



Internal Parasites in Chickens



Internal Parasites can be classified into two basic groups, worms and protozoa. Parasitic disease differs from bacterial and viral disease in specific ways:

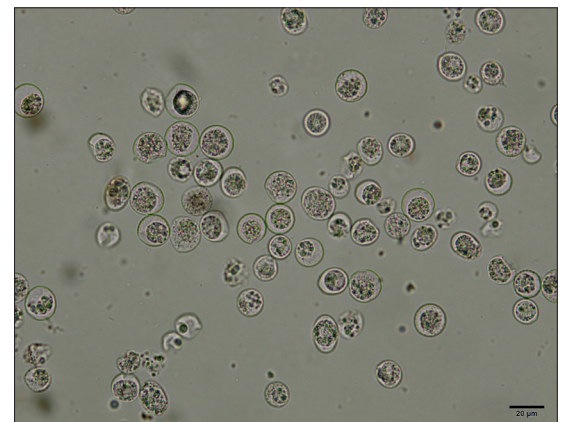
- Parasites have a complex lifecycle.
- Parasites are transmitted from bird to bird differently than viruses or bacteria.
- Serology (blood analysis) doesn't work for diagnosing parasites.
- Quarantine and disinfection are of little use in controlling parasites.

Modern commercial confinement systems have significantly reduced the incidence of worm infestation by limiting the bird's access to many parasites' alternate hosts. On the other hand, confinement systems and high-density stocking rates have led to an increase in the incidence of protozoan parasitic disease in these flocks.

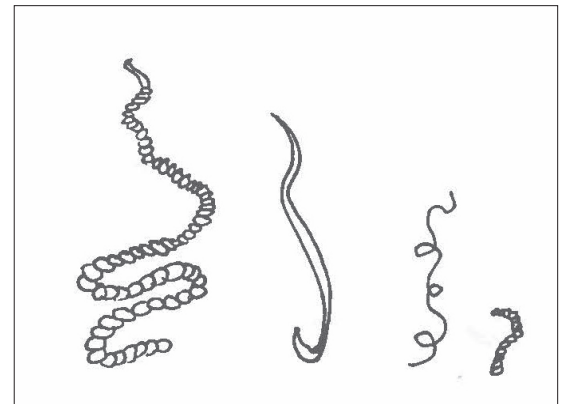
Intestinal parasites - worms - are common in backyard and free-range flocks. Low levels of parasitism don't usually cause a problem. If the infestation becomes severe, however, worms can lead to significant losses of production, feed efficiency, and overall health.

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Chicken coccidia fecal flotation.



Parasites that cause disease of chickens often include (left to right): Tapeworms, Roundworms, Threadworms, and Cecal worms as illustrated above.

Worms

Ascarids: Large Roundworms

Large roundworms or ascarids are the most damaging of the worms common to backyard flocks. Mild infestations of ascarids often go unnoticed, but severe infestations can cause a reduction in nutrient absorption, intestinal blockage and death.

“Severe infestation not only makes the birds less efficient, it also makes them more susceptible to other disease organisms.”



Severe infestation not only makes the birds less efficient, it also makes them more susceptible to other disease organisms. Large roundworms are about the thickness of a pencil lead and grow up to four and one-half inches long. They are easily seen with the naked eye and occasionally migrate up the hen's reproductive tract and become encased in a newly forming egg.

The life cycle of the large roundworm is direct, meaning that the parasite eggs are found in the droppings of infected birds and are passed directly to birds who consume contaminated feed, water or feces. Signs of ascarid infestation include lethargy, weight loss and diarrhea. Large roundworms can be controlled by strict sanitation, complete cleaning of housing between groups of birds, and segregation of younger birds. Use of clean range for each group of birds will help to reduce the level of Ascarid infestation in a flock.

See Parasite Treatment, Prevention and Control for table of medications to treat Roundworms.

Cecal Worms

The Cecal worm is a common parasite of backyard poultry flocks. As the name implies, the Cecal worm inhabits the cecum of the bird. Cecal worms cause little or no damage to chicken flocks but the Cecal worm can carry the organism that causes blackhead disease in turkeys.

Earthworms ingest the infected Cecal worm egg from poultry litter; turkeys that consume the earthworms become infected with the blackhead organism. Turkeys can also become infected with the blackhead organism from direct oral contact with the infected Cecal worms. Turkeys and chickens shouldn't be housed together, and turkeys shouldn't range where chickens have ranged.

See Parasite Treatment, Prevention and Control for table of medications to treat Cecal worms.

Capillaria: Capillary or Thread Worms

There are several species of *Capillaria* in poultry; they affect different parts of the bird and cause a variety of symptoms. Species that occur in the crop and esophagus cause thickening and inflammation of the mucus membranes. Turkeys and game birds may suffer severe losses due to these parasites. Other species of *Capillaria* are prevalent in the lower intestinal tract and cause inflammation, hemorrhage and erosion of the intestinal lining. Severe infestation can lead to death.

Some species of Thread worms have a direct life cycle and some an indirect lifecycle. Control of Thread worms that have an intermediate host can be achieved by the control of the alternate host.

Capillaria are a common problem of deep bedding houses; heavy infestations result in reduced growth, reduced egg production and reduced fertility. If present in large numbers thread worms can be seen during necropsy; eggs are difficult to find in bird droppings as they are very small.

See Parasite Treatment, Prevention and Control for table of medications to treat *Capillaria*.

Tapeworms

Several species of tapeworms affect poultry. They range in size from very small (not visible with the naked eye) to 13 inches long. Each species of tapeworm attaches to a different section of the digestive tract using four pairs of suckers located on their heads. Most tapeworms are host-specific, with chicken tapeworms affecting only chickens.

Tapeworms require an alternate host to complete their lifecycle. Hosts include ants, beetles, houseflies, slugs, snails and termites. The system for raising the birds determines the likely alternate host, with caged birds being infected by houseflies, litter-raised birds being infected by termites and beetles, and free-ranged birds infected by snails and earthworms. Tapeworms are made up of multiple flat sections, shed in groups of two to three on a daily basis. Each section of tapeworm contains hundreds of eggs and each tapeworm is capable of shedding millions of eggs in its lifetime.

Control of tapeworms can be achieved by controlling the alternate host. Different housing situations can make this difficult, impractical or impossible.

See Parasite Treatment, Prevention and Control for table of medications to treat Tapeworms.



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Other Parasites

Protozoa

Protozoa are single celled organisms, found in most all habitats, and include some important parasitic pathogens of humans and domestic animals. There are seven phyla or families of protozoa, two of which are of importance to the poultry industry; these include intercellular protozoa, flagellates and amoebas. Fortunately, the worst protozoan parasites aren't found in North America.

Coccidiosis

By far the most common protozoan parasite of the chicken is the *Eimeria* family of protozoa, commonly referred to as coccidia. Nine types of coccidia affect chickens; seven affect turkeys.

Coccidia are host-specific; this means the coccidia that affect your chickens won't affect your turkeys or other livestock. Coccidia live and reproduce in the digestive tract, where they cause tissue damage. The damage to the digestive tract can reduce nutrient and fluid absorption and cause diarrhea and blood loss. Coccidiosis can increase a bird's susceptibility to other important poultry diseases, such as salmonella.

Coccidia are found everywhere there are chickens. Chicks develop immunity over time, with most severe disease occurring between 3-6 weeks of age. Signs of coccidiosis include bloody diarrhea, watery diarrhea, weight loss, lethargy, ruffled feathers and other signs of general malaise. Outbreaks range from mild to severe and may predispose your flock to other opportunistic organisms.

Medicated feeds control but don't eliminate coccidia, allowing young birds to develop resistance to the coccidia most prevalent in their environment. If exposed to a different species of coccidia, they won't have immunity and disease symptoms may result.

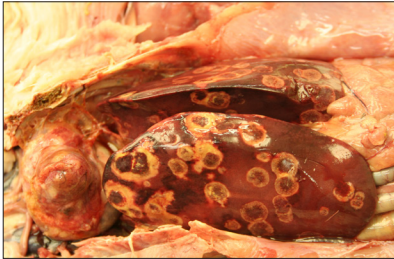
Coccidiosis can be controlled, but not eliminated, with good sanitation, adequate nutrition, clean water and dry bedding. Chickens housed in a floor-based system are exposed to coccidia all their lives. Properly fed and managed, they will develop resistance. If they are stressed, depending on the level of infective oocysts in the environment, they may develop symptoms.

Cage-raised birds aren't exposed to the infective materials and develop no resistance. Changing their housing system can result in severe disease and losses due to a lack of resistance in conjunction with exposure.

Vaccines are currently available that give newly-hatched birds a small amount of exposure to coccidia, allowing them to develop immunity without developing disease. With proper vaccination and management, routine anti-coccidial medications are no longer absolutely necessary.

If you vaccinate the birds for coccidiosis, then you should not be feeding medicated feed. The coccidiostat (medication in medicated feed) will kill the modified organism in the vaccine.

Cryptosporidiosis is a form of coccidia caused by *C. baileyi*. Cryptosporidia aren't specific to chickens and can infect other birds. *C. baileyi* is frequently spread from flock to flock on the feet of animals and people and can be carried by wild birds. Intestinal cryptosporidiosis is common, and symptoms are usually mild. Frequently the only symptom is pale skin in the yellow-skinned breeds. Cryptosporidiosis can also spread by inhalation, resulting in respiratory infection that is more severe than the intestinal form. Birds 4-17 weeks of age are more susceptible to the respiratory form of the disease. There is no treatment. Supportive therapy and guarding against secondary opportunistic infection are the only courses of action. Once recovered, birds are immune to future infection.



Two photos of Turkey liver black-head *histomonas meleagridis*.

Did You Know?

“With proper attention to housing, nutrition and insect control, parasite infestation can be kept to a minimum.”

Histomoniasis

Histomoniasis is also known as blackhead disease and is a serious disease of turkeys. Chickens carry and pass the parasite but are generally immune. Blackhead is most common in range-raised birds.

A chicken may eat an earthworm carrying the eggs of the cecal worm, which has been infected with the histomonad protozoa parasite. The blackhead parasite infects the cecum of the chicken and eventually the parasites are shed in the eggs of the cecal worm. Turkeys raised in close proximity to chickens or on range infected with the cecal worm eggs will pick up the parasite and develop the disease.

Histomonads won't survive long in the environment unless they are protected within the body of an earthworm or within a cecal worm egg.

There is no effective treatment for blackhead disease. Control involves controlling cecal worms to reduce the spread of the blackhead parasite. Turkeys shouldn't be housed or ranged in areas that previously contained chickens.

Parasite prevention, treatment, and control

At low levels of infection internal parasites don't cause significant harm. With proper attention to housing, nutrition and insect control parasite infestation can be kept to a minimum. Here are some tips to help with prevention and control of internal parasites in poultry. Keep the bedding in the coop as dry as possible, wet bedding is more likely to keep bacteria and parasite carrying organisms alive (Gary D. Butcher & Richard D. Miles, University of Florida Extension, 2018). Keep the coop and areas where poultry encounter clean. Lack of cleanliness is a common reason for disease. Completely clean and sanitize the coop before introducing new poultry, this helps decrease the chances of the next flock being infected with what the last flock had. Clean waterers daily and change bedding regularly. A clean coop is a healthy coop (Maurice Pitesky, University of California Cooperative Extension, 2014). Avoid overcrowding as it will help reduce the number of birds that contract parasites and keep your coop cleaner.

Try to keep wild birds, pigeons and other birds away from chickens as many types of internal parasites are transmissible between birds. Infected birds will shed the worm eggs in their fecal matter. Provide adequate drainage of ranges and move shelters frequently to decrease accumulation of droppings. Keep birds off freshly plowed ground where ingestion of earthworms and other insects is more likely. Other animals or bugs can be hosts to internal parasites that affect chickens and once the chicken ingests the said host the chicken is then infected with the parasite (Gary D. Butcher & Richard D. Miles, University of Florida Extension, 2018).

Monitor your flock for signs of parasite infestation and identify the parasite likely to be the cause before determining the proper treatment for the most effective control. Blanket application of de-wormers is expensive and can contribute to the development of parasite resistance to approved treatments.

De-Wormers					
Active Ingredient	Brand Name	Effective Against			
		Round Worm	Cecal Worm	Capillaria	Tape Worm
Albendazole	Valbazen	yes	yes	yes	yes
Ivermectin	Ivomec	yes	yes	yes	no
Levamisole	Prohibit	yes	yes	yes	no
Piperazine	Wazine	yes	no	no	no

Note: Piperazine is the only de-wormer approved for use in Poultry.
ALL extra-label use requires a prescription from a licensed veterinarian.

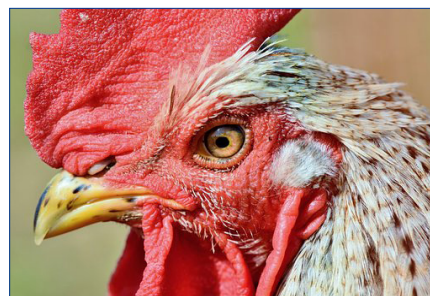


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Lab Photos

Thank you to Inga Sidor of the NH Veterinary Diagnostic Lab for the parasite and lab photos used in this fact sheet. Visit the NH Veterinary Diagnostic lab at: <https://nhvdl.unh.edu/>

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