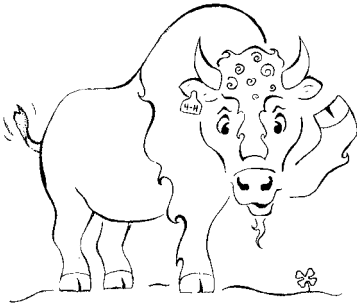


Parasites of the Bison



Roll Call:

Name a parasite. _____

Using roll call answers from club members, fill in these blanks.

Internal parasites

External parasites

Welcome to the intermediate section of Parasites of Bison. There are many parasites that can affect bison. In this unit we will cover some of the more common ones that have been found in Canadian bison herds.

Parasites and hosts

When an animal has a parasite, that animal becomes a host. Being a host is something livestock cannot afford to do. Being a healthy and efficient producer is difficult enough without having to feed and nourish parasites.

Internal parasites

Animals infected with internal parasites may show some of these symptoms:

- Anemia
- weakness
- low milk production
- poor hair growth
- depressed appetite
- scours (diarrhea in young calves)

Alberta 4-H Bison Project – Member Level Two

Problems arise when worm populations are found in large counts in bison manure. Past research has indicated that at a year of age most cattle will develop immunity to some parasites and their infestation numbers will drop, research conducted on bison herds has suggested this may also be the case for bison. More studies and research is needed before scientists can truly understand the effects that internal parasites have on bison herds. It is important to know what types of intestinal worms infest your herd because the parasites vary greatly in their ability to cause disease.

The roundworm is the most common internal parasite affecting beef cattle. For more information on the roundworm, consult level one, on Parasites of the bison.

Factors that affect parasitism in bison

1. **Grazing Density** - The more bison you have in one area, the higher rate of parasite population there will be in the pasture. By using pasture rotations and not overgrazing an area bison will not consume the grass close down to the ground, and they will also have more of a tendency to graze away from manure pads. Therefore they will ingest few larvae.
2. **Average Temperature** - In Alberta we have an advantage! Because our climate is normally conducive to having two distinct seasons of summer and winter, our parasites are limited to only a few parasite generations. Cold temperatures affect the hatching, movement and survival of many larvae.
3. **Maturity** - Most ruminants will become more immune to parasites as they grow older. Most problems that occur in young animals that are exposed to high levels of larvae.
4. **Nutrition** - It is important to provide proper nutrition to all animals. Bison that are on a low level of nutrition are far more susceptible to parasite infection than are animals on a balanced diet.

Deworming bison

The decision to deworm a specific bison herd should be made based on information obtained about that specific herd. What types of intestinal worms are found? What is the total number of worm egg counts? If the numbers are low, it may not be economical to deworm the herd, on the other hand if numbers are high the parasites may be affecting the efficiency of the bison herd.

There are some bison producers that believe bison are more resistant to parasitism than beef cattle. There is no scientific research to prove or disprove this thought. Forty years ago, many beef producers believed that feeding willows to their cattle would help to reduce intestinal worms, however as producers began to confine cattle more and increase stocking rates this method of parasite control began to lose its appeal. Perhaps as we start to produce higher numbers of bison we will find the bison's resistance to these parasites to be about the same as beef cattle.

Understanding the factors affecting parasitism in bison will help you and your veterinarian decide on the importance of deworming your bison herd. The best time to deworm your herd is in the spring of the year before bison are turned out onto their summer grazing range. It is important to remember that long winter hair may reduce the effectiveness of pour on products, therefore treatments are best applied after spring shedding has occurred.

External parasites

Animals infected with external parasite may show some of these symptoms:

1. uncomfortable
2. scratching or rubbing on fences or walls
3. greasy, dirty, rough hair coat
4. irritable

Alberta 4-H Bison Project – Member Level Two

Lice – There are two types of lice - sucking and biting.

Sucking lice are slate blue in colour and feed on the blood of the animal. There are two types of sucking lice - the short-nosed cattle louse and the long-nosed cattle louse. They are usually attached with their heads partly buried in the skin. The adult female is about 3 mm long. The eggs or nits are cream coloured and are attached to the hairs near the skin.

Biting lice feed on the hair, loose and dead skin and other debris on the skin of the animal. The biting louse is about 1.5 mm long and has a red head and light cream or yellowish body.

Eggs of the sucking lice hatch in 1 to 20 days after they are laid. Young lice mature within seven to 14 days. Biting lice eggs hatch and mature more quickly. The total life cycle of biting lice is about 15 to 22 days, compared to 18 to 34 days for the sucking lice. Cattle lice must remain on the animal continuously to feed and can survive for only one to two days if removed from the animal.

Control of lice in your herd is economically important. Infested cattle have a poor appearance, and a reduced market value. Heavy uncontrolled infestations may lead to an increase in abortions, and reduce the birth weights and weaning weights of calves. In breeding bulls, heavy infestations can cause reduced success in breeding.

Mange

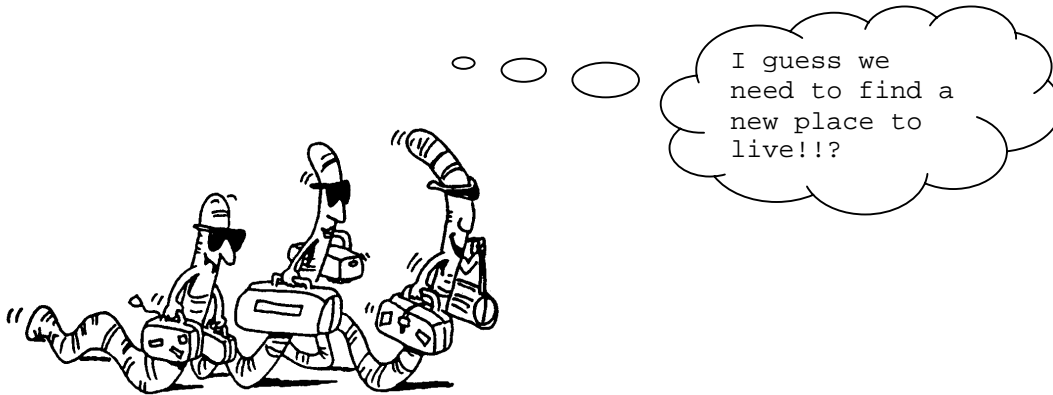
Tiny mites that feed off of the host animal cause mange. Although very few cases of mange have been reported in domestic bison, it is an external parasite that producers should be aware of. There are three types of mange that affect cattle in Canada.

Demodectic mange is the least serious type of mange. Chorioptic mange is most common, and is caused by mites that live on the surface of the skin. Sarcoptic mange can be very damaging to cattle. It must be reported to Agriculture Canada when diagnosed in your herd.

Alberta 4-H Bison Project – Member Level Two

Mange is confirmed only by examinations of skin scrapings by microscope. The mites are very tiny. You should suspect mange if your bison are uncomfortable and constantly rubbing on posts, fences or trees, and have scabs developing on rough hair coats. Contact your veterinarian if you suspect mange.

There are many products available to treat parasites such as those causing mange. Treat your infected animals only after consulting with your veterinarian.



Activity: Parasite investigation

Sometimes diagnosing parasites takes investigative skills.
See if you can identify the parasites or symptoms described
below!



I am small and I bite which makes me not nice _____.

Can you think of who I am, I am a _____.

If you notice your bison out on the range
are missing patches of hair it might be _____.

My manure is runny, please use your powers,
should you suspect that I have _____.

They live in my intestine and under no uncertain terms,
I need to get rid of these parasites we call _____.
My favourite drink is blood. I like it with no ice,
I hatch in 1 to 20 days, I am a _____.



Diseases in bison

Anaplasmosis

Anaplasmosis, was first detected in a bison herd in Saskatchewan, it is an infectious disease of ruminants caused by a bacteria-like blood parasite called *Anaplasma marginale*. Animals may suffer from anemia, as the parasite attacks the red blood cells that are then destroyed by the animal's immune system. Early symptoms may include fever, depression, and loss of appetite. As the disease progresses symptoms will intensify. The bison may become weak, pale and short of breath.

The anaplasmosis parasite is spread between animals through the transmission of red blood cells from an infected animal to a healthy one. Natural means of transmission may include horseflies, deer flies, mosquitoes and ticks. Other causes of transmission may be from hypodermic needles, dehorning tools, and surgical instruments.

The disease is fairly treatable if detected and treated early. In Canada treatment is not an option, as it is a reportable disease. Whenever it is detected the Canadian Food Inspection Agency (CFIA) will quarantine the herd, conducts tests on the entire herd and then orders slaughter for all positive animals. Thirty-five days after the removal of positive animals the herd is tested once again. If all bison test negative the quarantine is lifted from the herd and the producer will be compensated for any animals that needed to be destroyed.

Canada is taking measures to ensure that we control the transmission of this disease from other countries to ours. Animals that are imported from the United States must test negative for anaplasmosis, as well bluetongue, tuberculosis, and brucellosis.

Bacillary hemoglobinuria

This disease has not to date been detected in bison, but because of the severity of the disease to cattle, sheep and elk, it is a disease you should be aware of. This disease is also referred to as red water disease because of the presence of red urine. The spores that are produced by the bacteria can survive in the environment for a really long time. Once in the animal the spores will penetrate the lining of the intestines, spread to the blood stream, and make their way to the liver.

Alberta 4-H Bison Project – Member Level Two

The spores will remain dormant or inactive in the liver until the liver suffers some form of damage. If the liver becomes damaged the spores will begin to grow and will release two toxins. The first toxin will destroy adjacent tissue. This will allow the continued growth of the spores. The second toxin is released into the circulating system where it destroys the red blood cells causing discoloured urine or “red water”. Red blood cell destruction also causes lack of oxygen to the body tissues. Death will usually occur within 12 hours, however it may take up to 4 days for the animal to die.

Vaccinating your herd against the *Clostridium hemolyticum* is an effective way of preventing the disease in cattle and sheep. Another way to reduce the incidence may be to treat the herd for liver flukes as they do damage to the liver that creates the conditions for the growth of the spores. Consultation with a veterinarian concerning the health of your herd will help you determine if preventative measures should be taken.

Bovine viral diarrhea (BVD)

BVD is a contagious and potentially fatal disease. It may cause reproductive losses, increased incidence of other diseases, slow growth or even death. The majority of information currently available on BVD, as most diseases, pertains primarily to cattle, but similar affects will be seen in bison.

There are two types of BVD virus: type 1 and type 2

Type 1

This type is the less severe type that is more commonly seen in western Canada. If exposed to the virus the animal will develop a mild form of the disease with fever, poor appetite and diarrhea. This should pass in a couple of days and often goes unnoticed by the producer. The real problem arises if the animal is pregnant because it can spread to the unborn fetus. There are different outcomes depending on the stage of pregnancy:

1. During the first trimester the result may be embryonic death, abortion, mummification, or birth defects.

In the second trimester the fetus may become a carrier of the virus. The calf will appear normal at birth but will continue to shed the virus throughout its life.

Alberta 4-H Bison Project – Member Level Two

Type 2

This type may cause death in both adults and calves. Symptoms are severe and herds with a high death loss in all age categories of animals should be suspicious of this type. Although it has not been detected yet in western Canada it has been reported in eastern Canada and the United States.

A vaccination program is the best protection against your herd contracting BVD. It is important that the vaccination program be administered properly. Consult a veterinarian for assistance in planning a vaccination program. Isolation of all new animals will also reduce the risk of exposure.

Brucellosis

Transmission of Brucellosis typically occurs through ingestion. In most cases the organism will localize in the udder and/or the lymphatic system and reproductive tissue. Although abortion is the characteristic of acute brucellosis, other signs include retained placenta, infertility, reduced milk production, lameness and swollen joints.

Brucellosis is known in humans as undulant fever. Although uncommon today, undulant fever may cause reoccurring fever, muscle and joint aches, headaches and nausea.

Calf scours

Numerous agents may cause calf scours. These agents may be bacteria or virus, and they may be the primary pathogen, which can cause the diarrhea on their own, or they may be in combination with other pathogens.

Infection occurs when the newborn ingests the pathogens and they colonize the lining of the intestine and cause the calf to suffer severe diarrhea. Illness and death may occur because of dehydration, or a lack of fluids.

Treatment can be fairly successful in calves if diagnosed and administered quickly. The best solution is prevention. Calving bison out on a clean, dry environment will help significantly to reduce the incidence of scours. For more information reference the chapters on Herd Health and Newborns in this level.

Alberta 4-H Bison Project – Member Level Two

Capture myopathy

Capture myopathy is a degenerative muscle condition that can be brought on by extreme muscle exertion and overheating. In bison it is most commonly associated with poor handling techniques that create a lot of stress and excitement in the animals.

If you have ever been to the Alberta 4-H Centre at Battle Lake you may have attempted to run up the stairs from the fern glade. Perhaps if you have then you have experienced a build up of lactic acid in your legs. Well for the bison, when their body becomes stressed and their muscles tense and use up more oxygen than the blood can supply they will suffer the same effect. If the lactic acid builds up in the muscle cells it destroys cell membranes causing muscle damage. If enough muscle cells are damaged then capture myopathy occurs. Death can occur from shock.

There are a few key factors that can make bison more susceptible to developing capture myopathy:

Heat

- Extremely high outdoor temperatures
- Bison with full winter robe in a warm spring day
- Bison that has been tranquilized after running because a sedated animal loses its ability to effectively dissipate heat.

Fear

- Causes the animal to run and struggle, this is intensified with fright hormones that make the condition worse.

Diet

- Deficiencies in selenium and vitamin E make the muscles more prone to cellular damage.

Disposition

- Some animals may be more prone due to their disposition and ability to “handle” stress.

Alberta 4-H Bison Project – Member Level Two

Understanding the factors that make animals more susceptible to capture myopathy is the best defense. Avoid working or stressing animals on hot days, if you have to wait for the cooler part of the day and don't rush things. Allow animals an opportunity to explore the handling system on their own, and design a facility that will decrease the stress level for the animals. Provide some sort of shelter from the sun, such as treed areas, and be sure that you are feeding a properly balanced diet. If you are in a deficient area, be sure to supplement with vitamin E and selenium.

Malignant catarrhal fever (MCF)

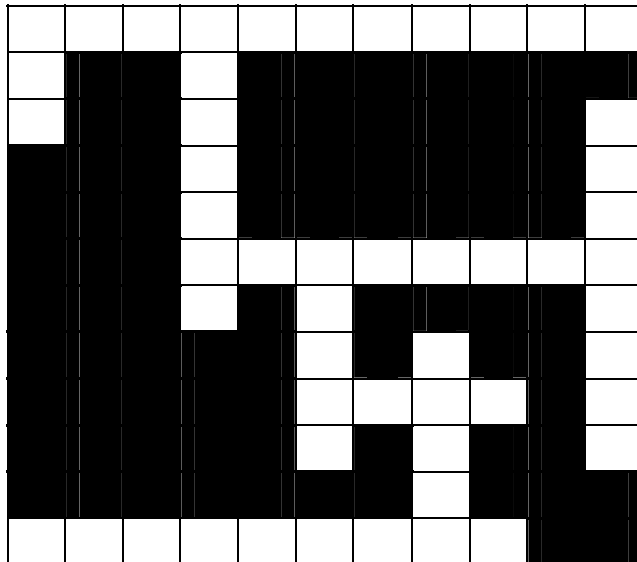
Malignant catarrhal fever, or MCF, is a worldwide viral disease affecting ruminant animals. There are two animal carriers that are associated with the disease. In Africa, the virus is carried by wildebeest and affects their cattle and deer. In North America, sheep are carriers for the virus. This means that although the sheep will not appear to be ill, when infected they will shed the virus.

We do not know for certain how the disease is spread, but it appears to spread from sheep and goats to other species. The possibility of contraction of the disease increases when:

- bison are pastured on the same or nearby pastures to sheep or goats
- bison are run through a common handling facility used for sheep or goats
- sheep or goats are kept in pastures that drain into neighbouring pens
- bison are transported in the same vehicle as sheep or goats
- temperatures allow the virus to thrive for longer periods of time during the spring or fall.

Because the agent causing this disease is a virus, antibiotics are not effective for treatment. Unfortunately there is no real treatment available and animals that contract the disease will most often die, if they do survive they will be unthrifty and not economical.

Activity: Disease fill in



Fill in the blanks then find a space to fit them on the crossword.



Undulant fever is the human form of this disease. _____

There are two types of this viral disease. ____

As handling facilities continue to be designed to reduce the stress to bison there will be less of this happening. _____ myopathy

A toxin is released into the circulating system where it destroys the red blood cells causing discoloured urine, this is sometimes referred to as _____

This is a common symptom of BVD. _____

Outcome for bison that contract Malignant Catarrhal Fever is usually _____
 Anaplasmosis parasite is spread between animals through the transmission of red blood cells from an infected animal to a healthy one. One natural means of transmission is by a _____

This disease affects newborns and is also referred to as neonatal diarrhea. _____

The spores will remain dormant or inactive in the liver until the liver suffers some form of damage. _____ hemoglobinuria