

The Doctor Will See Your Chicken Now

Common Conditions of Small-Flock Poultry

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RESOURCES



Chapter 6: Backyard Poultry, Gamebirds and Waterfowl



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Parasitism




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Intestinal Parasitism

- Parasitism in backyard/small flock poultry typically results from:
 - Poor nutrition...promotes litter consumption
 - Overcrowding
 - Mixing of different age groups/species
- Birds are naturally coprophagic
- Clinical Signs
 - Most common – unthriftiness, failure to gain weight, loose droppings
 - mucoïd to bloody fecal droppings (cocci)
- Diagnosis
 - Fecal flotation, microscopic evaluation (10x)




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Intestinal Parasites

Coccidiosis	Roundworms	Cecal Worms	Capillary Worms	Tapeworms
<i>Eimeria</i> spp.	<i>Ascaridia galli</i> <i>A. dissimilis</i>	<i>Heterakis gallinarum</i>	<i>Capillaria</i> spp.	Many species
Small Intestine, Ceca	Small Intestine	Ceca	Crop, esophagus, small intestine	Small Intestine
Oocyst size and shape depends on species <i>E. maxima</i> largest of all		Eggs similar to <i>Ascaridia</i> spp. but smaller	Bipolar operculated eggs	
				



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Nematode Treatment

Active Ingredient	Trade Name	Susceptible Worms	Dose	Comments
Levamisole Hydrochloride (46-kg)	Prohibit Solution® LevaMed®	Roundworms, Capillaria, cecal worms	10 mL/gallon of water	Drinking water administration
Albendazole	Valbazen® (113.6 mg/mL)	Roundworms, capillaria, cecal and tapeworms	5-10 mg/kg BW Tapes: 20 mg/kg BW	Drinking water administration
Fenbendazole**	**Safe-Guard Aguasol® (200 mg/mL)	Roundworms, capillaria, cecal worms	1 mg/kg BW	Drinking water administration x 5 days
Ivermectin 1%	Noromectin® Agri-Mectin® Ivomec® Vermec 1% * Etc.	Roundworms, capillaria, cecal	Oral: 0.25 mL (0.1 mL bantams) Water: 4 mL/gallon water for 2 days	Drinking water: need to administer with 50% propylene glycol and 50% water

****Safe-Guard Aguasol** only product with poultry label. All others are ELDU. Refer to FARAD for establishing withdrawal times. Safe-Guard and Panacur (both fenbendazole) are ELDU.

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Coccidiosis - Treatment

- **First, verify if feed is medicated**
 - Medicated = chemical anticoccidial
- **Amprolium 9.6% Oral Solution**
 - Trade Names: Corid®, Amprol®, CoccidAid®, etc.
 - Most active against *E. tenella*, *E. necatrix*
 - Dosage in drinking water: 1.25 mL/gallon water for 3-5 days, repeat in 1 week
 - 0-day withdrawal
- **Sulfadimethoxine 12.5% oral solution**
 - Dosage in drinking water: 15 mL/gallon water for 6 days
 - 5-day meat withdrawal
 - ***Do not give to hens laying eggs for human consumption***




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Coccidiosis - Treatment

- **Ponazuril (Marquis 15% w/w) -> extra-label**
 - Active metabolite of toltrazuril
 - **Paste requires dilution first***
 - Dosage: 7 mg/kg BW
 - Extrapolated from toltrazuril studies¹
 - Treat for 3 days, repeat in 1 week for severe infections
 - Withdrawal Periods ---- FARAD recommendation
 - Eggs: 16 weeks
 - Meat: 12 weeks
 - Egg elimination/residues are poorly understood so caution with eggs!



1. Mathis GS, et. al. Coccidiosis control with toltrazuril in conjunction with anticoccidial medicated or nonmedicated feed. Avian Dis. 2003 Apr;43(4):463-9. PMID: 12887207.

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50 mls Marquis paste + 12.5 mls water + 12.5 mls syrup for flavor = 75 mls of 100 mg/ml solution. Or for a smaller amount at one time: 20 mls Marquis paste + 5 mls water + 5 mls syrup for flavor = 30 mls of 100 mg/ml solution. Storage Recommendations The diluted paste solution should be kept refrigerated, in a UV-light proof container prior to use. Shake thoroughly prior to administering the product.

See more at: <https://poultrydvm.com/drugs/ponazuril>

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Ectoparasitism

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Fleas	<i>Echidnophaga gallinacea</i> (sticktight flea)	Chickens, turkeys, dogs, cats, etc.	-Once fertilized, female spends entire life on host. -Eggs fall to ground.	
Lice (+40 species)	<i>Menacanthus stramineus</i> (body louse)	Domestic fowl	-Entire life cycle on host. -Infestation worse in fall/winter. -Moth eaten feathers -Skin irritation -Chew on skin fragments -Move fast vs. mites	
Lice (+40 species)	<i>Menopon gallinae</i> (shaft louse)	Chickens Guinea fowl	-Entire life cycle on host. -Lay eggs at base of feather -Moth eaten feathers -Skin irritation -Chew on skin fragments -Move fast vs. mites	

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Northern Fowl Mite (<i>Ornithonyssus sylvarium</i>)	Red Mite of Poultry (<i>Dermanyssus gallinae</i>)
	
Entire life on chicken Vent, tail, legs	Nocturnal feeders – on bird at night Retreats to environment during day Can live off bird for 2-3 weeks
Barely seen with naked eye; debris readily visible Skin irritation by chewing on skin, feathers **hematophagous → bloodsucking** Decreased egg production	
When treating, always treat bird AND environment!	

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Scaly Leg Mite (<i>Knemidocoptes mutans</i>)	Depluming Mite (<i>Knemidocoptes gallinae</i>)
Burrow under scales of legs & feet Hyperkeratinization of legs & feet Feed on connective tissue More common in older birds	Burrows into chicken's skin, along feather shafts Feather loss Prevalent in Spring & Summer Smaller than <i>K. mutans</i>
	
Life cycle completed in 10-14 days Signs: Weight loss & decreased egg production With treatment, may take 4-6+ weeks for lesions to resolve	

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Treating Ectoparasites

- For parasites that live off the bird...always treat bird & environment!
- Ivermectin 1% - Oral**
 - 0.2 mg/kg PO; minimum 2 doses, 2 weeks apart
 - Scaly Leg Mite/Depluming Mite: 0.2 mg/kg PO, once every two weeks
 - In combination with daily warm water soaks + petroleum jelly application
 - ELDU – refer to FARAD for withdrawal times
- Elector PSP®**
 - Labeled for Northern Fowl Mite & Poultry Red Mite; spray application
 - 9 ml/gallon of water → apply to vent area and premise.
 - Mix new at each application
 - Minimum of two treatments, two weeks apart
 - No withdrawal when used according to label




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Treating Poultry - Ectoparasites

- Sevin Dust and other carbaryl-containing products were petitioned to have poultry label claims removed in 2009
- Egg withdrawal – infinite (eggs must be discarded forever)
- Is a restricted chemical and requires permit in some states
- My advice – don't use or encourage use



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BEWARE OF BED BUGS!!!!!!

Relationship between bed bugs and poultry becoming more common.....
Humans introduce to poultry environments....



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Neoplastic Conditions

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Neoplasia & Poultry

- Most neoplastic conditions will impact poultry > 16-20 weeks of age
 - Exception: Marek's Disease can impact as early as 6 weeks
- Commonly diagnosed neoplastic conditions:
 - Marek's Disease Virus
 - Spontaneous (adenocarcinoma, leiomyosarcoma)
 - Ovarian, oviduct, visceral, etc.
 - Lymphoid Leukosis
- Turkeys → Lymphoproliferative Disease Virus of Turkeys



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Marek's Disease

- Neoplastic, lymphoproliferative disease of chickens
 - Targets T- cells
- Gallid alphaherpesvirus-2
 - Enveloped DNA virus
 - Cell-associated → must exist inside a cell
- Ubiquitous & highly contagious, transmitted via feather dander
- Very common among small flocks
- Classic clinical presentation – unilateral paralysis
 - Lymphoma, neurological signs, skin and/or ocular leukosis
- Typically affects chickens 10-20 weeks of age, but as early as 4 weeks
 - Once infected, always infected



Courtesy of Dr. Karen Grogan



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Marek's Disease

- Diagnosis
 - ELISA, PCR, virus isolation
 - Vaccination history is important
 - Contact state veterinary diagnostic lab
- Treatment
 - None
- Prevention
 - Vaccination in-ovo (18 days incubation) or at hatch
 - Decreases clinical severity; does not prevent infection
 - DIVA → can complicate diagnosis
 - Source chicks from NPIP certified hatcheries that offer vaccination



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POULTRY VACCINATION – MAREK'S

- Marek's Disease Vaccine, Serotype 3
 - (Meleagrid alphaherpesvirus 3)
- Live vaccine
- Manufacturer: Zoetis
- 1000 dose vial (\$45)
- Follow label directions, MUST KEEP COLD
 - To administer: use 20 or 22 g needle, 3/8 to 1/4 inch
 - Location: SQ in neck
 - Withdrawal: 21 days



Dr. Karen Grogan



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Lymphoid Leukosis

- Caused by alpharetrovirus (Avian Leukosis Virus)
- Tumor-forming virus → B-cell lymphoma
- Vertical & horizontal transmission
- Typically impacts chickens >16 weeks of age
- Often, clinically similar to MD
 - Lethargy, anorexia, reluctance to move, paralysis, etc.
- No treatment, no prevention
 - No vaccination available
- Prevention is based on eradication through negative breeding stock



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Spontaneous Neoplasia



Ovarian Adenocarcinoma



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Bacterial Diseases

(SYSTEMIC BACTERIAL INFECTIONS)



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Salmonellosis

- Salmonellosis in poultry can present in numerous ways
 - Silent infection → clinical illness
- *S. enterica* subspecies *enterica* contains >2500 serovars
- Host-adapted & non-host adapted serovars
 - Host adapted: *Salmonella Pullorum* & *Salmonella Gallinarum*
 - Basis for NPIP!!!!
- ***Public Health Risk***
- Caution with backyard flocks, chicks/poults, sharing/selling eggs, petting zoos, etc.
- All serovars have ability to **spread via egg!**



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Salmonellosis: Host-Adapted

- *Salmonella Pullorum* & *Salmonella Gallinarum*
 - make chicks (and poults) sick!
- Pullorum Disease – “Bacillary White Diarrhea”
 - **reportable**
 - Commonly impacts chicks <4 weeks
 - Establishes bacteremia; Carrier status possible
 - White plaques throughout GI tract, pasty white feces
- Fowl Typhoid
 - Similar to pullorum
 - Impacts young, but can also infect older chickens/turkeys
 - Older: pale heads, shrunken combs/wattles, diarrhea +/- ulcerative enteritis



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Salmonellosis: Paratyphoid

- Paratyphoid: non-host adapted
- Often, **causes no clinical disease in chickens**
- Major serotypes of concern
 - *S. Enteritidis* (SE) – Group B
 - *S. Typhimurium* (ST) – Group D
 - *S. Infantis* (SI) – Group C
 - Others...
- ****Major food safety concern → Public Health Risk****
 - Increasing cases also resulting from direct contact with live poultry
- Transmission
 - Fecal oral, aerosol (dust, litter, etc), **via egg!!!**

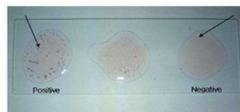


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Salmonellosis

- **Diagnosis**
 - Serum sample submitted to veterinary diagnostic lab
 - Serum plate agglutination, ELISA, organ culture, etc.
- **Treatment unrewarding**
 - Does not clear infection
 - Does not prevent reinfection, carrier status, etc.



Source: Engormix



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Salmonellosis – YOU NEED TO KNOW

- Educate clients, **ESPECIALLY** those consuming and sharing/selling eggs
 - FDA Egg Rule for flocks >3000 hens
 - Chickens may appear healthy, but could be shedding *Salmonella*
- **Vertical transmission common** – chicks/poults positive
- Ducks, rodents, reptiles, etc.
 - Also sources of infection/transmission
- Encourage proper food prep, cooking & sanitation for food!
- Some serovars **reportable** in certain states!



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Miscellaneous Bacterial Dz

- Fowl Cholera
 - *Pasteurella multocida* (gram-negative)
 - Rodents, cats important vector
 - Acute septicemia, chronic carriers
 - Treatment: tetracyclines, penicillin
- Erysipelas
 - *Erysipelothrix rhusiopathiae* (gram-positive)
 - Rodents important vector
 - Acute septicemia, swollen hocks, sudden death
 - Treatment: penicillin
 - *zoonotic*



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Traumatic Conditions



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Trauma

- Most often results from:
 - Self-trauma
 - Flock-mates
 - Predators
- Mating behavior:
 - Missing feathers and abrasions on back and head caused by rooster or dominant hens



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Trauma: Vent Prolapse

- Causes:
 - Obesity/heavy production
 - Bright red mucosal surface attracts flock mates/predators
 - Once cannibalism begins, difficult to stop
- Prevention
 - Avoid overcrowding
 - Maintain appropriate body condition
 - Gradual onset of egg production
 - Decrease light intensity
 - Environmental enrichment



Dr. Rodrigo Espinosa/Merck Vet Manual



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Trauma: Treatment

- Always isolate affected bird from flock-mates
- Superficial wounds:
 - Cleaning + topical antibiotics
 - Medical grade honey
- Supportive therapy
 - Supplemental heat
 - Warmed IV fluids via ulnar or medial metatarsal vein
 - Caution with oral fluids – crop injury



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Trauma: Treatment

- Deep/involved wounds
 - Sedation may be indicated
 - Sedative agents: butorphanol and midazolam
 - Local analgesia: lidocaine
 - Antibiotics IM/SQ
 - Penicillin, Oxytetracycline
 - Anesthesia resources:
 - Association of Avian Veterinarians
 - Plumb's Veterinary Compendium



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Sedation & Anesthesia

- Very efficient gas exchange system; rapid absorption and elimination of inhaled anesthesia
 - Isoflurane, Sevoflurane
- Injectable anesthesia riskier; dose & response is variable
- Regardless, preanesthetic considerations:
 - Minimum 4 hour fast, elevate neck above thoracic inlet
 - Maintain body temperature (~105°F for all ages)
 - Maintain hydration → prewarm fluids
 - Example rates 10 ml/kg/hr for 1st hour, 5 ml/kg/hr for 2nd hour

**presenter has no personal experience with avian anesthesia*



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Sedation & Anesthesia - Example

- Premedication drugs used:
 - Butorphanol (2 mg/kg IV)
 - NSAID: meloxicam (0.5 mg/kg IM) or robenacoxib (2-5 mg/kg IM)
- Mask Induction
 - Oxygen flow rate: 1-2 L/min
 - ISO: 4-5% initially, quickly reducing to 1.5% for maintenance
- Intubating nuances
 - Glottis is wider than trachea → avoid damage to mucosa
 - Complete tracheal rings

**presenter has no personal experience with avian anesthesia*



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Bumblefoot



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Bumblefoot

- Bumblefoot = pododermatitis
 - Inflammation of the plantar surface of the foot/metatarsal pad
 - +/- bacterial dermatitis or osteomyelitis
- Causes – improper husbandry!
 - Obesity – weight bearing
 - Trauma
 - Inappropriate bedding material
 - High litter moisture/ammonia



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Bumblefoot

- Diagnosis
 - Presumptive via physical exam
 - Radiographs to rule out osteomyelitis
 - Culture & susceptibility indicated
- Severity Classification
 - Mild: superficial/localized inflammation
 - Moderate: localized inflammation + bacterial infection
 - Severe: significant inflammation, caseous exudate + osteomyelitis



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Bumblefoot Treatment

- Correct husbandry and management!
- Mild pododermatitis
 - Soaking affected foot (diluted chlorhexidine or iodine solution)
- Moderate pododermatitis
 - wound debridement, weight-sparing bandage (pool noodle)
 - Systemic anti-inflammatories (meloxicam)
 - systemic antibiotics (ex: TMP-SMZ), impregnated AB beads
- Severe pododermatitis
 - Surgical debridement + systemic antibiotics (impregnated beads, etc.)
 - Weight-sparing bandage → use pool noodle
 - Prognosis is guarded



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Crop Impaction/Candidiasis

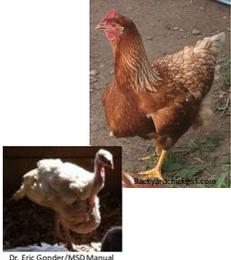


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Crop Impaction

- Crop is a muscular storage pouch for feed & water
- Crop impaction should be differentiated from a recent meal
 - Recent meal: doughy and should resolve within a couple of hours
- Pendulous crop: exact cause unknown, foul-smelling liquid, surgical reduction not rewarding



Dr. Eric Gonder/MSD Manual



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Crop Impaction

- Crop impaction is most often a result of indigestible material (grass/straw), foreign body or neoplasia
 - Poultry lack teeth, cannot chew grass clippings, straw, etc!
- **Caution with the "treats"**
- Severe impaction can impede respiration
- Impaction predisposes to candidiasis



AAAP Avian Disease Manual




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Crop Impaction

- **Diagnosis:**
 - Failure to clear crop contents within a couple hours of observation
 - Radiographs to identify foreign body/space occupying mass
- **Treatment**
 - Warm water gavage using endotracheal/nasogastric tube gently inserted into crop + gentle massage
 - Surgical removal
 - Local lidocaine block vs. gas anesthesia



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Candidiasis

- Yeast infection caused by *Candida albicans*, typically affect oropharynx and crop
 - Sour Crop, Thrush
- Organism is ubiquitous but under certain conditions, overgrowth can occur
- Most often a result of long-term (>2wks) antibiotic therapy
- Lesions:
 - Caseous pseudomembrane of oropharynx and crop
- Differentials
 - Wet pox (fowl pox), trichomoniasis, aspergillosis, vitamin A deficiency



AAAP Avian Disease Manual



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Candidiasis

- **Diagnosis**
 - Gross lesions, histopathology
 - Fungal culture
- **Treatment:**
 - 1st – correct underlying husbandry problems
 - Apple Cider Vinegar in drinking water (1 tbs to 2-3 gallons water)
 - Copper sulfate (1:2000 dilution) in drinking water
 - Treatment duration: 1-2 days
 - Nystatin in severe cases



Stock Solution:
 ½ lb CuSo4 + 1/2 c vinegar
 - added to -
 1 gallon water

Dispense stock solution at rate of 1 oz/gallon drinking water provided

0-day withdrawal



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Egg-Bound/Peritonitis



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Egg-Bound

- **Typical history**
 - Hen stopped laying, difficulty walking/abnormal stance, distended belly, and/or egg visualized in cloaca
- **Causes**
 - Large egg, double-yolk
 - Low blood calcium or calcium tetany
 - Reproductive trauma
- **Diagnosis**
 - Palpation and/or radiographs
 - Ultrasound to determine precise location of egg



Chickenvet



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Egg-Bound

- **Treatment**
 1. Parenteral calcium IM: calcium gluconate
 2. Warm water bath + lubricating canal and gently massaging coelomic cavity
 3. Surgery (salpingohysterectomy) – salvage procedure!
- **Prevention**
 - Primarily achieved through improved husbandry
 - Avoiding obesity
 - Feed adequate calcium levels
 - Prevent vent trauma



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Egg Yolk Peritonitis

- Peritonitis = coelomitis
- Ruptured egg material → inflammation + ² bacterial infection
- **Causes:**
 - Rough handling, sudden excitement
 - Superovulation
 - Hypocalcemia
- **Clinical Signs**
 - Lethargy, inappetence, weight-loss
- **Necropsy:** yellow caseous material in coelomic cavity
- **Treatment:** typically unrewarding



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Summary

- Parasitism is common in poultry
 - Fecal flotations are useful
 - Multiple treatments often required for ectoparasites
- Salmonella is an important public health risk!
 - Be aware and educate your clients
- Husbandry and management increase risk of many conditions
 - Educate clients on importance of body condition, appropriate stocking density, diet, etc.



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Additional Resources

- Disease Prevention & Control, Diagnostics, Biosecurity
 - Dr. Maggie Thompson
- Biosecurity, Husbandry, Behavior, Diet, 4-H, etc...
 - Dr. Brigid McCrea (mccreba@aces.edu)
 - Cooperative Extension websites



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Questions?

THANKS FOR YOUR ATTENTION!

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