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A Common Approach to Wildlife Control for Animal Welfare and Protection Organisations

Developed from discussions at the Expert Forum on Humane Wildlife Control Standards held at the University of British Columbia, Vancouver, Canada on July 27th and 28th, 2015



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Preface

This report has been developed by the University of British Columbia Animal Welfare Program (UBC AWP) and the British Columbia Society for the Prevention of Cruelty to Animals (BC SPCA) from facilitated discussions at the *Expert Forum on Humane Wildlife Control Standards*, held on July 27 and 28, 2015 in Vancouver, Canada. The following animal welfare and protection organisations (AWPOs), which participated in the Expert Forum, have reviewed and endorsed this report: Born Free Foundation, Canadian Federation of Humane Societies (CFHS), Humane Society of the United States (HSUS), RSPCA Australia, and RSPCA United Kingdom. Additional AWPOs which did not participate in the Expert Forum are also invited to review and endorse this report to guide wildlife control approaches in their countries (contact Dr. Sara Dubois, BC SPCA Chief Scientific Officer sdubois@spca.bc.ca).

The UBC AWP in the Faculty of Land and Food Systems is recognized internationally for providing unique opportunities for undergraduate and graduate research, and for offering solutions through applied science to animal welfare dilemmas. Established in 1997 to improve the welfare and humane care of animals in agriculture, research, companionship and in the wild, the UBC AWP helps build knowledge-based consensus on the broader ethical questions that arise over human use of animals.

The BC SPCA is one of the largest animal welfare organisations of its kind in North America, with 43 locations, over 500 staff, and nearly 4,000 volunteers throughout the province. Established in 1895 under the provincial *Prevention of Cruelty to Animals Act (PCA Act)*, its mandate is to protect and enhance the quality of life for domestic, farm and wild animals in British Columbia. As a registered charity, the BC SPCA operates 33 animal community shelters, three education and adoption facilities, four veterinary and spay/neuter clinics, a wildlife rehabilitation centre, a provincial call centre, and an administration office. In addition to province-wide programs for advocacy, government relations, humane education, and scientific research, 30 Special Provincial Constables enforce the *PCA Act* and *Criminal Code of Canada* to fulfill the Society's law enforcement duties.

The Expert Forum was funded by a Solutions Initiative Grant from the Peter Wall Institute for Advanced Studies (PWIAS), which is committed foremost to excellence in research by stimulating collaborative, creative, innovative interdisciplinary research that makes important advances in knowledge.

While Expert Forum participants included representatives from a wide variety of academic institutions and non-governmental organisations, the views in this document are a synthesis of the outcomes of the workshop process and do not necessarily reflect all the views of the participants or the organisations they represent. A list of participants at the Expert Forum is provided in [Appendix 1](#).

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Executive Summary

Animal welfare and protection organisations (AWPOs) in many parts of the world interact with the public regarding issues related to wildlife control. However, they face multiple challenges including: public expectations that AWPOs can provide humane solutions to human-wildlife conflict; varying definitions of the term “humane”; public confusion between the seemingly opposing AWPOs’ mandate to protect animals versus their support for lethal control when human health and safety are at risk; public access to control methods that are unreliable and inhumane for untrained people to use; how to incentivize humane wildlife control for commercial operators and property owners; AWPO opposition to government control programs for ethical or humane reasons; and, for AWPOs who enforce cruelty laws, the absence of standards for humane wildlife control practices to use as an enforcement tool.

The development of humane approaches to wildlife control – by AWPOs, regulators, academics and other groups – has been occurring for over a decade, in particular by experts in Australia and New Zealand. Wider endorsement and development of control principles with the involvement of other countries has the potential to more broadly establish what constitutes “humane” wildlife control. This is especially critical for those countries that lack control standards and/or regulations, and for the agencies that enforce animal cruelty laws related to the suffering of wildlife.

To address this gap, the BC SPCA initiated a project to develop Humane Wildlife Control Standards for Canada to first establish legal and illegal practices for application in its cruelty enforcement work. Secondly, of the legal control methods, recommended versus non-recommended practices would be outlined, with a view to eventually create an accreditation program for commercial pest control operators. To support this project, the *Expert Forum on Humane Wildlife Control* (Expert Forum) was convened at UBC on July 27 and 28, 2015 with the aim of: 1) understanding common wildlife control challenges, barriers and opportunities internationally; 2) developing globally applicable consensus principles on ethical wildlife control; 3) informing criteria for acceptable and unacceptable control methods; and, 4) providing the BC SPCA and other AWPOs with input on a common approach to wildlife control to guide their animal protection work.

The Expert Forum was attended by participants from seven countries – Australia, Brazil, Canada, New Zealand, South Africa, United Kingdom and United States ([Appendix 1](#)). Outcomes include clarification on shared terminology as per Definitions ([Appendix 2](#)), a co-authored manuscript for peer-review on consensus principles (page 12), and a set of animal welfare acceptability criteria (page 15).

Forum experts repeatedly identified the importance of public engagement and community involvement when developing solutions for human-wildlife conflict, suggesting AWPOs seek new ways to reach out to the public on these topics. In wildlife control, the scale of the problem is important and it will be easier for AWPOs to apply humane criteria in situations that involve fewer animals, while larger animal populations present a much greater challenge. These discussions challenge AWPOs to find ways to encourage and motivate new research for novel control method development, to incentivize humane practices, and to encourage wider awareness and adoption of humane wildlife control approaches in their advocacy work.

1. Introduction

Commonly known as vertebrate wildlife control, the poisoning, trapping, relocation, translocation, and/or killing of unwanted wild animals is often implemented in an effort to manage human-wildlife conflict (i.e. public health and safety, property protection) or as a conservation strategy. Control actions can be directed at native wild animals, introduced animals, and feral populations of domesticated animals.

Depending on the nature of their organisational mission, animal welfare and protection organisations (AWPOs) in many parts of the world interact with the public regarding issues related to wildlife control. However, relatively few countries have regulations or codes of practice for wildlife control that are aimed at protecting animal welfare by ensuring that the least harmful methods are always used. In addition, third-party quality assurance programs to ensure guideline compliance generally do not exist. This causes concern for AWPOs who aim to protect animals, and in some cases, have a legal mandate to enforce “humane” standards for both the handling and killing of wildlife.

1.1 Wildlife control challenges faced by AWPOs

Although distinct by governance and jurisdiction, but generally founded under the same principles, international SPCA's have a mandate to protect animals and prevent cruelty, including for wild animals¹. Other AWPOs have similar missions and activities on various international, national, and local scales (for example Born Free Foundation, CFHS and HSUS). One of the most visible activities undertaken by some AWPOs is providing care for wild animals that are injured, distressed and orphaned due to misuse/abuse during attempts at wildlife control. This activity fits easily and without controversy into most AWPOs' mandate, however other activities related to wildlife control present challenges to these groups.

The public may turn to their local AWPO for information on how to deal with human-wildlife conflicts and for referrals to pest control companies and products that will resolve the conflict. Generally, when people seek out an AWPO for this information, they are interested in protecting the welfare of the animal(s) involved and expect both a legal and humane solution to be provided. However, public awareness of legal versus illegal methods is often lacking. The definition of “humane” also varies, providing further complication. To some it may mean “non-lethal”, whilst to others it means “minimal suffering” or even “fairness” to the animal [1].

Furthermore, the public is often confused between the seemingly opposing AWPO's mandate to protect animals, versus their varying positions on wildlife control. For example, some AWPOs may support the need for killing certain wild animals in situations where the risk human health and safety is high. However, the public and/or AWPO supporters may not necessarily believe that any killing, even if done

¹ BC SPCA <http://www.sPCA.bc.ca/about/>
RSPCA Australia <http://www.rspca.org.au/what-we-do/about-us>
RSPCA UK <http://www.rspca.org.uk/utilities/aboutus/mission>
RNZ SPCA <http://www.rnzspca.org.nz/about/about-the-royal-nz-spca>
NSPCA <http://www.nspca.co.za/page/the-nspca>

humanely, is acceptable. This requires AWPOs as charitable organisations mostly dependent on donations, to delicately balance these competing interests.

Another source of conflict for AWPOs is the public availability of control methods that can be used improperly, are unreliable, and can cause suffering when used by untrained individuals (for example, glue boards used by members of the public who may not know to regularly check the traps and who have no means to humanely kill live-caught rodents). Unrestricted access to these methods may also put AWPOs in the conflicted position of giving advice about how to use a control method properly, simply because they know the public has access; for example the Australian RSPCA provides advice on killing cane toads but cautions that some methods are suitable for skilled operators only [2]. In addition, AWPOs also face the challenge of how to incentivize humane wildlife control and make it a goal that pest control companies, property managers and residential homeowners desire to achieve.

Wildlife control activities carried out by national, provincial and local governments, can also present challenges for AWPOs. Although sanctioned by governments for conservation, disease control, or public safety reasons, AWPOs may oppose the practices for ethical or humane reasons, such as for using methods not generally acceptable by animal welfare standards. For example, the BC SPCA's opposition to the aerial shooting and use of strychnine poison to kill wolves in Canada [3] and the Royal New Zealand SPCA's (RNZ SPCA) opposition to the use of 1080 poison to kill possums and rodents [4].

Some AWPOs also have a legal mandate to enforce animal cruelty legislation, such as the BC SPCA, RSPCA Australia, RNZ SPCA, ISPCA in Ireland and South Africa's NSPCA. Therefore, these organisations have the responsibility of investigating cruelty complaints related to misuse/abuse during attempts at wildlife control. However, in these countries a clear articulation of humane wildlife control practices may not exist for investigators to use as an enforcement tool.

1.2 Global development of humane approaches to wildlife control

The development of humane approaches to wildlife control – by AWPOs, regulators, academics, and other groups—has been occurring for over a decade. Here we provide a brief overview highlighting various sets of principles, although the summary is not intended to be a comprehensive review of all literature on the topic of humane wildlife control.

In 2003, RSPCA Australia, along with government and non-governmental organisational partners held a landmark workshop to discuss *“Solutions for achieving humane vertebrate pest control”* [5]. At this conference, RSPCA Australia articulated their approach to vertebrate management by presenting a set of guiding principles for the humane wildlife control of vertebrate pests, which apply equally whether the pest animals are native or introduced (**Table 1**).

Table 1: RSPCA Australia Guiding Principles for Humane Wildlife Control
(Jones 2003)

1. Justification for control
2. Lethal control methods should only be sanctioned where no effective, humane, non-lethal alternative method of control is available
3. Probability of success: Any measures taken to reduce or otherwise control pest animals must have a high probability of success in reducing the adverse impact of the target animal
4. Coordinated and strategic approach
5. Target-specificity: Control programs should be target-specific
6. Humaneness: [RSPCA is] opposed to inhumane methods of controlling wild animal populations. This applies equally to native and to introduced animals.

Following this workshop, a subgroup of symposium participants built upon the RSPCA Australia principles and developed a proposal for a national Australian approach towards humane vertebrate pest control [6] (**Table 2**).

Table 2: Principles of humane vertebrate pest control
(Humane Vertebrate Pest Control Working Group 2004)

1. The aims or benefits and the harms of each control program must be clear; control should only be undertaken if the benefits outweigh the harms
2. Control should only be undertaken if there is a likelihood that the aims can be achieved
3. The most humane methods that will achieve the control program's aims must be used (this requires an assessment of the humaneness of all existing methods)
4. The methods that most effectively and feasibly achieve the aims of the control program must be used
5. The methods must be applied in the best possible way
6. Whether or not each control program actually achieved its aim must be assessed
7. Once the desired aims or benefits have been achieved, steps must be taken to maintain the beneficial state
8. There should be research to reduce the negative animal welfare impacts of existing control methods and to develop novel methods that cause less pain and distress

Concurrently, academics in New Zealand published a review of the animal welfare and ethical issues associated with control of vertebrate wildlife [7]. In this review, they identified six principles that could be used to guide “ethically sound” vertebrate wildlife control programs (**Table 3**).

Table 3: Principles to guide the design and execution of ethically sound vertebrate pest control programmes
(Littin et al. 2004)

1. The aims or benefits and the harms of each control programme must be clear
2. Control must only be undertaken if the aims can be achieved
3. The methods that most effectively achieve the aims of the control programme must be used
4. The methods must be applied in the best possible way
5. Whether or not each control programme actually achieved its precise aim must be assessed
6. Once the desired aims or benefits have been achieved, steps must be taken to maintain the beneficial state

In 2008, researchers in Australia first published “*A model for assessing the relative humaneness of pest control methods*” (updated in 2011) which employed a ranking method to assess the humaneness of wildlife control methods [8]. Following publication of the assessment model, Australia began to produce species-specific Humane Codes and Standard Operating Procedures (SOPs) [9].

The progress of humane wildlife control was also reviewed by New Zealand researchers [10] and they found that the welfare of animals targeted for control was now widely accepted as a “*reasonable concern*”. Included in their review were the sets of principles discussed above and they further stated:

“...there needs to be the encouragement of further development of these, or similar principles, to guide the improvement of animal welfare in pest control worldwide. As a minimum, there needs to be further encouragement of anyone conducting pest control operations (including household users) to at least consider animal welfare, if not use the most humane method possible. To do this, there needs to be a good understanding or consensus on the relative humaneness of available tools.” [10 p.5].

Their review also identified that sharing experiences between countries could further assist in the development of humane wildlife control and that “... *given the different approaches, plus a lack of standards in many jurisdictions, there is a clear need for guidance that is broadly based and includes international perspectives on the issue.*”

In 2014, a further set of principles from Australia was published in a factsheet from the Invasive Research Council of Australia [11] (**Table 4**).

Table 4: Principles of pest animal management
(PestSmart Australia 2014)

1. A pest is a human-defined idea
2. Key stakeholders need to be actively engaged and consulted
3. Pests are rarely eradicated
4. Most pest management needs to focus on the outcome, not just killing pests
5. A whole of system approach is required for managing pest damage
6. Most pest management occurs in ecosystems of which our knowledge is incomplete
7. An effective monitoring and evaluation strategy is essential for all management action

Following the UBC AWP and BC SPCA Expert Forum in July 2015, a set of principles for managing urban wildlife damage was published in the US [12] (Table 5). These were developed from the perspective of management of conflicts related to urban wildlife and described by the author as an “... *IPM [integrated pest management]-like series of decision-making steps*” [12 p.1102].

Table 5: Management principles for wildlife damage
(Hadidian 2015)

1. The need to act must be clear (justification)
2. Any benefits sought must be realistic (achievability)
3. The methods to be employed must be able to achieve benefits (effectiveness)
4. The approach must be targeted to the problem-causing individuals (specificity)
5. The methods used must be the most humane available (welfare priority)
6. The consequences of actions must be amenable to evaluation (monitoring)
7. The benefits achieved must be maintained (follow-up)

These previous approaches have largely arisen from the work of researchers and wildlife control experts in Australia and New Zealand. However, as put forth by Littin and O'Connor, wider endorsement and development of control principles with the involvement of other countries has the potential to further drive progress in approaches to humane wildlife control [10]. Therefore, knowing that private citizens, commercial and agricultural operators, and governments participate in the control of many wildlife species, and that public attitudes and values towards the fair and appropriate management of wildlife are evolving [13–15], it is important to establish what constitutes “humane” wildlife control. This is especially critical for AWPOs.

1.3 Aims of this report

To address this gap in Canada, the BC SPCA initiated a project to develop Humane Wildlife Control Standards (HWCS) for Canada with a view to eventually create an accreditation program for commercial operators using legal and recommended practices. This has been initiated with encouragement from the

Structural Pest Management Association of BC (SPMABC), the province's professional industry organisation, who have expressed interest in defining "best practices" for their members.

A version of HWCS was prepared for some British Columbian animal types in 2014. This early document was circulated later that year to several international experts and modified following their feedback. To further support and develop the HWCS, the Expert Forum was then convened in 2015 with the aims of developing globally applicable consensus principles on wildlife control and providing the BC SPCA and other AWPOs with input on a common wildlife control approach to guide their animal protection work.

This report is a synthesis of the outcomes of the Expert Forum and is intended as a practical tool for AWPOs; for example, the BC SPCA will use these discussions to guide the future of their HWCS Program for use specifically in BC, and to influence the rest of Canada. It is also envisioned that this document will provide a foundation for the development of public engagement and enforcement tools for other AWPOs.

2. Expert Forum on Humane Wildlife Control

The *Expert Forum on Humane Wildlife Control* held on July 27 and 28, 2015 in Vancouver, British Columbia, Canada, brought together international experts on vertebrate pest management from academia, AWPOs and conservation organisations, with representatives from the BC pest control industry and government attending on the second day only.

The Expert Forum aimed to: 1) understand common wildlife control challenges, barriers and opportunities internationally; 2) develop globally applicable consensus principles on ethical wildlife control; 3) inform criteria for acceptable and unacceptable control methods; and, 4) provide the BC SPCA and other AWPOs with input on a common approach to wildlife control to guide their animal protection work (refer to [Appendix 1](#) for details of the forum agenda).

The Expert Forum included 20 participants from seven countries – Australia, Brazil, Canada, New Zealand [NZ], South Africa, United Kingdom [UK] and United States [US]. These participants were selected because of their expertise and interest in issues related to humane vertebrate pest control and/or their role in industry or government. In addition to the Expert Forum hosts and participants, two facilitators and two note takers attended (refer to [Appendix 1](#) for full list of attendees). Several days after the Expert Forum, a summary of the event was presented at the Compassionate Conservation Conference² held on July 28-30, 2015 in Vancouver, BC, Canada.

The Expert Forum was primarily funded by a 2015 Solutions Initiative Grant from the Peter Wall Institute for Advanced Studies and with support from the BC SPCA. The event was jointly hosted by the UBC AWP and the BC SPCA. Preparation of the documentation resulting from the forum, including a manuscript for peer-review and this report, was funded by the BC SPCA.

² <http://compassionateconservation.net/about/conference-2015/>

3. International Perspectives on Vertebrate Wildlife Control

Globally, human-wildlife conflicts differ widely, as do the approaches to wildlife control. Therefore, in order to work towards global applicability, it was important that Expert Forum outcomes account for these varied situations. To address this, participants completed a survey about their perspectives on wildlife control in their home countries five weeks in advance of the forum. They were asked to identify species of concern, main concerns, governance and standards related to wildlife control, and these topics were further discussed at the forum.

Through this process some commonalities between the countries were identified. First, a range of strategies are being used to handle wildlife control issues within each country, including legislative and non-legislative approaches. Second, some countries have national approaches to wildlife control (NZ and UK) while others delegate full or partial authority to the state or local level (Australia, Brazil, Canada, South Africa and US), which results in additional levels of regulatory complication.

Third, animal protection agencies have different roles in different countries, as discussed above. Fourth, an extreme division between “always” or “never use” lethal control measures was not in place in any of these countries. Instead there is a range of acceptability for each lethal control measure. Specific wildlife control issues that were in many cases unique to the countries were also discussed by participants.

Australia

Australian participants identified many contentious species that humans come into conflict with, including native animals (kangaroos and wallabies), introduced herbivores (wild deer, feral horses, feral camels) and introduced carnivores (dogs, foxes and cats). In Australia, public expectations for humaneness and effectiveness are high, but all control measures come with some negative effects on animal welfare. In addition, sometimes the least harmful control method is not currently widely accessible, or not effective for all populations or species.

Australian participants identified their concerns related to wildlife control. These included: which animals are perceived as “pests”; effectiveness and public expectations surrounding fertility control; and the humaneness of approved control methods. In addition, the commercial and non-commercial shooting of kangaroos and the fate of dependent young were identified as issues. The strength of the Australian hunting lobby and its influence on wildlife control decisions was also raised. Similarly, concerns regarding the scientific basis of a proposed government cull of two million feral cats were raised.

Australia has Codes of Practice (COPs) and Standard Operating Procedures (SOPs) developed for a range of feral animal species (camels, cats, deer, donkeys, goats, horses and pigs) as well as foxes, hares, “pest birds”, rabbits and wild dogs. However, adherence to these is voluntary and in some cases participants felt the COPs and SOPs included inhumane control methods.

Brazil

In Brazil, the most contentious species are rodents. Rodent management is complicated by: extreme poverty and lack of adequate sanitation infrastructure in communities with rodent infestations; lack of

laws or specific federal regulations, instead it is the responsibility of states and municipalities; and the lack of standardization and protocols to identify effective measures and practices. Another issue concerns wildlife control through chemical methods to alter animal fertility and the use of control methods without scientific evidence of the effectiveness. National guidelines for rodent control and bat control have been published by the federal government.

Canada

Canadian participants identified a wide variety of species that come into conflict with humans including birds (pigeons, Canada geese), large predators (bears, cougars and wolves) as well as raccoons, skunks, squirrels, rabbits and marmots. In Canada, wildlife control concerns include: the lack of definition of the purpose and need for control; the unclear process for selection of control methods; the practical implementation of humane killing; and the use of scientific evidence and ethical acceptability for decision-making on wildlife control, especially for government-sanctioned culls.

Participants also pointed to a gap in public knowledge regarding specific requirements for exclusion, trapping and killing methods, as well as a general lack of resources and education regarding humane control. They cited a lack of consistent standards for wildlife control and the need for greater consideration of the exclusion methods available and the effect of human-wildlife interactions and habitat encroachment. In Canada, there are no COPs or SOPs for wildlife control activities.

New Zealand (NZ)

New Zealand participants noted that every contentious wild species in NZ is non-native, including: Brushtail possums, Kaimanawa wild horses, feral cats, mustelids, feral dogs, rodents, rabbits/hares, and introduced fish and birds. In many cases, introduced species are targets of control to reduce the predation of endangered native birds (e.g. by rodents, feral cats). They identified wildlife control concerns related to the impacts of 1080 poison on non-target species (native wildlife) and the difficulty of using humane lethal methods and achieving effective control of a species.

NZ has animal welfare legislation (NZ Animal Welfare Act) but vertebrate pest control is excluded. The RNZ SPCA has enforcement powers and has government funding for the animal cruelty investigation portion of their mandate. NZ has legislation regarding trap-checking and traps must be checked 12 hours after sunrise each day, however there are no COPs or SOPs for wildlife control activities.

South Africa

Wild species identified as contentious for South Africa include large carnivores, baboons and jackals. The main issues of concern are carnivore-farmer conflict, lack of enforcement, and lack of successful prosecutions of wildlife and permit offences, as well as corruption within the wildlife management sector. South Africa also maintains a list of animals classified as “damage-causing animals” which includes animals that prey on livestock or damage crops and forestry plantations.

Control of “damage-causing animals” is the responsibility of provinces, unless the animal is also designated a Threatened or Protected Species, in which case management is a federal responsibility. A national “Norms and Standards” document describing methods and the minimum requirements for the

use of restricted methods (such as traps, cages, poison collars, darts call and shoot, and soft traps) for control of damage-causing animals has been drafted some time ago but not yet implemented.

United Kingdom (UK)

Contentious species and wildlife control concerns identified by UK participants include: Eurasian badgers, which are culled to manage bovine tuberculosis in cattle; grey squirrels, who are culled to protect native red squirrels from competition and disease; rodents who are subjected to misuse of traps and exemptions from spring trap legislation; and foxes who are killed for undefined “wildlife management” reasons. In the UK, there are many laws related to wildlife control, for example the Wildlife and Countryside Act, the Animal Welfare Act, Pests Act, Hunting Act and Protection of Badgers Act. However, participants reported that oversight and enforcement are limited due to legislation complexity. Participants observed that in the UK, there is no single set of standards, but many voluntary COPs, technical information and advice from a variety of governmental and non-governmental sources.

United States (US)

Many contentious species were identified by US participants including: predators (mountain lions, bears, wolves, coyotes), deer, geese, bats, rodents, mute swans and mourning doves. The main issues of concern relate to lethal control and culling, including the lack of oversight and enforcement of regulations, and a heavy reliance on trap-and-kill or trap-and-remove methods. Participants felt the existing regulations do not require the root causes of the human-wildlife conflict to be addressed, and do not take ecological principles into consideration.

Each state has primary control over wildlife control regulations and practices, unless the species is federally listed (such as for threatened, endangered and migratory species). Participants reported that many states do not require actual damage to occur before control activities are undertaken, just concern that the animal(s) are *likely* to cause damage. In addition, most states do not enforce their wildlife regulations, and citation or enforcement of local humane ordinances or laws is usually undertaken by humane societies.

Participants noted that some wildlife control projects in the US must document how animal welfare issues were considered and allow for a public comment period. However, this does not extend to control projects carried out by the US Department of Agriculture Wildlife Services which primarily consists of predator control, large scale control of geese and blackbirds, deer culling and lethal control of wildlife near airports. Some states have produced voluntary best practices or standards for wildlife control; in addition, a control training manual created by New York State Department of Environmental Conservation and Cornell University has been widely adopted. The American Veterinary Medical Association Guidelines on Euthanasia may be used by humane societies in enforcement.

4. Consensus Principles for Wildlife Control

Policy making by AWPOs can benefit from being able to refer to and use clearly articulated and widely-supported principles for wildlife control. Expert Forum discussions cumulated in the development of a set of internationally applicable consensus principles for ethical wildlife control. In particular, ethical decision-making was explored. The principles were drafted at the Expert Forum and further refined in a post-forum policy paper authored by forum attendees [16].

4.1 Exploration of ethical wildlife control decision-making

To lay the groundwork for development of consensus principles, break-out sessions followed by large-group discussions were held. Participants discussed their responses to the following questions about ethical wildlife control decision-making.

1) Should the reason for control influence decisions about appropriate methods?

Consensus held that consideration for the reason wildlife control was being undertaken would unavoidably influence the selection of control methods, although many participants felt that, ideally, it should not be that way.

The group agreed on the need for a multi-step process in decision-making to assess the justification for a proposed control action first, followed by assessment of the humaneness of the proposed method. Whether control can be ethically justified could be determined using cost-benefit analysis. Participants felt that the decision-making process needs to start from a firm ethical stance. The ethical framework has to be in place before selection of a method.

Participants agreed that harmful wildlife control methods would be more likely to be tolerated when the threat to human interests is highest. However, they felt people are still obligated to pick methods that have the lowest animal welfare effect and a serious problem is not an excuse for using a painful/harmful method. Some cautioned that no method is completely without negative effects on animal welfare. Many felt that “humaneness” is a relative term and when we label a method as inhumane we really mean it is “unacceptably inhumane”. Therefore, some participants preferred the phrase “least inhumane”.

Some participants cautioned about different contexts involved in wildlife control decisions, observing that human-denominated values are used, rather than, for example, the needs of ecosystems. They observed that utilitarian reasoning, such as cost-benefit analysis, is anthropomorphic and that the conclusion of such reasoning must be that it is ok to be inhumane in some circumstances. Instead, they proposed that we should be questioning the need for intervention.

2) People may accept certain methods for small, abundant, and disliked animals (e.g. rats) and but not for large, rare and charismatic animals (e.g. grizzly bears). Should such factors be taken into account in deciding appropriate control methods?

There was consensus that a wildlife control method should always be humane regardless of species; standards should not be relaxed just because humans value some animals differently. Instead, decisions should be made based on the circumstances, ecosystem needs, and on physiology, rather than human

affinity for some species over others. Participants acknowledged that although ideally this distinction on popularity of animals should not be made, it commonly occurs. Policies often depend on public sympathy or government tolerance for the species.

It was observed that what defines an “acceptable” control method includes public perceptions however, this is a question of values, not a scientific one. Similarly, participants discussed the difficulty of deciding to label a method humane versus not humane. Some believed it is a continuum and not always clear where to draw the line and reiterated that humaneness is a relative issue, and that the least inhumane method was the objective. In contrast, other participants believed that labelling humane versus inhumane is necessary for practical purposes to draw a line between the two based on scientific assessments, as is done for slaughter of animals for food or use in research.

3) Should notions of fairness and leniency enter into decisions about wildlife control?

Participants agreed that human-wildlife conflict should not be considered the “fault” of animals. The group felt the terms “fairness” and “leniency” were not useful and difficult to apply consistently.

Many participants felt that the role that humans play in creating conflict with wildlife should be acknowledged more broadly and that we should be acting in preventative ways (human responsibility). If we want wildlife and humans to co-exist, we should be communicating the steps that can be taken to avoid conflict. However, it was acknowledged that an informed and engaged public is needed to achieve this.

4) Should we regard prolonging life as inherently good or only instrumentally good inasmuch as it allows good quality of life?

Participants generally agreed that prolonging life should not be regarded as inherently good. Some cautioned that an extension of this logic is, if we kill everything, we can avoid causing suffering. The difficulty of determining what is “a life worth living” was raised. Some participants felt that this could be determined by using biological information about the species and individual animal.

5) Under what conditions, if any, is lethal control preferable to non-lethal?

It was agreed that the default for control should not be killing however, some participants felt that often non-lethal alternatives are not seriously or meaningfully applied and that in many countries there is no legal imperative requiring non-lethal alternatives to be used first. In addition, the public often equates the term “humane” with non-lethal, when the consequences of some non-lethal methods may not be humane. Therefore, the group felt that the public needs to be convinced that a humane death can be acceptable in certain circumstances. Participants also acknowledged the difficulty of communicating this with public.

4.2. Consensus Principles

Wildlife control principles that synthesize international perspectives have the potential to more broadly establish a common understanding of humane wildlife control. This is especially important for AWPOs given the lack of standards and/or regulations in many jurisdictions and the many wildlife control-related challenges AWPOs face (summarized in section 1.1). Therefore, the intent of these Consensus

Principles is to fill this gap and provide an internationally-informed, common framework for addressing human-wildlife conflict:

Modifying human practices

Principle 1: Human-wildlife conflicts arise from human activities, and should be prevented and mitigated by altering human practices wherever possible, and by developing a culture of co-existence

Justification for control

Principle 2: The need for wildlife control should be justified with evidence that significant harms are being caused to people, property, livelihoods, ecosystems and/or animals

Clear and achievable outcome-based objectives

Principle 3: The desired outcome of a wildlife control action should be clear, achievable, and monitored, with lessons learned so that future control can be improved

Animal welfare

Principle 4: Methods chosen for the control action should predictably and effectively cause the least animal welfare harms to the least number of animals

Social acceptability

Principle 5: Decisions to control wildlife should be informed by the range of community values alongside scientific, technical and practical information

Systematic planning

Principle 6: Decisions to control wildlife should be integrated into a program of long-term systematic management

Decision-making by specifics rather than categories

Principle 7: Decisions to control wildlife should be based on the specifics of the situation, not broad categories applied to the target species

The principles outline a path for achieving “ethical wildlife control”, which the authors define as taking a control action only after a comprehensive analysis of the action’s necessity, benefits, feasibility, costs to people and animals, alternatives, and effects on animal welfare in terms of the humaneness of the physical methods used [8,16,17]. The term “ethical wildlife control” was used in preference to the term “humane” to, “*acknowledge that the concept of humane is subjective and used in different ways by conservationists, animal welfarists, commercial companies and others*” [16].

These principles build upon on earlier work (described in Section 1.2) by weaving an international perspective through a step-wise set of criteria that outline the need for human responsibility, justification, and careful implementation, as well as animal welfare, in wildlife control decisions. They reaffirm some themes that existed in other sets of principles, including the need to justify decisions for wildlife control actions (Principle 2); the need for control measures to be achievable (Principle 3); the importance of animal welfare (Principle 4); and the importance of systematic planning (Principle 6). They expand on the concept of human responsibility in consensus principle 1, an idea first included in 2014 in the Australian PestSmart principles [11]. Principle 5 emphasizes the need for social acceptance in

wildlife control projects, in line with principles put forth by PestSmart [11] and Hadidian 2015 [12]. Principle 7 reinstates the idea that species bias should be avoided, an idea that was introduced by the 2003 RSPCA principles [5]. Absent from the Consensus Principles is a ‘knowledge’ principle similar to those articulated by the Humane Vertebrate Pest Control Working Group in 2004 [6] and PestSmart in 2014 [11] (refer to [Appendix 3](#) for a table comparing the sets of principles).

5. Animal Welfare Acceptability for Wildlife Control – Criteria for AWPOs

In addition to overarching consensus principles for ethical wildlife control, AWPOs also require specific criteria that clearly establish what harms to animals are unacceptable. These are required in order to enforce animal welfare legislation and to establish humane standards and any future accreditation program for the pest control industry. For these purposes, it is necessary to have criteria that more explicitly define what is meant by:

Consensus Principle 4: Methods chosen for the control action should predictably and effectively cause the least animal welfare harms to the least number of animals

Therefore, the BC SPCA developed a set of animal welfare acceptability criteria for wildlife control (“welfare criteria”) for use in evaluating the humaneness of capture, capture-and-kill and kill wildlife control methods used in British Columbia. An earlier version of these criteria was presented to participants at the Expert Forum for their input. Participants discussed their responses to the proposed criteria in relation to several prompting questions (such as, what points should be included within each criteria, what are other criteria should be added, and in what situations are the criteria not applicable). From this process, the criteria were refined and challenges to using them were identified. The finalized version of the welfare criteria is presented in **Table 6**.

Table 6: Criteria for evaluating the animal welfare acceptability of lethal wildlife control methods

To have an animal welfare outcome that is acceptable to the BC SPCA, a lethal control method would meet the following criteria:

1.	Short time to irreversible unconsciousness and/or death
2.	Short duration of physical injury and/or pain
3.	Low severity of physical injury and/or pain
4.	Short duration of distress
5.	Low severity of distress
6.	High reliability of method when used by trained and competent individuals
7.	Minimal impact on non-target animals
8.	Accessibility of animal for confirmation of death is necessary with direct killing methods

Participants emphasized that the animal welfare acceptability criteria for selecting a method should be considered as nested within the larger consensus principles (and not as an alternative to them). They clarified that the welfare criteria should only come into effect *after* the justification for need for control had been evaluated (as per Consensus Principle 2). In addition, the effectiveness of a method must still be evaluated to ensure the control is “*clear, achievable, and monitored*” (as per Consensus Principle 3).

Some participants were concerned with the use of qualitative descriptions in the criteria and instead favoured use of a scoring system that would allow methods to be ranked. Some participants also suggested that the welfare criteria as written implies only one control method is being applied when, in reality, in most control scenarios a combination of methods will have been used (e.g. exclusion first as non-lethal then lethal). However, the nesting of the welfare criteria within the larger context of the Consensus Principles, similar to a flow chart or decision-making tree would account for this.

5.1 Challenges of applying the animal welfare acceptability criteria

While acknowledging the need for specific welfare criteria, Export Forum participants also identified a number of challenges that AWPOs may face when attempting to apply the welfare criteria and develop standards for ethical and humane wildlife control. The response to these challenges will differ from country to country as different AWPOs jurisdictions face dramatically different wildlife control problems (as discussed earlier). Responses could be guided by Consensus Principle 5: *Decisions to control wildlife should be informed by the range of community values alongside scientific, technical and practical information.*

Defining the term “humane”

The BC SPCA intends to produce Humane Wildlife Control Standards, although participants were cautious about the term humane. They agreed that the term “humane” has different meanings to different individuals and different countries. They noted that “humaneness” does not always mean good animal welfare outcomes; instead it can refer to “the best that can be done” in a given situation.

In some research environments, humane and humaneness refer solely to welfare effects on an animal, for example what the animal is experiencing. In contrast, to others, humaneness includes welfare effects *and* value judgments and assessments. Therefore, the welfare effects on the animal always stay the same but the evaluation of a method as “humane” may shift as value judgments shift. Participants also discussed that in wildlife control, improving humaneness is mainly about minimizing negative effects on the animal, as opposed to adding welfare benefits. For this reason the Consensus Principles, intended for a global audience, used the term ethical wildlife control.

Evaluating scientific information

There was consensus between participants that any evaluation of wildlife control methods must be informed by science-based assessments. However, participants discussed how scientific assessments are also influenced by values and opinions and this can result in differing interpretations of data. For example, different research on the same topic can come to opposite conclusions.

Participants wondered how AWPOs could address or minimize this issue. They felt the welfare criteria do not stipulate *who* is deciding whether it is humane/least inhumane. The desire to minimize the

influence of value and opinions in interpreting scientific information prompted the development of the Australian model for assessing the relative humaneness of pest control methods [8].

In contrast, others commented that in decision-making, scientifically-informed, best judgment is used as the foundation and then other values are introduced. To decide on the science, a wide spectrum of expertise is consulted on the topic/species/biology and the literature is reviewed, not just a single paper. Additionally participants discussed how not all wildlife control decisions are based on science, but instead take values and sometimes politics into account. It was also agreed that there are many gaps in the relevant science.

Should humane criteria be considered aspirational or attainable?

Participants discussed whether wildlife control methods should be required to meet all the welfare criteria to be acceptable for AWPOs (i.e. attainable) or whether these lists should be regarded as an ideal to strive for (aspirational).

Some observed that no control methods could conform to these criteria and they objected to the idea that the welfare criteria are stating that only methods with all these features are acceptable, or humane. They also noted that even if a control method is identified as the “least inhumane” it may not be possible to use it for some other reason; therefore the criteria could be too restrictive. Given this, some participants asked whether the welfare criteria are even useful and suggested AWPOs could preface them with a statement explaining that an *ideal* method would meet all these criteria.

In contrast, other participants felt that welfare criteria can help direct the development of new control methods and that some sort of threshold is needed. They felt that for smaller human-wildlife conflicts such as raccoons in residential homes, it should be straightforward to use a control method that will meet all criteria (e.g. be attainable). They noted this may not be the case when the control problem includes the complexity of large populations of feral animals. It was suggested that AWPOs may wish to identify certain control methods that are always unacceptable, in addition to applying the welfare criteria.

Application to non-target animals

Although welfare criterion 7 states that acceptable methods will have “*Minimal impact on non-target animals*”, participants were concerned that overall, the list mostly focuses on effects on the individual animal that is the target of control. They noted that the unintended effects on young or members of a social group can result in distress and an inhumane death. However, other participants commented that this is a reality of all wildlife control, for example we cannot know about young in the nest for rodents or birds and with any control option there will be unintended effects.

Supporting an accreditation program

Participants acknowledged that since the goal of the BC SPCA is to develop a wildlife control accreditation program, therefore a standard is needed, regardless of the challenges that have been identified. They agreed that an accreditation program must be verifiable and enforceable and an accreditation system will have a checklist to support verification.

Participants suggested that commercial operators that want to be accredited also need to demonstrate compliance with the Consensus Principles. They felt many control methods would be tough to verify; for example, in Australian kangaroo culls, the mother kangaroos are killed by head shots which can be verified from the carcass, however the killing method of pouch young cannot be verified as the carcasses are not retained. It was suggested that if the BC SPCA cannot verify how animals were killed then the method should not be accredited as humane.

Participants discussed how the use of qualitative criteria is different from the use of scoring and ranking systems to make decisions. They suggested that there should also be some way to account for any positive effects of a wildlife control program, for example achieving the control goal, and the benefits of taking the control action in the first place.

Applicability of welfare criteria in unique situations

Participants cautioned that there may be unique situations in which rigid application of the welfare criteria could present a risk to health and safety of humans or the environment. Examples included: after a disaster scenario (e.g. hurricane) when suddenly the rat population will increase; possum control to prevent tuberculosis in cattle; and to protect endangered native birds from predation. Participants also discussed whether the welfare criteria would be applicable when the goal is eradication of an animal population and not merely control. They noted that term eradication is misused when it is not the aim or even a possibility.

6. Unacceptable Wildlife Control Methods

Participants reached consensus on wildlife control methods they would consider to be unacceptable for use under any circumstance due to animal welfare concerns.

6.1 Forum consensus on unacceptable methods

Unacceptable methods for capturing wildlife:

- Glue boards
- Steel-toothed traps (aka toothed traps, gin traps)

Unacceptable methods for capture-and-kill of wildlife:

- Conibear traps
- Drowning sets
- Self-locking snares

Unacceptable methods for killing wildlife include, but are not limited to:

- Bows and arrows used on large animals
- Chloropicrin (mustard gas)
- Carbon Monoxide from car exhaust fumes
- Drowning
- Explosives
- Exsanguination (sticking, throat cutting)
- Phosphorus for ingestion (not gas)
- Red Squill (rodenticide)
- Strychnine
- Warfarin (anticoagulant) baiting

While developing the above list, different exemptions and compromises to the use of unacceptable methods were discussed by participants. They commented that many methods that would be unacceptable for untrained members of the public to use, may be acceptable for pest control professionals to use (such as glue boards and other restraining traps). Some felt that any method where the level of training of the operator cannot be verified should be considered unacceptable (such as some methods easily available to the public) and noted that this distinction already exists for chemical control methods such as rodenticides but not for devices.

The use of glue boards as an exclusion device, where they are placed around building entry points to act as a barrier for rodent entry was considered. If glue boards were banned, then other trap types or poisons might be used instead for this purpose. If conditions were imposed, such as trap checking intervals of one hour and use of a humane killing method, it may be acceptable for professionals to use glue boards in this way.

A similar example from Australia was discussed where the Codes of Practice permit non-baiting ways of using strychnine, in particular the wrapping of strychnine-soaked cloths around the jaws of steel leg

traps so that trapped dogs chew the cloth and are lethally poisoned. This results in a painful death for the animals, but since it is impossible to check traps every 24 hours, it is seen as a compromise as opposed to a longer, slower death by dehydration, starvation and/or injuries.

6.2 Methods with varied acceptability

Participants discussed wildlife control methods where they had differing views on acceptability:

Use of dogs

Some participants felt it is acceptable to use dogs to track, locate and hold target animals. In particular, positive benefits may be accrued to dogs such as terriers who have been bred to hunt and kill rodents and are highly motivated to do it. Use of dogs may also be preferred over cats to kill rodents; anecdotally it has been observed that dogs usually kill the target animal only when under command of their guardians, while free-roaming cats often kill indiscriminately. Dogs can also be employed to locate wounded animals and thus facilitate a quicker death than if animal left to die of wounds. In contrast, other participants did not believe it is acceptable to “*pit one animal against another*” and observed that the safety and welfare of dogs can be compromised when the prey they are hunting is larger and potentially aggressive.

Asphyxiant traps

Since drowning was considered an unacceptable method it was also suggested that snare traps should also be on the list because both cause death by asphyxiation. Thus, it was also proposed that all asphyxiant traps should be on the unacceptable list. Other participants agreed that anything that causes slow asphyxiation is a concern however, each type of asphyxiant trap should be judged based on all relevant evidence about that particular trap. It was observed that even so-called kill traps do not kill instantaneously, and many take several minutes for animals to reach irreversible unconsciousness which would not be acceptable.

Carbon Dioxide (CO₂)

Participants observed that CO₂ is a chemical asphyxiant and that there is consensus in the scientific literature that CO₂ is highly aversive. However, not all agreed that it should be listed as an unacceptable method. It was argued that the irritation caused by CO₂ could be minimized but the mechanisms of other outcomes of CO₂ killing, such as breathlessness and air hunger are unclear and so these harms cannot yet be minimized. Harms from CO₂ killing of animals “in the field” were raised as wild animals will be highly stressed from being trapped, held and moved into a CO₂ kill chamber. It was observed that the mental experience might be different between drowning and CO₂.

Trapping and restraining devices

Participants discussed the mixed regulations surrounding trap types, for example in the US the acceptance of Conibear traps, snares and leghold traps varies from state to state. In NZ, leghold traps are banned except for “light-holding” leghold padded traps. In the UK, snares and spring traps can be used but with restrictions. Snares cannot be self-locking and must be checked once a day and while, in general, spring traps must be approved for use, approval is not required for mole traps or for break-back traps for rats or mice.

A few participants felt that use of any trapping/restraining device that requires checking should be unacceptable. In particular, because the placement of live traps can lead to death by exposure and because the methods commonly used to kill the trapped animals potentially cause a high degree of pain and distress (i.e. bludgeoning, injection of acetone to kill squirrels).

However, modifications and exemptions were also proposed. For example, live traps for certain species of docile animals (e.g. pigeons) with food and water provided could be acceptable. Similarly, an exemption for the use of limbhold/soft leghold traps for research purposes, provided the traps were equipped with devices to send cellular signals/ text messages when the trap was tripped.

Poisons

Participants discussed that cyanide is used in Australia and NZ and a large body of research has been carried out on its use, however the American Veterinary Medical Association concludes that cyanide is not an acceptable killing method. Similarly, in many jurisdictions anticoagulants are approved though they have very negative animal welfare effects. Similarly, in NZ a product may be exempted from the NZ Animal Welfare Act if the method is covered in another piece of legislation, for example poisons are allowed if they are registered in the Agricultural and Veterinary Act.

Carbon Monoxide (CO) from filtered car exhaust

Participants observed that in Australia, car exhaust filtered through water to deliver CO is acceptable if a petrol (not diesel) engine is used in a catalytic converter car and it is administered only in the first few minutes of ignition.

7. Forward Directions for AWPOs

7.1 Barriers to adoption of a common approach to wildlife control

Participants discussed and identified potential barriers that AWPOs may face as they attempt to improve the humaneness of wildlife control.

Distribution of responsibilities in governments

Participants observed that the distribution of responsibilities within a government may directly affect how a particular wildlife species is controlled. This complexity means that competing issues can affect decision-making. For example, wildlife management in South Africa is the responsibility of the Ministry of Agriculture; however, permits for capturing wild elephants are issued by a different ministry. Similarly, in the UK, the Home Office is responsible for animals classified for use in science while the Department for Environment, Food and Rural Affairs is responsible for decisions regarding farm animals and wildlife.

In some cases, several layers of government have similar responsibilities; for example, permits for wildlife control in the US are overseen by both state and federal hunting and trapping regulations. Similarly in Australia, responsibility for a species will be either a federal or state jurisdiction, therefore achieving national wildlife control changes requires eight different state governments to act.

Political and cultural considerations

Many participants commented that political and cultural issues can creep into wildlife control and wildlife management. Strong lobby groups often oppose new regulations and economic interests are often prioritized. One example is in the US, where hunting and trapping are considered wildlife control and therefore changes to wildlife control policies may affect recreational hunting and commercial trapping. Governments may also wish to avoid being litigated or challenged over wildlife control regulations, for example the South African government has been taken to court over regulations and lost. In addition, cultural barriers and entrenched habits and ways of doing things can be an impediment to adaptation of new practices and reconsideration of issues; for example, bounty hunting of wolves in Canada and foxes in Australia. Engagement of community is needed to affect the cultural issues.

Funding

Participants identified funding as another barrier to humane wildlife control, especially considering magnitude of some human-wildlife conflicts. Less costly methods might be used if the need is pressing, even if there is a high animal welfare cost, for example the use of 1080 to kill possums to protect NZ dairy herds and industry from tuberculosis.

There are also issues with the structure of government funding sources. Often funding cycles are too short, for example three years, but longer term funding is needed for wildlife control in order to reach goals. There is also a lack of funds for the development of new methods and to support the registration of new methods, which is often complex. Funding is needed because there are limited market incentives and commercial uses for these products. Many funding sources also focus on a single species rather than ecosystems and this species focus draws funding away from other issues such as invasive plants that may contribute to a human-wildlife conflict.

Lack of humane practical wildlife control methods

On-the-ground decisions need to be made when conducting wildlife control, for example killing a rat caught in a trap; however, often there is no appropriate method for use in the field. This applies to both professional pest control operators and the public. Participants suggested that AWPOs should also respond to the needs of members of the public who may find a rodent in their homes and wish to remove it.

Labelling and regulation of control devices

There is a lack of verified information about the efficacy and humaneness of control methods. For example, for cholecalciferol rodenticide, the research done to address product humaneness is privately held (by the company) and not peer-reviewed, but has still been registered by the Australian government. In BC, Canada there is no process for registration of most traps so they are not controlled. In contrast, the UK regulates spring traps and their use through legislation (although back-break and mole traps are exempted from the approval process) [18].

7.2 Opportunities to encourage adoption of humane wildlife control approaches

Participants discussed and identified ways that AWPOs could leverage their animal protection mandates to encourage wider adoption of humane wildlife control approaches.

Information coordination for AWPOs

Participants suggested it would be useful to have a website resource centre for existing wildlife control standards that other organisations can refer to when developing humane wildlife approaches for their own countries and species. Information coordination may also assist in identifying research that is needed and potential strategies to get novel control methods approved (for example, strategies used by biomedical researchers who wish to develop non-commercial medicines for extremely rare human diseases that do not present a financial incentive for pharmaceutical companies to develop).

Public engagement and communication

Participants reiterated the importance of engagement and education of the public on wildlife control issues. Communication based on wildlife animal welfare could be delivered through education and outreach programs as well as through the media. Social media to newspaper to radio news formats are all inter-connected but it is important to make sure the media uses AWPOs preferred language. It can be difficult to get people to feel sympathy for some animals, such as cane toads. However, charismatic animals could be leveraged.

Examples of success include: a community approach to bear-human conflict in BC, Canada which resulted in the *Bear Aware* program, providing public information on securing bear attractants and deterrents; and crocodiles in the Northern Territory of Australia where problem crocodiles are removed but there is still widespread recognition that this is crocodile habitat and the public is tolerant of that.

Engaging businesses

Businesses can also be targets for engagement and communication on wildlife control issues, in particular those that include an ethical framework in their ethical business plans. This could also form part of a wildlife control accreditation program; for example in the UK, part of the accreditation process for the RSPCA farm assurance scheme is the development of wildlife management plan. In Canada, the BC SPCA has been working to engage and educate the pest control industry through attendance at meetings and by working directly with them on wildlife control issues. Eventually, the BC SPCA hopes to further engage them through development of the HWCS and accreditation program and by providing training materials.

Legal options

Participants also identified that legal means may be effective to stop fraudulent use of the terms “humane” or “ethical” by pest control industry operators through consumer protection laws.

Animal welfare expertise (human resources)

Further development of animal welfare expertise such as through academic wildlife welfare centres³ was identified as an opportunity. In addition, it was suggested that AWPOs could build on the synergy of the Compassionate Conservation⁴ movement to develop expertise.

³ UK Wild Animal Welfare Committee <http://www.wawcommittee.org/>

⁴ <http://compassionateconservation.net/>

Intergovernmental agencies

Participants discussed the value of engagement with intergovernmental agencies in the promotion of human wildlife control approaches as they have influence over countries that may not respond to animal protection organisation advocacy. Participants identified the World Organisation for Animal Health (OIE) and the role its guidelines have in providing direction to its 180-country membership. For example, the stray dog section of the OIE terrestrial code. They also suggested involvement with the International Union for Conservation of Nature.

7.3 Promising novel wildlife control methods and strategies

Participants identified several novel wildlife control methods and strategies that they felt AWPOs should be aware of and potentially work to encourage.

Anesthetics administration for rodents

Using small scale drop method anesthetic administration for rodents; what percent of anesthetic gas is best has not yet been determined.

Target-specific methods

Rat-specific poisons are being studied such as norbormide. The animals currently reject oral administration (possibly due to side effect of dry mouth) but if that effect is overcome then it is a species-specific method that has a fast cardiac effect. Target specific delivery of cyanide for deer and goats is being explored in Australia. There is also a genetic method that could be used to alter a target animals' susceptibility to certain compounds (clustered regularly-interspaced short palindromic repeats, abbreviated as CRISPR and referred to as the Crisper technique). With this technique it is currently unclear about how will it get into population, how it would affect offspring and how it would be delivered.

Kill traps

Some buildings now have specific "built in" kill traps; when a rodent is trapped a signal is triggered for the trap to be checked. A new trap product called GoodNature that kills rats and possums by percussive strike to head was discussed.

Eviction-exclusion plans and strategies

This requires understanding how an animal uses a building/structure and when they have young. Reunion strategies are devised for parent-young because if the young are not removed from a structure then exclusion of the adult parent animal may fail.

Hazing

Use of hazing scare tactics and using odours to dissuade animals from entering a location were identified as positive. Similarly the use of controlled drones on pre-programmed flight patterns to scare birds from crops.

Education engagement communication

Participants discussed ways of engaging the public that have been successful, such as education and outreach about tolerance and coexistence and using signage to explain to the public about local animals (for example, that birds hanging around a local greenspace are just molting and will leave of their own accord if not fed). Resources and management plans for communities to adapt were also identified.

Fertility control

Fertility control has been used for pigeons and deer however these are not permanent and may be limited in effectiveness to a single or few years. Longer acting fertility control would be desirable.

Guarding animals

Use of guarding animals (dogs, donkeys and alpacas) is a way to protect herds and flocks from predation and some guidelines on this have been produced. However, guardian dogs are not companion animals and all guard animals must be habituated to the species they are guarding. There is a lack of information regarding the animal welfare outcomes of using guarding animals.

8. Conclusion

The Expert Forum achieved a broad survey of international wildlife control issues and achievements. It laid the foundation for the Consensus Principles and discussed how animal welfare acceptability criteria for wildlife control could be translated into a common approach to wildlife control for AWPOs. Repeatedly Export Forum participants identified the importance of public engagement and community involvement when developing solutions for human-wildlife conflict, suggesting AWPOs seek new ways to reach out to the public on these topics. The forum underlined that in wildlife control, the scale of the problem is important and it will be easier for AWPOs to apply humane criteria in situations that involve fewer animals, while larger populations present a much greater challenge. These discussions challenge AWPOs to find ways to encourage and motivate new method development and leverage their animal protection mandates in support of humane wildlife control approaches.

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Appendix 1: Expert Forum Participants and Agenda

Experts	Country	Affiliations
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Scott Carter, M.A.	United States	Chief Life Sciences Officer, Detroit Zoological Society
Barbara Cartwright, M.A.	Canada	Chief Executive Officer, Canadian Federation of Humane Societies
Federico Costa, Ph.D.	Brazil	Assistant Professor, Universidade Federal da Bahia, Salvador
Chris Draper, M.Sc.	United Kingdom	Programmes Manager (Captive Wild Animals/Science), Born Free Foundation
Sara Dubois, Ph.D.*	Canada	BC SPCA Chief Scientific Officer, University of British Columbia Adjunct Professor
David Fraser, Ph.D.*	Canada	Professor, Animal Welfare Program, University of British Columbia
Adam Grogan, B.Sc.	United Kingdom	Head of Wildlife, RSPCA UK
John Griffin, B.Sc.	United States	Director, Urban Wildlife Programs, Humane Society of the United States
Gregg Howald, M.Sc.	Canada	North America Regional Director, Island Conservation
Bidda Jones, Ph.D.	Australia	Chief Scientist, RSPCA Australia
Amanda Lombard, Ph.D.	South Africa	Research Associate, University of Cape Town
David Mellor, Ph.D.	New Zealand	Professor, Animal Welfare Science & Bioethics Centre, Massey University
Daniel Ramp, Ph.D.	Australia	Director, Centre for Compassionate Conservation, University of Technology Sydney
Catherine A. Schuppli, Ph.D. D.V.M.	Canada	Clinical Veterinarian & Sessional Lecturer, University of British Columbia
Trudy Sharp, Ph.D.	Australia	Ph.D. Graduate, Biological, Earth & Environmental Science, University of New South Wales
Industry & Government Representatives (Day 2 only)	Country	Affiliations
Scott Bennett	Canada	Pest Management Officer, BC Ministry of Environment
Andy Maganga	Canada	Canadian Pest Management Association Policy Committee, Abell Pest Control
Forum Assistants	Country	Affiliations
Nicole Fenwick, M.Sc.	Canada	Independent consultant and BC SPCA contractor
Elisabeth Ormandy, Ph.D.	Canada	Independent consultant
Erin Ryan, B.Sc.	Canada	BC SPCA Research Coordinator
Geoff Urton, M.Sc.	Canada	BC SPCA Senior Manager, Stakeholder Relations

*Forum hosts

Agenda - July 28 & 29, 2015

Day 1 began with setting the stage – including forum logistics, background, goals and objectives, and roundtable introductions. The role of the BC SPCA and the organisation's challenges and needs with respect to wildlife control was presented. A summary of the survey results by country were then presented. The remainder of the forum was focused on developing principles to guide humane wildlife control and was broken into four sessions. The afternoon of Day 1 included facilitated break-out sessions (2 groups).

Session I was a discussion of ethical decision-making, considering the following questions:

- 1) Should (and if so, how) the reason for control influence decisions about appropriate actions?*
- 2) Should (and if so, how) such factors be taken into account in deciding appropriate control actions?*
- 3) Should notions of fairness and leniency enter into decisions about wildlife control?*
- 4) Should we regard prolonging life as inherently good, or only instrumentally good inasmuch as it allows good quality of life?*
- 5) Under what conditions, if any, is lethal control preferable to non-lethal?*

Session II introduced and discussed the BC SPCA's proposed criteria for humane control. Questions asked included:

- 1) What points should be included within each criteria – adjust?*
- 2) What are other criteria not covered that should be added?*
- 3) Situations where criteria in general not applicable?*

Day 2 involved the participation of a Canadian industry member and a government representative and began with a group brainstorm during Session III: Barriers to Humane Standards. This session also included a discussion about unacceptable and novel methods, and how to leverage solutions to advance methods and standards. Questions included:

- 1) What are governance and standards barriers?*
- 2) What are practical/resource barriers?*
- 3) What are the knowledge/research barriers?*
- 4) Review methods that do not fit criteria but still in practice (Unacceptable)*
- 5) Discuss novel methods in emerging markets*
- 6) New research and science in the works?*
- 7) Where should leverage for change come from? Legislation, policy, humane movement (good and bad examples from countries) or industry interest in professionalism to advance methods/standards*
- 8) Where does some/all/none of these strategies work (which countries use which strategies well)*

Session IV integrated the ideas of all the previous sessions and participants began to draft and agree on a set of Consensus Principles for Humane Wildlife Control. The forum concluded with a discussion of next steps for individuals and for their organisations.

Appendix 2: Definitions

Animal welfare: The quality of life of an animal as measured by its biological functioning (including health and productivity), how the animal ‘feels’ (including measures of pain and preferences), and naturalness (including the animal’s ability to perform behaviours that are important to it)

Animal Welfare and Protection Organisations (AWPOs): A charitable organisation primarily dedicated to protecting and improving the welfare of animals through its operations and/or advocacy; may have a legal animal protection role to enforce animal cruelty legislation; including, but not limited to: SPCAs (Societies for the Prevention of Cruelty to Animals), humane societies, advocacy organisations, foundations and sanctuaries

Control: see Wildlife Control

Cull: Intentional killing of members of a wild animal population

Distress: A severe negative affective state caused by physical and/or psychological factors: physical distress may arise when an animal is hungry, thirsty, too hot, too cold, diseased, injured or in pain to an elevated degree; psychological distress may arise when an animal experiences fear, anxiety, frustration, depression or anger to an elevated degree

Eradication: Complete removal of a population of animals from a location

Ethical wildlife control: the acceptability of a wildlife control action based on a comprehensive analysis that includes the control action’s necessity, benefits, feasibility, costs to people and animals, alternatives, and effects on animal welfare in terms of the humaneness of the physical methods employed

Feral: Domesticated animals who have partially or fully readapted to natural, wild habitats

Humane: Actions that promote good welfare and minimize the amount (severity, duration, and the number of animals affected) of animal suffering (pain, fear or other negative states)

Human-wildlife conflict: The interaction between wild animals and people and the resultant negative impact on people or their resources, or wild animals or their habitat

Intervention: the action or process of intervening with wildlife that is in conflict with humans

Invasive species: An introduced animal species with demonstrated and measureable negative impact on the environment

Lethal: A control method that is intended to kill the target animal

Native (indigenous): An animal species originating or occurring naturally in a particular place

Non-lethal: A control method that is not intended to kill or cause long-term harm to the target animal

Non-native (non-indigenous): Introduced animals, including feral populations of domesticated animals and non-indigenous animals; may or may not have negative impacts on local environment

Non-target: Animals or species that are not the object, or target, or wildlife control activities that may incur unintended effects

Pest: An ambiguous, value-based term for unwanted wildlife (note the term “nuisance” is used in place of “pest” by the BC SPCA)

Pest control: An industry term used to describe the lethal and/or non-lethal management of invertebrate and vertebrate animals, which aims to restrict activity (i.e. killing, relocation, translocation, exclusion) of animals that are deemed troublesome to people through their direct or indirect activities

Target: An animal or species that is the object of wildlife control activities

Wild animals or Wildlife: Species that have evolved in complex ecosystems resulting in mutual interdependencies with other animals and the surrounding environment

Wildlife control: Lethal and/or non-lethal management of invertebrate and vertebrate animals defined as wildlife, which aims to restrict animal activity (i.e. killing, relocation, translocation, exclusion)

Appendix 3: Comparison of Sets of Principles for Humane Wildlife Control

Principle Topic	RSPCA Australia (2003)	Humane Vertebrate Pest Control Working Group (2004)	Littin et al. (2004)	PestSmart (2014)	Hadidian (2015)	Expert Forum Consensus (2016)
Human Behaviour				1. A pest is a human-defined idea		1. Human-wildlife conflicts arise from human activities, and should be prevented and mitigated by altering human practices wherever possible, and by developing a culture of co-existence
Justification	1. Justification for control 2. Lethal control methods should only be sanctioned where no effective, humane, non-lethal alternative method of control is available	1. The aims or benefits and the harms of each control program must be clear; control should only be undertaken if the benefits outweigh the harms	1. The aims or benefits and the harms of each control programme must be clear		1. The need to act must be clear (justification)	2. The need for wildlife control should be justified with evidence that significant harms are being caused to people, property, livelihoods, ecosystems and/or animals
Achievable Outcomes	3. Probability of success: Any measures taken to reduce or otherwise control pest animals must have a high probability of success in reducing the adverse impact of the target animal	2. Control should only be undertaken if there is a likelihood that the aims can be achieved 4. The methods that most effectively and feasibly achieve the aims of the control program must be used	2. Control must only be undertaken if the aims can be achieved 3. The methods that most effectively achieve the aims of the control programme must be used	4. Most pest management needs to focus on the outcome, not just killing pests	2. Any benefits sought must be realistic (achievability) 3. The methods to be employed must be able to achieve benefits (effectiveness)	3. The desired outcome of a wildlife control action should be clear, achievable, and monitored, with lessons learned so that future control can be improved

Principle Topic	RSPCA Australia (2003)	Humane Vertebrate Pest Control Working Group (2004)	Littin et al. (2004)	PestSmart (2014)	Hadidian (2015)	Expert Forum Consensus (2016)
Animal Welfare	<p>5. Target-specificity: Control programs should be target-specific</p> <p>6. Humaneness: [RSPCA is] opposed to inhumane methods of controlling wild animal populations. This applies equally to native and to introduced animals</p>	<p>3. The most humane methods that will achieve the control program's aims must be used (this requires an assessment of the humaneness of all existing methods)</p> <p>5. The methods must be applied in the best possible way</p>	<p>4. The methods must be applied in the best possible way</p>		<p>4. The approach must be targeted to the problem-causing individuals. (specificity)</p> <p>5. The methods used must be the most humane available (welfare priority)</p>	<p>4. Methods chosen for the control action should predictably and effectively cause the least animal welfare harms to the least number of animals</p>
Social Acceptability				<p>2. Key stakeholders need to be actively engaged and consulted</p>		<p>5. Decisions to control wildlife should be informed by the range of community values alongside scientific, technical and practical information</p>

Principle Topic	RSPCA Australia (2003)	Humane Vertebrate Pest Control Working Group (2004)	Littin et al. (2004)	PestSmart (2014)	Hadidian (2015)	Expert Forum Consensus (2016)
Systematic planning/monitoring	4. Coordinated and strategic approach	6. Whether or not each control program actually achieved its aim must be assessed 7. Once the desired aims or benefits have been achieved, steps must be taken to maintain the beneficial state	5. Whether or not each control programme actually achieved its precise aim must be assessed 6. Once the desired aims or benefits have been achieved, steps must be taken to maintain the beneficial state	5. A whole of system approach is required for managing pest damage 7. An effective monitoring and evaluation strategy is essential for all management action	6. The consequences of actions must be amenable to evaluation (monitoring) 7. The benefits achieved must be maintained (follow-up)	3. The desired outcome of a wildlife control action should be clear, achievable, and monitored, with lessons learned so that future control can be improved 6. Decisions to control wildlife should be integrated into a program of long-term systematic management
Avoid Species Bias	6. Humaneness: [RSPCA is] opposed to inhumane methods of controlling wild animal populations. <i>This applies equally to native and to introduced animals</i>					7. Decisions to control wildlife should be based on the specifics of the situation, not broad categories applied to the target species
Knowledge		8. There should be research to reduce the negative animal welfare impacts of existing control methods and to develop novel methods that cause less pain and distress		3. Pests are rarely eradicated 6. Most pest management occurs in ecosystems of which our knowledge is incomplete		