

Newsletter

South Eastern Gamebird Breeders & Hunting Preserve Association

Summer 2010 (No. 3)

Parasitic Round Worms in Gamebird Production

Dr. Gary S. Davis

This question was recently asked of me: 'I hear of game bird producers that use a fenbendazole treatment at 3 week intervals, is that frequent a treatment actually needed?'

There are 3 main types of parasitic round worms that can infect gamebirds. Infection of these worms can cause severe problems in nutrition because these worms infect different parts of the digestive tract and interfere with digestion and absorption of nutrients. In addition, worms can be mechanical vectors of other diseases. Some of these worms include:

Syngamus - aka, gapeworms. Mature gapeworms have been found in the trachea as early as 4 days after experimental infection and are firmly attached to the trachea within 11 days. Earthworms are the primary intermediate hosts, as is the case with cecal and *Capillaria* worms. The parasite is injected when birds eat embryonated tracts and interfere with digestion and absorption of nutrients. The parasite is injected when birds eat embryonated eggs of the *syngamus* worms or feed on earthworms that have eaten gapeworm larvae. The mature female gapeworm lays eggs while in the lumen of tracheas of birds. The eggs are coughed-up, swallowed by the bird, and subsequently passed out in the droppings. Gapeworms embryonate within 8 to 14 days on the ground or in litters.



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<http://segamebirds.us>**

Heterakis – aka, cecal worms. The *Heterakis gallinarum* worm is important because of its role in the spread of histomoniasis or Blackhead. The life cycle begins when *Histomonas meleagridis*, a protozoan, is picked up by the cecal worm in the intestine of infected birds. This protozoan infects the gastrointestinal gut wall similar to coccidiosis. The cecal worm then produces *H. meleagridis* infected eggs that pass in the bird's droppings and germinate into infective larva. Earthworms feed on infected heterakis eggs. The eggs then hatch in the digestive tract of the earthworm and become encysted in the wall of the earthworm. Infective cecal worm eggs or infected earthworms may be ingested by gamebirds, turkeys, and other birds as they feed. The *Histomonas* organism is once again in the intestine of birds, and heterakis-histomoniasis cycle is repeated.

Capillaria – Seven different species infect gamebirds, pigeons, ducks, geese, and domestic poultry. The earthworm serves as the intermediate host for *Capillaria*, *heterakis*, and *syngamus*. *Capillaria* eggs pass in the droppings of the bird; embryonation requires 24 to 30 days; and the egg becomes infective only in the embryonated form. The *Capillaria* themselves are quite small (from 10 to 60 mm long), but they burrow into the lining of the digestive tract causing a severe reaction and thickening of the gut wall, thereby digestion and absorption cannot take place. Infected birds appear weak and droopy, they huddle away from the rest of the birds, and they become emaciated, and are often fatal with death resulting from starvation. Diagnosis can be confirmed at your state diagnostic lab by a veterinarian. Fecal samples or pieces of the thickened portion of the gut can be examined under a

microscope. The area of the infected gut will depend on the species of *Capillaria* involved. *C. onotorta* and

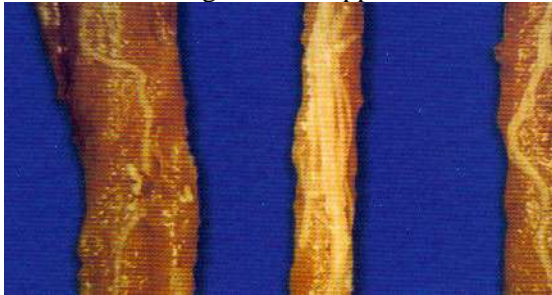
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C. annulata infect primarily the esophagus and crop. Other species, including *C. obsignata*, infect the small intestine. Reasonable success has been achieved treating *Capillaria* infections with levamisole (Tramisol) at 25 mg/kg body weight. This translates to approximately 1g/gal of drinking water. Since earthworms are carriers of these parasites, treating the litter with common salt can help prevent the presence of earthworms. After cleaning out the pens or houses, spread salt at 60 Lbs per 1,000 sq. ft. Till the ground surface, lightly wet the surface, let stand for a week, then till again

If you want complete information on any approved drugs for worming gamebirds and poultry, I recommend that you visit the web site <http://www.fda.gov/cvm>. Once there, go to Animal & Veterinary. Then, select the approved drug online database. Once there, select the search-database choice. Once you get the search page, you can search by drug name, NADA number, species, indication, etc. It is a really terrific resource. Once you get the results, you can go to the individual products (the printable view is nicer than the browser view). The abstracts will give you lots of information about the product. Once you get there, you can record the NADA number or any product that interests you. That will give you information on the studies that supported the product's

approval. I hope this information helps if you have any question about worming your birds and the drugs that are approved.



Note the *Capallaria* worms in the trachea of Bobwhite quail



Note the *Capallaria* worms in the small intestine of Bobwhite quail

Water Consumption During Heat Stress

During periods of high temperatures, gamebirds have an increased demand for drinking water. The ratio of water-to-feed is normally 2:1 at 70 °. The demand for water increases to an 8:1 water-to-feed ration when temperature reaches 100 °.

The water system must have the capacity to provide the volume of water required for high flock water consumption. It is necessary that drinking water be available to gamebirds in the amount they require. Providing additional drinkers that dispense cool water can help accommodate the increased demand. In emergency conditions of heat stress, gamebirds can be sprayed with a cool mist.



Food Corner

To lower cholesterol or unwanted fat from fried foods in your diet, make a gamebird omelet with small yoked eggs. Mix and stir 5 whole fresh quail eggs with 1 tbl spoon of water without using butter, grease or oil; once stirred, place in a hot Teflon or porcelain pan with a pat of butter or margarine. Slowly lean the fry pan forwards, backwards, to the left, and to the right (making a hole and fill it), letting the eggs cook. As the egg mix cooks, you can add your omelet ingredients of choice along one side (cheese, mushrooms, tomatoes, or ham), etc. Using a spatula, you then flip one side of the mix over the ingredients and flip onto a plate. According to biochemists, egg yolk protein and fats digest best if the omelet reaches the desired (soft) consistency. This gamebird omelet is high quality protein and fat that contains almost all necessary vitamins and minerals.



Does Your Resort Finish the Hunt with The WOW EFFECT?

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My wife and I enjoy traveling. During the spring after the hunters are gone we hit the road or a cruise ship. As we travel I come in contact with all kinds of tour guides, travel experiences, etc. I have a rating I give this experience I call it "the wow effect". What I just saw or did, was it something I will remember all my life? Or just a memory that soon hits the "trash can of life experiences"! On a recent cruise ship I had just seen the finest most exciting dinner show I had ever seen on a ship. Two thousand people hit their feet for a standing ovation when the music stopped! It was a wow effect on everyone. As I set on the balcony looking at the ocean and thinking of that experience; I asked myself, 'Do my hunters leave with a wow effect? Do they leave planning the next trip? Do they leave with a cell phone on their ear telling the buddies back home what they had just seen?' I was also thinking of the choices the hunters have today. They could take that money they just gave you and go to a casino, to a lake in a boat, a nice golf course, shopping with the wife, a big car race, or a cruise, etc. The list is huge in the choices a hunter now has to spend his/her recreation dollars. I know that many of you are having a tough time keeping the parking lot full. Add the fact we deal with weather and a short hunting season. Accordingly it is extremely important to make sure every client has a wow effect hunting trip. If not, they may choose a different resort next time. Or choose not to hunt at all. Hunter numbers are dropping in America, are there too many choices? Years ago we did not have all these choices for a vacation. No theme parks, few cruise ships, few casinos, get the idea. Resort owners need to understand all this and make a 110% effort to keep that client. Maybe take an evening to put yourself as a client. Think about what you offer or show him. Think about from the time he gets out of the truck till the time he gets in the truck. Was his visit all it could be? Was your staff on top of his needs like the staff on a cruise ship? Did they leave thinking of all the other things I could have spent that money on? Hunting resort owners are facing more competition for recreation money than ever before in the history of hunting. This competition is not coming from other hunting operations. It is coming from the world we now live in. Times are changing fast and the successful hunting resort owner must

Keep up and change with it, or fail. Example; when I have a client that loves this place, comes all the time, then stops; I always check in with them to see what is going on. I here about their new bass boat, new baby, found a casino, moved away, lost their job, new boss that doesn't like hunting, etc. They still love the resort, but life has changed for them. Example; my wonderful father is on his death bed. I sat by his side one night and asked. Dad what was the most exciting thing in your life that you did? Well he said; one summer I built a room on to the house you were born in. What? I thought now he is 82 and that is it. Then he looked at me and said "son in my day there was no Las Vegas, no big cruise ships, no Branson, no theme parks, few lakes to fish in, all I ever did was work! That tells you how the world is changing. To grow your hunting resort you must get on board with the world. Keep up with the times. Market and sell like you have never done before and do it all year long. Not a month before season opens. You must attend the NAGA & SEGB&HPA convention to learn from the pros. You must find new ways to find a hunter. Then when they come know how to WOW them! Make a, not a hunt! Last hunting season was a tough one and this year could be the same. I am just a dumb old country boy and can't tell you what will happen in your area of the country. Some resorts will make money and some will dry up and go away. The fact that you have a pretty farm to hunt or work all summer training good dogs to hunt is very important for sure. But what if few people come to see it? Your most important employee is your salesman; they are the ones that start it all. Example: during last year's tough hunting season when others around me were going out of business, I had shot all the thousands upon thousands of birds I produce here and had to buy 3500 more to finish the last 3 weeks of season. No brag, just fact as John Wayne used to say. Why, because I focus on selling all year long and made it happen. I did not wait for the phone to ring, I made the phone ring! Think about what you are doing right now to fill the parking lot. Right now, in the middle of summer. I have been in the office all day marketing and selling as I do all year long. Took a break and wrote this column for you. Think about it. Hope to see you at this year's conventions for the NAGA or SEGB&HPA! Till next time, Kim Shira, CEO, Show Me Birds Hunting Resort. Visit me at www.showmebirds.com

You Can Eat Dog Food!

Mickey Hall

According to 2007 statistics released from the AVMA there are about 72,114,000 dogs in the US. About 37.2% households own dogs which comes to about 1.7 dogs/household or 43 million households in the US with dogs. Those dogs consume about \$39 billion dollars worth of dog food; therefore, we feed more dogs and cats than new-born babies, infants and all pre-school age children combined!

When it comes to different dog foods ingredients will vary and the formulas for the different dog food ingredients will vary due to the variety of sources. Usually generic or off-brand dog foods contain poorer quality ingredients. Ingredients for Canned and Dry dog foods are the same, however, the difference is the cooking process and in the amount of water with canned food containing about 82% water. Dogs are omnivores and can easily digest meat and vegetable or cereal based diets. However, when a dog food diet is exclusively plant or cereal based, the dog can develop an imbalance, therefore, vegetarian diets for dogs should be supplemented with Vitamin B12.

It is important to read labels for dog food but what is NOT only the label can be as important as what is recorded on the label. Digestibility is not listed on the label. Digestibility takes into account the quality of the ingredients as well as the availability of the ingredients. Measuring digestibility can be used to gauge metabolism and performance of the animal receiving the diet, which in the case of hunting dogs is very important.

What should be on the label is the Guaranteed Analysis and the list of ingredients. The list of ingredients or what actually is in the dog food should be listed in descending order of predominance by weight. Some ingredients are added in dry for some in wet form. For example "Whole Meats" – may contain more water in fact "dressed chicken" has about 70% water. Another way ingredients are added is by "Splitting" ingredients, so Corn which is good for energy can be in the form of Corn flour, ground corn, corn bran, and corn gluten meal. Listing ingredients as "Crude Fat", "Crude fiber," "Crude Protein" is permissible...but misleading since it doesn't tell "true availability" or "Biological value," and Animal Protein should be one of the 1st three ingredients in a dry formula.

Long-term feeding (For Adult Dogs) should have at least 1 cereal grain in the dry matter analysis and one source of Calcium.

So where's the beef? Meat & Meat Meal vary in quality which depends on the quality of tissue or muscle. Commercially rendered Meat Meals can be questionable therefore, it is important to look for dog foods that list whole meats first i.e. "Chicken" rather than "Chicken Meal." And some dog food manufacturers make their own meat meal. As a consumer you can call the 1-800-number listed on the bag to find out. Also, avoid pet food containing "by-products" and "by-product meal."

When looking at the nutritional value of dog food on the label, the American Feed Control Officials (AAFCO) doesn't require dry matter analysis on the label which means you could be paying for water. AAFCO is the pet food industry's governing council that sets guidelines for pet food. If you wish to determine the dry matter amount use the percent of each nutrient found on the label. The following is an example:

$$\% \text{Nutrient} / 100\% - \text{Moisture} \times 100 = \% \text{ Dry Matter}$$

If the ingredient corn is 49.1% of the diet and the average moisture of a dry dog food is 12% then,
 $49.1/100 - 12 \times 100 = 55.79\%$.

Also found on the label would be and all pet food shipped across state lines must have the following information:

- Name & Address of the Manufacturer;
- Net Weight (Actual amount of dog food)
- Guaranteed Analysis
- Date Codes, Month, Day and Year:
 011510 means manufactured on January 15, 2010
- Julian Calendar: 12110 means the 121st day of 2010 or May 1st, 2010
- "Best if Used Before": means EXACTLY that.
- Serving Amounts

Also included is what is known as a "Nutritional Adequacy (Statement)." The following is an example of a nutritional adequacy statement: (Product Name) is formulated to meet the nutritional levels established by the AAFCO Dog Nutrient Profiles for (Stage of Life); Animal feeding tests using AAFCO procedures substantiates that (Product Name) provided complete and balanced nutrition for (Stage of Dog's Life).

“Complete & Balanced” means the food meets a standard, based on set amounts of each ingredient. Statement to AAFCO as to how diet was formulated, how the diet was tested and that it “Meets the Standard.” However it does not mean that a feeding trial or studies were done on the nutritional adequacy. If the package says feeding trials or followed AAFCO feeding test protocols then studies were done and the nutritional adequacy is accurate. If nutritional adequacy is NOT tested, then the statement on the food says, “intended for occasional feeding only!”

Guaranteed Analysis measures protein, fat, fiber, and moisture of the dog food, which means that some amount of the nutrients named are found in the food as defined by the NRC...the ACTUAL amounts can vary by as much as 500% and still stay within a single label guarantee. This is important because nutrient excesses and subtle differences in moisture content cause BIG differences in nutritional ratios and overall balance. Overall, dry dog food can vary in ingredient composition, nutrient quality, digestibility, and metabolizable energy and cost.

What type of bag is also important for the maintenance of the quality of the dog food. Bags which have inner liners do help to retain freshness. Some dog foods are vacuum sealed which will also maintain shelf life, that is until the food is opened. Always remember to store food in a cool dry place out of direct sunlight. Dry dog food comes in in several forms which include meals, pellets, biscuits, kibbles, and extruded products. Dry dog food is the largest proportion of the pet food industry and is low in moisture about 12%. There are three classes of dry dog food: (please go to the next column)

1. Generic which is the most variable in composition is usually formulated on a Least Cost Formula and the type usually sold in Local Grocery Stores
2. Premium is of higher quality uses fixed formulas and sold in specialty stores i.e. (Pet Smart)
3. Specialty (Veterinary) is used to treat or control a health condition.

The two main regulators of the pet food industry are FDA and AAFCO. FDA regulates interstate commerce of pet foods and labeling requirements as well as the use of drugs and food additives in pet foods. The Center for Veterinary Medicine (CVM) of the FDA regulates health claims – NOT drug claims in pet foods. Such as this dog food will help prevent tartar buildup. Drug claims such as this dog food will help treat or reduce a condition or disease CANNOT be made by the companies selling the dog food. AAFCO on the other hand provides model laws for states to follow. However, states don't have to enforce these laws. AAFCO is responsible for the company using the correct label such as the Brand & Product Name. So when a product says lamb & rice then AAFCO requires at least 25% of the diet to contain those ingredients, the first contributing a greater percentage to the diet than the second. AAFCO ensures the proper nutrients for specific age of animal as well as the “Nutrient Profiles” or the guidelines for specific dog food formula enforcing the minimum and maximum levels and that the formula is “complete and balanced.” AAFCO Nutrient Profiles.

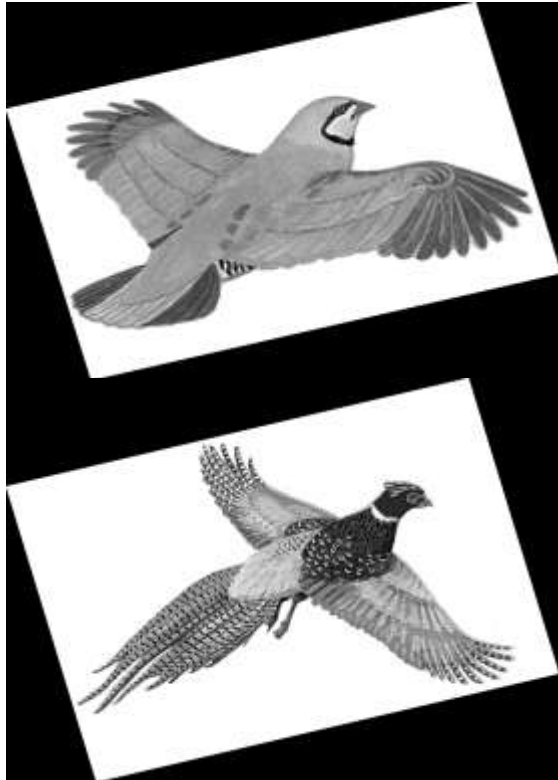
There are three ways to determine the nutritional adequacy of the dog food and compare the label to the national standard established by the NRC. Before using any method it is important to remember the NRC only lists the MINIMUM levels of essential nutrients in dog food diets for a specific dog. The three methods are calculation, analytical, and feeding trials. The calculation method is the least reliable because the manufacturer looks up nutrient content of each ingredient combined w/ percentage of the ingredient and this is done for each ingredient to get the finished product. It does not take into consideration if the ingredient is of poor quality, therefore, the food may be up to standard. The analytical method involved submitting the final product to a test lab to determine essential nutrients. If percentages are not above NRC guidelines then the label can read, “complete & balanced ration,” however, the dog food again may only contain MINIMUM levels as specified by NRC. The final method of validation is using feeding trials. This method follows the feeding protocols of AAFCO. This method is the best Guarantee of Adequacy in the diet since a specific number of animals are fed a specific diet. Then the weight of animals and the analyses of blood of dogs throughout the feeding of the diets are done.

Protein	Carbohydrate	Fat	Fiber
Beef, Chicken	Alfalfa meal	Animal fat	Apple pomace
Brewer's dried yeast	Barley	Borage oil	Barley
Chicken meal	Brewer's rice	Chicken/poultry fat	Beet pulp
Chicken liver meal	Brown rice	Corn oil	Cellulose
Chicken byproduct meal	Dried kelp	Fish oil	Citrus pulp
Chicken byproducts	Dried whey	Flaxseed	Oat bran
Corn gluten meal	Flaxseed meal	Safflower oil	Rice bran
Dried egg product	Grain sorghum	Soybean oil	Soybean hulls
Meat byproducts	Ground wheat	Sunflower oil	Soybean hulls
Meat & bone meal	Oat meal		Tomato pomace
Poultry byproduct meal	Rice flour		
Soybean meal	Molasses		
Fish, fish meal	Wheat		
Nutrient	Growth/Repro. Min. (g/kg)	Adult Maintenance Min. (g/kg)	Maximum (g/kg)
Protein	220	180	
Methionine-cysteine	5.3	4.3	
Threonine	5.8	4.8	
Tryptophan	2.0	1.6	
Fat	80	50	
Linoleic acid	10	10	
Minerals			
Calcium	10	6	25
Phosphorus	8	5	16
Ca:P	1:1	1:1	2:1

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Exposed and susceptible to a wide range of pathogenic bacteria, upland game birds need help maintaining proper microflora balance. The microbial sub-species in PrimaLac colonize the digestive tract with good bacteria allowing greater utilization of available nutrients.

Numerous field and applied research studies* have been conducted verifying the effects of PrimaLac on gamebirds, including:

- Feather quality
- Performance and immune response
- Growth, feed conversion, livability
- Antibody response

For over 30 years, PrimaLac has been used to improve animal health and performance. And, *only* PrimaLac microbials are processed with the Thermo-Positive System for assured viability even after pelleting.

* Research studies available on request