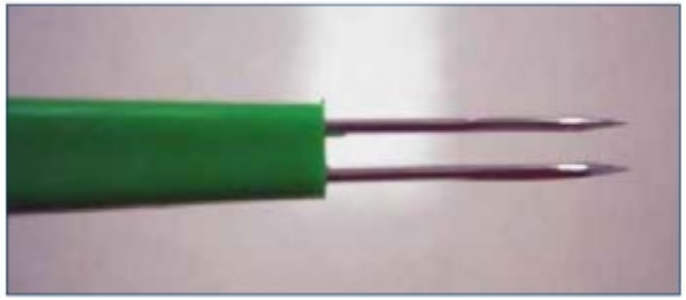
- Virus can cause disease in almost any avian species (wild birds, ducks quail etc.)
  - Focus on biosecurity

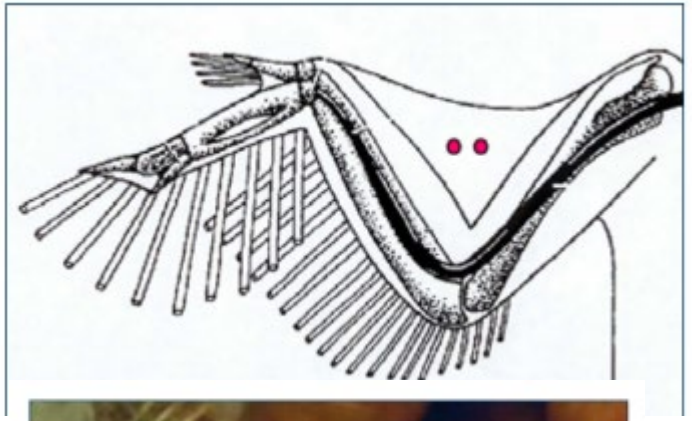
- Virus can be spread as a fomite and can persist in the environment
  - Focus on biosecurity

* Fully recovered birds do not appear to be carriers

Vaccination Against Dry Pox

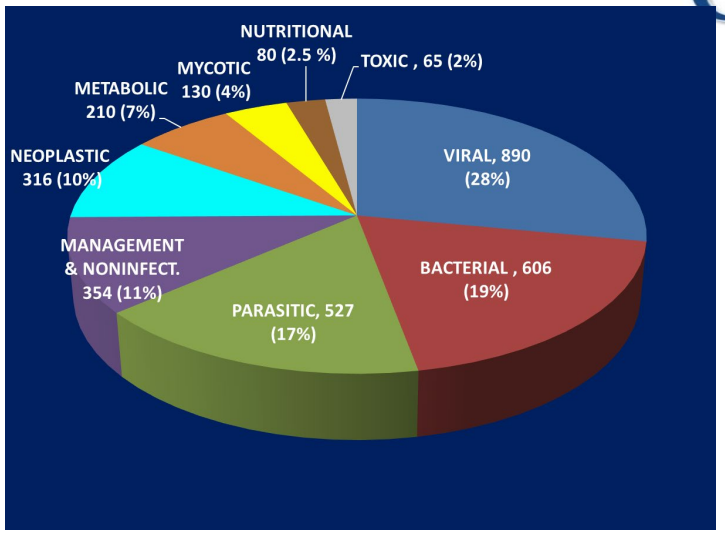
- If a flock is at risk, in addition to mosquito control vaccination is appropriate to consider
- Wing-stick method of vaccination
- Look for a ‘take’ 7-10 days after vaccination
- First vaccine at 4 weeks of age and then re-vaccinate 1-mo before egg production and then yearly after that
- Use combo vaccine (pigeon pox and fowl pox to achieve maximum coverage)

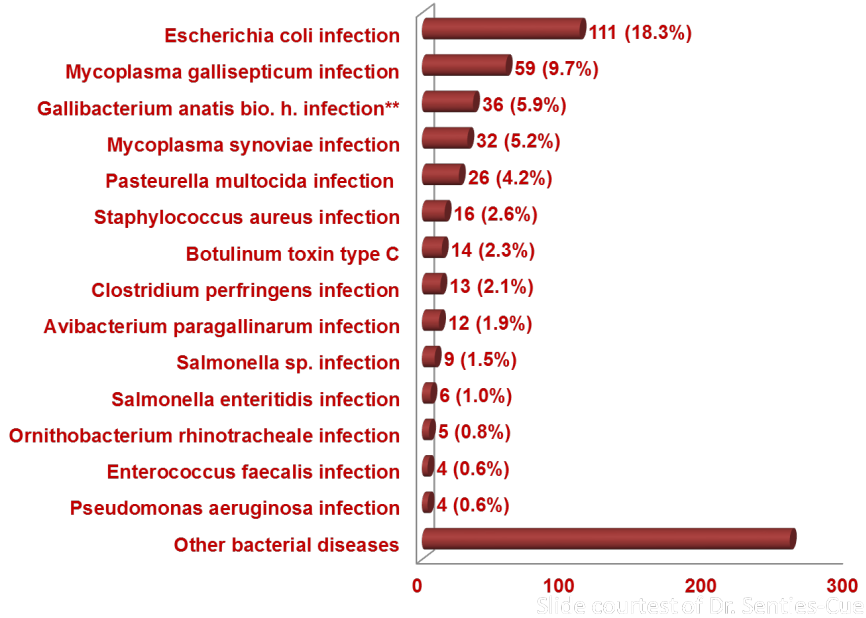




Salmonella Enteritdis (SE)

- SE is rare in but Salmonella is common in poultry
- Typically poultry are asymptomatic carriers
- Shed in feces intermittently which can then contaminate the environment
- SE and ST are the most common serotypes that cause foodborne illness
- Vaccines and good management can reduce public health risk by reducing colonization

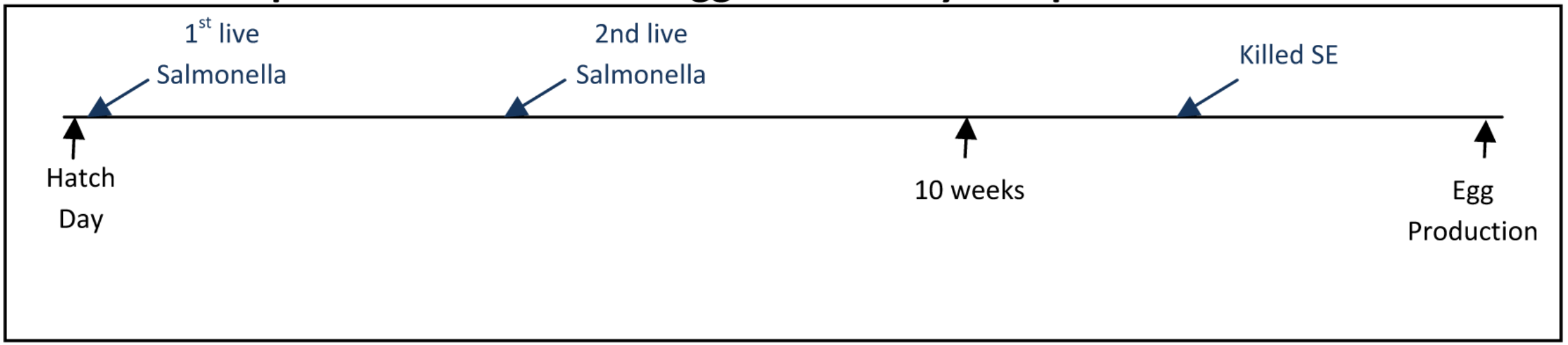




Slide courtesy of Dr. Sentes-Cue

SE Vaccination Recommendation and Requirement for Commercial Layer Producers with over 3,000 Hens

Example of California Shell Egg Food Safety Compliant Vaccination



- Live attenuated ST and SE vaccines (oral or spray)
- Rapid onset of immunity

- Killed SE vaccine given sub-Q
- ~2 weeks to establish immunity

General Vaccination Tidbits

- Only vaccinate healthy birds
- Live vaccines are sensitive to water
  - Make sure you use non-chlorinated water
- Primary vaccine for individual birds
  - Boosting vaccine via water. Don't give birds water for ~ 2hrs before the vaccine
- Live and killed vaccines should be stored at temperatures between 2-8°C (don't freeze). Maintain cold chain!(vaccinate when it's cold if possible)
- For inactivated vaccines, do not use vaccines that separate after shaking for ~ 2 min
- Do not leave bottles of vaccine in direct sunlight
- Typically don't vaccinate young birds except against MD due to maternal neutralizing Abs

Vaccines to Consider

Recommend to Use in All Cases

- Marek's
- Newcastle Disease

It Depends…

- Newcastle Disease
- Dry Pox
- Salmonella Enteritidis (SE)
- Coccidia
- ILT

What We Usually Don't Use

- AI
- IB

Newcastle Disease

- Occurrence:
  - Usually occurs in chickens, pigeons & less often in turkeys
  - Most poultry and many wild & cage birds are susceptible
  - All age groups are susceptible
  - Humans may develop a localized eye infection [conjunctivitis] from the NDV vaccine (concentrate)

- Velogenic (Exotic Newcastle, vNDV, END)
  - High mortality (up to 100%) , severe drop in egg production, CNS signs, acute respiratory distress, hemorrhagic lesions
  - (in unvaccinated poultry)

Control on Newcastle Disease

- Biosecurity…
  - Simple measure of biosecurity such as use of dedicated shoes and dedicated clothes will reduce the introduction of pathogens into a flock including NDV

- Why not just vaccinate?
  - Because vaccination by itself does not work, good management and biosecurity are essential to protect your flock

Newcastle Vaccination Recommendations

- Vaccination only in risk areas (i.e. Southern California)
- Vaccination only using vaccines licensed in the U.S.
- Vaccinate with lentogenic strains (B1 or LaSota)
  - These are live vaccines which will stimulate humoral and cellular immunity
- Best way to give is via the eye drop method
- Vaccinate every 6 months

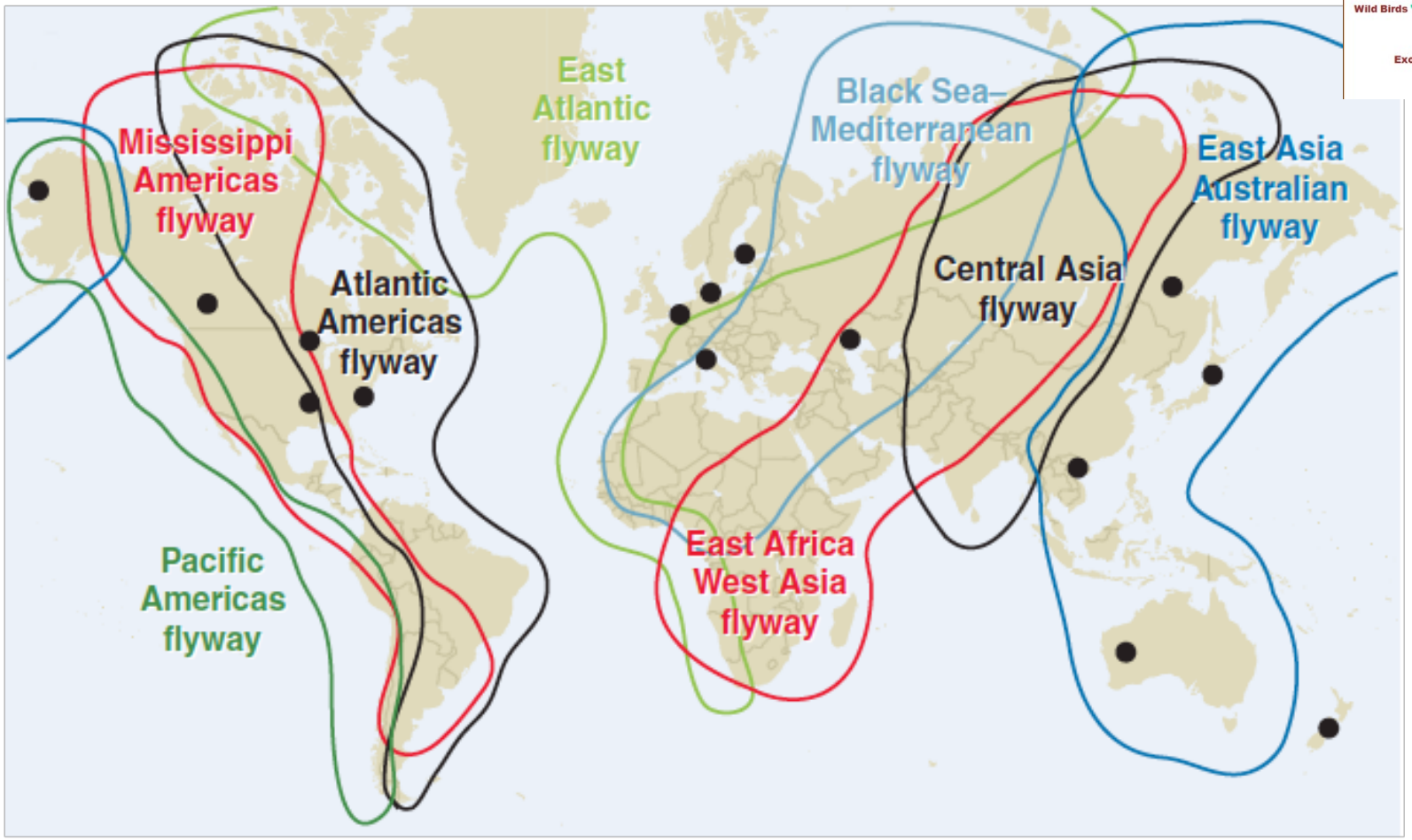
Downside of Newcastle Vaccination

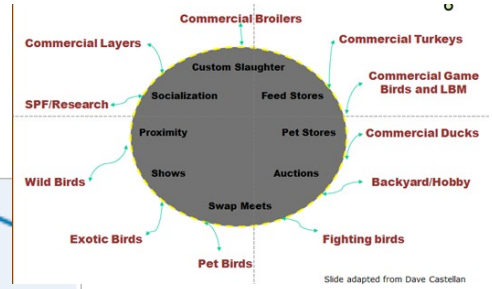
- While the vaccine reduces the shedding of the virus it also reduces clinical signs of infected birds
  - Therefore biosecurity is still very important to communicate
- Vaccine can cause some mild clinical signs consistent with ND (drop in egg production and respiratory signs)
- Maintenance of the cold chain to make sure the vaccine is still viable

Newcastle Vaccination Summary

Vaccination is not a substitute for good biosecurity, which is the best way to prevent your flock from getting infected with VND.

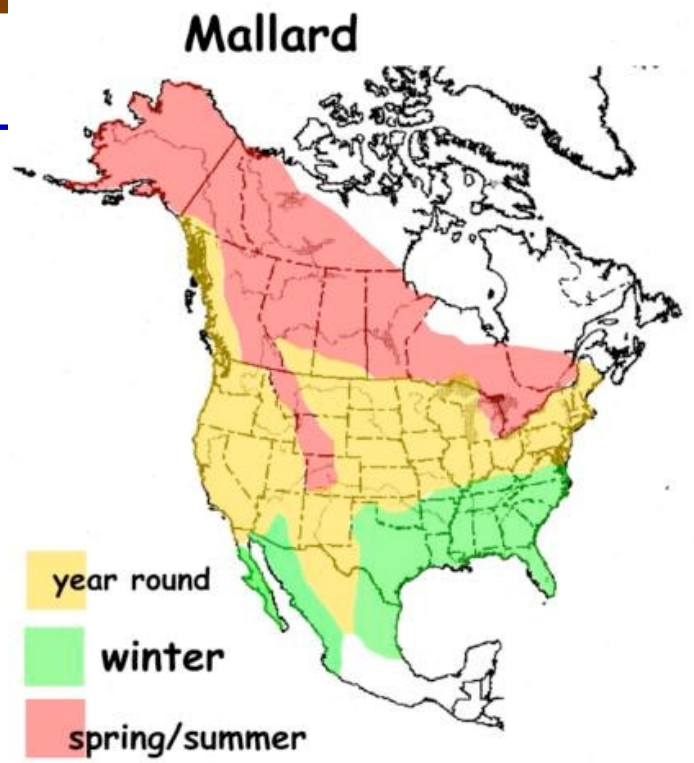
Avian Influenza and Migratory Waterfowl…

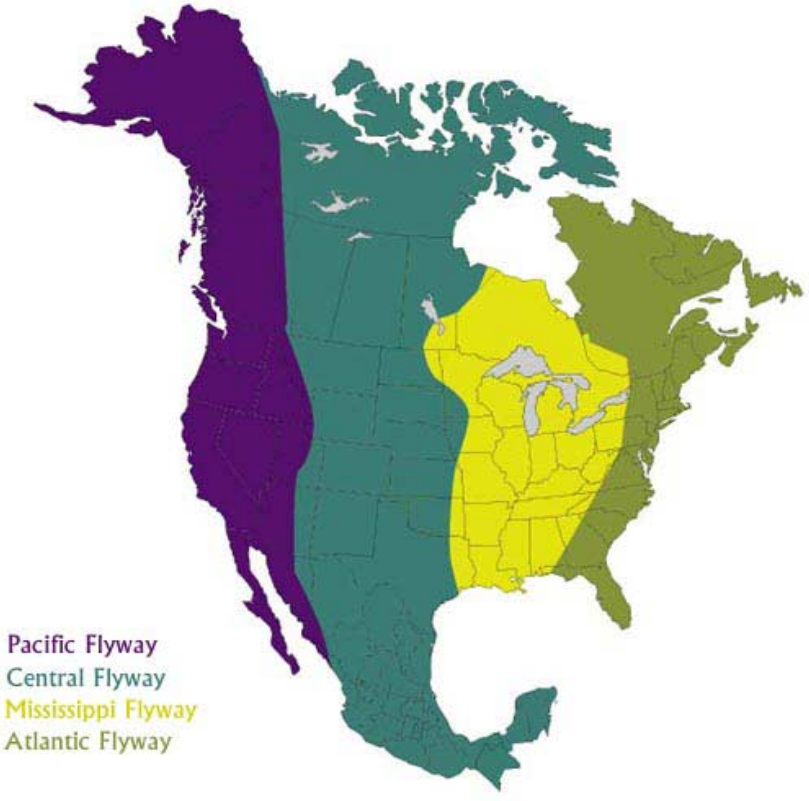




Björn Olsen et al., Global Patterns of Influenza A Virus in Wild Birds, Science 312, 384 (2006);

Birds and their viruses migrate south in fall and north in spring …





… ~ 5-20% ducks arriving in CA in fall are shedding viruses

… very few flying north in spring infected

Infected waterfowl have flu viruses in their intestinal tracts …

… and shed viruses in their feces for ~ 7 days

Influenza is common in California waterfowl every year

… 600,000 breeding waterfowl during summer ~ 60,000 – 240,000 shedding virus

… 6,000,000 ducks and geese migrate south in fall ~ 300,000-1,200,000 shedding virus

Practical biosecurity for BYF owners

- Obtain your chicks from a reputable source (i.e. NPIP certified hatchery)
  - Testing for Salmonella pullorum and Salmonella gallinarium and AI for breeding/hatching industry
- Encourage the hatchery to vaccinate chicks against MDV
- Avoid mixed-aged flocks if possible…
- Use clothes specifically for working with chickens, especially shoes
- Wash hands thoroughly before and after working with chickens
- Separate sick birds from healthy birds
- If sufficient land rotate your coop.
- Foot baths (Difficulties)

Be meticulous!

Quarantine Pen

- Quarantine new birds for at least 30 days.
- Isolate sick appearing (ie. lethargic, droopy eyes) birds away from the flock.
- Instructions on how to build this specific sick pen available at:

http://ucanr.edu/sites/poultry/files/236853.pdf

So How Do We Prevent Exposure to Diseases Carried by Wildlife ? There Is No Silver Bullet…

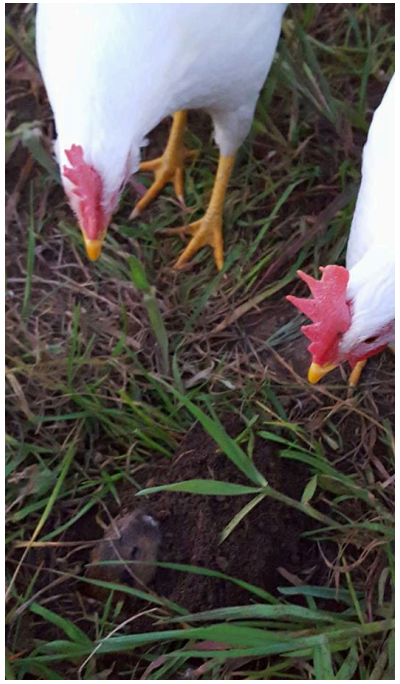
- Need to use a **combination** of management practices to maximize efforts.
- But keep in mind that it is impossible to eliminate risk completely.

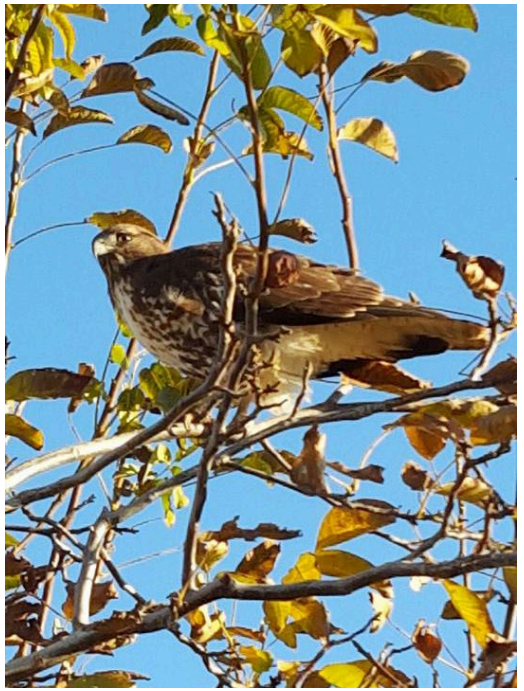
Most poultry diseases do not have a cure making prevention key!

Personal Protective Equipment (PPE)

- Our clothes, glasses and shoes can carry disease-causing agents so wear some type of PPE to reduce the probability of bringing in disease onto and out of the farm.
- PPE include:
  - Hairnets.
  - Coveralls and disposable coveralls for visitors.
  - Rain boots and disposable plastic boots.
- Applied hand sanitizer to our hands before entering the coop area too.

Surveillance





Knowing what you are up against can help you determine what tools and strategies to use and therefore maximize your efforts.

What About At Night?

- We used motion sensor cameras to monitor wildlife during the day and at night.
- Good to keep nocturnal wildlife in mind (ie. opposums, raccoons).

Shade/Shelter Structures

- Birds can go underneath for shade.
- Offers protection from predators.
- For instructions on how to build, visit:

http://ucanr.edu/sites/poultry/files/236853.pdf

Predator Repellent Tape

- Relatively inexpensive from $7 (150ft) to $27 (100ft).
- Easy to use/install.
- Attach to 6-8in. string and hang around farm.
- Hang strategically in trees, at eye level for ground predators and around enclosures.
- Can potentially scare your birds so they should placed farther away from flock.
- Humane; flashes in all directions in the sun and makes a noise as it flaps in the wind.
- Need to move it to different locations regularly so wildlife wont get acclimated.
- Reviews vary.

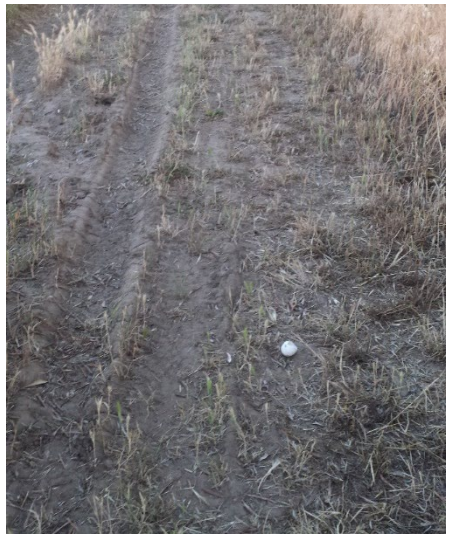
Coyote/Fox Decoy

Also, remember fencing!

- $30-$67.
- Also, easy to use/install.
- Humane.
- Must be moved around to be effective (consider changing position daily); birds can start to catch on.
- May be why some reviews are poor, not being used properly.
- Need about one decoy per ¼ acre.

Electric Fence

- Portable electric fence help with husbandry and predator control
- Will have to make sure it has good charge and that it is working regularly.
- Walk along the fence once a week.
- Keep the pasture low around the fence to keep the fence circulation going.



Dogs for Protection of Poultry

Can be very effective

Get the right breed

www.irhishtimes.com

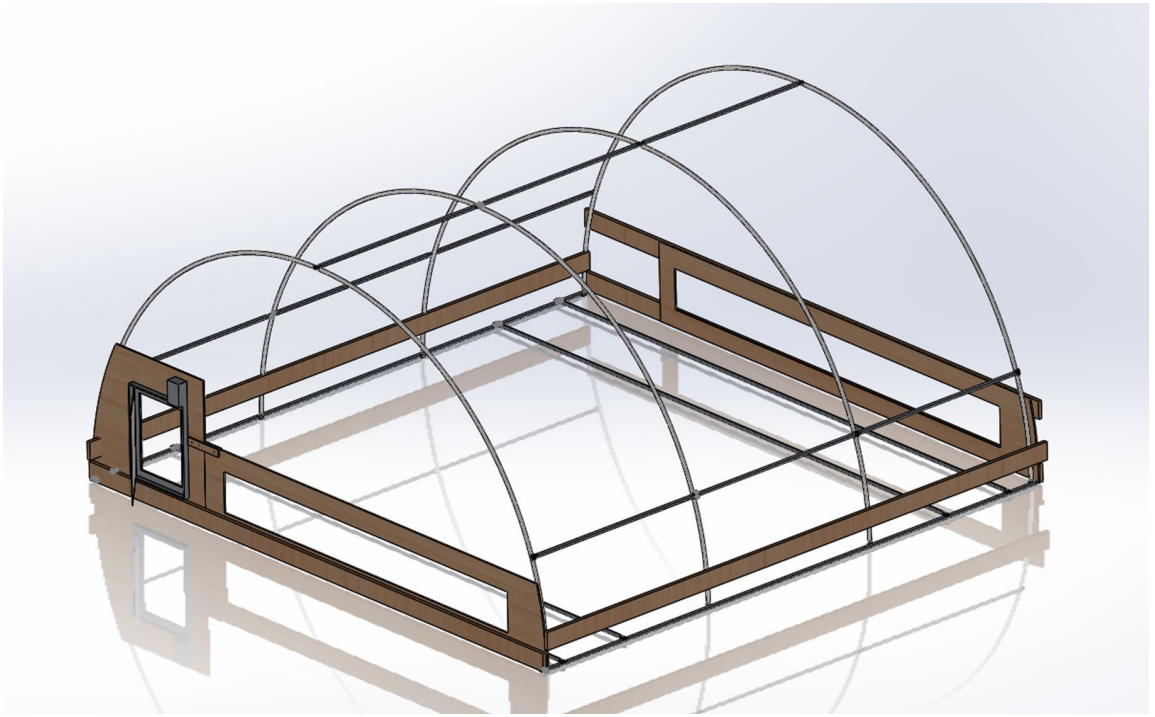
Coop Designs

Mobile Coop


Islote Farms

Mobile Coop

First Mobile Coop



Second Mobile Coop

New Coop Designs

Questions?

Predatory Birds

Racoons