

Wildlife Disease Concerns in Animal Damage Control
Dr. Sarah Shapiro Hurley, Wisconsin Dept. of
Natural Resources

ABSTRACT

There are many facets to the topic of wildlife disease concerns in animal damage control, but the area that I have chosen to discuss is that of zoonotic disease - diseases which are transmissible in nature between humans and other animals. The list of zoonoses is extensive and in the time available only a few can be reviewed.

Rabies (rhabdovirus):

Rabies is one of the oldest recognized zoonotic diseases. It is almost invariably fatal. All warm-blooded animals are susceptible to the rabies virus, however, the disease is maintained in nature by bats and carnivorous mammals.

The species of wild animal most likely to carry rabies tends to be very specific within a region. Fox rabies is widespread in the Appalachian Mountain states, but few skunk rabies cases are reported despite large skunk populations. Similarly, areas of the Midwest have a serious skunk rabies problem, but few raccoon and fox rabies. In Florida and Georgia where rabies in raccoons is a problem, virtually no rabies is recognized in the abundant foxes and skunks.

The signs of rabies are variable so don't attempt to second guess or play the odds with an animal, domestic or

wild, that is behaving in an unusual manner. Neurological signs may indicate rabies and should be treated as such. If human exposure to a potentially rabid animal does occur, consult your physician immediately.

Tularemia (Francisella tularensis):

This disease is often thought of as "rabbit fever", but is also found in a variety of other mammals (over 100 species), birds, and even fish, frogs and toads. The causative organism which is found in the blood and tissues of infected animals can penetrate intact skin and can survive for months in contaminated water and carcasses. The bacteria also can infect ticks and then be transmitted by their bite.

The symptoms of the disease in humans usually are first seen 3 days after exposure, but may vary from 1 to 9 days. They include headaches, chills, vomiting, fever, aches and pains. Lymphnodes become swollen and sore. Duration of the disease may be 3 to 4 weeks and can be fatal.

Animals infected with the bacteria may act "sick" but are usually presented as asymptomatic carriers or already dead. To avoid transmission, it is important to avoid contact with known infected animals. Do not drink water from areas where tularemia is prevalent. Wear rubber gloves whenever skinning and dressing rabbits.

The hands should be thoroughly washed with soap and water after handling rabbits, even though only the fur is touched.

Blastomycosis (Blastomyces dermatitidis):

Blastomycosis is a chronic systemic fungal disease of humans and animals. The fungus which causes blastomycosis is probably inhaled in spore laden dust. To date, however, there are only reports of its isolation from soil. Environmental variables which appear most important for the growth of the fungus are temperature and humidity. A specific ecologic relationship between B. dermatitidis and definite environmental elements, for example, bird or bat excreta, as has been seen with Histoplasma capsulatum, apparently does not exist. Experimentally, however, extract from starling manure has been shown to stimulate the growth of the fungus B. dermatitidis.

Since the disease in humans generally occurs as single unrelated cases, and the epidemiology is poorly understood, it is difficult to develop practical preventive measures for individuals. At least one cluster of cases in a group of school children and several individual cases in Wisconsin have been linked to an association with beaver dams.

Baylisascaris (Baylisascaris procyonis):

Baylisascaris is a common intestinal roundworm parasite of raccoons. In the raccoon it does little damage,

however, in other animals, including humans it is an important cause of fatal nervous system disease, eye disease, and damage to other vital organs. When an infected raccoon defecates, the surrounding area becomes contaminated with Baylisascaris eggs. Other animals ingest the eggs accidentally, the eggs hatch and the larvae, instead of maturing in the intestine as they do in the raccoon, penetrate the intestines and migrate through the liver, lungs, and other tissues. In a certain percentage of cases, the larvae enter the brain and/or eyes where they can produce significant damage.

These eggs are some of the most resistant parasite eggs known. They can survive years in the soil under natural conditions including severe winter weather. They are also resistant to most disinfectants - very strong lipid solvents (50/50 xylene and absolute alcohol, boiling lye water) and intense heat will kill them.

Lyme disease (Borrelia burgdorferi):

Lyme disease is an illness, which if not diagnosed and treated promptly, can cause serious problems involving the heart, joints, eyes, and nervous system. In Wisconsin, Minnesota and eastern coastal states, this bacterial disease is transmitted to people and animals by the bite of deer tick (Ixodes dammini). In California and other parts of the west, the western black-legged tick (I. pacificus) is the carrier.

Lyme disease is, in general, a preventable, treatable, controllable disease. There has been quite a bit of information about the disease and its epidemiology in both the popular and scientific literature recently. Some things to remember which may help to reduce the hysteria are:

1. It is approximately 24-48 hours from the time a Borrelia burgdorferi infected tick begins to feed until the bacterial infection has spread to the tick's salivary glands and can be introduced into the new host. This gives one time to locate ticks and remove them before being infected.
2. The mouthparts of a tick are shaped like tiny barbs. The best way to remove a tick is to grasp it with tweezers as close to the skin as possible, and gently but firmly pull it straight out.

Do not grab the tick with your fingers and squeeze it. This simply injects whatever is inside the tick into the host and increases the chances of infection.
3. There are various products on the market which either repel or kill ticks. These contain DEET

and permethrin respectively.

4. You cannot get Lyme disease from a toilet seat.

In summary, many of the animals that damage control specialists come into contact with are diseased. Wearing latex gloves; masks when appropriate, and keeping the possibility of zoonotic disease in mind will minimize the possibility of transmission. Departments of Natural Resources and Public Health, local veterinary practitioners, and human health care providers are good sources of more information on zoonoses.

Above all, be sure to provide pertinent details of your occupation to your physician if you should become ill. The things that you are being exposed to in the course of your work day are not always garden variety colds and flu, and for many of these zoonotic diseases, rapid diagnosis is the key to successful treatment.

Additional information regarding zoonotic diseases can be obtained from text books such as Diseases Transmitted from Animals to Man 6th Edition Vols. 1 and 11, edited by W.T. Hubbert, W.F. McCulloch, P.R. Schnurrenberger. 1975 Charles C. Thomas, Publisher