

Parasites Affecting Ducks and Geese

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NOT MANY internal parasites attack our domestic ducks and geese, but some of them cause large losses in individual flocks.

Roundworms are more numerous and generally more injurious than the others.

The gizzard worm, *Amidostomum anseris*, is a slender, reddish worm, up to three-fourths inch long. The young worms penetrate the softer parts of the gizzard lining and migrate to a position between the lining and the muscular part below. There they feed, grow, and injure the lining. Many tunnel-like impressions in the lining and in the muscular part of the gizzard, visible on separation of the two, is evidence of their presence.

Young birds lose their appetite and become dull and emaciated. Severely infected birds may die. The gizzard lining of a heavily infested bird appears loosened, necrotic, and riddled with worms. The softer parts are dark brown or black and often separated in places.

The eggs of the gizzard worm are microscopic. They are discharged from the female and pass out in the droppings. They are partly developed when they reach the outside. If moisture and temperature are favorable, the eggs complete development and hatch. The larvae become infective in about a week. Susceptible birds become infected by swallowing the free-living infective larvae with food and water. Adult worms have been found in the gizzard about 25 days after infective larvae were fed in experiments.

The cecal strongyle, *Trichostrongylus tenuis*, is related to the gizzard worm and has a similar developmental cycle. It is much smaller than the gizzard worm and is often overlooked in a casual examination of the cecal con-

tents. It is straw colored and does not ingest blood as does the gizzard worm.

Large numbers of the worm produce definite clinical symptoms. The changes in the ceca consist of a thickening and reddening of the walls. Small hemorrhages are sometimes present. Loss of weight, anemia, and chronic toxemia are signs of heavy infections. The cecal strongyle has been transmitted experimentally to domestic turkeys, guinea fowl, and chickens.

A species of gapeworm, *Cyathostoma bronchialis*, has been encountered only occasionally as a parasite of domestic geese in the United States but is said to be a rather common parasite of geese in Europe. This roundworm was responsible for extensive losses among goslings in Minnesota in 1951. The morbidity in that outbreak reached about 80 percent, and the mortality was about 20 percent. As this gapeworm is common in the wild geese of the North Central States, it is possible that domestic geese acquire their infections from them.

Gapeworms are associated with respiratory distress—the bird throws its head back and gasps for breath. Some birds die within a few days after symptoms appear. Others may linger for several weeks.

One can tell the gapeworms that occur in geese from *Syngamus trachea*, which attacks chickens and turkeys, by the disjointed condition of the male and female worms. Gapeworms of chickens and turkeys are joined permanently in the adult stages.

A species of hairworm or threadworm, *Capillaria contorta*, occurs in both wild and domestic ducks in the United States. Domestic and wild turkeys and other wild gallinaceous birds often harbor these worms also.

Tapeworms occur occasionally in

domestic ducks and geese in the United States but are of less economic importance than the roundworms.

One kind of tapeworm, *Hymenolepis tenuirostris*, caused the death of a large flock of geese in Oregon in 1921. The affected birds showed weakness, emaciation, incoordination, and diarrhea. It is the only time this tapeworm has been associated with death of geese in this country, but it has been reported on several occasions in Europe.

Ducks and geese become infected by swallowing certain small aquatic animals, which are said to serve as the parasite's intermediate hosts.

No satisfactory treatments for the removal of roundworms and tapeworms of ducks and geese are known. Sanitary measures which prevent the contamination of feed and water with the droppings of infected birds are of value in keeping parasitism at a low level.

BLOOD PARASITES, which resemble the parasites that cause malaria, are responsible for considerable losses in ducks in the United States. The parasites are known as leucocytozoa, and the disorder they cause is called leucocytozoon disease.

One, *Leucocytozoon simondi*, is the cause of sickness and death among domestic and wild ducks, especially the young ones. It is most common in flocks in the region of the Great Lakes. Some ducklings that recover may be permanently stunted. Occasionally adult birds become affected severely and may die. They usually recover, however, but continue to harbor the parasite in their blood stream and thus serve as sources of infection for young birds.

This disease strikes suddenly. A flock may appear normal and healthy one day. Many of them may be dead the next day. Some affected birds refuse to eat. Others may continue to drink until they are too weak to move. Some of them crawl about in a sitting position as though it were an effort to exert themselves. Shortly before death their breathing may be fast and la-

bored, and they may pass through a period of nervous excitement.

The spleen of a severely affected bird is enlarged and blackened. The liver also is enlarged. The blood is thin, pale, and watery, does not clot readily, and contains large numbers of leucocytozoa.

These parasites are transmitted from one bird to another by blackflies (*Simulium* species), which ingest the parasites when they suck the blood of an infected bird. The parasites grow and multiply within the fly's body. When they reach the infective stage they are discharged, along with the saliva, into the next bird, on which the insect feeds.

In the duck, the parasites penetrate the cells of the lungs, liver, and spleen and multiply several times. Enormous numbers of parasites are produced. Eventually the parasites are liberated into the blood stream and supposedly invade the blood cells, where they appear as large rounded and spindle-shaped bodies.

The entire life cycle requires 3 days in the blackfly and 6 to 12 days in the duck.

The disease can be controlled in ducks and geese by protecting them from blackflies. That may be done by raising susceptible birds in regions where there are no blackflies or by raising them in houses screened to keep out the insects.

A secondary method of control is to detect and destroy carrier birds.

Chemical treatment of blackfly-infested streams will also aid in the control of the disease by reducing the number of blackflies.

COCCIDIOSIS is responsible for serious losses among geese. It is caused by coccidia, microscopic protozoan parasites that invade the tissue cells and eventually destroy them.

One species of coccidium, *Eimeria truncata*, causes a highly fatal renal, or kidney, disorder in geese. This type of coccidiosis is widespread in the United States and Canada. Goslings 3

weeks to 3 months old are particularly susceptible.

Affected birds lose weight rapidly, become emaciated and weak, and often die 2 or 3 days after symptoms appear. A mortality of 80 to 100 percent has been reported in severe outbreaks.

Enormous numbers of coccidia develop within the kidneys. They plug up and destroy the uriniferous tubules (minute passages). The kidneys of a severely affected bird are swollen, pale, and flecked with small yellow-white nodules and fine white streaks.

Other species of coccidia, *Eimeria anseris*, *E. nocens*, *E. parvula*, and the *Tyzzeria anseris*, have been found in the intestine of geese, but the extent of their injuries is not known. One species, *Tyzzeria anseris*, has been found in geese in the United States.

We have had relatively few reports of serious losses among ducks from coccidiosis, and in them the species of coccidia were not identified positively.

One species, *T. pernicioso*, is known to cause sickness and death under experimental conditions. E. Allen, of the Department of Agriculture, experimentally infected 10 ducklings, 8 of which died. The walls of the intestines were thickened and their muscular exterior was dotted with round white spots. The contents of the intestine consisted of blood, cheesy material, and pieces of intestinal lining.

E. Dougherty III, of the New York State Veterinary College, in 1952 reported two outbreaks of intestinal coccidiosis in ducklings in New York. He observed that many of the birds were not eating and appeared moribund; 20 percent of them died. He tentatively identified *T. pernicioso* as the cause.

An intestinal flagellate, *Cochlosoma anatis*, is common in the intestinal tract of ducks. It has a rounded, cup-like depression in the front half of the body. It moves by means of six long, hairlike structures (flagellae), which are attached near the front end. The parasite has been found in birds suffer-

ing from intestinal disturbances, but there has been no evidence that it was responsible for the trouble.

Sarcocystis rileyi, a parasite of the muscles, often is found in wild ducks and has been found in domestic ducks. It forms tubular sacs up to one-fourth of an inch long. The saclike parasites often occur in huge numbers, particularly in the breast muscles.

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