

Diseases of Waterfowl
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Backyard Poultry:

- From small hobby flocks to show flocks to small production/businesses, backyard poultry has become an increasingly prominent part of veterinary medicine. This course focuses on topics affecting the backyard poultry owner and veterinarian with a focus on field investigation and clinical medicine of chickens, turkeys, waterfowl (ducks, geese, swans), and gamebirds (quail, pheasant, peafowl, chukar partridge). This course looks at basic nutrition, housing, handling, clinical medicine, diagnostic testing, and key poultry diseases.
- Waterfowl are very social with a pecking order. They are excellent swimmers but poor runners with delicate legs and feet. Ducks can live 6-8 years. When picking up waterfowl, pick up by the neck or body then secure the body. Do not pick up waterfowl by the legs.

Associations:

- American College of Poultry Veterinarians
- American Association of Avian Pathologists
- American Board of Veterinary Practitioners (Avian Medicine and Surgery)
- Association of Avian Veterinarians

Ducks in Production

- Understanding ducks in a production setting can assist with management and care in a backyard setting.
- Ducks hatch in 28 days and common hatchery issues include humidity in the summer, breeder flock quality, and proper culling by staff. Ducklings are then placed in runs and provided with heat (90-100F), water, and feed. The area ducklings have access to slowly expands as the birds grow. Common issues at this stage and in subsequent stages include winter airflow, high ammonia levels, and ventilation to move moisture out of the barn. Ducks are housed on shavings with separate areas for water with good drainage. Problems encountered in breeding ducks include foot health, winter airflow, high ammonia levels, and ventilation to move moisture out of the barn.
- Ducks drink approximately 2.5 times the amount of feed they consume and can be quite messy drinkers. Adequate drainage or regular monitoring of the surrounding area will prevent build up of mold and ammonia.

Diseases of Waterfowl

- Bumblefoot
 - Bumblefoot, or pododermatitis results from trauma to the foot and introduction of normal skin flora. Waterfowl are particularly susceptible due to the delicate webbing skin and surface area. When bumblefoot is noted, special care should be taken to investigate the enclosure for moisture removal and ventilation, proper bedding thickness, and areas where feet can be punctured or caught. Other causes of leg injury in waterfowl include frostbite, prolonged standing, and trauma. In cases of pododermatitis, warm Epsom salt baths 1-2 times a day for 7-14 days and wrapping both feet can help relieve pressure and exfoliate foot pads. Antibiotics and surgery are utilized in cases of acute pododermatitis with hallmark signs of inflammation.
- *Riemerella anatipestifer*
 - This is a bacterial disease affecting waterfowl, particularly ducks, geese, and even gallinaceous birds like turkeys. Ducks less than 8 weeks are often affected and a more localized, chronic form of the disease can be seen in breeder ducks. Transmission is aerosol as well as direct contact through skin wounds. Mortality can range from 5-75%. Clinical signs can include listlessness, oculonasal discharge, coughing, sneezing, diarrhea, and neurologic signs if lesions progress (ataxia, torticollis, tremors, coma). Necropsy findings include fibrinous to caseous inflammation and chronic lesions manifest as joint or dermal lesions. Diagnosis is achieved by gross necropsy, culture (and sensitivity to assist with treatment choices), and histopathology. Penicillin is a commonly used treatment but sensitivity is recommended on isolates. Management practices to implement are biosecurity, sanitation, proper ventilation, and prevention of overcrowding and manure build up. Differentials for fibrinous to caseous inflammation in the coelomic cavity of a waterfowl include *Riemerella anatipestifer*, *Pasteurella multocida*, *E. coli*, *Staphylococcus spp.*, *Streptococcus spp.*, *Enterococcus faecalis*, and Salmonellosis (paratyphoid). Any chronic inflammation in waterfowl can lead to amyloidosis.
- Fowl Cholera (*Pasteurella multocida*)
 - Fowl cholera can manifest as acute mortality or chronic, localized lesions. Common signalments include turkeys over 8 weeks of age, particularly males, and mature chickens and waterfowl. Sources of infection include contaminated water, cannibalism, rodent and feline bites, and chronically infected birds. Diagnosis is achieved by culture (and sensitivity to assist with treatment choices), necropsy, and supportive histopathology. Samples to submit for culture include liver, spleen, cardiac blood, and bone marrow. Management and prevention of fowl cholera includes elimination of sources, all-in all-out practices, single species sites, timely removal of dead birds, and pest control.

- Colibacillosis (*Escherichia coli*)
 - *E. coli* can cause variably morbidity and mortality in all ages of poultry. It is frequently a secondary infection. Colibacillosis can manifest in several syndromes including airsacculitis, omphalitis, septicemia, salpingitis, and coligranulomas. Predisposing factors include concurrent disease, stress, and high levels of ammonia. Diagnosis is achieved by culture (and sensitivity to assist with treatment choices), necropsy, and supportive histopathology. Tetracyclines have been used as a treatment choice but efficacy can diminish with continued use. To help prevent colibacillosis, examine the flock for concurrent disease, evaluate sanitation and ventilation of the house, remove dead birds quickly, and avoid overcrowding.
- Salmonellosis
 - *Salmonella Typhimurium* and *Enteritidis* can cause acute infection of ducklings under 3 weeks of age and chronic infection of all ages. Transmission occurs via direct contact, fecal-oral, or shell contamination. Necropsy findings include acute necrotizing lesions, fibrinous to caseous inflammation, and arthritis in chronic lesions. Diagnosis is achieved by culture (and sensitivity to assist with treatment choices), necropsy, and supportive histopathology. Tetracyclines have been used as a treatment choice but efficacy can diminish with continued use. Management practices are similar to those outlined in *Riemerella*. Proper handling, cleaning, and handwashing should be emphasized to clients, particularly small children, to prevent salmonellosis.
- Duck Enteritis Virus (anatis herpesvirus-1)
 - Duck enteritis virus is a herpesvirus with a tropism for endothelial cells. Transmission occurs via direct or indirect contact with sick ducks, contaminated items, or latently infected ducks. Morbidity and mortality can range from 5-100%. Clinically, ducklings can develop diarrhea, dehydration, a blood-stained vent, and cyanotic bill with death in 1-5 days. Breeder ducks experience a drop in egg production, a sudden and persistent high mortality of ducks in good flesh, inappetence, lethargy, ataxia, nasal discharge, watery diarrhea, thirst, and prolapse phallus. Due to the endothelial-tropic nature of this virus, gross lesions are due to DIC and necrotic degenerative changes that are seen systemically. Virus replication takes place in GI mucosa, particularly the esophagus, then spreads to lymphoid organs. One specific gross lesion is hemorrhage and necrosis of annular bands in the intestine. Diagnosis is achieved by serology, histopathology, virus isolation, and molecular testing. Prevention requires enforced biosecurity protocols and prevention of contact with wild waterfowl. In some states, this is a reportable disease.
- Duck Viral Hepatitis

- Duck viral hepatitis is caused by three different viruses and commonly affects ducklings less than 5-6 weeks of age. Virus is excreted by recovering ducklings for up to 8 weeks and there is no vertical transmission. Mortality can vary with age, with the highest mortality rates in flocks less than 1 week of age. Mortality in ducklings over 5 weeks is negligible. Clinical signs include lethargy, paddling, opisthotonus, and death within a few minutes following onset of signs. On necropsy, gross lesions include hepatomegaly with hemorrhages, renomegaly, and splenomegaly. Diagnosis is achieved by serology, molecular testing, and virus isolation.