

Bovine Tuberculosis (TB) in Minnesota Minnesota DNR Fact Sheet

How was bovine tuberculosis detected in Minnesota?

On July 12, 2005, the Minnesota Board of Animal Health in conjunction with the United States Department of Agriculture (USDA) announced the confirmation of a bovine tuberculosis (TB) infected beef cattle herd in Roseau County. This is the first positive herd identified in Minnesota since the state was declared TB free in 1976.



What is tuberculosis?

Bovine TB is an infectious disease that is caused by the bacterium *Mycobacterium bovis* (*M. bovis*). Bovine TB primarily affects cattle, however, other animals may become infected. *M. bovis* causes a disease that can be transmitted between wildlife populations and food animals (e.g., cattle). Disease due to *M. bovis* in animals typically presents in the lungs but may also occur in the intestines and other parts of the body.

Tuberculosis in humans is usually caused by *Mycobacterium tuberculosis* (*M. tuberculosis*). *M. tuberculosis* is the single greatest cause of infectious disease in humans worldwide.. In humans, tuberculosis is usually contracted by inhaling the bacteria and it occurs most often in the lungs. However, skin lesions can occur if the bacterium gets into a cut. Humans can be skin-tested to determine if they are infected with TB. These tests can be done at either the local health department or a private physician's office. A positive skin test, however, does not identify the type or source of the infection.

What is the being done to control this situation?

The Minnesota Board of Animal Health (BAH) is working closely with the USDA to eliminate bovine TB-infected cattle in Minnesota. The infected herd in Roseau County is quarantined and awaiting depopulation. The BAH has identified additional herds that had contact with the infected herd. The animals sold from the infected herd over the last 7 years will be purchased by the USDA, euthanized, and tested for TB. If these animals are negative for bovine TB, the herds they currently reside in will be tested for the disease. In addition, a few herds have fence-line contact with the infected herd and might have been exposed to the disease due to their pasture grounds being close together. These herds were also placed under quarantine and will be tested. With any of the currently quarantined herds, if they test negative, they will be removed from quarantine. If positive for bovine TB, they will be depopulated.

How is bovine TB transmitted?

Bovine TB is spread primarily through the exchange of respiratory secretions between infected and uninfected animals. This transmission usually happens when animals are in close contact with each other. Animals may also become infected with TB by ingesting the bacteria. Thus, animal density plays a major factor in TB transmission. Bacteria

released into the air through coughing and sneezing can spread the disease to uninfected animals. Research also suggests that bovine TB can also be contracted from ingesting contaminated feed. Survival of TB in the environment is reduced by exposure to sunlight. Reports on the length of bacterium (*M. bovis*) survival vary from 18 - 332 days at temperatures ranging from 54-75 F.

Can bovine TB spread from infected cattle to wild deer and vice versa?

Although bovine TB was once relatively common in U.S cattle, it has historically been a very rare disease in wild deer. Prior to 1994, only eight wild white-tailed and mule deer had been reported with bovine TB in North America. In 1995, bovine TB was detected in wild deer in Michigan. Though deer in Michigan do serve as a reservoir of bovine TB, conditions in Northwestern Minnesota are different. The *M. bovis* strain isolated from the infected Minnesota herd does not match that found in Michigan. Minnesota has no history of tuberculosis infection in deer or other wildlife. There are fewer deer in the area of the infected herd than in the affected areas of Michigan. Also, unlike Michigan, Minnesota does not allow baiting, which artificially congregates deer and increases the likelihood of disease transmission.

What is being done in Minnesota to monitor wild deer for the presence of bovine TB?

In order to ensure that deer do not harbor bovine TB, the Minnesota Department of Natural Resources (DNR) will test deer in the area of the infected cattle herd during the 2005 firearm season. Personnel will staff deer registration stations to inspect harvested deer. Additionally, lymph nodes will be extracted for testing at the Veterinary Diagnostic Laboratory at the University of Minnesota. Hunters will then be notified of the results if their deer tests positive for bovine TB.

What are the symptoms of bovine TB in deer?

Bovine TB is a progressive, chronic disease. It can take months to years from time of infection to the development of clinical signs. Unlike most bacteria, bovine TB grows very slowly and only replicates every 12-20 hours. The lymph nodes in the animal's head usually show infection first and as the disease progresses, lesions will begin to develop on the surface of the lungs and chest cavity. In severely infected deer, lesions can usually be found throughout the animal's entire body.

How can I tell if my deer is infected with bovine TB?

Hunters do not always readily recognize small lesions in deer. Abscesses may not be visible to hunters when field dressing deer. Infected animals may have yellow to tan, pea-sized nodules in the chest cavity or lungs. Lymph nodes of the head and neck can be swollen and soft. In fact, most infected white-tailed deer appear healthy. In Michigan, only 42% of the bovine TB positive deer had lesions in the chest cavity or lungs that would be recognized as unusual by most deer hunters. These deer had tan or yellow lumps on the inside surface of the rib cage and/or in and on the lung tissue.



Bovine tuberculosis lesions seen with chronic infection, throughout lungs and on ribs of a wild deer. (photo from MIDNR website)

Bovine TB infected deer not showing lesions in the chest cavity can be diagnosed by performing a visual inspection of the lymph nodes in the deer's head. Affected lymph nodes, when cut, will contain one or more variably sized pus-filled nodules. Suspicious looking lymph nodes are removed for further testing at approved laboratory facilities. For 2005, DNR will remove and test lymph nodes, even if they do not look infected.

Is there any treatment for bovine TB?

There are no effective vaccines for disease prevention and no effective medications for treatment of bovine TB in wild deer. Instead, a combination of wildlife disease surveillance and deer management strategies can be used to eliminate the disease if present in wild deer. Wildlife surveillance monitors the spatial distribution and prevalence of the disease, while hunters are also asked to examine their deer.

Other mammals are most likely to contract bovine TB from feeding on infected tissues from deer carcasses. In Michigan, bovine TB has also been found in black bear, bobcat, coyote, opossum, raccoon, and red fox.

Can bovine tuberculosis infect humans?

In the U.S. today, the threat of humans contracting bovine TB from animals is extremely remote. Most human tuberculosis is caused by the bacteria *M. tuberculosis*, which is spread from person to person and rarely infects animals. Bovine TB is caused by the closely related bacteria *M. bovis*, which is capable of infecting all mammals including people. The United States has actively pursued a bovine tuberculosis eradication program since 1917. This program, together with food safety initiatives, has been very effective in reducing the likelihood of people contracting tuberculosis from *M. bovis*. **What precautions should hunters take when field dressing deer or handling meat?** Good field-dressing techniques are important to avoid contact with TB and other wildlife pathogens. The best way to insure your safety is to wear disposable rubber gloves when gutting a deer. Special attention should be paid to the lungs and chest cavity where small lesions may be evident in an infected deer. Every precaution should be taken to avoid cutting yourself when field dressing a deer.

Is it safe to eat venison?

While it is possible to transmit bovine TB from animals to people, the likelihood is extremely rare. It is highly unlikely that a person field dressing or eating the cooked meat of animals infected with bovine TB would become infected. The TB bacterium is very rarely found in meat (muscle tissue). Since bovine TB is primarily spread through respiration, the bacterium is generally found in lung tissue. As a precaution, all meats (including deer), should be thoroughly cooked to an internal temperature of 165 degrees F. This effectively kills all known bacteria, including TB and *E. coli*.