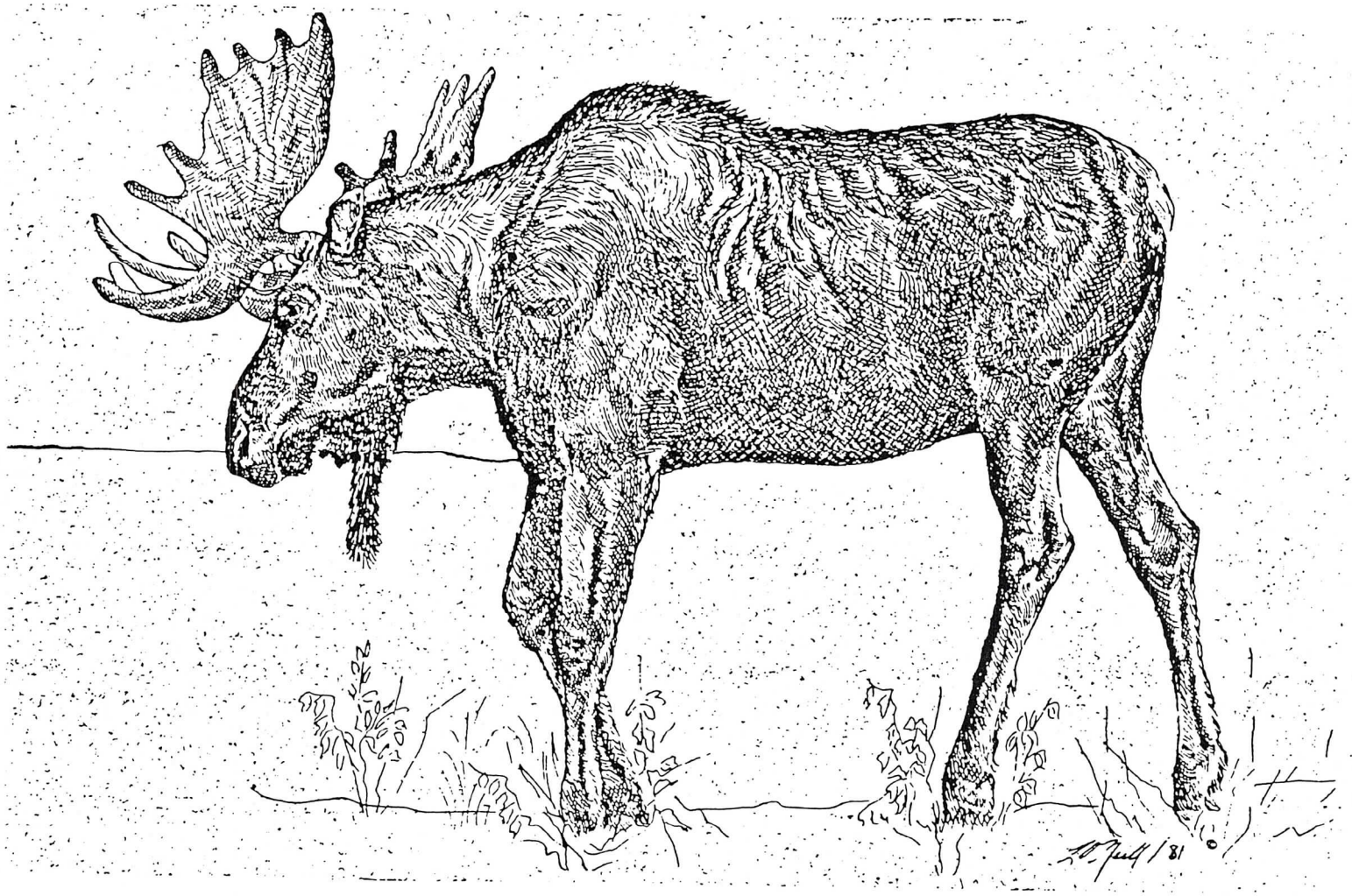
A GUIDE FOR

MANITOBA MOOSE HUNTERS



by

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INTRODUCTION

The perception of quality hunting varies among hunters, however, the most important commodity is always up to you, the hunter: your attitude; your sense of responsibility; the principles you adhere to. Hunting practices that emphasize traditional skills, fair chase and proper conduct are always experiences of great value which foster many pleasant memories and the occasional tall tale around the campfire. Yet, when the emphasis is on the quickest and easiest way to fill the game bag, though technically legal, is not much of an experience. The use of mechanized vehicles or other illegal means to carry out the task is not only illegal, represents abuse of the resource but tends to leave memories that one is reluctant to discuss. Above all, it degrades both the sport and participants and gives the non-hunting element powerful ammunition with which to promote abolition.

The standards you set for yourself are the true measure of your experiences in the field. In many instances, these standards will help ensure the future of our resource and the recreational opportunities they provide. The measure of the hunt is largely a measure of yourself. Since you have a personal stake in wildlife, the real question is are you carrying out your responsibilities to ensure these valuable resources are being accorded their proper place in society today and for the future?

This document is intended to acquaint the novice and experienced moose hunter with some of the techniques relative to handling a downed moose in addition to pointing out some of the common parasites, diseases and other abnormalities frequently observed while dressing moose. The requests of hunters made by the Wildlife Branch are also briefly discussed.

DRESSING AND FIELD CARE

Equipment Required In Field

Basic	Optional
Hunting knife	Meat saw
Small hand axe	Block and tackle
Whetstone	Cotten meat bags
8-10 metres of 1-1.5 cm rope	Clean cloths
	Salt and pepper
	Large heavy plastic bag

Hunting in an area that requires carrying out meat, it is essential to have a packsac or packboard.

Dressing

Dressing implies bleeding, gutting, cleaning, cooling, quartering and hanging.

Bleeding

This must be done immediately following the death of an animal. In many instances, bullets will sever blood vessels and result in bleeding internally, however, in case this has not occurred, one of the following must be done.

a) Insert a knife into the shallow cavity at the base of the neck and cut the large blood vessels by a deep cut across the neck. This technique is a must if one is desiring to keep the cape for mounting purposes.

b) Make a deep cut across the throat just back of the head.

Gutting

Prior to gutting, the animal should be manipulated in such a way to make the best advantage of existing trees, logs or vehicles for holding the animal in an upright position. Roll the animal onto its back and prop it up using logs placed against the side in a lengthwise position. Tie the front and back legs on one side apart (just above the hooves) with a sturdy stick. Next, secure a piece of rope on the front leg, wrap it once around a tree or sturdy object and then to the back leg at the stick holding the two legs apart. Once this has been completed, the head of antlered animals can be manipulated so that the snout is upright and the points of the antlers downward - this assists in keeping the body in an upright position. The legs on the untied side, if the animal is lying a little off centre, will naturally fall away from the centre of the body and generally removed from the working area.

Insert a sharp knife just forward of the breastbone and proceed to make a cut backward toward the anus. In making all cuts, care should be taken to avoid getting hair on the meat.

1) This cut should sever the hide down the centre of the body and be made with the cutting edge of the knife upward.
2) When cutting back from the breastbone, cut on one side of the penis if a male or the udder if a female.
3) The hide should be peeled back a little from the edge of the cut. Next, cut the muscle overlying the breastbone. Follow this by cutting the muscle enclosing the stomach and intestines. This is done by inserting two fingers on either side of the knife (but underneath it) and lifting up the layer of muscle as you cut. Care must be taken not to puncture the paunch or intestines.
4) Cut forward from the breastbone to just underneath the jaw and peel the hide back from the cut.
5) Make a cut in the hide on the opposite side of the penis and lifting upward, cut the connective tissue under the penis back to the point where the base of the penis enters the body cavity beneath the rectum. With females, remove the udder by cutting the hide around it and the connective tissue attaching it to the groin area.

6) Split the sternum or breastbone using an axe or meat saw. An alternative is to cut the ribs away from the sternum on one side at the point where they attach to the sternum.

7) Cut the trachea or windpipe and gullet free from the neck tissue back to the point where they enter the lung cavity and tie a piece of rope around both.

8) Cut the diaphragm (thin membrane separating the lung cavity from the abdominal cavity) free as much as possible on both sides working toward the centre of the back. Care must be exercised not to cut the paunch.

9) Using the rope tied to the windpipe and gullet, pull toward the anus. As you pull, the lungs and heart will become detached. If the diaphragm is not completely detached, it will have to be done at this time. Pull the lungs, heart, paunch and intestines out and to one side. As this is done, the attachments to the backbone will have to be cut or pulled free.

10) At this point cut the muscles over the pelvic girdle or H-bone. Next, either detach the anus and rectum beneath the pelvic girdle working from the rear, or the pelvic girdle can be split using an axe or saw. It is recommended that a piece of the pelvic girdle about 7 cm wide be cut out to facilitate removing the rectum. Cut away any tissue holding it. Pull the rectum free. Pull paunch and intestines away from the animal.

11) Remove the liver and heart from the gut pile if they are to be saved. Drain any clotted blood from each.

12) If the animal is to be removed whole, the legs can be detached at this time to facilitate pulling. To do this, cut the skin over the joints, sever the tendons and with pressure, remove the legs.

Cleaning

Loosen ropes holding the carcass upright so it will fall to one side - remove blood from the abdominal cavity. Water should not be used. Snow can be used but must be completely removed. The body cavity should be dried as much as possible. Water if used to wash the carcass may be retained in some of the tissue and serves as an excellent medium for bacterial growth. Let the film of blood adhering to the meat dry - this will help to seal the surface until cut up. Parts damaged by bullets should be cut away.

Cooling

It is important that the carcass be cooled as quickly as possible. A stick should be used to spread the cavity apart and ensure circulation of cooling air. If possible, the carcass should be hung head up for 2 - 3 days before quartering. If it is impossible to hang the carcass, lift it off the ground using poles. Removing the hide during early fall seasons will speed up cooling. During winter seasons, covering it with snow will prevent freezing and yet allow proper cooling. Never cover warm meat with plastic.

Quartering

Separate the front half from the back by cutting between the 2nd and 3rd ribs (leave 2 ribs on back quarters) with a knife and chopping or sawing through the backbone. Split each half by chopping or sawing through the backbone. Skinning the carcass makes quartering easier and avoids the problem of hair getting on the flesh. Care should be taken to keep hair away from cutting areas. Quartering is easier if the carcass is hanging. If this is impossible and the hide is removed, spread the hide out with flesh side up and use it as a place to work on. This will keep quarters clean.

Each quarter (in the fall season) should be put in meat bags or wrapped with cheese cloth. This helps to protect it from dirt and flies. Salt and pepper are also excellent to put on exposed flesh and cut surfaces to keep flies away.

Hanging

Moose meat should be ideally hung at 1°C to 4°C for 10 - 18 days. Warmer temperatures speed up the aging process, thus, it is not necessary to hang for as long. If you encounter exceedingly warm weather, remove the hide and do not let it hang for more than 3 - 4 days at these temperatures. It should be in a shady, airy location

Moose should be hung with the hide on if conditions are right or covered with a shroud to prevent the surface from drying.

Don't let your meat spoil - it is the mark of a very poor hunter and an offence under the Manitoba Wildlife Act.

PARASITES, DISEASES AND ANOMALIES

Frequently, Manitoba's moose hunters encounter parasites, diseases or other anomalies which understandably raise concern about the edibility of the meat. Very few moose are unfit for human consumption. The following information is provided to reinforce this point and explain some of the conditions found in moose.

Seven parasites or disease conditions are frequently encountered by moose hunters. Three of the parasites found are tapeworm larvae, one is a fluke, one is a roundworm, one is ticks and the last are benign skin tumours. The life cycles of each of these parasites are presented along with relevant information about the disease.

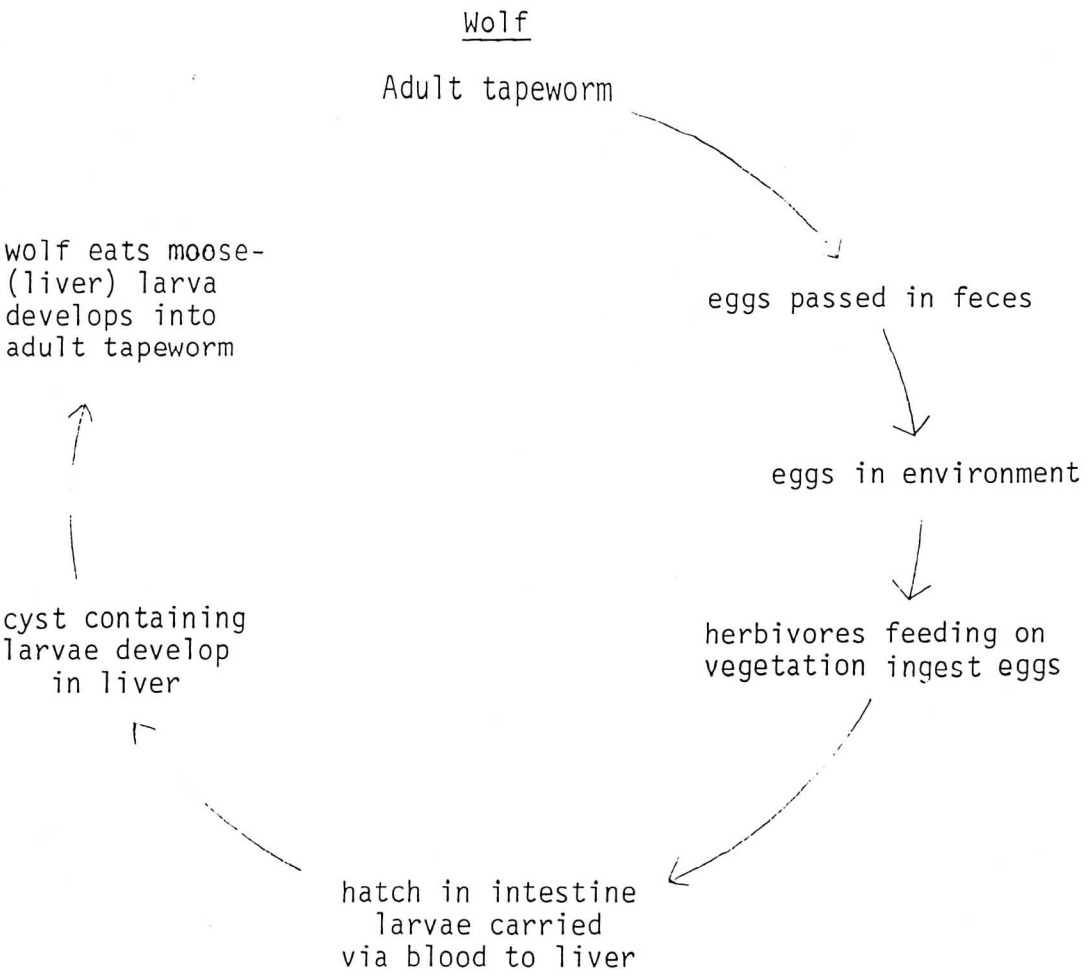
Tapeworms

The segmented adult tapeworms develop only in the intestine of wolves. They produce eggs which are passed in feces and may end up on vegetation eaten by moose. When this occurs, the eggs hatch, penetrate the stomach wall and are eventually carried, via the blood system, to the organ of its choice where it encysts.

Taenia hydatigena - Thin-necked bladderworm

- adult stage of tapeworm is found in intestine of wolves, coyotes and dogs
- intermediate stage or larval form occurs in bladder-like sac or cyst in liver and occasionally abdominal cavity of elk, deer, moose, caribou, reindeer and domestic herbivores - this is stage observed by hunters
- confirmed in Manitoba in elk, moose, caribou and reindeer

Life Cycle

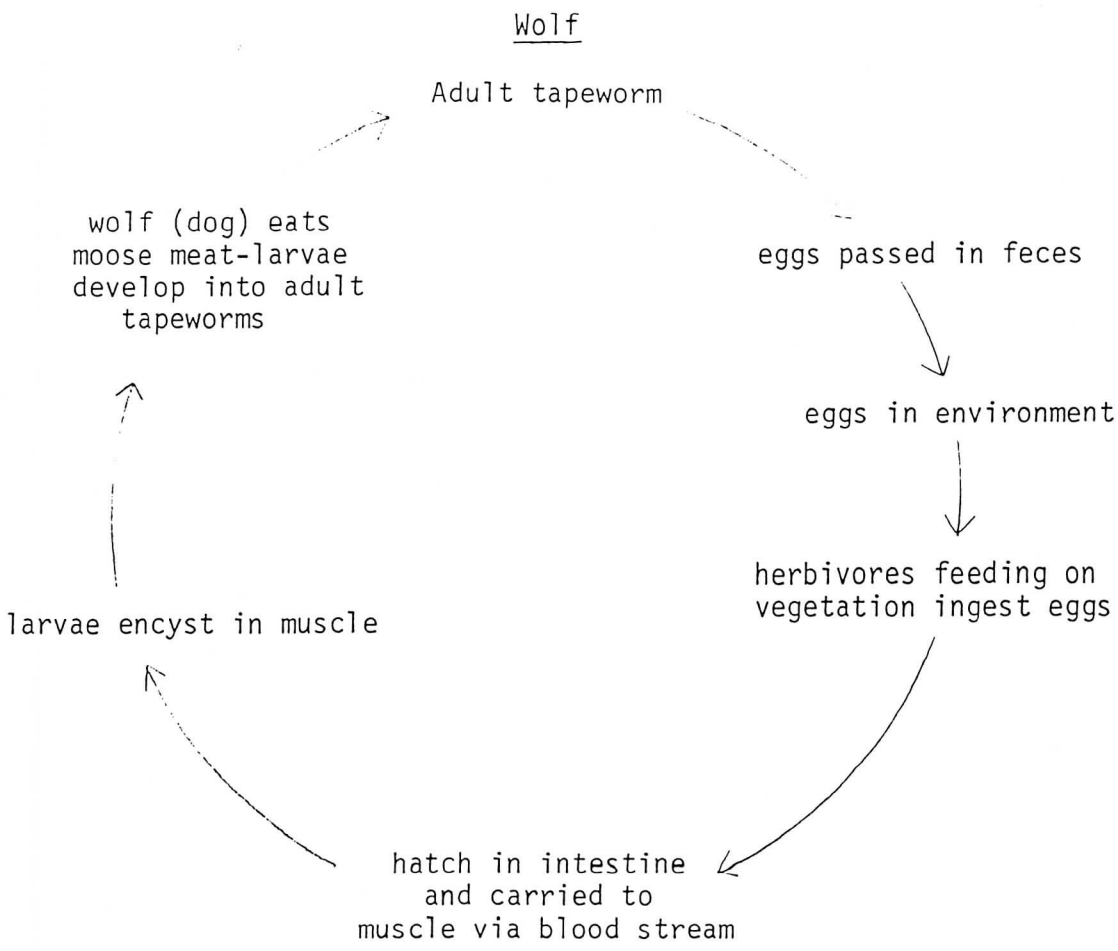


- disease in moose called cysticercosis
- hemorrhagic streaks in liver of moose are migration paths of larvae
- resemble large water blister on surface of liver
- meat safe for human consumption as is liver - remove larvae
- do not feed uncooked liver to dogs as larvae present will develop to adults in dogs
- usually the pathological changes in big game are of little influence on health of animal

Taenia krabbei - Muscle cysticercosis

- called muscle measles in moose
- larval form found in moose, elk, caribou and reindeer
- adult worm found in wolves, coyotes, bobcats and dogs

Life History

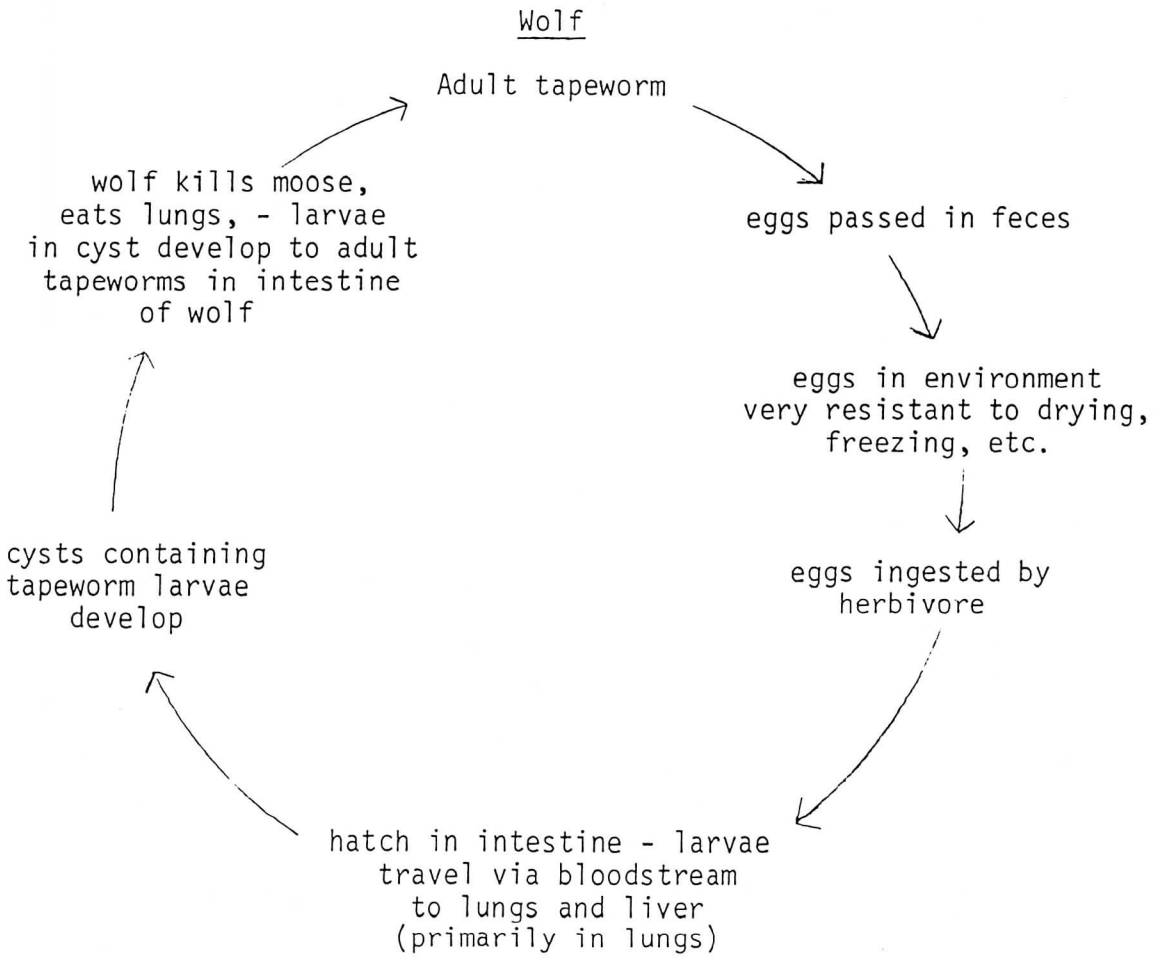


- frequently found in heart muscle in addition to skeletal muscles
- in muscle a single tapeworm larva is found in a small bladder about 1 cm in length and yellowish white in colour
- anyone having eaten moose meat has eaten this tapeworm larva but it will not develop to an adult tapeworm in man
- for aesthetic reasons, meat heavily parasitized is generally not used for human consumption
- never feed uncooked moose, deer, elk, caribou, etc. meat to dogs as larvae will develop to adult tapeworms
- little host reaction in big game and no extensive pathology
- there are portions of North America where hunting pressure has declined due to undesirability of eating measly meat - the possible implications of this to herd management, i.e. habitat, are obvious if hunting is used to keep herds within carrying capacity of range

Echinococcus granulosus - Hydatid disease

- disease called hydatid disease, hydatidosis or echinococcosis
- adult worms occur in small intestine of wolves, coyotes and dogs
- larvae occur in lungs or liver primarily of moose, elk, caribou, reindeer normally. Has been found in kidneys of moose also in Manitoba. Frequently, many cysts can be found in moose, etc. with older animals having more cysts than younger ones.
- parasite occurs where wild herbivores serve as a source of food for coyotes, wolves and dogs

Life History



- man can replace moose in cycle and dog can replace wolf. Infected dogs pass eggs in feces. Eggs can eventually end up on dog's fur and on hands of man, flies can land on feces, pick up eggs and then contaminate food or as feces are left lying about, eggs can become air borne and be ingested
- never, never, never feed lungs or liver infected with cysts to dogs

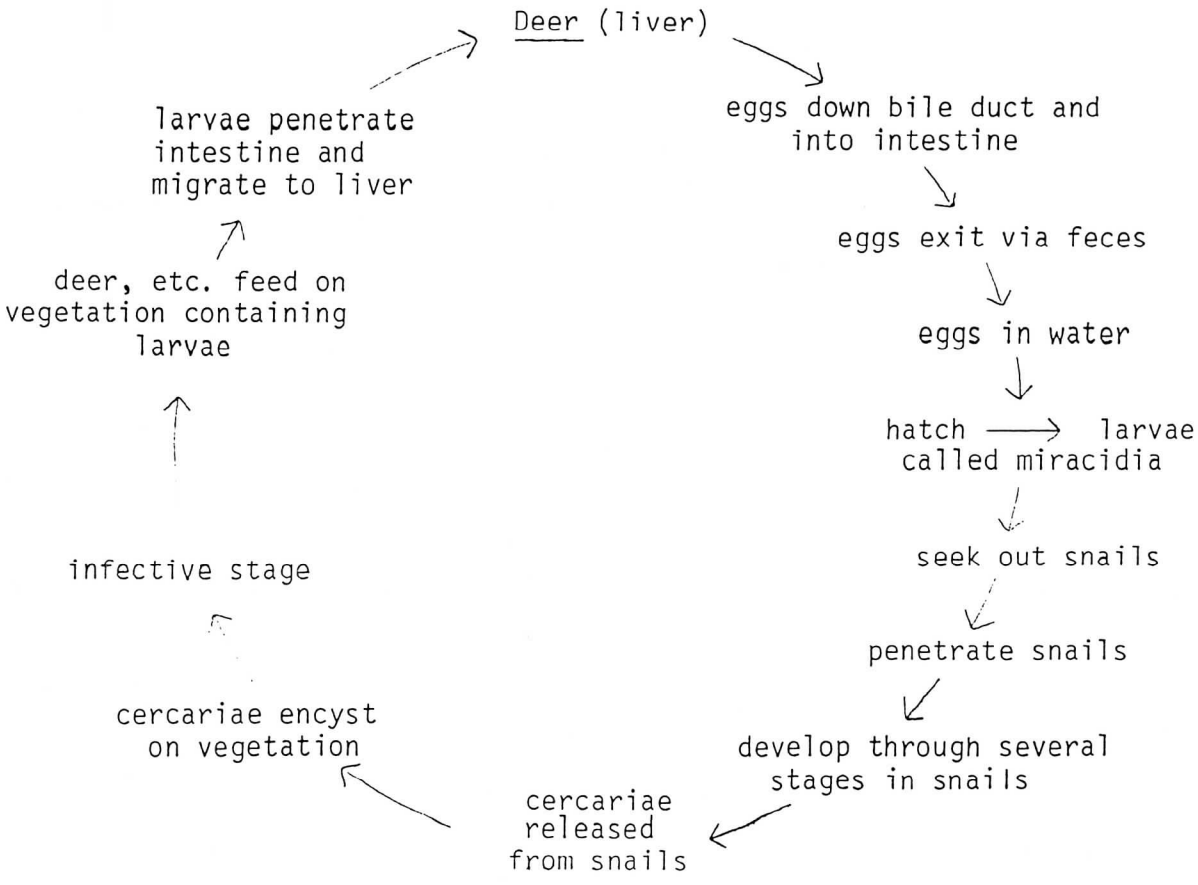
- destroy infected viscera
- organs containing cysts are generally not used for human consumption, however, meat is good
- man is not capable of harbouring adult tapeworms and thus cannot become infected by handling hydatid cysts. He can only pick up infection by ingesting eggs

Flukes

Fascioloides magna - Large American liver fluke

- disease called fascioliasis or liver rot
- the parasite is a fluke - large, oblong and leaf shaped, about 5 cm long, reddish-brown and often resembles a blood clot
- very strong smell from infected animals and when opened up a black pigment resembling ink appears on surface or liver
- occurs in livers of wild and domestic herbivores
- reported in Manitoba from deer, moose and elk

Life Cycle



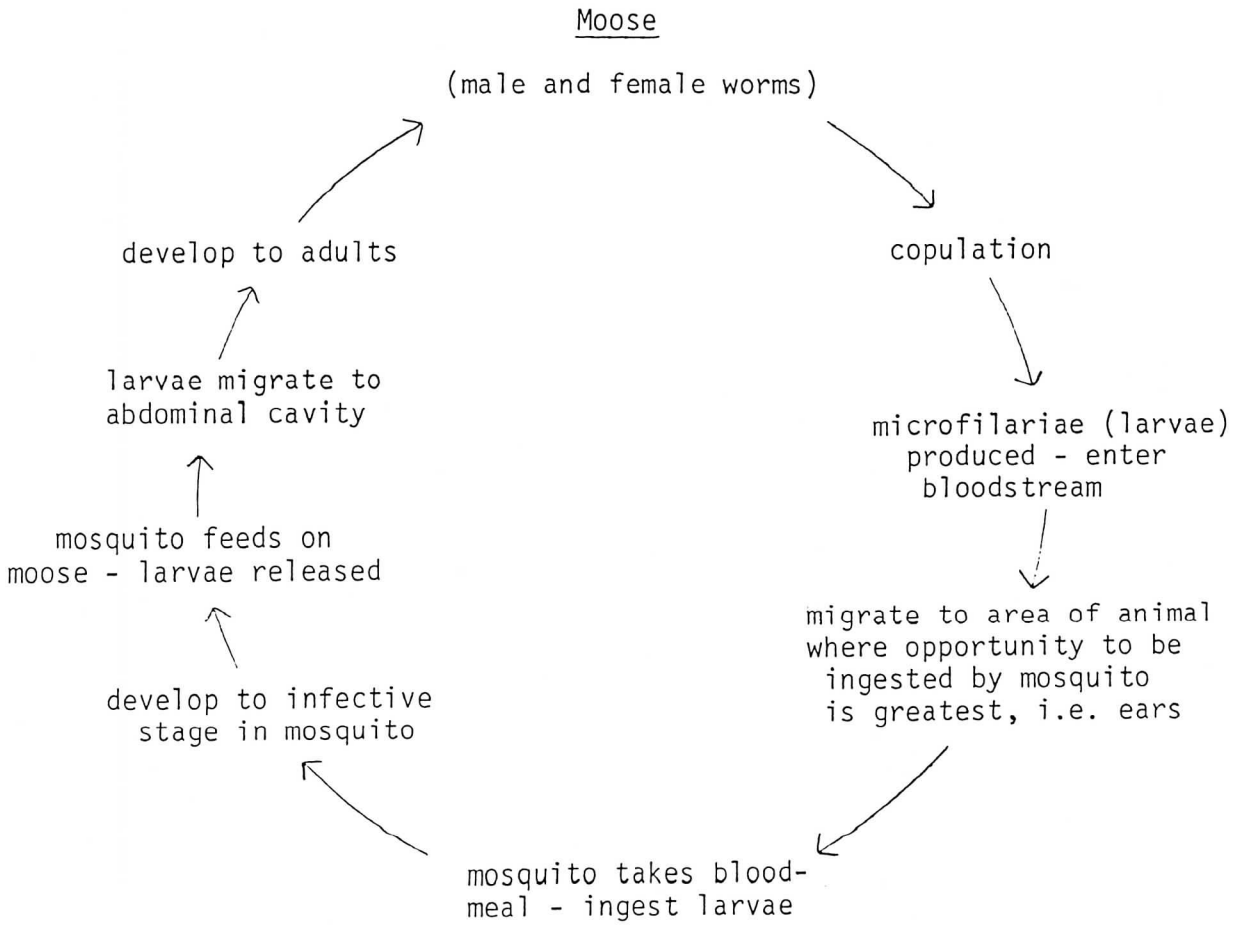
- within liver (of normal host - deer) parasite becomes enclosed in a fibrous cavity which prevents destruction of liver and yet allows eggs to be released
- in moose, which are an abnormal host, large thick walled cysts appear in liver. Cysts are filled with black necrotic debris
- can cause death in domestic animals like sheep when they become infected
- common in moose in southeast Manitoba and except for liver, the meat is edible

Roundworm

Setaria yehi

- roundworm found in abdominal cavity of moose, elk, deer and caribou in Manitoba
- whitish thread-like worms about 7 - 8 cm long free in abdominal cavity and occasionally thoracic cavity

Life Cycle



- animals infected generally have a layer of fibrin covering the liver and giving it a whitish color
- frequently worms die in abdominal or thoracic cavity and calcified worms occasionally are found on liver or in other tissues
- does not affect edibility of meat or liver, nor does it appear to cause a problem for moose

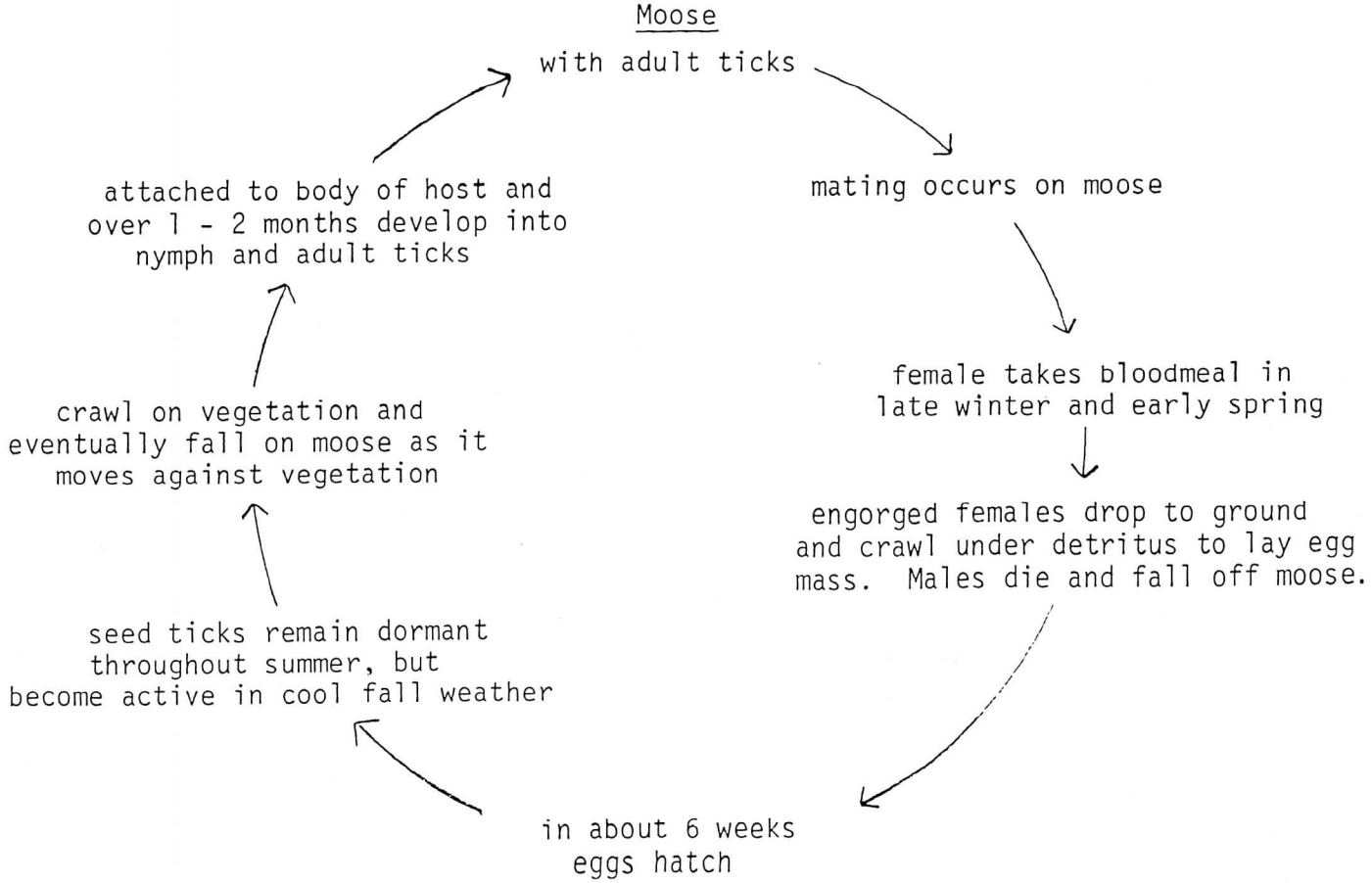
Ticks

Dermacentor albipictus - Winter or moose tick

- winter tick is not the common wood tick or dog tick - it is generally found on moose, however, in Manitoba it has been found occasionally on deer, caribou and elk
- moose are the preferred host and ticks are on them from late fall to early spring

Life Cycle

- life cycle has 4 stages - egg -- larva (seed tick) -- nymph -- subadult -- adult



Other anomalies found are wounds from fighting especially during the fall or bullet wounds. In these cases, the damaged flesh should be cut away. During the rutting period, frequently the liver of bull moose will take on a jaundiced or yellow color. This results from the animal generally not eating and being forced to utilize fat reserves which are metabolized in the liver. This yellowish liver is friable (easily broken) and takes on a granular appearance when broken but is excellent for eating.

The foregoing has hopefully made you more informed and more inquisitive relative to parasites, diseases and other anomalies you may encounter. If there is some doubt as to what you find, the specimens should be submitted in a fresh or frozen condition to any office of the Department of Natural Resources.

CADMIUM FACT SHEET

1. A preliminary study in 1985 revealed the presence of cadmium in the kidneys and liver from moose harvested by hunters. Because of the small sample size, it is impossible to arrive at any conclusions regarding consumption of these organs for food.

2. Cadmium is found primarily in the kidney, with lesser amounts in the liver. Meat from an animal exposed to cadmium is edible. It generally does not concentrate in muscle.

3. Cadmium is very toxic in humans and was the cause of hundreds of deaths in Japan in the early 60's from the dreaded 'itai itai' disease. The source of the metal was the effluent from industry, and it was picked up by rice plants and subsequently transferred to humans.

4. Cadmium is present in effluent from Thompson and Flin Flon and is deposited in the environment along the pathway of the "smoke plume". Prevailing winds are from the northwest, thus areas such as the Whiteshell and GHA 26, are of concern.

5. Swedish results show that cadmium levels in the organs from moose, roe deer and hares increase with age. The 1985 results in Manitoba showed similar trends.

6. The World Health Organization suggested a limit value for consumption is 0.5 mg cadmium/week. A study in Ontario revealed an average of 22 ppm in moose kidneys with one animal exhibiting 99 ppm.

7. The Swedes have found the amount of cadmium in samples of wheat from the same area in Sweden doubled from 1916 to 1972. The increase is attributed to increased industrial pollution.

8. Swedish authorities have advised their hunters not to eat the kidneys of any roe deer or moose. They recommend only 1 meal of liver of adult animals per month and that from old animals should be discarded. Ontario has advised hunters not to eat kidneys or liver.

9. It is possible that acid rain falling on exposed bedrock can react in such a way as to release naturally occurring cadmium into the environment.

10. Big game pick up the metal by ingesting plants containing cadmium.

11. Because cadmium will be present in greater concentrations in older animals, it is important to obtain the jaw from each specimen. In this way, animals of comparable ages from different areas can be compared.

The above summary is provided with the hope that all hunters will be concerned and submit the lower jaw, kidney and a piece of liver (4 inches x 4 inches) from any moose harvested during the 1986 hunting seasons.

PRACTICAL BALLISTICS AND MARKSMANSHIP FOR HUNTERS: NOTES

1. Setting up your rifle

A. Check all the guard screws and stock screws for proper tension. They should be tight but not so tight that wood is compressed. The tension on these screws should never be changed between sighting in your rifle and taking your rifle in the field.

B. Check all of the scope mounting screws both on the rings and on the mount to ensure that they are tight. Ideally all these screws should be held in place with some kind of anti-vibration compound.

C. Make sure the bore of the barrel is clean and dry before you take the rifle either to the range or into the field. If you fire the rifle with oil still on the bore, the point of impact of the first couple of shots may be unpredictable.

D. If the trigger on your rifle is adjustable make sure that it is set properly, not only for weight but (if the adjustments are there) for creep and backlash. If you don't know how to do this yourself, take the rifle to a gunsmith and remember that before the hunting season you might have to leave it with him for several weeks.

E. If your rifle is not a bolt action be especially careful to keep the chamber clean, so cartridges will feed and eject smoothly. This might take some time with a small brush and solvent. Before you fire the rifle clean any excess oil off the inside of the chamber just as you would the bore.

2. Ammunition and sighting in

A. Choose the right weight of bullet for the animal you are hunting. If you are shooting at moose you should be using a much heavier bullet than if you were shooting at deer. If you are using a light caliber it is especially important to choose a bullet that has a strong enough construction to penetrate through bone and a lot of muscle into vital organs.

B. Sight your rifle in, using the ammunition that you are going to be using in the field, so that at 100 yards the point of impact is 3 inches above the aiming point. This will allow you to use a hold on the centre of the animal's shoulder at ranges of up to 250 yards for most common calibers and bullet weights.

MOOSE DIGESTIVE SYSTEM