

## Liver Flukes in Alberta's Livestock

Two species of liver flukes have recently gained attention in Alberta's livestock and game farm industries. One species, the common liver fluke, *Fasciola hepatica*, has a wide range of herbivore hosts in which it can develop including cattle, bison, sheep, deer, swine and llama. In contrast, the giant liver fluke, *Fascioloides magna*, has a narrow host range. Wapiti (elk), white-tailed deer and caribou are the main hosts of this latter parasite in North America.

### Life cycle of liver flukes

The general life cycle pattern for both liver flukes involves aquatic snails as intermediate hosts and herbivores as final hosts (Figure 1). Adult flukes in the livers of herbivores excrete eggs, which pass down the bile ducts into the intestine and pass in the feces.

The eggs develop in water, hatch and release free-living larvae (miracidia) that invade suitable aquatic snails. The larvae develop and multiply in the snail, eventually producing new free-living larvae (cercariae) that are released into the snails' aquatic environment. The cercariae encyst (as metacercariae) on moist or submerged vegetation, where they remain until eaten.

Livestock become infected by ingesting metacercariae on aquatic plants or by drinking water from ponds and sloughs containing metacercariae. Once ingested, the metacercariae excyst (emerge), migrate through the intestinal wall to the body cavity and then to the liver. The young flukes migrating in the liver eventually locate a bile duct and complete their development to the adult stage.

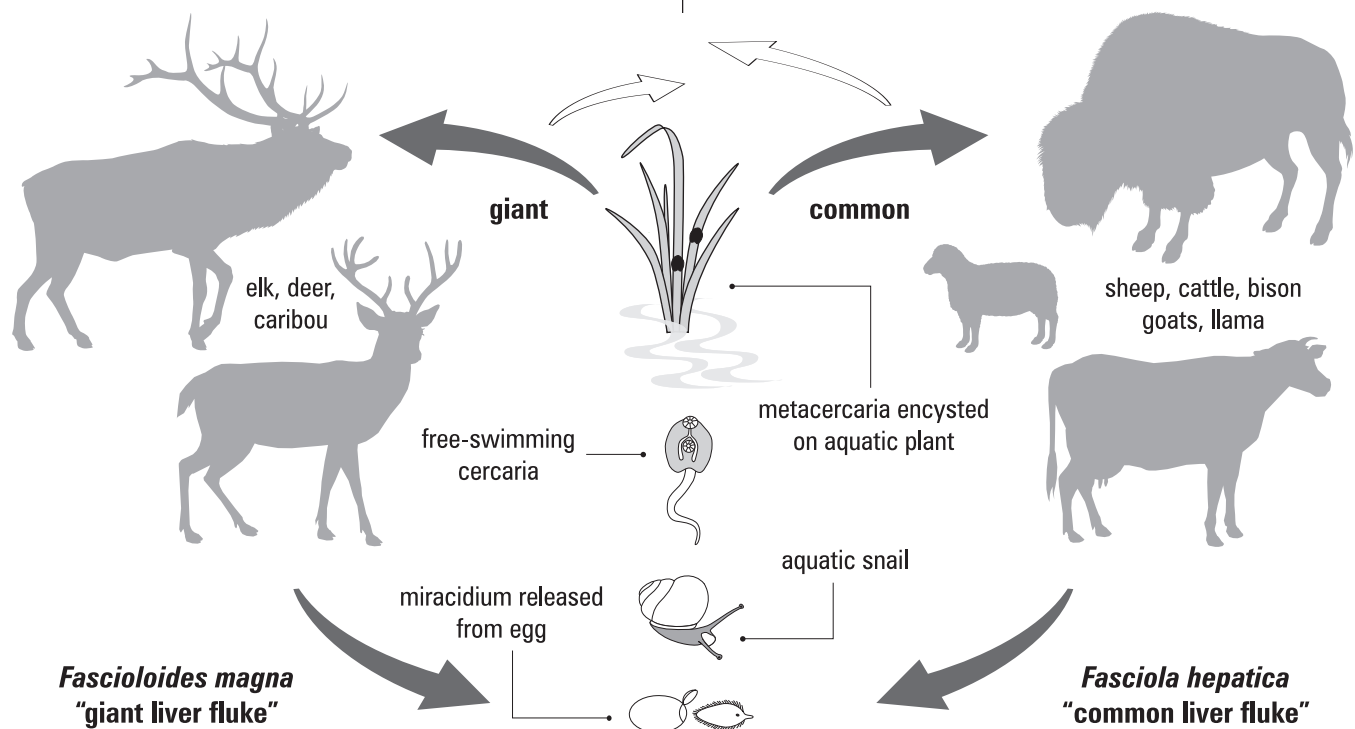


Figure 1. Life cycle of liver flukes

## How common are liver flukes in Alberta?

The common liver fluke was first reported in cattle in Alberta in 1998. Since then, additional surveys have identified this fluke in both cattle and sheep as well as in farmed bison and wapiti.

The giant liver fluke occurs sporadically in farmed elk and cattle in Alberta. Infections with the giant liver fluke occur in free-ranging wapiti in the foothills and mountains of southern Alberta and in Waterton National Park and Cypress Hills Provincial Park. They also occur in moose and white-tailed deer that share pastures with infected elk.

## How are liver flukes spread in Alberta?

The spread of liver flukes depends on the presence of a suitable snail intermediate host and a herbivore host capable of scattering fluke eggs in its feces. Conditions suitable for snails include mud flats bordering slow moving rivers or streams, river backwaters, permanent or seasonal runoff streams, irrigation ditches, dugouts and marshy areas. Liver flukes expand their ranges naturally through the movement of infected wildlife or when infected livestock are moved from farm-to-farm or pasture-to-pasture.

## What economic loss do liver flukes cause?

The severity of liver fluke infection depends on the condition of the herbivore and the number and species of fluke it ingests. Cattle with a light infection of the common liver fluke may show no symptoms. However, when infections accumulate, cattle show a gradual loss of condition or reduced milk production in dairy animals. Liver damage caused by migrating or encysted flukes results in economic loss when the animal's liver is condemned and discarded at slaughter. Sheep, goats and llamas are very susceptible to the common liver fluke and may experience high mortality when infected.

The giant liver fluke in cattle, bison and moose rarely matures to produce eggs. Establishing and maintaining an infection in cattle and sheep depends on their cohabitation with infected cervids like elk or deer that are suitable hosts of *F. magna*. Under high stocking densities and limited pastures, fluke numbers may build up, resulting in heavy infections that may affect herd health and productivity and cause increased liver condemnations.

## Can I become infected?

People are susceptible to infection with the common liver fluke. The infection can be acquired by drinking water or ingesting aquatic plants (e.g. watercress) contaminated with metacercariae.

## How can I tell my herd is infected?

Special tests are used to examine the feces of animals for the eggs of liver flukes. However, these tests do not detect immature flukes because eggs are not being shed. The giant liver fluke generally does not produce eggs in cattle and bison, and so fecal samples will not detect infected animals.

Infections can be detected at slaughter by examining the liver or by serologic tests. Consult your veterinarian for the appropriate test for your herd.

## Can livestock be treated?

Alberta producers with stock grazing low-lying wet pastures should have their cattle examined for liver flukes. Control programs using triclabendazole have reduced the prevalence of infection in sheep, llamas, cattle and elk.

Producers in Alberta use triclabendazole to control the giant liver fluke in farmed wapiti, but this drug is currently only available to veterinarians in Canada as a medical emergency drug. Triclabendazole has an efficacy against liver flukes approaching 100 per cent. Treat animals at least once in the autumn to reduce infection and again in the spring before turnout onto pasture to reduce pasture contamination. The treatment times may need to be adjusted based on experience.

Albendazole is primarily effective against adults of the common liver fluke. At least two doses of albendazole per year are advisable. The first treatment should be given in the fall when most of the flukes in the liver have reached the adult stage. A second treatment in the spring will reduce egg shedding at a time of year when numerous snails are available for infection. Consult your veterinarian for appropriate treatment dosages, withdrawal times and other restrictions.

# How can I control liver flukes on my farm?

Attempts to control liver flukes include snail eradication, eliminating infected animals and treating infected animals with a flukicide. Limiting the movement of infected animals to areas where suitable aquatic snails are not present will help control this parasite. Infections can be prevented by not allowing livestock access to contaminated pastures or water bodies where snails and plants abound. Controlled burning of grasses and rushes in the spring may reduce the number of larvae available to infect livestock.

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