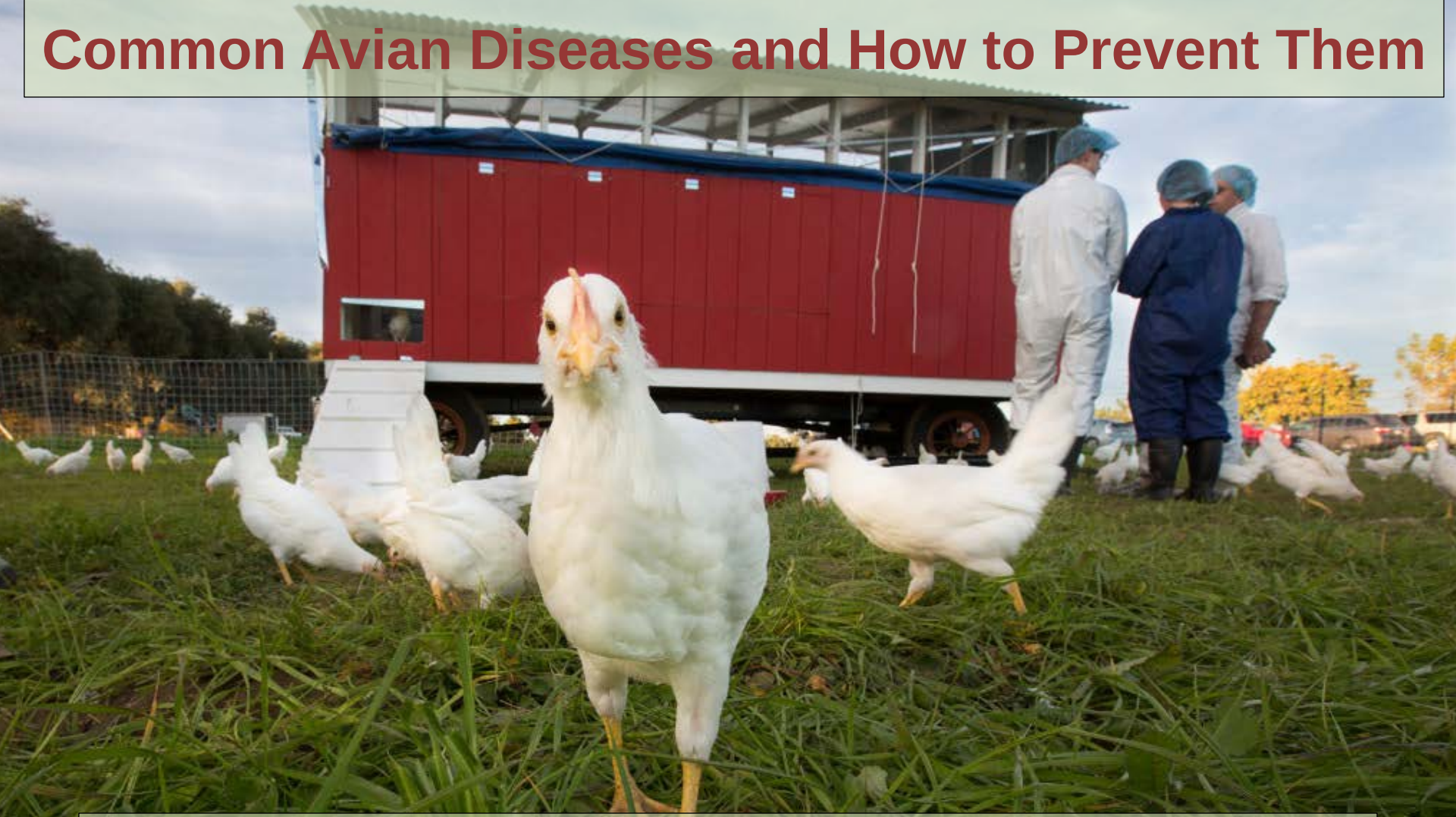
Common Avian Diseases and How to Prevent Them



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

Central California Livestock Symposium
April 27th, 2016

Questions?

Who am I ???

Work Experience

Faculty Member UC Davis School of Veterinary Medicine, Cooperative Extension, Poultry Health and Food Safety Epidemiology

California Department of Food and Agriculture, Veterinarian-Poultry Focus

California Council of Science and Technology, Science Fellow-California State Senate

Small Animal Veterinarian

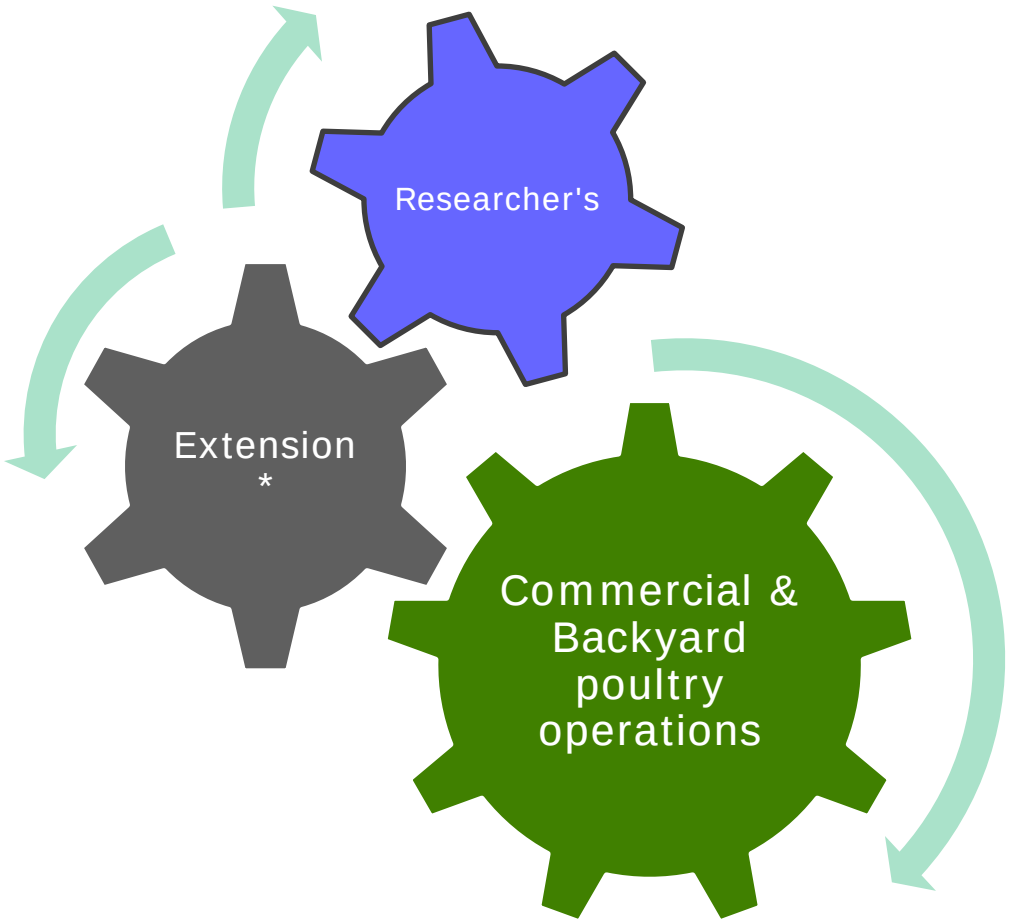
Lawrence Livermore National Lab, Chemical And Biological National Security Program

Areas of Interest

- Application of classical & spatial epidemiology in disease surveillance
- Interface of science & policy
- Food safety
- “Sustainable” Poultry Production

Real Life

What is Extension?



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

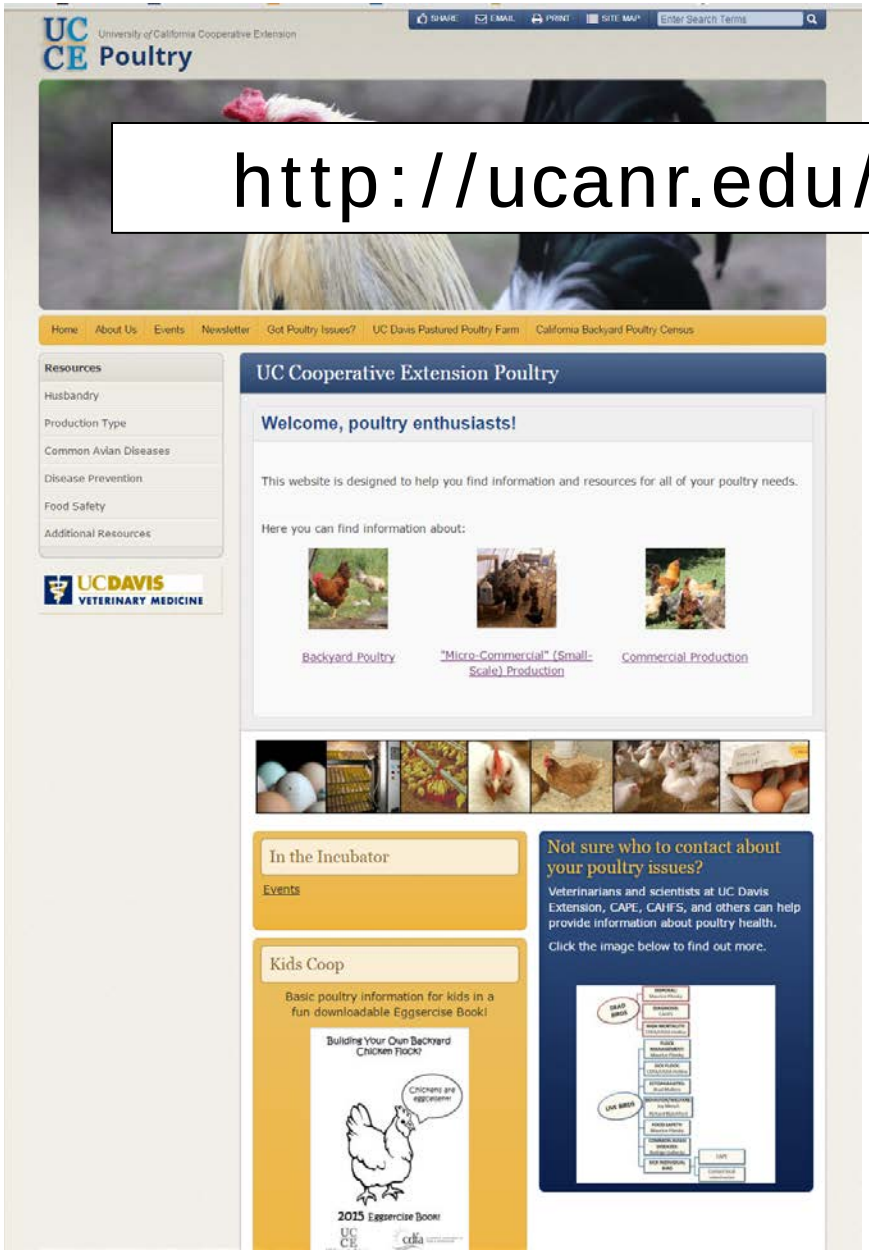
- 200 locally based CE advisors and specialists
- 57 local offices
- 130 campus based CE specialists
- 9 research and extension
- centers
- 700 academic researchers

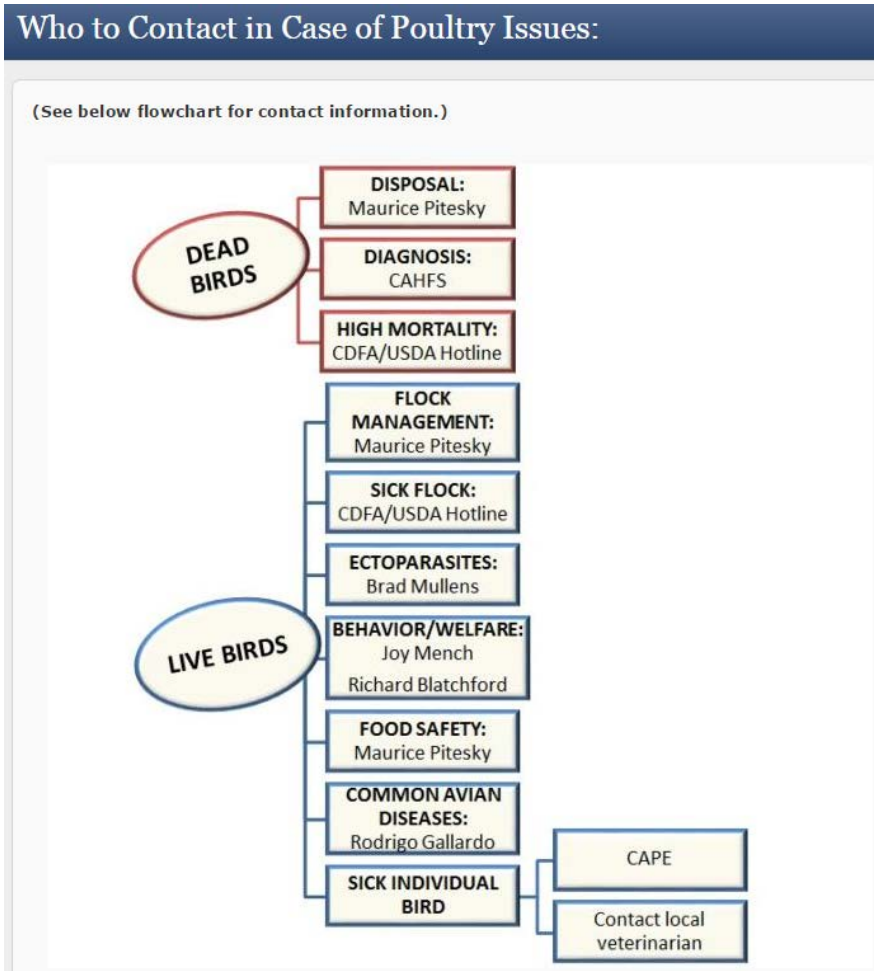
* Extension specialists, researchers and Farm Advisors

http://ucanr.edu/

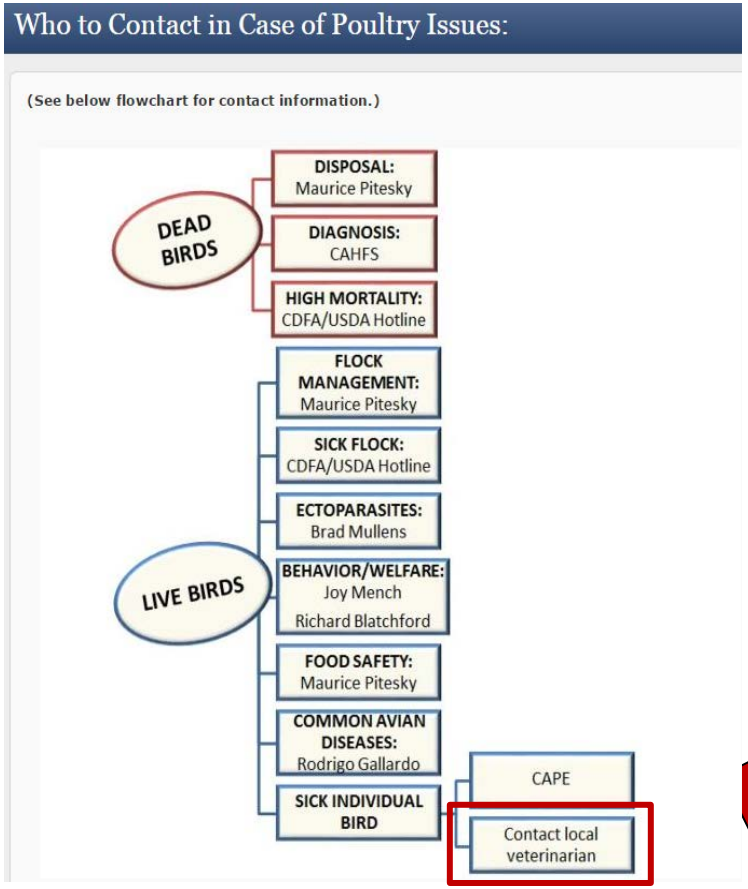
New UCCE Poultry Website

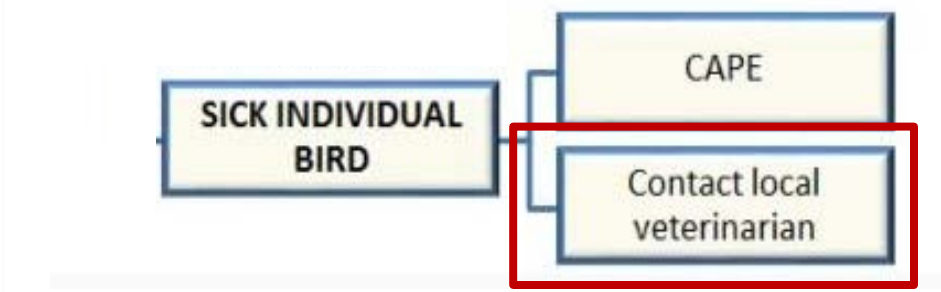
http://ucanr.edu/sites/poultry/





Need a Veterinarian Who Works with Poultry???





Currently we have over 20 veterinarians in 15 California counties

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.

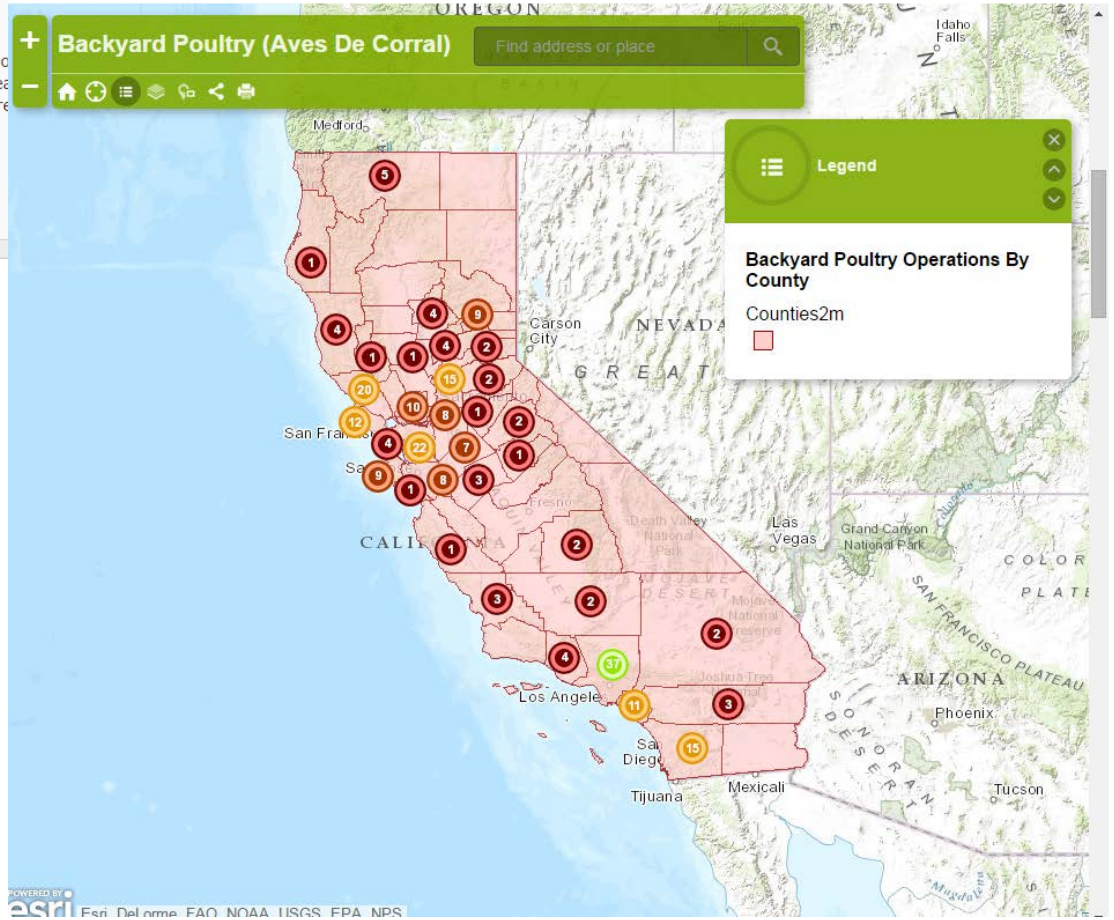
The California Backyard Poultry Census:

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.

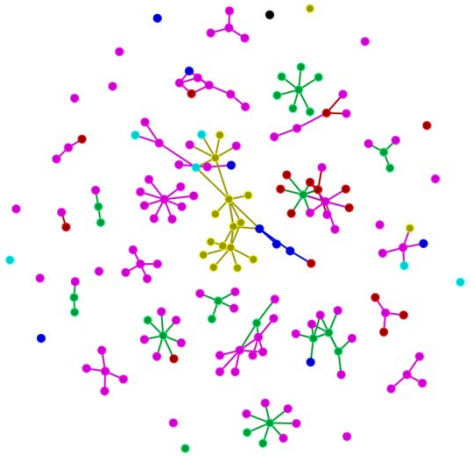
English Version

Versión en Español

Census Map



Social Network Analysis of Backyard Poultry



Poultry Ponderings

A Quarterly Newsletter Summarizing Poultry Related Work at UC

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)

Common Lice Found In Backyard Chickens

Chicken lice (not to scale) collected in survey. (A) *Menopon gallinae;* (B) *Menacanthus cornutus;* (C) *Menacanthus stramineus;* (D)*Goniocotes gallinae ;* (E) *Lipeurus caponis;* (F) *Cuclotogaster heterographus.*

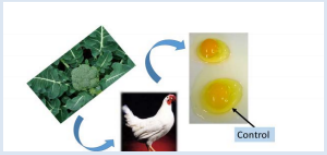
PLEASE CONTACT MAURICE PITESKY AT MEPITESKY@UCDAVIS.EDU OR 530-752-3215 WITH QUESTIONS OR COMMENTS

Nutrient-Rich By-Products for Layers

Gabriela Pedroza and Annie King

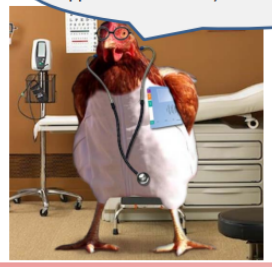
Want deep yellow egg yolks? Give your layers dried excess broccoli leaves and stems. Results of published research with broccoli stems and leaves meal (BSLM) indicated that adding up to 9% in diets of 42-week-old layers increased yolk pigmentation and had no negative effects on production measurements 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:

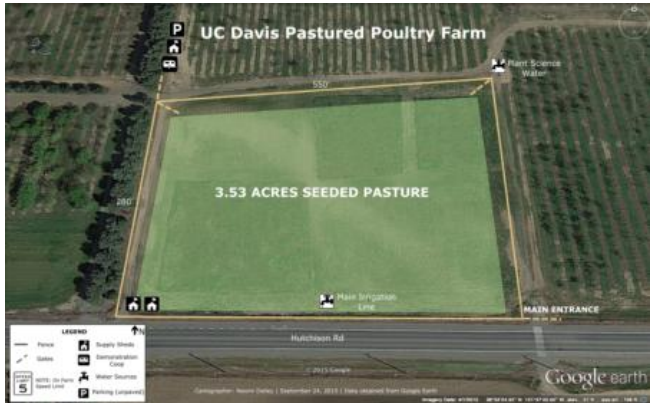
What is the UC Davis Pastured Poultry Farm?

Innovation, Research and **Outreach** hub for:

- Free-range commercial poultry producers
- Researchers/educators
- Auditors and other stakeholders

Our current focus in on pastured poultry production but we are keen to work on all free-range systems

Our goal is to improve these systems using practical technology, research and outreach



Why do we need a pastured poultry farm?

Farmers want to know about:

Food safety
Regulations
Production
Physiology (molting etc)
Welfare
Genetics
Coop design
Equipment
Diseases
Sustainability

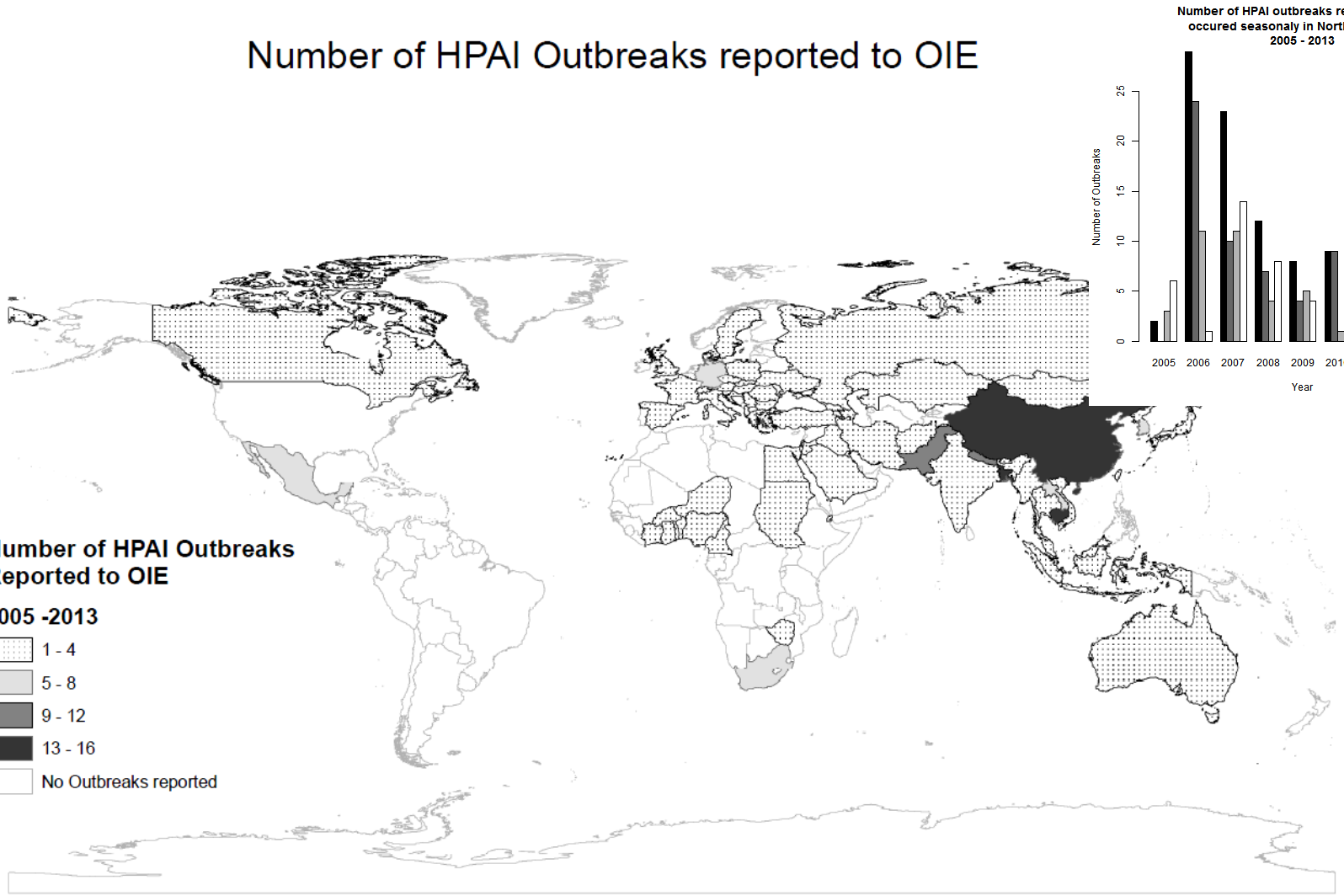
Companies want to make sure that the small farms they contract with are producing healthy food in a sustainable fashion

Prop 2…

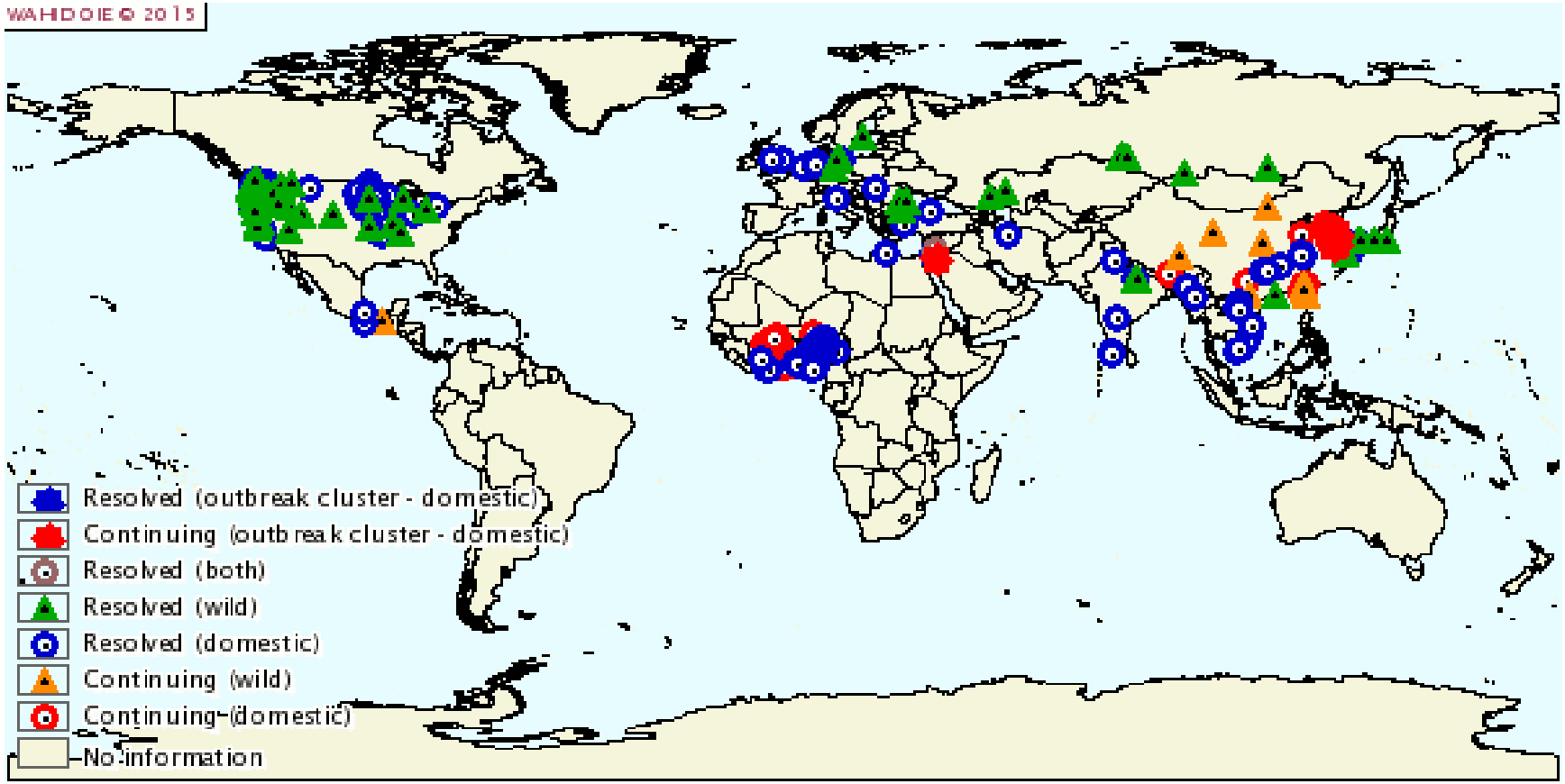
One not so common Avian Disease

Avian
Influenza

Highly Pathogenic Avian Influenza

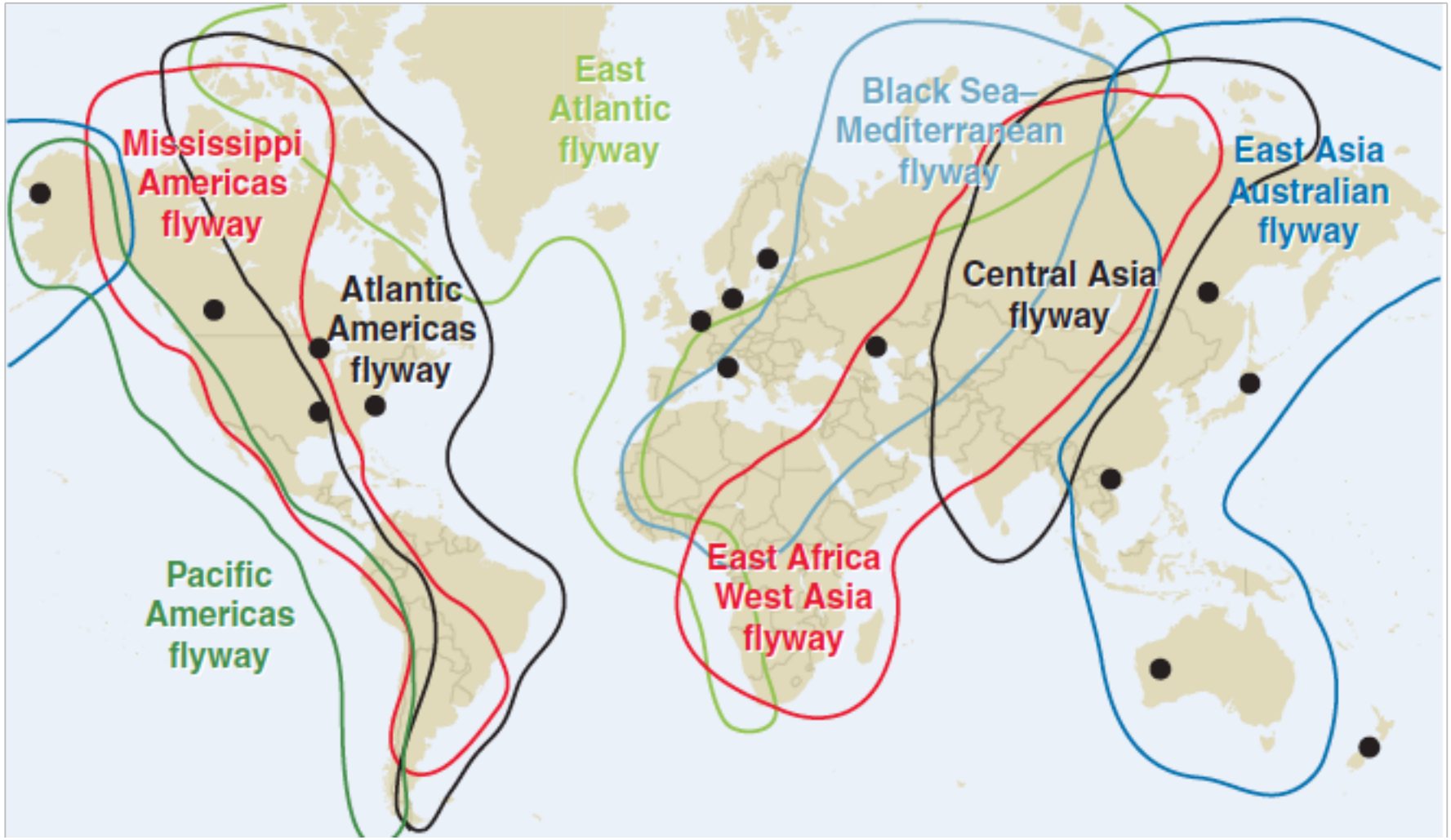


HP AI in the world (11/2014 to 8/2015)



Source: OIE

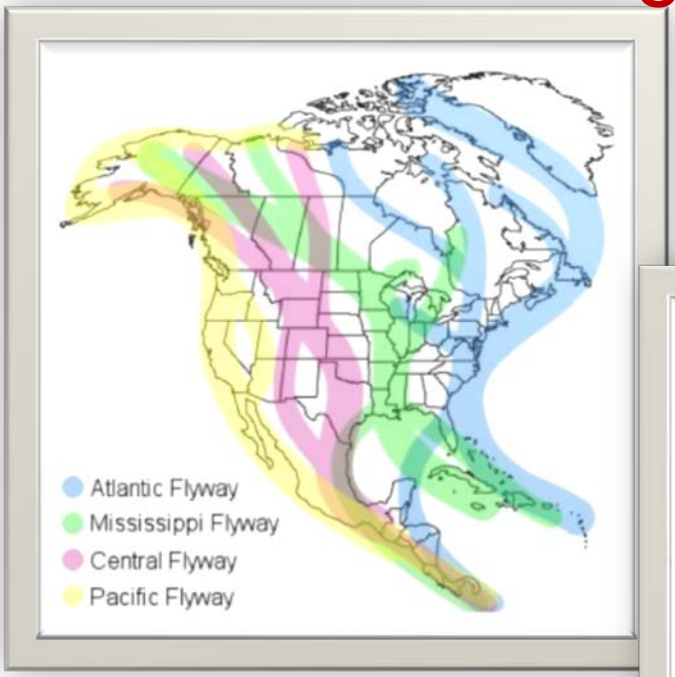
Waterfowl and Avian Influenza: Global Perspective

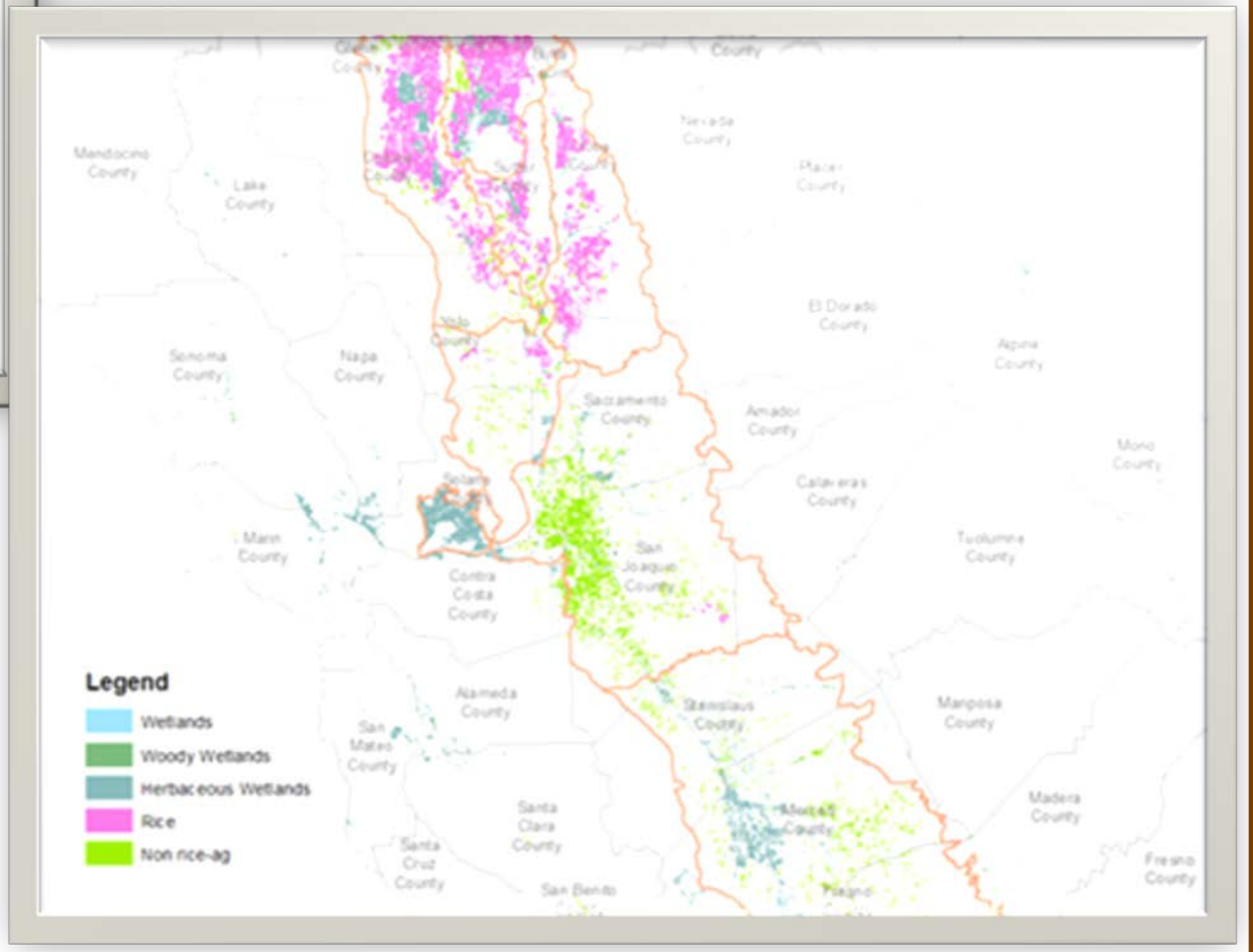


Björn Olsen et al., Global Patterns of Influenza A Virus in Wild Birds, Science 312, 384 (2006);

Genetics of strain consistent with strains from the East Asia / Australia Flyway

Waterfowl and Avian Influenza: North American and California Perspective



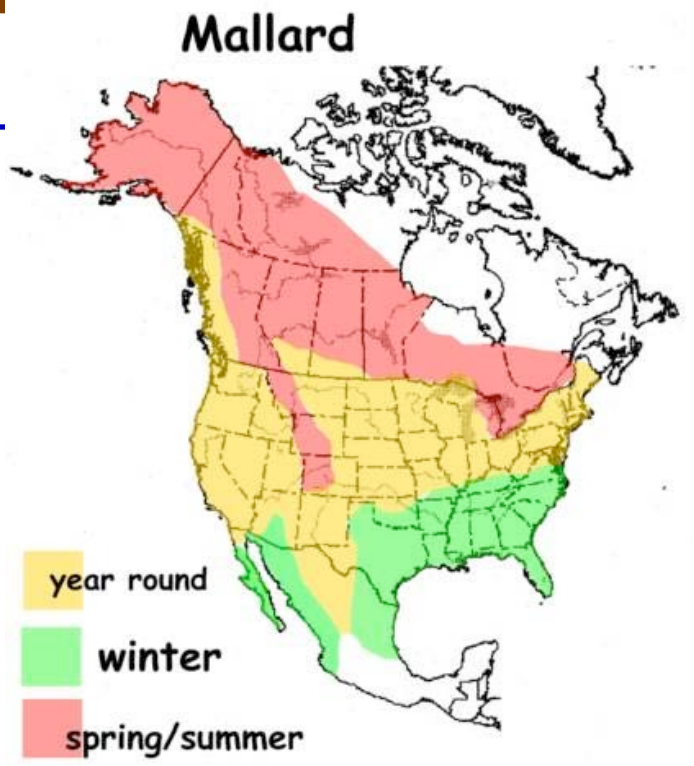


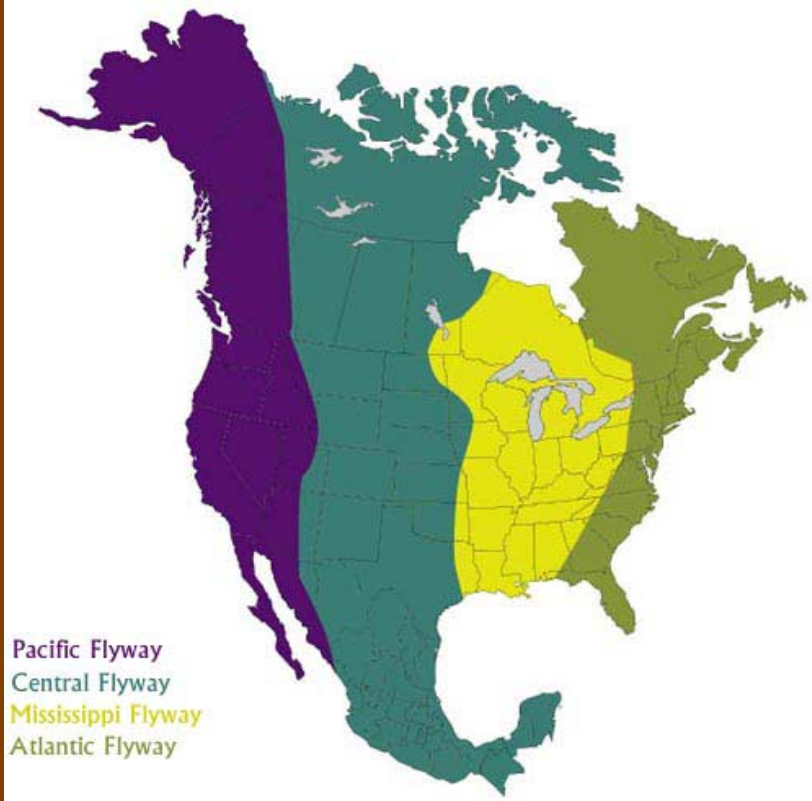
Infected waterfowl have flu viruses in their intestinal tracts …

… and shed viruses in their feces for ~ 7 days

Slide courtesy of Walter Boyce

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

Slide courtesy of Walter Boyce

Major Conclusions/Recommendations

Can't keep HPAI out of USA

Surveillance will tell us if HPAI becomes endemic

Biosecurity will never lower risk of introduction = 0

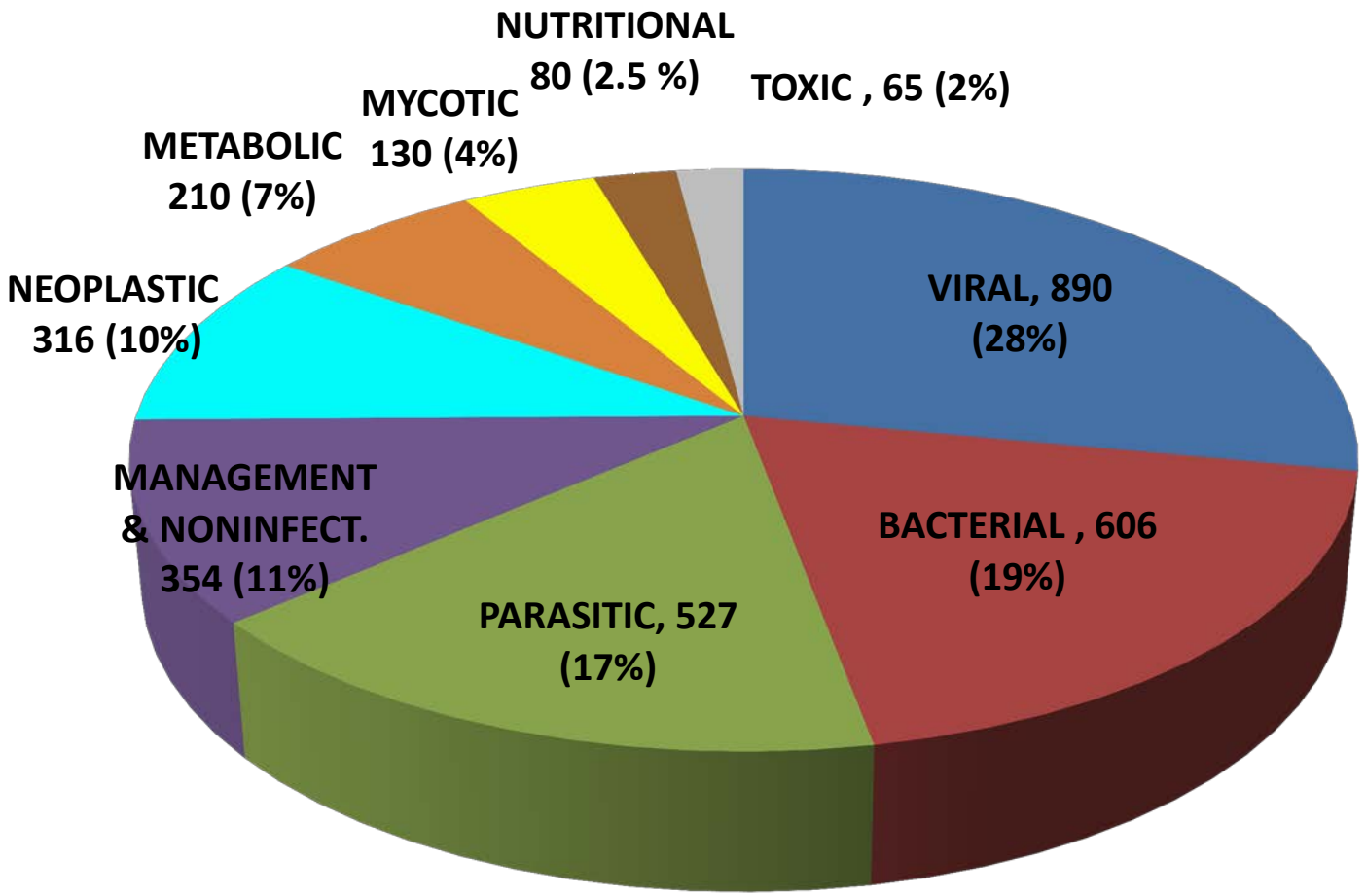
Biosecurity and rapid response key to reducing amplification in poultry and spill-back from poultry to wild birds

Speeding up depopulation efforts to reduce shedding

Make sure you have an AI Response Plan (13 responses representing 48 farms do not have one).

Biosecurity!!! USDA Epi Report showed sharing of equipment, employees moving between infected and non-infected flocks, lack of C&D of vehicles between farms and rodents and free-flying birds were correlated with high risk of HPAI infection

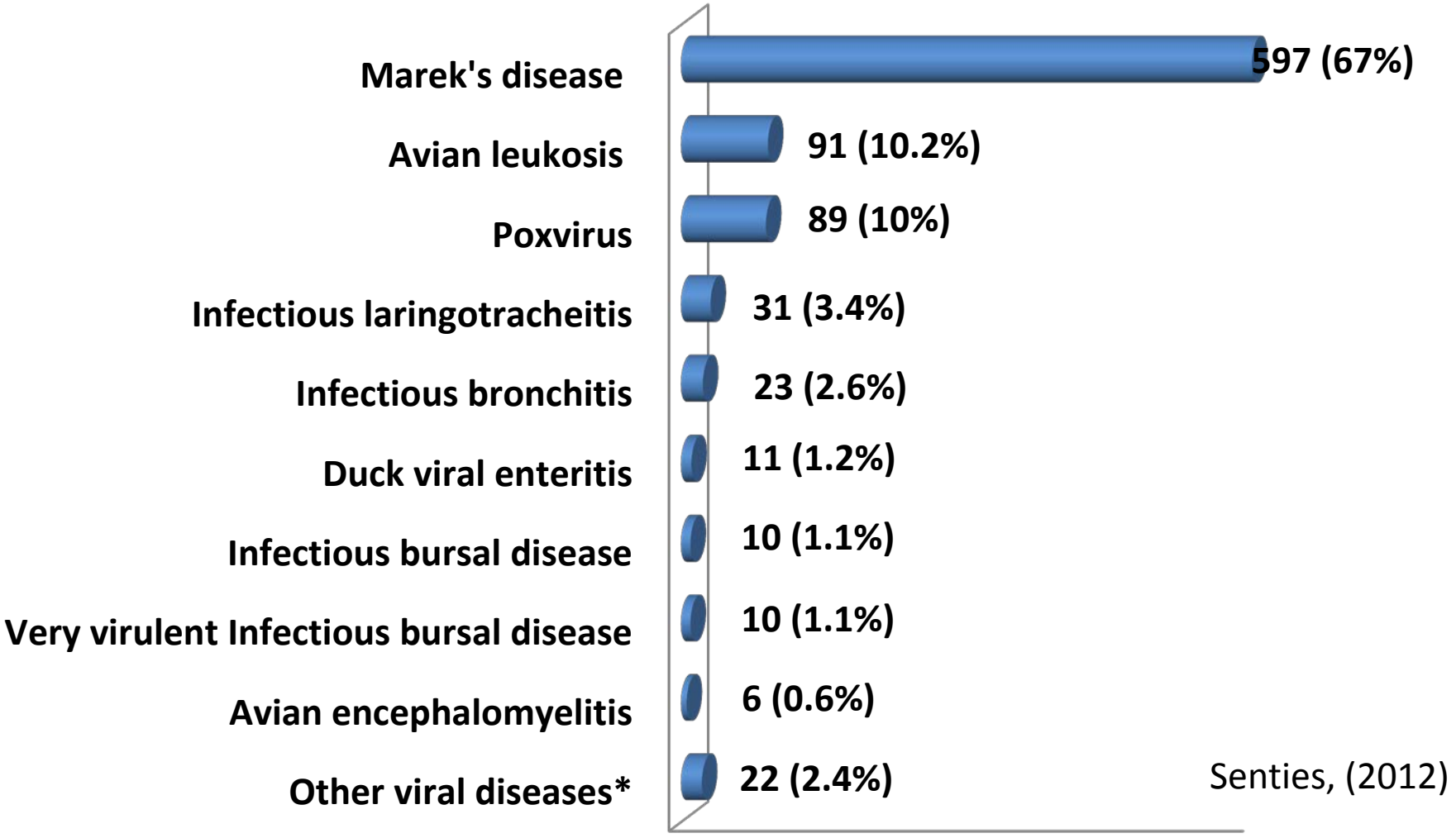
2001-2011 Frequencies and Percentages of Diagnoses by Etiological Types



TOTAL = 3178 DIAGNOSES

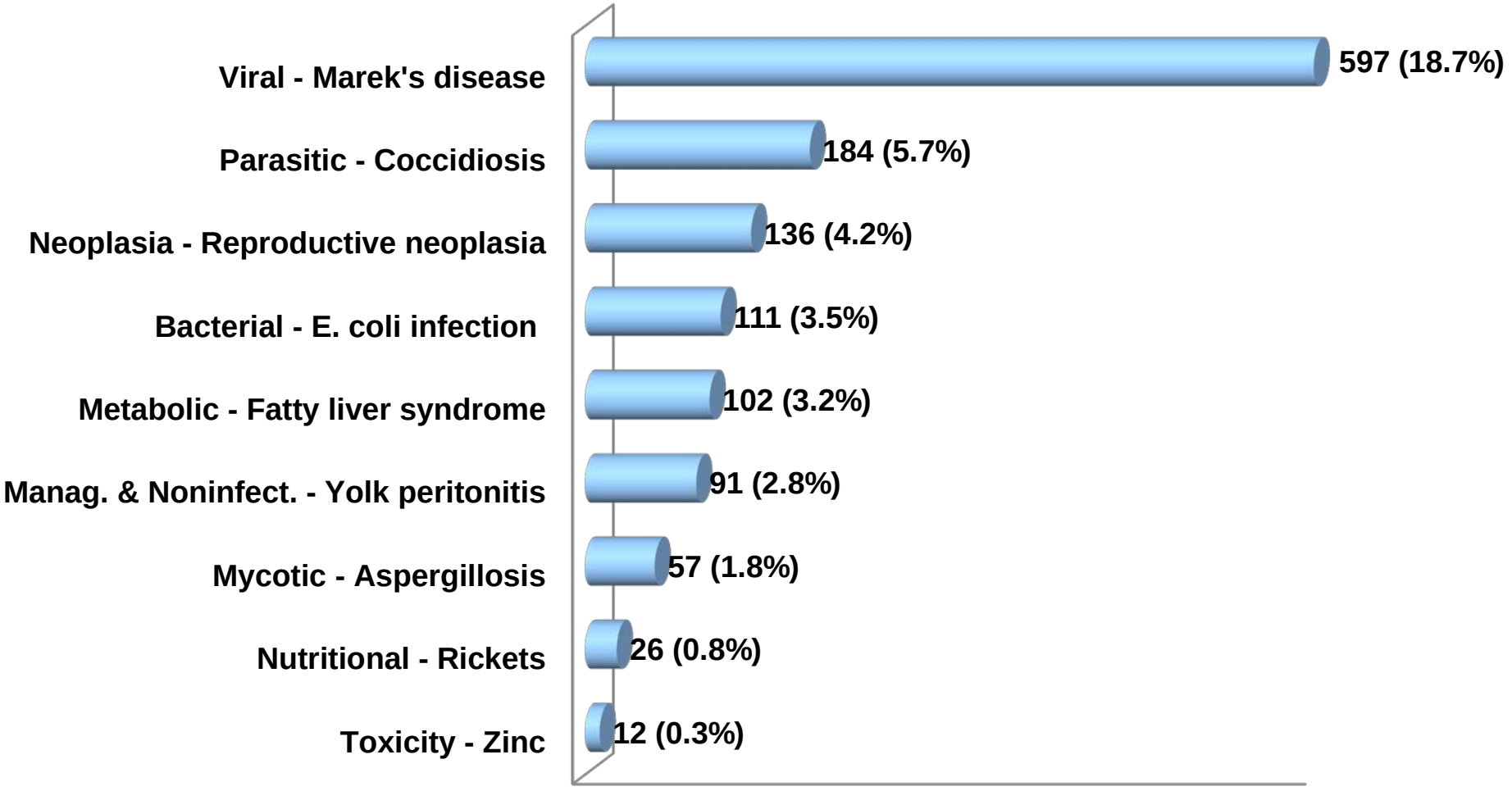
Senties, (2012)

Viral Diseases
(890 Diagnoses)



*Most of the 2002-2003 exotic Newcastle disease diagnoses were not included since regulatory diagnoses are not considered ¨backyard¨ in LIS.

2001-2011 Top Backyard Poultry Diseases



Senties, (2012)

Marek's Disease

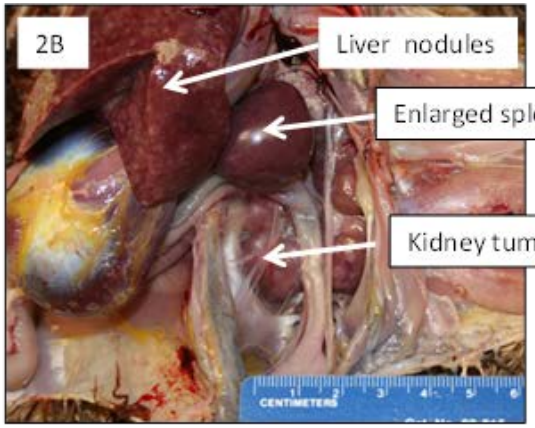
- Highly contagious epizoonotic herpesvirus

  #1 cause of BY poultry mortality in California

- Endemic in the global poultry environment

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

- Immunosuppression



Transmission and Vaccination

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

UGA, 2014

Viable virus can be inhaled by susceptible chickens from house dust associated with feather follicles

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

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

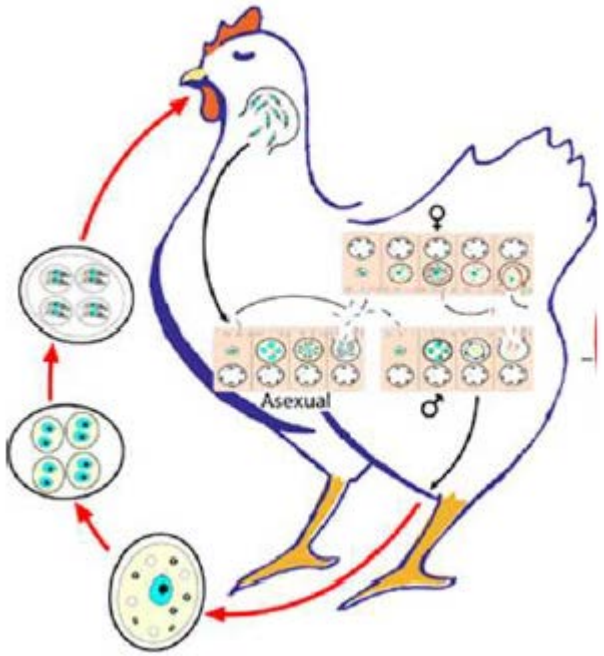
Eimeria (i.e. Coccidia)

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



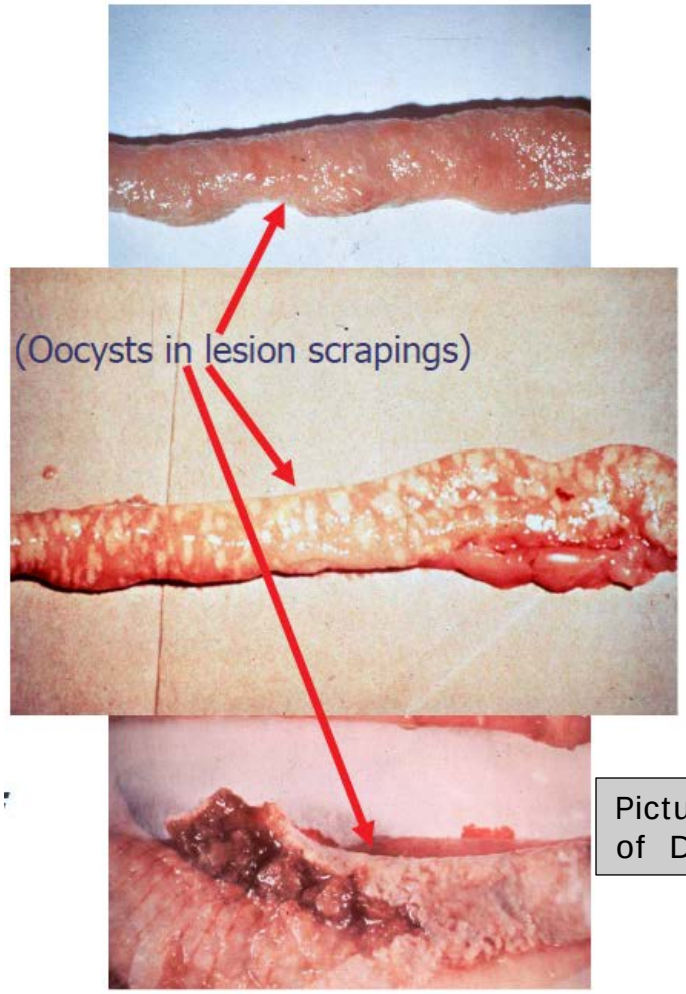
ALL poultry house litter contains coccidia. To keep the coccida load low it is important to keep litter dry and purchase feed that contains a coccidiostat

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)
- Good biosecurity. Coccidia can be spread by fomites

Practical Cleaning of your coop

80 %

- Pre-Cleaning Removal of debris (aka Remove the dirt)
- Apply soap (aka wet the Dirt' with a foamy soap)
- Wash the dirt away
- Let the surface drain and dry

20 %

- Apply disinfectant (Right disinfectant, concentration, consistency, time)

Utilizing the California Animal Health and Food Safety Laboratory System (CAHFS)

Slides courtesy of Dr. Asli Mete: CAHFS

CAHFS Locations & Services

AVIAN, LIVESTOCK, HORSE

AVIAN

AVIAN, LIVESTOCK, HORSE

AVIAN, LIVESTOCK, HORSE

Slides courtesy of Dr. Asli Mete:

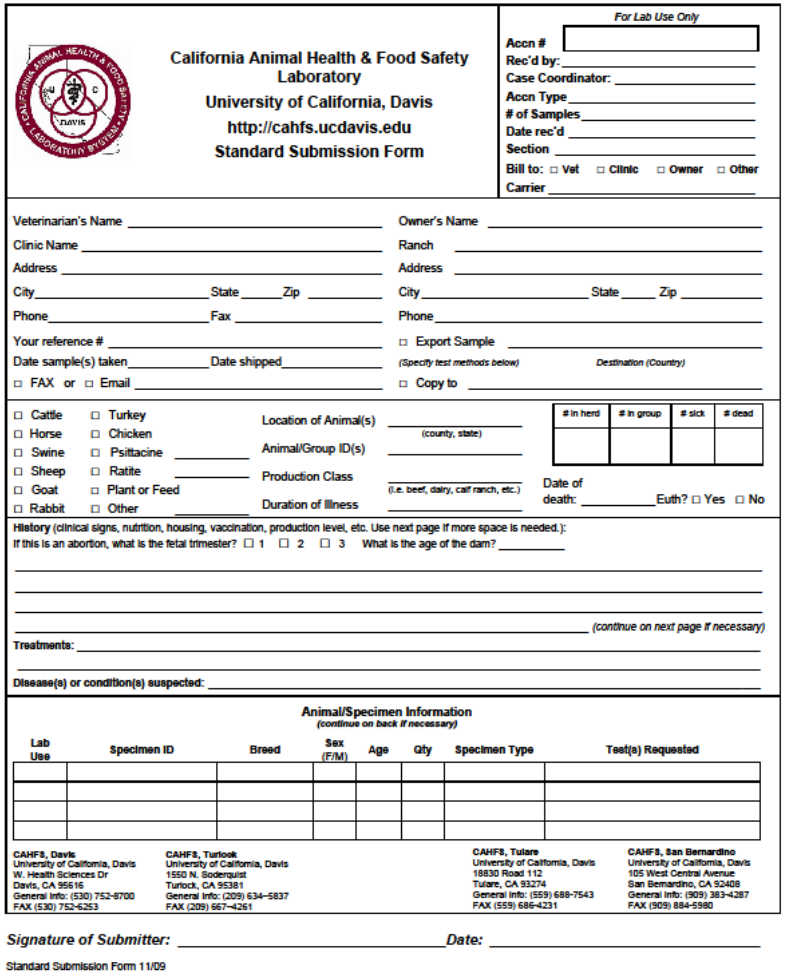
Submission Process

Available on the web:

http://cahfs.ucdavis.edu

or

Google - CAHFS



California Animal Health & Food Safety Laboratory
University of California, Davis
http://cahfs.ucdavis.edu
Standard Submission Form

For Lab Use Only
Accn #
Rec'd by:
Case Coordinator:
Accn Type
# of Samples
Date rec'd
Section
Bill to: ☐ Vet ☐ Clinic ☐ Owner ☐ Other
Carrier

Veterinarian's Name
Clinic Name
Address
City State Zip
Phone Fax
Your reference #
Date sample(s) taken Date shipped
☐ FAX or ☐ Email

Owner's Name
Ranch
Address
City State Zip
Phone
☐ Export Sample
(Specify test methods below) Destination (Country)
☐ Copy to

☐ Cattle ☐ Turkey
☐ Horse ☐ Chicken
☐ Swine ☐ Psittacine
☐ Sheep ☐ Ratite
☐ Goat ☐ Plant or Feed
☐ Rabbit ☐ Other

Location of Animal(s) (county, state)
Animal/Group ID(s)
Production Class (i.e. beef, dairy, calf ranch, etc.)
Duration of Illness

# in herd	# in group	# sick	# dead

Date of death: Euth? ☐ Yes ☐ No

History (clinical signs, nutrition, housing, vaccination, production level, etc. Use next page if more space is needed.):
If this is an abortion, what is the fetal trimester? ☐ 1 ☐ 2 ☐ 3 What is the age of the dam?
(continue on next page if necessary)
Treatments:
Disease(s) or condition(s) suspected:

Animal/Specimen Information
(continue on back if necessary)

Lab Use	Specimen ID	Breed	Sex (F/M)	Age	Qty	Specimen Type	Test(s) Requested

CAHFS, Davis
University of California, Davis
W. Health Sciences Dr
Davis, CA 95616
General Info: (530) 752-8700
FAX (530) 752-5253

CAHFS, Turlock
University of California, Davis
1550 N. Soderquist
Turlock, CA 95381
General Info: (209) 634-5837
FAX (209) 667-4261

CAHFS, Tulare
University of California, Davis
18830 Road 112
Tulare, CA 93274
General Info: (559) 688-7543
FAX (559) 686-4231

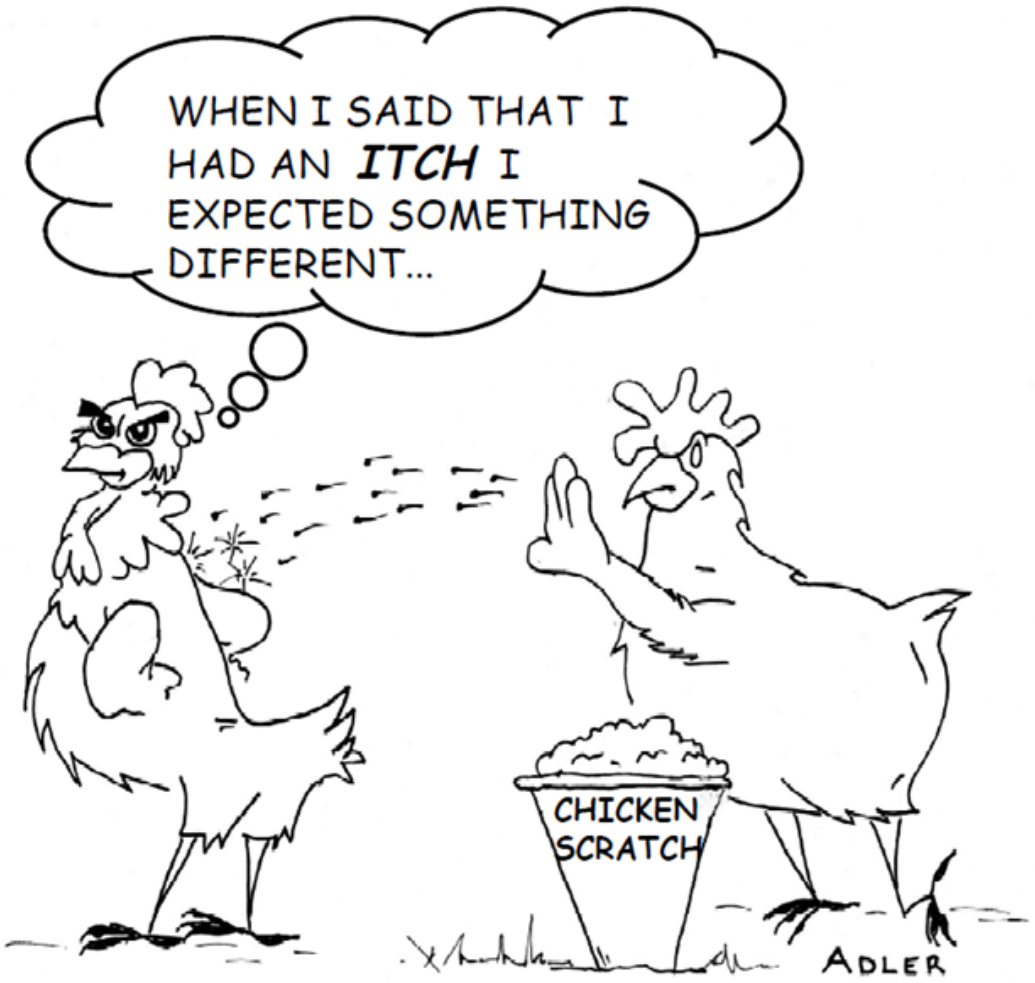
CAHFS, San Bernardino
University of California, Davis
105 West Central Avenue
San Bernardino, CA 92408
General Info: (909) 383-4287
FAX (909) 884-5980

Signature of Submitter: Date:

Standard Submission Form 11/09

Slides courtesy of Dr. Asli Mete:
CAHFS

Thank you!



Cartoon by Dr. Evan Adler (veterinarian and amateur cartoonist).