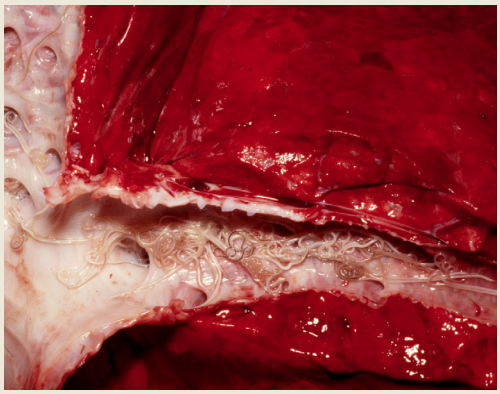
PARASITES OF BLACK-TAILED AND MULE DEER

Fact Sheet #45

PARASITES

A wide range of species live in or on deer but only a few are common and most are not harmful to deer. Many parasites in deer have no significant population affects. However, changes in presence or distribution, such as with exotic lice, could affect a deer population.

NEMATODES (ROUNDWORMS)



Nematodes are classic "worms" that live in various tissues and organs. These white thread-like, fluid-filled animals often show up easily against the darker tissues in which they live. Life cycles are **direct** (immature stages move out of one individual, live freely in the environment, then go back into the species they started in) or **indirect** (out of one individual, through one or more different species, then back into the original species). Food habits, predator-prey interactions, and biting arthropods all play significant roles in the life-history strategies of nematodes. Common conspicuous nematodes in black-tailed and mule deer include: carotid or arterial worm *(Elaeophora schneideri)*, lungworm (primarily *Dictyocaulus viviparous*) [as pictured], abdominal worm *(Setaria yehi)*, eyeworm *(Thelazia californiensis)*, and legworm *(Onchocerca cervipedis)*.

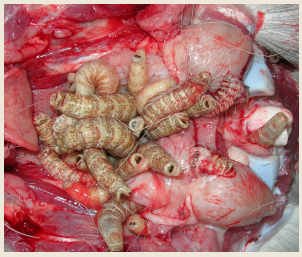
CESTODES (TAPEWORMS)

Tapeworms are long, white, flat ribbons with repeating segments throughout. One end has a small "head" (scolex) that anchors the tapeworm in its favorite part of the intestines. Tapeworms have no digestive system, they absorb nutrients through their body wall. Each segment has male and female reproductive systems, but cross-fertilization from another worm happens often. Segments containing fertilized eggs occur in deer feces. It gets complicated from there. Most tapeworms have **indirect** life cycles: Larvae from hatched eggs encyst in invertebrates like snails or mites that are eaten by deer as they forage. Predator-prey relationships between cervids and carnivores also are common in tapeworm cycles. Long flat worms in the intestine or round tapeworm cysts in deer tissues may concern some hunters, but these do not infect people. Common visible larval cysts in mule deer include: *Taenia* spp. and *Echinococcus* (Note: *Echinococcus* eggs in canid feces are infective to humans; the cysts in deer lungs are NOT).

PROTOZOANS

Sarcocysts are common benign critters that generally use predator-prey relationships to move between herbivores and carnivores. Sarcocysts occur in two sizes: macrocysts (visible) and microcysts (microscopic). The large sarcocysts seen in black-tailed and mule deer muscles are different species; neither is the same as the sarcocysts in waterfowl breast muscles. Sarcocysts in black-tailed and mule deer do not pose health concerns to deer or people.

FLIES AND FLY LARVAE



Louse flies or deer keds (hippoboscid flies) are harmless flat brown flies often seen in deer hair. They are larger than lice and move faster than ticks. On the other hand Botfly larvae (*Cephenemyia* spp.) are yellowish grubs at the back of the throat. In dead deer, they often move into the mouth, nose, or onto the ground. These larvae are small in the fall and not often seen by hunters. Generally, they too are harmless to deer.

LICE

There are two types of deer lice: chewing lice *(Tricholipeurus)* and sucking lice *(Solenopotes)*. Chewing lice feed on hair and sloughed skin cells and generally are not associated with significant damage to deer. Sucking lice are blood-feeders and although rare, can be vectors of disease pathogens. Chewing lice and sucking lice can occur on the same individual, but on different body regions or in different seasons. North American lice on black-tailed and mule deer are of little concern. However, exotic lice from imported fallow deer are associated with hairloss, emaciation, and death, particularly in fawns and yearlings.

TICKS

Ticks are not insects, but like spiders, adults have eight legs and one body part. The most common ticks on black-tailed and mule deer are wood tick *(Dermacentor andersoni)* or winter tick *(Dermacentor albipictus)*, each of which can be common but rarely numerous. Many tick larvae are licked away by deer (unlike moose), which limits the number of ticks but can cause minor hairloss in the licked area. All ticks feed on blood and can be potential vectors of some disease agents. Hunters and wildlife biologists should take appropriate precautions to avoid tick bites. People with embedded ticks should seek medical advice and remove ticks using recommended techniques.

Table 1. Overview of selected parasites of black-tailed and mule deer.

Common name	Location in host	Common/Rare	Management concern?
Carotid worm: *Elaeophora*	Blood vessels in head & neck	Common	Benign in deer. Debilitating in other species.
Lungworms: *Dictyocaulus*	Lung airways	Common	Benign
Abdominal worm: *Setaria*	Liver & omentum	Common	Benign
Eyeworm: *Thelazia*	Eye tissues	Common	Usually benign
Legworms: *Onchocerca*	Foot & leg tissues	Common	Benign
Tapeworm: Larval cysts	Liver, muscles, lungs	Locally abundant	Benign
Tapeworm: Adults	Intestines	Common	Benign
Protozoans: *Sarcocystis*	Skeletal & smooth muscles	Common	Benign
Botfly larvae: *Cephenemyia*	Back of throat	Common	Usually benign
Louse fly: A few species	Haircoat	Locally abundant	Benign
Lice: Native species	Haircoat	Common	Benign
Lice: Exotic species	Haircoat	Locally abundant	Debilitating mortality factor
Ticks: Various species	Haircoat	Locally abundant	Potential pathogen vector

For more information visit: www.muledeerworkinggroup.com. More information on diseases and parasites in black-tailed and mule deer: Pybus, M.J., Wood, M.E., Fox, K.A. and Munk, B.A., 2023. Diseases and Parasites. Pages 103-124 in Ecology and Management of Black-tailed and Mule Deer of North America. CRC Press.

A product of the **Wildlife Health Committee & Mule Deer Working Group**
Sponsored by the **Western Association of Fish & Wildlife Agencies**
Produced with support from the Mule Deer Foundation (www.muledeer.org) — Approved: January 2024