

Giant liver fluke

(Fascioloides magna)

in Alberta



D. Leighton

Common name

giant liver fluke,
fascioloidiasis, liver
rot

Scientific name

a trematode (fluke),
Fascioloides magna

What's Bugging Wild Critters?

Fact sheet #20:
Giant liver fluke

Significance

Giant liver fluke (GLF) causes conspicuous lesions in the liver of cervids. It can be a concern when excessive numbers of flukes interfere with proper liver function in some individuals and in extreme cases, cause death of the critter providing shelter for the flukes. Moose are less able to control the flukes and more likely to have significant liver damage than other cervids. Giant liver fluke infections are an increasing concern on game farms in Alberta.

What? Where? How?

As their common name implies, these flukes are giants in their world. Adult flukes may grow to 70-80 mm long and 30 mm wide (approximately 3 x 1 ¼ in.) but they are thin, as if flattened by a rolling pin. Their chosen habitat is in the liver of cervids. Adult flukes are often found in pairs encased in capsules about the size of a ping-pong ball and filled with thick dark fluid. Damage to the liver varies markedly depending on whose liver is being used, the number of flukes present, and the length of time they have been in the liver. In white-tailed deer, lesions generally are limited to black streaks and one or two capsules in the liver. In elk/wapiti, lesions range from those described in white-tailed deer to extensive changes in size, colour, and architecture of the liver. Large capsules and accumulations of eggs and detritus can occur throughout the liver, making it appear pale and irregular in shape.

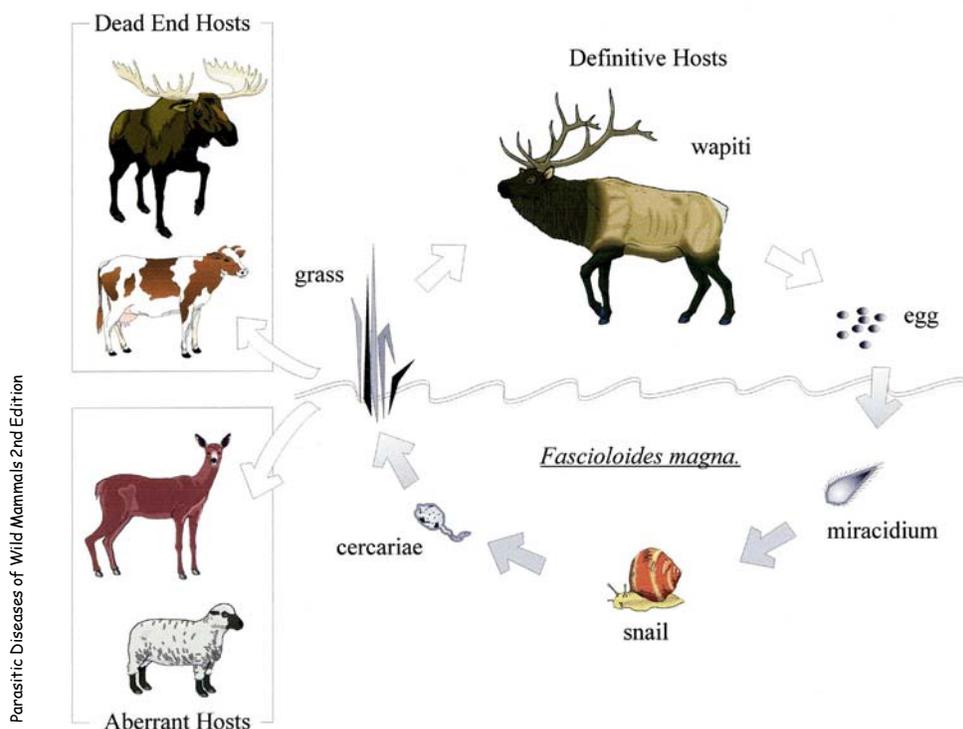
Often there are fibrous adhesions (pale little tufts of connective tissue) attached to the outer surface of the liver. On cut surfaces, you may see white fibrous capsules containing mature flukes, dark solid balls of eggs, blood-filled tracks/tunnels, and thin lines of black pigment embedded in the liver tissue. Black inky fluid sometimes leaks from the cut surfaces. In most infected moose, the damage is quite extensive and similar to the worst cases in elk.

Transmission Cycle

Giant liver flukes are simple animals with a very complicated life history. Adult flukes produce eggs that are carried from the liver into the small intestine and eventually leave the gut along with the faecal pellets. If the eggs land in water, each one hatches into a fringed larva (miracidium) that actively looks for and burrows into an aquatic snail. The larvae multiply and develop in the snail and eventually escape as tailed larvae that can swim freely in water (cercariae). These larvae glue themselves onto vegetation in the water and form a resistant cyst (metacercariae). They then wait to be eaten by a passing herbivore. Once ingested, the encysted larvae are activated and make their way from the stomach to the liver (probably through the blood stream). As the flukes tunnel, they eat and destroy liver tissue along the way. The immature larvae continue to tunnel through the liver until they find another fluke larva, at which time they stop tunnelling and mature as adults. The infected herbivore then builds a cyst wall around the flukes to keep them from further wandering.

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Distribution in Alberta

Wild white-tailed deer, elk, moose, and rarely, mule deer, in the foothills and mountains south of the North Saskatchewan River provide suitable habitat for GLF.

Natural infections also occur in Banff, Waterton, and Elk Island national parks as well as in the elk in the Cypress Hills. Game-farmed elk throughout central and western Alberta and cattle in the Waterton area also play host to these flukes.

Importance for Wildlife Management

Although generally not a serious concern in elk and deer, infections in moose can be debilitating. Thus, wildlife managers are concerned about introducing GLF into areas where moose are abundant. Programs involving translocation of elk from areas where the parasite is common (enzootic areas) involve treatment of each individual before release in non-enzootic areas.

Public Significance

Giant liver fluke does not live in humans and does not occur in the meat of affected animals. However, domestic cattle, goats, sheep, as well as game farm elk and deer can have flukes in the liver. Chronic infections in dairy cows and beef breeding stock may be associated with reduced productivity, and infected livers are condemned at slaughter. Large numbers of flukes in domestic goats and sheep may be associated with mortality, although this has not been seen in Alberta. Chronic or heavy infections in game farm cervids may also be associated with decreased productivity and/or weight gain as well as deformities in growing antlers.



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Prevention/Control

Prevention or control of infections in wild populations is neither feasible nor warranted. Current management programs are aimed at identifying infected populations and limiting human-related spread of the flukes. Elk translocated from infected populations are treated to prevent the spread of fluke infection to wetlands and wildlife. Fasinex® (triclabendazole) is used as an oral drench at 50-60 mg/kg live body weight prior to translocation. A second drenching is recommended to eliminate any remaining live flukes.

Control of GLF in game farm situations should include annual or semi-annual treatment of elk and white-tailed deer with Fasinex® (note: mule deer are not good habitat for this critter), restricted access to contaminated wetlands, and perhaps controlled burning of affected wetland vegetation in the spring.



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Summary

Giant liver fluke currently has limited distribution in wild populations in Alberta. Infections occur in game-farmed elk and deer and therefore animal husbandry and pasture management techniques should be implemented annually to avoid infection.

Additional Information

Parasitic Diseases of Wild Mammals, Second Edition. Edited by William M. Samuel, Margo J. Pybus and A. Alan Kocan. 2001. Chapter 6 - Liver Flukes.

Alberta Agriculture, Food and Rural Development: [http://www1.agric.gov.ab.ca/\\$department/deptdocs.nsf/all/agdex4623?opendocument](http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/agdex4623?opendocument)

University of Northern British Columbia: http://www.unbc.ca/nlui/wildlife_diseases_bc/liver_flukes.htm

Merck Veterinary Manual - Online: <http://www.merckvetmanual.com/mvm/index.jsp?cfile=htm/bc/22604.htm&word=fascioloides%2cmagna>