

Brucellosis

(*Brucella* spp.)

in Alberta

Government of NWT RWED



Common name

brucellosis, Bang's disease, contagious abortion, undulant fever

Scientific name

bacteria of the genus *Brucella*:
Brucella abortus,
Brucella suis Type IV

What's Bugging Wild Critters?

Fact sheet #1:
Brucellosis

Significance

Brucellosis is a world-wide concern in domestic cattle. The disease can cause significant economic losses and is a potential human health risk. In North America, infection in wildlife persists in bison and caribou populations in northern Canada as well as in bison and elk populations in and around Yellowstone National Park.

What? Where? How?

Brucellosis is a highly contagious bacterial disease and can survive in a wide range of species, particularly ruminants. Infections may result in abortion, weak calves, infertility, or chronic arthritis and lameness associated with nodular swelling in leg joints. On the other hand, some infected animals may not show any signs of disease.

Transmission Cycle

The bacteria generally are passed on to new individuals that eat contaminated tissue. *Brucella* species most commonly live in tissues of the gastrointestinal and reproductive tracts, and as a result occur in the urine, faeces, uterus, milk, and semen of infected animals. The placenta (afterbirth), aborted foetus, and vaginal discharges from a female infected with *B. abortus* contain huge numbers of bacteria that contaminate the environment and may be directly or indirectly eaten by other individuals. Carnivorous predators and scavengers are at risk if they eat infected animals:

however, generally they are poor habitat for the bacteria. Carnivores rarely transmit the bacteria further.

The form of brucellosis that occurs in caribou and reindeer (*B. suis* Type IV) prefers tissues of the reproductive system but also survives well in joints in the legs. Tissues and fluids associated with abortions, drainage of fluid from swellings in the leg joints, and predation and scavenging all contribute to a population of bacteria in the environment, which are later eaten accidentally by other caribou.

Distribution in Alberta

Domestic cattle and captive bison in Alberta are considered brucellosis-free. Populations of free-ranging bison in and around Wood Buffalo National Park (WBNP) are infected. Infection rates differ among local herds. Within WBNP, the infection rate is consistently in the range of 30-35%. Brucellosis has not been confirmed in free-ranging caribou in Alberta, although suspicious joint lesions (wounds) have been seen in the population in the northeastern part of the province.

Importance for Wildlife Management

The role of brucellosis in reducing bison populations remains controversial. Infected females may abort or produce weak calves for the first one or two years after infection and then appear to have normal reproductive success. There are no reports of reduced male fertility. Infections in caribou and reindeer in Alaska and northern Eurasia may be more significant in terms of mortality and

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reduced population growth. White-tailed deer and mule deer appear to be relatively resistant and infection is rare. Brucellosis in moose generally is fatal; however, transmission to moose may not occur very often.

Disease in northern bison populations continues to pose significant wildlife management concerns in Alberta. Re-establishment of viable populations of wood bison (listed as an endangered animal in Alberta) currently is hampered by the presence of brucellosis (and [bovine tuberculosis](#)) in animals associated with WBNP. Until a complex set of issues and concerns among various interest and user groups is resolved, attempts to solve the problem will progress slowly.

Public Significance

Brucellosis in humans is a relatively mild, repeating fever. Most human infections in the past were associated with drinking contaminated milk or handling infected dairy cattle; however, owing to the pasteurization of milk and concerted eradication efforts, this transmission route is no longer a concern in Canada. Limited risk does exist with the handling or eating of infected bison or caribou. The primary means by which bacteria enter people is through small cuts or scratches in the skin. In some cases, they also enter through moist tissues in the eyes, nose, or mouth.

Summary

Throughout much of Alberta, brucellosis is a disease that is readily controlled through current federal surveillance and eradication programs. However, its presence in bison in the north continues to pose significant risk to expansion of livestock (cattle and bison) operations and re-establishment of wood bison in the area. Further, it is likely one of a number of factors limiting current free-ranging bison populations in the north.

Additional Information

Infectious Diseases of Wild Mammals, Third Edition. Edited by Elizabeth S. Williams and Ian K. Barker. 2001. Chapter 22 - Brucellosis.

Canadian Food Inspection Agency: <http://www.inspection.gc.ca/english/index/ahsae.shtml>

Alberta Agriculture, Food and Rural Development: <http://www1.agric.gov.ab.ca/app21/rtw/selcat.jsp>

Northwest Territories RWED: <http://www.nwtwildlife.com/Publications/diseasepamphletweb/brucellosis.htm>

For more information on wildlife diseases in Alberta: <http://www3.gov.ab.ca/srd/fw/diseases/Index.html>

Prevention/Control

Tremendous effort has been aimed at developing vaccines against brucellosis. Vaccines in cattle are effective and readily available. Similarly, captive bison and reindeer can be successfully vaccinated; however, protection is of relatively short duration and must be repeated annually.

Vaccination of free-ranging wildlife generally is not feasible. An extensive vaccination program exists for concentrated populations of elk on traditional winter feeding grounds in Wyoming. However, the program is costly, requires tremendous manpower to implement, and is only applicable to a very specific set of local needs and conditions.

To avoid human infections:

- ✓ wear gloves when handling potentially infected bison,
- ✓ do not handle affected parts (particularly the uterus and foetus),
- ✓ wash your hands, clothes, and knives in warm soapy water when you are done, and
- ✓ cook bison meat thoroughly. Note that freezing, smoking and drying will NOT kill the bacteria.
- ✓✓ Please report any suspected cases in wild bison or caribou in Alberta to a Fish and Wildlife office.

