



Parasitic Tapeworm (*Echinococcus granulosus*)

What is *Echinococcus granulosus*?

Echinococcus granulosus is a parasitic tapeworm that requires two hosts to complete its life cycle. Ungulates (deer, domestic cattle, domestic sheep, elk, and moose) are intermediate hosts for larval tapeworms, which form hydatid cysts in their body cavity. Canids (wolves, coyotes, dogs, foxes) are definitive hosts where larval tapeworms mature and live in the small intestine. Definitive hosts are exposed to larval tapeworms when ingesting infected ungulates. Adult tapeworms, 3-5 mm long, produce eggs which are expelled from canids in feces. Intermediate hosts ingest the eggs while grazing, where the eggs hatch and develop into larvae.

Where is *Echinococcus granulosus* found? Is it found in Oregon?

The tapeworm has a worldwide distribution with two recognized "biotypes." The 'northern' biotype that circulates between canids (wolf, dog) and wild ungulates (moose, caribou, reindeer, deer and elk) is primarily found in northern latitudes above the 45th parallel. The 'southern' biotype circulates between dogs and domestic ungulates, especially sheep. It is endemic and common in most sheep-raising areas of the world.

Hydatid cysts were found in domestic sheep from Idaho sent to California for slaughter in the late 1960s and early 1970s. In Oregon, hydatid cysts were documented in a deer carcass from Grant County in 1977. So, the parasite is possibly maintained in wild coyote and fox populations in our state. Tests for the tapeworm have not been conducted in coyotes and foxes, and the prevalence rate is unknown.

More recently, adult tapeworms were found in 39 of 63 (62%) wolves collected in 2006-2008 from Idaho. Similar prevalence occurs in Montana. It is unknown if Oregon wolves have these tapeworms. However, Oregon's wolf population originates from Idaho, and the tapeworm is part of its ecology.

Can humans get infected with *Echinococcus granulosus*?

Humans are not a natural host of the parasite, but in rare cases can be infected by ingesting eggs from canid feces, usually from a domestic dog. In humans, hydatid cysts usually develop in the liver or lungs, and there are several treatments for the disease. Throughout the world, most human cases occur in indigenous people with close contact with infected dogs. The hydatid cysts that can form in intermediate hosts (ungulates like deer and elk) are not infectious to humans.

Where the parasite is found in wolves and wild ungulates, most wildlife management and public health agencies consider the public health significance and risk to be low. These agencies always recommend wearing latex or rubber gloves when skinning or field dressing coyotes and foxes, consistent with the recommendations for handling most harvested game. Additionally, wild game meat should always be cooked thoroughly (165 degrees). Gloves should also be worn when handling dog or wolf feces.

Am I at greater risk if I am a hunter, trapper or outdoor enthusiast?

The potential for hunter exposure to *Echinococcus granulosus* eggs in wolf feces or fecal contaminated hides is low. In Minnesota, where the parasite has been well-documented for many years and where hunter harvest of game animals is high, no case of human infection has been recorded.

Regular deworming of domestic dogs and good hygienic practices (wearing rubber or latex gloves when handling feces and washing hands after handling feces) by humans in contact with dogs and dog feces are the best methods of control and prevention of the tapeworm in humans. Do not feed uncooked meat or organs of deer, elk, moose or sheep to dogs.

What is the significance of *Echinococcus granulosus* to wildlife and livestock?

Based on available information, the health risks associated with *Echinococcus granulosus* to wildlife and livestock is low. Heavy infections may be related to poor body condition. In ungulates, the presence of large numbers of hydatid cysts can lead to respiratory difficulty. The presence of hydatid cysts in livestock at slaughter is generally not of concern, and if present, is trimmed from the edible product.

Where can I find more information about *Echinococcus granulosus*?

Centers for Disease Control and Prevention

<http://www.dpd.cdc.gov/dpdx/html/Echinococcosis.htm>

Oregon Department of Fish and Wildlife

Wildlife Health Laboratory 541-757-4186 (ext. 222)

<http://emedicine.medscape.com/article/216432-overview>