



A Field Guide to Common Wildlife Diseases and Parasites in the Northwest Territories

6TH EDITION (MARCH 2017)

Government of
Northwest Territories



Introduction

Although most wild animals in the NWT are healthy, diseases and parasites can occur in any wildlife population. Some of these diseases can infect people or domestic animals. It is important to regularly monitor and assess diseases in wildlife populations so we can take steps to reduce their impact on healthy animals and people.

The information in this field guide should help hunters to:

- recognize sickness in an animal before they shoot;
- identify a disease or parasite in an animal they have killed;
- know how to protect themselves from infection; and
- help wildlife agencies monitor wildlife disease and parasites.

The diseases in this booklet are grouped according to where they are most often seen in the body of the animal: skin, head, liver, lungs, muscle, and general.

General precautions:

Hunters should look for signs of sickness in animals before they shoot, such as:

- poor condition (weak, sluggish, thin or lame);
- swellings or lumps, hair loss, blood or discharges from the nose or mouth; or
- abnormal behaviour (loss of fear of people, aggressiveness).

If you shoot a sick animal:

- Do not cut into diseased parts.
- Wash your hands, knives and clothes in hot, soapy water after you finish cutting up and skinning the animal, and disinfect with a weak bleach solution.

- If meat from an infected animal can be eaten, cook meat thoroughly until it is no longer pink and juice from the meat is clear.
- Do not feed parts of infected animals to dogs.
- It is important to report all wildlife diseases.

When collecting samples you should:

- Wear rubber gloves to protect yourself.
- Place each sample in a separate plastic bag.
- Unless otherwise noted, samples should be submitted frozen.
- Record the following information:
 - date and location collected;
 - type of animal;
 - sex and estimated age of the animal;
 - description of the sample; and
 - any other conditions that may be important (e.g. unusual weather, signs of a struggle).

Disinfecting:

After cutting samples from the affected area of the animal, clean your equipment with an appropriate disinfectant (6% bleach solution) before butchering the rest of the animal.

Under the NWT *Wildlife Act*, it is an offence to waste, destroy, abandon or allow to spoil the meat of big game, other than bear, wolf or wolverine, or the raw pelt or hide of any fur-bearing animal. It is permitted to waste the pelt of a bear, beaver or muskrat if the animal was harvested for its meat.

For more information, contact your local Renewable Resource Officer, Regional Biologist, or the Wildlife Disease Specialist. See Contact Information at the back of the booklet.



Table of Contents

Skin (External)

Chytridiomycosis	6
Contagious Ecthyma (Orf).....	8
Lice	10
Papillomas (Warts)	12
Ringworm.....	14
Sarcoptic Mange	16
Warbles	18
White-nose Syndrome	20
Winter Ticks.....	22

Head

Nose Bots.....	24
Lumpy Jaw	26

Liver

Liver Flukes	28
Liver Tapeworm Cysts	30

Lungs

Aspergillosis.....	32
Hydatid Disease	34
Muskox Lungworm.....	36
Thread Lungworms.....	38
Tuberculosis (TB)	40

Muscle

Muscle Tapeworm.....	42
Trichinosis	44
Sarcocystosis.....	46

General

Abscesses.....	48
Anthrax.....	50
Avian Pox	52
Besnoitiosis	54
Brucellosis.....	56
Chronic Wasting Disease (CWD)	58
Dirofilaria	60
Distemper.....	62
Erysipelas.....	64
Exertional Myopathy	66
Giardia	68
Injuries	70
Parvovirus.....	72
Rabies.....	74
Ranavirus.....	76
Starvation/Malnutrition	78
Tularemia	80
Glossary	82
Contact Information	84
Notes	85

Icon Legend



**CAN INFECT
PEOPLE**



**CAN INFECT
DOGS**



**COOK
WELL**



**DO NOT
EAT**

All photos credited to GNWT unless otherwise stated.



Chytridiomycosis

What causes chytridiomycosis?

Chytridiomycosis is an infectious disease caused by an aquatic fungal pathogen *Batrachochytrium denodrobatidis*.

The fungus can cause sporadic deaths in some amphibian (e.g. frog, toad, salamander) populations and 100% mortality in others. The disease has been suggested as a contributing factor in global declines of amphibian populations. The only way to reduce the spread of the disease is through good field hygiene (see How can I protect myself?).

Where does chytridiomycosis occur?

This fungus has been confirmed in the NWT for some amphibians in localized areas.

What are the signs of chytridiomycosis?

Amphibians infected with the fungus can show reddening of the skin, build-up of dead skin over the body, occasional small ulcers or hemorrhages, and other abnormalities. Behavioural changes can include lack of energy, failure to find shelter, failure to flee when threatened, loss of righting reflex and abnormal posture (e.g. sitting with hind legs away from the body).

How can I protect myself?

Ensure all equipment is disinfected and fully dry before using at another site. Pay particular attention to nets, buckets and any other items that come into direct contact with amphibians. Avoid holding large numbers of amphibians together in common buckets or coolers as this will rapidly spread disease among those in the holding containers.

Footwear and clothing should also be cleaned and fully dried before using at another site. Soak footwear, free of organic material, in a disinfectant such as 6% bleach. Rinse with clean water and allow to dry. For clothing, wash in hot water with detergent.

Can I eat the meat?

Chytridiomycosis poses no threat to human health. However, it can seriously affect amphibian populations and steps should be taken to prevent accidental human spreading of the fungus among ponds.

Samples to collect

Collect whole carcass and keep frozen.



Contagious Echthyma (Orf)

What causes echthyma?

Contagious echthyma is caused by a virus spread by direct contact with scabs on infected animals. Echthyma is found in Dall's sheep, mountain goats, reindeer and muskoxen, and possibly in moose, wapiti (elk) and caribou.

Where does echthyma occur?

In the NWT, it occurs periodically in the Mackenzie Mountains and Banks Island.

It is most common and severe in younger animals.

Humans can also be infected.

What are the signs of echthyma?

Pus-filled blisters form into thick scabs on the head, mainly on the lips, mouth, nose, eyelids and ears.

Scabs on the mouth may make it difficult or painful for the animal to eat.

Scabs can also occur on the udder and the top of the foot just above the hoof.

If scabs are on the feet, animals may be lame.

Animals that are heavily infected may be weak.

How can I protect myself?

You can get echthyma by touching scabs on an infected animal or by touching anything that has come in contact with the scabs. The virus enters through cuts or scratches in your skin or through your eyes, nose or mouth.

Wear gloves.

Do not cut into blisters or scabs.

Wash your hands, knives and clothes with hot, soapy water after you finish butchering.

Can I eat the meat?

Meat from an infected animal is suitable for human consumption.

Trim off affected parts.

Severely infected animals may be in poor condition, reducing the quality of the meat.

Samples to collect

Scabs and surrounding unaffected area.



**CAN INFECT
PEOPLE**



Lice

What causes lice?

Lice are small wingless insects that are spread by direct contact between animals.

There are two kinds of lice: biting lice and sucking lice.

Where do lice occur?

There are many types of lice that occur on many different animals.

Lice are very host specific and don't move from one type of animal to another.

In the NWT, lice have been found on caribou, wolves, coyotes, dogs, foxes, lynx, marten, wolverine and a variety of bird species.

What are the signs of lice?

Lice are small (1-5 mm), flat, wingless insects with bodies divided into three distinct sections.

Lice attach their very small eggs to the hairs of their host.

Biting lice cause mild hair matting or loss.

Sucking lice pierce the skin and suck blood.

Large numbers of lice may cause weakness from blood loss (and possibly death in young or sick animals).

Sucking lice can also cause allergic reactions.

How can I protect myself?

You cannot get lice from infected animals.

Lice may reduce the value of an animal pelt.

It is unknown if infection can spread between wolves and domestic dogs.

Can I eat the meat?

Meat from affected animals is suitable for human consumption.

Samples to collect

Whole lice.



Papillomas (Warts)

What causes papillomas?

Papillomas or warts in animals are caused by viruses similar to those that cause warts in people. This condition is spread between animals by direct contact.

Where do papillomas occur?

One type of wart occurs in caribou, moose, wapiti (elk) and deer. Another type of wart occurs in wolves and dogs. All types are most common in animals younger than two years old and have been found in the NWT.

What are the signs of papillomas?

Affected animals are usually in good body condition.

Warts are often found on the head, but can occur on other parts of the body.

In caribou and moose, warts are dark lumps that vary in size from 1-15 cm. There may be only one or many warts and the surface may be rough or smooth.

In wolves and dogs, warts are usually dry, hard, whitish, cauliflower-like bumps on the lips and around the teeth.

How can I protect myself?

You cannot get warts from infected animals.

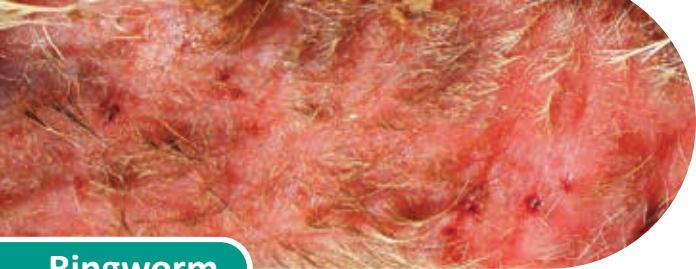
Can I eat the meat?

Meat from infected animals is suitable for human consumption.

Trim off parts containing warts. Refer to page 3 for cleaning of equipment prior to continuing with butchering of animal.

Samples to collect

Warts.



Ringworm

What causes ringworm?

Ringworm is caused by a fungus that grows in the soil, on people and on animals. It is caused by *Mircosporum canis* and *Trichophyton verrucosum*. The name comes from the outward growth of the fungus from a central core. As the inner area heals, it is surrounded by a ring of active tissue damage.

Where does ringworm occur?

Ringworm occurs in skin lesions, contaminated skin flakes, hairs of infected mammals and birds, or as fungal spores in the environment.

What are the signs of ringworm?

Ringworm causes animals to have areas of thickened skin with hair loss over the head or legs. The skin may become red and hair easily breaks away.

Red circular lesions will appear, spreading outwards and can be itchy. Lesions can vary from dry to scaly and moist to crusty. Lesions will often have a central healed area surrounded by a ring of infection.

How can I protect myself?

You can get ringworm by touching the skin and hair of infected animals.

Wear disposable gloves. Wash your hands. Disinfect your workspace (refer to page 3). Avoid contact between affected skin, hair and edible meat.

If you become infected, you can spread ringworm to your family.

Can I eat the meat?

Ringworm only occurs in the skin and does not affect the meat.

Wash your hands with soap and water.

Samples to collect

Submit whole carcass or the portion of hide with affected area.



**CAN INFECT
PEOPLE**



**CAN INFECT
DOGS**



Sarcoptic Mange

What causes sarcoptic mange?

Sarcoptic mange is caused by a parasitic mite called *Sarcoptes scabiei*. Microscopic mites are related to spiders and ticks.

Where does sarcoptic mange occur?

Sarcoptic mange typically infects foxes, wolves, coyotes and dogs.

What are the signs of sarcoptic mange?

Sarcoptic mange affects animals in varying degrees – from hair loss on the legs and tail to hair loss over most of the body in severe cases. Some animals may appear to have thickened skin. Badly affected animals are in poor body condition.

Animals may appear weak and are fearless of people.

How can I protect myself?

Although the risk of infection is low, humans can get sarcoptic mange. Infections are rare and short lived. Mild symptoms include itchy red skin and rashes. This can be resolved if treated.

Wear disposable gloves and long sleeved clothing. Wash your hands.

Disinfect your workspace, tools and equipment after skinning and handling infected animals (refer to page 3).

Shower and wash your clothing after handling wildlife.

Can I eat the meat?

Meat from infected foxes, wolves and coyotes is suitable for human consumption.

Samples to collect

Collect whole carcass.



CAN INFECT
PEOPLE



CAN INFECT
DOGS



Warbles

What causes warbles?

Warbles are parasitic larvae of the warble fly.

The adult fly lays eggs on the hairs of the caribou's legs and lower body. The larvae hatch, enter the skin and travel under the skin to the caribou's back. The warbles grow there until early summer, when they break through the skin and drop to the ground.

Where do warbles occur?

In the NWT, warble fly larvae are very common in caribou and reindeer.

What are the signs of warbles?

Caribou usually appear healthy, although animals with heavy infections may be weak.

While laying their eggs, warble flies can harass caribou and interfere with feeding.

Warble fly larvae are found under the skin on the caribou's back.

Larvae are yellowish-white, oval grubs about 2.5 cm long.

There is often swelling and fluid in nearby tissue.

The number of warbles can range from 1 to over 100 on an animal.

How can I protect myself?

You cannot be infected by warble flies or their larvae.

Can I eat the meat?

Meat from affected animals is suitable for human consumption.

Warbles in caribou reduce the quality of both hide and carcass.

Samples to collect

Larvae of the warble fly.



Shelly Colabakie Asst. Cave Ecologist Missouri Dept. of Conservation

White-nose Syndrome

What causes white-nose syndrome?

White-nose syndrome is caused by the fungus *Pseudogymnoascus destructans* and affects hibernating bats.

Where does white-nose syndrome occur?

Pseudogymnoascus destructans grows at cool temperatures and affects bats where they hibernate, such as in deep caves and mines. It is commonly spread from bat to bat, but can also be spread from cave to cave by humans that carry the fungus on their boots, equipment and clothing.

White-nose syndrome was first documented in New York in 2006 and has spread rapidly across the eastern United States and Canada. As of March 2014 it was as far west as Oklahoma and Ontario. It was also documented in one spot in the western United States in the summer of 2016, but it is not yet in western or northern Canada. A current map of the white-nose syndrome is available at www.whitenosesyndrome.org.

What are the signs of white-nose syndrome?

White-nose syndrome is a distinctive white fungus on a bat's muzzle and wings. Infected bats show lesions consistent with the disease, including damage or scarring of the wing membranes.

Bats with white-nose syndrome show loss of body fat and unusual behaviour during winter, including flying outside in the day. Bats with white-nose syndrome typically die of the disease. Bats have been found sick and dying in unprecedented numbers in and around caves and mines in affected areas.

How can I protect myself?

White-nose syndrome is not thought to be a human health issue.

To avoid disturbing bats and potentially spreading white-nose syndrome, avoid entering caves and abandoned mines where bats may be hibernating.

Those entering caves and abandoned mines should follow strict disinfection guidelines to reduce the risk of spreading the disease (www.whitenosesyndrome.org/topics/decontamination). This includes disinfecting all equipment and clothing after entering a cave and not using the same equipment at different sites.

Under no circumstances should clothing, footwear or equipment that was used in a confirmed or suspected white-nose syndrome-affected region be used in the NWT.

Bats can carry other infectious diseases and should not be handled or touched. Anyone bitten or scratched by a bat should immediately seek medical consultation.

Samples to collect

Take a photo of the bat and report any sightings to your nearest Renewable Resource Officer.



Winter Ticks

What causes ticks?

Winter ticks (*Dermacentor albipictus*) are small spider-like parasites that live on an animal's skin and suck its blood.

Where do ticks occur?

In the NWT, winter ticks occur occasionally in moose in wooded areas. These ticks have been also found on wapiti (elk), boreal caribou and deer.

What are the signs of ticks?

Ticks are brown and oval-shaped and have eight legs.

They are small (4-5 mm), but can grow 2-3 times bigger when filled with blood.

Ticks are most often found on the neck, shoulders and back, and sometimes on the stomach and around the anus.

The larval form of the tick grows on moose over the winter. By late winter, heavily infected animals may be very thin and large areas of their hair coat may be rubbed off.

Moose can carry thousands of ticks, causing weakness through loss of blood and skin irritation.

Lymph nodes under the skin may be swollen.

How can I protect myself?

People are not a normal host for winter ticks.

However, tick bites may occur through direct contact with ticks.

Remove any ticks that may get on you or your clothing.

Can I eat the meat?

Meat from affected animals is suitable for human consumption.

Heavy tick infestations on moose can reduce the quality of both the hide and the meat.

Samples to collect

Ticks.



Nose Bots

What causes nose bots?

Nose bots are caused by the larvae of the bot fly.

The adult female bot fly leaves larvae in the nostrils of caribou. Nose bot larvae attach and grow in a cluster in the caribou's throat near the base of the tongue. The larvae are sneezed out in the spring.

Where do nose bots occur?

Nose bots are commonly found in barren-ground caribou in the NWT.

What are the signs of nose bots?

Caribou usually appear healthy.

When laying their eggs, bot flies can harass caribou and interfere with feeding.

Nose bot larvae are found in the sinuses and airways at the back of the throat.

The worm-like larvae are white when they begin to develop, but grow to 2-4 cm in length over the winter and become yellowish-brown.

How can I protect myself?

You cannot be infected by nose bot flies or their larvae.

Can I eat the meat?

Meat from affected animals is suitable for human consumption.

Samples to collect

Larvae of the bot fly.



Lumpy Jaw

What causes lumpy jaw?

Lumpy jaw is caused by bacteria normally found in the mouths of healthy animals.

The bacteria can enter through wounds in the mouth, which can be caused by coarse feed or when teeth break through the gums during development, and can occur in moose, caribou, muskox, mountain goat and Dall's sheep.

Where does lumpy jaw occur?

In the NWT, lumpy jaw occurs periodically in Dall's sheep and barren-ground caribou. The disease is known to spread between animals.

What are the signs of lumpy jaw?

Infection of the jaw bone itself causes hard swellings that can be quite large.

Swellings containing thick yellow pus (abscesses) can also be found around the mouth and jaw.

Lumpy jaw may interfere with the animal's ability to eat.

Other than the swelling on the jaw, animals may appear healthy.

How can I protect myself?

You cannot get lumpy jaw from infected animals.

Be careful not to cut into pus-filled swellings. If this happens, pus can be spread and contaminate other parts of the carcass.

Can I eat the meat?

Parts containing abscesses should not be eaten.

The remainder of the carcass is suitable for human consumption.

Samples to collect

Lower jaw and surrounding tissue.



Liver Flukes

What causes liver flukes?

Liver flukes cause abnormal changes in the tissue of the liver in caribou and moose.

Liver fluke larvae attach themselves to vegetation and are eaten by herbivores. The larvae then make their way from the stomach to the liver. As the fluke tunnels as it moves, it destroys liver tissue along the way. The liver develops a cyst around the fluke, preventing it from wandering elsewhere in the liver.

Where do liver flukes occur?

Liver flukes can occur in hoofed wildlife species found in the NWT.

What are the signs of liver flukes?

Liver flukes cause white fibrous capsules containing mature flukes, dark solid balls of eggs, blood-filled tracks and tunnels, and thin lines of black pigment embedded in the liver tissue.

Black inky fluid sometimes leaks from the cut surface of the liver.

How can I protect myself?

Liver flukes pose no threat to human health.

Can I eat the meat?

Meat from infected animals is suitable for human consumption.

Samples to collect

Portions of the liver containing cysts.



Liver Tapeworm Cysts

What causes liver tapeworm cysts?

Larvae of the tapeworm *Taenia hydatigena* cause liver tapeworm cysts.

The tapeworm needs two hosts: a carnivore (e.g. a wolf or lynx) and herbivore (e.g. caribou). The tapeworm grows and lays eggs in the intestines of the carnivore. Eggs come out in the carnivore's droppings and contaminate plants that are eaten by the herbivore. The eggs hatch into larvae that travel to the herbivore's liver where they form cysts. Carnivores become infected when they eat liver containing cysts.

Where do liver tapeworm cysts occur?

In the NWT, *Taenia hydatigena* commonly occurs in caribou and moose.

What are the signs of liver tapeworm cysts?

Animals will probably appear healthy.

In the herbivore host, the larvae form large cysts attached to the liver or the lining of the body cavity.

There also may be white, star-like scars on the surface of the liver.

How can I protect myself?

You cannot be infected by the cysts of *Taenia hydatigena*.

Cysts can easily be removed from the liver during butchering.

Can I eat the meat?

Meat from infected animals is suitable for human consumption.

Cooking will kill the parasite. If you suspect your animal has this disease do not eat the meat raw.

Dogs can be infected with tapeworms if they eat the liver cysts.

Do not feed infected parts to dogs.

Samples to collect

Cysts or affected liver tissue.



**CAN INFECT
DOGS**



**COOK
WELL**



Aspergillosis

What causes aspergillosis?

Aspergillosis is caused by a fungus found growing on dead leaves, compost piles, mold, and in other decaying vegetation.

Aspergillosis is not contagious and may be an acute, rapid fatal disease or a more chronic disease.

Where does aspergillosis occur?

Aspergillosis infects the lungs and air sacs of birds. It causes a build-up of spores in the lungs and air sacs, decreasing the ability to breathe, leading to death.

What are the signs of aspergillosis?

Birds will appear weak, emaciated, have difficulty breathing, and may fail to try to escape capture.

Infection in the brain causes loss of muscular coordination, and twisting of the head and neck so that the head is held in unnatural positions.

How can I protect myself?

Aspergillosis rarely affects people with a healthy immune system. Pulmonary aspergillosis can occur in people who have asthma or cystic fibrosis; this can also affect people with weakened immune systems. Those who have worked with aspergillosis have become allergic to it.

Can I eat the meat?

Meat from infected birds is suitable for human consumption.

Samples to collect

Collect whole carcasses and keep frozen.





Hydatid Disease

What causes hydatid disease?

Hydatid disease is caused by the larva of the tapeworm *Echinococcus canadensis* (previously known as *Echinococcus granulosus*).

The tapeworm needs two hosts: a carnivore (e.g. wolf or dog) and herbivore (e.g. caribou). The tapeworm grows and lays eggs in the intestines of the carnivore. The eggs come out in the carnivore's droppings and contaminate plants which are eaten by the herbivore. The eggs hatch into larvae that travel to the herbivore's lungs where they form cysts. Carnivores become infected when they eat lungs that contain cysts.

Where does hydatid disease occur?

The adult tapeworm lives in wolves and dogs without causing any harm. The larval form or cyst occurs in moose, caribou, bison, wapiti (elk) and deer, and can occur in humans, but in the NWT, hydatid disease occurs commonly in moose and caribou.

What are the signs of hydatid disease?

Animals usually appear healthy and do not show any signs of disease.

In moose and caribou, the cysts have thick walls and are filled with a clear, watery liquid.

Cysts are usually found in the lungs, but can also occur in the liver or other organs.

Cysts can be 2-20 cm in diameter, but most are 2-6 cm.

The surrounding tissue is usually normal.

How can I protect myself?

You can be infected from tapeworm eggs found in the droppings of wolves and dogs.

Wear gloves when handling scats from wolves or foxes.

The lung cysts in moose and caribou do not infect people.

Can I eat the meat?

Meat from infected animals is suitable for human consumption.

Do not eat any tissues or organs containing cysts.

Dogs and wolves can be infected from eating infected meat, and spread the disease to people.

Do not feed infected parts to dogs.

Samples to collect

Portions of tissue containing cysts.



CAN INFECT
PEOPLE



CAN INFECT
DOGS



Muskox Lungworm

What causes muskox lungworm infections?

Muskox lungworm is caused by a roundworm called *Umingmakstrongylus pallikuukensis*.

The lungworm needs two hosts: a muskox and a gastropod (snail or slug). Adult worms are found in the lungs of the muskox, where they lay eggs that hatch into larvae. The larvae are coughed up, swallowed and passed in the muskox's droppings. The larvae are taken up by snails, where they develop into an infective stage. The snails are eaten by muskoxen when feeding on plants. The larvae penetrate the intestines of the muskox and travel to the lungs, where they develop into adult worms.

Where do muskox lungworm infections occur?

This lungworm has been found in muskoxen in areas northeast of Great Bear Lake and on Victoria Island.

What are the signs of lungworm infection?

Muskoxen usually appear healthy.

Older muskoxen that are heavily infected by lungworms tire more easily, may have difficulty breathing and cannot run well.

There may also be slight bleeding from the nose after an animal has been running.

Adult lungworms and their eggs and larvae are found in large (1-4 cm), well-defined cysts in the lungs.

Heavily infected muskoxen may have over 100 of these cysts in one lung.

How can I protect myself?

You cannot become infected by muskox lungworms.

Can I eat the meat?

Meat from infected animals is suitable for human consumption.

Samples to collect

Adult worms and/or parts of lungs with cysts, droppings.



Thread Lungworms

What causes lungworms infections?

A variety of roundworm parasites are known as “lungworms” (e.g. *Dictyocaulus*, *Protostrongylus* spp.).

Adult worms are found in the lungs, where they lay eggs that hatch into larvae. The larvae are coughed up, swallowed and passed in the animals’ droppings. In some lungworms, the larvae are taken up by a snail or slug, where they develop into an infective stage. The snails are then eaten by herbivores when feeding on plants. The larvae penetrate the animal’s intestines and travel to the lungs, where they develop into adult worms. Other lungworms do not need a snail or slug host. The larvae develop into the infective stage on plants that are then eaten by the herbivore.

Where do lungworm infections occur?

In the NWT, a number of different lungworms commonly occur in caribou and muskox, and can also be found in bison, Dall’s sheep and snowshoe hare.

What are the signs of lungworm infection?

Animals often appear healthy.

Animals with severe infections may cough and have difficulty breathing, especially after running.

They may be generally weak and thin, and have a harsh, dull hair coat.

When butchering, you may find adult worms or small round gray lumps of dead tissue up to 2 cm in diameter in the lungs.

Lungworms are white, thread-like worms that range in size from 1-8 cm long.

How can I protect myself?

You cannot become infected by lungworms.

Can I eat the meat?

Meat from infected animals is suitable for human consumption.

Samples to collect

Worms and/or parts of lungs with cysts, droppings.



Tuberculosis (TB)

What causes tuberculosis?

Tuberculosis is caused by bacteria (*Mycobacterium bovis* and *M. avium*) and is spread by direct contact with material coughed up by infected animals and birds.

Where does tuberculosis occur?

In the NWT, tuberculosis is found in wood bison in Wood Buffalo National Park and the Slave River Lowlands, but can also be in a wide variety of birds and animals, including humans.

What are the signs of tuberculosis?

In bison, tuberculosis usually affects the lungs, causing difficulty breathing, coughing and discharges from the mouth or nose.

Small, pale rounded lumps can form in the lungs or on the lining of the ribcage, or in other organs like the liver, kidneys, spleen, windpipe and the associated lymph nodes (glands).

There may be one or many lumps and they may vary in size.

They may appear in only one or in many organs.

How can I protect myself?

You can get tuberculosis by eating contaminated meat that has not been cooked well or by inhaling bacteria from open wounds, droppings or discharge from the nose and mouth of infected animals.

Lungs or other infected areas and lymph nodes should be handled with care, preferably with protective gloves.

Butcher the animal carefully and do not cut into infected parts.

Wash your hands, knives and clothes with hot, soapy water after handling the animal.

Report any animals suspected of having tuberculosis to your local Renewable Resource Officer.

Can I eat the meat?

Do not eat any affected parts.

If the disease is wide-spread within the body, the animal should not be used for human consumption.

Thorough cooking will kill the bacteria.

Freezing, smoking, drying and pickling will not kill the bacteria.

Do not feed infected parts to dogs.

Samples to collect

Infected organ (including lymph nodes, if possible).





Muscle Tapeworm

What causes muscle tapeworm?

Larvae of the tapeworm *Taenia krabbei* cause muscle tapeworms.

The tapeworm needs two hosts: a carnivore (e.g. wolf or dog) and a herbivore (e.g. caribou). The tapeworm grows and lays eggs in the intestines of the carnivore. Eggs come out in the carnivore's droppings and contaminate plants that are eaten by the herbivore. The eggs hatch into larvae that travel in the blood to other parts of the herbivore's body where they form cysts in the muscle. Carnivores become infected when they eat meat with cysts.

Where does muscle tapeworm occur?

In the NWT, the adult tapeworm occurs in wolves, lynx, bears and dogs without causing any harm. The larval stage occurs in caribou and moose.

What are the signs of muscle tapeworm cysts?

Animals will probably appear healthy.

In the herbivore host, cysts are whitish or yellowish-white, round and about 5 mm in diameter.

Cysts generally occur in both muscle and the heart, but may also occur in unusual sites.

Surrounding tissues are usually normal.

How can I protect myself?

You cannot be infected by the muscle cysts of *T. krabbei*.

Cysts can be easily removed during butchering.

Can I eat the meat?

Meat from infected animals is suitable for human consumption.

Thorough cooking will kill the parasite.

Do not feed infected parts to dogs.

Samples to collect

Portions of muscle containing cysts.



CAN INFECT
DOGS



COOK
WELL

Trichinosis

What causes muscle tapeworm cysts?

Trichinosis is caused by a roundworm called *Trichinella nativa*.

The larvae of the roundworm grows and mates in the intestines of the host animal. The females deposit larvae that travel in the blood to other parts of the body where they form cysts in the muscle. Animals become infected when they eat meat with cysts.

Where do muscle tapeworm cysts occur?

Trichinosis occurs in bears (black, grizzly and polar bears), wolves, foxes (Arctic and red), wolverine, lynx, walruses, seals, and ground squirrels. Humans and dogs can also get trichinosis by eating infected meat.

What are the signs of trichinosis?

Animals may appear healthy.

Trichinosis is hard to detect when butchering because there are few signs.

Larvae form cysts usually in the muscles of the jaw, tongue and diaphragm.

Cysts may not be visible to the naked eye.

Animals may have swollen intestines with small bruises.

Affected muscles and associated lymph nodes (glands) can be soft and swollen.

How can I protect myself?

You can get trichinosis by eating meat from infected animals that has not been thoroughly cooked.

All bear, walrus and wolf meat should be considered possibly infected.

Can I eat the meat?

Meat should be well cooked (internal temperature of meat should be at least 72°C or 160°F).

Freezing, smoking, drying, salting and microwaving may not kill the larvae.

Do not feed infected parts to dogs.

Samples to collect

Tongue and jaw muscles, diaphragm.

A large sample of muscle (at least 100 g) is required for analysis.





Sarcocystosis

What causes sarcocystosis?

Sarcocystosis is caused by the cyst stage of a single-celled parasite.

The parasite needs two hosts: a herbivore (e.g. caribou) and a carnivore (e.g. a wolf). The carnivore becomes infected when it eats meat from a herbivore with cysts. The parasite reproduces in the carnivore's intestine without harming the animal. It comes out in the carnivore's droppings and contaminates plants that are eaten by herbivores.

Where does sarcocystosis occur?

In the NWT, sarcocystosis occurs commonly in barren-ground caribou, but can be found in many other ungulate species.

What are the signs of sarcocystosis?

Animals usually appear healthy.

When butchering infected caribou, cysts may be found in muscle tissue.

Cysts may look like grains of rice (whitish streaks) running in the direction of muscle fibres.

They may not be visible (usually less than 1 mm long), but can reach 5 mm in length and be seen in the meat.

Larger cysts may lie loose in the connective tissue surrounding muscle and can be oval or globular in shape.

Animals may have swollen muscles with greenish cigar-shaped areas up to several centimeters in diameter caused by decomposing cysts.

How can I protect myself?

You cannot be infected by the cysts of *Sarcocystis* spp. in meat.

The form of the parasite found in carnivore droppings may be infectious. Use caution if handling carnivore droppings to prevent accidental exposure.

Can I eat the meat?

Meat from infected animals is suitable for human consumption.

Cooking will kill the parasite.

Do not feed infected meat to dogs.

Samples to collect

Heart, tongue, diaphragm and skeletal muscles.



CAN INFECT
DOGS



COOK
WELL



Abscesses

What causes abscesses?

An abscess is a pocket of pus in an animal's tissue. They are usually caused when a wound becomes infected.

Where do abscesses occur?

They may occur in any species of animal and can be found anywhere on the body, in muscle or other tissue.

What are the signs of abscesses?

Animals usually appear healthy and may not show any signs of disease.

Most abscesses are found while butchering.

Usually, they are firm lumps of white fibrous tissue filled with thick white, yellow or green pus.

How can I protect myself?

Be careful not to cut into an abscess. If this happens, pus can be spread and contaminate other parts of the carcass. Refer to page 3 to clean tools, equipment and work station.

Can I eat the meat?

Portions of meat containing abscesses should not be eaten.

The rest of the carcass can be used for human consumption.

Samples to collect

Abscess and surrounding tissue.



Anthrax

What causes anthrax?

Anthrax is a disease caused by the bacterium *Bacillus anthracis*. It is generally a disease of ungulates (hoofed animals), where it is usually rapidly fatal. Anthrax can infect any mammal, but in the NWT, it occurs almost exclusively in bison.

Where does anthrax occur?

Anthrax outbreaks have occurred in the Slave River Lowlands, Wood Buffalo National Park (WBNP) and the Mackenzie bison range. All outbreaks in bison in the NWT have happened between June and August. Bison of all ages and sex classes die of anthrax, but generally, more mature and subadult males die than any other class.

What are the signs of anthrax?

Bison with anthrax may appear sluggish, depressed or indifferent, and unwilling to move. They may stagger, walk with a stiff-legged gait or limp. They may have swellings on various parts of their body, and may have blood or other fluid discharge from body openings. Bison usually die within a few days of getting anthrax. Carcasses are typically found on their side with their legs straight out in a saw-horse position. Anthrax killed animals tend to bloat with gas and decompose quickly.

How can I protect myself?

You can get anthrax through contact with infected animals, and especially through fluids that leak from carcasses. The bacteria can enter through cuts or scratches in your skin or through your eyes, nose or mouth. You can also get anthrax by inhaling spores from contaminated objects or by eating undercooked meat from an infected animal.

Do not approach bison suspected of having anthrax or animals that may have died of the disease.

Any person who may have been exposed to anthrax should call the local nursing station or hospital immediately.

Report any sick animals or dead bison to your local Renewable Resource Officer or regional biologist immediately.

Can I eat the meat?

No. Do not eat meat from an infected animal and do not feed infected meat to dogs.

Samples to collect

Do not approach any animal suspected of having or that may have died of anthrax. If you see sick or dead bison, report them to the nearest Renewable Resource Officer as soon as possible. Avoid opening the carcass and do not attempt to collect samples. Opening anthrax-killed carcasses increases the formation of resistant spores and helps spread them in the area.



**CAN INFECT
PEOPLE**



**CAN INFECT
DOGS**



**DO NOT
EAT**



Avian Pox

What causes avian pox?

Avian pox is a highly contagious, mild to severe, slow-developing disease of birds caused by several different strains of avipoxvirus. This virus is transmitted by mosquitoes, direct contact with infected birds, and virus contaminated surfaces (entry through chafed skin).

Where does avian pox occur?

Avian pox is resistant to drying and can be transmitted by contaminated dust, food, perches, cages and clothing.

What are the signs of avian pox?

The birds may appear weak, skinny or have difficulty swallowing and breathing, vision problems, soiled facial feathers and wart-like growths.

Avian pox can appear in two forms: external warty nodules and an internal form that affects the mucous membranes of the digestive and respiratory tract.

How can I protect myself?

Avian pox poses no threat to human health.

Use general safety precautions when handling carcasses.

Can I eat the meat?

Meat from infected birds is suitable for human consumption.

Thorough cooking of the bird will kill the virus.

Samples to collect

Collect whole carcass and keep frozen.





Besnoitiosis

What causes besnoitiosis?

Besnoitiosis is caused by an intracellular parasite (*Besnoitia tarandi*).

The parasite needs both a herbivore (e.g. caribou or muskox) and a carnivore (e.g. wolf) host. The parasite multiplies in the herbivore, forming cysts that contain many spores. A carnivore becomes infected when it eats meat from a herbivore with cysts. The parasite comes out in the carnivore's droppings and contaminates plants that are eaten by herbivores.

Where does besnoitiosis occur?

In the NWT, besnoitiosis commonly occurs in caribou, but can be found in muskoxen and other ungulates (hoofed animals).

What are the signs of besnoitiosis?

Animals usually appear healthy.

Heavily infected animals may lose hair on their lower legs and face, and skin may be thick.

Besnoitiosis can be most easily identified when skinning the lower legs.

Cysts are hard and feel like a slight roughness (sand paper) over the bone and skin.

Cysts appear as very small, round, clear to white lumps (like grains of corn meal) embedded in tissue.

Similar tiny cysts may be visible on the eye.

How can I protect myself?

You cannot get besnoitiosis from infected animals.

Can I eat the meat?

Meat from infected animals is suitable for human consumption.

Cook meat well.

Samples to collect

Lower front leg or affected tissues.



**CAN INFECT
DOGS**



**COOK
WELL**



Brucellosis

What causes brucellosis?

Brucellosis is a highly contagious disease caused by bacteria called *Brucella suis* type 4 (in caribou, reindeer) and *Brucella abortus* (in bison). *Brucella suis* has also been seen in muskoxen and moose. It is spread in the afterbirth and fluids during calving.

Where does brucellosis occur?

Brucella abortus occurs in bison in Wood Buffalo National Park and the Slave River Lowlands northeast of the park. These infected bison are a potential source of infection to the healthy wood bison in the Mackenzie Bison Sanctuary and Nahanni herd. Humans can be infected by both types of *Brucella*.

What are the signs of brucellosis?

Animals may appear healthy and do not show any signs of disease.

Brucellosis usually affects the reproductive organs and leg joints.

Often, animals will have swollen leg joints causing limping or lameness (especially in the front legs).

When butchering, you may find pus-filled swellings under the skin, in the meat or in the internal organs.

The testicles or womb may be swollen.

How can I protect myself?

You can get brucellosis through exposure to contaminated parts. The bacteria can enter through cuts or scratches in your skin or through your eyes, nose or mouth. You can also get brucellosis by eating infected meat that has not been fully cooked.

Do not cut into diseased parts.

Do not spill fluid from the womb onto the meat.

Use extreme care when handling any fetal membranes or aborted tissues.

Wash your hands, knives and clothes with hot, soapy water after handling the animal.

Report any animals suspected of having brucellosis to your local Renewable Resource Officer or regional biologist.

Can I eat the meat?

Meat from animals with brucellosis should be thoroughly cooked.

Freezing, smoking, drying and pickling do not kill *Brucella*.

Raw bone marrow from infected animals can contain the bacteria.

Do not feed diseased parts to dogs.

Samples to collect

Swollen joints and other infected areas.



**CAN INFECT
PEOPLE**



**CAN INFECT
DOGS**



**COOK
WELL**



Game Warden Mike Hopper
Kansas Department of Wildlife, Parks and Tourism

Chronic Wasting Disease (CWD)

What causes chronic wasting disease?

Chronic wasting disease (CWD) is a progressive, fatal disease of the nervous system of deer, moose, elk and, potentially, caribou. CWD is caused by a prion (an abnormal form of a normal protein), found in the central nervous system, accumulating in the brain.

Where does chronic wasting disease occur?

Although this disease has not been found in the NWT, we are doing surveillance to confirm that it is not present. CWD is present in free-ranging deer in some areas of Alberta and Saskatchewan.

What are the signs of CWD?

CWD is a progressive and fatal disease. An animal shows signs of weight loss over time, behavioural changes, inactivity, lowering of the head (head tremors), blank facial expression, repetitive walking in a set pattern, drooling and grinding of the teeth. The meat of the animal smells like it is starting to rot.

CWD can be transmitted by direct contact (animal to animal) or by environmental conditions (contact with feces, urine or by contaminated water by infected saliva).

How can I protect myself?

Wear gloves when field-dressing carcasses, bone-out the meat from the animal, and minimize handling of the brain and spinal cord tissues.

Thoroughly wash your hands and equipment in warm, soapy water after field dressing is completed.

Do not consume the brain and spinal cord of harvested animals.

Can I eat the meat?

It is not recommended to consume the meat of infected animals.

Samples to collect

Report all sightings of possible infected animals to a Renewable Resource Officer or regional biologist.

If an animal is harvested and CWD is suspected, submit the head of an animal for testing.



**DO NOT
EAT**



Dirofilaria

What causes dirofilaria?

Dirofilaria, *Dirofilaria immitis*, is a roundworm transmitted by black flies.

Where does dirofilaria occur?

Dirofilaria can be found in the abdominal cavity and under the skin of bears. Microscopic worms are found in the blood. This worm is considered to be harmless.

What are the signs of dirofilaria?

Dirofilaria infection signs include single or multiple bumps under the skin usually in the chest or head region, fever, redness around the bumps and anorexia.

How can I protect myself?

It is unlikely that dirofilaria would cause any adverse reaction in humans.

Can I eat the meat?

Meat from infected animals is suitable for human consumption.

Samples to collect

Submit samples of tissue containing parasites.



CDC, J.B. M.J. Mahy, B.Sc, MA, PhD, ScD, DSc

Distemper

What causes distemper?

Distemper is transmitted between animals through the air by breathing in the virus from discharges of other infected animals (i.e. coughing). Infected animals may shed the virus for months, but the virus cannot survive for very long in the environment.

Where does distemper occur?

Distemper is a disease affecting bears (black, grizzly, polar), dogs, coyotes, foxes, wolves, and mustelids like mink, marten, otter, weasel, fisher and wolverine.

Distemper is not a seasonal disease, but can be found in wildlife year round.

What are the signs of distemper?

Distemper initially causes lung infections. The virus can spread throughout the body to other organs (intestinal tract, kidneys and nervous system).

Symptoms of the disease include signs of respiratory infection, such as discharge from the nose as well as eyes. Affected animals usually appear depressed and may have diarrhea. If the disease persists, the animal may develop thickening of the pads of the feet or nose.

Those that recover from the first stage of the disease will show neurological signs (muscle twitching, weakness, paralysis or seizures). Other symptoms include lack of coordination, circling or head pressing.

Animals may show little fear of humans, walk in circles, stagger or have convulsions.

Animals that survive this disease are likely immune for the rest of their life.

How can I protect myself?

Distemper poses no threat to human health.

Note: The sign of rabies can be mistaken for distemper. Use caution when handling carcasses. Wear rubber gloves. Testing should also be conducted for rabies if you are unsure.

Can I eat the meat?

Meat from infected wolves, foxes and coyotes is suitable for human consumption.

Samples to collect

Collect whole carcasses and keep frozen.



**CAN INFECT
DOGS**



Erysipelas

What causes erysipelas?

Erysipelas is a disease caused by the bacterium *Erysipelothrix rhusiopathiae*.

Where does erysipelas occur?

The bacterium is found around the world and affects a range of bird and mammal species. It has recently been detected for the first time in muskoxen in the NWT.

What are the signs of erysipelas infection?

Sudden death due to blood infection can occur.

Lesions may include areas of blood loss on the skin and the surface of internal organs. Infection of the head or joints can also occur.

Animals may be found dead.

How can I protect myself?

While it is rare, humans can get infected with erysipelas through contact with infected animals.

The bacteria can enter through cuts and scrapes in the skin and can cause localized skin infections with large raised red patches as well as painful and itchy hands. Infection is generally mild and can be treated by antibiotics.

Can I eat the meat?

Meat from any diseased muskoxen suspected of having erysipelas should not be eaten. Hunters should avoid areas where sick animals are seen and should not harvest animals that are noticeably sick or dying.

Sample to collect

Any dead or dying animals suspected to have erysipelas should not be handled. Report any dead or dying muskoxen to your local Renewable Resource Officer or regional biologist.



**CAN INFECT
PEOPLE**



**COOK
WELL**



Exertional Myopathy

What causes exertional myopathy?

Exertional myopathy is a muscle disease that can occur when wild animals are excessively chased, handled or stressed.

Where does exertional myopathy occur?

It is most commonly seen in caribou, muskoxen and other ungulates (hoofed animals), but has been reported in a wide variety of wild animals and birds.

What are the signs of exertional myopathy?

Animals may appear depressed, weak and stiff.

The muscles, heart and kidney are usually affected, but signs may be difficult to see.

There may be a difference in the colour and texture of muscle groups.

Early in the disease, affected muscles may look wet and have small bruises.

Later, the muscle becomes pale, dry and very soft.

In severe cases, entire muscles may be torn.

The heart muscle may have pale areas or streaks.

Lungs are usually dark and wet.

In bad cases, the bladder may contain red-brown urine and kidneys may be dark brown.

Can I eat the meat?

Meat from affected animals is suitable for human consumption.

Exertional myopathy may cause muscle changes that decrease the quality of the meat.

Samples to collect

Portions of muscle from several different areas of the body as well as sections of the heart and kidney.

These samples should not be frozen. Keep cool and take them to your local Renewable Resource Officer.



Giardia

What causes giardia?

Giardia is a microscopic parasite that causes diarrhea.

Where does giardia occur?

Giardia is found on the surfaces or in soil, food or water that has been contaminated with feces from infected animals.

Giardia can infect a wide variety of wildlife species, including mice, muskrat, beavers, shrews, moose, caribou, muskox, Dall's sheep, mountain goat, wolves, foxes, coyotes, bears and lynx.

What are the signs of giardia?

Infected wildlife may not show any signs.

Symptoms of giardia include: diarrhea, gas, greasy stools that tend to float, abdominal discomfort, nausea, vomiting and dehydration.

How can I protect myself?

Although the risk of infection is low, humans can get giardia. Wash your hands thoroughly with soap and water. Dry your hands with a clean towel or air dry them.

Wearing gloves, disinfect your workspace, tools and equipment (refer to page 3).

Can I eat the meat?

Thoroughly boil all water and cook meat well if giardia is suspected.

Samples to collect

Fecal and water samples.



**CAN INFECT
PEOPLE**



**CAN INFECT
DOGS**



**COOK
WELL**



Injuries

What causes injuries?

Injuries are quite common in wild animals. Animals can often survive even with bad injuries like broken bones.

There are four major causes of injuries in wild animals and birds:

- vehicle collisions
- fighting within a species
- predation
- gunshot wounds

What are the signs of injuries?

Vehicle collisions:

Most animals and birds hit by vehicles are killed immediately, although some may survive.

The most common collisions in the NWT occur with bison on Highway #3 between Fort Providence and Yellowknife.

Fighting within a species:

Serious injuries caused by fighting between animals of the same species are uncommon. Occasionally, dead animals are found with gore wounds (e.g. bison) or bite wounds (e.g. wolves) on the throat and neck.

Predation:

Wounds are usually found on the hind legs, neck and head, and sometimes on the flank.

There is usually a lot of blood that collects under the skin and extends for some distance in one direction from wound.

Teeth marks may not go all the way through the hide, but there is usually a bruise or bleeding in the skin at the site.

The animal may also have had a disease that allowed it to be more easily killed by a predator.

Predators may also be injured while hunting for food. Wolves have been found with healed broken ribs and cracked skulls that they probably got when attacking large animals, such as caribou.

Gunshot Wounds:

Most animals that are wounded during hunting die from their wounds. Animals with “old” gunshot wounds are not often seen.

Gunshot wounds, particularly those from low calibre weapons, may be difficult to see through the animal’s hair. They are more visible on the flesh side of the hide.

Can I eat the meat?

Unless some other condition is present, meat from affected animals is suitable for human consumption.

Any of these injuries might reduce meat quality.

Samples to collect

Portions of affected tissue.



Parvovirus

What causes parvovirus?

Parvovirus is a disease affecting dogs, coyotes, foxes and wolves.

Parvovirus is transmitted between animals by oral contact with fecal material from infected animals. Infected animals shed the virus in their feces for approximately two weeks and the virus can survive in the environment for a very long time.

Where does parvovirus occur?

Parvovirus can infect wolves, foxes, coyotes, wolverine, river otter, marten, fisher, ermine, weasel, mink and bears. Parvovirus is found worldwide and is most often found in late spring or early summer when there is an abundance of susceptible animals.

What are the signs of parvovirus?

Parvovirus can cause an intestinal infection resulting in severe dehydration and often vomiting. The diarrhea typically contains blood and has a very characteristic odor. Affected animals will not eat, are extremely weak and usually have vomiting and diarrhea. Death often follows as a result of dehydration, shock and secondary infections.

Foxes, coyotes and wolves found dehydrated with fecal material on their hindquarters may have been affected by parvovirus.

How can I protect myself?

Parvovirus poses no threat to human health.

Can I eat the meat?

Meat from infected foxes, coyotes and wolves is suitable for human consumption.

Samples to collect

Collect whole carcass and keep frozen.



**CAN INFECT
DOGS**



Rabies

What causes rabies?

Rabies is caused by a virus spread in the saliva of infected animals. All warm-blooded mammals and birds can be infected.

Where does rabies occur?

In the NWT, rabies regularly occurs in Arctic foxes. Rabies has also been found in dogs, red foxes, wolves, caribou, and grizzly and polar bears. Humans can also get rabies.

What are the signs of rabies?

Animals may act differently than normal.

Wild animals often lose their fear of humans and may become vicious and attack for no reason.

Animals may have a dropped jaw and appear to be “foaming at the mouth”.

Rabid animals may also appear weak or paralyzed.

How can I protect myself?

All hunters and trappers should receive pre-exposure treatment against rabies. This consists of three rabies vaccinations over a 3-4 week period.

You can get rabies if you are bitten or licked by an infected animal or if saliva from an infected animal comes into contact with your skin, eyes, nose, lips, cuts or scratches.

Rabies can be fatal for humans and signs may be undetectable for weeks or months.

Do not go near an animal that you think has rabies.

Any person exposed to an animal that may have rabies should immediately contact the local nursing station or hospital.

Report any animals suspected of having rabies to your local Renewable Resource Officer, Bylaw Officer or the RCMP.

If you must kill an animal that you think has rabies, do not shoot it in the head. Do not handle the animal without gloves and keep it away from other animals and humans.

Can I eat the meat?

Do not eat meat from an animal that is suspected to have rabies.

Do not feed the meat to dogs.

Samples to collect

Do not collect samples yourself.

Immediately contact your local Renewable Resource Officer, Bylaw Officer or the RCMP.



**CAN INFECT
PEOPLE**



**CAN INFECT
DOGS**



**DO NOT
EAT**



Ranavirus

What is ranavirus?

Ranavirus is a highly infectious disease causing die-offs in larval and adult frogs. Ranavirus is not limited to amphibians (e.g. toads, frogs, salamanders), but can also be found in reptiles (e.g. snakes, lizards) and fish.

Where does ranavirus occur?

The presence of ranavirus has been confirmed in the NWT for some amphibians in localized areas.

What are the signs of ranavirus?

Amphibians show signs of weakness, loss of weight, reddening of the lower belly and lower limbs, and loss of digits. In tadpoles, the tail can be affected and it can be partially lost or have broken blood vessels on it. In some cases, the tadpoles will spend more time near the surface of the water.

Ranavirus can be transmitted either by contact between individuals or contaminated water and through ingestion of infected materials. It can seriously affect amphibian populations and steps should be taken to prevent accidental human spreading among ponds.

How can I protect myself?

Ensure all equipment is disinfected and fully dry before using at another site. Pay particular attention to nets, buckets and any other items that come into direct contact with amphibians. Avoid holding large numbers of amphibians together in common buckets or coolers as this will rapidly spread disease among all amphibians in the holding containers.

Footwear and clothing should also be cleaned and fully dried before using at another site. Soak footwear, free of organic material, in a disinfectant such as 6% bleach. Rinse with clean water and allow to dry. For clothing, wash in hot water with detergent.

Can I eat the meat?

Ranavirus pose no threat to human health.

Samples to collect

Collect whole carcass and keep frozen.



Starvation or Malnutrition

What causes starvation-malnutrition?

Starvation or malnutrition occurs when an animal is not able to get the right amount or types of nutrients it needs from the food. Starvation and malnutrition can affect any wildlife species and usually affects young, old, weak or sick animals.

Where does starvation-malnutrition occur?

There may not be enough food available, or the animal may not be able to reach or get nutrients from food because of environmental factors (e.g. deep snow or a hard crust) or physical problems (e.g. injury, disease, parasites, poor teeth).

What are the signs of starvation-malnutrition?

Animals may be weak with not much body fat.

The skin may appear loose with a dull, rough hair coat.

Animals may have humped or sagging backs, sunken eyes and small, tucked up bellies.

The bones of the shoulders, ribs, back and hind end may stick out.

When butchering, you may notice a lack of fat under the skin, around the heart, kidneys and other organs, and in the bone marrow (e.g. thigh bone).

The marrow of a starving animal may be a red or yellow, jelly-like liquid. Bone marrow from a healthy animal is usually solid, white and waxy.

Muscles and organs such as the liver may have shriveled.

The intestines and stomach may not contain much food, or may be full of dry, poor quality food.

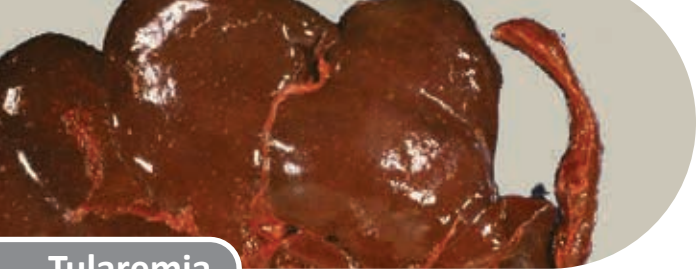
Can I eat the meat?

Meat from affected animals is suitable for human consumption.

Starvation and malnutrition may decrease the quality of the meat.

Samples to collect

Femur (thigh bone). The easiest way to tell if an animal has died of starvation is to measure the amount of fat in the marrow of the femur.



Tularemia

What causes tularemia?

Tularemia is an infection common in wild rodents (e.g. voles, mice, muskrat, beaver, rabbits). Tularemia is caused by a bacterium called *Francisella tularensis*. The bacteria can remain alive for weeks in water and soil.

Where does tularemia occur?

Tularemia can be passed to humans by a bite from a tick, through handling infected animals, eating or drinking contaminated food or water and breathing in the bacteria *F. tularensis*.

What are the signs of tularemia?

Animals may become lethargic or depressed and have high body temperatures. Tiny, pale spots on the liver, spleen or lung are typical lesions of tularemia. The spleen or liver may become enlarged. Muskrat are often found dead.

Signs in humans consist of chills, eye irritation, fever, headache, joint stiffness and muscle pains, red spots on the skin growing to become a sore (ulcer), shortness of breath, sweating and weight loss. A person can develop pneumonia after breathing in infected dirt or plant material.

How can I protect myself?

Use insect repellent prior to heading outdoors.

Wear gloves when handling sick or dead animals.

Wash your hands using soap and warm water after handling animal carcasses.

Ensure your drinking water is from a safe source.

Can I eat the meat?

Cook meat thoroughly to destroy the bacteria prior to eating the meat.

Samples to collect

Submit whole carcass for testing.



**CAN INFECT
PEOPLE**



**CAN INFECT
DOGS**



**COOK
WELL**

Glossary

Bacteria: one-celled microorganisms. Bacteria may be free-living, saprophytic (feed on dead or decaying organic matter) or pathogenic (cause disease).

Carnivore: an animal that eats meat, such as a wolf, bear, wolverine, fox or dog.

Connective tissue: a tissue that connects, supports, binds or separates other tissues or organs.

Cyst: an abnormal membranous sac containing a liquid or semisolid substance.

Diaphragm: the muscular membrane dividing chest and abdomen. Important in expanding the chest for breathing.

Fibrous: having, consisting of, or resembling fibres (threads).

Herbivore: an animal that eats plants, such as caribou, moose, muskoxen, bison, Dall's sheep, rabbits and ground squirrels.

Host: an organism whose body provides nourishment and shelter for another.

Larva: early stage in the life cycle of a parasite, usually wingless and worm-like and usually incapable of reproduction.

Lesion: wound or injury.

Lymph node: small oval or round gland that makes up part of the immune system that removes bacteria and foreign particles from the body.

Nutrient: substance necessary for life and growth.

Parasite: an organism that grows, feeds and lives on or in another organism to whose survival it contributes nothing.

Spore: a reproductive cell that can develop into an organism resembling the parent immediately or after a period of dormancy.

Tissue: any of the similar collections of specialized cells of which animals or plants are made (e.g. muscular tissue, connective tissue).

Ungulate: a hoofed mammal, such as a caribou, moose, muskoxen, mountain goat, bison or Dall's sheep.

Virus: simple sub-microscopic infectious agent that often causes disease in plants, animals and bacteria; unable to replicate without a host cell.

Contact Information

The NWT Wildlife Emergency contact number is 1-866-762-2437 or, for more information, contact the Environment and Natural Resources regional office nearest you:

Fort Simpson

(867) 695-7450

Dehcho Wildlife Emergencies

(867) 695-7433 (May – September)

Fort Smith

(867) 872-6400

Fort Smith Wildlife Emergencies

(867) 872-0400 (May – September)

Hay River Wildlife Emergencies

(867) 875-7640 (May – September)

Inuvik

(867) 678-6650

Inuvik Wildlife Emergencies

(867) 678-0289 (May – October)

Norman Wells

(867) 587-3506

Sahtú Wildlife Emergencies

(867) 587-2422

Yellowknife

(867) 767-9238 ext. 53461

North Slave Wildlife Emergencies

(867) 873-7181

Wildlife Division, General Inquiries (Yellowknife)

(867) 767-9237 ext. 53468

Centimetres

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

