



Sarcocystis

(*Sarcocystis* spp.)

in Alberta



Common name

sarcosporidiosis,
sarcocystosis, rice
grain disease

Scientific name

single-celled protozoans
of the genus
Sarcocystis

What's Bugging Wild Critters?

Fact sheet #11:
Sarcocystis

Significance

Sarcocysts are benign little critters that live in the muscles and intestines of various birds and mammals. They cause concern only when hunters see them, most often in the breast muscles of wild ducks. They are NOT infective to humans

What? Where? How?

There are many, many species of sarcocysts. Generally, these single-celled animals live as tiny microscopic individuals in muscle cells or intestinal cells of infected animals. Groups of sarcocysts, often referred to as cysts, can occasionally be seen in muscles of birds or mammals as white areas about the size and shape of a piece of rice. These show up particularly well in the dark breast muscles of dabbling ducks.

Transmission Cycle

Sarcocysts are superbly adapted to make use of predator/prey relationships. The needs of sarcocysts change during their different life stages as herbivores and carnivores provide alternating habitats. In herbivores (e.g., ducks, moose), sarcocysts develop as visible cysts that contain hundreds of immature individuals. The cysts provide food, warmth, moisture, and nutrients, as well as protection from the immune system.

While inside the cyst, these critters are in a resting stage and will not develop further until the cysts (and the duck or moose!) are eaten by a carnivore (possibly a skunk or a wolf, respectively).

In the carnivore, the immature individuals break out of the cysts, enter cells of the intestine, and begin to reproduce. They eventually develop into sporocysts that can re-enter the intestine and be passed out along with the faeces. Sporocysts are well adapted to survival in the environment as they wait and wait for an herbivore to eat them. Once eaten by the right species of herbivore, the sporocysts release a different kind of immature stage into the herbivore's intestine. These immature sarcocysts burrow into blood vessels, produce multiple generations of new and different immature stages, eventually enter muscle fibres, and finally develop into a resting cyst. Pretty complicated for a single-celled animal!!

Distribution in Alberta

Sarcocysts make ready use of various wild and domestic birds and mammals as habitat in Alberta. The most conspicuous cysts are found in dabbling ducks, particularly shovelers, mallards, and gadwall. Cysts also occur in almost all moose, deer, and elk as well as a wide range of rodents and furbearers but they are generally too small to see. Dr. Marht from the University of Alberta conducted a survey of various big game species throughout central Alberta, and found 50% to 75% of the animals examined, depending on species had these cysts. These ubiquitous animals (the sarcocysts) are well distributed throughout the province and around the world.

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Importance for Wildlife Management

There is little or no evidence that sarcocysts harm the habitats in which they live. As a natural component in most if not all ecosystems, these species are well adapted to living in harmony with other members of the system.



Fish & Wildlife Alberta GRD

Public Significance

Sarcocysts do not pose a human health risk. Some heavily infected ducks may be needlessly discarded because hunters are concerned about the aesthetics of serving or eating meat loaded with the cysts! Cysts in lightly infected birds or birds that are plucked rather than skinned are undoubtedly eaten by many hunters and their friends. In case you are still concerned, rest assured that the cysts are killed by freezing and cooking.

Prevention/Control

Control of these tiny protozoans is neither necessary nor possible.



Summary

Sarcocysts are extremely common residents throughout Alberta. They are completely benign and pose no particular concern. They just live here.

Additional Information

Parasitic Diseases of Wild Mammals, Second Edition. Edited by William M. Samuel, Margo J. Pybus and A. Alan Kocan. 2001. Chapter 17 - Tissue-inhabiting Protozoans.

Northwest Territories Resources Wildlife Economic Development: <http://www.nwtwildlife.rwed.gov.nt.ca/Publications/diseasepamphletweb/sarcocystosis.htm>

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

USGS National Wildlife Health Center: http://www.nwhc.usgs.gov/pub_metadata/field_manual/field_manual.html