

## PARASITIC DISEASES

### HELMINTHS

ASCARIDS - Ascarida hermaphrodita (psittacines), A. columbae (pigeons) and A. galli (gallinaceous birds). Ascarids are the most common nematode found in cage birds. Heavy infestations can be found in breeding aviaries especially in cockatiels, conures, pigeons and doves. Life cycle is direct. The eggs are passed in the feces and become infective within 1 to 2 weeks under favorable conditions. Eggs can remain viable for extended periods of time in a warm moist environment.

Clinical signs - loss of condition, weight loss; severe infestations can result in impaction of the intestines.

Diagnosis - worms are quite large (up to 10 cm in length) and can easily be seen on post mortem exam. Eggs are ovoid with thick walls and are easily seen on fecal floatation.

Treatment - Levamisole is effective in the water for most species; species which fail to drink may be treated by gavage. Piperazine is often ineffective against ascarids in pet birds.

CAPILLARY WORMS - Capillaria (hair worms or thread worms) occur less frequently than ascarids but are often found in psittacines and gallinaceous birds. In gallinaceous birds they often infect the crop, while in psittacines they occur more commonly in the intestinal tract. Capillaria are quite resistant and live for extended periods of time in the environment. A build-up of parasites may occur in aviaries, especially in flights with soil floors in warm moist climates. Capillary worms are especially troublesome in macaws.

Clinical signs - weight loss, dullness, poor appetite, vomiting and loose stools. In heavy infestations, may lead to severe enteritis, emaciation and death.

Diagnosis - The adult worm is very small and cannot be seen with the naked eye. Eggs are easily found on fecal floatation but are rarely present in large numbers. Eggs are oval and bioperculate.

Treatment - Levamisole is effective in most cases but usually requires two treatments 10 to 14 days apart. In aviaries where capillary worms are well established, birds must be wormed at least twice a year. Control in warm moist climates may require elevated wire cage flooring to prevent the bird from eating on the cage floor.

GAPE WORMS - Syngamus trachea. Adult gape worms are found in the trachea or bronchi. The adult worms are bright red from ingested blood and the male and female worms are permanently attached together resembling a "Y". Gape worms are uncommon in cage birds. The life cycle is direct.



Clinical signs - Young birds are most commonly affected and may exhibit open mouth breathing, dyspnea, neck stretching, coughing and shaking the head to dislodge worms.

Diagnosis - Bioperculated eggs are deposited in the trachea, coughed up and swallowed, then passed in the feces. Eggs may be found on fecal floatation exam. In severe infestations, worms may be seen by looking down the trachea as the bird gasps for air. Adult worms can be easily seen on post mortem exam.

Treatment - Thiabendazole, mechanical removal of worms in large birds.

GIZZARD AND PROVENTRICULAR WORMS - Spiroptera and Dispharynx. These parasites are uncommon in psittacines but may be found in Australian parakeets and occasionally other species. The adult worm burrows into the mucosa of the proventriculus causing inflammation, ulceration or thickening of the lining layers. The life cycle is indirect; the eggs are eaten by arthropods and infective larvae develop within the intermediate host which is eaten by the bird.

Clinical signs - Digestive disorders, weight loss, and in some cases death.

Diagnosis - Eggs are oval and embryonated and can be found on fecal floatation test.

Treatment - Levamisole, Mebendazole.

TETRAMERES - The globose stomach worm - Found in pigeons and doves and very rarely in psittacines. The adult resembles a small red ball and burrows into the mucosa of the proventriculus. Oval embryonated eggs are found only on sedimentation. This parasite is very difficult to eliminate.

EYE WORMS - Oxyspirura mansoni - Most often found in cockatoos. In most cases they are harmless and go unnoticed. In heavy cases they cause conjunctivitis and can result in blockage of the nasolacrimal duct.

Diagnosis - Apply an ophthalmic topical anesthetic to the eye and lift the nictitating membrane. Worms will be found beneath the membrane and will quickly move into the nasolacrimal duct.

Treatment - Mechanical removal - Treatment is usually not warranted.

TAPEWORMS - Found commonly in finches, lorys, macaws, African grey parrots and eclectus parrots. In most cases they are non-pathogenic; however, in large numbers they can result in impaction.

Treatment - Niclosamide.



## ARTHROPODS

BITING AND CHEWING LICE - May be carried to cage birds by wild birds which come around the aviaries to feed. Are commonly found on recently captured birds. The entire life cycle is spent on the bird. Eggs, called nits, attach in clusters to the feathers.

Clinical signs - Restlessness, excessive scratching. Lice will get on people but will not stay. Lice can easily be seen on the bird, especially under the wings. May result in ragged plumage or feather plucking. Some species feed on blood and excessive numbers may lead to anemia.

Treatment - Carbaryl dust (5% Seven Dust) or pyrethrin sprays. Insecticides must be applied in the axillary area.

TICKS - Argus species - may be found on newly captured wild birds but are uncommon in pet bird species. Ticks are usually not host specific; therefore ticks of all types may occasionally infest birds.

SCALEY FACE OR SCALEY LEG MITES - Cnemidocoptes pilae - Burrow into skin and produce proliferating honey-combed or scaley lesions on the beak, cere, around the eyes, feet, beak and wings. Can result in severe beak deformity. Severely affected birds may be immunodeficient. Occurs most commonly in budgerigars but may be found in many other species including macaws, cockatoos, amazons, and parakeets.

Diagnosis - Skin scraping, clinical appearance.

Treatment - Swab lesions once or twice weekly with a variety of topical acaricides. Scalex, a product on the lay market, is effective but must be used with caution to avoid skin irritation, especially around the eyes. Eurax cream, Tresaderm, or mitox may be used, again with caution. Mild cases will respond to the application of mineral oil, drowning the mites.

TRACHEAL OR AIRSAC MITES - Sternostoma tracheacolum - Found most commonly in canaries and lady gouldian finches. These mites inhabit the trachea, bronchi and airsacs where they appear as small black dots (due to engorged blood). Transmission is probably by infected birds feeding their young. Life cycle is unknown.

Clinical signs - Coughing, sneezing, gasping, loss of condition, development of dyspnea with little activity, death.

Diagnosis - Mites can be seen on gross post mortem exam.

Treatment - Inhalation of malathion or carbaryl dust, Vapona strips (should not hang over food or water supplies), feeding of seed impregnated with liquid carbaryl.

RED MITE - Dermanyssus gallinae - The red mite attacks both poultry and pet birds. The mite lives in small cracks and crevices in the cage, coming out to feed on the bird at night. The life cycle is short; eggs are laid in moist areas of the cage and may become blood sucking nymphs within 72 to 100 hours.



Clinical signs - Restless at night, anemia, dissection of eggs or chicks, weak fading chicks, ragged plumage.

Diagnosis - The bird should be inspected at night or a white sheet hung over the cage at night may reveal red dots. Mites are very fast moving.

Treatment - The cage must be thoroughly cleaned. All disposable material should be burned. Perches and cages should be thoroughly sprayed with a suitable acaricide such as malathion. Vapona strips are often effective in controlling light infestations. Carbaryl dust should be added to nesting material for breeding birds.

SKIN AND FEATHER MITES - Many species can be found in all species of birds. Most cause no problem unless found in very large numbers. Treatment is as in red mites.

QUILL MITES - Inhabit the feather quills and may cause irritation or excessive moulting. There is no satisfactory treatment.

MANGE MITES - Produces feather loss and scaly skin similar to *cnemidoptes*; however, they rarely invade the legs and beak. Treat as for *cnemidoptes*.

#### PROTOZOA

TRICHOMONAS - Common in birds of prey, pigeons and finches. In birds of prey and pigeons it affects primarily the crop, producing proliferating epithelial lesions, fluid accumulation, and poor food passage. In finches, the crop and intestinal tract is involved producing a severe enteritis and high mortality. *Trichomonas* is uncommon in psittacines.

Diagnosis - Crop swab can be examined by saline mount for motility. Diagnosis in finches is difficult and may require sacrifice of an affected bird or examination immediately after death. Scraping the gut or crop wall may be required to find the organisms. A therapeutic diagnosis is often the most practical approach. Affected flocks respond rapidly to dimetridazole (Emtryl water mix) to the drinking water.

GIARDIASIS - *Giardia* is common in budgerigars and in cockatiels, especially in breeding collections. Clinical signs include diarrhea, weight loss, lethargy and unthrifty birds. It can produce mortality in baby birds, especially when found in combination with candidiasis and enteric bacterial infections.

Diagnosis - By direct fecal examination in saline mount you may be able to see trophozoites or cysts. I find the cysts very difficult to identify. The easiest and most positive way of diagnosis is by sacrifice of an affected chick and examination of the contents of the duodenum and jejunum. On adult or single suspect birds, trophozoites may be found by examination of gut contents obtained by duodenal aspirate. Organisms which resemble hexamita may also be found by this method, but their significance is unknown.



COCCIDIOSIS - Both Eimeria and Isospora sp. have been found in pet birds. Eimeria is the common species found in gallinaceous birds and pigeons and doves. Isospora is found in passerines, psittacines, mynahs, toucans, pigeons and passerine birds.

Clinical signs - Loss of condition, failure to gain weight despite voracious appetite, lethargy, insatiable appetite for grit, vomiting, diarrhea.

Diagnosis is by direct fecal exam or floatation.

Treatment - Sulfas, amproleum, trimethoprim sulfa, nitrofurazone. Some species found in mynahs and toucans may be quite refractory to treatment with amproleum or nitrofurazone in the water and may require mixture of trimethoprim sulfa in the food.

TOXOPLASMOSIS - Very rare in birds. Infection may result in fulminating pneumonia and acute death. Birds are infected by contamination of food and water supplies by cat feces or by eating coprophageous arthropods. The affected bird does not shed oocysts; diagnosis is by histopathologic exam.

#### BLOOD PARASITES

HAEMOPROTEUS - Psittacines, especially cockatoos (approximately 50%), are commonly infected with haemoproteus. Haemoproteus reproduces primarily in the respiratory epithelium. Only the gametocyte is found in the circulating blood and no further division takes place after infection of the RBC. An intermediate host is required and suspected vectors include midges and louse flies.

Diagnosis - Examination of blood smears. Haemoproteus are found in the cytoplasm and contain pigment granules. They may occupy most of one side of the RBC. Haemoproteus does not appear to be harmful in most cases and are usually found in low numbers. Large numbers of haemoproteus in the circulating blood may indicate immunosuppression or concurrent disease problems.

Treatment is not warranted. While chloroquin may be effective in lowering the numbers of parasites, the drug is toxic and not well tolerated.

MICROFILARIA - Several species of filarial worms have been found in psittacine birds and microfilaria are a common finding in psittacines and passerines. Approximately 45% of cockatoos are infected. In most cases the adult worms live in the airsacs and neither the adult worm or the microfilaria are considered to be pathogenic. Diagnosis is by microscopic examination of the buffy coat on a hematocrit tube.

TRYPANOSOMES - Hyacinth macaws appear to be the primary psittacine host for trypanosomes. Very little is known about this parasite or its significance. It may be found by examination of the buffy coat on a microhematocrit tube.

PLASMODIUM - An uncommon parasite which may occasionally be found in canaries. Canaries were used for much of the early research into human malaria as a model for drug tests.