Canadian Cooperative Wildlife Health Centre

Wildlife Health Centre Newsletter

Spring/Summer 2010, Volume 15, Number 1

In This Issue

Special Note:

The 60th Wildlife Disease Association Annual International Meeting will be held for the first time in eastern Canada. Quebec City will host this meeting from August 14 to 19th, 2011. Save the dates and plan to attend! Registration and further meeting information will be available in January 2011. Check the WDA web site for more details.

In an effort to provide diversified content and reduce the environmental and economic costs associated with printing and distribution the wildlife health centre newsletter has moved to an electronic format which more closely align with our website www.ccwhc.ca

The CCWHC is a university-based, inter-agency partnership through which Canada's Colleges of Veterinary Medicine, government agencies at all levels and non-government agencies pool their resources and expertise to reduce the economic, health and ecological costs and impacts of wild animal diseases in Canada.

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CCWHC Workshop for Wildlife Professionals

On February 23-24, 2010 the CCWHC hosted a two-day workshop for wildlife health professionals. The purpose of the workshop was to bring together individuals active in the fields of wildlife health and disease management nationally and engage them in discussions surrounding two broad themes; animal welfare issues in wildlife management, research and harvest and the One World One Health concept. In addition, the workshop was designed to elicit feedback and comments pertaining to the CCWHC program.

The workshop was held at Carleton University, Ottawa, ON and facilities were made available with the assistance of Environment Canada and the National Wildlife Research Centre. The workshop attracted 70 participants from across Canada as well as representatives from the United States. Day One was comprised of presentations and discussions designed to advance the concept of wildlife welfare and to identify approaches to integrate wildlife welfare considerations into the design and implementation of management, research and harvest activities while ensuring that these activities can continue efficiently in the long term. A report on the meeting is being prepared and will include the questions that were raised during the workshop. It is hoped that the document will serve as an "animal welfare benchmark" for agencies and organizations, and as a work in progress upon which to develop future work on wildlife welfare in Canada and abroad. The survey document is available for download from the CCWHC website http://www.ccwhc.ca/publications_and_newsletters.php

The morning of day two was presented in conjunction with the Public Health Agency of Canada (PHAC), and was a discussion pertaining to the wildlife aspects of the "One World One Health" (OWOH). The Public Health Agency is formulating a substantial policy initiative around the OWON concept and this session was organized to capture input from Canada's wildlife health professionals gathered at the workshop. The OWOH concept proposes an international and interdisciplinary approach to disease surveillance, monitoring, prevention, control and mitigation that incorporates environmental conservation, and recognizes linkages among human, animal and ecosystem health. Expert advice and engagement of professionals in all 3 broad categories of health is required for its success.

The third component of the workshop and the subject of the afternoon of day two consisted of a consultative process to engage participants in providing immediate input to the CCWHC as it formulates its work agenda for the coming year and beyond. This feedback will assist the CCWHC to plan its activities in order to support the needs of its partner agencies over time.

Patrick Zimmer, CCWHC – Headquarters Office

Proposal for a National Wildlife Health Centre in Sri Lanka

This summer the Headquarters Office of the CCWHC, the Centre for Coastal Health and the Faculty of Veterinary Medicine and Animal Science of the University of Peradeniya carried out a feasibility study for the development of a national wildlife health centre in Sri Lanka. The general plan is to twin the Sri Lanka centre with the CCWHC and develop a program in Sri Lanka similar to that of the CCWHC, over about a five year period. This program will build on a very successful program in veterinary public health carried out by the University and the Centre for Coastal Health over the past five years. The work this summer consisted of a three-week visit to the CCWHC in Saskatoon by professor Sampath Lokugalappatti from Sri Lanka and research assistant Sophie Valeix from France. They then went to Sri Lanka, together with Ted Leighton and Craig Stephen, and carried out a series of interviews and facility visits over a five week period to assess how best to develop a wildlife health program in the country. The results of this study now are being used to prepare formal inter-institutional agreements and a structural and operational plan for the Sri Lankan centre.
Ted Leighton, CCWHC – Headquarters Office

Sri Lankan and CCWHC representatives in Sri Lanka, July, 2010

CCWHC Alberta Welcomes the Centre's First Wildlife Parasitologist

The CCWHC Alberta node was established in 2005 and has been advancing its operations as the Faculty of Veterinary Medicine (UCVM) at the University of Calgary has developed. The UCVM, also established in 2005, accepted its first class of students in the fall of 2008. Its mission is to meet the veterinary, animal and public health needs of Alberta with particular emphasis on veterinary medical education; clinical, diagnostic and professional teaching/services and research/service activities that promote animal and human health in Alberta, Canada and internationally.

The CCWHC Alberta node is largely funded through the base-operating grant for UCVM. When considering the emphasis of the Alberta node, there was a consensus in Alberta and the CCWHC leadership that expertise in wildlife parasitology would be an important contribution to the CCWHC mission. Dr. Manigandan Lejeune was recently hired to develop and support the wildlife parasitology activities of the CCWHC. Dr. Lejeune holds a Master's in Veterinary Parasitology from India and a PhD in Microbiology and Infectious Diseases from the University of Calgary, Canada. Dr. Lejeune's role is to provide expertise in morphological and molecular identification of parasites in our Canadian wildlife which will include diagnostic test development and application. He, together with others at the Alberta CCWHC office, are also available to provide advice on wildlife parasitology issues including study design, sampling, preservation and the ecology of parasitism.

National wildlife disease surveillance and training remains a key part of CCWHC's mission. In Alberta, the CCWHC will work with pathologists at the UCVM and staff from Alberta Sustainable Resource Development, Alberta Tourism, Parks and Recreation and Parks Canada to complement existing wildlife disease surveillance activities. Pathologists at the UCVM include a truly international team consisting of Drs. Carmen Fuentealba and Oscar Illanes from Chile, Amy Warren from Australia and Padraig Duignan from Ireland. Dr. Duignan has recently joined UCVM and was hired specifically for his interest and expertise in wildlife pathology.

The Alberta node of the CCWHC looks to be an important contributor to the over-all activities of the network. With the strong emphasis on ecosystem and public health at UCVM, the teaching cases and research material will provide additional benefits to our DVM and graduate programs.

Susan Kutz, CCWHC – Alberta Regional Centre

Asia-Pacific Conference on Wildlife Borne Diseases

Dr. Ian Barker (CCWHC, Ontario-Nunavut Region) and Dr. Catherine Soos (Environment Canada), were invited by the Chinese Academy of Sciences (CAS) and the United States Department of Agriculture - Animal and Plant Health Inspection Service (USDA-APHIS), to represent Canada at the "Asia Pacific Conference on Wildlife Borne Diseases," in Beijing, China, from July 19-23, 2010. This conference was jointly led by the CAS, Bureau of Life Science and Biotechnology (CAS-BLBT), the State Forestry Administration of China - Department of Wildlife Conservation and Nature Reserve Management (SFA-DWCM), and the USDA-APHIS-Wildlife Services, and was hosted by the CAS - Institute of Zoology (CAS-IOZ), the International Society of Zoological Sciences (ISZS), and the China Zoological Society (CZS). The theme of this conference was on research, prevention and control of important wildlife borne diseases in the Asia-Pacific. The objectives of this conference were to: (1) promote collaboration in the field of wildlife diseases among countries and districts in the Asia-Pacific region; (2) share activities related to investigation, surveillance, and research on wildlife diseases; and (3) coordinate the cooperation and communication of specialists across multiple disciplines.
Both participants gave oral and poster presentations (see below for titles), and participated in an international round table discussion on surveillance and management of wildlife diseases. The round table resulted in the initiation of the Asia-Pacific Wildlife Disease Network, which aims to create a communication network to enable scientists and managers across countries and disciplines working on wildlife diseases to share information among their peers, to facilitate collaboration and capacity building, and to strengthen international partnerships and surveillance networks.

Oral Presentations:
Canada's Inter-Agency Wild Bird Influenza Survey: Surveillance and Research.
C. Soos, E.J. Parmley, I.K. Barker, A. Breault, P.A. Buck, P-Y. Daoust, J. C. Davies, M. Fortin, T. Hisanaga, E. Jenkins, H. Kehler, F. Kibenge, R. King, S. Lair, J. Leafloor, K. McAloney, R. Nallar, D. Ojkic, J. Pasick, J. Robinson, J. Rodrigue, H. Whitney, F.A. Leighton

Asia-Pacific Conference on Wildlife Borne Diseases (continued)

Surveillance and Management of Wildlife Diseases in Canada.
C. Soos
Wildlife disease surveillance and the West Nile virus response in Canada
I. K. Barker
Surveillance for white-nose syndrome in bats in Ontario, Canada
I. K. Barker

Poster presentation:

Capacity Building to Support Ecuador's Wild Bird Influenza Surveillance Program
Soos C, Cárdenas WB, Santander García TL, Guevara Andino EA, Loor-Vela S, Montoya G, Pozo Cajas M, Hilgert N, Falconi F, Mendosa G, Parraga P, Grijalva M, Cisneros M, Camacho C, Torres S, North N, McAloney K, Pollard B, Rhodes W, Eldridge W, Williams A, Remenda H, Leach SW, Warner K, Nieman D, Pasick J, Kehler H, Hisanaga T, Leighton FA, Swafford SR, DeLiberto TJ

Websites to link the above organizations:
Chinese Academy of Sciences http://english.cas.cn/
Chinese Academy of Sciences - Bureau of Life Science and Biotechnology
http://english.cas.cn/Administration/OB/200908/t20090825_33986.shtml
CAS - Institute of Zoology http://english.ioz.cas.cn/
United States Department of Agriculture - Animal and Plant Health Inspection Service
http://www.aphis.usda.gov/
State Forestry Administration of China - Department of Wildlife Conservation and Nature Reserve Management
http://english.forestry.gov.cn/web/article.do?action=readnew&id=201003150915504155
International Society of Zoological Sciences
http://www.globalzoology.org/
China Zoological Society http://www.czs.ioz.ac.cn/

Ian Barker, CCWHC - Ontario/Nunavut regional centre & Catherine Soos – Environment Canada

Dr.'s Ian Barker and Catherine Soos first row 6th and 5th from right respectively

Sylvatic Plague in Grasslands National Park

In July of 2010, a black-tailed prairie dog (*Cynomys ludovicianus*) was found dead by researchers from the Calgary Zoo on a prairie dog colony located within Grasslands National Park near Val Marie, Saskatchewan. The dead prairie dog was submitted to the CCWHC Western and Northern Region for necropsy on July 19th, 2010. Lesions of a severe bacterial septicaemia were found on necropsy and tissues were submitted for bacterial culture to Prairie Diagnostic Services. The bacteria isolated on culture was consistent with *Yersinia pestis* and it was then forwarded to the Saskatchewan Public Health Laboratory and subsequently to the National Microbiology Laboratory in Winnipeg for confirmatory identification. The bacteria was subsequently confirmed as *Y. pestis* through PCR and biochemical testing.

At about the same time, other researchers conducting burrowing owl (*Athene cunicularia*) surveys on an existing prairie dog colony in a remote area of the park (over 20 kilometres from the colony where the dead prairie dog was found) noticed no signs of recent activity and it appeared the colony had mysteriously disappeared. Park staff confirmed this finding later in the week and swabbed several burrows to look for fleas that may indicate recent sylvatic plague activity, but no fleas or prairie dogs were found. The disappearance of this colony still has not confirmed as being due to plague, but it is certainly considered a high probability.

The finding of the *Y. pestis* in a prairie dog prompted the release of a local Information Bulletin on August 13th, alerting local and regional media to the confirmed presence of sylvatic plague in the park. This also began an important and ongoing dialogue between provincial public health authorities, local health authorities, and federal public health agencies and other federal government departments regarding the approach and management to this often misunderstood, often neglected zoonotic disease. Signage was erected on all accessible prairie dog towns within the park alerting visitors to the potential for plague, recommending against travel on prairie dog towns, prohibiting access of domestic dogs and cats and to take precautions to reduce potential transmission by fleas through the use of DEET-based insect repellents. Local veterinary clinics were also alerted to the possibility of plague in domestic pets and park visitors were informed of the potential for plague exposure. Subsequent intensive monitoring and surveillance of prairie dog colonies in the park revealed that densities have decreased significantly during the summer of 2010 to approximately 50%-70% of long-term average densities, but a large scale epizootic has not been observed to date. Much of this decrease could be attributed to decreased pup production resulting from a growing season drought which occurred in 2009 and significantly affected reproduction in the spring of 2010. A similar decrease in prairie dog density was observed on colonies in the summer of 2008, but it is difficult to determine whether these decreases were due to sylvatic plague or other environmental factors. Further research is being conducted in the park to better determine the specific causes of these declines over the coming years. Preliminary risk assessment and mitigation plans were previously developed in 2006 and a recent multi-jurisdictional plague response plan is currently being drafted to manage this disease in black-tailed prairie dogs and black-footed ferrets. As a precautionary measure, park staff will be applying DeltaDust®, a pyrethroid insecticide containing deltamethrin to prairie dog colonies within the park in an effort to reduce the potential impact of sylvatic plague on the remaining black-tailed prairie dog colonies in Canada. Large outbreaks of sylvatic plague with mortality rates exceeding 95% have significantly impacted prairie dog colonies as well as the black-footed ferrets (*Mustela nigripes*) whose primary prey are prairie dogs in the United States. DeltaDust® has been used successfully to reduce the acreage of prairie dog colonies as well as black-footed ferrets lost to sylvatic plague including some areas within US national Parks (e.g. Wind Cave National Park, South Dakota).

Previous research using domestic dogs and coyotes (*Canis latrans*) as sentinels (Leighton et al 2001, unpublished Parks Canada data) had indicated the presence of plague-specific antibodies at low levels in both southern Alberta and Saskatchewan, and in the area around Grasslands National Park, but a significant epizootic had never been observed in Canadian prairie

Black-tailed Prairie Dog

Sylvatic Plague in Grasslands National Park (continued)

dogs. To our knowledge, this is the first confirmed case of sylvatic plague in Canadian rodents since 1988, when it was isolated from two Bushy-tailed Woodrats (*Neotoma cinerea*) in southern British Columbia (Lewis 1989) and only the third report of plague in Canadian rodents. The last suspected human case in Canada was from a mink rancher in south-eastern Alberta near Hanna that became infected from skinning mink after being fed local ground squirrels (Ozburn 1944, Humphreys & Campbell 1947, Gibbons & Humphreys 1941) during an epizootic of plague in ground squirrels. It is an important reminder of the One World One Health concept being promoted by both wildlife and public health agencies around the world and the interconnectedness of wildlife, pathogens and humans. Veterinarians, physicians, biologists, conservation officers, hunters and trappers should be aware of the risks of infection with sylvatic plague through direct contact with infected carnivores or rodents and from their associated fleas, particularly in the southern regions of the prairie provinces.

References:

Gibbons, RJ & Humphreys, FA. 1941. Plague surveys in western Canada. Canadian Public Health Journal, 32: 24-28.

Humphreys, FA & Campbell, AG. 1947. Plague, Rocky mountain spotted fevers, and tularaemia surveys in Canada. Canadian Journal of Public Health, 38(3): 124-130.

Leighton FA, Artsob HA, Chu MC, & Olson JG. 2001. A serological survey of rural dogs and cats on the southwestern Canadian prairie for zoonotic pathogens. Canadian Journal of Public Health, 92(1):67-71.

Lewis, RJ. 1989. Plague in bushy-tailed woodrats. Canadian Veterinary Journal, 30(7): 596-597.

Ozburn, RH. 1944. Problems of medical entomology of military importance in Canada. Journal of Economic Entomology, 37(4):455-459.

Todd Shury – Parks Canada

Newcastle Disease in Double-crested Cormorants

Newcastle Disease was detected in Double-crested Cormorants (DCCO) in summer 2010 in both Saskatchewan and Ontario. In Ontario, 18 mortality events in DCCO were reported between 8 June and 1 September 2010; Newcastle Disease virus was confirmed in five, at Toronto (2), Mississauga(2) and Kirkfield (1) northeast of Lake Simcoe. In Saskatchewan, DCCO confirmed with Newcastle Disease were found at Jack Fish Marsh north of North Battleford, at Flotten Lake north of Meadow Lake and at Egg Lake near La Ronge. Most mortality events reported in Ontario did not appear to involve large numbers of birds. Those in Saskatchewan were not quantified. Since late July, the National Wildlife Health Center of the U.S. Geological Survey has confirmed that at least 800 double-crested cormorants have died in Minnesota, North Dakota and Wisconsin from Newcastle Disease.

Newcastle Disease is the name given to infection of birds with strains of Avian Paramyxovirus-1 (APMV-1) which are capable of causing rapidly fatal disease in domestic chickens. There are many strains of APMV-1. Only a few of these strains are agents of Newcastle Disease and the term "Newcastle Disease" should only be used for infection with virus strains highly pathogenic to chickens. Canada's poultry populations are free of this virus and infection of poultry with the virus could have a very large economic impact on the poultry industry. Newcastle disease virus was first recognized in DCCO in Canada in 1975, and then not again until 1990 when substantial numbers of affected birds were found in Saskatchewan. Since then, it has been detected with some regularity in DCCO in the prairie provinces and on the Great Lakes. In DCCO, the virus produces severe disease in young birds up to about 12 weeks of age (fully grown and independent) but does not appear to do so in older birds. Occasionally other species are affected in outbreaks in Cormorants, but this appears to be minor relative to the number of DCCO affected. In DCCO, the virus particularly affects the brain and spinal cord. Many birds that survive infection have permanent damage to the spinal cord which results in paralysis of one or both wings and legs.

Ted Leighton, CCWHC – Headquarters Office

Whole Kernel Corn Inhalation in Wild Turkeys

As part of a Manitoba Conservation project, one hundred and forty wild turkeys were banded during winter 2010, using bait and a pneumatic net launcher to capture the birds. Sites were baited with whole oats and rolled corn except for two which were baited with whole kernel corn. At one of the latter sites, two healthy birds, a tom and hen were captured, placed in individual ventilated holding boxes, and found dead 20 minutes later. At necropsy, both birds were in excellent body condition and each had a large quantity of whole kernel corn in their upper digestive tract. Surprisingly, both birds also had a single kernel of corn lodged in the airway at the point where the trachea divides in two, to supply air to the right and left lung and the cause of death was thought to be asphyxiation. Our colleagues in Manitoba, Frank Baldwin and Vince Crichton, upon learning of the diagnosis, supplied the following reference in which whole kernel corn inhalation was described in 1974 and 1991 in wild turkeys baited with whole kernel corn.

1. www.uga.edu/scwds/topic_index/1991/WHOLEK~1.pdf
2. Doster GL. 1974. Aspirated corn kernels cause death of canon-netted Wild Turkeys. Journal of Wildlife Management 38(3):578.

L. Bryan, CCWHC Western and Northern Regional Centre

Pneumatic net launcher – photo courtesy F. Baldwin, BM Conservation

Black-footed Ferret Reintroduction update, Grasslands National Park

Following a successful release of 34 black-footed ferrets (*Mustela nigripes*) in October of 2009 (see December 2009 Newletter), staff and volunteers at Grasslands National Park in southern Saskatchewan have been monitoring the success of this reintroduction effort. An additional 15 captive-born ferrets were released on September 23rd, 2010 to supplement the existing population and further population recovery in Canada. This is the only population of black-footed ferrets in Canada and it exists within the range of its major prey species, the black-tailed prairie dog (*Cynomys ludovicianus*) which only occurs in and around Grasslands National Park. Black-footed ferrets were extirpated from Canada in the 1930's and this current reintroduction effort will attempt to introduce a self sustaining population of ferrets.

Black-footed Ferret being anesthetized and processed in Grasslands National Park

Population monitoring is conducted using volunteer spotlighters who traverse potentially occupied ferret habitat on foot during night-time hours on black-tailed prairie dog towns and look for the characteristic green eyeshine of the ferrets. Once located, ferrets are identified using a microchip reader which reads a passive integrated transponder implanted under the skin in the neck area. A monitoring session conducted over two weeks in April 2010 positively identified a minimum of 12 individuals ferrets, corresponding to a 35% survival rate from ferrets originally released in the previous October. This overwinter survival rate is similar to other reintroduction sites in the US in the northern prairies. Additional monitoring and capture of ferrets was conducted over two weeks in August 2010 and again in mid-September with veterinary students from Canadian veterinary colleges doing the spotlighting as part of the Ecosystem Health Rotation. This effort resulted in the capture and successful vaccination of the first wild-born black-footed ferrets born

Black-Footed Ferret Reintroduction update, Grasslands National Park Continued

in Canada since the 1930's. One litter of three kits was located (2 females and one male) and another lactating female was also discovered. The kits were anesthetised using portable gas anesthetic units and implanted with microchips and vaccinated against sylvatic plague and canine distemper; two diseases which were identified as major threats in the Black-Footed Ferret Recovery Strategy. These kits are considered very important to the recovery program as it indicates that the population is successfully reproducing in Canadian conditions and bodes very well for future population growth of this fragile population of prairie carnivores. The reintroduction effort is part of a five-year project entitled Prairie Restored: Building the Grasslands Experience. More information on black-footed ferret recovery and Grasslands National Park can be obtained at http://www.pc.gc.ca/eng/pn-np/sk/grasslands/index.aspx or by calling (306)298-2166 ext 231.

Todd Shury – Parks Canada

Black-footed Ferret Having microchip scanned in Grasslands National Park

Fatal Coyote Attack, Cape Breton Island, NS, October 2009

Taylor Mitchell was killed by coyotes in Cape Breton Highlands National Park in October 2009. Because she was by herself, no one will ever know exactly what happened or what may have triggered this apparent predatory attack. This was a big tragedy that has seriously tarnished the reputation of all coyotes on this continent. The only other known fatal attack by coyotes involved a 3-year-old girl in California in 1981. Numerous non-fatal attacks have been reported over the years, and the vast majority of them have occurred where human habitation has expanded into wildlife habitat, such as in suburban areas of western United States. The attack on Taylor in a National Park raises the suspicion that some of the coyotes had become habituated by the presence of humans during the tourist season, which may have included inadvertent or purposeful feeding.

Six coyotes were killed in the area of the attack shortly afterwards and in subsequent weeks. It was imperative to obtain as much information as possible on these animals, particularly in terms of their health status. Up to three of these coyotes appeared to have been involved in the attack; all three were adult animals in good nutritional condition, with no underlying disease. Parks Canada, Nova Scotia Department of Natural Resources, and CCWHC - Atlantic region cooperated closely to provide rapid assessment of the health status of these animals, including confirmation by the Canadian Food Inspection Agency Laboratory of their rabies-negative status, and to collect appropriate samples for further analysis, including precise age determination by tooth sectioning and genetic relatedness by DNA analysis.

The first coyote, an adult female that had successfully bred earlier in the year, was shot at the site of the attack a few hours later when it came back to the site. Its stomach contained some material that was neither copious nor dramatic, but nonetheless convincingly of human origin.

The second coyote, an adult male, was identified by the similarity of fur markings on its front legs with those visible in one of two coyotes whose pictures had been taken by a hiking couple shortly before the attack on the same trail that Taylor was using. The coyotes had apparently shown no fear as the couple stepped off the trail and let the coyotes pass.

The third coyote, another adult male, was identified as one of possibly three attackers because two 00 Buckshots were found in the carcass and because the history on the animal indicated than an aggressive coyote had been shot at the scene soon after the attack with a 12-ga shotgun with 00 Buckshot load, "may have been hit in the hip area, on the right side, fell and got away", Buckshots were not used subsequently to kill any of the other coyotes.

These three coyotes were healthy, and there is no reason to believe that they were exhibiting abnormal behavior. This is a very sad reminder that it is nature's way to constantly push boundaries and that habituation of wildlife to humans, in one form or another, sooner or later leads to confrontation, some of it tragic.

Pierre-Yves Daoust, CCWHC - Atlantic regional centre

Minke Whale Necropsy on PEI

On June 16, following a day and night of very strong wind and heavy surf, a dead minke whale was found on the north shore of Prince Edward Island. A complete necropsy was done, and the whole skeleton was saved for potential assembly at a later date.

The whale was a female, 6.3 m long; its inactive ovaries and relatively small size suggested that it was an older immature animal or a young adult. The carcass was fresh and appeared in good nutritional condition, and the gastric compartments were filled with digested food. A deep cut surrounded the base of the tail suggesting that this whale may have been caught in fishing gears and subsequently drowned.

Since 1988, our Wildlife group has done the necropsy of seven other minke whales: six adult females and one immature male. Three of these seven animals had become entangled in fishing gears from lobster traps, and observations on two others also suggested that they had been caught in fishing gears.
Pierre-Yves Daoust, CCWHC – Atlantic Regional Centre

Minke Whale on the north shore of PEI, June, 2010

White Nose Syndrome (WNS) Detection in Bats from Québec

WNS is an emerging disease of bats in North America. Since 2007, it has caused mass mortalities of bats throughout the north-eastern part of the United States. Newly affected hibernaculum are detected each winter. Affected bats typically display a whitish mycelial fungal growth visible on the muzzle, the ears and sometimes the wings and are usually emaciated when found dead. The fungal agent causing this infection has been recently identified : *Geomyces destructans*. This organism is capable of growth in the humid and cold cavern environment where bat colonies are found.

Little Brown Bat with White Nose Syndrome. Note the characteristic pale deposit around the muzzle and in patches on the forelimb/wing and ears.

Early last April the Ministère des Ressources Naturelles et de la Faune (MRNF = Ministry of Natural Resources and Wildlife - Québec) informed the public that infected bats with WNS had been found in Québec through an active surveillance program involving both MRNF and the CCWHC – Québec Regional Center. Abandoned mines housing significant bat colonies in the province had been visited in 2008 and 2009 with no observation of fungal growth on bats and no detection of mass mortality. WNS was detected in caves from the Outaouais and Estrie regions in 2010, although no mass mortality appears to have been noticed so far. The Outaouais region is adjacent to Ontario while the Estrie territory borders Vermont and New Hampshire. All these province/states have also confirmed positive cases in their regions. WNS continues to have profound effects on bat populations everywhere it has been detected so far in North America. Its appearance within bat colonies in Québec is worrisome and should be no exception. WNS surveillance will be continued during this coming winter in the province to document further spread of this disease and associated mass mortality of bats.

André Dallaire, CCWHC - Québec Regional Centre and Frédérick Lelièvre, MRNF

Dystocia in two St. Lawrence Beluga Whales

As part of the ongoing health monitoring program supported by the Department of Fisheries and Oceans, eight carcasses of St. Lawrence beluga whales were fully examined in 2010 by the CCWHC Quebec Regional Centre. Dystocia (difficulty in giving birth) was identified as the cause of death in two of these animals. Both of these carcasses were reported to the *Réseau québécois d'urgences pour les mammifères marins* and transported to St. Hyacinthe by the team of the St. Lawrence National Institute of Ecotoxicology.

The first animal, which was observed drifting offshore Ste. Flavie at the end of July, was in good body condition and displayed a somewhat enlarged belly. The uterus was markedly distended by a full term 151 cm long female foetus. A 180° anticlockwise torsion of the uterus was also present. In addition, lacerations, partially covered with brown granular secretions, were observed on the external side of one of the distended uterine horn. The foetus was in longitudinal – caudal presentation (tail first) with a dorsosacral position, which is considered one of the normal presentation for beluga calves. However, the tail stalk was still completely and tightly tucked on the left side of the calf. This was considered an abnormal posture since the tail should have been rapidly pushed toward the vagina in response to uterine contractions (dilatation of the cervix and uterine lacerations indicate that the birth had started). Consequently, the dystocia in this case was believed to have been caused by an abnormal posture of the calf's tail fluke. The uterine torsion was most likely secondary to the extreme labour contractions and rapid swimming patterns that most likely followed the difficulty in expulsing the calf.

The second animal was found stranded in Ste. Flavie about a month later. The head of a foetus could be felt in the genital tract through the markedly distended genital slit. The uterus contained a fully formed 163 cm long male foetus in a longitudinal – cranial presentation (head first). This presentation is also considered normal for this species. The head of the beluga calf was tightly engaged in the lower genital tract. There was no evidence of abnormal posture in this calf. The cause of this dystocia in this female was therefore not identified. However, the relatively large size of the calf might have contributed to this dystocia.

Since the beginning of this health monitoring program, six cases of fatal dystocia have been diagnosed in the St. Lawrence beluga whales. This actually represents 7% (6/85) of all the mature females on which complete post-mortem examinations were performed. Despite the limitations associated with the small size of this sample, this figure seems high when compared to reported occurrences of dystocia in other free-ranging populations of marine or terrestrial mammals (with the exception of bottlenose dolphins in the Adriatic Sea for which a similar occurrence has been observed). This suggests that belugas from this threatened population of whales might have an increased susceptibility for birthing complications. Even if it would be tempting to link these failures in the reproductive process of these animals to their known exposure to contaminants with endocrine disruption potential, this association would be purely speculative at this point.

Stéphane Lair and Sylvain Larrat, CCHWC – Quebec regional centre

Carcass of a stranded beluga whale that died of dystocia. The grey head of the calf can be seen from the distended genital slit.

Stranding and Wandering of Harp Seal Pups in the St. Lawrence Estuary

An unusually high number of stranded and *out of range* harp seal pups have been reported to the Quebec Marine Mammal Emergency Response Network so far in 2010. Actually, over 100 harp seals have been reported to this surveillance network since the beginning of the year (up to the end of September), which represent over 20 times the average number of harp seals reported annually over the last six years (Figure 1). Approximately 90% of these reports were recorded during the months of March and April, and mainly involved white coat (newborn) pups. Even if we were not able to perform sufficient numbers of necropsies needed to exclude other causes of mortality, circumstantial evidences suggest that the vast majority of these strandings were secondary to maternal neglect. These abandonments were most likely a consequence of the almost total absence of sea ice in the harp seals parturition ground in the St. Lawrence Gulf. Due to this profound shortage of breeding habitat in 2010, a large proportion of the females Harp seals probably gave birth on the shores. A large proportion of the pups were most likely abandoned prior to the lactation period essential to their survival since the coast does not represent a usual breeding habitat for this species. The impact that this massive mortality of the 2010 cohort will have on the dynamic of this population is difficult to determine. However, it can be speculated that this population, now estimated to be over 6 millions seals, will not be overtly affected by this single catastrophic breeding season. Having said that, if the frequency of the seasons with low ice covers increases in the coming year, this habitat modification could potentially alter the dynamic of this population of marine mammals.

The Quebec Marine Mammal Emergency Response Network is formed of different partners interested in marine mammal conservation. This network, which is supported by a call centre managed by the Group for research and education on marine mammals (GREMM), has been mandated to organize, coordinate and implement measures to reduce the accidental death of marine mammals, save animals in trouble and favour the acquisition of data for cases involving beached or drifting carcasses in St. Lawrence waters bordering the province of Quebec. Data gathered by this network, which is financially supported by Fisheries and Oceans Canada, can be used to monitor mortalities and morbidities of marine mammals on Quebec shores.

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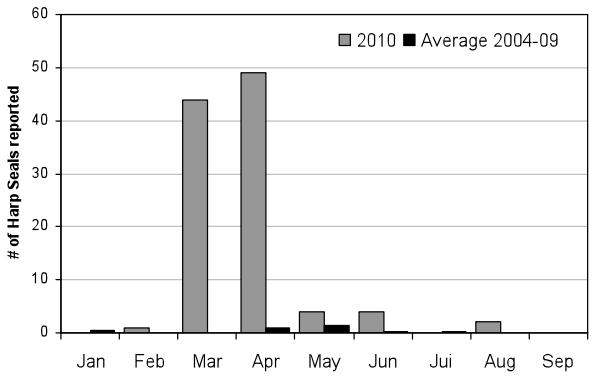

Number of Harp seals reported to the Quebec Marine Mammal Emergency Response Network every month from January to September. Comparison between the year 2010 and the average of the six previous years.