



# Echinococcus multilocularis

## in Alberta



### Common name

alveolar hydatid disease,  
alveolar echinococcosis

### Scientific name

a tapeworm (cestode),  
*Echinococcus multilocularis*

## What's Bugging Wild Critters?

Fact sheet #36 :  
*E. multilocularis*

### Significance

*These tiny tapeworms generally are benign in wild species. Although rare, infections in humans are documented, some of which were fatal.*

### What? Where? How?

*Echinococcus multilocularis* is a teeny tiny white tapeworm (<5 mm in total length!) that commonly lives as an adult in the intestine of arctic fox, red fox, occasionally in coyotes, and rarely in wolves, dogs, and cats. Larvae occur as thin-walled transparent fluid-filled cysts in the internal tissues of various rodents. The cysts are interconnected and look somewhat like a bunch of miniature grapes.

This tapeworm has a wide distribution in central Europe and northern Asia and also extends from the tundra zone of northern Canada to the central regions of the United States. In Canada, *E. multilocularis* is reported from the Northwest Territories, Nunavut, Manitoba, Saskatchewan, and Alberta.

### Transmission Cycle

This tapeworm relies on predator-prey relationships to complete its life cycle. When rodents with larvae in their tissues are eaten, adults develop in the intestines of a fox or coyote. Eggs in the canid faeces are deposited on the ground where they can survive for long periods, even if frozen.

A variety of small rodents, including but not limited to mice, voles, shrews,

lemmings, squirrels, and muskrats become suitable habitats for the larvae if they eat soil, vegetation, or faeces contaminated with the eggs.

Within hours, the eggs hatch and larvae penetrate the wall of the intestine. The larvae then migrate to the liver where they multiply over and over, eventually creating clusters of cysts in various tissues of the chest and abdominal cavities. In less than two months after entering the rodents, larvae are infective and ready to be eaten by a fox or coyote.

### Distribution in Alberta

Thorough surveys for *E. multilocularis* have not been conducted. However, in the 1970s cysts were recovered from deer mice collected near Edmonton and Lethbridge. More recently adults were found in the gut of coyotes in and around Calgary and Edmonton. Given the overall distribution of this species, it may well occur in foxes, coyotes, and rodents throughout the province. Dogs and cats that eat infected rodents also are suitable habitats for these tapeworms, although documented infections are rare.



# Alveolar hydatid in Alberta

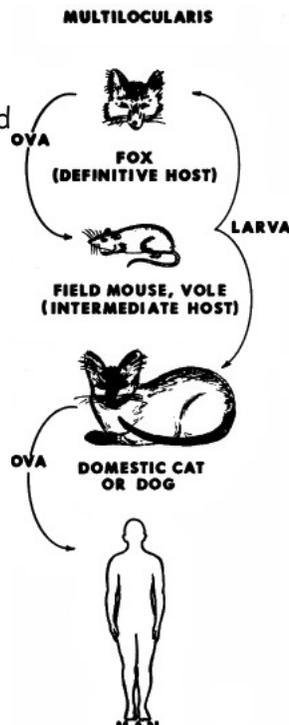
(*E. multilocularis*)

## Importance for Wildlife Management

Adult tapeworms generally occur as benign residents of the intestine. Several hundred thousand adult *E. multilocularis* can occur in individual foxes or coyotes without any apparent effect on the health of the individual (remember, the adults are tiny). This is not the case for larvae in the rodents, and death of heavily infected rodents may increase the opportunity for transmission to scavenging foxes and coyotes. Legal and illegal translocation of infected foxes or coyotes to areas outside the present range of the parasite is a serious management concern due to the subsequent risk to public health (see below).

## Public Significance

People can enter the life cycle of *E. multilocularis* by ingesting eggs from contaminated surfaces and thus replacing the rodent host.



The eggs may come from handling infected foxes or coyotes but also can be produced by infected cats and dogs. The latter animals pose the greatest risk to humans.

Infected people can develop rapidly multiplying alveolar cysts within their liver and other tissues. Although the disease is very rare in Canada, a few cases were found since 2013 in central Alberta.

## Prevention/Control

There is no practical way to control *E. multilocularis* in the wild. However, it is very important to ensure that cats and dogs remain free of the parasite. In areas where the parasite may occur, pets should be de-wormed annually and discouraged from eating small rodents. Transfer of infected foxes or coyotes to areas free of the parasite should be prohibited.

## Summary

*Echinococcus multilocularis* is a significant health risk in infected humans. Fortunately, infections in people are extremely rare and this tapeworm is uncommon in wildlife in Alberta. Care should be taken to ensure that dogs and cats are not infected.

## Additional Information

Parasitic Diseases of Wild Mammals, Second Edition. Edited by William M. Samuel, Margo J. Pybus and A. Alan Kocan. 2001. Chapter 7 - Taeniasis and Echinococcosis.

Health Canada: [www.phac-aspc.gc.ca/lab-bio/res/psds-ftss/msds55e-eng.php](http://www.phac-aspc.gc.ca/lab-bio/res/psds-ftss/msds55e-eng.php)

Merck Veterinary Manual Online: [www.merckmanuals.com/professional/infectious\\_diseases/cestodes\\_tapeworms/echinococcosis\\_hydatid\\_disease.html](http://www.merckmanuals.com/professional/infectious_diseases/cestodes_tapeworms/echinococcosis_hydatid_disease.html)

Alaska Department of Fish & Game: [www.adfg.alaska.gov/index.cfm?adfg=disease.internal1](http://www.adfg.alaska.gov/index.cfm?adfg=disease.internal1)

Centers for Disease Control & Prevention: [www.cdc.gov/parasites/echinococcosis/index.html](http://www.cdc.gov/parasites/echinococcosis/index.html)