Canadian Cooperative Wildlife Health Centre National
Workshop for Wildlife Health Professionals

Animal Welfare in Wildlife Management, Harvest, and Research – Survey Document

February 23, 2010 - Carleton University, Ottawa

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– A Canadian Cooperative Wildlife Health Centre Workshop –
Carleton University, Ottawa, February 23, 2010

Preamble to the Workshop

Pragmatic proponents of wildlife welfare take the viewpoint that we can study, manage and harvest wild species, but in doing so, we bear responsibility for ensuring that their welfare is compromised as little as possible through our activities. The term “welfare”, a concept traditionally applied to the care and management of laboratory and domestic animals, implies freedom from various stressors (hunger, thirst, pain, and fear) as well as freedom to express normal behavior. While it is difficult to extrapolate these freedoms to free-living wildlife, many North American government wildlife agencies have fallen short of recognizing wildlife welfare as an important consideration in the design and implementation of management and research programs, perhaps in part as a consequence of the tendency to focus upon groups of animals (populations, communities, ecosystems) rather than individuals. However, there is growing recognition within the wildlife profession that practices previously thought to be innocuous can in fact adversely affect the health and welfare of individual animals and consequently the reliability of research results. Specific concerns raised by stakeholder groups in northern Canada also point toward the need to capture and handle wild animals in a respectful manner. At another level, a major demographic shift from the rural to the urban environment has coincided with a change in public attitude toward the harvest of wild animals, either for sustenance, sport, or commerce. People increasingly question the ethics of such harvest and the harvesters’ ability to adhere to sound animal welfare practices. Although seemingly different issues, these various forms of interaction with free-living wildlife represent a continuum in our connection with the natural environment.

Successful integration of a wildlife welfare philosophy into the activities of government agencies and users of natural resources is likely to be a gradual process requiring appropriate training of new wildlife professionals and wildlife harvesters along with continuing education to modify the viewpoints and habits of the more experienced users. The goal of this one-day workshop was 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.

Purpose of the Survey Document

A central objective of this workshop was the development of a “survey document” to capture current perspectives on animal welfare in the context of wildlife management, harvest, and research in Canada. Much of the content of this document is derived from questions asked, responses given, and opinions expressed during three theme discussion periods, concerning wildlife management, harvest, and research, that were held during the workshop. Every effort has been made to document all discussions in an accurate, yet concise manner, without bias. In essence, we have tried to give all points of view equal value. It follows then that the content of this document is by no means intended to be prescriptive. Instead, we see it serving 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.

Workshop Agenda

8:30 - 8:45 Introduction to the Workshop

Animal welfare is a concept based both in values and in science; it builds upon the interaction between personal and cultural values and scientific investigation. The development of standards for wildlife welfare and the application of animal welfare science in practical ways to improve the lives and deaths of wild animals are dependent on policies and decisions that collectively recognize the technical, cultural, and ethical elements of animal welfare. To stimulate discussion on the concept and application of wildlife welfare, the CCWHC has invited several speakers who through their vocations and experiences provide different perspectives that broadly reinforce the interplay between facts and values in shaping animal welfare science. Following our opening keynote presentation by Dr. Michael Cockram, we have organized succeeding presentations and discussions-to-follow along three themes – management, harvest, and research. This arrangement, however, is mostly for expediency as undoubtedly there is much overlap between themes in their issues and potential approaches to resolving questions about the proper treatment of wild animals.

8:45 - 9:45 Michael Cockram – *Animal welfare and wildlife*

Dr. Cockram is the Chair in Animal Welfare at the Sir James Dunn Animal Welfare Centre, Atlantic Veterinary College, University of Prince Edward Island. He is a veterinarian from the United Kingdom who spent over 20 years at the University of Edinburgh undertaking teaching and research on animal welfare. His main interests have been on animal welfare assessment, transport and handling of animals. He recently completed a study on the welfare implications of deer culling methods. Dr. Cockram will discuss the concept of animal welfare, methods of welfare assessment and welfare issues related to wildlife management.

Management

9:45 - 10:15 Albert Bourque – *Wildlife welfare issues in Canada's north*

As a Métis hunter, a veteran Renewable Resource/Wildlife officer with the Government of the Northwest Territories Department of Environment and Natural Resources, and the third generation of a family with a long history in managing northern wildlife in both the Eastern and Western Arctic, Mr. Bourque has a unique perspective on wildlife welfare issues in Canada's north. He will provide a view on the challenges of integrating animal welfare considerations into wildlife management in an area of Canada where cultural ties to wildlife are perhaps most prominent.

10:15 - 10:45 Break

10:45 - 11:15 Kimberlee Beckmen – *Tackling wildlife welfare issues within a wildlife management agency: Perspectives of the Division of Wildlife Conservation*

As a wildlife veterinarian with the Alaska Department of Fish and Game recently tasked with updating departmental policy and procedures regarding animal welfare, Dr. Beckmen will explain the events prompting her Department's decision to revise policy, and will describe the approach she has taken and the obstacles encountered in fulfilling this task.

11:15 - 12:00 Theme Discussion 1 (wildlife management)

12:00 - 1:15 Lunch

Harvest

1:15 - 1:45 Pierre Canac-Marquis – *The multi-purpose use of trapping*

Mr. Canac-Marquis is a biologist and the trapping coordinator for the Ministère québécois des Ressources naturelles et de la Faune. He has been involved for many years in trap research and in the use of traps for wildlife management and research. He was involved in negotiations leading to the *Agreement on International Humane Trapping Standards (AIHTS) between the European Community, Canada, and the Russian Federation*, signed in 1999. Since then, he has coordinated its Canadian harmonized implementation. Mr. Canac-Marquis will describe the program established in this country to develop traps that meet the best standards of animal welfare practice as they are currently known and the importance that trapping continues to play in wildlife management, research, harvesting, and control of wildlife diseases.

1:45 - 2:15 Pierre-Yves Daoust – *The Canadian seal hunt - current best practices*

Dr. Daoust is professor of anatomic pathology and wildlife pathology at the Atlantic Veterinary College, University of Prince Edward Island, and coordinator of the Atlantic Regional Centre of the CCWHC. For the past 10 years, he has been involved in the study of animal welfare issues surrounding seal hunts in Canada and other countries. Sealing is at the forefront of the debate between animal rights groups and primary users of wildlife resources. Dr. Daoust will describe the work currently done to address some of the animal welfare concerns raised about this commercial activity.

2:15 -3:00 Theme Discussion 2 (wildlife harvest)

3:00 - 3:15 Break

Research

3:15 - 3:45 Marc Cattet – *Negative effects of capture and handling in bear research*

Dr. Cattet is a professional research associate with the CCWHC and an adjunct professor in the Department of Veterinary Pathology at the Western College of Veterinary Medicine, University of Saskatchewan. He provides technical expertise in the areas of wildlife capture and handling to government wildlife agencies in Canada. He also collaborates with several long-term wildlife research programs directed toward detecting, understanding, and reducing the effects of a range of human activities on the health of wild species. Dr. Cattet will draw from his experiences with research on bears to describe some of the challenges of integrating animal welfare considerations into wildlife research.

3:45 - 4:30 Gilly Griffin – *The Canadian Council on Animal Care's role in promoting wildlife welfare*

Dr. Griffin is *Guidelines and Three Rs Program* Director for the Canadian Council on Animal Care (CCAC), the national organization responsible for overseeing the ethical use of animals in science. She also contributed to the development of the CCAC's 2003 *Guidelines on: the care and use of wildlife*, a document which was recognized as currently the best available world-wide at a recent international meeting on "Harmonisation of the care and use of animals in field research", in Norway. Dr. Griffin will explain the role of the CCAC as a quasi-regulatory organization, its interest in wildlife welfare, and the intents of the Guidelines. Her review of the CCAC's role in influencing the conduct of wildlife research and management should also serve as a pertinent overview of this workshop.

4:30 - 5:15 Theme Discussion 3 (wildlife research)

5:15 - 5:30 Overview, closing remarks

Theme Discussions

The moderator – Gordon Stenhouse served as moderator for the theme discussions. Mr. Stenhouse has been a wildlife biologist for the past 30 years spending much of the first half of his career with the Northwest Territories government conducting research and management studies on a number of wildlife species including polar bears, grizzly bears, barren ground and Peary caribou, muskoxen, moose, Dall sheep, peregrine falcons, wolves, and arctic nesting geese. In 1995, he relocated to Hinton to work as a biologist with Weldwood of Canada Limited for a 3-year period. He is currently a wildlife biologist with Alberta Sustainable Resource Development Fish and Wildlife Division and an adjunct professor at the Western College of Veterinary Medicine at the University of Saskatchewan. Since 1998, he has been on secondment from the Alberta Government working as the Program Lead of the Foothills Research Institute Grizzly Bear Research Program.

The discussions – In each theme discussion period participants were asked to address three basic questions. They were:

1) Is animal welfare a significant concern in the area of wildlife management / harvest / research? Support your view with examples applicable to your organization or geographical area.
2) How is your organization currently addressing animal welfare issues in relation to wildlife management / harvest / research?
3) How could your organization better address animal welfare issues in relation to wildlife management / harvest / research?

We organized discussions along the themes of management, harvest, and research mostly for the sake of convenience, but recognized there would likely be similarities between discussions on issues identified. Further, participants would undoubtedly raise other questions and issues, all of which are documented in the pages to follow.

Workshop Participants

The workshop was attended by 59 participants who reflected a diverse range of wildlife-related agencies, organizations, and interest groups including:

- ***Federal government –*** Canadian Food Inspection Agency, Environment Canada, Fisheries and Oceans Canada, and Parks Canada;
- ***Provincial and territorial governments –*** Alberta, New Brunswick, Newfoundland and Labrador, Northwest Territories, Nova Scotia, Ontario, Quebec, and Saskatchewan;
- ***State government –*** Alaska;
- ***Universities –*** Calgary, Guelph, Montreal, Prince Edward Island, and Saskatchewan;
- ***Wildlife-interest organizations –*** Animal Alliance of Canada, Canadian Cooperative Wildlife Health Centre, Canadian Council on Animal Care, Foothills Research Institute, Fur Institute of Canada, Nunavut Tunngavik Incorporated, and Veterinarians Without Borders; and
- ***Zoos –*** Calgary and Toronto.

Keynote Presentation: *Animal welfare and wildlife*

Michael Cockram, B.Vet.Med. PhD. MRCVS, Chair in Animal Welfare

Sir James Dunn Animal Welfare Centre and Department of Health Management, Atlantic Veterinary College, University of Prince Edward Island, Charlottetown, PEI, Canada

Potential welfare issues affecting wildlife were discussed by providing examples of human activities or changes to the environment that could affect welfare. The concept of animal welfare was discussed and described as (at the minimum) the avoidance of suffering in sentient animals and the promotion of fitness (i.e. good health and physical condition to avoid potential issues that could lead to suffering). The principles underlying animal welfare research and assessment were discussed. The role and limitations of science in animal welfare research were presented by explaining the steps between ethical concerns over animal treatment and the provision of a scientific basis for policy decisions on wildlife welfare. The first step is a critical and systematic analysis of the issues that can provide a framework for investigations to provide the best available answers to practical questions. As there are basic similarities between the neurophysiology and behaviour of many animals and that of humans and similarities in their responses to stimuli that would cause suffering in humans, this initial analysis is often formulated on assumptions based on human experience and feelings. Although animal welfare itself cannot be measured, it is possible to measure a number of factors (including behaviour, physiology and health/pathology) that can be used to assess animal welfare. If different types of measurement provide similar relative results, the evidence for a particular welfare assessment is stronger. However, animal welfare assessment is not purely a scientific procedure and involves value-related or ethical judgements. The importance of a wildlife welfare issue can be evaluated by considering the cause and nature of the problem, its duration, the number of animals affected and the capacity of the animals to suffer. Examples of animal welfare research on methods of killing wildlife by shooting and trapping were presented. There is a need for further research on the welfare issues associated with the management of wild animals. This can identify the important welfare issues and provide evidence on how procedures can be performed to minimize suffering.

Review papers on wildlife and welfare

Jordan, B. 2005. Science-based assessment of animal welfare: Wild and captive animals. Revue Scientifique et Technique-Office International des Epizooties, 24, 515-528.

Kirkwood, J. K., Sainsbury, A. W., & Bennett, P. M. 1994. The welfare of free-living wild animals: Methods of assessment. Animal welfare, 3, 257-273.

Littin, K. E. & Mellor, D. J. 2005. Strategic animal welfare issues: Ethical and animal welfare issues arising from the killing of wildlife for disease control and environmental reasons. Revue Scientifique et Technique-Office International des Epizooties, 24, 767-782.

Littin, K. E., Mellor, D. J., Warburton, B., & Eason, C. T. 2004. Animal welfare and ethical issues relevant to the humane control of vertebrate pests. New Zealand Veterinary Journal, 52, 1-10.

Sainsbury, A. W., Bennett, P. M., & Kirkwood, J. K. 1995. The welfare of free-living wild animals in Europe: Harm caused by human activities. Animal Welfare, 4, 183-206.

Webster, J. 1995. Animal Welfare: limping towards Eden. Blackwell Publishing, Oxford.

Wildlife Management Presentation #1: *Wildlife welfare issues in Canada's north*

Albert Bourque, Renewable Resource/Wildlife Officer

Government of the Northwest Territories, Environment and Natural Resources, Yellowknife, NWT, Canada

Canada's North is home to a largely Aboriginal population whose values regarding the environment, and the life that it sustains, are well documented in Ethnographical documents but are largely of third person origin and interpretation. I am of Métis heritage and of a generation that bridges time from the older traditions to those of the present day ideologies. I provided a brief personal history of my life experience as someone who has been educated in both traditional values and ways of knowing and that of modern society to lend perspective to this dialogue. I summarized Aboriginal cosmologies from Métis, Inuit and Dené cultures to illustrate the importance of humility in those views coupled with the difference in philosophical and ideological placement of being. Western tradition holds to a strict hierarchy of being and this has influenced how science approaches wildlife and the natural environment. The differing world view of the Aboriginal Peoples of Canada's north does not place life in a hierarchy but rather holds that all are equal in significance and all dependent upon the Earth. This dichotomy has often brought conflict between the scientific community and Aboriginal communities in the North. All life is to be respected for its own intrinsic value and it is to be accorded as much respect and dignity as human life. A further complication in understanding between the differing worldviews is in the perception of wildlife as a commodity; for Aboriginal people, most wildlife is food or clothing or both. This is different from the scientific community which sees the world more objectively, and wildlife and the environment as a source of information and knowledge. Lastly, I emphasized the point that trust is the singular issue facing researchers and managers in the present day: trust that the scientific community will see the validity of different forms of knowing and trust from Aboriginal Communities to see the validity and rigor of objective study. Trust can only come from open and honest communication between the two groups.

Wildlife Management Presentation #2: *Tackling wildlife welfare issues within a wildlife management agency: Perspectives of the Division of Wildlife Conservation*

Kimberlee Beckmen, M.S., D.V.M., Ph.D., Wildlife Veterinarian

Alaska Department of Fish and Game, Division of Wildlife Conservation, Fairbanks, AK, USA

In the US, the Animal Welfare Act of 1970 (AWA) was amended in 1985 to require the establishment of Institutional Animal Care and Use Committees (IACUC) to review research protocols involving live warm-blooded vertebrates. Additional amendments in 2002 Animal Welfare Regulations (AWR) exempted farm animals, such as those used for food or fiber, birds, rats and mice bred for research, pet shops, shelters and pets. The animal welfare regulations are administered by the US Dept of Agriculture. The regulations apply to all research facilities that receive any manner of funding from the federal government. This includes Federal Aid to state wildlife management agencies.

Despite the clear wording in the Act and regulations that apply to state and federal resource agencies, many have avoided compliance because of the erroneous belief that research conducted on free-ranging wildlife is exempted because such studies are called "field studies". However, the AWA defines a field study as "Studies conducted on free-living wild animals in their natural habitat, which do not involve an invasive procedure, and which do not harm or materially alter the behavior of the animal under study." Even when agencies did recognize this distinction, they chose to classify their activities such as chemical immobilization, capture, physical restraint, tagging, etc. as not invasive, harmful, or materially altering the behavior of the animal, thereby granting them an exception to IACUC oversight. However, it is during or after these activities that the greatest mortality or morbidity occurs in wildlife[1]. These self exemptions have been viewed as either incomplete or token compliance.

The consequences of non-compliance with AWR are: that research will not get published, recognized as valid "sound science", federal and international permits to capture certain animals can't be obtained by staff, the development of adverse public opinion including animosity and campaigns against agency actions, suspension or revocation of federal funding for research, not meeting ethical or moral obligations, and in our case, violation of agency policies.

In addition to the lack of enforcement by an outside agency, lack of administrative zeal has impeded full compliance. One of the cited concerns by administrators is the concern it might force agencies to disallow some customary and traditional means and methods of hunting and trapping.

The Alaska Dept. of Fish and Game Division of Wildlife Conservation has been one of the leaders on the road to compliance. In 1995, the DWC adopted an Animal Welfare Policy that was the initial attempt to come into compliance. In 2002 a full time attending wildlife veterinarian was hired and tasked to bring the DWC into AWA compliance. The IACUC was reformed and they immediately updated the AW policy to extend oversight to all DWC field projects involving warm-blood live animals including management projects. The policy also required euthanasia or humane killing methods be used whenever agency personnel were conducting collections and predator control.

[1] Mulcahy, D. 2003. Does the AWA apply to free-ranging animals? ILAR Journal 44(4):252-258.

In 2009, a policy review was precipitated by involvement of non-agency personnel in predator management. The revised policy included mandated AW training for staff and implementation of SOPs in the form an IACUC approved wildlife capture and handling manual. The stated purpose of the policy is 1) to assure wildlife involved in research and management activities receives humane care and treatment and are handled in ways which minimize pain and distress; 2) to assure personnel are properly trained and follow guidelines on approved methods of capture, care, treatment, and euthanasia of wildlife; 3) and to require personnel, prior to conducting activities covered under the Animal Welfare Act, submit a protocol for review by the DWC ACUC.

The revised policy directed the DWC ACUC Reviews to limit comments to first assuring the humane treatment of wildlife and those components of the activities related to the care and use of wildlife, and second to improving procedures and techniques involving wildlife that will eliminate or minimize discomfort, distress, and pain to the animals.

Thus, to fulfill the AWR mandate of scientific merit, a scientific merit review/approval must be completed prior to submission for ACUC review.

An informal survey of state wildlife agencies finds that Alaska is the only agency that includes management projects in its IACUC review procedures. Only Colorado preceded Alaska in forming an IACUC, having it since 1989, and Colorado also has an animal welfare policy.

Wyoming reviews captive research only. Wisconsin has an active IACUC but an animal welfare policy still in development. Oregon has an informal policy and does have an IACUC for research project review. Montana has an IACUC but no policy. Virginia is developing a policy. Nevada and Pennsylvania have no policies and no IACUC. Less than half of the states employ a wildlife veterinarian (19 of 50 at last count). With respect to the Federal wildlife agency compliance, the US Geological Survey, Alaska Region has an IACUC. It was the ADF&G DWC permitting authority requirement for AWR compliance for federal wildlife activities in Alaska that prompted the US Fish and Wildlife Service Region 7 (Alaska) to develop an AW policy in 2008 and an IACUC as of 2009. The National Park Service has a national IACUC, although NPS AK biologists were unaware of it until recently, and is currently developing a policy. I've been told that the National Marine Fisheries Service is also developing an IACUC but that is most likely just the National Marine Mammal Laboratory. To reprise the lessons I have learned, compromises are often necessary to gain or even maintain acceptance of wildlife welfare considerations and oversight and this can be because of political agenda or stakeholder perceptions. Many natural resource agencies are still asking if they must or should comply with regulations rather than how they can address wildlife welfare issues.

Theme Discussion 1: *Questions, Answers, and Views from the Discussion on Animal Welfare and Wildlife Management*

1) How is your organization currently addressing animal welfare issues in relation to wildlife management?

In Alberta, many wildlife management-related activities fall under the radar when it comes to recognizing and addressing animal welfare issues. In some cases, where animal welfare concerns have been expressed, public safety issues were used to trump these concerns. Regardless of whether wildlife personnel are engaged in management- or research-related activities, all are required to re-certify in wildlife capture and handling procedures every 5 years. However, while requirements for personnel to employ best practices concerning animal welfare are inflexible for research, they often are put aside for management in the name of public safety.

Two animal care committees operate within Parks Canada to ensure animal welfare guidelines are followed in both research and management activities. However, difficulties are often encountered when wildlife-related activities involve cooperation with other agencies that have different expectations regarding animal welfare assurances. A question that invariably arises is, "Whose policies should prevail?". Canada does not have animal welfare legislation to set regulations and policies concerning wildlife. This leaves wildlife welfare in a gray area in which adherence to animal welfare guidelines by wildlife personnel is more a matter of voluntary compliance with generic ideals than abiding by firm rules. Another area within Parks Canada where adherence to animal welfare guidelines sometimes also is difficult is with respect to the control of "hyperabundant species" – that is, a species whose numbers clearly exceed the upper range of natural variability that is characteristic of the ecosystem, and where there is a demonstrated long-term negative impact on ecological integrity, e.g., white-tailed deer in St. Lawrence Islands National Park.

2) How could your organization better address animal welfare issues in relation to wildlife management?

The methods used for prevention and control of human-wildlife conflicts should be based more in science, especially as it relates to protecting human property and activities. Government wildlife agencies also need to be more sensitive to changes in societal concerns, e.g., killing of black bears at garbage dump by wildlife officers in Alberta in 2009 lead to a strong public outcry.

Lines of communication and cooperation need to be established between government wildlife agencies, animal care committees, and animal protection groups. In Europe, animal protection groups are recognized as credible and knowledgeable interest groups, and are often represented at meetings to discuss wildlife-related procedures and policies. In Canada and the U.S., animal protection groups are painted with the same brush as radical animal rights extremists and consequently are discounted as an important voice.

Awareness of animal welfare as it relates to wildlife and wildlife-related activities needs to be raised to match the current societal level of concern.

3) In Alaska, is the government wildlife agency using best management practices to ensure animal welfare is adequately addressed through both research and management activities?

Effort has been made to adapt and incorporate best available procedures and protocols for all wildlife-related research and management activities in Alaska. To varying degrees, the level of acceptance for applying wildlife welfare considerations to different activities (research, management, harvesting) is influenced by political agendas and stakeholders' perceptions. For example, all research and some management activities must be assessed and receive prior approval by an Institutional Animal Care and Use Committee (IACUC), but trapping and hunting are exempt from this policy because stakeholders fear that if they have to start addressing animal welfare concerns, it will ultimately lead to the end of these activities.

4) Is there not concern that the animal care committee review and approval process or the widespread use of standard operating procedures (SOP) may hinder a timely response to emergency issues where public safety is threatened?

Public safety always comes first in emergency situations. SOPs are mostly in place for procedures that are applied with regularity in non-emergency situations, e.g., chemical immobilization. Further, prior approval by an animal care committee is not expected for procedures employed in an emergency situation where public safety is threatened.

5) How can we ensure that wildlife management decisions and policies are based on science? Recent examples, including trapping of beaver to reduce water contamination and culling of double-crested cormorants to protect fish stocks, may not be supported by science.

No answers were provided for this question.

6) Is there a link between animal welfare and conservation?

There are similarities between these areas, but also differences. Both concern the care of animals and are supported to some extent through science-based policies. However, a key difference is that animal welfare focuses on the care of individual animals whereas the level of attention in conservation is typically on animal populations with emphasis more toward care and protection of their environment. Clear links exist in some situations. For example, proper handling of individual animals from threatened or endangered populations for research or management purposes can be essential for the conservation of these populations.

7) Is there a difference between animal welfare and humane treatment of animals, and which of these terms is more appropriate?

In general, discussions on best terminology, such as humaneness versus animal welfare, are not very useful to the issues at hand.

Wildlife Harvest Presentation #1: *The multi-purpose use of trapping*

Pierre Canac-Marquis, Biologist and Trapping Coordinator of the Ministère des Ressources naturelles et de la Faune, and Technical Vice-Chairman of the Fur Institute of Canada's Trap Research and Development Committee

Ministère des Ressources naturelles et de la Faune Québéc, Sainte-Foy, Québec, Canada

Concern for animal welfare related to trapping was ongoing for many years in Canada and scientific initiatives to address this issue began in the mid 70s through a Federal Provincial Committee for Humane Trapping. Subsequently, in 1985 the Canadian Wildlife Directors intensified the scientific approach toward improving welfare related to trapping by establishing the most advanced trap research program in the world. The program is coordinated through the Fur Institute of Canada and the Alberta Research Council, and involves a team of wildlife biologists, statisticians, a mechanical engineer, veterinarians and wildlife technicians who have access to a research facility located in Vegreville, Alberta. This facility includes outdoor landscaped enclosures which simulate the habitat of the study species, laboratories for mechanical testing and advanced computing. Between 1985 and 2009, $18 million has been invested in the program.

The research data produced by this program contributed toward establishing scientific trap testing protocols through the International Organization for Standardization (ISO). The data also served as a basis for establishing welfare thresholds and indicators agreed to by groups of experts (veterinary pathologists, wildlife biologists) from Canada, the European Union, the Russian Federation and the United States under the terms of the Agreement on International Humane Trapping Standards (AIHTS) which was ratified in 1999. There are two sets of welfare thresholds: one set for killing traps, which relate to times to irreversible unconsciousness, and one for live capture devices based on injuries and stress indicators. Eight years of testing and research applying these thresholds has led to the identification and certification of a number of species-specific traps that meet the AIHTS requirements. A major breakthrough in the research program was the development of 8 species-specific Computer Simulation Models (CSM) used to rate killing type traps against the AIHTS thresholds. Use of the CSMs replicates 10,000 individual live animal/trap kill tests in an enclosure, and almost eliminates the need to capture, transport, house and euthanize animals. Since 2007 in Canada, traps which are used to capture the wild furbearer species listed in the AIHTS must be certified as complying with the welfare thresholds set out in it. Their mandatory use is regulated by provincial and territorial government legislation. The AIHTS applies to all trapping circumstances: food and fur harvesting, scientific research, species management and conservation, nuisance, public health and safety. The ongoing objective toward the continued improvement of animal welfare related to trapping is largely addressed by the AIHTS process.

Wildlife Harvest Presentation #2: *The Canadian seal hunt - current best practices*

Pierre-Yves Daoust, DVM, PhD, Dip ACVP, and Professor Anatomic Pathology and Wildlife Pathology

Pathology and Microbiology and Canadian Cooperative Wildlife Health Centre, Atlantic Veterinary College, University of Prince Edward Island, Charlottetown, PEI, Canada

Harp seals have been hunted commercially in Atlantic Canada for more than 200 years, and this species continues to have an important place in the social and economic life of many coastal communities. Grey seals have also recently been targeted for commercial exploitation. It is possible that these species will continue to be hunted despite opposition from other countries and therefore it is important to continue to work toward improving hunting practices for these animals from an animal welfare perspective. In the past 10 years, a number of studies have been released that looked at hunting methods for seals in different parts of the world, with emphasis on Canada. The majority of these studies have concluded that, when used correctly, the rifle and the hakapik are appropriate killing tools. These studies, however, made a distinction between methods in theory and methods in practice, and concluded that improvements could be made in the latter. In 2005, a report by the Independent Veterinarians' Working Group[2] recommended the use by the sealers of a simple three-step process to ensure rapid death of the animals, without these steps interfering in any significant manner with the sealers' hunting practices. This process includes: 1) "stunning" with a regulation weapon (rifle, hakapik, or club), 2) "checking" by palpation of the skull to ensure that it is completely crushed and, therefore, that the brain is destroyed, and 3) "bleeding" by severance of both axillary arteries, all three steps being carried out in sequence as rapidly as possible. This process was endorsed by subsequent studies and was recently incorporated into the Marine Mammal Regulations of the Canadian Fisheries Act. In spring 2009, a series of well attended information workshops focusing on this three-step process was offered to sealers on the Magdalen Islands, on Québec's lower north shore, and in Newfoundland, through the Fur Institute of Canada, with financial assistance from the Governments of Québec and of Newfoundland and Labrador, and with participation by managers and officers from Fisheries and Oceans Canada.

It is not possible to achieve long-term progress in promoting good practices of animal welfare in harvest without working closely with the harvesters themselves. This can be done through a combination of information and pragmatic regulations, both supported by sound knowledge of anatomy and physiology, and it must be guided by principles of respect for the environment, the animals, and the people, the three cornerstones of real progress in our interaction with nature. It is the experience of Canadian biologists and veterinarians that tangible improvement on issues of animal welfare can be made with commercial harvesters, such as trappers and sealers, when the working relationship is based on trust. Similar improvement could be achieved with subsistence and sport hunters if proper means of communication were established. In addition, the general public must be reached and informed about the appropriateness of methods currently used to harvest wildlife in this country; this can be challenging, considering the seemingly increasing urban-rural divide.

[2] IVWG. 2005. Improving humane practice in the Canadian harp seal hunt. Report, 26 pp. http://www.ivwgonline.org

Theme Discussion 2: *Questions, Answers, and Views from the Discussion on Animal Welfare and Wildlife Harvest*

1) ***Is animal welfare a significant concern in the area of wildlife harvest? Support your view with examples applicable to your organization or geographical area.***

Opinions are divided with respect to concern for animal welfare by sealers on Canada's eastern coast. Some animal welfare groups with representatives monitoring the annual seal harvest conclude that sealers generally do not comply with animal welfare standards. Fisheries and Oceans Canada, however, asserts that there is a high level of compliance among sealers in following a regulated three-step process to ensure seals are killed as humanely and rapidly as possible. It was also pointed out that the seal hunt is heavily scrutinized and severely criticized in part because it occurs out in the open, but the same animal welfare issues could probably be raised with other forms of exploitation of wildlife if these were as easily accessible.

2) ***Is there any way to accurately estimate "struck and lost" animals during commercial, subsistence, or sport hunting?***

In general, the challenge of counting animals for harvest management is substantial. For "struck and lost" animals, the most accurate source of information is the harvesters themselves. Currently, however, an atmosphere of trust is lacking between harvesters and government. Harvesters are not going to report these numbers if this will translate into increased harvest restrictions. So, development of trust is essential to moving forward because trust between harvesters and government is a requisite for accurate information. To develop trust between harvesters or hunters and government will require greater recognition on the part of government (researchers) about the importance and validity of local knowledge. In general, more effort is required to research and validate methods to integrate the observations and knowledge of local resource users.

3) ***In regard to fur trapping, do trappers provide feedback to government wildlife agencies on the effectiveness of kill traps under field conditions relative to the reported effectiveness based on lab tests?***

Yes. In the Northwest Territories (NWT), there is a well-established government program in place to ensure traps are as humane, efficient and safe to use as reported by manufacturers and the Fur Institute of Canada. Elements of the program include regular communications between conservation officers and trappers, annual workshops to learn about new "certified" traps, and a trap-exchange program in which trappers trade in older unapproved traps for newer certified traps. In addition, to promote a high level of compliance among trappers, the NWT government inspects pelts for quality and to ensure the animal was killed using a certified trap, and then advances the trapper payment for the pelt provided it was taken with a certified trap. The operation of this program over the past 10 years has led to just about 100% compliance among trappers today. Although this program is unique to the NWT, compliance among trappers elsewhere in Canada with use of certified traps is thought to be high because use of certified traps is in the economic interest

of trappers. Equally as important is the fact that many trappers are passionate about what they do and strive for high quality pelts (which are less likely to occur when using unapproved traps).

4) ***In Aboriginal communities, is there any conflict among resource users with the need to use wildlife for profit or subsistence versus the need to ensure sustainability over the long-term?***

In northern communities, the use of wildlife for profit is not a significant issue. Generally, selling meat or parts (e.g., skin) from animals you have killed is not acceptable in many communities. In the special case of where there is economic return (~$25,000) on polar bear sport hunts in Nunavut, the money is shared among the community members. The question regarding management policies and perspectives within aboriginal groups of potential over-exploitation of wildlife populations was further articulated, but no responses were made.

5) ***Could the Canadian Cooperative Wildlife Health Centre (CCWHC) play a role in evaluating adherence to animal welfare guidelines among sport hunters?***

The CCWHC services the entire country in collaboration with government agencies and non-governmental organizations to promote wildlife health and assess wildlife disease. Under this broad mandate, the CCWHC could lead discussion and promote collaboration with partner agencies on this topic.

6) ***Other points expressed…***

- This workshop has not considered animal welfare dimensions in the context of recreation and non-consumptive use of wildlife, e.g., whale watching. Similarly, there are welfare issues that have not been considered in regard to wildlife in captivity or wildlife rehabilitation; standards for both vary considerably across the country.
- With respect to harvesting wildlife, the application of humane killing techniques cannot be considered in isolation of human safety concerns, i.e., the safety of harvesters. Further, instant death of target animals is not always practical. For example, some marine mammals such as seals and small whales are first harpooned before being killed by gunshot to ensure the carcass will be recoverable. Otherwise, without use of a harpoon, the carcass will quickly sink and be lost.

Wildlife Research Presentation #1: *Negative effects of capture and handling in bear research*

Marc Cattet, DVM, MSc, PhD, and Professional Research Associate

Canadian Cooperative Wildlife Health Centre, Western College of Veterinary Medicine, University of Saskatchewan, Saskatoon, SK, Canada

I chose the context of "bear research" to discuss wildlife welfare because of my familiarity with this research area. Having spent close to 30 years participating in studies involving all three North American bear species, and serving different roles as wildlife technician, researcher, or veterinarian, I've seen wide disparity in views on the significance of animal welfare as it relates to wildlife research. For some, the sense of moral duty to minimize welfare effects on wildlife is absent; for others, it trumps all including human safety. For many, however, it falls somewhere between these extremes. With this presentation, my intent was to put the question of "moral duty" aside and instead focus on how neglecting welfare concerns in wildlife research can potentially lead to erroneous interpretations of research results. As a starting point, I asked the question, "Can capture and handling reduce biological fitness[3]?". In other words, can capture and handling impact the welfare of an animal to such an extent that it reduces its survival or reproductive output?

To address this question, I presented two examples from bear research that I've participated in that support the likelihood that capture and handling can reduce biological fitness through negative effects on animal welfare. With both examples, I used the same variables – number of captures per individual as a measure of capture and handling intensity, and body condition as a measure of welfare status (nourishment; availability of stored energy). Although I did not go as far as demonstrating a link between welfare and biological fitness, the link between body condition and reproduction is already firmly established in the wildlife literature. The *a priori* predictions made for both examples were (i) bears captured multiple times are likely to be in poorer body condition than bears captured once, and (ii) the effect will be directly related to the number of times captured.

The first example concerned grizzly bears, with data taken from a long-term ongoing research project, the Foothills Research Institute Grizzly Bear Project, in western Alberta. The project has several major objectives which collectively contribute to improved conservation of grizzly bears. A unique element of this project, however, is that "evaluation of possible negative effects of capture and handling bears" was also included as an objective in the study design from the beginning. Over 10 years, project personnel have captured 282 unique bears over a total of 363 captures. This works out to an average of 1.3 captures per bear with 71% of bears captured once only, but 13% captured 3-8 times each. It turns out that the age-specific body condition of bears captured multiple times tends to be poorer than that of bears captured once only, with the magnitude of effect directly proportional to number of times captured and the effect more evident with age. These results have been published[4].

The second example concerned polar bears, with data taken from a long-term research project in western Hudson Bay that began in 1989 and finished in 1998, and was directed through the University of

[3] Biological fitness is essentially a measure of the capability of an individual to copy its genes to the next generation. Survival and reproductive rate are key determinants of biological fitness.

[4] Cattet M., J. Boulanger, G. Stenhouse, R. Powell, and M. Reynolds-Hogland. 2008. An evaluation of long-term capture effects in ursids: implications for conservation biology. Journal of Mammalogy 89(4): 973-990.

Saskatchewan. The project had several objectives relating to life history strategies, contaminant exposure, and physiological adaptations to fasting. The data from this project also contributed to the goals of a much larger and longer term study on the same population of polar bears directed by the Canadian Wildlife Service that began in 1981 and is still active. Past analyses of polar bear body condition data in conjunction with annual dates of sea-ice break-up (a surrogate measure of sea-ice availability) have shown that over a period of 30 years, mean body condition of male and female polar bears has decreased and sea-ice break up occurs 2-3 weeks earlier now than before[5]. This has led to speculation that body condition in polar bears has decreased over time as a result of reduced sea-ice availability caused by climate change. While this may be true, the potential impact of multiple captures on body condition has not been explored. The capture histories for 368 polar bears captured by the University of Saskatchewan show a total of 1,207 captures. This works out to an average of 3.3 captures per bear with 30% of bears captured once only, and 46% captured 3-13 times each. Statistical analyses of this dataset failed to show any significant association between body condition and date of sea-ice break-up for either female or male polar bears. However, number of captures was a significant explanatory factor in female polar bears.

Both examples support the likelihood that capture and handling can reduce biological fitness through negative effects on animal welfare. Both examples should also underscore the importance of evaluating for possible negative effects of capture and handling throughout a research program – from beginning to end. The question, however, is "Why don't wildlife researchers routinely evaluate their impact on animal welfare?". I suggest several possible reasons, including: (i) the capacity to evaluate welfare was limited in the past; (ii) ignorance, e.g., "wild animals are tougher than us, so they can well tolerate our procedures"; (iii) resistance to change, e.g., can't teach "old dogs (field researchers), new tricks"; (iv) increased difficulty, i.e., evaluating welfare requires more money, more time, and more expertise; (v) results that question the *status quo* may be difficult to publish; and (vi) lack of funding support for welfare-related research objectives. Despite these obstacles, however, evidence is growing in the scientific literature to support the contention that ignoring potential animal welfare effects of capture and handling wildlife can lead to ambiguous research results.

[5] See Stirling, I, Lunn, NJ, and J Iacozza. 1999. Long-term trends in the population ecology of polar bears in western Hudson Bay in relation to climatic change. Arctic 52: 294-306.

Wildlife Research Presentation #2: *The Canadian Council on Animal Care's role in promoting wildlife welfare*

Gilly Griffin, PhD, and *Guidelines and Three Rs Programs* Director for the Canadian Council on Animal Care

Canadian Council on Animal Care, Ottawa, ON, Canada

The Canadian Council on Animal Care (CCAC) is the national organization responsible for setting and maintaining standards for the ethical use and care of animals in science in Canada. In 2003, CCAC published guidelines on the care and use of wildlife[6], with funds provided through the Canadian Association of Zoo and Wildlife Veterinarians from the Max Bell Foundation. The subcommittee which developed the guidelines came from a wide variety of backgrounds, including investigators, wildlife veterinarians, a director of a provincial wildlife agency and a community representative. Canada has a diverse population of wild species, therefore the guidelines by necessity are broad and limited to basic principles that will assist investigators, wildlife managers and animal care committees in the development and review of protocols and standard operating procedures. Additional recommendations for the various species groups continue to be developed and are being made available on the CCAC website (http://www.ccac.ca). The underlying basis of all CCAC guidelines and policies is the requirement for adherence to the Three Rs of Russell and Burch (replacement, reduction and refinement of animal use for scientific purposes). The subcommittee decided that *CCAC policy statement on: Ethics of Animal Investigation* (1989)[7], which defines the Three Rs for the CCAC program, applies equally to wildlife use for research, teaching and testing as it does to laboratory animals; however, modification of approach is needed in some instances, in particular to balance concern for the individual animals with the concern for the ecosystem. This was important to help animal care committees (ACCs) to have an understanding of the application of this ethical framework to wildlife studies (Griffin & Gauthier 2004)[8].

Investigators frequently adopt practices believed to improve animal welfare based on anecdotal evidence, which is often not published, and passed on through informal training. The CCAC guidelines on the care and use of wildlife, encourages investigators to share this information with ACCs, and in particular to report back at the end of the season, so lessons learned in the field can be considered during future protocol review. The guidelines also emphasize training as key to the improvement of welfare outcomes for wildlife used in research and management activities.

[6] Canadian Council on Animal Care – CCAC (2003). Guidelines on: the care and use of wildlife. Ottawa ON, CCPA, http://www.ccac.ca/en/CCAC_Programs/Guidelines_Policies/GDLINES/Wildlife/Wildlife.pdf (March 2010).
[7] Canadian Council on Animal Care – CCAC (1989). Policy statement on: Ethics of Animal Investigation. Ottawa ON, CCPA, http://www.ccac.ca/en/CCAC_Programs/Guidelines_Policies/POLICIES/ETHICS.HTM (March 2010).
[8] Griffin G. and Gauthier C. (2004) Incorporation of the Three Rs in Wildlife Research. Alternatives to Laboratory Animals 32(S1):215-219.

Theme Discussion 3: *Questions, Answers, and Views from the Discussion on Animal Welfare and Wildlife Research*

1) ***Is animal welfare a significant concern in the area of wildlife research? Support your view with examples applicable to your organization or geographical area.***

Animal welfare is a significant, long-standing concern of the Inuit, especially as it pertains to wildlife research. In recent years, this issue has gained wide attention because of the increasing role that First Nations peoples are taking in the co-management of wildlife. There is a common perception held in many Aboriginal communities that researchers do not demonstrate adequate respect and care for wildlife. In fact, some have appeared to put more effort into ignoring wildlife welfare concerns than into confronting and minimizing these concerns. There is growing expectation among First Nations peoples that the attitudes of researchers towards wildlife welfare concerns must change.

2) ***In Alaska, is the government wildlife agency using best management practices to ensure animal welfare is adequately addressed through both research and management activities?***

See Theme Discussion 1 (Wildlife management), point 3 (page 13).

Within Environment Canada, the Canadian Wildlife Service (CWS) has an animal care committee that reviews and approves research mostly involving bird banding. Effort has been expended to make the application and approval process easier and quicker. The CWS animal care committee would like to see the development of standard operating procedures (SOP) to guide researchers and establish consistency in attention to animal welfare issues across research programs. These SOPs should also be viewed as dynamic documents that are regularly reviewed and revised.

3) ***How is adherence to animal welfare guidelines verified under field conditions? For example, do wildlife agencies conduct field audits?***

In New Brunswick, personnel enlisted in the raccoon rabies control program were field audited to ensure they were complying with animal welfare guidelines in their treatment of animals. Monitoring also occurs within other wildlife research / management programs to ensure animal care protocols are followed. Quebec has taken a similar approach to New Brunswick with respect to ensuring their raccoon rabies control program is conducted with adherence to animal welfare guidelines, including humane killing of raccoons and skunks. Quebec also invests substantial effort in ensuring kill-trapping is conducted humanely by trappers, as well as by government wildlife personnel.

4) ***Are wildlife researchers adequately trained and evaluated for their proficiency in the application of different capture (or kill) methods? If not, shouldn't government wildlife agencies ensure field personnel are fully qualified to carry out these procedures?***

In Alaska, government wildlife personnel receive training that includes recertification in capture and handling every 5 years. However, there are no actions in place to assure marksmanship with firearms or remote drug delivery equipment. Government wildlife personnel in Alberta receive training and re-certification in wildlife chemical immobilization every 5 years.

5) ***In wildlife research, there is often some trade-off between causing injury or distress to some animals and the scientific merit of the project. Recognizing this to be the case, how can we evaluate scientific merit in an objective and consistent manner?***

This is a difficult issue. The dilemma is how to weigh the importance of a research question (often directed at population-level processes) against compromising the welfare of individual animals. Some of the larger funding agencies, such as the Natural Sciences and Engineering Research Council (NSERC) of Canada, conduct rigorous reviews for scientific merit. However, smaller sources of funding may lack the expertise required to adequately evaluate scientific merit. Similarly, animal care committees often lack expertise in evaluating scientific merit and may rely on external reviewers. If researchers were to serve mandatory time working on animal care committees, they could provide some expertise in evaluating scientific merit while at the same time gaining a better understanding of the animal care protocol review and approval process.

6) ***Is the Canadian Cooperative Wildlife Health Centre (CCWHC) expanding its mandate to include animal welfare? Is it CCWHC's intention to develop national standards for wildlife welfare, or continue to expand on what is currently contained in the Canadian Council on Animal Care guidelines on the care and use of wildlife?***

The CCWHC has no agenda with regard to wildlife welfare other than to continue to work with its partner agencies and Canada's other wildlife health professionals on this issue. The CCWHC does assess individual requests on specific issues from collaborators and in cases in which issues are deemed to be of broad interest, the CCWHC often plays the role of a facilitator in the exchange and transfer of knowledge or development of action plans. This workshop provides a good example of facilitation by the CCWHC on a pertinent issue.

7) ***Is the Canadian Cooperative Wildlife Health Centre doing anything to link climate change with wildlife populations?***

The CCWHC has within its ranks people looking at changes in patterns of disease, particularly in the North, with regards to climate change and its effect on wildlife health. Further, the CCWHC is conducting ongoing surveillance studies from which wildlife data could be linked to climate data.

8) ***Other points expressed…***

- Animal welfare considerations and conservation (research) goals need to be better linked. A big step in this direction would be for researchers to recognize that their research often impacts the welfare of study animals. A worrying trend among researchers has been the acceptance of a certain level of mortality. Researchers need to be more critical of their methodology; they need to report broadly on detrimental effects of research so others can avoid similar problems. They

need to seek less intrusive methods of research, and they need to reduce morbidity (as well as mortality).

- Within the Canadian Wildlife Service, the research permitting process and animal care committee approval process need to be better linked. On the research permitting side, animal care protocols and animal care committee approvals are received in many different formats (from other agencies or institutions), so it is difficult to verify the quality of a protocol and the validity of a review. This could perhaps be facilitated to some extent by development and broadened recognition of standard operating procedures. The Canadian Council on Animal Care could perhaps play a role in standardization of the animal care committee approval process (as it relates to wildlife). The Canadian Cooperative Wildlife Health Centre might also play a resource role by aggregating standard operating procedures and relevant wildlife welfare documentation on their website.
- In Nunavut, there is growing divide between subsistence hunting and research. This is largely because wildlife researchers have been unwilling to change their techniques to incorporate local ecological knowledge. For example, there is a common perception among wildlife researchers that a decreasing population size is bad. However, populations naturally fluctuate up and down. We have to consider this when looking at oscillations in caribou /polar bear populations. We only see one oscillation in our life time, but local knowledge documents that these fluctuations have been occurring over the millennia. There is a sense among Inuit harvesters that research is bringing about the demise of a subsistence way of life.

Conclusions and Way Forward

The broad spectrum of participants at this workshop demonstrated strong interest in promoting animal welfare in this country and recognized that issues of animal welfare need to be addressed in all forms of exploitation of our wildlife. However, the multiplicity of interest groups involved in exploitation of these resources also brings challenges. In particular, there is need for more trust and better lines of communication among the different parties involved, including government managers, researchers, harvesters, and animal welfare organizations. Improved cooperation among these groups would not only promote the design and application of sound and pragmatic principles of animal welfare, but would also facilitate the overall management of wildlife resources.

The wide variety of ways in which we interact with wildlife, e.g., for research, management, commerce, subsistence, sport, and non-consumptive use, likely preclude the formulation and implementation of government-legislated rules and regulations on animal welfare that encompass all forms of interaction. However, there is need for some degree of uniformity in defining criteria for animal welfare as applied to wildlife, in order for animal care committees and animal welfare organizations to more easily and objectively evaluate methods of research, management, and harvest. The Canadian Council on Animal Care has served, and continues to serve, an important role in harmonizing standards of animal welfare in research across Canada. Its “Guidelines on: the care and use of wildlife” (2003) have been recognized as the best available world-wide, but guidelines should also be established for management and harvest of wildlife. The Canadian Cooperative Wildlife Health Centre is a national network of specialists in wildlife veterinary science. In this capacity, it is well positioned to facilitate exchange and transfer of

animal welfare knowledge and development of action plans pertaining to the application of principles of animal welfare to wildlife use.

Ultimately, we hope this document will provide sufficient baseline information for Canadian wildlife agencies and organizations to progress in promoting animal welfare in handling of wildlife in this country and also to engage in cooperative work with other countries on this issue.