In Ontario, 80% of dairy farms currently use tie-stall housing, which has been the traditional system for housing dairy cows in Canada and the USA. In this system, cows are tied into a single stall, with a gutter behind it to catch manure, thereby reducing labour needed to keep stalls clean. The cows are restrained in these stalls throughout the lactation phase, with the exception of time spent on pasture during the summer, or a daily exercise period.

To maximize space within the barn, stalls were designed to be just wide and long enough to accommodate the size of the cow. However, efforts to improve production during the past 40 years has seen advances in nutrition and breeding research that have resulted in larger cows. While dairy cow stature has increased, the size of tie stalls has not changed proportionately. This discrepancy and long enough to accommodate the size of the cow. However, efforts to improve production during the past 40 years has seen advances in nutrition and breeding research that have resulted in larger cows. While dairy cow stature has increased, the size of tie stalls has not changed proportionately. This discrepancy of injury, and cleanliness, have all been associated with stall design.

Katherine Zurbrigg, a graduate student at U of G working under the direction of Dr. David Kelton, decided to examine these relationships in greater depth. A sample of Ontario tie stall dairy farms were surveyed to describe a range of measurements for stall width and length, tie rail height, and tie chain length. Also determined were indicators of welfare such as prevalence of hock and neck lesions, various lameness indicators, broken tails and levels of cow cleanliness. The next task was to determine how stall measurements affect dairy cow welfare, and if there are correlations between the stall and welfare measurements.

Zurbrigg found that, of her 317 study farms, 90% did not meet the current recommendations in extension... continued on page 7
newly developed “Animal Care Assessment Tool”, which uses standards from the Recommended Codes of Practice, will allow swine producers to document their animal care protocols the same way they document their food safety protocols. The Animal Care Working Group, a committee formed by the Canadian Pork Council in 2002 and made up of swine industry stakeholders, researchers and government representatives, has modeled the animal care assessment tool after the Canadian Quality Assurance (CQA) Program. The assessment tool is not intended to be an audit, but rather an educational tool for producers to track the welfare of their animals and to demonstrate to buyers what they’re doing to ensure good care of their animals. Canadian Pork Council Executive Associate Catherine Scovil says “A lot of the program deals with how producers are interacting with their animals so key areas deal with stockmanship, but there’s also other sections that deal with nutrition and water and comfort of the animals.” She adds that the Canadian Federation of Humane Societies, the Canadian Council of Grocery Distributors, the Canadian Meat Council and the Canadian Veterinary Medical Association all support the new assessment tool. The Canadian Pork Council and Canadian hog producers think the development and implementation of this Animal Care Assessment Tool is another key element of the competitiveness of Canadian agriculture.

For the full story, please visit: www.farmscape.ca

British Columbia Boasts First “Freedom” Cattle Farm

Barstow Island’s Painted River Farm is the first B.C. beef producer to earn SPCA certification for raising its cattle under humane conditions and free of hormones and steroids. The SPCA Certified labelling program has so far established standards for the treatment of pigs, chickens (meat and eggs), beef and dairy cattle. Sheep and turkeys will be added to the list at some future date. The SPCA program was inspired by Britain’s very successful Freedom Food venture, and aims to promote the humane treatment of farm animals. The standards outlined in the program embrace the concept of the Five Freedoms, which were established in the Brambell Report (1965). The Five Freedoms state that animals should be entitled to: freedom from hunger and thirst, freedom from discomfort, freedom from pain, injury or disease, freedom from distress, and freedom to express natural behaviour. The B.C. SPCA has modified the last ‘freedom’ to state behaviour that promotes well-being. Such programs are cropping up internationally in recognition of the fact that the production of cheap food on a large scale can lead to practices that ultimately compromise animal well-being. Therefore, the cost of Certified farm products must be increased by 10-25% as a means of covering the extra labour and equipment necessary for adherence to SPCA standards. In turn, consumers are assured by the “SPCA Certified” label that the products they are buying come from farms where animals are raised under high animal welfare standards. The program is voluntary, and Certified farms are inspected annually, with 30 per cent being randomly audited each year to ensure program standards are met.

For more information, please visit www.thenownewspaper.com
Choosing a fulfilling career can take time, and sometimes, a few attempts. Dr. Karol Mathews can attest to this—veterinary medicine was her third career. Dr. Mathews began a career in the field of human medicine, as a medical secretary at Sunnybrook Hospital. Here she was offered the opportunity to train as an audiology technician, which she enthusiastically accepted, but soon felt there was something very much missing. Thus, the desire to attend medical school, combined with a lifelong love of animals, led Dr. Mathews to the Ontario Veterinary College, where she completed a degree in veterinary medicine.

As a surgical resident, it became apparent to Dr. Mathews that it was necessary to manage animal pain, but that options were limited.

Upon completion of her DVM, Dr. Mathews went into practice for a year, returning to OVC to complete an internship in small animal medicine and surgery. Finding surgery especially enjoyable, Dr. Mathews decided to further her education by completing a DVSc in this area, followed by a 2-year post doctorate position focusing on renal transplantation in dogs. It was during this time that Dr. Mathews was confronted with a challenge that would become an integral part of her life’s work—the management of animal pain.

As a surgical resident, it became apparent to Dr. Mathews that it was necessary to manage animal pain, but that options were limited. At that time the only drugs available for pain management were opioids, and highly controlled. Therefore, she felt she was in the ideal position, as a surgeon, to try to manage the pain of the dogs she performed surgeries on, testing various new non-steroidal anti-inflammatory analgesics (NSAIAs) that could be more widely administered by students and practitioners. Dr. Mathews’ career then took a serendipitous turn when, in 1988, she was asked to manage the emergency room and intensive care unit at the OVC. Thus, the opportunity to observe, assess, and manage pain was broadened to encompass a number of species experiencing a wide range of medical problems—including injury, recovery from surgery, various painful medical conditions, and critical illness. In 1993, Dr. Mathews became a Diplomate of the American College of Veterinary Emergency and Critical Care (ACVECC), indicating specialty in the field.

Dr. Mathews remains Service Chief of Emergency and Critical care at OVC today. Being in this position has allowed her, together with many students and colleagues, to compile years of data and develop appropriate pain management strategies for a wide range of medical conditions. Mathews says this is done by first assuming the level of pain an animal must be experiencing, and administering an analgesic that is expected to manage that pain. Careful observations on changes in the animal’s behaviour, combined with physiological measures such as respiratory and heart rate, give a good indication of the effectiveness of the drug type and dose required, which sometimes have to be adjusted. This information is then extrapolated to estimate the degree of pain associated with a particular condition. The information gathered on emergency and critical care, and pain management has led to the publication of a book on veterinary emergency and critical care, over 50 refereed journal articles and book chapters, and the development of 2 CDs on pain management. It has also led Dr. Mathews to speak regularly on the subject at international meetings. Dr. Mathews was President of the Veterinary Emergency & Critical Care Society (USA) from 2002-2004 and currently serves on the Board of Directors.

Dr. Mathews’ work has led to several distinguished awards, including the shared Scientific Achievement award for Pain Assessment and Management in the critically ill, awarded by ACVECC in 2002. She is currently a professor at OVC, teaching phase two to fourth year veterinary students, as well as graduate residents. Because veterinary emergency and critical care medicine is a relatively new specialty, there is always something to be investigated, and Dr. Mathews plans to continue adding to the body of knowledge on animal pain management, or as she puts it “Looking after them.”

To see excerpts from the CD “PAIN H.U.R.T.S” please visit: www.jonkar.com
Dr. Georgia Mason, together with graduate student Ros Clubb, used data sets from various zoos to investigate welfare problems in carnivores. Mason began her study of zoo animal welfare after becoming aware that some species living in zoos are doing very poorly, while others are thriving. For example, compared to wild cheetahs, zoo housed cheetahs have a higher incidence of stomach problems, higher faecal cortisol levels (which is a measure of stress), and larger adrenal glands. They also have poor breeding success. In contrast, the snow leopard tends to do very well in captivity. Many other species show similar differences. Mason’s work aims to identify why there are such vast differences in adaptability across species and which factors within species influence welfare.

Certain types of data sets collected in zoos can be very useful when assessing animal welfare. For example, infant mortality records can indicate potential welfare problems because maternal care is typically compromised by chronic and acute stress. Likewise, because stress is associated with shorter life spans, overall mortality records from zoos can provide some insight into the quality of life of the animals housed within them. Furthermore, many small-scale environmental enrichment studies have been done that examine stereotypies in zoo animals. Stereotypies are repetitive, invariant behaviour patterns with no obvious goal or function, and are often associated with other measures of poor welfare, and possibly with central nervous system dysfunction induced by chronic stress or abnormal rearing conditions.

Factors thought to put a species at risk for poor welfare include a specialized diet, reliance on hunting, high activity levels, and a wide-ranging nature in the wild - because these needs are difficult to meet in captivity. By compiling data records from 43 sites, 35 species, and 940 individuals, Mason was able to correlate potential risk factors, based on an animal’s natural or wild behaviour, with the indicators of poor welfare mentioned above, such as lifespan and recorded stereotypies. She was then able to conclude whether individual risk factors or combinations of risk factors could act as predictors of poor welfare. That is to say, whether or not a species’ natural tendencies put it at high risk for welfare problems in confinement.

Mason’s findings indicate that wide-ranging animals are, indeed, inherently more prone to welfare problems in captivity. However, natural foraging behaviour (diet and hunting) and natural activity levels of a species have no effect. As a result of her findings, Mason suggests that zoos consider phasing out wide-ranging species in favour of more stay-at-home ones. As an example, brown bear.

**Adrenal glands of a zoo-housed cheetah on the left, and of a free-living wild cheetah on the right.**

**The snow leopard on the left typically thrives in captivity, while the clouded leopard on the right typically does not.**

**Natural hunting instinct is not related to whether a wide-ranging animal experiences poor welfare in captivity.**

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**Using Multi-Zoo Datasets to Investigate Welfare Problems in Carnivores**

Dr. Georgia Mason

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**ANIMAL BEHAVIOUR AND WELFARE SEMINAR SERIES KICKS OFF!**

The Animal Behaviour and Welfare Seminar Series began successfully in January, with no seat left unoccupied. The seminar series, hosted by the Animal Sciences Department at U of G, is aimed at graduate students, faculty, and interested undergraduates. Each month, a speaker is invited to share his or her work on animal behaviour, brain and behaviour, or animal welfare.

Please enjoy the following re-caps of two winter semester sessions.
Mason suggests that zoos consider phasing out wide-ranging species in favour of more stay-at-home ones.

Hyenas, which have large territories, could be replaced with spotted hyenas, which have smaller territories. Enrichment practices should also, according to Mason, be reconsidered for wide-rangers. Current enrichment practices are heavily focused on foraging behaviour, such as placing fish in large ice cubes for polar bears, or tying a food item to a rope for an animal to chase. However, because foraging is not strongly tied to welfare for wide-rangers, Mason feels that zoos should think carefully about what it means to be wide-ranging. If these species must be kept in captivity, then modifying enclosure design is the most appropriate next step towards increased animal welfare. This study was published in *Nature*. For more information, please visit: http://www.nature.com/cgi-taf/DynaPage.taf?file=/nature/journal/v425/n6957/full/425473a_fs.html

The Bear Necessities: Stereotypies and Stress Hormones in Zoo Polar Bears

by Dr. David Shepherdson

The majestic and elusive polar bear is among the most impressive species housed in zoos. The polar bear exhibit is often a priority among zoo-goers, hopeful to get a glimpse of a bear swimming, eating, or playing. What they frequently see, unfortunately, is a bear pacing incessantly, sometimes to the point of wearing down the concrete ground. This pacing is a form of stereotypic behaviour, and thought to be indicative of poor welfare.

David Shepherdson, of the Portland Zoo in Oregon, has been studying stereotypies in polar bears for 4 years. His goal is to find effective methods of assessing animal well-being in zoos, and feels that polar bears are an ideal model because they typically show stereotypies, but little is known about how to correct the problem.

Because each zoo generally houses few polar bears, Shepherdson combined data from 22 zoos, resulting in a wider information base. He decided to first study general stereotypic behaviour patterns, and then investigate whether husbandry, environment, or stress play a role in stereotypic behaviour. A particular interest of Shepherdson was whether an animal’s temperament influenced its tendency to perform stereotypies. If so, temperament could be used as an indicator of a bear’s likelihood of developing stereotypic behaviour in the future.

Shepherdson relied on zoo staff and volunteers to video-tape the bears for one full day, bi-weekly. This video was then coded using a scan-sampling technique, whereby bears’ activities were recorded every 10 minutes. Temperament was assessed by placing a novel object in the enclosure and recording each bear’s reaction to it. A bear’s temperament was assigned to one of four categories, being 1) interactive with novel object, 2) interested, 3) cautious and 4) slow to approach. Zoo staff also collected fecal samples, which were tested for levels of stress hormone using corticoid assays.

Results showed that polar bears are fairly inactive for about 70% of the time, but when they do move about, 30% of this time is spent performing stereotypies. Environmental factors, such as enclosure size and pool size did not correlate with stereotypic behaviour. Nor was a strong relationship found between corticoid levels and stereotypies. However, an association was found between a higher number of females in a group and a reduced incidence of stereotypies. This is a surprising result considering that polar bears are thought to be solitary animals. Also, wild caught bears performed less stereotypies than ones born at the zoo, possibly because a bear’s coping skills are more highly developed in the wild than in captivity. In the temperament test, timid bears showed the highest levels of stereotypies, suggesting that temperament tests could indeed be used to indicate future welfare problems.

Animals living in more enriched environments, and those that were formally trained, showed less stereotypies.

Perhaps the most practical finding was that animals living in more enriched environments, and those that were formally trained, showed less stereotypies. Therefore, Shepherdson believes that improved husbandry is key to reducing stereotypies in zoo polar bears. For more information please visit: http://www.polarbearsinternational.org/pbhc/sumbehave.htm
You have just settled in at the kitchen table on Saturday morning, coffee in hand, to browse the morning paper. Upon reading the headlines, you do a double take: “The Research is In: Dogs Recognize Their Owners!” You might wonder how such an obvious finding has made its way to the front page. It might be more impressive, you think, if the headline read that, say, cockroaches can tell people apart...but this is exactly what Dr. Hank Davis, Psychology Professor at the University of Guelph, and graduate student, Emily Heslop, have found.

As a professor of psychology, Dr. Davis often has the opportunity to study animal behaviour in his lab. He became interested in the ability of animals to identify and recognize individual people when he observed that this seemed to be occurring regularly, regardless of the nature of the study.

Therefore, a research program was implemented, and a series of animals were studied, beginning with rats, and continuing on with sheep, chickens, cows, llamas, rabbits, penguins, seals, emu, rhea, honey bees, and finally Madagascar hissing cockroaches. Each and every species studied demonstrated the ability to tell people apart – in every case by showing a greater acceptance for a familiar person than for a stranger. “In some cases habituation to humans in general happened” says Davis “If that was all that happened, then that, in and of itself, would have been a negative finding, because we’re interested in individual human recognition, not simply habituation to humans... It’s nice to see that cockroaches can be tamed, but to be able to show that they go beyond general taming and become tamed to one specific person, is where we’re hitting pay dirt.” Bees and cockroaches were every bit as able to demonstrate they could identify someone unfamiliar to them as the seemingly intelligent rat. Cockroaches were an appropriate model for invertebrate study because they have the unique ability to forcibly expel air through a pair of modified abdominal breathing pores, creating a “hissing” sound, when they are disturbed – and they hissed more when someone they were not familiar with handled them.

This research program as a whole has both practical and philosophical implications. It raises questions about how the animal and the handler might benefit from positive handling techniques, and also about why we give certain species much more consideration than others. For example, a dog is generally given more consideration than a chicken, and the chicken is given much more consideration than a honey bee – even though they all have the ability to provide for us.

Food animal production entails the animals coming into contact with the stockperson frequently for various management procedures. Likewise, lab animals are frequently in contact with researchers, zoo animals are handled by keepers, and racehorses are handled by grooms. It has been shown by Hemsworth (see Issue #12), that swine are easier to handle and are more productive when interacted with positively rather than aversively by stockpersons, and by Spinka (see Issue #10) that pigs are able to predict future experiences based on past experiences. This knowledge,
publications for stall length and width, tie rail height, or tie chain length. In the second phase of the study several relationships were identified between tie stall design and the animal based welfare indicators. Short stalls were associated with higher numbers of cows with dirty hind limbs. This may be because large cows are forced to stand diagonally in short stalls, increasing the chance of manuring in the stall, then lying down before stalls are cleaned out. This can result in both dirty hind limbs and udders, which can lead to mastitis, a painful infection of the mammary glands. Short stalls were also associated with an increase in rotated hind claws, an indicator of subclinical lameness. Lameness has been associated with increased time standing, and rotating the hoof to alleviate pressure on sore spots. Proper stall design and bedding would encourage cows to spend more time lying down and could therefore decrease the prevalence of lameness.

Short tie chains were associated with higher numbers of cows having swollen hocks, which can result if rising and lying behaviour are difficult. Finally, low tie rails were found to be associated with an increase in the number of cows with neck lesions, due to repeated contact with the tie rail.

This study raises concerns not only for animal welfare, but for practical reasons as well. For instance, it has been found that milk production drops even before clinically lame cows are diagnosed, and remains low for months after treatment. Unclean udders can lead to high somatic cell counts in the milk, resulting in fines for the farmer. Zurbrigg’s results indicated that dirty hind limbs and narrow stall widths were associated with farms that had low milk production, and that lameness indicators and dirty hind limbs were associated with farms with higher somatic cell counts.

Therefore, Zurbrigg associated stall dimensions not only with dairy cow welfare, but with milk production and quality as well. She hopes that the information arising from her work will inspire changes and improvements in tie stall design and lameness, injury, and cleanliness of dairy cows.

Zurbrigg completed her thesis while working full time as Surveillance Analyst with the Veterinary Science Unit of OMAF (Ontario Ministry of Agriculture and Food), where she is currently employed.

combined with the finding that many species may not only be able to associate past experiences with people in general, but also with individual persons, raises some thoughts about animal welfare.

How an animal feels is central to its welfare. If an animal can associate aversive handling with a particular individual, then it stands to reason that the animal may feel stressed or anxious when this individual is present. Not only can stress be a negative feeling in itself, but it also can lead to decreased production, and to a negative experience for the handler. Also, experiments in which stress levels or behaviour are being measured may elicit inaccurate results if the one doing the measuring is also the individual who had carried out, for example, restraint for medical treatment in the past. Therefore, it is important that animals are handled in a positive manner and that previous handling is taken into consideration for the sake of good production, sound studies, employee satisfaction, and animal comfort.

From a philosophical standpoint, the continuum from the “lower” invertebrate species such as bees and cockroaches, to “higher” vertebrate species, implies a parallel continuum in intelligence that is widely accepted by society. The higher an animal’s intelligence, the more worthy of our consideration that animal is. At the very least, Davis hopes that his work will make people to stop and think about how animals all around them are being treated. “This, in a sense, is the welfare implication of our work. Why is it that we treat dogs differently from rats, differently from mice, differently from cockroaches? What gives us license to do this?” It’s food for thought.

For a list of sample publications or for more information, please visit: http://www.psychology.uoguelph.ca/d_faculty/davis.html
Animal Welfare Brought to the Forefront

The Forum on Farm Animal Welfare, which was jointly hosted by OFAC (Ontario Farm Animal Council) and the OSPCA (Ontario Society for the Prevention of Cruelty to Animals), was held on Nov 30th, 2004. The meeting brought together stakeholders to discuss farm animal welfare issues, and focused on options and directions for the future. The Forum drew a diverse group into attendance, including producers, transporters, government, humane societies, commodity organization staff, sales barn personnel, and processors.

According to OFAC, the key issues raised were: training for animal handlers, compromised and non-ambulatory animals, humane euthanasia, the problem of deadstock, and the fact that communication is needed across industry. All of these issues are closely related to one another. For example, if a producer does not have a viable option for economically disposing of livestock that are “down,” meaning very sick and unable to stand, that producer may be less likely to euthanize a suffering animal, thereby extending and exacerbating that suffering until the animal reaches the processing plant. Therefore, decisions and protocols that are put into place regarding each issue mentioned above, directly impact the welfare of production animals by dictating how they will be managed at each step in their journey from farm to abattoir. It is imperative that all those involved are able to express concerns and develop solutions for management protocols that have the potential to compromise animal welfare. OFAC has helped to make this possible.

Other welfare-focused meetings attended by OFAC throughout the year were the Canadian Animal Health Coalition’s Stakeholder Meetings on Animal Welfare, Expert Committee on Farm Animal Welfare and Behaviour, Canada Council on Animal Care, and the Ontario Human Transport Working Group. The Colonel F. Campbell Centre for the Study of Animal Welfare commends OFAC for ensuring that emerging issues in animal care and welfare reach the public in a factual and fairly represented manner. For more information on OFAC, please contact Crystal Mackay, Executive Director, www.ofac.org

CSAW NEWS

CSAW would like to congratulate Anne Malleau on her new position with Whole Foods Market as Executive Director of the Animal Compassion Foundation. According to Whole Foods Market, the world’s leading retailer of natural and organic foods, the Animal Compassion Foundation will help producers of animal products create environments and conditions that will support every animal’s natural physical needs, natural behaviour, and well-being. The foundation seeks to improve the quality of life of farm animals through educational services and research aimed at assisting ranchers and farmers around the world to achieve a higher standard of animal welfare excellence.

CSAW is pleased to announce that Kimberly Sheppard is our new Communications Co-ordinator. Kimberly obtained a BSc in Animal Science from the Nova Scotia Agricultural College. After graduation, Kimberly had the opportunity to participate in an exchange program, as a research assistant for the Whale Stewardship Program, which involved the protection and behaviour study of a solitary beluga whale off the coast of Guysborough, Nova Scotia. She then completed a Master’s degree at the University of Guelph, investigating the effects of light type, level of illumination and feeding time on nesting behaviour in broiler breeder hens. Kimberly was Community Relations Coordinator for the Cambridge and District Humane Society before being employed as animal behaviour and welfare research assistant in Dr. Suzanne Millman’s ethology lab at U of G.

Please visit our website frequently, as we are adding to it on a regular basis. Our web address is www.aps.uoguelph.ca/~csaw/

Thanks to everyone who sent comments on our last newsletter and suggestions for future issues. Your feedback is always welcome and appreciated. Please contact Kim with comments and suggestions via the regular post at the address below, or via e-mail at ksheppar@uoguelph.ca

CSAW NEWS

is published twice a year by The Colonel K.L. Campbell Centre for the Study of Animal Welfare 103 ANNU Building, University of Guelph Guelph, On N1G 2W1

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MISSION STATEMENT

As a group of individuals with diverse interests and views, our primary goal is to promote the welfare of animals through research and education.