Guidelines for the Euthanasia and Humane Killing of Migratory Birds in Canada, Under Damage or Danger or Avicultural Permits

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1. SCOPE

This document provides information on currently accepted practices in Canada for killing wild birds. This information applies to people killing migratory birds in Canada under Damage or Danger or Avicultural permits issued under the Migratory Birds Regulations (MBR).

NOTE: Migratory birds protected under the Migratory Birds Convention Act (MBCA) and the Migratory Birds Regulations may only be killed under the authority of a permit. Those permits include Avicultural and Damage or Danger permits issued by the Canadian Wildlife Service. For species not protected under the MBCA, contact your provincial or territorial agency regarding permit requirements.

It is the responsibility of the person or agency employing any techniques to obtain all the necessary permits and engage, as required, with government agencies including municipalities, provinces and territories, federal departments and Indigenous communities. People employing these techniques should be aware of and must comply with all relevant animal cruelty laws. For example, Sections 445 to 446 of the *Criminal Code of Canada* protect birds from cruelty, abuse and neglect.

2. DEFINITIONS & CRITERIA FOR EUTHANASIA AND HUMANE KILLING METHOD

In this document, methods for euthanasia and humane killing are described. These terms are defined by the American Veterinary Medical Association (AVMA, 2013, p. 98) as:

> Euthanasia: A method of killing that minimizes pain, distress, and anxiety experienced by the animal prior to loss of consciousness, and causes rapid loss of consciousness followed by cardiac or respiratory arrest and death.
>
> Humane killing: killing performed in a manner that minimizes animal distress, but may not meet the requirements of euthanasia due to situational constraints.

Euthanasia is preferred over humane killing if the conditions are suitable.

Euthanasia and humane killing should result in rapid loss of consciousness followed by cardiac or respiratory arrest and the ultimate loss of brain function (AVMA, 2013). In addition, the technique should **minimize or eliminate pain, fear and distress** experienced by the animal prior to loss of consciousness. For example, any technique that does not require capturing or transporting the birds will minimize fear and stress. However, the absence of pain and distress cannot always be achieved so the application of best practices ensures that "if an animal's life is to be taken, it is done with the highest degree of respect, and with an emphasis on making the death as painless and distress-free as possible" (AVMA, 2013, p. 7). Different situations will require different techniques, so when choosing one method over another, one should "attempt to balance the ideal of minimal pain and distress with the reality of the many environments in which the killing is performed" (AVMA, 2013, p. 7).

All techniques should minimize or eliminate pain, fear and distress, and provide a humane death for the bird. Techniques should be reliable, reproducible, irreversible, simple, safe and rapid (CCAC, 2010). The following criteria for euthanasia or humane killing and other considerations are adapted or taken from EC-CWS, Migratory Birds in Research: Animal User Training (2008) and AVMA Guidelines for the Euthanasia of Animals (2013):

- Proper handling is required to minimize pain, fear and distress in birds, to ensure the safety of the person performing euthanasia or humane killing, and, often, to protect other people and birds.
- Personnel who perform euthanasia or humane killing must be proficient in the use of the techniques.
- To avoid distress, personnel employing the technique should strive to kill the bird within the bird's physical and behavioural comfort zones (e.g., preferred temperature, natural habitat).
- Unless there is a specific reason, it is recommended that techniques to kill birds that can be employed on site be used; capturing and transporting birds to another location will add stress to the process and should be avoided as much as possible.
- Stress to the bird, personnel and onlookers should be minimized. Human psychological responses to killing should be taken into consideration when selecting the method of killing, but should not take precedence over animal welfare considerations.
- It is imperative that death be verified, by examining the bird for cessation of vital signs after the technique is employed. For example, an animal in deep narcosis following administration of an injectable or inhalant agent may appear to be dead, but might eventually recover.
- **The following three-step process should be employed systematically and as rapidly as possible**:
    1. Step 1: Employ the primary method of euthanasia or humane killing.
    2. Step 2: Check for a lack of vital signs, for example, lack of pulse, lack of breathing, lack of corneal reflex.
    3. Step 3: A secondary (adjunctive) technique should be employed to reconfirm death and all cessation of brain and cardiac function. Recommended secondary techniques include cervical dislocation, decapitation, exsanguination (through severance of carotid or axillary arteries), or rapid cardiac compression (in small birds), as dictated by the circumstances and environment at the time.

The preferred method for killing wild birds depends on the particular situation involved. Whichever method is selected as being most appropriate, killing must be done as privately as possible, preferably beyond auditory and visual range of other birds, and the carcasses disposed of appropriately (see section 4).

3. LIST OF EUTHANASIA AND HUMANE KILLING TECHNIQUES

A list of techniques for euthanasia and humane killing of migratory birds, as well as considerations for each technique, is given in Table 1. **Only the techniques listed in Table 1 can be used to kill Migratory Birds under Damage or Danger or Avicultural Permits; all other techniques are considered unacceptable.** The list of techniques was adapted from the AVMA Guidelines for the Euthanasia of Animals (2013), the Canadian Council on Animal Care Guidelines on euthanasia of animals used in science (2010) and in consultation with

veterinarians at the Canadian Wildlife Health Cooperative. Details on how to use the techniques and detailed evaluation of each technique's advantages and disadvantages can be found in AVMA (2013). As a general consideration, personnel who perform euthanasia must be adequately trained and proficient in the use of the employed technique.

Table 1. List of techniques of euthanasia and humane killing of wild birds.

Category	Technique	Considerations
Noninhaled agents	Injectable pharmaceuticals (e.g., barbiturates, T-61)	- This is one of the quickest and most reliable means of euthanizing birds, particularly for people with appropriate skills in restraining and injecting birds. - This method is acceptable as a primary or secondary (adjunctive) technique to kill the bird, as part of the three-step process. - **Barbiturates** are controlled drugs that must be given intravenously, and their possession and use require the appropriate licenses, which are usually restricted to the medical and veterinary professions. **A licensed veterinarian is required to administer these drugs.** - **T-61** is not a controlled drug and therefore can be used by a trained layperson, but it must be given intravenously, implying the need for proficiency. **A veterinarian or veterinary technician with the appropriate skills should administer this drug.** - Need to consider how to minimize fear and distress, for example with added sedation or by covering the bird's head. - In order to minimize handing time and ensure effective euthanasia, the approximate weight range of the species involved should be known before birds are handled. Based on this information, the dosage of the euthanizing agent should be calculated, and doubling this dose in order to ensure euthanasia is achieved is recommended.
Inhaled agents	Overdose of inhaled anesthetics (e.g., isoflurane)	- Inhaled anesthetics can be used to anesthetize birds prior to euthanasia or humane killing. - Alternatively, a prolonged overdose of inhaled anesthetic eventually leads to cessation of breathing and death. - The bird should be placed in a tightly closed container, such as a bag or a bucket with lid, together with a cotton ball or rag soaked with the inhalation anesthetic. The container should be dark to reduce the bird's stress. - This method is acceptable as a primary or secondary (adjunctive) technique to kill the bird, as part of the three-step process. However, if it is used as a primary technique, a secondary method should be employed in order to ensure death of the bird. - Isoflurane is not a controlled substance, but its use is restricted to, or by order of, a licensed veterinarian. -The safety of the personnel employing this technique, particularly pregnant women, must be considered in order to avoid exposure to the vapours. Use of inhalant anesthetics must not be done in a confined environment. - The efficiency of this technique varies, depending on the ability of birds to hold their breath (e.g., it may be less effective for diving birds). In addition, the size of the bird and associated lung capacity must be considered as the technique requires more inhalant anesthetic and may take a longer time to kill a large bird.
Physical methods (If feasible, the animals should be	Gunshot (shotgun or rifle)	**- Holders of an Avicultural Permit under the Migratory Birds Regulations are prohibited from using this technique.** - Holders of a Damage or Danger Permit under the Migratory Birds Regulations must obtain the necessary permits and permissions to allow discharge of a firearm at the prescribed time and location.

Category	Technique	Considerations
anesthetized prior to use of these methods.)		- The use of a firearm presents inherent risks, so this method should only be performed by highly trained and skilled personnel. - All regulations regarding the use of firearms must be strictly observed at all times. The safety of personnel, the public, and other animals that are in the area needs to be taken into consideration. - The preferred target area is the head as it is likely to cause instant loss of consciousness. If this target is judged to be too small, a shot to the thorax (heart and lungs) will also ensure death, but time to death may be delayed. - The use of non-toxic ammunition is required. - This method is acceptable as a primary or secondary (adjunctive) technique to kill the bird, as part of the three-step process. - As an emergency measure, if the bird is injured but not killed, the shooter must make every effort to retrieve the bird and kill it through another method.
	Cervical dislocation (or cervical crushing using castration forceps)	- This method is acceptable as a primary or secondary (adjunctive) technique to kill the bird, as part of the three-step process. - Should only be performed by **well-trained personnel** to ensure proficiency. - Manual cervical dislocation is mostly suitable for small birds (< 200 g). Neck muscles are stronger in larger birds, therefore cervical dislocation must be conducted using a mechanical cervical dislocation device (e.g., the Koechner Euthanizing Device, also referred to as “a necker”). Castration forceps (burdizzos) may also be used. These do not cause cervical dislocation; instead, they sever or crush the vertebrae and the blood vessels. - Following the dislocation or crushing, birds may convulse (e.g., wing flapping) which can be disconcerting for users and observers.
	Decapitation	- This method is acceptable as a primary or secondary (adjunctive) technique to kill the bird, as part of the three-step process. - This method can be performed using a guillotine or a sharp hatchet with a board or any hard surface. For very small chicks, decapitation can be done using a sharp pair of scissors. - All equipment must be maintained in good working order and killing devices kept sharp as this will ensure quick decapitation. Equipment should be checked prior to capturing birds in order to minimize handling time. - Covering the bird’s head prior to decapitation (e.g., with a sock) will limit stress. - Personnel must be fully trained in bird handling and in operating the equipment and must take precautions to prevent personal injury. - Following decapitation, birds might convulse (e.g., wing flapping), which can be disconcerting for users and observers.
	Manually applied blunt force trauma to the head	- This method **is only acceptable as a primary technique in the case of an emergency killing (e.g., a bird is fatally injured or is experiencing severe pain and distress).** - To deliver the blow, a metal pipe or metal bat can be used (Erasmus et al. 2010). For small birds that can be easily handled, holding the bird and hitting its head against a table or other stationary object is also acceptable.

Category	Technique	Considerations
		- **The skull must be palpated immediately afterwards in order to ensure that it has been crushed.** - Birds might convulse (e.g., wing flapping), which can be disconcerting for users and observers.
	Rapid Cardiac Compression (RCC) (Engilis et al. 2018)	- This method is **only acceptable as a primary technique if the bird has been anesthesized;** it is acceptable as a secondary (adjunctive) technique to kill the bird, as part of the three-step process. - Sufficient pressure must be applied in order to cause death, therefore this technique is acceptable only for very small birds (e.g., less than 100 g). - This should be employed only by an expert comfortable with the technique.
	Exsanguination	This method is **only acceptable as a secondary** (adjunctive) method to ensure death of the bird, as part of the three-step process. It can be achieved by severance of both axillary arteries or both carotid arteries.

In Table 2 we provide information on average weights and size classes for eleven common bird species in Canada. The list is not exhaustive, it is provided in order to help practitioners evaluate euthanasia and humane killing techniques where the weight and size of the birds are of consideration. Information for other species can be found on the Cornell All About Birds Website (https://www.allaboutbirds.org/; available only in English) or The Birds of North America (https://birdsna.org/Species-Account/bna/home; by subscription only, available only in English).

Table 2. Average weight of common wild bird species*

Species	Average weight (in grams)	General size class
Dark-eyed Junco	18 g – 22 g	Small
House Sparrow†	27 g – 29 g	Small
American Robin	75 g – 85 g	Small
Blue Jay†	70 g – 100 g	Small
Pileated Woodpecker	250 g – 350 g	Medium
Rock Pigeon†	330 g – 370 g	Medium
American Crow†	450 g – 550 g	Medium
Ring-billed Gull	470 g – 550 g	Medium
Herring Gull	800 g – 1,250 g	Large
Mallard	950 g – 1,300 g	Large
Canada Goose	1,000 g – 5,000 g	Very large

*Adapted from Cornell Lab of Ornithology, The Birds of North America (https://birdsna.org/Species-Account/bna/species). Accessed Jan. 19, 2019). The weights provided are an average range for adult individuals and may vary depending on age, sex, and geographic area.

†: These species are not protected under the Migratory Birds Convention Act (MBCA) and the Migratory Birds Regulations (MBR), they may be protected under provincial or territorial legislation. If required, contact the wildlife authorities in your jurisdiction for additional information.

4. CARCASS DISPOSAL

Consumption is allowed for birds killed under some types of permits, including avicultural permits. For other types of permits, the following general principles apply regarding carcass disposal:

- **Death must be confirmed before disposal of any bird carcasses.** Initially in the process of euthanasia, and depending on the method used, the bird may shudder and stiffen, and it may shake its head and close its eyes; agonal gaping may occur; some birds may erect their feathers, particularly on the head and dorsal region of the neck (Engilis et al. 2018). Complete relaxation of the body, including neck, wings and legs, cessation of respiration, loss of corneal reflex, and dilatation of pupils confirm death. Nonetheless, beyond this point, the bird should continue to be monitored for at least an additional 60 seconds to ensure that no vital signs reappear.
- When disposing of bird carcasses, public concern must be taken into account.
- Carcasses being transported or temporarily stored in a vehicle should be covered.
- Acceptable disposal methods include incineration or liming the carcass and immediately burying in a deep hole according to local laws and regulations.
- A carcass may be discarded or buried on the property where it was taken or deposited on another property if approved by that property owner.
- Carcasses may be disposed of at landfills where animal disposal is permitted. The carcasses should be placed in bags. They should not be deposited in garbage dumpsters, unless prior approval is obtained.
- Carcasses may be incinerated in approved facilities that comply with local regulations. In rural areas, where no laws or bylaws would prevent doing so, carcasses may be burned along with other disposed items in burning barrels or waste pits.
- In the case of Kill-to-Scare (as stated in a Damage or Danger permit issued under the Migratory Birds Regulations), carcasses should be left in the open to act as a deterrent whenever possible. In any other situation (for example, on rooftops where leaving carcasses is not possible for human health reasons), the carcasses must be disposed of in appropriate manner.
- When pharmaceutical agents or lead-based ammunition were used to kill the birds, the carcasses must be disposed of in a way to ensure that the chemicals do not enter the food web.
- Biosafety, suspicion of disease, and other considerations not covered in this document should be addressed with the proper authorities. The Canadian Wildlife Health Cooperative (www.cwhc-rcsf.ca) can be consulted for guidance.

REFERENCES

American Veterinary Medical Association (AVMA). 2013. Guidelines for the Euthanasia of Animals: 2013 Edition. 102 p. https://www.avma.org/KB/Policies/Documents/euthanasia.pdf

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