

Tropical Parasite Found In A Canadian Bison Herd

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Manitoba isn't known for its tropical climate, though there is actually a place named Miami in the south of the province. Until very recently ruminant animals living in this province were thought to be free from intestinal parasites found in tropical and subtropical parts of the world. Based on a recent discovery this is no longer true. *Toxocara vitulorum* is an intestinal roundworm usually confined to warm climates found in places like south Asia and commonly found in ruminant animals like the water buffalo (*Bubalis bubalis*). However, last spring saw the first case of this parasite ever recorded in Canada in a herd of bison (*Bison bison*) from Manitoba. It seems this was inevitable since there have been informal reports of *T. vitulorum*, affecting calves in Minnesota and South Dakota bison herds. There is no doubt that trade in live bison as well as water buffalo and possibly cattle has pushed this parasite northward from the southern United States.

The parasite has an unusual life cycle in that the adult worms are rarely seen in the adult host animal (Figure1). When the microscopic eggs containing infective larvae are ingested by a bison, they hatch in the intestine and migrate around the body, stopping only to hide in the host's liver or other safe place where they remain dormant. In males, they stay there and are harmless. In females, the larvae become active at calving time and move to the mammary glands where they are passed in colostrum and milk to the new calf. These larvae develop into adults which inhabit the small intestine where they cause problems such as diarrhea, weight loss, gut distention or sometimes total intestinal blockage. While they are a common nuisance to water buffalo and relatively harmless to infected cattle in warm climates, *T. vitulorum* can cause clinical disease and even death in bison calves. The surviving calves pass eggs in their feces, infecting other adults and calves sharing the same pasture. Toxocara eggs are very hardy and are capable of surviving a Canadian summer or winter if they are in an undisturbed fecal pat. Hot and dry conditions are best for reducing the number of eggs on pastures.

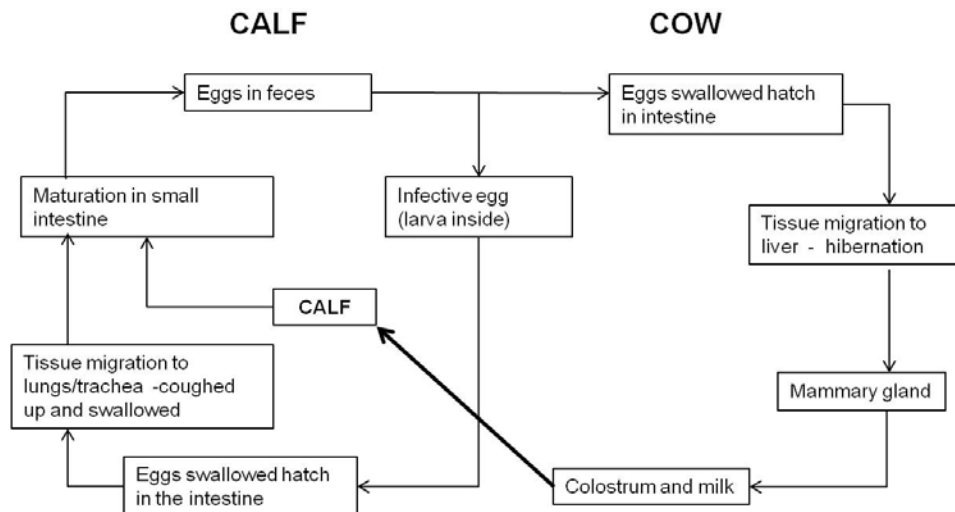


Figure 1 - Life Cycle of *Toxocara vitulorum* in water buffalo (*Bubalis bubalis*)
From *Toxocara: The enigmatic parasite*. Ch 18 *Toxocara vitulorum* in livestock Starke-Buzetti, W.A. eds: Holland, C.,
Smith H.V. 2006 CABI Publishing, Cambridge MA, USA.

The larvae residing in the tissues of infected adult animals are difficult or impossible to kill. Worms inhabiting the intestines of calves are susceptible to treatment and in water buffalo or cattle treatment is relatively easy and straightforward. However, that's not often the case with infected bison calves, often 2 or 3 weeks old, and still very attached to mom. As you all know, even ear tagging a bison calf can be hazardous to your health when mom is around. At this age they aren't eating solid food and they don't drink much except from mom. How can a producer treat a new bison calf on pasture with injectable or pour-on anthelmintic? Darting the calves with a low-velocity, compressed gas powered delivery system or a blow gun dart works. So does the use of pour-on ivermectin delivered through a kid's Super-Soaker water gun. Neither method is ideal and the herd quickly figures out what is going on but if you are sneaky about it you can get most of the calves treated over a few days. Treating the cows at this stage, or even later on when the calves are older, is never 100% effective because of the worm's ability to hide from the drugs in the dormant form. Treatment of the calves is, unfortunately, the single best method to rid the herd of this parasite.

Since the worms are hibernating in adults and have disappeared from the intestinal tract of calves by weaning time, the best time to check feces for the parasite is soon after calving starts. The early post calving period is when most clinical problems appear and is also the best time to do fecal checks for eggs. Observation of the calves on pasture will provide an opportunity to collect feces on the ground into a baggie or an empty bread bag soon after they are passed. Take the fecal sample to your veterinarian for parasite assessment. Post mortem examination of dead calves will show worms in the upper intestinal tract which, unlike most bison worms, are visible to the eye.

Regular treatment of the entire herd for parasites helps but will not kill all the *T. vitulorum* parasites in affected bison. Treatment of calves is best but should only be done when there is evidence of infection. Harrowing of affected pastures to break up fecal pats, allowing them to dry out, helps prevent infection as does keeping bison out of affected pastures for a season or two. Use biosecurity measures for prevention, meaning that you should treat herd imports for parasites on arrival and do not mix groups of new and old animals until you are sure it is safe to do so. Asking questions about health issues and parasite problems in the herd from which you intend to buy is always a good idea. Keeping this parasite out of your bison herd is much easier than dealing with it once it has become established.