

CAN I EAT IT?

By Dr. James C. Kroll, Ph.D.

Over the years I have maintained a list of questions folks ask me about deer, and from this list I've constructed an all-time top 10 group. One of the top five usually comes into the office as a hurried phone call. Some guy is out in the middle of no where and wants to know if it's safe to eat the buck he just shot.

"He has big, black warts all over his face," he will say. "Can I eat him?" Another fellow will call in about a pile of nasty worms that showed up beneath the deer hanging on his pole, while still another is wondering about the ugly sore on the side of a doe. So I thought I would save myself a lot of time and answer these and other questions about the wholesomeness of the venison you are about to put in your mouth.

Deer are beset by a host of diseases and conditions, no different from any other hoofed mammal. They are infected by many diseases and have an amazing number of accidents. Fortunately, most of these diseases and maladies have little or no potential effect on humans, even those ills that are the ones most devastating to deer. Let's start with the above questions and work our way down my list of possible concerns.

Warts commonly occur on the skin of deer. They can be quite grotesque in appearance; some may even cover the entire face of a deer. They are called "fibromas," "papillomas," or "papillofibromas," depending on the makeup of the tissue involved. They are caused by viruses transmitted from one deer to the

next, either by insects or direct contact with a ruptured wart. It takes about six to seven weeks for the wart to develop, and it grows very slowly. Most deer develop immunity to their own warts and lose them within a year. A skinned

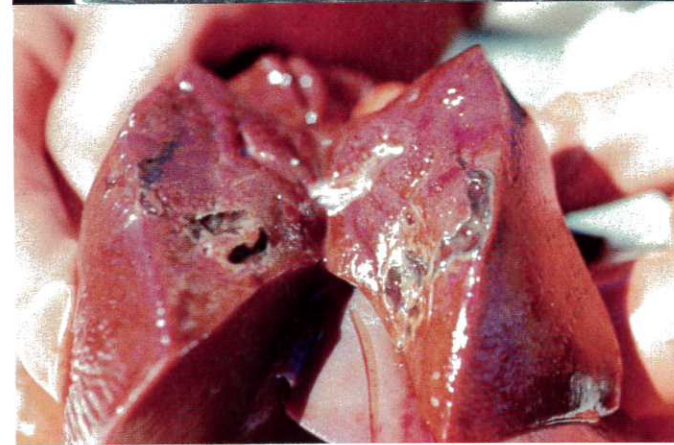
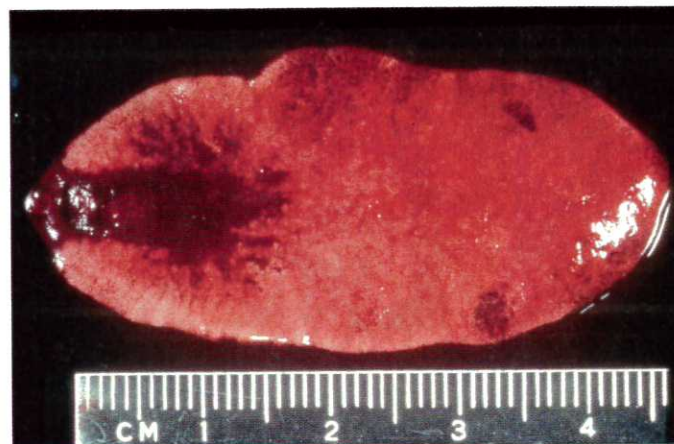
species transmission. So it is perfectly safe to eat an infected deer, but it may be a little difficult to get your mind past the ugly outward appearance.

Now let's turn to the worms. These are commonly called "nose bots," and they are the maggots of a large fly that goes under the scientific name *Cephenemyia sp.* They have been known since the time of the Greeks, and Aristotle even commented on them. The one most often found in Texas and southern deer is *C. phobifer*. The female hatches the young maggots in her body and deposits them around the nose of a deer.

They crawl into the nose and migrate to the area just behind the tongue known as the retropharyngeal pouches. The maggots feed and remain there until they reach a length of one to 1½ inches, then exit the nostrils and fall to the ground. (You may have noticed deer sneezing and snorting for no apparent reason. This probably is caused by maggot irritation.) Pupation takes place in the ground and usually takes no more than three weeks. The emerging adults are like some butterflies in they cannot eat, making their life relatively short. Pupae produced late stay in the soil until warm conditions

permit emergence. Again, other than being really ugly and somewhat distasteful, deer infected by bots are perfectly good to eat—unless, of course you want to eat the nose!

What about sores and abscesses? These are caused by a host of bacteria, including *Bacteroides nodosus* and



At top, a liver fluke parasite, and at bottom, a deer liver showing the damage from the fluke.

deer does not show any signs of the warts beneath the skin, but can you eat venison from such an animal?

There have been experiments in which wart material and filtered viruses were deposited on the abraded skin and tissues of other mammals. To my knowledge, there has yet to be a case of cross-

Fusobacterium necrophorum. These bacteria occur commonly in the soil and can gain entrance to a deer through wounds such as abrasions to the foot and mouth and from damage from fighting. The bacteria work together symbiotically to decay the tissue around the infection site. Other bacteria may also join in on the "feast," producing, in some cases, a large and rather nasty abscess filled with pus. Many times the deer is able to overcome the infection, but not until considerable damage is done. The bacteria and their associates also can infect humans, and the bacteria can spread within a deer's body. Hence, it probably is not a good idea to consume venison from a seriously infected animal. You should look a deer over carefully to assure there are no obvious infections.

Now let's turn to parasites. Deer contract several species of worms, including large stomach worms, whip worms, hook worms, lung worms, and abdominal worms. The most obvious parasite is the liver fluke (*Fascioloides magna*). It is a large, flat, liver-colored worm that burrows into the liver and forms a fluid-filled cyst. The adults produce eggs that pass out of the deer's digestive tract. If

deer feces fall on wet or moist soil, the eggs then turn into an intermediate life stage, called "miracidia." These in turn infect snails, where they then reach a further stage of development called "cercaria." The cercaria emerge from the snail and form cysts on vegetation (metacercaria). Deer eating vegetation along edges of streams or ponds then

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pick up the metacercaria, and the process begins anew.

I have found liver flukes in deer all over the South and Southwest—just because a geographic area is dry does not mean liver flukes cannot flourish. Any place where deer congregate to feed or water can harbor liver flukes. For those of you who like to eat deer liver, the best thing to do is examine the liver by cutting it into slices about an inch thick. That will expose any flukes housed in the organ. Obviously, if you find any flukes, discard the liver. Liver flukes rarely do significant damage to a deer, but can make them less thrifty. As for humans, there is no way to contract liver flukes from eating an infected liver—but a heavily infected liver is pretty nasty!

As deer populations continue to increase at an alarming rate, really serious diseases such as epizootic hemorrhagic disease (EHD) and its close cousin blue tongue, as well as coccidiosis and tuberculosis, are also increasing. The most commonly occurring are the viral-caused EHD and blue tongue diseases. The virus is carried by biting gnats, which emerge from mud around wet

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areas. Feeding on the belly region of a deer, the gnats transmit the viral agent from one deer to the next. In about 14 days, the deer comes down with a very high fever, and the tissues of the mouth, digestive tract, and other organs begin to deteriorate, hence the term "hemorrhagic." It is a terrible way for a deer to die, not unlike the fate of humans infected with Ebola virus. The deer usually dies within 48 hours, but some survive due to partial resistance or because of a less deadly strain.

In the past, most deer dying from EHD/blue tongue were observed in late summer to early fall. We would find their carcasses around water, where they'd come to escape high fever. With climate change, however, we are seeing the disease almost year-round in many areas. A survivor will appear fairly normal, except for hooves with a definitive line marking the point where growth was interrupted. Bucks also may have abnormal antlers, sometimes appearing brownish and soft at the tips.

The lucky deer that survive EHD/blue tongue do not appear very thrifty. They

often lose a considerable amount of weight and may not shed their summer coat until much later in the fall. A deer with such an appearance, no matter what the cause, probably should not be eaten, just to be on the safe side. However, although similar to Ebola, the viral agents causing these diseases cannot be transmitted to humans. The only real concern would be the associated pathogenic bacteria that often accompany the disease.

Lastly, bovine tuberculosis (bTb) has been a concern for farmed deer for many

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years. First appearing in New Zealand red stags, bTb has been reported among captive herds in a few U.S. states and Canadian provinces. The only free-ranging infection I am aware of is in the northeast portion of the Lower Peninsula of Michigan. The disease appears to have originated as early as the 1930s from untested Mexican cattle brought into the area. Since then, deer and cattle have mingled and re-infected each other many times. In spite of attempts to eradicate the disease, bTb still occurs at a fairly low infection rate in Michigan.

The probability of you killing a deer with bTb is astronomically small! I currently work in the heart of the infected area of Michigan, and have encountered the disease in two of 100 animals tested. Healthy animals tend to be resistant, so in well-managed herds I would be surprised to find the disease. An infected deer usually has a large number of pus-filled cysts in its lung cavity. An infected live deer can appear completely normal or very skinny and weak in later stages of the disease. You should always examine the lung cavity of any deer you shoot,

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checking for signs of bTb or pneumonia (pneumonia also manifests itself as an obvious lung infection, with the lung cavity filled with pus or yellowish liquid).

Can a human contract bTb from a deer? Although there have been a few cases reported, it would be rare for a human to contract the disease from a killed animal. I believe that unless you are immune compromised, your chances are almost zero of catching bTb from a deer. However, you should be vigilant when dressing out your deer. I prefer to wear rubber gloves when processing deer, especially since I work with so many animals each year.

All this said, how much should you worry about catching some disease from a deer you've killed? And how wholesome is venison as a food item? Think about all the deer you either have shot or have been around when they were dressed out. How many showed signs of having any of the above symptoms? I bet there were very few. When you factor in the extremely low probability of contracting a disease, I would give it little concern. Further, we live in a world full of artificially produced foods, particularly meats. The beef you pick up at the grocery may have been produced with hormones, antibiotics, and who knows what! The venison you serve your family from last year's season was produced naturally and has been shown to be remarkably free of pathogens.

Note I have not discussed chronic wasting disease. I consider that disease to be more political than biological. More deer die in one day from EHD than have succumbed to CWD since its discovery. And there is no evidence humans can contract the disease, in spite of what you may have read in some outdoor magazines. The most famous free-ranging infection is the one in Wisconsin, and the infection rate, even in the heart of the disease zone, is less than one percent. Wisconsin recently abandoned its eradication efforts in favor of managing for the disease. I am not advocating fool-heartedness, but I am trying to put this disease into perspective. I do not consider CWD to be a significant human health hazard. Yet, to be on the safe side, if a deer comes by that appears unhealthy, don't shoot it! That's just common sense. 🐾