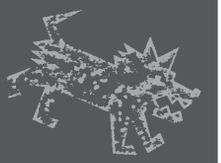






AWC NEWS

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Sir James Dunn Animal Welfare Centre

ATLANTIC VETERINARY COLLEGE • UNIVERSITY OF PRINCE EDWARD ISLAND

From the Coordinator's desk

We were very pleased to celebrate the Sir James Dunn Animal Welfare Centre's tenth anniversary this fall. On November 1 the Atlantic Veterinary College held a public event to acknowledge our sponsors and to mark the achievements of all who have contributed to the growth of the Centre, initially called the Animal Welfare Unit (see photos, page 11). At the same time, Dean Ogilvie announced a $1.6 million commitment for continued support of the Centre over the next five years, from the Friends of the Christofor Foundation. We are extremely grateful for the support to date from the Sir James Dunn and the Friends of the Christofor Foundations, and for the renewed funding. We very much appreciate the confidence they continue to show in us.

Since 1994, the Sir James Dunn Animal Welfare Centre has funded 88 research and service projects at a cost of almost $2 million. These projects have ranged from research on canine quality of life, to screening tests for immune failure in newborn foals, to caring for injured companion animals and wildlife. This work would have been impossible without the support of the Foundations, as well as the good work of the more than 80 AVC faculty members, 15 graduate students, and numerous veterinary students who devise and carry out the projects. And we gratefully acknowledge that it all started with Lady Beaverbrook's desire to help animals—in particular, horses and dogs. Although she died in 1994, we trust she would be pleased at what we have accomplished through her generosity.

We are committed to expanding our research base over the next five years, and are passionate about creating greater public and professional awareness of animal welfare issues in Canada. We look forward to continuing our work, through research, service, and public and professional education.

This fourteenth edition of our newsletter is a full one, containing synopses for the five research and six service projects completed this year, an update on the federal Cruelty to Animals legislation, a tribute to 2004 Christofor Award winner Bryan Langlois, and information about education in animal welfare at AVC. Please visit our website at **www.upei.ca/awc** to find out about upcoming events at the Centre, and for information on all projects funded to date, associated publications and presentations, and animal welfare resources at the UPEI library.

A.R. Cook

Editorial from the Research Chair

In June 2004, a full-page advertisement in *The New York Times* criticized the American Veterinary Medical Association for not taking a stronger position on the management of pregnant sows, veal calves, and laying hens. This illustrates the need for the veterinary profession to have clear positions on questions of animal care. In recent years, veterinarians in the United Kingdom and the US have indicated, through their professional journals and in personal communications, their belief that the profession's commitment to serving clients has overridden the profession's responsibility to question some animal welfare issues in existing systems. It is notable that veterinarians are largely not involved in the search for workable solutions to these complex, value-laden questions. However, veterinarians' growing concern is encouraging, and may be expected to lead to the appropriate contribution by the profession as a whole, and by individuals as researchers and clinicians.

The veterinarians' professional role in animal welfare has not been formally agreed upon by members and cannot be assumed to be what it was in previous years, when societal structures and cultural norms were different. Examples of modern differences from earlier years include the nature of the modern human-animal bond, and its potential tendency to be weighted more in favour of the human being's sensibilities than the animal's; the role of the market in farming and veterinary practice such that, for example, there are very different standards of pain management for identical procedures in farm animals and companion animals; the ubiquity of pet stores; and the demand for ever more varied exotic pets when knowledge of how best to meet their physical and behavioural needs is lacking. It is beyond the remit of veterinarians to change the wider societal structures that contribute to current issues of welfare concern. However, if veterinary professional organizations and veterinary colleges would work to define the profession's modern role in animal welfare—whatever that is agreed to be—clearer guidance could then be provided to practitioners and to veterinary students.

Many of our students are much more aware of welfare issues than were faculty members when they were students. The awareness of these future veterinarians is welcome and it is important to help them find how they might use this awareness as members of a profession whose professional organization (in Canada) has voted animal welfare to be the first concern (page 9). At the SJDAWC, the continuing generosity of the Friends of the Christofor Foundation enables us to support students' initiatives in animal welfare through the Student Project Fund. Current initiatives include support for final-year students taking an external rotation at the British Columbia SPCA (page 9), and for students to attend an international conference on the implications of sentience for farm animal trade and management in 2005 (**www.ciwf.org/conference 2005**).

Caroline J. Hewson

COMPLETED PROJECTS—2004

Use of painkillers after surgery *(Assessment of changes in perioperative analgesic usage by Canadian veterinarians between 1994 and 2001)*
C Hewson, I Dohoo, and K Lemke

In 1994, research sponsored by the Animal Welfare Unit showed that approximately 50% of veterinarians did not use analgesics in the postoperative management of dogs and cats (Dohoo S and Dohoo I *Can Vet J* 1996; 37:546-551, and *Can Vet J* 1996;37:552-556). Since then, there are new pain-relieving drugs available (non-steroidal anti-inflammatory drugs, similar to aspirin), and there is increased awareness of the importance of pain relief in animals. The present project was conducted to examine changes in usage and in attitudes since 1994. The same research approach was used.

A random sample of 652 veterinarians from across Canada were surveyed by mail to determine perioperative use of analgesics in dogs and cats following seven surgical procedures; attitudes to surgical pain; and attitudes to using different analgesics. The response rate was 63.8%. The results indicated several positive changes within the profession since 1994. Pain ratings had increased and more animals undergoing elective surgeries received post-incisional analgesics. In addition, more respondents worked in practices with at least one animal health technician (AHT) in 2001, compared with the results in 1994. Unlike in 1994, there was no evidence that the respondent's gender affected the likelihood of analgesic use. Factors that increased the likelihood of analgesic usage in 1994 and 2001 included employment of animal health technicians and the veterinarian's attitude to pain. Other factors affecting usage in 2001 were school and year of graduation.

These findings will be used to promote optimal perioperative analgesic usage by veterinarians, through continuing professional education and undergraduate education. This may be expected to increase the likelihood of all animals receiving optimal perioperative analgesia.

This project was, to the authors' knowledge, the first repeat study of analgesic usage within the veterinary profession of any country. The results demonstrate positive changes in analgesic usage, and indicate where further change is needed. This is of immediate relevance to the Canadian profession and will assist it in achieving a uniformly high standard in this important area of animal welfare. Two scientific papers with the results of this research are in preparation.

Development of a quality of life scale for dogs
C Hewson and J Wojciechowska

Veterinarians are often asked by pet owners, "Is my animal suffering?" Veterinarians do not have a formal means of addressing such enquiries about the quality of the animal's life (QOL). While a focus on the animal's health is important, other aspects of QOL may not be considered fully: the state of the animal's mind and the extent to which its nature is satisfied, as evidenced by its day-to-day behaviour at home. This project was intended to produce a preliminary QOL scale for pet dogs with the potential for use in veterinary practice.

A telephone questionnaire was developed to assess canine QOL, based on the discussion of a focus group of dog owners, and on the literature in animal welfare, veterinary medicine, and human quality of life. Following assessment by experts in those fields, and pretesting, the questionnaire was administered to 120 dog owners, recruited from those with appointments at the Atlantic Veterinary College's Veterinary Teaching Hospital between fall 2002 and winter 2003. Repeat interviews were conducted with 39 owners so as to assess the questionnaire's reliability. Statistical analysis indicated that most questions had reasonable to good reliability and that 11 questions did not contribute information. There was no evidence that the aspects of QOL assessed by the questionnaire were affected by health status; however, duration of ownership and environment (urban, suburban, or rural) did affect QOL.

All the objectives of this study were met. Further research should include questions about proxy (owner) attributes, such as age and QOL status; addition of a health checklist for use by the attending veterinarian; addition of a validated pain assessment for dogs thought to be in pain; and research on construct validity. Refinements would also be needed if the instrument were to be used to evaluate changes in QOL status, or to predict the effect of treatment on QOL.

Indirect benefits to animals during the research are that several owners reported that they were thinking more closely about their dogs' QOL, and making positive changes, such as taking the dogs for walks daily. Other indirect benefits would accrue with further development of the instrument.

This project is significant because, to the authors' knowledge, it is the first systematic QOL research in veterinary medicine, providing an important contribution to this growing field of interest. In particular, the literature review and research provide a philosophical and scientific framework for future work. Three scientific papers have resulted from this research: one is in press (*J Am Vet Med Assoc*) and the others have been submitted. Aspects of the research were presented at two international scientific meetings in 2003: the 37th Annual Congress of the International Society for Applied Ethology, and the International Symposium of the Universities Federation for Animal Welfare.

Benazepril in dogs with chronic kidney failure *(Pilot clinical trial to determine the effect of benazepril on plasma and urine TGF-beta concentrations in dogs with chronic renal failure)*
D Shaw, P Foley, and A Cribb

Chronic renal failure (CRF) is a serious disease of dogs and cats in which there is progressive loss of kidney function, ultimately causing death. A study was funded in 2000 by the SJDAWC that showed that levels of TGF-$ß_1$, a small protein with many effects, are significantly higher in dogs with CRF (P Foley, D Shaw, and A Cribb *Proceedings* 2003 Annual Meeting of the American College of Veterinary Internal Medicine).

Studies in laboratory animals and people have shown that TGF-$ß_1$ production is increased by a peptide hormone called angiotensin II. Drugs that block production of this hormone result in a decrease in levels of TGF-$ß_1$ in the blood, and slow the

progression of CRF. This project was a clinical trial of benazepril (an angiotensin converting enzyme inhibitor) in dogs with CRF, to see the effect on the levels of TGF-$ß_1$, and on kidney function. The authors hypothesized that treatment with benazepril of dogs with naturally occurring CRF would result in a decrease in plasma and/or urine-transforming growth factor beta (TGF-$ß_1$) concentrations. The specific objectives of the study were to determine and compare the plasma and urine concentration of TGF-$ß_1$, as well as any changes in serum creatinine, body weight, and urine protein-to-creatinine ratio, in dogs with CRF prior to starting benazepril or placebo therapy, and after 30 days of benazepril or placebo therapy.

The study population consisted of client-owned dogs, recruited from veterinary practices in Atlantic Canada, with recently diagnosed CRF. For each dog, the following information was collected at the beginning of the study: age, breed, gender, body weight, complete blood count (CBC), serum biochemistry panel, urinalysis, urine protein-to-creatinine ratio (UPC), and plasma TGF-$ß_1$ concentration. The plasma TGF-$ß_1$ concentration was determined using a commercially available sandwich enzyme-linked immunosorbent assay (ELISA) for detection of human TGF-$ß_1$, which was validated for use with canine plasma. Each dog was randomly assigned to receive either benazepril or placebo therapy for 30 consecutive days, after which the dogs returned for a recheck examination. The same data was collected as at baseline, and then the patient was switched from receiving placebo to receiving benazepril, or vice versa, for the next 30 days. At this point (60 days after starting the study), the same samples were again collected and analyzed, and the animal left the study.

A total of 26 dogs with chronic renal failure were enrolled in the study. Some of these dogs were in advanced chronic renal failure at the time of diagnosis and, as a result, only 16 dogs survived to complete the full 60 days of the study.

The results showed that there was no significant difference in plasma TGF-$ß_1$ concentration, serum creatinine concentration, body weight, and UPC in dogs receiving benazepril for 30 days versus placebo for 30 days. The simplest explanation is that benazepril may have no effect on plasma TGF-$ß_1$. A second possible explanation is that the dose of benazepril used may have been insufficient to generate an effect. Thirty days may be too short a period of time in which to see significant improvements in renal function, but it is a reasonable time frame in which to see trends in concentrations of cytokines, such as TGF-$ß_1$. Extending the study period to 6 to12 months is likely unrealistic in these dogs with advanced renal disease. Perhaps if dogs were studied earlier in renal disease, the survival time, and thus the study time, could be longer, and the sample size could be larger.

Dogs in this study benefitted through close monitoring of their kidney function through blood work and urinalysis, at no charge to the owner. The dogs were also provided free medications, as required, and high-quality prescription diets during the study. Referring veterinarians were able to consult closely with residency-trained and board-certified internists on the management of each case.

This study provided further information on how benazepril functions in naturally occurring CRF in dogs. Other studies have shown that angiotensin converting enzyme (ACE) inhibitors are beneficial in the management of canine CRF by decreasing glomerular hypertension and proteinuria, so the results of this study do not indicate that the use of ACE inhibitors should be discontinued. A manuscript describing the results of this project is in preparation for submission to a peer-reviewed journal.

A new treatment for glaucoma *(Anterior chamber to frontal sinus valved glaucoma shunt: A surgical therapy for dogs with primary glaucoma)*
C Cullen

Glaucoma is a painful eye disorder that is one of the most common causes of blindness in dogs. It results from an increase in fluid pressure in the eye, which happens when the normal pathway for fluid to leave the eye is blocked. The blockage can occur for many reasons, including an inherited defect in the structure or function of the pathway for fluid exit. This is called primary glaucoma, and is more common in certain purebreds, usually eventually affecting both eyes.

Glaucoma must be treated quickly to prevent irreversible blindness. Available treatments include drugs and/or eye surgery to attempt to reduce or redirect fluid production in the eye. Unfortunately these treatments are rarely successful over the long term, and pain and blindness result. Options at this point for blind, painful glaucomatous eyes include complete removal of the eye, or placement of an implant within the outer coat of the eye.

Through this project, Dr. Cullen developed and tested a new type of surgical treatment for primary glaucoma. Treatment consisted of implantation of a shunt (a small piece of plastic tubing) intended to redirect the fluid produced in the eye to the frontal sinus, an air-filled space near the eye. (Currently-used shunts direct the fluid to the outside, and scarring and blockage of the tube usually develop within one to six months.) The Cullen FSVG shunt (anterior chamber to frontal sinus valved glaucoma shunt) was professionally manufactured by E Benson Hood Laboratories. The shunt has been evaluated in dogs (Cullen CL. Cullen frontal sinus valved glaucoma shunt: preliminary findings in dogs with glaucoma. *Vet Ophthal* 2004;7(5):311-8). Because there were few cases of primary glaucoma in dogs presented to the AVC that were considered appropriate candidates for this shunt, Dr. Cullen commenced a multicentre clinical study, the preliminary results of which were presented at the 2003 meeting of the American College of Veterinary Ophthalmologists (ACVO). The two abstracts below summarize the findings from this study. In addition, an application for a patent has been submitted for the Cullen FSVG shunt.

The Cullen FSVG shunt is a novel therapy for canine primary glaucoma that is now readily available to, and used by, several veterinary ophthalmologists across North America. This shunt has been successful in controlling glaucoma and preserving vision in many eyes of dogs for varying degrees of time. The shunt appears to be most helpful in cases of acute canine primary glaucoma, in that these eyes have suffered less glaucoma-related damage and may have some remaining vision. Surgical shunt placement in these cases results in fewer complications than those encountered in more chronically glaucomatous eyes. The most common complication of shunt placement in these dogs' eyes is occlusion of the tube as a result of created and/or pre-existing inflammation inside the eye.

A manuscript is in preparation that will document the findings from the multicentre clinical study.

Abstracts
Cullen CL. Preliminary findings of a canine frontal sinus valved glaucoma shunt. Abstract: 33rd Annual Meeting ACVO, Denver, Colorado. *Vet Ophthal* 2002;5:291.

Cullen CL, Corcoran K, Bartoe JT, et al. Preliminary findings from the multicenter clinical study group evaluating the Cullen canine frontal sinus valved glaucoma shunt. Abstract: 34th Annual Meeting AVCO, Coeur D'Alene, Idaho. *Vet Ophthal* 2003;6:356.

Improving understanding of glaucoma in dogs and cats—COX-1, -2, and -3 *(Expression of cyclooxygenase-1, -2, and -3 in normal and glaucomatous canine and feline eyes)*
C Cullen and D Sims

Glaucoma is a painful eye condition that is one of the most frequent causes of permanent blindness in dogs and cats. Both medical and surgical therapies are used to treat this disease, which develops as a result of increased fluid pressure in the eye. Medical therapies used to treat glaucoma are confusing and even contradictory. Often combinations of several medications are required, as eye drops, with two to four treatments per day. Not only is this costly, but it can be stressful both for the animal receiving the treatment and the person providing medical care. One difficulty is that all anti-glaucoma medications used in dogs and cats are those intended for use in people, and there is often little information about their specific effects in dogs and cats.

Prostaglandins play a part in both the occurrence and the treatment of glaucoma. Recently the role of two prostaglandin isoenzymes (COX-1 and -2) in the human eye has been investigated. As well, a new isoenzyme (COX-3) has been described in the dog brain, among other tissues. In this study, Drs. Cullen and Sims looked at the occurrence of these three enzymes in both normal and glaucomatous eyes in dogs and cats, with the aim of better understanding glaucoma and its medical management.

The results show that COX-derived prostaglandins (PGs) play a role in the development of canine and feline glaucoma. This information has improved the understanding of the way currently used anti-glaucoma medications work, including latanoprost (a $PGF_{2\alpha}$ analogue) and corticosteroids in the management of canine primary glaucoma, and non-steroidal and steroidal anti-inflammatory agents in the treatment of canine and feline glaucoma secondary to non-infectious uveitis. The documentation of altered COX immunoreactivity in glaucomatous eyes of dogs and cats may also lead to the implementation of novel therapies to help control glaucoma. The long-term goal is to improve medical therapy so as to prevent the pain and blindness associated with this condition in dogs and cats.

Two abstracts (one pertaining to dogs and one to cats) summarizing these results were presented at the Annual Meeting of the American College of Veterinary Ophthalmologists (ACVO) in October 2004. Two manuscripts are being prepared (canine and feline) for submission for publication in a suitable veterinary journal.

Abstracts
Cullen CL, Sims DE, Singh A, et al. Cyclooxygenase-1, -2, and -3 expression in clinically normal and glaucomatous canine eyes. Abstract: 35th Annual Meeting ACVO, Washington, DC. *Vet Ophthal* 2004;7:441.

Cullen CL, Sims DE, McCarville C, et al. Cyclooxygenase-1, -2, and -3 expression in clinically normal and glaucomatous feline eyes. Abstract: 35th Annual Meeting ACVO, Washington, DC. *Vet Ophthal 2004;*7:441.

Disease surveillance in two wildlife species
S McBurney

The piping plover (*Charadrius melodus*) and Newfoundland pine marten (*Martes americana atrata*) are designated as endangered species by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). Since 1995, many Newfoundland pine marten and piping plover mortalities have been submitted to the Canadian Cooperative Wildlife Health Centre for post-mortem examination. In addition, abandoned piping plover eggs, primarily from Prince Edward Island National Park (PEINP), but also including the Magdalen Islands and other locations in the Maritime provinces, have been examined.

courtesy of Sidney Maddock

Piping plover

Significant abnormalities have not been detected in the piping plover eggs, although, in the 1998 field season, a qualitative assessment detected an increased fragility of the egg shells in three clutches from PEINP. In 1996, the *Irving Whale* recovery project raised environmental concerns due to the presence of polychlorinated biphenyls (PCBs) in the cargo heating system of the sunken barge. A decline in reproductive success has been reported in many avian species exposed to PCBs. Egg shell thinning, embryonic death, congenital deformities, and abnormal behaviour have been implicated as causes of reproductive failure. Despite the potential exposure of PEINP's and the Magdalen Islands' piping plover populations to PCBs, the eggs of these two populations had not been evaluated for PCB contamination by toxicological analysis.

Accidental snaring or trapping has been identified as a frequent cause of death for the Newfoundland pine marten. Since many of these animals are removed from the trap or snare and discarded prior to biologists finding them dead, it is important to recognize trapping and snaring injuries so that the mortality can be properly attributed to these activities. Accurate diagnosis of trapping and snaring mortalities provides the documentation

required to introduce management initiatives to prevent this type of accidental death. A relatively large proportion of the pine marten examined (i.e., 10 out of the 30 necropsied) had changes in the brain tissue strongly suggestive of an infectious disease problem (nonsuppurative encephalitis).

The objectives of this study were to send the piping plover egg content collected and examined in the year following the recovery of the *Irving Whale* to a certified toxicology laboratory for PCB analysis; to continue the post-mortem examination of pine marten mortalities for accurate diagnosis of the cause of death; and to submit the brain tissue of individual pine marten diagnosed with nonsuppurative encephalitis for immunohistochemistry to determine the cause.

Twenty-three piping plover eggs were analyzed for organochlorine pesticides and PCBs. The only contaminants present in significant levels in the eggs were PCBs and DDE (a toxic metabolite of DDT). The levels of both toxins were below that at which, in most bird species, any obvious effects are seen on hatching success. However, sensitivity of different bird species to PCBs and DDE varies widely. It is difficult to draw any firm conclusions about, for example, possible subtle embryonic developmental effects, without knowing how sensitive plovers are to these contaminants, in comparison with other birds.

The pine marten necropsies were completed. A total of 76 animals were examined, with the greatest source of mortality being anthropogenic in origin (43%), including trapping/snaring bi-catch, problems associated with radiotelemetry collars (i.e., skin infections and mishaps leading to entrapment), accidental drowning, and vehicular trauma. Other major causes of mortality were predation/interspecific-intraspecific aggression (17%) and emaciation/starvation (14%). There were some interesting infectious disease problems in some individuals, and significant lesions in the brain of 10 animals, which, taken together, were strongly suggestive of a parasitic etiology. Further investigation will be required to determine the specific identity of the nematode involved. (Due to the parasitic origin of the brain lesions, there was no need to carry out the study's third objective.) The diagnosis for 10 of the animals (13%) remained open because of severe post-mortem decomposition.

The goal with endangered species is to achieve as complete an understanding as possible of the life history, in order to provide answers that are critical to the preservation of the species. Funding for this project has enabled the investigation of mortality factors in two endangered species. The information gained will enable biologists responsible for managing piping plover and Newfoundland pine marten populations to make better-informed decisions on health-related matters in these species. For example, the findings from this study confirmed and quantified snaring bi-catch as a substantial cause of mortality in Newfoundland pine marten, providing significant supporting evidence for the establishment of regulations requiring the use of a modified snare (i.e., one that cannot capture pine marten) in zones near known marten habitat. The identification of radiotelemetry collar-associated mortality in pine marten may provide the impetus for biologists to investigate alternative collar designs or telemetry methodologies for monitoring the movements of this species. The low level of organochlorine pesticide and PCB contamination in piping plover eggs provides a baseline for further monitoring or surveillance contaminant work in this endangered species.

The data from the piping plover portion of the project were presented at the annual Piping Plover Recovery Team Meeting in Sackville, NB, in November 2003, and will be included in a paper on 10 years of results from the examination of abandoned piping plover eggs throughout the Maritime provinces, to be published after the 2005 nesting season.

French heartworm in Newfoundland
(Canine Angiostrongylosis in Newfoundland: Serologic diagnosis and pathology)
G Conboy, F Markham, and L Miller

French heartworm (*Angiostrongylus vasorum*) is a roundworm (a parasite) that infects the blood vessels in the lungs and heart of dogs and red foxes. It causes serious disease and death, through damage to the heart and lungs and potentially other organs. The main signs of infection are a chronic cough, for which there are also many other causes, and, eventually, heart failure. The parasite was first diagnosed in Newfoundland in 1996 and has not yet been found in other regions of Atlantic Canada. However, given the frequency and speed of travel between Newfoundland and other areas, and the abundance of red foxes and slugs (the intermediate host) in the rest of Atlantic Canada, it seems likely the parasite will spread.

Standard stool tests for parasites (e.g., Baerman test) do not detect French heartworm larvae. Instead larvae are detected by a specialized technique, but usually this is done only after the animal is showing signs of disease (which means some permanent heart and lung damage may have already occurred). The main goal of this project was to develop a blood test to help with diagnosis, patterned after the ELISA test that has been used so successfully in the early diagnosis of North American heartworm, so that treatment can occur before there is serious permanent damage to the heart and lungs. Early treatment greatly improves the chances for a complete recovery. The project also looked at the effect of the French heartworm on dogs in the St. John's area of Newfoundland, through post-mortems on dogs euthanized by the humane society.

Through this project, Drs. Markham, Verzberger (PhD student), and Conboy have developed a sandwich-ELISA test that is able to detect antigen(s) circulating in the blood of dogs infected with *A. vasorum*. The diagnostic sensitivity was determined to be 89.5% and the specificity to be 100%. Cross comparisons using the sandwich-ELISA test and Baerman fecal flotations indicate that the latter has a sensitivity of only 45%. Currently, Dr. Verzberger is continuing efforts to characterize and identify the antigen(s) that the sandwich-ELISA detects, in an effort to further improve the sensitivity of the test.

For the second part of the project, 56 dogs from the St. John's area of Newfoundland have been necropsied, seven of whom (12.5%) were found to be infected with *A. vasorum*. To the degree that humane society dogs reflect the general population, this value (12.5%) represents an overall prevalence of *A. vasorum* infection in the dogs in this area. The pathological changes seen in the infected dogs varied from mild to severe, and reflect the highly pathogenic nature of this parasite in dogs. One of the seven infected dogs had right-sided congestive heart failure

resulting from severe pulmonary pathology (cor pulmonale) and another dog died from a parasite-induced stroke. This research is part of the MVSc programme of Dr. Andrea Bourque, who plans to complete her programme in May 2005.

In conclusion, the low level of sensitivity of the standard Baermann fecal examination (45%), as indicated by the serological work, makes it woefully inadequate as a diagnostic test for French heartworm. The best hope of preventing or delaying the spread of the parasite from Newfoundland to the rest of Atlantic Canada is through an accurate and reliable diagnostic test, such as is promised by the antigen sandwich-ELISA. This test also offers the potential for routine screening of dogs, and treatment of animals before the onset of clinical signs. The pathology work indicates that the level of infection in dogs in the St. John's area is fairly high, and that there is significant risk of permanent damage if infections go undetected in dogs.

Dr. Verzberger presented some of the findings of her work at the 2002 meeting of the Atlantic Canadian Association of Parasitologists in Fredericton, NB (*Serologic diagnosis of Angiostrongylus vasorum*). Upon completion of their work on this project, Drs. Verzberger and Bourque will submit their results for publication.

Neutering of feral cats on PEI (2002–04)
P Foley and H Gelens

The objectives of this trap, neuter, and release (TNR) project were to decrease the birth rate of the feral cat population on Prince Edward Island; to test feral cats for Feline Leukemia Virus (FeLV) and Feline Immunodeficiency Virus (FIV) in order to continue gathering prevalence data on these important infectious diseases; and to provide basic and preventive medical care to the trapped feral cats.

The first objective was accomplished by trapping and surgically sterilizing (spaying or castrating) feral cats over six weeks of age. These surgeries were performed at AVC approximately every two months on "Neuter Days" run by volunteer veterinarians, veterinary students, and volunteers from the Cat Action Team of PEI (CAT), a non-profit organization dedicated to the trapping, neutering, and releasing of feral cats on PEI (**www.cats-pei.ca**). The first neuter day performed using funds from this project was held in February 2002. Since then, a total of 13 neuter days have been held, with sufficient funds remaining through this project for another two or three neuter days. Over this time, 335 cats were brought in, and 310 spays or neuters were performed.

To achieve the second objective, all cats were tested for FeLV and FIV. Any cat that tested positive for either virus was euthanized to help prevent spread of these fatal viral illnesses in the cat population of PEI. The 335 cats processed on feral cat neuter days at AVC using the funds of this project represent 29% of the feral cats that have been neutered by CAT, from its creation in 2001 until the present. A total of 1,173 cats have been neutered using funds provided by the Sir James Dunn Animal Welfare Centre, the Pegasus Family Foundation, and private donations. Changes in the prevalence of FeLV and FIV from early 2001 to 2004 show that the prevalences of these diseases have been steadily declining. In many individual colonies, FeLV and FIV have been eradicated, with occasional FeLV or FIV positive cats immigrating to the colonies from surrounding areas.

Preventive medical care for neutered cats included vaccination against feline viral rhinotracheitis, feline calici virus, feline panleukopenia virus, feline leukemia virus, and rabies virus. This last vaccine is particularly important from a public health perspective, as it helps provide a rabies-vaccinated population of feral cats should raccoon rabies ever be introduced onto PEI. The cats were also dewormed using ivermectin, and any eye or ear infections were treated with topical cleaning and medications. Every cat received a unique tattoo number for identification, and to prevent accidental surgery on previously neutered cats at future neuter days.

Assessing the decline in birth rate of the feral cat population is difficult. An indirect measure is to look for a progressive decline in the annual totals of cats surrendered to the PEI Humane Society. Most of the individual major feral cat colonies monitored by CAT have had 70–100% of the cats in those colonies spayed or castrated.

Feral cat

This project improved the quality of life of individual cats through surgical neutering, vaccination, deworming, and treatment of pre-existing medical conditions. Spayed and castrated cats fight less, and have better chances of survival than cats that are mating and raising kittens. Cats that tested positive for FeLV or FIV and were euthanized were spared the slow and painful death that can be associated with these diseases. The project also benefitted the feral cat population as a whole by decreasing the prevalence of FeLV and FIV, which also benefits owned cats that interact with feral cats. Fewer feral kittens were born, resulting in less competition for resources, and improving the overall welfare of the feral cat population. Neutering of cats results in less nuisance behaviour, such as urine-spraying and fighting, thus improving the public's good will towards feral cats. The publicity generated by the activities of the volunteers in this project has raised the awareness of the plight of feral cats on PEI, and stressed to the public the importance of spaying and castrating cats and dogs.

Each neuter day, dozens of students from all four years of the

veterinary medicine programme volunteer to take part. Not only is this additional training experience extremely valuable to the students, it reminds them of their responsibility to use their training for the benefit of feral animals, and shows them that trap, neuter, and release programmes are viable. Since the start of this programme, four privately owned veterinary practices on PEI have begun offering discounted services to neuter feral cats for CAT, following the protocols established through this project. Earlier this year, a veterinarian from Nova Scotia seeking to establish a feral cat TNR programme in her province travelled to AVC to assist at one of the neuter days. She plans to adopt the AVC protocols.

Information about the TNR programme has spread through the media, and by word-of-mouth through the many veterinary students who participate, and take their knowledge and experience with them when they graduate. Dr. Foley plans to publish the results of this programme, including FeLV and FIV prevalence data, in a peer-reviewed journal. Information about the initial TNR project at the Atlantic Veterinary College can be found in Gibson K, Keizer K, and Golding C. A trap, neuter, and release program for feral cats on Prince Edward Island *Can Vet J* 2002;43:695-698. As well, Dr. Crook presented information about this programme at the 2004 Australian Veterinary Association Animal Welfare and Ethics sessions (Crook A. Feral cat management in Prince Edward Island, Canada. Canberra, Australia, May 2004, published in the *Proceedings*).

AVC humane dog training programme (2003–04)
N Guy

Dr. Guy began this programme in 2001, in cooperation with the PEI Humane Society (PEIHS). The objectives are to improve the quality of life for dogs being held for adoption at the PEIHS; to increase veterinary student awareness of shelter issues; to increase the adoption and retention of humane society dogs; to increase the basic level of dog behaviour knowledge and the training skills of AVC students and the humane society staff; to proactively improve the knowledge and training skills of new owners; and to provide leadership in positive methods of behaviour modification within the PEI community.

AVC student trainer Alison Pollard works with "Peanut" in the new outdoor exercise area for PEIHS dogs.

This project provided a full-time student trainer for the summer of 2003 and three part-time student trainers from September 2003 until March 2004. During the fall and winter months, student trainers provided a reliable 24 hours of contact time per week with shelter dogs and with potential adopters. This was a very effective way of providing behavioural enrichment for the shelter dogs while educating the public. From April 2003 through March 2004, the PEIHS received a total of 822 dogs. Of these, 164 were reclaimed by their owners, and 296 were adopted out to new homes. Among the dogs who were adopted, only those that spent less than two days on the adoption floor did not receive the benefit of contact from the student trainers.

Most of the dogs on the adoption floor remain in the shelter for a period of one or more weeks. Without the presence of the student trainers, these dogs would have very little access to activities outside their runs, and would not be conditioned to show more socially acceptable behaviour. Of the 361 dogs who were deemed to be unsuitable for adoption, 72% were euthanized for behavioural reasons, demonstrating the impact of behaviour problems on the welfare of dogs. Student trainers answer general behaviour questions received by the shelter, and provide ongoing training support to owners of newly adopted dogs. The programme continues to enjoy enormous support from the shelter administration and staff, and, although not everyone continues to clicker train his or her dog after adoption, there is a noticeable increase in the public's awareness of the effectiveness of non-coercive methods of training.

In addition to the obvious direct benefits to the shelter dogs, this programme helps to improve the public's perception of the PEIHS and its activities, and can be expected to indirectly foster better attitudes towards animals. Perhaps the most significant impact this programme has on the welfare of animals is the dissemination of knowledge by graduating AVC veterinarians to their colleagues and clients. Although this effect will always be difficult to measure, a graduate's hands-on experience and "comfort" with managing problem behaviour will undoubtedly work to keep many dogs in their homes who might otherwise be relinquished to shelters.

Funding for this project has been renewed through 2006. More information can be found at **www.upei.ca/~traindog**, and Dr. Guy is also preparing an article on the programme for peer-reviewed publication.

AVC humane education programme (2002–04)
N Guy

This programme was begun in 1997 by Dr. Karen Gibson. The objectives over the last two years were to continue the classroom visits, including distribution of learning aids; evaluate the programme through examination of teacher surveys; create a written compilation of student experiences in the classroom for the benefit of new student volunteers; revise the lesson plan book if required; and prepare a manuscript describing the programme for submission to a peer-reviewed journal.

The *AVC humane education programme* continues to be evaluated very highly by those teachers making use of it, and veterinary students encounter few problems in the classroom. However, although the programme has been in place for a number of years and is well-publicized to the schools with annual mail-outs, many teachers remain unaware of its existence. In an effort to improve the visibility to teachers, two initiatives were undertaken in the fall of 2003. The first was a fax sent directly to

all schools, with a request that it should be copied and placed in the mailboxes of individual teachers, and not just posted. The second was an information booth set up at the PEI Teachers' Federation Annual Convention, which is attended by virtually all teachers in the province. This booth was staffed by AVC students for the two full days of the conference, complete with dogs that had been approved for classroom use, examples of all the grade-appropriate lesson plans, and information leaflets for the teachers to take home. The booth received a lot of interest, with many teachers saying it was the first time they had heard of the programme.

There are ongoing challenges coordinating the visits by students with the time the teachers would like to have them in the classroom. Presentations must be done within the time frame of the normal school day. As a result, AVC students miss their own lectures or labs to give a presentation, particularly if it is outside the Charlottetown area. In addition, the student who is hired as the coordinator has difficulty organizing visits by other student volunteers, resulting in the coordinator doing the lion's share of the presentations, which cannot be sustained.

The basic principles behind this project are laudable: giving veterinary students the opportunity to positively influence the attitudes of children (and adults) towards animals. In total, over 1,000 students or members of community groups such as the Beavers have benefitted from presentations in the past two years. The long-term success of this programme, however, will depend on developing a model which more efficiently and thoroughly delivers the information to the target population.

It is clear that any increase in the accuracy of knowledge about animals, and the demonstration of humane attitudes towards them, will be of benefit to both the animals themselves and to the community at large. The lesson plans, videotapes, and other materials that have been developed through this project over the last several years will be maintained for use by anyone wishing to give a presentation to school-age children, as the information will remain highly relevant for this age group.

Medical and surgical care of homeless dogs and cats (2002–2004)
C Runyon and J Miller

Funded continuously since 1994, this project provides care for homeless, injured, and sick animals, and addresses the problem of pet overpopulation. In the last 10 years, over 2,500 dogs and cats have been presented to the Veterinary Teaching Hospital (VTH) at the Atlantic Veterinary College through this grant. In the two years funded by this specific project, 320 animals were treated at the VTH. The majority of these were presented for illness or injury, by the PEIHS or Good Samaritans. Animals from the shelter population are seen and treated on an emergency basis or as routine hospital admissions, depending on the nature of the problem. Students within all fourth-year companion animal clinical rotations are involved in the diagnosis and care of these animals. The clinicians at the VTH work closely with the PEIHS to ensure that sick and injured animals are presented in a timely manner for best care and then returned to the shelter for adoption. Most animals, once healthy, are placed in homes. Some lost animals are claimed by their owners; others have such serious medical problems that euthanasia is the best option for them. Animals brought in for treatment by Good Samaritans are also sent to the PEIHS for adoption, after recovery. As well, some dogs and cats from the PEIHS are neutered through this programme by fourth-year students or interns.

This programme addresses the welfare of homeless dogs and cats through direct action and education. The provision of veterinary care to sick and injured animals allows them, once healthy, the opportunity to be placed in homes, rather than being euthanized due to medical problems. The increased cooperation and communication between the Atlantic Veterinary College and regional shelters encourages veterinary students to better appreciate the problems of homeless animals and pet overpopulation, and the veterinarian's role in resolving these problems.

PEIHS personnel, Good Samaritans, and AVC faculty, students, clinicians, and staff are all very appreciative of the opportunity to provide care to injured and ill homeless animals through this programme. Many members of the AVC community have adopted shelter animals, particularly those with special needs, that have come to the VTH through this project. Funding for this programme has been renewed through 2006.

Health management services for the PEI Equine Retirement Society, Inc. (2002–2004)
W Duckett

This project has been funded through the SJDAWC since 1997, to provide basic preventive medical care to incoming and resident horses at the PEI Equine Retirement Society, Inc. (PEIERS), to better prepare them for future adoption. The objectives are to minimize the spread of respiratory disease and the chance of contacting neurologic disease, including West Nile Virus, through vaccination; to decrease parasite burdens at the facility; and to provide an educational opportunity for senior veterinary students.

"Speedy" receiving a vaccination from veterinary students Marie Claire Galvin and Shanna Clinch [now Drs. Galvin and Clinch].

As of June 2004, 26 horses had been donated to the PEIERS, of which eight were on-site. Each of the 26 horses received a physical examination; vaccination against influenza, rhinopneumonitis, viral encephalidites, and tetanus; parasite treatment; and dental floating as required. Random fecal flotations on individuals in the herd have been performed to monitor parasite burdens. Senior veterinary students have been involved in each of the visits to the facility, thereby providing an

opportunity for them to perform routine equine management work not commonly seen in academic practice.

Benefits to the horses are manifold. Current vaccination and parasite management strategies are particularly important in a facility that has constant movement of horses in and out of the herd. The incidence of respiratory disease is minimized, and parasite burdens are controlled. Physical assessment of each donated horse provides an opportunity to assess its adoptability, as special needs or concerns for potential new owners can be addressed. These preventive practices help provide the donated horses with a healthy start prior to their adoption to new homes. Once initiated at the PEIERS facility, continued health care for adopted horses is a requirement of the adoption agreement. Guidelines for the health care of the horses are established with their new owners prior to adoption, and include requirements for an annual health certificate from a licensed veterinarian, documentation of an appropriate vaccination and parasite control schedule, and documentation of routine hoof care by a qualified farrier.

The PEIERS, as a non-profit organization, relies on private and corporate sponsorship of finances, goods, and services to continue operation. This service project, as offered through the SJDAWC since 1997, not only provides health care for the horses, but tremendously decreases the financial burden of caring for them. The project is very much appreciated by members of the PEIERS. Funding has been renewed through 2006, to continue to provide basic veterinary services for the PEIERS.

EDUCATION

2004 Invited Lecture in Animal Welfare
On October 30, Dr. Katherine Houpt from the Faculty of Veterinary Medicine, Cornell University, gave the Sir James Dunn Animal Welfare Centre's 2004 Invited Lecture in Animal Welfare. She addressed the question "Are horses happy?" and reviewed the welfare concerns surrounding the different uses of horses in North America, from those used to produce estrogen for human medication, to racehorses, to horses prized for a particular appearance such as Arabians and Tennessee Walking Horses, to horses kept for leisure use.

During her visit, Dr. Houpt also gave a seminar on research done by her and her students on aspects of crib-biting; met with veterinary students and faculty; and gave an interview on CBC radio's Island Morning.

External Rotation in Animal Welfare
Fourth-year students may take a new rotation this year in companion animal welfare. The rotation is possible through the support of the British Columbia Society for the Prevention of Cruelty to Animals (BCSPCA), where students go for two or three weeks to work at the SPCA's main hospital in Vancouver. The students also visit outlying shelters, and accompany SPCA officers investigating reports of animal neglect. In addition, the students visit the Animal Welfare Programme at the University of British Columbia (UBC), meeting with some of the many graduate students there and learning about their work. We are most grateful to Dr. Jamie Lawson, Chief Veterinary Officer of the BCSPCA, and that organisation's staff, and to Drs. David Fraser and Dan Weary and the members of the UBC Animal Welfare Programme for their support for the rotation.

First-year students' activities in animal welfare
In January this year, the Class of 2007 submitted position statements on animal welfare to the Animal Welfare Committee of the Canadian Veterinary Medical Association (CVMA). The students developed the statements as part of their first-year class in animal behaviour and welfare. They critically reviewed the CVMA position statements on questions of animal use and, based on their research, suggested amendments or, where no statement existed, drafted new statements. The Committee is taking this material into consideration as position statements are reviewed, or new ones developed.

The Class of 2008 has also been engaging with the profession. They recently wrote to the authors of a proposed curriculum in swine medicine for North American students, to ask why training in animal welfare was not specified.

Graduate students
Former SJDAWC graduate student Nina Wojciechowska DVM MSc (page 2) has been appointed Veterinary Director of the Windsor-Essex County Humane Society in Ontario.

OTHER NEWS

2004 Christofor Award in Animal Welfare
Fourth-year student Bryan Langlois is the recipient of this year's award, presented November 4 at the Atlantic Veterinary College Awards Night. Bryan has demonstrated his long-standing commitment to improving the welfare of animals in a variety of ways. For the past eight years he has volunteered at the Glen Cove Animal Lovers League in Glen Cove, NY, where he has assisted with care of individual animals, helped to set up a record-keeping system for the shelter, and created a medical programme for all animals coming through the shelter. Due in part to his efforts, the shelter has been named one of the five most innovative shelters in the US by the Humane Society of the United States.

2004 Christofor Award recipient Bryan Langlois with presenter Dr. Alice Crook

At AVC, Bryan has been a member of the Humane Ethics Club for the past three years, and the club's president this last year. He has given presentations to AVC students on the challenges and rewards of animal shelter medicine, on humane euthanasia at shelters, and on the use of teaching animals in the curriculum, together with available alternatives to their use. Bryan has helped to set up procedures for the planned "owned cat" feline blood donation programme, and encouraged students to visit the resident blood donor cats. He has taken an active role in the programme to provide house-training and socialization to the teaching beagles at the College, prior to their adoption.

Bryan has also been extensively involved for the last three years with the PEI Cat Action Team (CAT), a volunteer organization working to care for stray and feral cats. In addition to helping set up properly managed colonies with appropriate shelter, he has also coordinated student involvement for the AVC neuter days for the past two years (page 6).

Bryan intends to pursue his veterinary career in the area of shelter medicine, with the goal of providing the most stress-free and friendly environment possible for animals coming through animal shelters. The SJDAWC wishes him well in these endeavours, and congratulates him on his well-deserved receipt of the 2004 Christofor Award.

Update on Federal Cruelty to Animals Bill
The bill, most recently named C-22, is the first major amendment to the Cruelty to Animals sections of the Criminal Code since these laws were originally enacted in 1892. The bill would move animals out of the property section of the Criminal Code, and provide tougher punishments for killing or harming an animal, or for failing to provide adequate care.

The legislation has been essentially stalled in the Senate since it was passed by the House of Commons in June 2003. Bill C-22 died in May 2004, for the fourth time, when Parliament prorogued shortly thereafter. Justice Minister Irwin Cotler has indicated that he intends to reintroduce the legislation in this session of Parliament.

This legislation has been before Parliament for almost five years. It has received careful scrutiny in both the House of Commons and the Senate, and many organizations have provided input through the respective Standing Committees. The legislation is widely supported across Canada and has the expressed support of organizations such as the Canadian Veterinary Medical Association and the Association of Chiefs of Police, the provincial governments of Ontario, Nova Scotia, and New Brunswick, humane societies, and groups representing researchers, hunters, trappers, and farmers.

The text of Bill C-22, as passed by the House of Commons, can be found at **http://www.parl.gc.ca/37/3/parlbus/chambus/house/bills/government/C-22/C-22_3/90148bE.html**. It is widely believed that this legislation will make a significant contribution to the protection of criminally abused animals in Canada.

SPONSORS

The Centre is very pleased to welcome three new sponsors this year. Two grants have been received from the **Pegasus Family Foundation**, through the Peninsula Community Foundation. One provides for costs associated with neutering approximately five feral cats per week (approximately 260 cats per year) at the Veterinary Teaching Hospital. Procedures are carried out as established by Dr. Peter Foley in consultation with the PEI Cat Action Team (CAT) for the SJDAWC-funded project *Neutering feral cats on PEI* (page 6). The other grant is a six-month project to provide resources to ease the financial burden of medical/surgical care for canine or feline companion animals of owners on restricted incomes.

Novartis Animal Health Inc. (Canada) recently provided funds to the Centre to sponsor a research project by Dr. Étienne Côté that was funded in the 2004 SJDAWC granting competition. The project *Vagal manoeuvres to lower heart rate in dogs and cats* will compare the effects of two kinds of vagal manoeuvres (the brief application of manual pressure on the eyeballs and the throat) on the hearts of dogs and cats. This noninvasive project was described in the summer 2004 issue of *AWC News*.

Through another grant, the **Animal Welfare Foundation of Canada** has provided funds to the Centre to support Dr. Caroline Hewson's project, *Canadian veterinarians' use of painkillers in large animals* (jointly funded with the SJDAWC).

We are most grateful to all our sponsors for their support.

NOVEMBER 1, 2004—CELEBRATING TEN YEARS

MANDATE

The Sir James Dunn Animal Welfare Centre (SJDAWC) exists to promote animal health and well-being in the broadest sense.

Objectives:

1) The SJDAWC promotes research projects and service activities where there is a clear potential for tangible benefits to animals.
2) The SJDAWC serves as a resource centre to compile, generate, and disseminate information relevant to the well-being of animals.
3) The SJDAWC strives to raise the awareness of the public and the veterinary profession on broad questions of animal welfare and animal use, and to provide accurate, scientifically based information on these questions.

Support the Sir James Dunn Animal Welfare Centre

We welcome the generosity of animal welfare supporters and friends of the Atlantic Veterinary College. Planned gifts established in the name of a donor, friend, or family member can be a fitting and lasting tribute. We also appreciate the donations that have been made to the Centre in memory of special pets. If you are interested in learning about ways you can support the work of the Centre, please contact 902-628-4360 or acrook@upei.ca

The Sir James Dunn Animal Welfare Centre gratefully acknowledges the continued support of the Friends of the Christofor Foundation.

Dr. Alice Crook, Editor
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