

THE PARASITIC DISEASES

There are many parasites that infect pigeons and I feel that it is beyond the scope of this book to discuss all of them in detail. The most important and most commonly encountered parasites are roundworm, hairworm, tapeworm, the external parasites, lice and mites and Coccidia.

Worms

Worms are a primary and serious parasite and it is important that they are completely eradicated for the birds to perform at their best. They weaken the bird, meaning that race performance cannot be optimal, and also increase vulnerability to other secondary diseases, such as canker and respiratory infection. There are three common intestinal worms - roundworm, hairworm and tapeworm.

Roundworm and hairworm

These worms live in the digestive tract of the pigeon and release eggs, which are passed with the bird's droppings. After several days in the environment, these eggs become infective and, if then accidentally ingested by a pigeon, hatch inside them and grow into the new worm. In the loft, there is no easy way for the fancier to tell whether his birds have these parasites as the adult worms are only rarely passed in the droppings and indeed hairworms are microscopic. They are usually diagnosed by microscopic examination of a dropping sample, in which their eggs can be seen.

Treatment

I recommend Moxidectin to treat hairworm and roundworm. Moxidectin (2 mg/ml) is a clear fully water-soluble liquid that, when diluted in the drinking water, is readily taken by the birds. The dose is 5 ml per 1 litre of water for 24 hours. It has a wide safety margin and is perfectly safe to use during racing, breeding and, in particular, moulting. Moxidectin does not cause nausea and vomiting as many older worming preparations do and so the birds can be fed and loft flown quite normally. Moxidectin also has the added advantage that it eliminates any external parasites that feed off body fluid. Mites in pigeons live off blood and so these are all cleared with Moxidectin. Lice live off feather debris and bloom and so in theory this drug should have no effect on them but in practice, during the 3 weeks following Moxidectin treatment, most lice also disappear. Moxidectin is also a safe and effective treatment for air sac mites at the usual dose given above.

Control in the stock loft

The stock loft should be completely free of worms. The roundworm life cycle can be completed in 3 - 4 weeks and so a single worming before breeding (or racing) will improve things for that period of time only. Eradication can be achieved by using Moxidectin twice at a 3-week interval followed by a super thorough clean after each treatment. This removes droppings passed before medication, which may contain infective parasite eggs with the potential to reinfect the birds. It is a good idea to have the droppings rechecked 3 weeks after the second worming to ensure that the parasite has been cleared. Once these parasites have been cleared, worming any new bird before it goes into the stock loft should prevent reintroduction of worms. The dose of Moxidectin for a single bird is 0.25 ml of the neat liquid. If it is not possible to completely and thoroughly clean the loft, Moxidectin can be repeated every 3

weeks over a 6-month period as the longest that eggs can remain infective in the environment is 5 - 6 months. Worms can also reenter the stock loft if the droppings of pigeons or doves outside the loft can enter. To prevent this, any external flight should either have a grid or suspended floor.

Tapeworm

Tapeworms also live in the pigeon's digestive tract. They have a head or scolex, which is embedded deeply into the lining of the pigeon's bowel. Behind this head mature segments, called proglottids, which are essentially packets of eggs. New segments are continuously forming behind the head, pushing maturing segments further and further away until eventually ribbons of segments trail behind the head down the bowel, with the most mature ones at the end. When fully mature, these egg packets snap free either singly or several at a time in ribbons before passing down the bowel and out with the droppings. The fancier will notice either a segmented white ribbon hanging from the pigeon's cloaca or, alternatively, as the segments are motile when passed, he may see small white segments wriggling within the droppings shortly after being passed or air-dried segments stuck to the surrounding perch. Tapeworms are therefore not a microscopic diagnosis because these segments can be seen with the naked eye. Different types of tapeworm vary in size. The small ones look like white pieces of cotton trailing through the dropping, larger ones look like pieces of rice stuck on the surface of the droppings, while the largest ones appear as whitish squares up to 0.5 cm x 0.5 cm. Once in the environment, the eggs inside these segments are ingested by insects. These eggs hatch into infective larvae in the insects. Pigeons become infected by eating these insects.

Treatment

For tapeworm eradication, I recommend Prazivet Solution. This is a new preparation that has many advantages over previously available treatments. It is fully water-soluble, meaning that birds do not have to be picked up individually and given tablets. It only needs to be made available for 24 hours, unlike other water-soluble preparations. It can also safely be given during racing, breeding, and, in particular, moulting. There is no need to remove food and the birds behave quite normally so that feeding and loft training can continue uninterrupted. It is also very cheap, costing less than 4 cents to treat each bird. The dose is 5 ml to 1 litre of water. Its active constituent is praziquantel. Praziquantel tablets (Droncit) are also available for those fliers preferring to give tablets to individual birds.

A tapeworm's life cycle can be completed as quickly as 21 days. This means that if a pigeon swallows an insect the day after worming, within 21 days it will have tapeworms again. It is therefore important to minimize the birds' exposure to insects. However, in the warmer northern areas of Australia where tapeworms are common, Prazivet can be given for 1 day every 3 - 4 weeks. Weevils are one of the insects that can carry tapeworm and so seed that either has or has had weevils in it (look for the little bored holes) must be avoided. Within the loft, slaters are the most common insect carrying tapeworm. When disturbed, slaters roll themselves into balls, which I think pigeons mistake for peas, because these balls are a similar size and color. To prevent reinfection, it is therefore best to spray out the loft with Permethrin Solution simultaneously with a Prazivet treatment. Permethrin has a residual effect for 4 months.

Lice and mites

The two most common external parasites of pigeons are lice and mites. Lice live their entire life cycle on the bird, dying quickly once they are off the bird. They live off feather debris and bloom. Mites drink blood and other body fluids and not only live on the pigeon but also live in cracks and crevices throughout the loft. Not all mites that infect the pigeon are on the bird at any one time. Many live in the loft environment, hiding in cracks and crevices, and, in particular during the breeding season, below nest bowls and within nesting material, only moving onto the birds and nestlings at night to feed.

Treatment

Permethrin is a synthetic pyrethroid used to treat lice and mites. Pyrethroids are plant-origin insecticides, which are very effective but very safe for use in pigeons. Permethrin Solution is used in the following three situations:

1. To dip birds to eradicate lice - Fill a bucket, diluting 10 ml Permethrin to 1 litre of water. Use warm water and treat the birds in the morning of a warm day. Add half a teaspoon of soap flakes to act as a wetting agent. Immerse birds up to their neck, fanning their wings and tail through the solution. Momentarily dip their heads below the surface. Addition of the wetting agent enables complete penetration by the Permethrin. The birds look normal 2 hours after dipping. Permethrin does not remove the birds' bloom and has a residual effect for up to 4 months.
2. To spray the loft - This is done in conjunction with Prazivet treatment to kill any insects in the loft that might be carrying any tapeworm and also to eradicate mites in conjunction with a Moxidectin treatment. It is also done before breeding to eliminate mosquitoes, flies and, in particular, red mite. Birds are removed from the section, which is then scraped clean. Permethrin is diluted 10 ml to 1 litre and sprayed onto the clean scraped surfaces and into any nooks and crannies. The loft will dry in 1 - 2 hours and the birds allowed to re-enter.
3. To treat individual birds - It is a good idea to have some diluted Permethrin mixed and ready to use in a spray bottle. Any introduced birds can be quickly sprayed before being placed in the loft as can any late returning race birds. The usual dilution used is also 10 ml to 1 litre.

Coccidia

Coccidia are fascinating organisms. They can infect not only pigeons, and in fact all birds, but also dogs, cats, sheep, pigs, cows and a range of other animals. They are, however, very species-specific so that it is only pigeon Coccidia that can infect pigeons and, for example, only sparrow Coccidia that infect sparrows. There are however, several types that can infect each animal. The most common Coccidia type in pigeons is called *Eimeria* spp.

Animals become infected by swallowing the organism's eggs. All Coccidia once swallowed replicate in the cells of the host, in the process causing extensive damage. In pigeons, this occurs in the lining of the bowel. After multiplying here, the newly produced eggs are passed in the droppings. When initially passed, the eggs (oocysts) are thin-shelled and contain a spherical body, which looks granular, called a

sporoblast. The sporoblast is an amorphous blob of protoplasm. Once in the environment, the sporoblast within the bigger egg develops into several smaller eggs called sporocysts (there are four in Eimeria), which in turn each contain a number of structures called sporozoites (there are two in Eimeria). Once this has happened, the egg is said to be sporulated. It is not until this has happened that the egg is infective if swallowed. This process usually takes 4 - 5 days but depends on temperature and humidity. Once an infective (i.e. sporulated) egg is swallowed, the sporozoites hop out and burrow into the wall of the bowel. They at first multiply asexually in the bowel cells but then develop into the equivalent of male and female gametes, which then 'mate' to produce further eggs (oocysts), which rupture back through the bowel lining before being passed in the dropping, thus completing the life cycle.

The significance of Coccidia for us as pigeon racers is that as the Coccidia multiplies in the bowel lining, it damages it, interfering with it doing its job of digestion properly. This is complicated by the fact that each time an egg ruptures back into the bowel from the lining, it causes a microscopic 'pin prick', allowing the bird's blood, electrolytes and protein to be lost.

This weakens the birds and interferes with the absorption of vital nutrients. Severely affected birds develop greenish diarrhea, are lethargic, thirsty and lose weight. Race birds with even the slightest infection are not able to give of their best.

In most lofts, a low level of infection is present and out of the racing season is regarded as normal, serving to maintain the flock's level of immunity. In two situations, the organism can increase in number and cause clinical problems:

1. As a primary disease, where there are flaws in loft management or design that lead to high exposure to the organism - The loft must be clean and dry. A build-up in the loft is prevented by regular cleaning with particular attention to the drinkers and hoppers. There is no place for wetness in a healthy loft; it not only enables the Coccidia egg to become infective more quickly, but promotes bacterial infection.
2. As a secondary disease, where other factors weaken the bird, enabling the Coccidia to increase in number and cause clinical disease - Such factors may be other concurrent disease, such as worms, or alternatively overcrowding, excessive tossing, poor nutrition, etc.

Treatment

Coccidia should always be suspected where loose droppings appear, particularly in young birds or following wet periods or heavy training. Diagnosis is through fecal examination under a microscope. The best drug to use is Toltrazuril Coccidiocide Solution, which acts entirely within the bowel. It does not interfere with race form and can therefore be safely used during racing. It can also be used safely during breeding and moulting. The dose is 1 ml per 2 liters of water for 2 - 3 days. Avoid medicating if you believe your birds do not have coccidiosis.

Monitoring of coccidial counts by fecal examination (I suggest every 4 weeks) through the race season is a good indicator of the team's form. Birds with elevated counts will benefit from a course of Toltrazuril Coccidiocide Solution. In fecal samples from perfectly fit birds, no coccidial eggs are seen.

Other parasites

Other less common parasites that the fancier might encounter are pigeon flies, scaly leg mites and Hexamita.

PIGEON FLIES

Have you ever seen a row of holes on a pigeon's flight feather? These are caused by a special type of fly called *Pseudolynchia canariensis*. The adults live on the body of the bird, scurrying between the feathers. They are blood suckers, with their bites causing pain, irritation and restlessness. They will insert their feeding tube into a blood-filled growing feather follicle to feed. As this feather unfurls, the tunnel created by the feeding tube unravels into a series of holes.

The flies lay their eggs on accumulated pigeon droppings and their maggots develop here. Fly numbers are highest during the warmer months when the birds are breeding when they can bite nestlings and breed in the droppings around nest bowls. Interestingly, the saliva of the adult flies gives the nestlings diarrhea, which makes it easier for the maggots to survive.

Treatment

On-going hygiene and efficient disposal of droppings (remembering that accumulated droppings below a grid floor or piled in the garden near the loft can serve as breeding grounds) will do much to control the problem. However if necessary, any flies on the birds can be killed by either spraying the birds with Permethrin or treating them with a 24-hour course of Moxidectin. Coupling this with spraying the loft with Permethrin, particularly before breeding, will solve the problem.

SCALY LEG MITES

Some mites, e.g. *Cnemidocoptes mutans*, will actually burrow into the skin of a pigeon's feet. They lay their eggs in the tunnels they create and leave little breathing tubes connected to the surface. This irritation causes the skin of the feet to become thickened and scaly. At any one time, the mites can also be found on other parts of the body, in particular on the wing butts, around the face and on the skin over the abdomen. Even though the mites are infectious only certain birds seem vulnerable so that not all birds in the team will be infected.

Treatment

The best treatment is to give all birds a simultaneous 24-hour course of Moxidectin. It is important not to confuse scaly leg mite infestation with the thickened crusty growths that occur on the feet of some birds with age.

HEXAMITA

Hexamita is an organism closely related to the organism that causes canker. It lives primarily in the bowel and in high numbers can cause diarrhea. It is diagnosed by microscopic examination of a fresh fecal smear, in which it looks just like a canker organism but appears slightly more elongated and moves

faster and more purposefully Well-cared-for, non-stressed pigeons can carry low-level infections asymptotically. However, Hexamita should be totally eradicated in any racing pigeon loft to ensure that the birds give their best.

Treatment

Any medication that kills canker also kills Hexamita. However, Hexamita needs to be treated for longer. Usually, a continuous 7-day course of a drug such as Turbosole is given simultaneously to all birds in the loft. The organism cannot survive in the environment and so reinfection from the loft is not a concern. Treating all birds simultaneously for 7 days therefore ensures eradication. It is always worthwhile doing a follow-up dropping test to ensure its removal.