



**CANADIAN COOPERATIVE WILDLIFE HEALTH CENTRE**  
**Department of Pathobiology, Ontario Veterinary College,**  
**University of Guelph,**  
**Guelph, Ontario. N1G 2W1.**  
**519-824-4120 ext. 54662**

### **Raccoon Roundworm (*Baylisascaris procyonis* )**

#### **What is it?**

*Baylisascaris procyonis* is the roundworm of raccoons. Related species are found in the intestines of bears (*B. transfuga*) and skunks (*B. columnaris*). Like the roundworms of dogs and cats, this parasite has a complicated life cycle that may or may not involve intermediate or paratenic hosts. The adult worms live in the small intestine of the final host, the raccoon. The female worm sheds eggs into the intestinal tract and they pass out into the environment with the feces of the host. These worms are prolific egg producers, and millions of eggs may be present in a single defecation. The eggs are not immediately infective and must incubate for a period of time in the environment. The time varies with temperature and humidity but is typically somewhere around 21 days. Once the egg has larvated it is infective. Larvated eggs are extremely resistant to physical and chemical attack and will remain in the environment, potentially infective, for long periods of time. If the eggs are ingested by an animal other than their final host, they may go on a migration through body tissues, causing tissue damage as they travel. This may result in illness or death of the affected host. If the affected animal is subsequently eaten by a raccoon, the larvae are released into the intestines of the raccoon and continue their normal development to adults.

#### **Effects on infected hosts**

The worms have little or no harmful effect on raccoons. Infection is more common in young raccoons and presumably, most raccoons have overcome infection by adulthood. In rare instances, the numbers of worms present in an individual raccoon may be so great that they cause loss of body condition through competition for nutrients, or may cause an intestinal blockage through sheer mass of numbers.

More serious consequences occur in aberrant or atypical hosts. In these animals, the migration of the larval worms through tissue may cause significant tissue damage. The worms often end up in the brain of the atypical host where they cause severe neurological impairment and often death.

## **Species of animals affected**

Infection with *B. procyonis* has been reported in a wide range of North American wildlife species, including both mammals and birds. Animals at particular risk are those which commonly share habitat with raccoons and which feed off the ground. Neurological disease due to tissue migration of *B. procyonis* is a common cause of death in squirrels, groundhogs and other rodents. Ground-feeding birds have also been infected. Infection in carnivores appears to be a rare event.

## **Human health concerns**

There have been cases of human infection with *B. procyonis*. Fortunately, these cases have been rare, but the consequences for the individual patient are extremely severe. The larval worms cause considerable tissue damage which results in severe neurological impairment and possibly death. The small number of cases reported has almost exclusively involved children, presumably because of their exploratory nature and often poor personal hygiene. The disease in people is not easily diagnosed and is essentially untreatable, with treatment aimed at arresting further damage and ameliorating the symptoms due to the damage already caused.

## **Distribution of *B. procyonis* in Canada**

The parasite likely occurs wherever raccoons are present, but its prevalence seems to vary widely across the country. No systematic surveys of its occurrence have been reported. Anecdotally, the parasite occurs at high prevalence in most areas in southern Ontario. It has also been described in raccoons from the Pacific coast. It apparently is much less commonly seen in raccoons in the prairie provinces. It is probably reasonable and cautious to assume that the parasite is present wherever there are raccoons.

## **Public health measures**

There are legitimate public health concerns over the potential exposure of humans to this parasite, due to the large number of raccoons populating many urban centres in Canada. The best preventive measure is the removal of fresh raccoon feces before the parasite eggs have the opportunity to larvate. Fortunately, raccoons often defecate collectively and repeatedly in the same location, or 'latrine', facilitating to some degree the task of cleaning up. People are often faced, however, with the prospect of cleaning up a heavily contaminated area such as an old shed or barn.

Such clean-ups should be approached cautiously. People should wear protective masks and gloves. The feces that are collected should be disposed of by burning or burying in a landfill. Under no circumstances should they be composted or deposited in an area in which there is likely to be human or animal contact. Contaminated surfaces will be difficult to clean completely as the eggs are resistant to most disinfectants. They are sensitive to heat, so that steam cleaning or dry heat (e.g. blow torch) should destroy them.

Obviously, this is not going to be feasible in many circumstances, and in some cases destruction and replacement of contaminated surfaces may be necessary.

### Life Cycle of *Baylisascaris procyonis*

(Source: Center for Diseases Control, Atlanta, Georgia, USA)



