
1. PURPOSE

This Standard Operating Procedure (SOP) describes the acceptable methods for euthanasia of avian species

2. RESPONSIBILITY

Principal investigator (PI) and their research staff, veterinary care staff.

3. MATERIALS

- 3.1. Injectable agents (sodium pentobarbital)
- 3.2. Needles, syringes
- 3.3. Inhalant agents (isoflurane) and clear chamber
- 3.4. Decapitation device
- 3.5. Shotgun

4. PROCEDURES

- 4.1. Ensure that all individuals responsible for euthanasia:
 - 4.1.1. Receive appropriate training to perform the procedure.
 - 4.1.2. Adhere to Facility Animal Care Committee (FACC)-approved protocols and institutional policies.
 - 4.1.3. Select the method of euthanasia based on the species and the objectives of the protocol.
- 4.2. Minimize distress to the animal as well as to the operator by handling the bird gently and carefully.
- 4.3. Avoid the euthanasia of birds in the presence of other birds and/or animals.
- 4.4. Verify death prior to disposal of the body. Confirm by:
 - 4.4.1. Observing for the absence of movement.
 - 4.4.2. Observing for the absence of respiratory and heartbeat activity for at least 3 minutes.
 - 4.4.3. Check eye and toe pinch reflex.
- 4.5. Non-Physical Methods:
 - 4.5.1. Barbiturate overdose
 - 4.5.1.1. Inject sodium pentobarbital intra-peritoneally or intra-venously at a dose of 120 mg/kg
 - 4.5.1.2. When IV injection is impossible, injectable euthanasia agents can be administered via intracoelomic, intracardiac, or intraosseous routes only if a bird is unconscious or anesthetized.
 - 4.5.2. Inhalant anesthetic overdose (Isoflurane):
 - 4.5.2.1. Should be followed by other methods (i.e. cervical dislocation) to ensure death.
- 4.6. Physical methods:
 - 4.6.1. Except in field situations away from syringes, anesthesia or sedation must be given prior to the use of any of the following physical techniques (except shotgun) unless scientifically justified by the user and approved by the FACC.
 - 4.6.2. Use cervical dislocation (dislocation of the neck) for birds less than 2.3 kg. This method should only be performed by well-trained personnel who are regularly monitored to ensure proficiency.
 - 4.6.3. Use decapitation for birds less than 200 g. Perform decapitation with clean, sharp equipment that will ensure that the head is separated from the body rapidly and completely.

- 4.6.4. Use thoracic compression as a secondary method for animals that are deeply anesthetized or insentient; do not use on conscious, unanesthetized birds.
- 4.6.5. Use shotgun for wild animals only in areas where discharge of firearms is lawful and permission of landowner and all necessary provincial and federal permits are obtained.
- 4.6.6. Verify death as in Section 4.4.
- 4.7. Embryos, Eggs:
 - 4.7.1. For embryos, eggs >50% gestation, use methods appropriate for hatched birds (e.g., decapitation, overdose of anesthetic)
 - 4.7.2. For embryos, eggs <50% gestation, (under field conditions), destroy the viability of eggs by one of the following methods: shaking, puncturing, freezing, or coating eggs with oil.

5. REFERENCES

- 5.1. American Veterinary Medical Association. [AVMA Guidelines for the Euthanasia of Animals: 2020 Edition](#).
- 5.2. Canadian Council on Animal Care. [CCAC guidelines on euthanasia of animals used in science](#) (2010).
- 5.3. Environment and Climate Change Canada. [Guidelines for the Euthanasia and Humane Killing of Migratory Birds in Canada, Under Damage or Danger or Avicultural Permits, 14 February 2020](#).

SOP REVISION HISTORY

DATE	NEW VERSION
2021.05.14	3.3 Inhalant agents (CO ₂ , isoflurane) and clear chamber
2021.05.14	4.5.1.2. When the intracoelomic (IC) route of administration is used, place the bird in a small cage in a quiet area to minimize excitement and trauma, as birds may be slow to become sedated.
2021.05.14	4.5.1.2. When IV injection is impossible, injectable euthanasia agents can be administered via intracoelomic, intracardiac, or intraosseous routes only if a bird is unconscious or anesthetized.
2021.05.14	4.5.2. Inhalant anesthetic overdose (Isoflurane):
2021.05.14	4.5.2.1. CO₂: 4.5.2.1.1 Use compressed CO₂ from cylinders; dry ice is not permitted as a CO₂ source. 4.5.2.1.2 Use the CO₂ in a chamber that is clear so that the bird can be observed. 4.5.2.1.3 Do not overcrowd the chamber or mix species within the chamber. 4.5.2.1.4 Set a flow rate that displaces 20% of the chamber volume per minute. 4.5.2.1.5 Sanitize the chamber after each session. 4.5.2.1.6 Neonatal and diving birds are tolerant of high concentrations of CO₂. Prolonged exposure to high concentrations of CO₂ will be required to produce death (e.g., up to 5 minutes in 60–70% CO₂ for 1-day-old chicks).
2021.05.14	4.6.2. Use cervical dislocation (dislocation of the neck) for birds less than 200g 2.3 kg . This method should only be performed by well-trained personnel who are regularly monitored to ensure proficiency.
2021.05.14	4.6.4. Use thoracic compression only as a last choice for small to medium size free-ranging birds when a preferred method is not possible (e.g., field work) as a secondary method to confirm euthanasia for animals that are deeply anesthetized or insentient; do not use on conscious, unanesthetized birds.
2021.05.14	5. REFERENCES 5.1. American Veterinary Medical Association. AVMA Guidelines for the Euthanasia of Animals: 2020 Edition. 5.2. Canadian Council on Animal Care. CCAC guidelines on euthanasia of animals used in science (2010). 5.3. Environment and Climate Change Canada. Guidelines for the Euthanasia and Humane Killing of Migratory Birds in Canada, Under Damage or Danger or Avicultural Permits, 14 February 2020.