

# Animal Health Monitor

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Ministry of  
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## Adjusting to the Times

*R.P. Kitching, Chief Veterinary Officer and Director, Plant and Animal Health Branch*



The Ministry of Agriculture (AGRI) is updating its animal health legislation to improve its ability to respond to events that could threaten the health of provincial livestock or the safety of provincially produced animal products. The existing Animal Disease Control Act has not been substantially changed since it was written in 1948, and it no longer reflects contemporary strategies for the control of animal disease. A 60 day public consultation that closed at the end of January, produced a number of comments from the public and agricultural industry representatives. Ministry staff also held meetings to discuss the new legislation with stakeholders. What has been apparent is that there is a polarization of concerns, with smaller producers suspicious that any new legislation would put additional burdens on them, but only benefit the export opportunities

enjoyed by the large producers. The large producers have concerns that their livelihoods could be at risk from the lack of biosecurity on the small holdings which predisposes to the introduction of highly infectious diseases such as avian influenza and foot-and-mouth disease.

Diseases do not respect size of farm, and while it can be argued that a low pathogenic strain of avian influenza virus will more likely mutate to a high pathogenic strain in a large poultry unit, its introduction into domestic poultry will more likely occur on a farm where the domestic and wild birds can freely mix. Similarly, pigs kept in a backyard are more likely to be fed table scraps that could include illegally imported meat products containing any one of a

variety of pig pathogens (foot-and-mouth disease, classical swine fever, African swine fever, swine vesicular disease, Aujesky’s disease etc ), than pigs kept on a commercial pig enterprise.

The problem with disease outbreaks, whether on a small or large farm, is that they affect every livestock owner. Repercussions of some outbreaks are that both international and interprovincial export markets close, consumer confidence is compromised, even if there is no possibility of transmission to humans. Combine this with a drop in prices for products that can no longer be exported, and all producers suffer.

The updated animal health legislation is intended to benefit all B.C. residents, including large and small scale producers, and consumers. There is no intent by government to restrict the ability of livestock owners to profitably produce food, quite the contrary. As times have changed, consumers require more assurance that the food supply is safe and humanely produced, and trading partners no longer take our word for the absence of disease contamination of our products. If we say we are free of a particular disease, we have to show that we are looking for it.

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**Poultry Extension update-** Bill Cox



Poultry extension services have been offered by the B.C. Ministry of Agriculture for a few years. Outreach efforts have been very well received and appreciated by small flock owners throughout British Columbia that have attended short courses on poultry management and disease prevention. In the next year we plan to continue offering these courses at various locations including Denman Island, the Okanagan, and both Chilliwack and Abbotsford campuses of the University of the Fraser Valley.

To augment the course, a new manual for small flock owners with a wealth of information on management, disease prevention, biosecurity, and recognition of important diseases will soon be available.

For commercial poultry producers, new growers, and farm workers, a short-course on flock management and disease prevention and control (including vaccination procedures) is being planned. This course will emphasize practical approaches and techniques in poultry production. Stay tuned, notification of these courses will be disseminated through producer associations. For more information contact Dr. Bill Cox, Poultry Extension Veterinarian at [william.cox@gov.bc.ca](mailto:william.cox@gov.bc.ca)

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## **B.C. Johne's Disease Program update-** Jane Pritchard

B.C. is in the second year of a project to increase awareness and testing of Johne's disease in beef and dairy herds. Ontario, Quebec and Alberta also have Johne's programs.

In the first year of this project we focused on increasing awareness among veterinarians with workshops on applying the On Farm Risk Assessment Tool and we initiated work to develop an efficient, effective laboratory test for Johne's Disease and BVD at the Animal Health Centre in Abbotsford. Now in the second year of funding, B.C. producers were informed during workshops in March about the Ontario Johne's Program by Dr. Ulrike Sorge from the University of Guelph. Also, our new laboratory test protocol is ready and it will be available to test beef and dairy herds later this year. There will not be any charge for testing, and to optimize the program, testing will be offered through veterinarians who will do the On Farm Risk Assessment in conjunction with testing.

Producers can enroll by talking with their veterinarians. To sample a herd, the veterinarian collects individual labelled manure samples (about 60gm), from each animal that is over 18 months of age. The test on manure involves two steps:

- 1) PCR to detect genetic components of BVD virus and Johne's Disease bacteria and
- 2) culture in the automated Bactec MIGT system.

To keep costs down, tests will be batched and run together rather than running them individually. This means that results will be provided to veterinarians as they become available and they will not be available immediately. The program also is offering a PCR test for BVD using skin biopsies or serum. Producers have access to this testing through their veterinarians. Veterinarians and producers should discuss and determine their needs for Johne's/BVD testing and then request the number and type of appropriate containers from the Animal Health Centre.

The goal is to test as many herds in B.C. as possible, both to benefit individual producers working to control disease, and to develop a better understanding of the prevalence of Johne's Disease in B.C. We intend to offer the testing for at least 4 years. The best use of this program is when producers work with their veterinarian to have at least two tests on each animal in the herd combined with the On Farm Risk Assessment. The project is funded by the Growing Forward joint Federal Provincial Program.

For further information please contact Dr. Jane Pritchard at [jane.pritchard@gov.bc.ca](mailto:jane.pritchard@gov.bc.ca)

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***West Nile virus can cause serious and fatal disease in horses.*** As the weather warms, mosquito season will inevitably arrive. West Nile virus is now an endemic mosquito borne disease throughout North America. Though B.C. has been spared the high impact that other regions have had, unpredictable weather patterns could lead to virus circulation in some local areas. ***Protect horses with vaccination against West Nile virus this spring.***

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## Virus sharing in the park- Ann Britton

In March, 2011 a free ranging male striped skunk found dead in an urban park was submitted to the Animal Health Centre (AHC) for post mortem examination. The necropsy revealed severe generalized bronchopneumonia with *Streptococcus canis* bacterial colonization. PCR testing on lung tissue identified pandemic H1N1 influenza virus which was confirmed by immunohistochemistry. PCR tests on kidneys from the skunk also showed infection with Aleutian disease virus and *Leptospira* bacteria.



The pathology in the lungs was similar to that seen last year in two skunks diagnosed at the AHC with pH1N1 influenza virus. Intense immunohistochemical staining for influenza in the pneumonic lungs of the 3 skunks suggests that the virus was causing severe clinical disease. Recent post mortem examination of another skunk found dead in the same urban park revealed death due to predation in an otherwise healthy animal. PCR analysis of nasal passages and lungs for pH1N1 influenza virus

in this skunk was negative. These four cases suggest that pH1N1 influenza virus may be highly virulent for skunks.

As for the source of infection, humans are the reservoir maintaining circulation of this strain of influenza, and the infected skunk was likely exposed to human secretions through contact with litter, foraging of garbage receptacles or by direct human-animal contact. It is reported that people feed skunks in this park. Preventing the spread of influenza virus to skunks and other wildlife is yet another reason to educate people who visit parks and other natural habitats to refrain from feeding or directly contacting wildlife.

To further define the pathology of pH1N1 in skunks, we would like to examine fresh carcasses that may be available. Please contact Dr. Ann Britton ([ann.britton@gov.bc.ca](mailto:ann.britton@gov.bc.ca)) to arrange submissions.

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**Dr. Chelsea Himsworth**, Diplomate of the American College of Veterinary Pathologists will join the Animal Health Centre in May 2011. Dr. Himsworth graduated from the Western College of Veterinary Medicine, University of Saskatchewan in 2007, earned a Master of Veterinary Science in Anatomic Pathology in 2009, and completed a Senior Residency in 2010. She has earned numerous awards, prizes, fellowships, scholarships, and distinctions. She has been extremely productive in her new career with more than 16 published journal articles, oral and poster presentations given at many professional conferences, and student supervision, mentoring and teaching assistant positions. Dr. Himsworth is currently pursuing a PhD in epidemiology at the

University of British Columbia. We are delighted to have her expertise in diagnostic pathology and welcome her to the Animal Health Centre. She can be reached at 604-556-3003.

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### ***Listeria monocytogenes* in dairy cattle** - Ann Britton, Nancy deWith

In February, the Animal Health Centre received tissues from 2 dairy cows from 2 separate dairy farms. The first cow had calved 4 to 5 days prior to developing a drop in milk production, blindness, recumbency, and paddling. The veterinarian reported an elevated white blood cell count indicating inflammation, and it was euthanized. The second cow was in mid-lactation and had not responded to treatment with antibiotics and nonsteroidal anti-inflammatory drugs for persistent circling to the left. Fresh and formalin fixed samples were submitted to the Animal Health Centre for diagnostic workup.

Both cows exhibited similar histopathological findings of perivascular mixed inflammatory cell cuffing, centered on the white matter in brainstem. This type of focal inflammation is typical for listeriosis and *Listeria monocytogenes* was cultured from the brainstems of both of these animals.

*Listeria monocytogenes* is a bacteria that is ubiquitous in the environment. The source for animal infection is usually by ingestion of contaminated feed. Cattle can be either clinically or subclinically infected and they shed bacteria intermittently in manure, adding to environmental contamination.(1) In a study comparing feces, feed, water, and soil on farms with recently reported cases of listeriosis in cattle to other farms without recognized listeriosis infection, the overall prevalence of *L. monocytogenes* was very similar. The bacteria was present in 24.4% of farms with cases (n=24) and 20.2% of farms without apparent infection in animals (n=28) (2).

One way that people can be infected with *Listeria* is through ingestion of unpasteurized milk and products made from raw milk. Surveys in the United States have recovered *Listeria monocytogenes* from the bulk tank milk of 2.8% of 248 dairy herds in Pennsylvania, and 4.6% of 131 herds in South Dakota and Minnesota (3,4). The risk of infection with *Listeria* and many other bacteria that are killed by pasteurization provides solid rationale to avoid the consumption of raw milk.

1. Ho AJ, Ivanek R, Gröhn YT, Nightingale KK, Wiedmann M. *Listeria monocytogenes* fecal shedding in dairy cattle shows high levels of day-to-day variation and includes outbreaks and sporadic cases of shedding of specific *L. monocytogenes* subtypes. *Prev Vet Med.* 2007 Aug 16;80(4):287-305. Epub 2007 May 3
2. Nightingale KK, Schukken YH, Nightingale CR, Fortes ED, Ho AJ, Her Z, Grohn YT, McDonough PL, Wiedmann M. Ecology and transmission of *Listeria monocytogenes* infecting ruminants and in the farm environment. *Appl Environ Microbiol.* 2004 Aug;70(8):4458-67.
3. Jayarao BM, Donaldson SC, Straley BA, Sawant AA, Hegde NV, Brown JL. A survey of foodborne pathogens in bulk tank milk and raw milk consumption among farm families in Pennsylvania. *J Dairy Sci.* 2006 Jul;89(7):2451-8.
4. Jayarao BM, [Henning DR](#). Prevalence of foodborne pathogens in bulk tank milk. *J Dairy Sci.* 2001 Oct;84(10):2157-62.
5. Mohammed HO, Stipetic K, McDonough PL, Gonzalez RN, Nydam DV, Atwill ER. Identification of potential on-farm sources of *Listeria monocytogenes* in herds of dairy cattle. *Am J Vet Res.* 2009 Mar;70(3):383-8.

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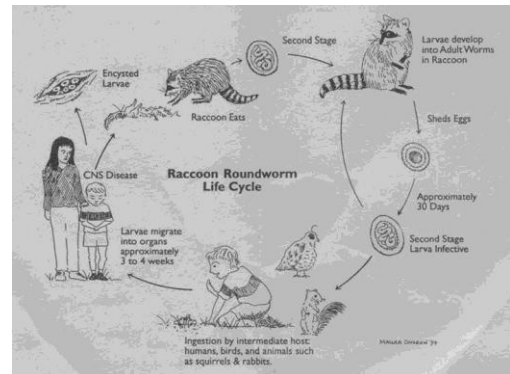


## Raccoon Zoonoses- closer than you think- Mira Leslie

In the 15 day period of November 23, 2010 through Dec. 8, 2010, six raccoons that were found dead in an urban park were submitted to the Animal Health Centre for diagnostic necropsy. All six raccoons died of canine parvovirus infection. In addition to the fatal enteritis caused by parvovirus, the raccoons had several ancillary infections that can be transmitted to humans or other animals. All six of the raccoons had *Baylisascaris*, the raccoon roundworm in their intestines, three had *Leptospira* bacteria in their kidneys, and *Salmonella* bacteria was cultured from the intestines of two of the animals.

Raccoon populations are common and dense in urban parks, lots, commercial and residential areas where food sources are plentiful.

*Baylisascaris procyonis*, an intestinal raccoon roundworm is present in 70-90% of raccoons (1). Raccoons establish community latrines -- sites where they repeatedly deposit fresh feces. These latrines are a hazard to human health and to other animals due to the potential for exposure to roundworm eggs. Once deposited in the environment, the eggs can survive in the soil for several years. Human infection can occur after roundworm eggs are inadvertently swallowed (for example a child may touch their mouth after gardening or playing with toys that have been in the dirt). Occasionally the larvae migrate in people to affect the eye or central nervous system. Severe infection in people is rare, with only 18 known cases of *Baylisascaris procyonis* infection in humans, all in North America (2).



Another zoonotic concern is *Leptospira* bacteria which is commonly carried by wild animal reservoirs including raccoons, and shed in urine into the environment. Water in lakes, streams and ponds can become contaminated. People and pets, especially dogs can become infected. In Washington State, veterinarians have reported 278 clinical leptospirosis infections in pet dogs between July 2004 and December 2010, with around 30% mortality. According to the affected dogs' owners, potential exposures included wildlife frequenting the backyard, hunting, and swimming or playing in ponds, streams or swampy areas. No human illness has been linked to the infected dogs. Occupational transmission of leptospirosis to veterinarians, animal workers and farmers, however, is well documented. In addition to direct contact with infectious urine from animals, people often contract leptospirosis from recreational exposures such as swimming, bathing or wading in contaminated lakes, waterfalls, streams. Dogs can be vaccinated against some of the serovars of *Leptospira*. Veterinary clinical staff should practice good hygiene (gloves, hand washing) and environmental disinfection to limit the potential for exposure in the clinic setting.

Preventing the transmission of diseases from raccoons to humans and pets relies mainly on common sense measures. Assure that trash and pet food are not accessible to wildlife, never feed or approach wildlife, and remediate or avoid raccoon latrine areas. Pets should be leashed in parks and wildlife habitat to reduce the chance that they may be exposed to wild animals, raccoon latrines or contaminated water. Wash your hands frequently and always after touching dirt or animals.

1. Sorvillo F, Ash LR, Berlin OGW, Yatabe J, Degiorgio C, Morse SA *Baylisascaris procyonis*: An Emerging Helminthic Zoonosis. *Emerg Infect Dis*, Vol 8, No 4, April 2002
2. Page LK, Beasley JC, Olson ZH, Smyser TJ, Downey M, Kellner KF, et al. Reducing *Baylisascaris procyonis* roundworm larvae in raccoon latrines. *Emerg Infect Dis* Jan 2011

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## Gas Bubble Disease in Harbour Porpoises Stranded in B.C.



Stephen A. Raverty,<sup>1,3</sup> Lisa Spavin,<sup>2</sup> Paul Cottrell,<sup>2</sup> John Ford,<sup>2</sup>  
Anna Hall,<sup>3</sup> Joe Gaydos,<sup>4</sup> Martin Haulena,<sup>3,5</sup> and Marina Ivančić<sup>6</sup>

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### ABSTRACT

Harbour porpoises (*Phocoena phocoena*) are among the most abundant small cetaceans in the northeastern Pacific and there is a distinct bimodal seasonal stranding trend. Increased numbers of animals present in late April to mid May with fewer individuals stranding late August through to mid September. The cause of this temporal pattern is unknown. In May, 2010, nine harbour porpoises stranded in a four day span along the southeast coast of Vancouver Island, British Columbia. All were adults, well fleshed and in good post mortem condition. There was no indication of human interaction. Six animals presented with pulmonary edema, two featured multifocal subcutaneous and muscular hemorrhage along the torso and two had healed rib fractures. Due to the acute deaths and clustered stranding in a geographical area, MR and CT scans were undertaken on the heads of 5 animals. Three individuals had extensive stippled hypoattenuating foci consistent with gas (-340 to -955HU) evident along the hypodermis/muscle interface along the dorsal margin of the head, within the melon, the calvarial vault, the globes, the retrobulbar tissues, throughout the mandibular fat, lateral to the hemimandibles, and within the soft tissues rostromedial and dorsal to the bullae. On gross dissection and reflection of the calvarium, gas was evident within the meningeal vasculature and histopathology of the acoustic fat revealed focal distension of blood vessels with clear, uni to multiloculated clear intravascular foci (gas) with scattered acute perivascular hemorrhage. Follow up whole body CT scan of a code 3 harbour porpoise in Puget Sound, WA disclosed subcutaneous gas near the blowhole and to a much lesser extent along the torso. Similar findings of gas bubble disease have been observed in a number of geographic regions<sup>1,2,3</sup> and this is believed to be the first case series in the northeastern Pacific Ocean. No strandings could be linked to anthropogenic causes.

Jepson PD, Deaville R, Patterson IA, Pocknell AM, Ross HM, Baker JR, Howie FE, Reid RJ, Colloff A, Cunningham AA. 2005. [Acute and chronic gas bubble lesions in cetaceans stranded in the United Kingdom](#). *Vet Pathol* 42(3):291-305.

[Moore MJ](#), [Bogomolni AL](#), [Dennison SE](#), [Early G](#), [Garner MM](#), [Hayward BA](#), [Lentell BJ](#), [Rotstein DS](#). 2009. Gas bubbles in seals, dolphins, and porpoises entangled and drowned at depth in gillnets. *Vet Pathol* (3):536-47. Epub 2009 Jan 27.

Yang WC, Chou LS, Jepson PD, Brownell RL Jr, Cowan D, Chang PH, Chiou HI, Yao CJ, Yamada TK, Chiu JT, Wang PJ, Fernández A. 2008. [Unusual cetacean mortality event in Taiwan, possibly linked to naval activities](#). *Vet Rec* 162(6):184-6.

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## In the News:

A team of scientists and volunteers gathered in Sitka in late March to determine the cause of death in a 3-5 year old male killer whale carcass that had been reported to the Alaska Marine Mammal Stranding network. The whale was found by hikers on a beach on Kruzof Island. The necropsy was lead by Dr. Stephen Raverty, veterinary pathologist with the Animal Health Centre.



While the field necropsy did not reveal an obvious cause of death, tissue samples were collected for further study by several laboratories including the National Institutes of Health, National Oceanic and Atmospheric Administration in La Jolla, Calif., University of California at Davis Wildlife and Health Department, and a private veterinary pathology lab in Anchorage. Dr. Raverty noted that the whale appeared to have good body condition and there was no evidence of pneumonia, which is a common cause of killer whale deaths worldwide. There was mild peritonitis and a low-grade infection in its stomach cavity.



Dr. Raverty describes several reasons to study dead killer whales “There is an intrinsic value of the whale, and it is held in high regard by many First Nation peoples. As a predator, it is a good indication of the health of our ecosystem. From an individual perspective, it’s of value to see what contributed to its mortality.” Raverty noted that next to humans, killer whales are the most widely distributed mammal in the world. “Through studying these whales, we can start to appreciate the impact of global warming, urbanization and other anthropogenic impacts on the environment,” he said.

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## Profiles:



For Dr. Ann Britton, veterinary pathologist at the AHC, the post mortem room has romantic connotations. She met her husband Brad (also a veterinarian) while working on a horse in the post mortem room at Ontario Vet College as a summer student in the 1970’s. Two children later, they have recently become empty nesters and are about to resurrect a passion for sailing together. While living in Guelph, they sailed a 12 ft dinghy, in Lake Huron and Georgian Bay as well as the little puddle known as Guelph Lake. Now they are ready to take on the Salish sea in a slightly bigger vessel. She and her daughter participate in pony club eventing and dressage. The family are all avid skiers, and their son is on the Canadian Freestyle Ski Team in moguls, hoping to compete in the 2014 Olympics.

At the AHC, Dr. Britton is infused with enthusiasm about her cases. In discussions with producers, veterinarians, and colleagues, she lays out the evidence, searches literature, and meticulously drives toward determining the cause of death for her cases. In addition to her caseload, she coordinates the Hastings racetrack study in horses, as well as several special projects including pigeon fever in horses, feline panleukopenia and hypertrophic cardiomyopathy in cats, pandemic H1N1 influenza virus in skunks, *Streptococcus equi subspecies zooepidemicus* in shelter cats, novel Mannheimia species in dairy calves and viral abomasitis in calves.



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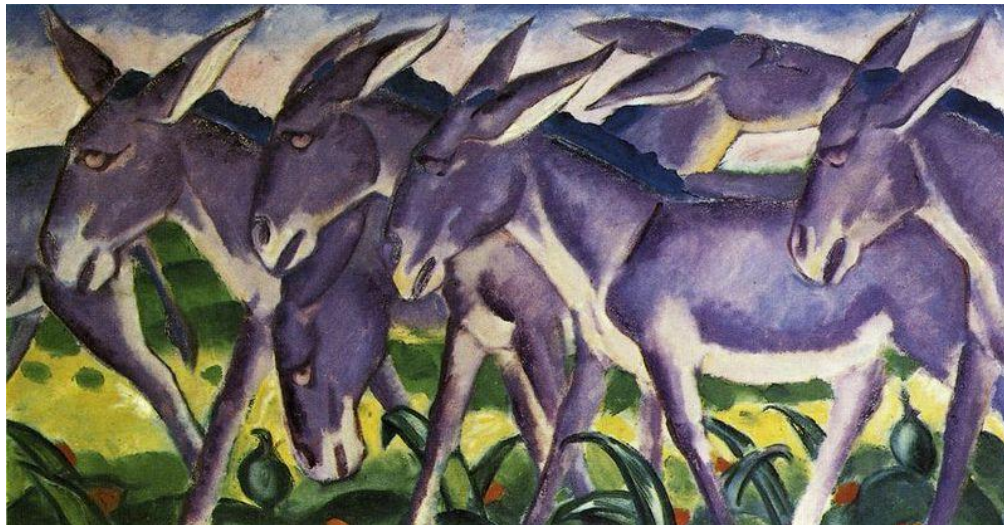


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Donkey Frieze (1911) by Franz Marc, (Wikimedia commons)