

Gapeworms

Syngamus trachea and *Cyathostoma sp.*

Dr. Bruce Hunter,¹ Ashley Whiteman,¹ Dr. Babak Sanei,² and Al Dam²

Gapeworms are small nematode worms that live in the airways of the respiratory tract of some birds. Gapeworms may cause disease in several bird species, but are particularly important in pheasants, range-reared turkeys and waterfowl collections. Gapeworms can also occur in raptorial birds (hawks and owls) and some passerines (song birds).

Status in Canada

Gapeworms are common throughout Canada.

Etiology

There are two main types of gapeworms that cause problems in captive or back yard birds. *Syngamus trachea* is important in gallinaceous species, particularly pheasants and turkeys and *Cyathostoma sp.* occurs in geese and other waterfowl and occasionally in wild owls and songbirds.

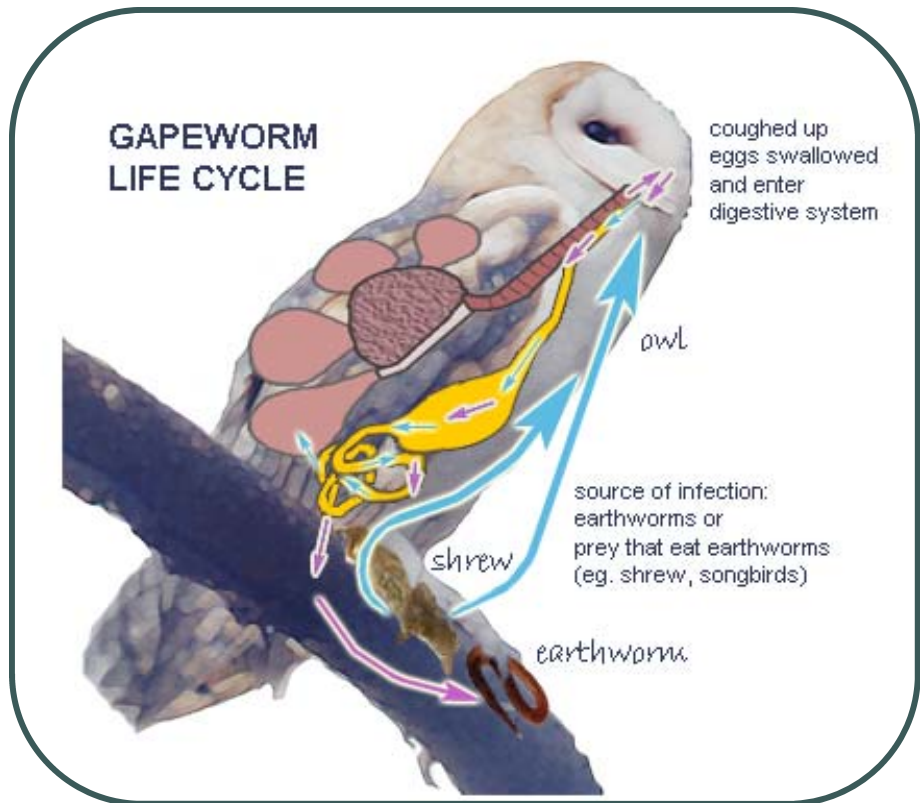
For both species of worm the adult worms live inside the trachea (windpipe) or in the main airways of the respiratory tract. The adult worms produce eggs that are coughed up and swallowed. The eggs move through the bird's digestive tract without being destroyed and are passed via the feces to the environment. The eggs hatch in the environment after a week or two depending on favourable environmental conditions (temperature/humidity etc.) and they develop into an infective 3rd stage larvae.

These infective larval worms may be ingested directly by the bird, but more commonly, the larvae are picked up by earthworms where they can survive for months or years embedded in tissues of the earthworm. Birds can then be infected by consuming these earthworms. Because the eggs survive in earthworms, the ground in a pen can remain infective for long periods of time.



There is also evidence that birds can be infected by consuming other species that eat earthworms, so owls or raptors can be infected by consuming earthworm-eating shrews or songbirds.

Schematic of the life cycle of gapeworms in an owl. Eggs coughed up from the lungs and windpipe are swallowed and pass through the bird's digestive tract. Earthworms or earthworm eating critters like shrews can become the source of infection or reinfection in the bird.



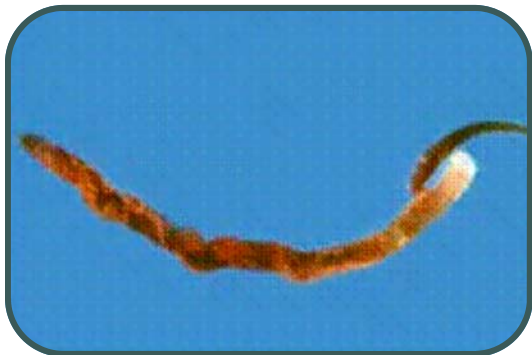
The Disease

After a bird ingests the gapeworm larva, it penetrates the stomach wall, enters the blood stream and is carried to the lungs. The larva migrates through the lung tissue and eventually localizes in the wind pipe and attaches to the tracheal lining.

Windpipe of a pheasant opened up to show the large numbers of red worms plugging the lumen. In small or young birds there may be sufficient numbers of worms to suffocate the bird.



In young birds the developing worms may physically block the trachea or air passages causing coughing, gasping and respiratory distress. Inhalation of the worm eggs or the migration of the larva through the lung tissues may cause severe foreign body type pneumonia.



Syngamus trachea: The larger worm is the female. She is the one that attaches to the tracheal lining. The smaller worm is the male that is always in a stage of copulation with the female. The male of *Cyathostoma* (the gapeworm that affect geese and other waterfowl) is not in a permanent state of copulation. This and other anatomical differences allow these parasites to be differentiated from each other.

Treatment

A number of drugs including ivermectin, thiabendazole and other anti-nematode drugs have been used to treat and prevent gapeworms. A properly designed worming program can be developed by your veterinarian. Improved husbandry, regular cleaning and manure management and earthworm control will reduce transmission. Treatments that kill the worms in already infected birds may result in the dead parasite being inhaled, producing a foreign body pneumonia; therefore some birds may die shortly after treatment. This is a risk that you should be aware of before you start treatment.

Prevention

Prevention of gapeworm is sometimes difficult because it is hard to control access to earthworms in birds housed in outdoor, natural floored pens. Some pheasant growers and some waterfowl parks feed anthelmintics (worm medication) in the feed. Others watch birds closely and treat individual sick birds with appropriate worming medication. Controlling earthworms by using gravel or concrete floored pens is effective but may not fit the husbandry practices of many growers producing birds for hunt clubs or release.



UNIVERSITY
OF GUELPH¹

Ontario²

CONTACT

OMAFRA's
Agricultural
Information
Contact Centre:
1-877-424-1300