

Small Flock and Commercial Poultry

Kristen Hill-Thimmesch

Outline

- ▶ FLAWS
- ▶ Assessing Backyard Flocks
- ▶ Necropsy and Sampling
- ▶ Backyard Set Ups
- ▶ Assessing Small Commercial or Large Scale Flocks
- ▶ Common Flock/Management Conditions and Diseases

FLAWS System

FLAWS System

- ▶ F: Feed
- ▶ L: Light, Litter
- ▶ A: Air
- ▶ W: Water
- ▶ S: Sanitation, (bio)Security, Space

FLAWS F: Feed

- ▶ Complete feed
 - ▶ Appropriate for purpose, age and stage of production
- ▶ Medicated feed
 - ▶ Until laying age (18-20 weeks)
- ▶ Mixed feed?

DuMOR 16% Layer Pellets, 50 lb. Bag
SKU # 24229779



FLAWS F: Feed



FLAWS F: Feed

- ▶ Storage
 - ▶ Keep the original bag
 - ▶ Store in a cool, dry place
 - ▶ Consider nutritional content
 - ▶ Sealed, rodent-proof container
 - ▶ Prevent pests!



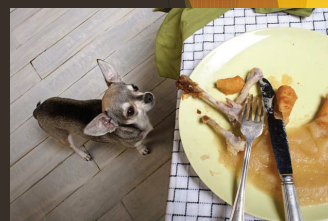
FLAWS F: Feed

- ▶ Supplements?
 - ▶ Oyster shell vs. Egg shell
 - ▶ Poultry Grit?
 - ▶ Apple Cider Vinegar?
 - ▶ Vitamins?
 - ▶ Minerals?
 - ▶ Oregano, garlic and more?



FLAWS F: Feed

- ▶ YUM!
 - ▶ Vegetable and fruit table scraps
 - ▶ Meal worms
 - ▶ Corn
 - ▶ Etc. (everything in moderation)
- ▶ YIKES!
 - ▶ Meat
 - ▶ Bones
 - ▶ Molasses
 - ▶ Whole eggs



FLAWS L: LIGHT, Litter

- ▶ LAYERS
 - ▶ Bring into production
 - ▶ Increase the light to 16 hours
 - ▶ Stepwise by 30 minutes every week
 - ▶ Molt lighting
 - ▶ Reduce the light from 16 hours to 8 hours the next day
 - ▶ You will see a drop in egg production over the next few days



FLAWS L: Light, LITTER

- ▶ Sight
 - ▶ Moisture
 - ▶ Coverage
 - ▶ Material used for litter (pine shavings, corn cobs, straw)
- ▶ Smell
 - ▶ Chicken, ammonia, musty, mold
- ▶ Touch
 - ▶ Accommodates height of the perches
 - ▶ Moisture content
 - ▶ Dry litter (dusty)
- ▶ Hear/Taste



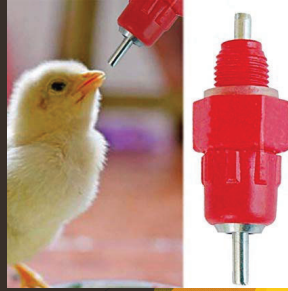
FLAWS A: Air

- ▶ Ventilation
 - ▶ See: Dust, feather dander
 - ▶ Smell: "chicken", ammonia, mold, musty smell, stale
 - ▶ Feel: Air movement, patches of cold and hot air, humidity



FLAWS W: Water

- ▶ Free access to fresh, clean water at all times
 - ▶ Bowls / waterers with tray
 - ▶ Nipple drinkers
- ▶ Think about the height of the water access
- ▶ CLEAN and refill
 - ▶ Dish soap and a diluted bleach solution
- ▶ Beware of leaking water



FLAWS S: SANITATION, (bio)Security, Space

- ▶ Cleaning with a flock
 - ▶ Litter condition (remove wet litter, observe dry litter, depth)
 - ▶ Water dishes/buckets
 - ▶ Feed dishes/pans
- ▶ Clean out
 - ▶ Downtime between flocks: 2-4 weeks
 - ▶ Clean and disinfect (power wash, dilute bleach solution)

FLAWS S: Sanitation, (BIO)SECURITY, Space

- ▶ It Starts from Purchasing Birds!
 - ▶ Purchase birds from a reliable source
 - ▶ Tractor Supply, Theisens, Rural King
 - ▶ Swap Meet
 - ▶ Online Hatchery
 - ▶ Friends/Neighbors
 - ▶ Shows
 - ▶ QUARANTINE! (4 weeks)

Flock Additions/Removals							
Date In	From/Source	Breed	Sex	Number of Birds	Reason	Date Out	Destination
1							
2							
3							
4							
5							
6							
7							
8							
9							

BOAH To download or print more copies of this form, visit the BOAH website at: www.boah.org

FLAWS S: Sanitation, (BIO)SECURITY, Space

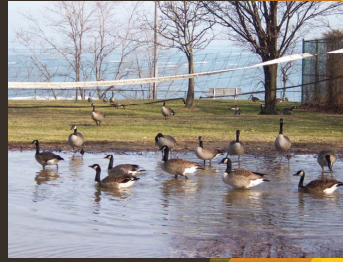
► Keeping the Flock Healthy

► Client

- Avoid contact with wild birds
- Visitors?
 - Records? Boots?
- Reporting sick birds
- On-site quarantine (ordering their morning routine)
- Mixing animals/birds?

► Veterinarian

- Down time between flocks
- PPE
- Reporting sick birds



FLAWS S: Sanitation, (bio)Security, SPACE



Assessing Backyard Flocks

Assessing Backyard Flocks

- ▶ FLAWS
- ▶ Four Circle System
 - ▶ 1: Site
 - ▶ 2: Coop
 - ▶ 3: Flock
 - ▶ 4: Individual Birds



Four Circles: Site



- ▶ Do the birds have access to the site?
 - ▶ Lead, poisons, oil, pesticides, medications, salt
 - ▶ Ponds, open water
 - ▶ Fields
 - ▶ Piles of debris
 - ▶ Predators and pests



Four Circles: Coop



- ▶ FLAWS
 - ▶ Feed, Light, Litter, Air, Water, Sanitation, bio(Security), Space



Four Circles: Flock



- ▶ See: Note behavior, ability to ambulate, note stance, appearance of birds, uniformity
- ▶ Hear: Snicking, rales, coughing, sneezing, quiet?
- ▶ Smell: Ammonia, feces, infection
- ▶ Touch: Physical examination



Four Circles: Individual



- ▶ Physical Examination
 - ▶ Whole Body (body condition, feathering, mites/lice)
 - ▶ Respiratory (sounds, sinuses, discharge, wet feathers)
 - ▶ GI (oral cavity evaluation, crop palpation, pasty vent, dirty birds)
 - ▶ Reproductive (penguin stance, in lay?)
 - ▶ Musculoskeletal (lameness, joints, footpads)
 - ▶ Special Senses (eyes: pupil dilation, pupil shape, iris color)
 - ▶ Necropsy



Necropsy and Sampling

Necropsy & Sampling

- ▶ Necropsy
 - ▶ Shears
 - ▶ Whirlpaks
 - ▶ Needle, Syringe, Red Top Tube
 - ▶ Glass Slides, Cover Slips, Microscope
- ▶ References
 - ▶ Avian Disease Manual
 - ▶ Gross Pathology of Avian Diseases



Submitting a Necropsy?

- ▶ Refrigerate (Do NOT Freeze)
- ▶ Cool bird down in soapy cold water
- ▶ Deliver on Ice
- ▶ Paperwork in a Ziploc Bag

The form is titled "AVIAN HEALTH SUBMISSION FORM" and is from the "Indiana Animal Disease Diagnostic Laboratory". It includes fields for "VETERINARIAN" (Name, Address, City, State, Zip, Phone, Fax, Email) and "OWNER" (Name, Address, City, State, Zip, Phone, Fax, Email). There is a "PREMISE ID BARCODE" section. Below that, there are checkboxes for "Species" (Chicken, Turkey, Duck, Goose, Pigeon, Dove, Quail, Other) and "Sex" (Male, Female, Unknown). The "SUBMITTER'S" section includes checkboxes for "Send to: Indiana Animal Disease Diagnostic Laboratory" and "Send to: Indiana Animal Disease Diagnostic Laboratory (if you have a specific request)". There is also a table for "SUBMITTER'S" with columns for "Sample ID", "Date", "Species", "Sex", "Age", "Weight", "Color", "Other", and "Remarks".

Backyard Set Ups

Backyard Set Ups

- ▶ Caged (Indoor/Outdoor)
- ▶ Indoor Coop
- ▶ Outdoor Coop
- ▶ Runs, Flight Pens
- ▶ Free Range





Assessing Small Commercial or Large Scale Flocks

Assessing Small Commercial or Large Scale Flocks

- ▶ FLAWS and Four Circles
- ▶ Records!
 - ▶ Water intake
 - ▶ Feed consumption
 - ▶ Vaccine schedule
 - ▶ Egg production/weights/floor eggs
 - ▶ Mortality

Four Circles: Site

- ▶ Perimeter Buffer Area
- ▶ Surrounding area
 - ▶ Ponds, backyard flocks, roads, other animals
- ▶ Surrounding barn
 - ▶ Gravel or vegetation



Four Circles: Barn

- ▶ Records, Feed Samples
- ▶ Line of Separation (dutch style?)
- ▶ Cage system (belted, a-frame/high-rise)
- ▶ Cages (conventional, enriched, aviary, cage-free)
- ▶ Feeding system (belts, rotary)
- ▶ Manure system (belts, pit)



Four Circles: Flock

- ▶ See: Note behavior, lameness, note stance, appearance of birds, uniformity
- ▶ Hear: Snicking, rales, coughing, sneezing, quiet?
- ▶ Smell: Ammonia, feces, infection
- ▶ Touch: Physical examination, egg examination



Four Circles: Individual

- ▶ Physical Examination
 - ▶ Whole Body (body condition, feathering, mites/lice)
 - ▶ Respiratory (sounds, sinuses, discharge, wet feathers)
 - ▶ GI (oral cavity evaluation, crop palpation, pasty vent, dirty birds)
 - ▶ Reproductive (in lay?)
 - ▶ Musculoskeletal (lameness, joints, footpads)
 - ▶ Special Senses (eyes: pupil dilation, pupil shape, iris color)
 - ▶ Necropsy



Caged Layers

- Cannibalism
- Colibacillosis
- Mycoplasma synoviae
- Calcium depletion
- Mites
- Focal Duodenal Necrosis
- Gout
- Mycoplasma gallisepticum
- Tapeworms
- Fatty liver syndrome

Cage-Free Layers

- Cannibalism
- Colibacillosis
- Roundworms
- Mites
- Coccidiosis
- Bumblefoot
- Calcium depletion
- Hysteria
- Mycoplasma synoviae
- Tapeworms

USAHA 2012

Broilers

- Coccidiosis/gut health
- Gangrenous Dermatitis
- Infectious Laryngotracheitis
- Novel Reovirus
- Non-Infectious Lameness
- Necrotic Enteritis
- Colibacillosis
- Spinal Abscesses
- Runting Stunting Syndrome
- Inflammatory Process

USAHA 2012

Turkeys

- Lack of approved, efficacious drugs
- Clostridial Dermatitis (Cellulitis)
- Colibacillosis
- Leg Problems
- Late Mortality
- Salmonellosis
- Poult Enteritis of unknown etiologies
- Bordetella avium
- Breast Blisters and Breast Buttons
- Osteomyelitis

USAHA 2013

Ducks

- Bumblefoot
- Lameness
- Riemerella anatipestifer
- Pasteurella multocida
- Colibacillosis

Common Flock/Husbandry Conditions

Common Flock/Husbandry Conditions

- ▶ Management Related
 - ▶ Bumblefoot
 - ▶ Fatty Liver Hemorrhagic Syndrome (Fatty Liver Syndrome)
 - ▶ Egg Bound
 - ▶ Predators/Pests
- ▶ Coccidiosis
- ▶ Marek's Disease
- ▶ Mycoplasmosis
- ▶ Fowl Pox

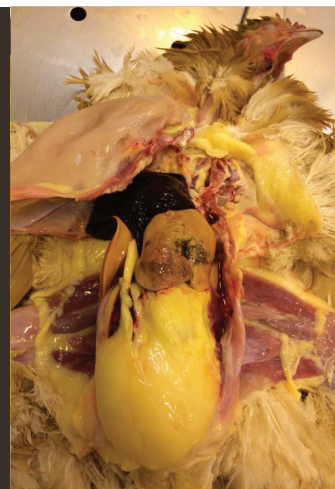
Management

- ▶ Bumblefoot
 - ▶ Bird
 - ▶ Pododermatitis
 - ▶ Infection by normal flora
 - ▶ Treatment
 - ▶ Epsom salt baths 2x a day for 7 days
 - ▶ Wrap BOTH feet
 - ▶ Management Adjustments
 - ▶ Perch design, height, bedding, astroturf?
 - ▶ Areas where feet can get punctured or caught



Management

- ▶ Fatty Liver
 - ▶ Bird
 - ▶ Sudden death of a backyard layer
 - ▶ Multifactorial disease (high energy diet, limited exercise, hormonal and genetic factors, aflatoxins)
 - ▶ Treatment
 - ▶ Switch feed to pelleted
 - ▶ Cut out high energy treats
 - ▶ Management Adjustments
 - ▶ Feed (complete feed, proper storage)
 - ▶ Treats (sparingly)



Management

- ▶ Egg Bound
 - ▶ Bird
 - ▶ Precocious onset of lay
 - ▶ Limited exercise and obesity
 - ▶ Treatment
 - ▶ Fluids
 - ▶ Warm towels and massage
 - ▶ Manual reduction
 - ▶ Surgical removal



Management

- ▶ Coyotes
- ▶ Foxes
- ▶ Dogs
- ▶ Cats
- ▶ Raccoons
- ▶ Mink



Management

- ▶ Rats and Mice
- ▶ Flies
- ▶ Mosquitos
- ▶ Wild Birds



Coccidiosis

- ▶ Common protozoal disease of chickens caused by *Eimeria* sp.
- ▶ Species specific
- ▶ Multiply in intestines and cause tissue damage
 - ▶ Necrotic enteritis
- ▶ Feed and digestion disruption, decreased nutrient absorption, dehydration, blood loss
- ▶ Life cycle generally 4-6 days
- ▶ Most infections are relatively mild
- ▶ Oocysts can be transported on boots, shoes, clothing, vehicle wheels, on other animals, or on people.

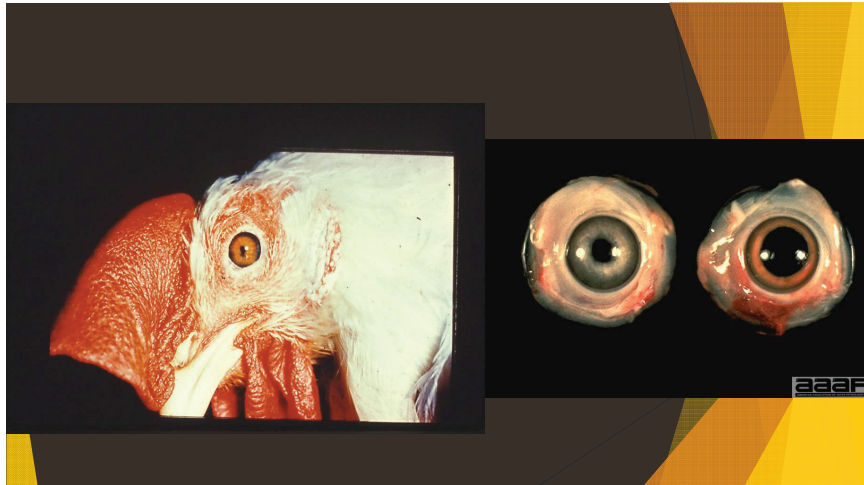


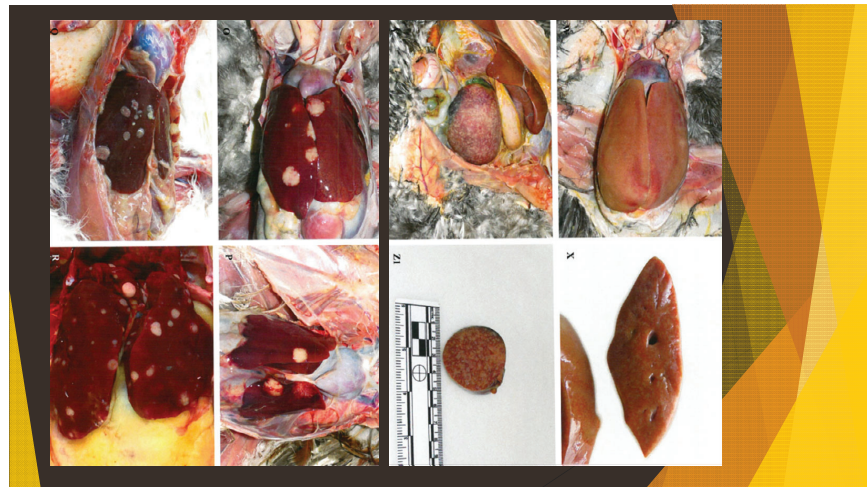
Coccidiosis

- ▶ Diagnosis
 - ▶ Fecal, necropsy, histopathology
- ▶ Treatment
 - ▶ Amprolium
 - ▶ Most commonly used as a preventative medication in feed but can be used as treatment
 - ▶ Diatomaceous earth? Garlic?
- ▶ Prevention
 - ▶ Beware of overcrowding
 - ▶ Cleaning and disinfecting
 - ▶ Vaccination at hatch (commercial)

Marek's Disease

- ▶ Herpesvirus (Gallid herpesvirus 2)
- ▶ Lymphocytic tumors in a variety of organs and nerves
- ▶ Affects primarily chickens
- ▶ Morbidity = mortality
- ▶ Infected chickens shed virus-containing feather follicle dander





Marek's Disease

- ▶ No Treatment
- ▶ Vaccination
 - ▶ 1 day of age SC
 - ▶ In ovo at 18 days of embryonation
- ▶ Minimize early exposure
- ▶ Purchase vaccinated birds from reliable sources

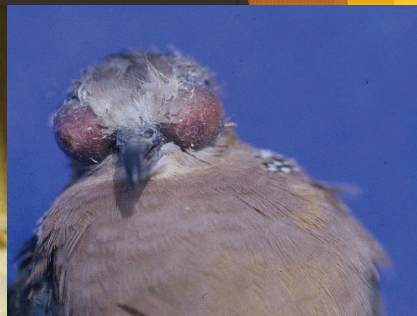


Mycoplasmosis

- ▶ When are they exposed
 - ▶ Exposed to carriers at shows, swaps, meetings, etc.
 - ▶ Birds obtained from multiple sources
- ▶ Transmission: Direct contact, vertical, carriers, fomites
- ▶ Mycoplasma colonizes mucosal surfaces, joints and bones
- ▶ Also reported in partridges, pheasants, quail, guinea fowl, ducks and pigeons
- ▶ Often associated with Infectious Bronchitis, Infectious Coryza, NDV, E. coli and P. multocida

Mycoplasmosis

- ▶ Clinical signs
 - ▶ Slow onset, persists for weeks
 - ▶ Respiratory signs
 - ▶ Snicking, coughing, sneezing, rales, ocular and nasal discharge, conjunctivitis, sinusitis
 - ▶ Drop in egg production, feed consumption
 - ▶ Mortality low in adults
 - ▶ Mortality variable in young birds
 - ▶ Turkeys have high mortality if lower respiratory tract is involved.



Mycoplasmosis

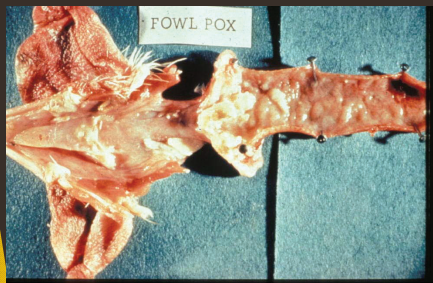
- ▶ Prevention
 - ▶ Depopulation, C&D, establish a clean flock
 - ▶ Obtain chicks or poults from reliable source
 - ▶ Vaccination (will still shed)
- ▶ Treatment
 - ▶ Tetracyclines, tylosin
 - ▶ No antibiotic will prevent breeders from laying potentially infected eggs

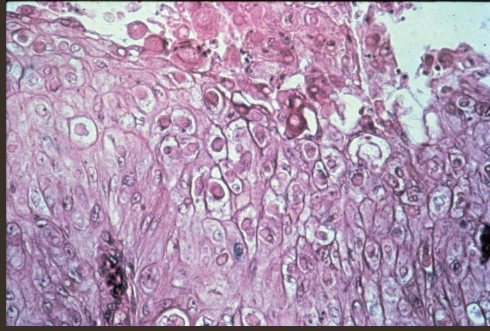
Fowl Pox

- ▶ Affects all age groups
- ▶ Many poxviruses are species specific
- ▶ Mosquitos are important vectors!
 - ▶ Mechanical transmission with minimal aerosol transmission
- ▶ Morbidity is variable, mortality is low in poultry
 - ▶ Mortality can be high in quail

Fowl Pox

- ▶ Cutaneous (Dry) Pox
 - ▶ Localized papules, vesicles, pustules and crusts
 - ▶ Unfeathered areas
- ▶ Diphtheritic (Wet) Pox
 - ▶ Diphtheritic membrane in oral cavity, larynx, opening of esophagus
 - ▶ Starvation, suffocation
 - ▶ Inhalation or ingestion of virus particles in scabs that slough off





Fowl Pox

- ▶ No treatment
 - ▶ Disease course is 2-3 weeks if uncomplicated (6-8 weeks if complicated)
 - ▶ Recovery leaves the birds with great immunity to infection
- ▶ Vaccination
 - ▶ Live fowl, pigeon, quail and turkey pox vaccines are available
 - ▶ Vaccinate turkeys in the drumstick
 - ▶ Vaccinate in the face of outbreak

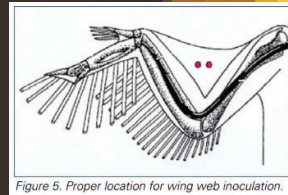
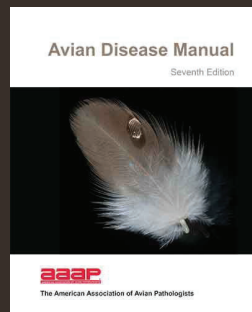


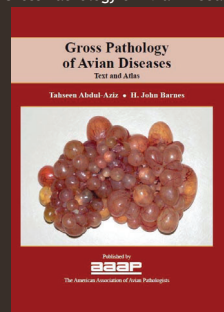
Figure 5. Proper location for wing web inoculation.

Suggested Textbooks

- ▶ Avian Disease Manual: Seventh Edition
- ▶ Gross Pathology of Avian Diseases



\$75



\$125



Thank you for your attention!