egg production, and have yellow livers with a blood clot extending from a rupture of the capsule. The disease problem reported here poses a significant negative economic impact in affected flocks. Differential diagnoses at this time include 1) a lymphoproliferative disease, 2) bacterial infection, such as *Campylobacter* or *Clostridium* spp., 3) feed toxin, such as rapeseed or mycotoxins. Further diagnostic and epidemiological studies are required.

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British Columbia

Heartworms in dogs in British Columbia

On March 26, 1991, heartworm disease was diagnosed in locally raised dogs in the Oliver — Osoyoos area of the Okanagan Valley. The initial diagnosis was made at necropsy in a Plott hound that had been admitted to the clinic in severe respiratory distress and exhibiting a heart murmur. The hound died during a diagnostic workup.

Post-mortem findings included ascites, a large nutmeg liver, excess pleural fluid, and mottled lungs with some consolidation. The heart was enlarged and misshapen, with the right ventricle and right atrium grossly dilated. The right ventricle, pulmonary artery, and arterioles contained many heartworms. The total count of worms, which ranged up to 35 cm in length, was 329. Direct smears of the blood stained by the Diff-Quick method revealed microfilariae. Two dogs housed near this dog were examined for microfilariae by the modified Knott's concentrating technique in 2% formalin, and stained with methylene blue. Microfilariae were demonstrated in both dogs. All slides were examined by Dr. J. R. Allen, Western College of Veterinary Medicine, Saskatoon, and a positive confirmation of *Dirofilaria immitis* was made.

Microfilariae have been demonstrated in 20 dogs from 15 owners. Nine of the dogs are hounds that had been in contact with one another in the past. These hounds are commercial hunting dogs and travel extensively within the province. For this reason, it is important to examine dogs in many areas of the province to identify other foci of infection. One dog was not a sporting dog, but approximately three years previously, had lived within 3 km of animals involved in the original outbreak. The remaining dogs had not been in contact with these hounds, and were distributed randomly in the area. The main distribution of positive dogs ranges from south of Osoyoos to north of Oliver, a distance of approximately 30 km. One dog raised in the area of Oliver lived in Summerland, and was found to be positive for microfilariae. The Oliver-Osoyoos area is a popular destination for tourists, many of whom bring dogs to the area. It is possible that some of these dogs have become infected with the parasite, and have transported it to their home areas, where they may serve as vectors for other resident dogs.

Circumstantial evidence suggests that the disease was introduced by a hound from Texas about six years ago. The dog was known to have had heartworms in Texas, but was supposed to have been treated and cured before it left Texas. This dog had been tethered among the dogs in which the disease was first found, and then sold to another owner. The hound from Texas died some time ago while bear hunting, presumably from exhaustion at that time. To date we have tested 360 dogs and have found 20 animals positive for *D. immitis*. Nineteen of these animals are undergoing treatment. The remaining dog continues to be a carrier, as the owner has not sought treatment for this animal. Necropsies will be performed on coyotes killed in the area of Oliver - Osoyoos, to determine whether this wildlife species is involved.

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Alberta

Border disease virus isolated from twin lambs

Reported for the first time in Canada, Border disease (BD) virus was isolated from clinically affected twin lambs. The lambs were born in the fall of 1989, at Olds, Alberta. Both were stunted, but only one exhibited characteristic tremors (a bobbing motion) of the head, neck, pelvis and hind legs. Over a period of several months, the tremors diminished, and eventually disappeared. Neither lamb appeared hairy or excessively pigmented.

Border disease virus was detected in leukocytes from one twin and in tissues of the other. Virus could not be detected in serum, using standard techniques for detecting bovine virus diarrhea viruses. **By inoculating pregnant ewes with virus recovered from tissues, we reproduced BD in the offspring.** A detailed investigation of this case was performed, and a full report has been accepted for publication in this journal (1).

Reference

1. Lees VW, Loewen KG, Deregt D, Knudsen R. Isolation of border disease virus from twin lambs in Alberta. Can Vet J 1991; *in press.*

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