Avian Influenza and Backyard Biosecurity

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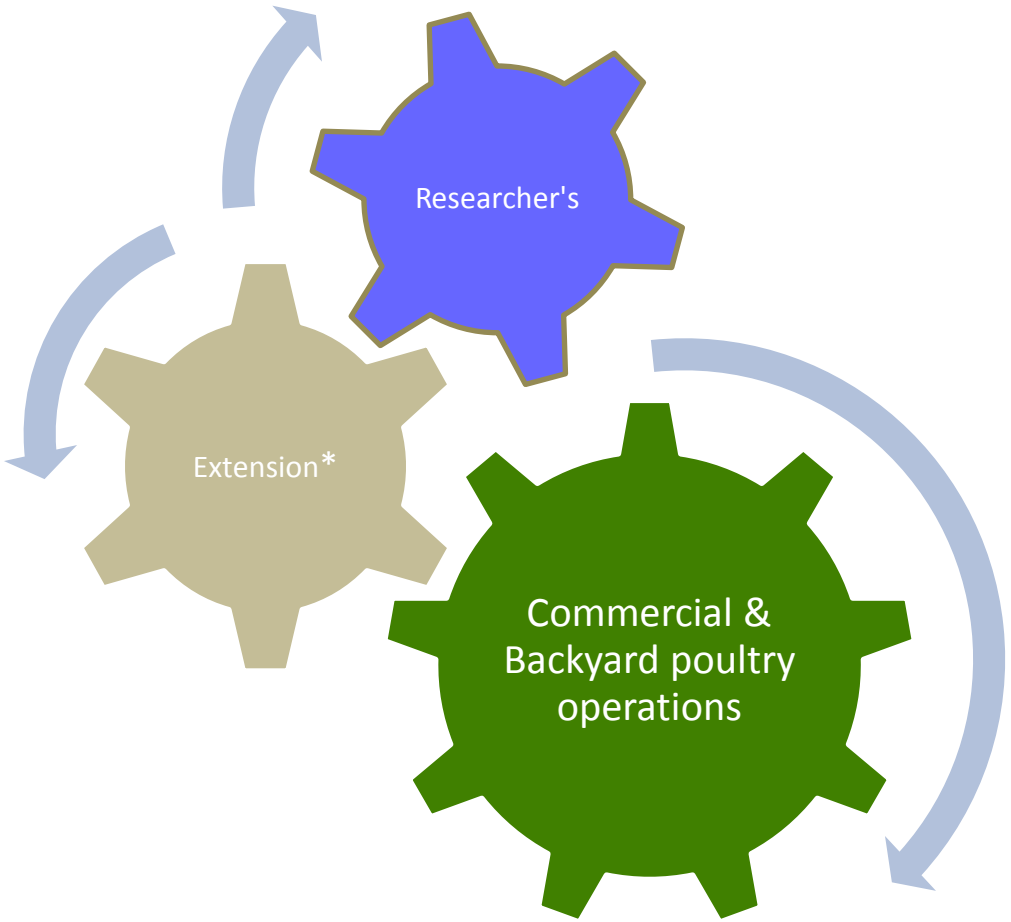
Poultry Health and Food Safety Epidemiology
School of Veterinary Medicine, Backyard Poultry Workshop
March 12th, 2016

Questions?

What is Cooperative Extension?



Mission Statement:

Using UC Research capabilities to help deliver healthy food systems, environments and communities

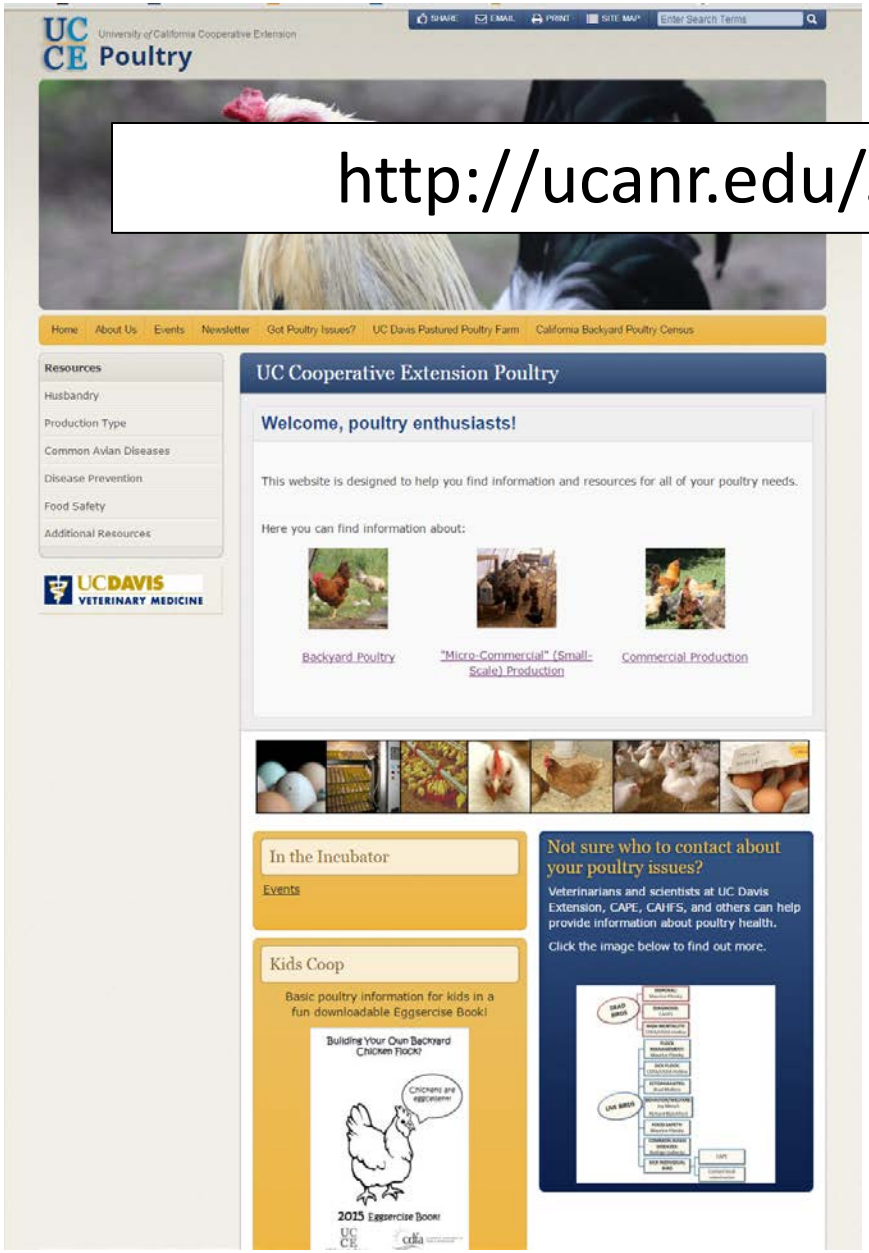
- 200 locally based CE advisors and specialists
- 57 local offices
- 130 campus based CE specialists
- 9 research and extension
- centers
- 700 academic researchers

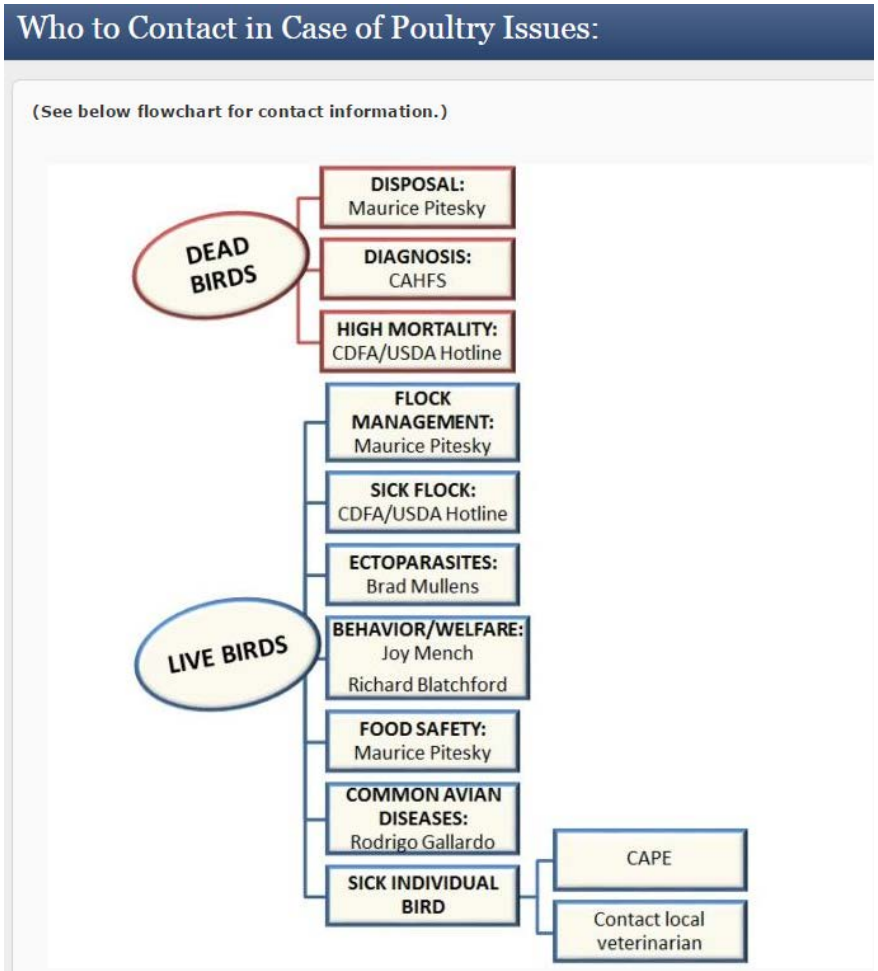
http://ucanr.edu/

* Extension specialists, researchers and Farm Advisors

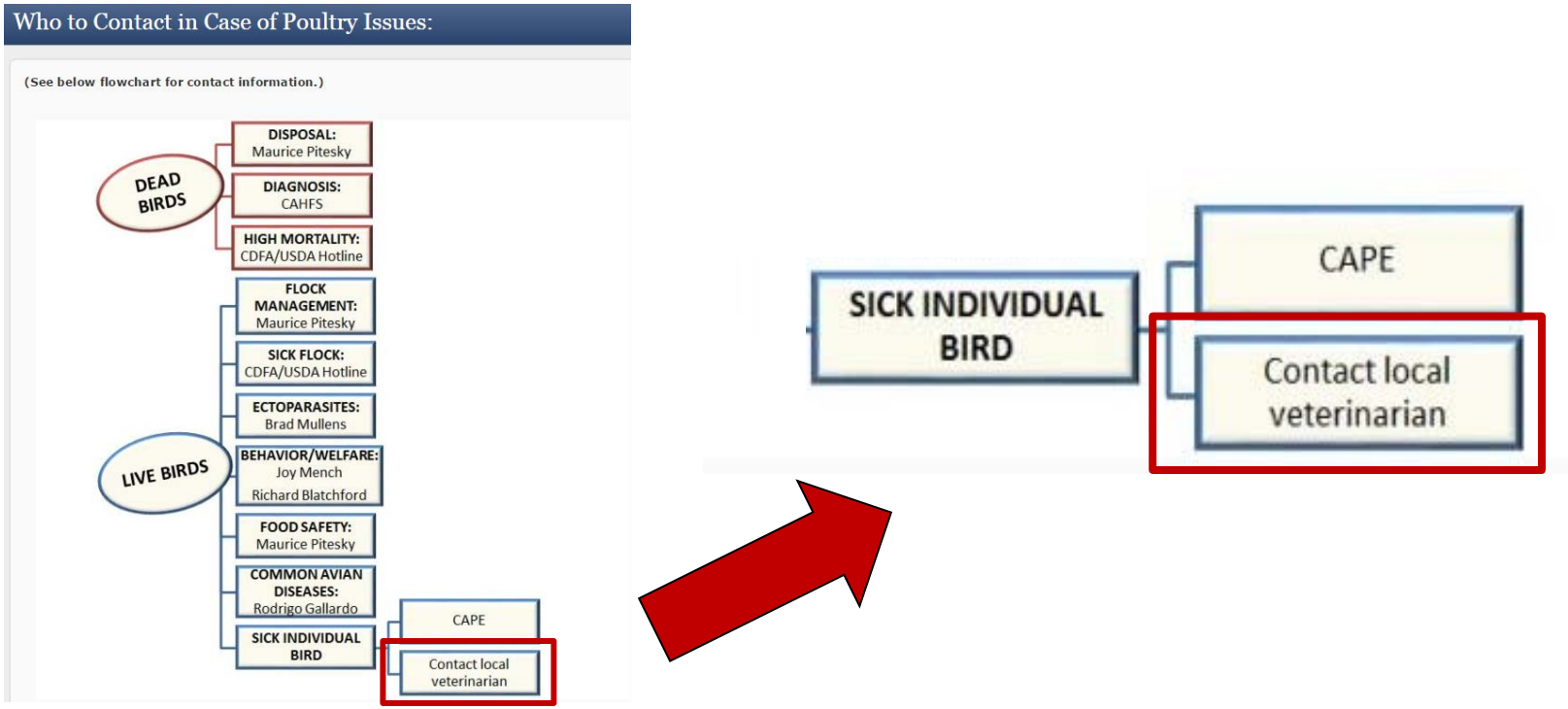
New UCCE Poultry Website

http://ucanr.edu/sites/poultry/





Need a Veterinarian Who Works with Poultry???



Currently we have 14 veterinarians in 9 California counties (including 1 veterinarian in Alameda County and 3 in Sonoma County).

California Backyard Poultry Census

California Backyard Poultry Census

Goal

In California, backyard poultry ownership is increasing like never before. A recent National Animal Health Monitoring System (NAHMS) study predicted a 4.6% increase in chicken ownership in Los Angeles alone. At the same time, California resources available to this growing group are limited. Little is known about backyard poultry communities. To address these issues the UC Davis School of Veterinary Medicine and Cooperative Extension have made a short survey designed for backyard poultry enthusiasts. Results will help us get an idea of the number of backyard poultry farms in California, the trends among them, and more impor the communication gap between poultry experts and backyard poultry enthus reason, we sincerely hope you consider participating in this survey.

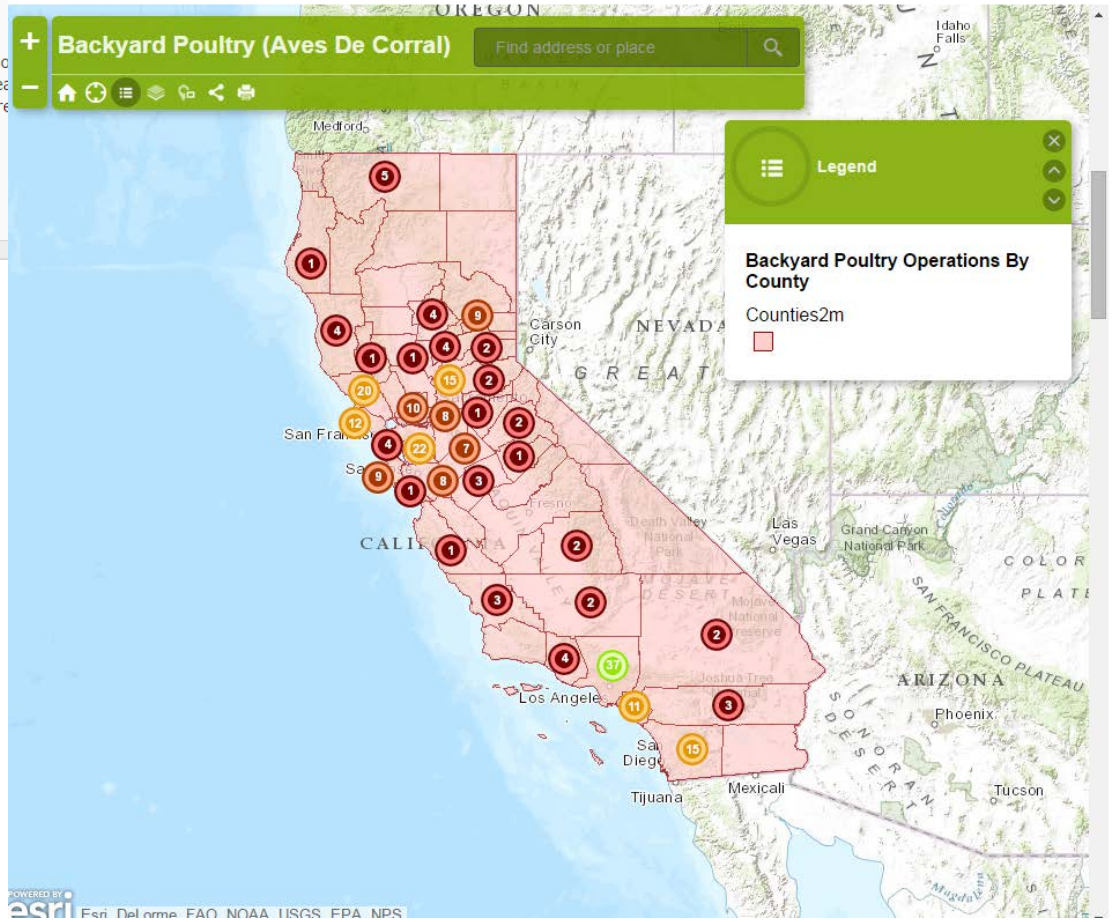
The California Backyard Poultry Census:

Note: As veterinarians at UC Davis our interest is in working with Backyard po owners to improve poultry health. The data in this survey is strictly for outrea want to work with you. We are a university not a regulatory agency and there on outreach and education and not regulation and enforcement.

English Version

Versión en Español

Census Map



Poultry Ponderings

A Quarterly Newsletter Summarizing Poultry Related Work at UC

University of California | Fall, 2015 | Edition 6

POULTRY PONDERINGS

A QUARTERLY NEWSLETTER SUMMARIZING POULTRY RELATED WORK AT UC

UC Davis Starts New Pastured Poultry Research, Innovation and Outreach Farm

Maurice Pitesky and Deb Neimeier

In a collaborative effort between 5 departments, UC Davis has started a 4.5 acre pastured poultry farm to help address many of the challenges these farms face with respect to biosecurity, food safety, environmental management, predator control, and farmer ergonomics and business management.

Recent outreach efforts have identified over 80 commercial pastured poultry farms in California. Traditional outreach efforts have not been effective toward working with this segment of poultry production. The UC Davis effort is designed to address this challenge in order to make sure that these farms are using the best practices possible with respect to their production system. In order to accomplish this a multi-department effort is essential toward the practical integration and application of 21st century technologies on these types of farms. Examples of technological advances include:
Bluetooth-enabled temperature, moisture and light sensors to transmit data remotely to a $35 computer inside the coop. The data then can be transmitted to a "cloud"-based system that also captures data submitted by farmers using a "Google form." The use of hyperspectral imaging to better understand pasture management via the generation of Normalized Difference Vegetation Indices (NDVI). The source code, methodology and estimated costs for these and other innovations will all be "open-source" and hosted on the UCCE poultry website.

Picture of the "eggmobile" on pasture at UC Davis.

The ability to work with non-conventional commercial poultry producers that "slip through" traditional regulatory and outreach efforts is an essential component of the farms efforts. In November a one day outreach effort in Marin County for Pastured Poultry Farmers was organized. Topics including biosecurity, Avian Influenza, Salmonella control and relevant regulations were discussed. Further outreach efforts are continuing in other counties including Modoc county.
If people would like to learn more about the farm and it's goals feel free to contact Maurice Pitesky at mepitesky@ucdavis.edu or go to the following website:

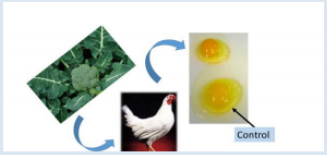
http://ucanr.edu/sites/poultry/UC_Davis_Pasture_Poultry_and_Innovation_Farm/

Nutrient-Rich By-Products for Layers

Gabriela Pedroza and Annie King

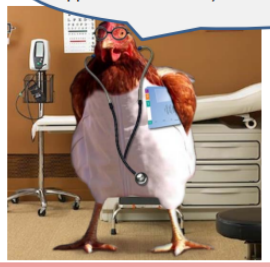
Want deep yellow egg yolks? Give your layers dried excess broccoli leaves and stems. Results of published research with broccoli stems and leaves meal (BSLM) indicated that adding up to 9% in diets of 42-week-old layers increased yolk pigmentation and had no negative effects on production measurements compared to that of a corn/soy diet. We fed 15% BSLM in the diet of 35-week-old layers. It produced significantly darker yolks but had no negative effects on weight gain, feed consumption, egg weight, egg shell thickness and Haugh units (overall egg shell quality) compared to that of the control. While carotenoids in BSLM deepened yolk color, its glucosinolates can cause severe growth depression; therefore, greater than 12% - 15% BSLM is not recommended.

The research is part of a broader study to use nutrient-rich dried horticultural by-products (remaining after harvest and processing of fruits, grains, nuts, seeds and vegetables) in diets of layers. Use of BSLM and other by-products is important because California produces an estimated 96% of the broccoli and over 50% of other fruits and vegetables for the US along with vast quantities of unused material, often deposited in landfills and possibly negatively affecting the environment.



When fed discarded broccoli stems and leaves, hens deposit carotenoids in their yolks, causing a rich yellow-orange yolk color

Female birds dictate the sex of the offspring (as opposed to mammals). What are 2 exceptions?

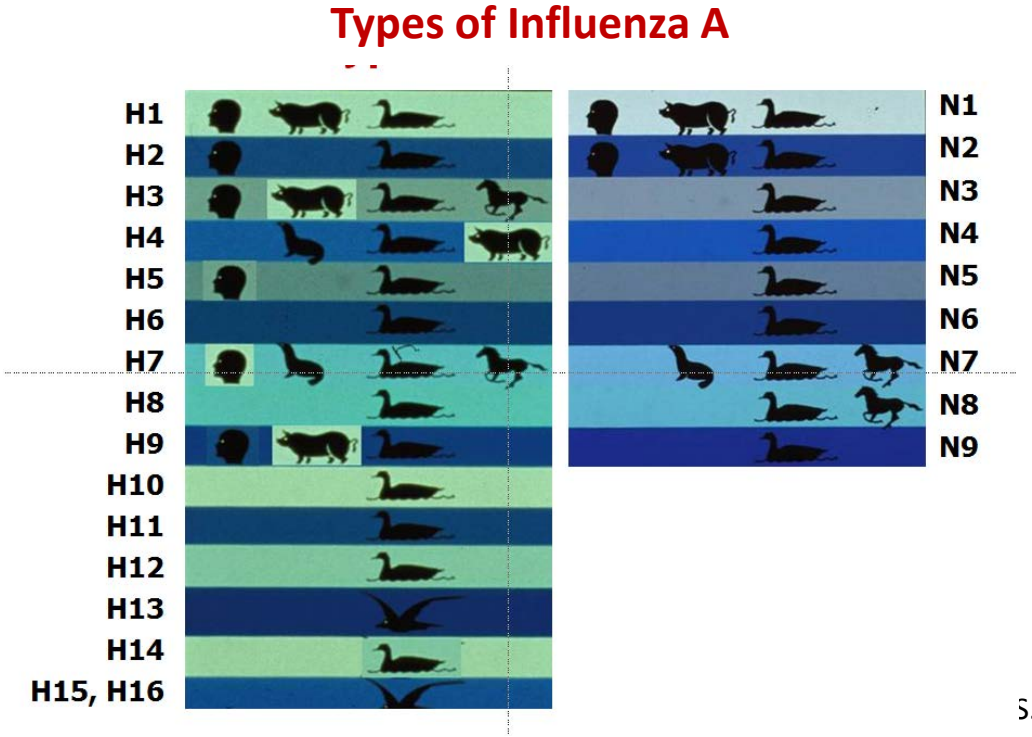


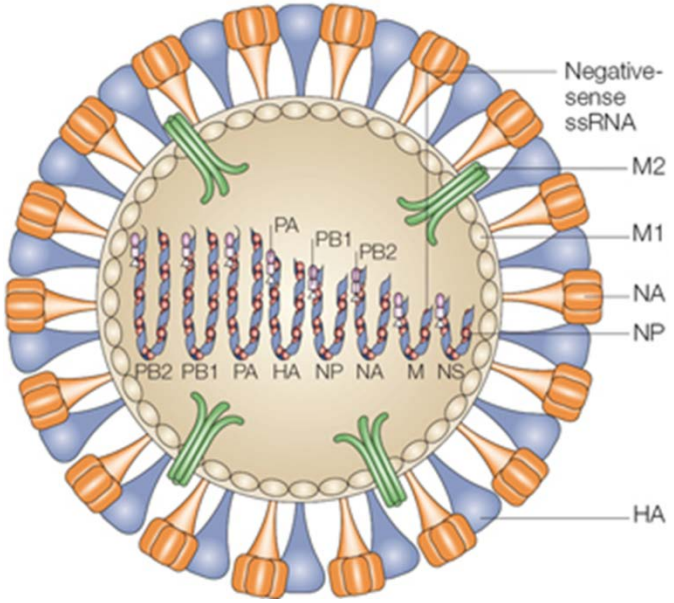
Last quarters trivia: The biggest egg ever (over 300x the size of a hens egg)aid was by the now extinct Elephant Bird

Useful Information on Highly Pathogenic Avian Influenza can be found at:

Influenza virus (the basics)

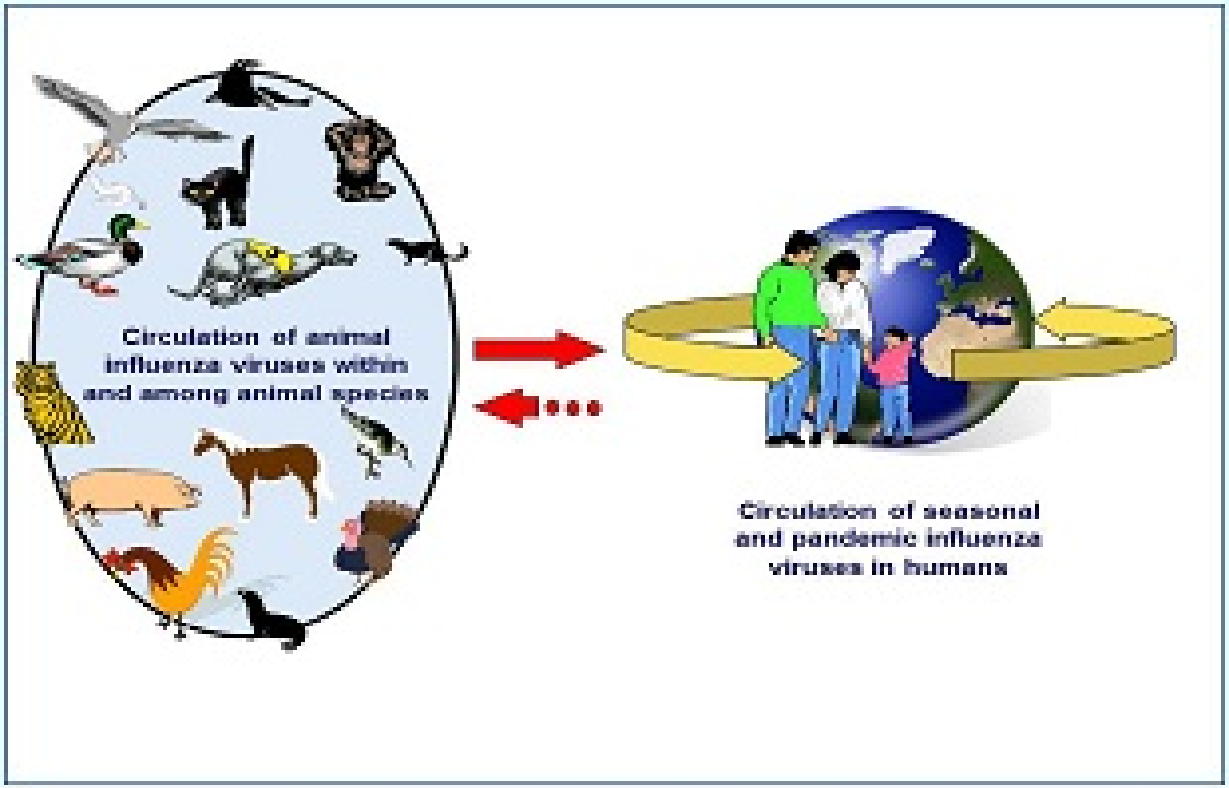
- Types: A, B, or C
- Variability: Prone to mutations and recombination events



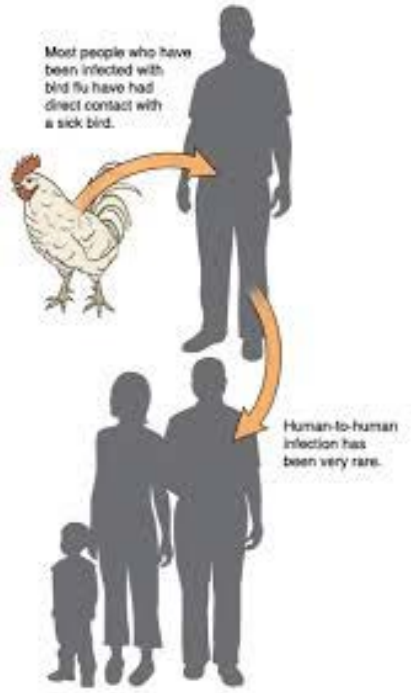


S. (2008) Genetics of the influenza virus. Nature Education 1(1)

Influenza and Avian Influenza Transmission



(WHO, 2016)



(fairview.org)

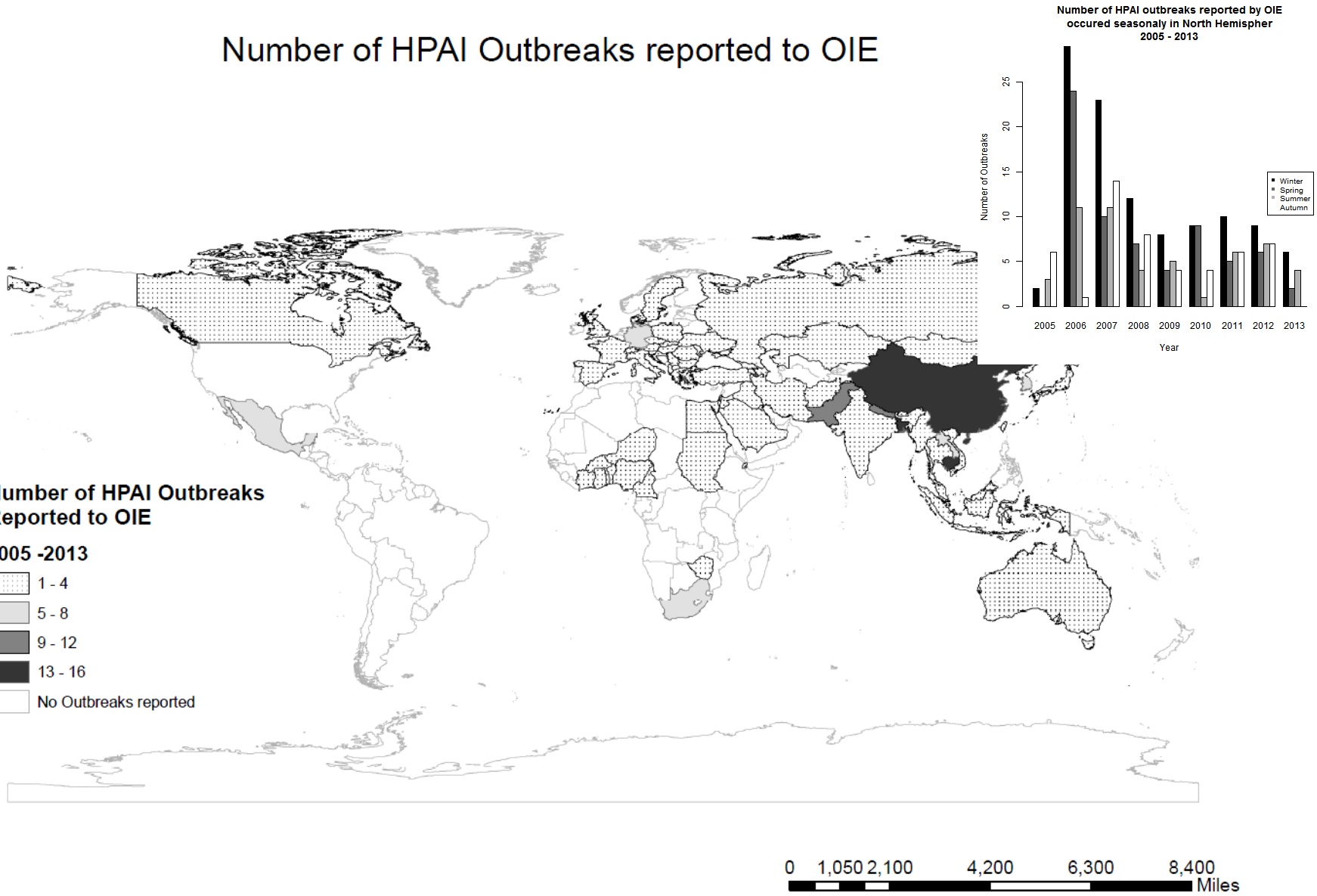
Transmission to humans is very rare

The Basics: Low Path AI vs. High Path AI

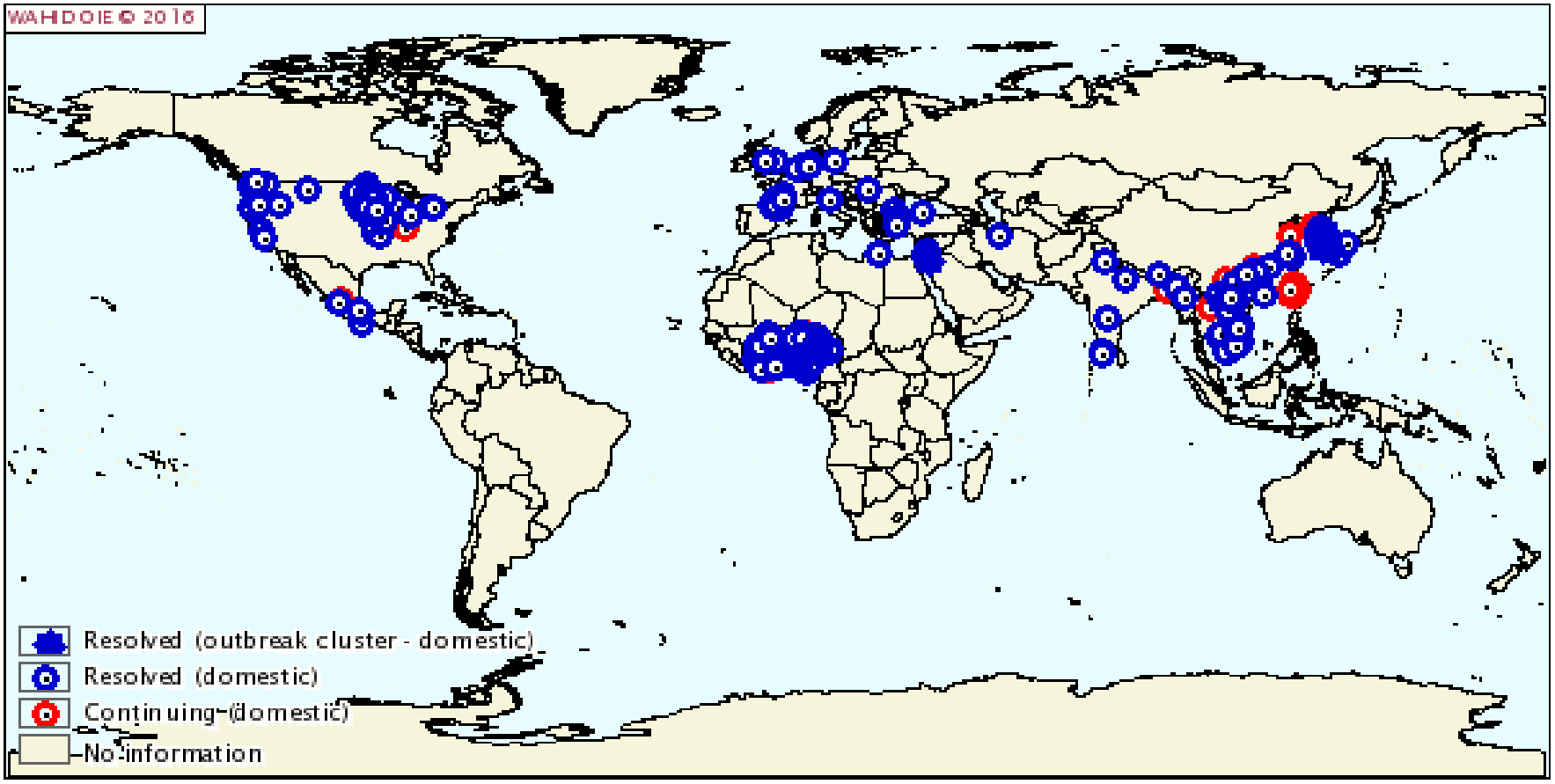
Low Pathogenic Avian Influenza (LPAI) associated with mild disease in poultry; such as mild respiratory symptoms, low mortality, and drop in egg production

High Pathogenic Avian Influenza (HPAI) leads to severe illness, hemorrhage, swollen wattle and comb, necrosis of tissue, and mortality (close to 100%) in poultry; H5N1 is a highly pathogenic virus

Highly Pathogenic Avian Influenza



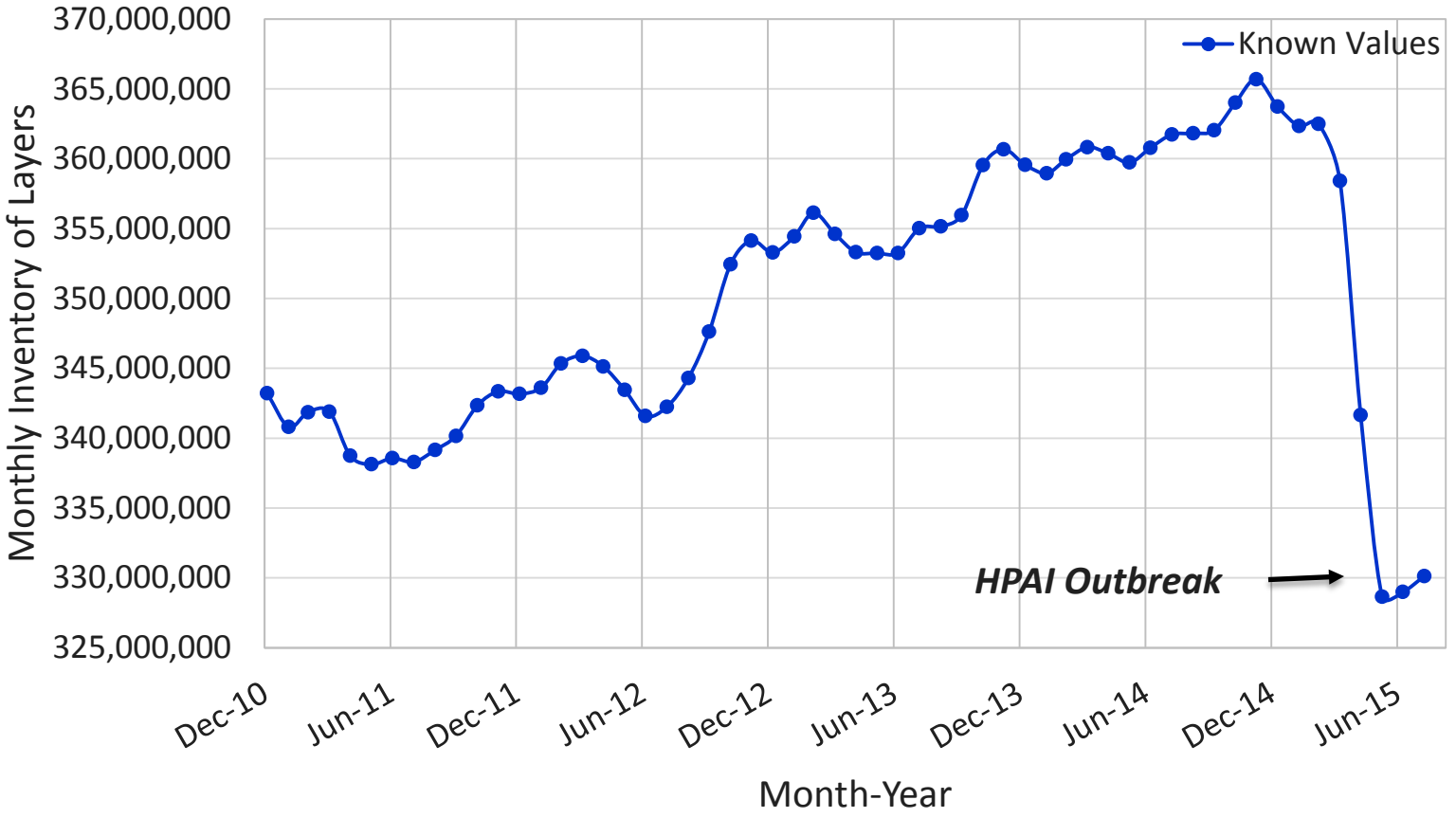
HPAI in the world (11/2014 to 11/2016)



Source: OIE

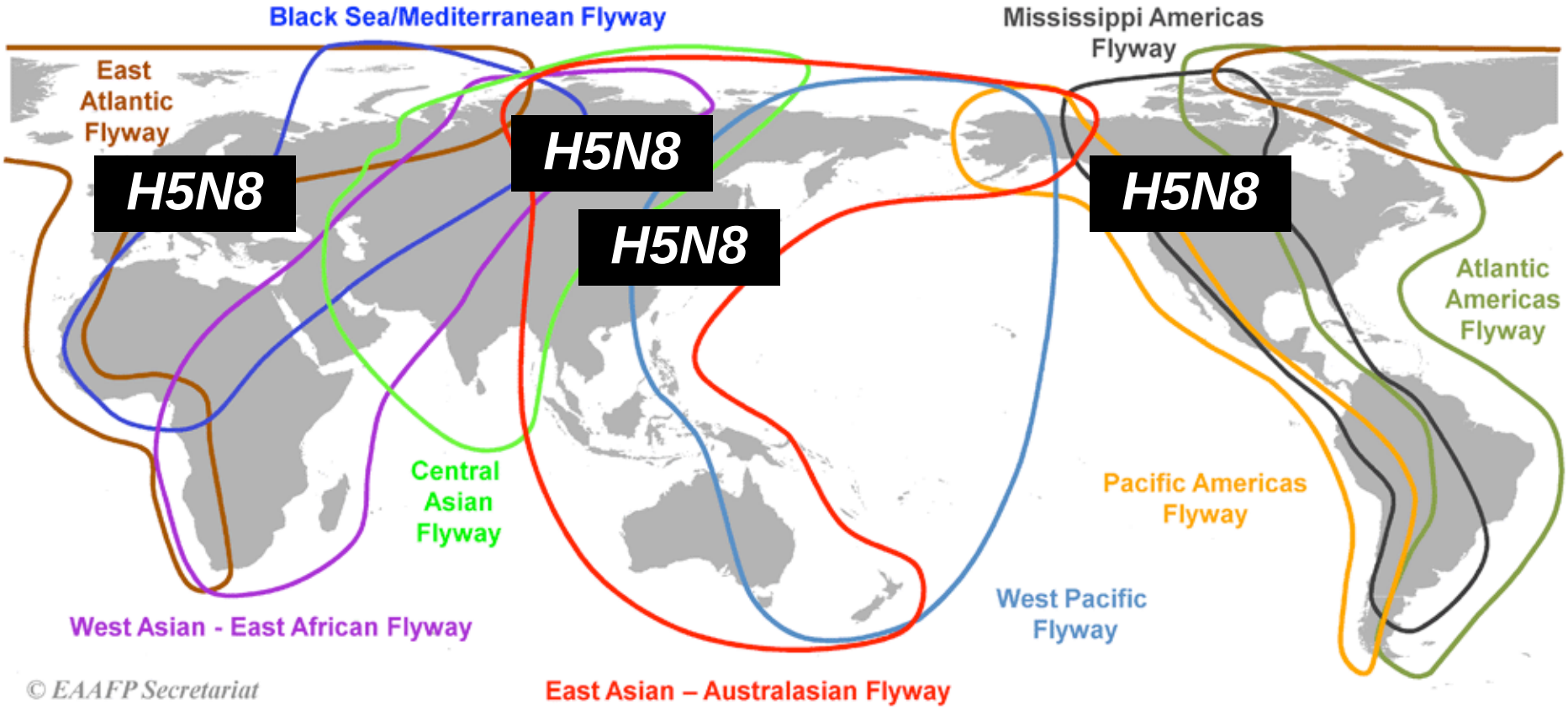
More than 90% of the human population in the developing world depends on free-ranging poultry flocks as sources of food (Cardona, 2009).

Historical Seasonal Layer Inventory



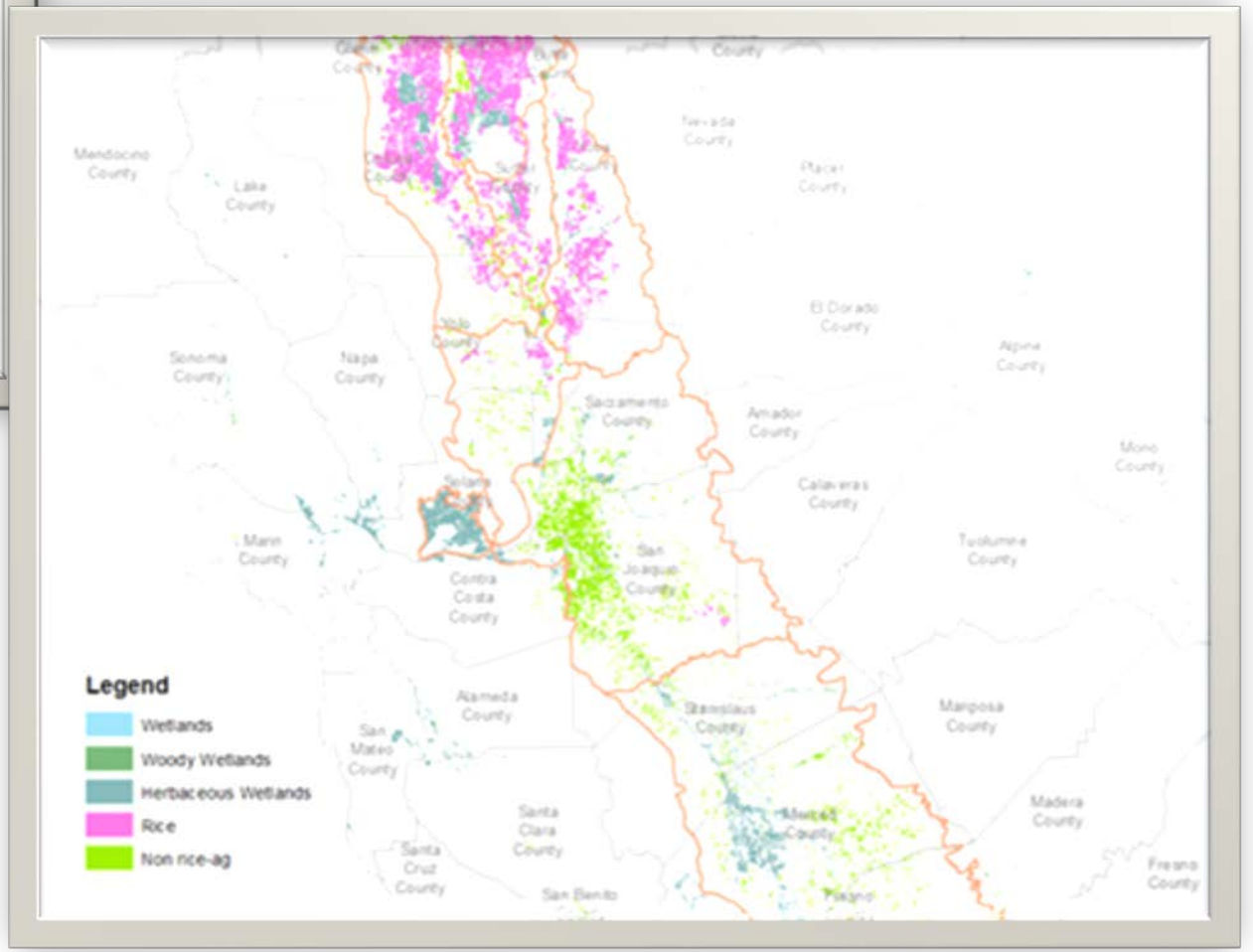
During the most recent HPAI outbreak in North America, the US lost close to 8% of it's commercial layer and turkey population

HPAI H5N8 arose in East Asia and spread to Europe and North America in 2014…



wild birds and poultry infected
wild birds responsible for widespread dissemination

Waterfowl and Avian Influenza: North American and California Perspective

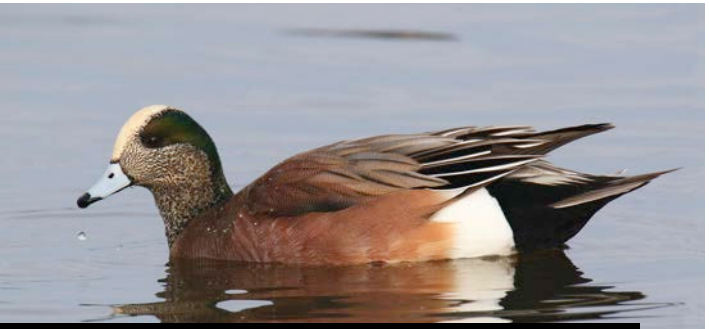


LPAI is endemic in waterfowl including waterfowl present in California

Infected waterfowl have flu viruses in their intestinal tracts …

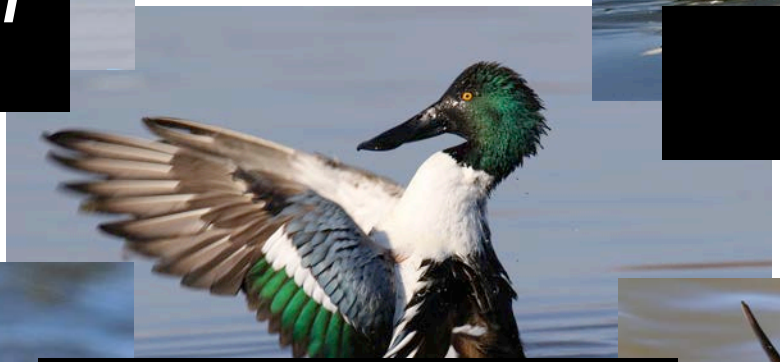
… and shed viruses in their feces

Up to 40% of ‘hatch year’ dabbling ducks infected



American Wigeon

Mallard

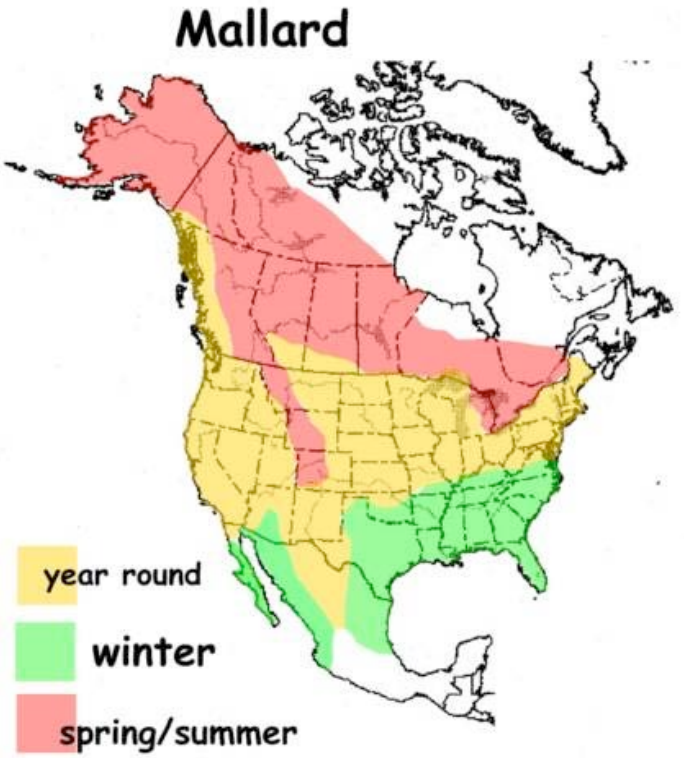


Northern Shoveler

Green-winged Teal

Northern Pintail

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



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

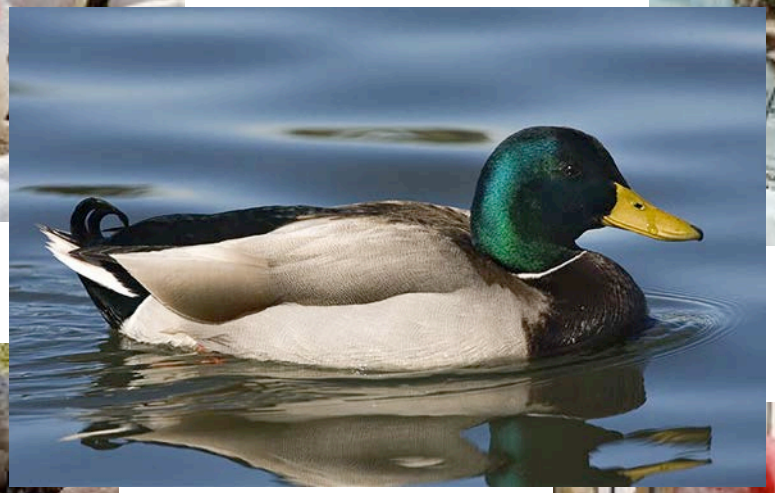
… very few flying north in spring infected

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

Influenza viruses don’t cause disease in California waterfowl … but do in poultry



HPAI H5N8 not detected in wild birds since January 2015…

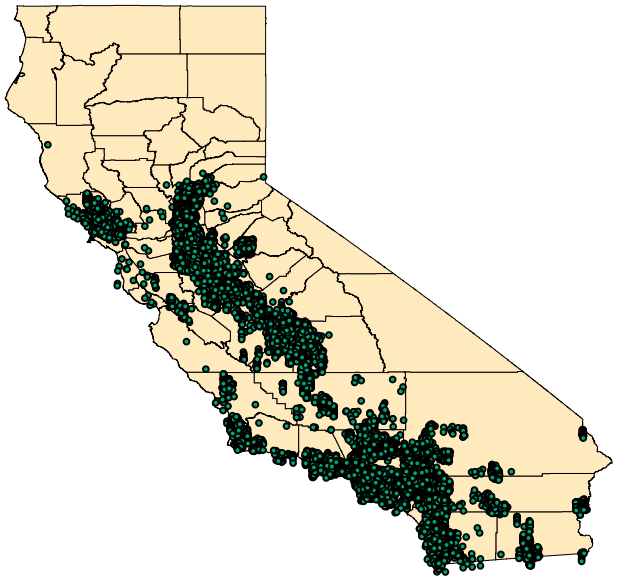
6000 live birds sampled in summer and fall

… HPAI H5N2 not detected in wild birds since June 2015…

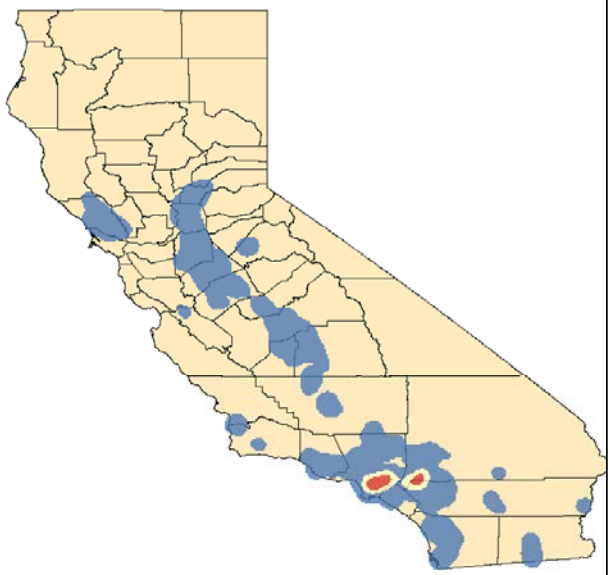
… HPAI H7N8 was detected in a commercial flock in Indiana in January of 2016.

What can we do in California

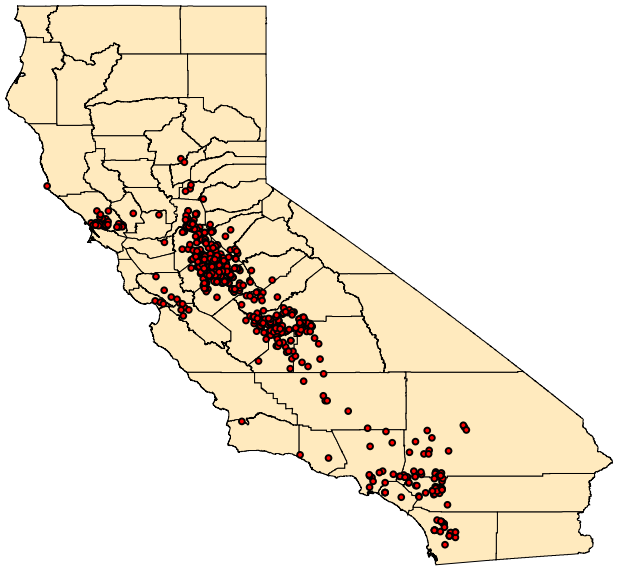
BY poultry



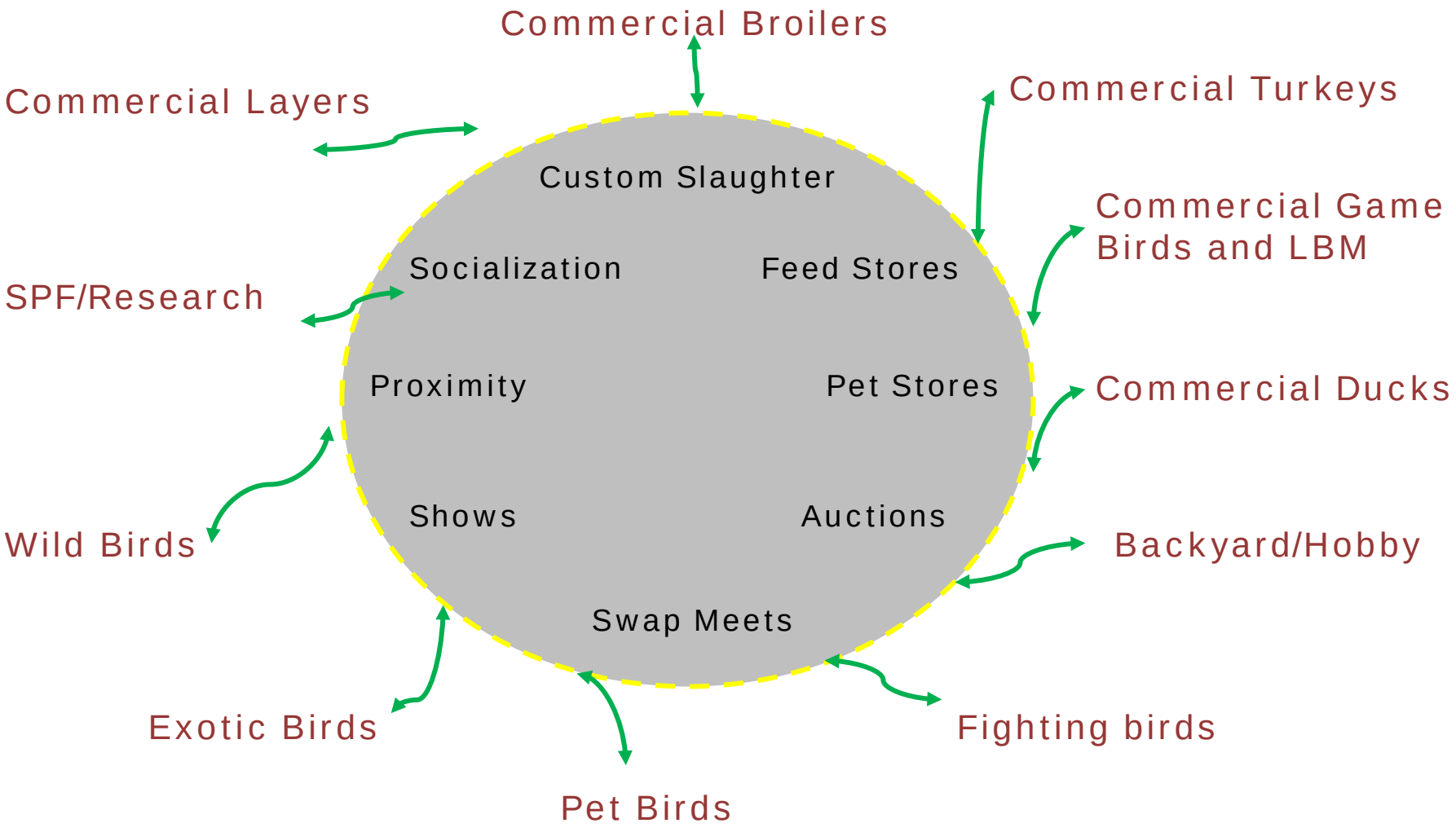
BY poultry



Commercial poultry



California Poultry



Slide adapted from Dave Castellan

Summary of AI in California

- We will not keep AI out of California
- Surveillance is key to a fast response
  - Work with your CAHFS lab and be part of the California Poultry Census)
- The best way to keep our chickens safe is via good biosecurity

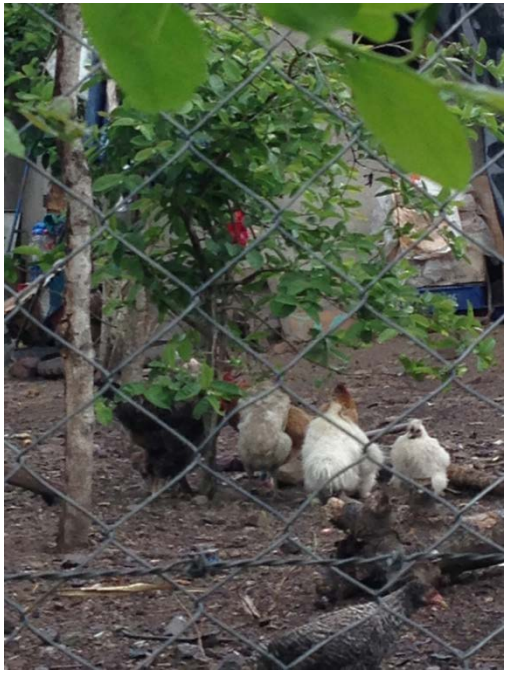
Biosecurity in BY Poultry

Don’t make perfect the enemy of good!

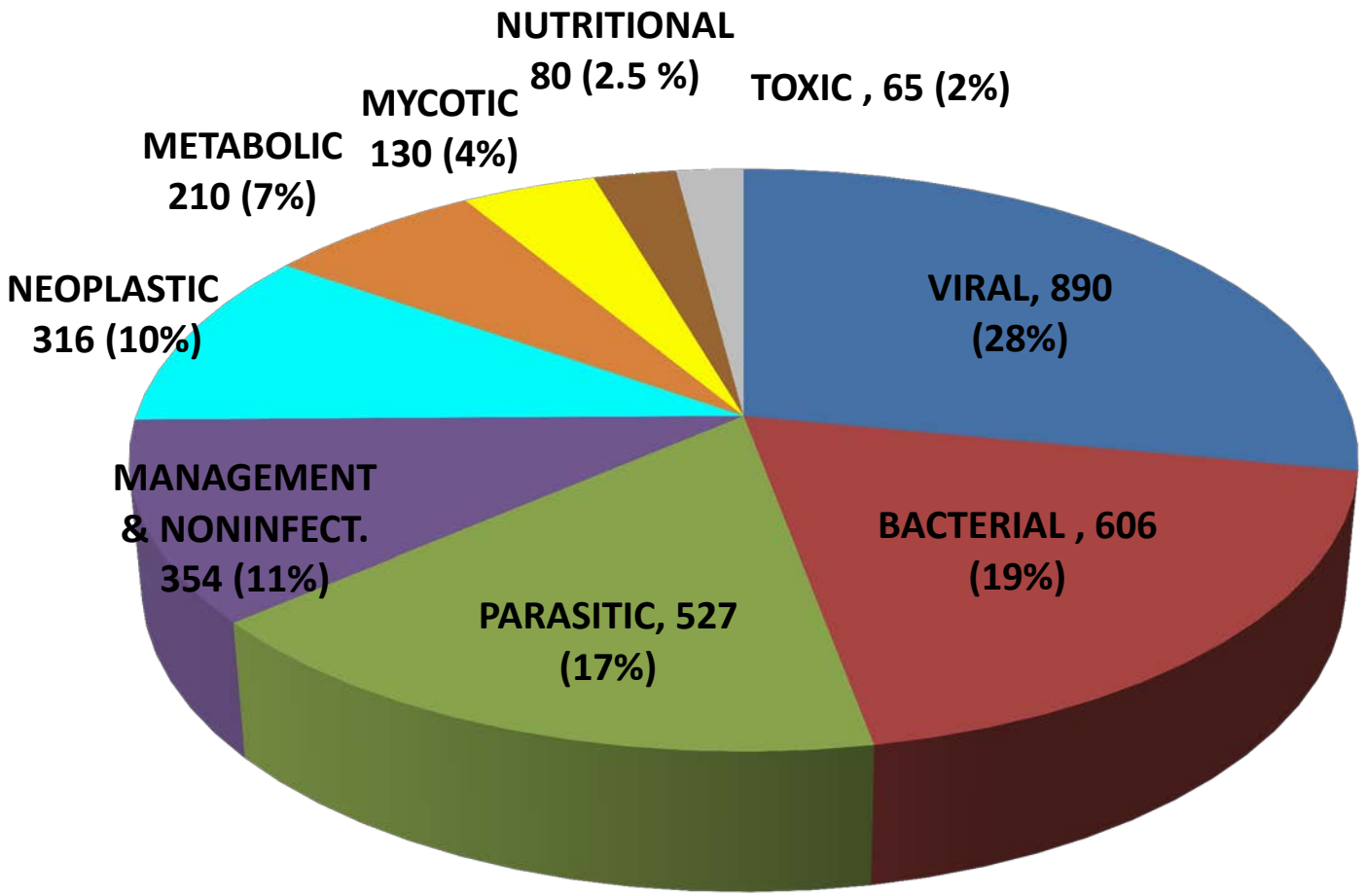
“Perfect is the enemy of good”

Different Approaches Toward Biosecurity

Versus...



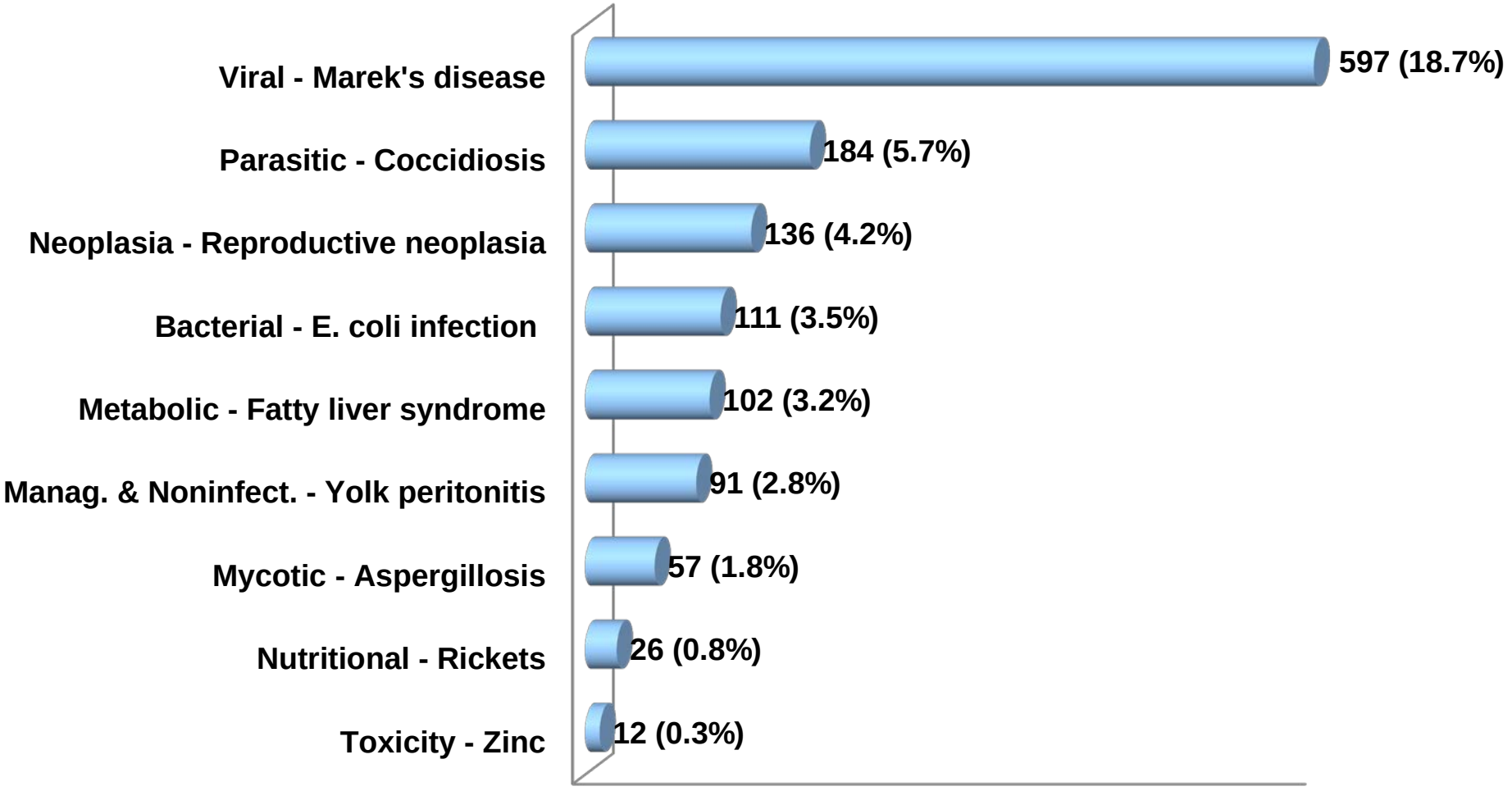
2001-2011 Frequencies and Percentages of Diagnoses by Etiological Types



TOTAL = 3178 DIAGNOSES

Senties, (2012)

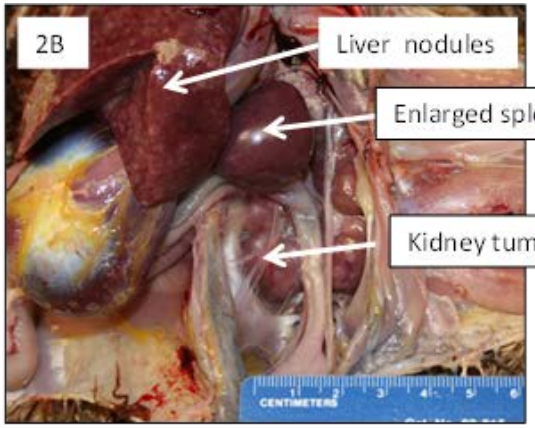
2001-2011 Top Backyard Poultry Diseases



Senties, (2012)

Marek's Disease

- Highly contagious epizoonotic herpesvirus
  - #1 cause of BY poultry mortality in California
- Endemic in the global poultry environment
- Virus causes lesions/lymphomas in peripheral nerves and other tissues
- Immunosuppression
- 'Classic' clinical sign is paralysis



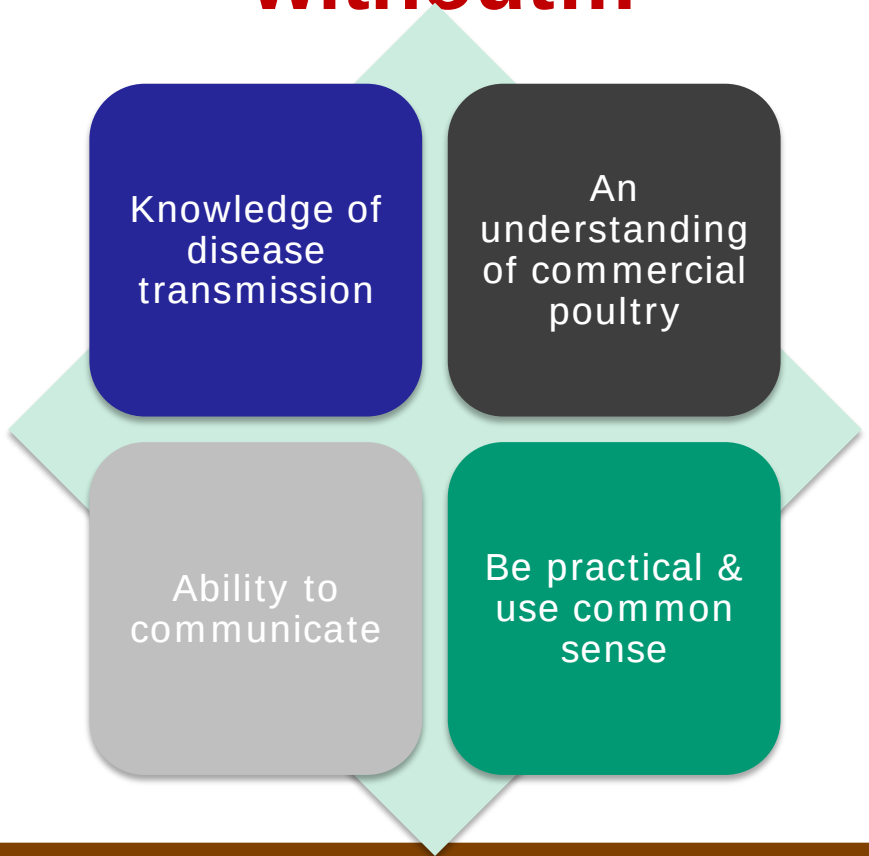
Prevention of Marek's

- Appropriate cleaning (MDV infects cells of the feather follicle)
- Vaccination at the hatchery or at one day of age with a cell associated vaccine
- 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

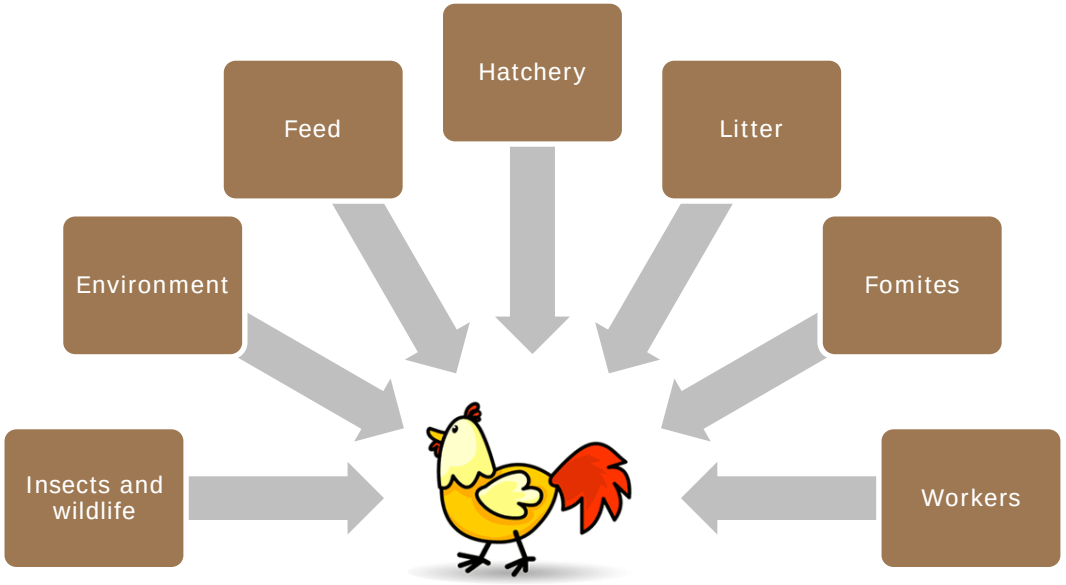
What is Biosecurity?

The protection of animals from disease causing agents

Can’t teach BY Biosecurity to clients without…



Knowledge of Disease Transmission



Disease transmission

There are multiple hosts and multiple routes of infection

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
- Do not allow chickens to enter your home as ‘visitors’
- Avoid mixed-aged flocks if possible…

- Use clothes specifically for working with chickens, especially shoes
- Wash hands thoroughly before and after working with chickens
- Every time you introduce new birds quarantine them for 7-10 days
- Separate sick birds from healthy birds and have a plan for euthanizing and disposing of sick birds
- If sufficient land rotate your coop.
- Foot baths (Difficulties)

Be meticulous!

Practical biosecurity for BYF owners cont

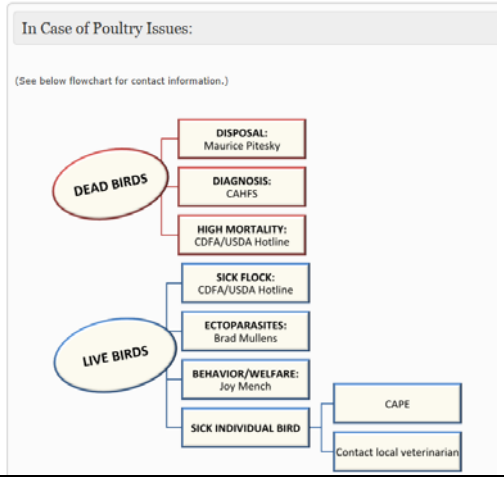
Your birds should not have contact with wild birds including game birds and migratory waterfowl, rodents or insects as these may carry disease organisms.

Poultry should be kept in a screened in area to minimize exposure to diseases.

Obtain feed from clean dependable suppliers and store the feed in containers that are bird, rodent, and insect proof. Provide clean fresh water to your birds at all times.

Restrict access by visitors onto the premises where your birds are housed. Do not allow people who own other birds to come in contact with your birds.

Consult your local veterinarian for more useful tips.



http://ucanr.edu/sites/poultry/

Practical Biosecurity: Rodent control

Why are rodents bad?

Diseases spread by rodents include: Salmonella, Plague, IB, AI, Fowl Cholera etc.

They love poultry feed

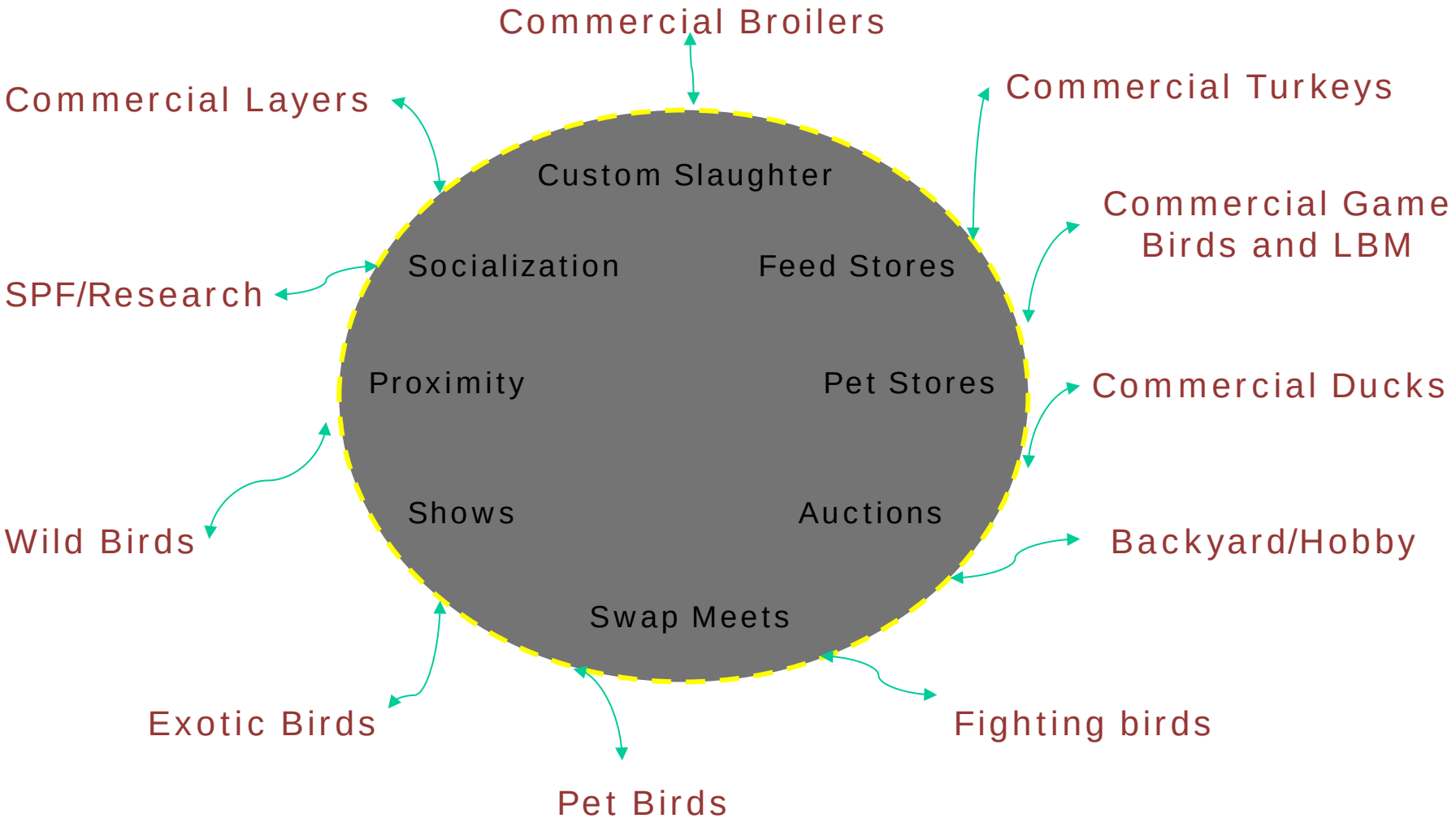
Know your enemy…

- Mice and rats have different behaviors
- Rats are more cautious, more opportunistic and have a larger geographical range of land
- Rodents don't like to dig through gravel. Therefore use gravel as a barrier at the coop fence-line
- Rodents can jump ~3 ft from a tree to the roof of a coop. Therefore, prune trees appropriately

Traps and Baits:

- Essential part of poultry management
- **<u>On the outside of the coop:</u>** Put traps or bait stations every 25 to fifty feet around the perimeter of the house
- Products I don't like: Glue-boards

California Poultry



Slide adapted from Dave Castellan

Questions?