



IACUC Guidance:	<b>TAMU-G-025</b>	Title:	<b>Guidelines on Physical Methods of Euthanasia in Warm Blooded Species</b>
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	Location	Effective Date	Review By
	<b>College Station/Dallas/Galveston/Kingsville</b>	10/20/2022	02/28/2025
	<b>Houston</b>	04/01/2022	02/28/2025

**1. PURPOSE**

- 1.1. To describe physical methods of euthanasia in warm blooded species used for research, teaching, testing and other purposes at Texas A&M University, as these require the most skill to perform.
- 1.2. To provide instructions on the use and maintenance of guillotines and other equipment used for physical methods of euthanasia.

**2. SCOPE**

- 2.1. Applies to commonly used methods of euthanasia. For a complete review, see the current AVMA Guidelines on Euthanasia.
- 2.2. Refers to applicable species that are pre-sedated or anesthetized before performing physical method of euthanasia unless precluded by scientific considerations and specifically justified to, and approved by, the IACUC.
- 2.3. Does not apply to depopulation.
- 2.4. For guidance regarding euthanasia for fish, amphibians and reptiles, see TAMU-G-048.

**3. RESPONSIBILITY**

- 3.1. The **PI** is responsible for:
  - 3.1.1. Ensuring that any euthanasia method that deviates from the AVMA Guidelines on Euthanasia is justified for scientific or medical reasons and is described in the approved animal use protocol.
  - 3.1.2. Describing use of the guillotine or scissors in the approved animal use protocol and ensuring that anyone using the equipment is properly trained.
    - 3.1.2.1. Ensuring the equipment used for decapitation is clean, sharp and in good working order.
    - 3.1.2.2. The PI will create an SOP for ensuring guillotine sharpness.
  - 3.1.3. Ensuring that animals are euthanized using appropriate technique, equipment and agents, as outlined in the approved animal use protocol.
  - 3.1.4. Training personnel to minimize distress and to recognize and confirm death.
  - 3.1.5. Monitoring personnel for ongoing proficiency of each type of physical method performed to ensure euthanasia is conducted appropriately.
  - 3.1.6. Documenting training according to TAMU-G-029.
  - 3.1.7. Completing certification of competency according to TAMU-G-029.
  - 3.1.8. Reporting animal concerns and potential noncompliance according to TAMU-G-015, which includes failure to ensure death of animals after euthanasia procedure (e.g., animal recovers from euthanasia)
  - 3.1.9. Obtaining and abiding by any applicable wildlife permits.
- 3.2. The **IACUC** is responsible for:
  - 3.2.1. Reviewing and approving methods of euthanasia proposed in the AUP with special consideration for scientifically justified methods of euthanasia that deviate from the current AVMA Guidelines on Euthanasia.
- 3.3. The **AWO** staff is responsible for:
  - 3.3.1. Notification of PI when competency certification is required as a part of the administrative pre-review for protocols and amendments proposing physical methods of euthanasia without pre-sedation as described in TAMU-G-029.

- 3.4. The IACUC, CMP/ARU/PAR/PRF staff, AWO Animal Activity Liaison, or other as defined in TAMU-G-029, is responsible for evaluating competency of physical methods of euthanasia performed without pre-sedation/anesthesia.

#### **4. DEFINITIONS AND/OR ACRONYMS**

- 4.1. **Acceptable:** A method considered to reliably meet the requirements of euthanasia. Also see EUTHANASIA.
- 4.2. **Acceptable With Conditions:** A method considered to reliably meet the requirements of euthanasia when specified conditions are met. Also see EUTHANASIA.
- 4.3. **Adjunctive Method:** A method of assuring death that may be used after an animal has been made unconscious.
- 4.4. **Altricial Neonate:** An animal in the first week of life that is incapable of independent activities
- 4.5. **Animal Activity Liaison:** AWO staff member providing education, outreach and post-approval monitoring. See also PAM.
- 4.6. **AUP:** Animal Use Protocol. Document submitted by the PI indicating the housing and procedures involving animals.
- 4.7. **AV:** Attending Veterinarian. Individual designated by Texas A&M University to fulfil the regulatory role of AV. May also describe veterinary staff who report directly, and have delegated authority from, the AV.
- 4.8. **AVMA:** American Veterinary Medical Association. Nation's leading advocate for the veterinary profession through a variety of avenues including education programs and the provision of position statements on key issues including humane euthanasia, i.e. AVMA Guidelines for the Euthanasia of Animals.
- 4.9. **AWO:** Animal Welfare Office. Supports the IACUC administratively.
- 4.10. Centrally administered support service for animal research and teaching programs at Texas A&M University:
  - 4.10.1. **ARU:** Animal Resource Unit supports the College of Dentistry vivarium
  - 4.10.2. **CMP:** Comparative Medicine Program supports the Texas A&M College Station campus
  - 4.10.3. **PAR:** Program for Animal Resources supports the Institute of Biosciences and Technology vivarium
  - 4.10.4. **PRF:** Pharmaceutical Research Facility supports the Kingsville Pharmaceutical Science Facility vivarium
  - 4.10.5. **Sea Life:** The Sea Life Facility support the Galveston campus
- 4.11. **Cervical Dislocation:** A physical method of euthanasia that must meet a performance standard of luxation of the cervical vertebrae without primary crushing of the vertebrae and spinal cord – inducing very rapid unconsciousness.
- 4.12. **Depopulation:** The rapid destruction of a population of animals in response to urgent circumstances with as much consideration given to the welfare of the animals as practicable.
- 4.13. **Distress:** The effect of stimuli that initiate adaptive responses that are not beneficial to the animal—thus, the animal's response to stimuli interferes with its welfare and comfort.
- 4.14. **Euthanasia:** A method of humane destruction 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.
- 4.15. **Guidance:** Guidance documents are developed by the IACUC to provide procedural standards to the research community on the topics identified. Animal care and use program participants are expected to adhere to the standards described unless an exception has been requested and approved by the IACUC.
- 4.16. **Humane Killing:** Killing performed in a manner that minimizes animal distress, but may not meet the requirements of euthanasia due to situational constraints.
- 4.17. **IACUC:** Institutional Animal Care and Use Committee. Institutional body responsible for ensuring adherence to federal regulation and institutional policy relating to the care and use of animals in teaching, testing and research. Appointed by the Institutional Official.
- 4.18. **(Semiannual) IACUC Inspection:** The inspection, at least semiannually, of the institution's animal facilities, satellite housing and animal study areas where surgery occurs.

- 4.19. **NPCB:** Non-penetrating Captive Bolt
- 4.20. **PAM:** Post-Approval Monitoring. Mechanism used for continuing IACUC oversight of animal activities within the animal care and use program.
- 4.21. **PCB:** Penetrating Captive Bolt
- 4.22. **Physical methods of euthanasia:** As described in the AVMA Guidelines for the Euthanasia of Animals. Include, but are not limited to, include captive bolt, gunshot, cervical dislocation, decapitation, electrocution, blunt force trauma to the head, kill traps, focused beam microwave irradiation, thoracic compression, maceration and some adjunctive methods (exsanguination, NPCB/stunning, and pithing).
- 4.23. **PI:** Principal Investigator. The individual who has ultimate administrative and programmatic responsibility for the design, execution, and management of a project utilizing vertebrate animals.
- 4.24. **Secondary Method:** A euthanasia method employed subsequent to a primary method to ensure death of an unconscious animal before it can recover consciousness. Also, see adjunctive method.
- 4.25. **SOP:** Standard Operating Procedure
- 4.26. **Thoracic (cardiopulmonary, cardiac) Compression:** Method that has been used by biologists to terminate the lives of wild small mammals and birds, mainly under field conditions
- 4.27. **Unacceptable:** A method that does not meet the requirements of euthanasia

## 5. GUIDELINES OR PROCEDURE

### 5.1. General Guidelines and Considerations:

- 5.1.1. Euthanasia must be performed as per the approved protocol
- 5.1.2. Should be performed in an area that is isolated from other animals, where practical, and free of distractions for the individual performing the procedure.
- 5.1.3. A minimum number of animals should be brought into the euthanasia area while the procedure is being conducted.
- 5.1.4. Inexperienced persons should be trained by experienced persons and should practice on euthanized animals or anesthetized animals to be euthanized until they are proficient in performing the method properly and humanely.
- 5.1.5. Training records documenting competency of the performance of physical methods of euthanasia must be maintained in the laboratory as outlined in TAMU-G-029.
- 5.1.6. Training records, equipment, SOPs for assessing sharpness, as well as maintenance logs will be inspected as part of the IACUC semi-annual inspections.
- 5.1.7. All animals undergoing cervical dislocation or decapitation must be pre-sedated and/or anesthetized prior to being euthanized. IACUC Guidance TAMU-G-002, TAMU-G-003 and TAMU-G-010 may be relevant to the anesthetic or sedative selected.
  - 5.1.7.1. Exceptions, based on scientific considerations, must be justified to and approved by the IACUC.
  - 5.1.7.2. Where exceptions are granted, cervical dislocation/decapitation technique should be first practiced on deeply anesthetized and/or dead animals to demonstrate proficiency. See TAMU-G-029 for additional training requirements.
- 5.1.8. Physical Methods of Euthanasia:
  - 5.1.8.1. Destroy or render nonfunctional the brain regions responsible for cortical integration producing instantaneous unconsciousness. Death quickly follows when the midbrain centers controlling respiration and cardiac activity fail.
  - 5.1.8.2. Are inexpensive, humane, and painless if performed properly, and leave no drug residues in the animal's remains.

- 5.1.8.3. May result in less fear and anxiety and be more rapid, painless, humane, and practical than other forms of euthanasia, when properly used by skilled personnel with well-maintained equipment.
- 5.1.8.4. Require sensitivity of the operator to convey expectations to onlookers as convulsions and exaggerated muscle activity can follow loss of consciousness.
- 5.1.8.5. Usually require a more direct association of the operator with the animals to be euthanized, which can be offensive to, and upsetting for, the operator.
- 5.1.8.6. May involve risk of trauma for animals and people. If the method is not performed correctly, personnel may be injured or the animal may not be effectively euthanized; personnel skill and experience are essential.
- 5.1.8.7. Must be skillfully executed to ensure a quick and humane death, because failure to do so can cause substantial suffering.
- 5.1.9. There is species variability in response to physical methods of euthanasia:
  - 5.1.9.1. The corneal reflex will be absent.
  - 5.1.9.2. When the brain is directly destroyed, signs of unconsciousness include immediate collapse and a several-second period of tetanic spasm, followed by slow hind limb movements of increasing frequency in cattle.
  - 5.1.9.3. Physical methods that destroy or render nonfunctional the brain regions responsible for cortical integration (eg, gunshot, captive bolt, cerebral electrocution, blunt force trauma, maceration) produce instantaneous unconsciousness.
  - 5.1.9.4. Following decapitation/cervical dislocation, loss of righting reflex and unconsciousness may be followed by activities such as convulsions which are unlikely consciously perceived.
  - 5.1.9.5. Exsanguination, NPCB/stunning, and pithing are **not** recommended as a sole means of euthanasia, but may be considered as adjuncts to other agents or methods.
  - 5.1.9.6. After the method has been applied, death must be confirmed before disposal of the remains.
- 5.2. **PCB**
  - 5.2.1. **General considerations:** Use of the PCB is acceptable with conditions and is a practical method of euthanasia for horses, ruminants, swine, rabbits, and poultry. To ensure death, it is recommended that animals be immediately exsanguinated or pithed unless a powerful captive bolt gun designed for euthanasia is used. These guns have recently become available and reduce the need to apply an adjunctive method. Ruminants used for food should not be pithed to avoid contamination of the carcass with specified risk materials.
  - 5.2.2. Adequate restraint is important to ensure proper placement of captive bolts. Appropriate placement of captive bolts for various species has been described and diagrammed in the current AVMA Guidelines on Euthanasia.
  - 5.2.3. Signs of effective captive bolt penetration and death are immediate collapse and a several-second period of tetanic spasm, followed by slow hind limb movements of increasing frequency. The corneal reflex must be absent and the eyes must open into a wide blank stare and not be rotated.
  - 5.2.4. There are two types of PCBs: a regular PCB and an air injection PCB. In both cases, the bolts penetrate the brain.
  - 5.2.5. All captive bolt guns require careful maintenance and cleaning after each day of use. Lack of maintenance is a major cause of captive bolt gun failure.
  - 5.2.6. Repeated firing of a captive bolt for extended periods may reduce effectiveness, due to the gun becoming overheated.
  - 5.2.7. The air injection captive bolt must never be used on ruminants that will be used for food because of concerns about contamination of meat with specified risk materials (neurologic tissue).

- 5.2.8. Because the PCB is destructive, brain tissue may not be able to be examined for evidence of rabies infection or chronic wasting disease.
- 5.2.9. Captive bolt guns used for larger species must have an extended bolt.
- 5.2.10. Although one well-placed bullet or shot from a PCB usually results in immediate loss of consciousness with little likelihood of return to consciousness, one should always be prepared to deliver a second or even a third shot if necessary.

**5.3. Gunshot**

- 5.3.1. **General considerations:** When an animal can be appropriately restrained, the PCB, preferably one designed for euthanasia, is preferred to a gunshot because it is safer for personnel. When other methods cannot be used, an accurately delivered gunshot is acceptable with conditions for euthanasia.
- 5.3.2. Shooting should only be performed by highly skilled personnel trained in the use of firearms and only in jurisdictions that allow for legal firearm use.
- 5.3.3. The safety of personnel, the public, and other animals that are nearby should be considered. The procedure should be performed outdoors and in areas where public access is restricted.
- 5.3.4. As a method of euthanasia for captive animals, the firearm should be aimed so that the projectile enters the brain, causing instant loss of consciousness. This must take into account differences in brain position and skull conformation between species, as well as the energy requirement for penetration of the skull and sinus.
- 5.3.5. For wildlife and other freely roaming animals, the preferred target area should be the head. It may, however, not be possible or appropriate to target the head when killing is attempted from large distances (missed shots may result in jaw fractures or other nonfatal injuries) or when diagnostic samples of brain tissue are needed for diagnosis of diseases (eg, rabies, chronic wasting disease) important to public health. For freely roaming wildlife, gunshots should be delivered with the least amount of prior human contact necessary.
- 5.3.6. Prior to shooting, animals accustomed to the presence of humans should be treated in a calm and reassuring manner to minimize anxiety. In the case of wild animals, gunshots should be delivered with the least amount of prior human contact necessary.
- 5.3.7. Although one well-placed bullet usually results in immediate loss of consciousness with little likelihood of return to consciousness, one should always be prepared to deliver a second or even a third shot if necessary.

**5.4. NPCB**

- 5.4.1. **General considerations:** In general, NPCB guns should not be used as a sole method of euthanasia. However, pneumatic purpose-built NPCB guns have been used successfully to euthanize suckling pigs, neonatal ruminants, and turkeys.
- 5.4.2. In general, NPCB guns only stun animals and should not be used as a sole method of euthanasia.
- 5.4.3. The NPCB has a wide, mushroom-shaped head that does not penetrate the brain of large mammals, such as adult cattle, slaughter-weight pigs, sows, and adult sheep.
- 5.4.4. NPCBs are not effective for stunning bulls, adult swine, or cattle with long hair.
- 5.4.5. Purpose-built or powder-activated pneumatic NPCB guns have recently been developed and successfully used for euthanasia of suckling pigs up to 9 kg (20 lb).

**5.5. Kill Traps**

- 5.5.1. Kill traps do not consistently meet the criteria for euthanasia, and may be best characterized as humane killing under some circumstances. For this reason, use of live traps followed by other methods of euthanasia is preferred.
- 5.5.2. If kill traps must be used (only when other acceptable methods are not practical or have failed):

- 5.5.2.1. The most humane option available must be chosen, as evaluated by use of International Organization for Standardization testing procedures, or by the methods of Gilbert,<sup>292</sup> Proulx et al,<sup>293,294</sup> or Hiltz and Roy. See REFERENCES section.
- 5.5.2.2. To reach the required level of efficacy, traps may need to be modified from manufacturers' production standards.
- 5.5.2.3. Individual testing is recommended to be sure the trap is working properly.
- 5.5.2.4. As specified in scientific studies, trap placement (ground vs tree sets), bait type, set location, selectivity apparatus, body placement modifying devices (e.g., sidewings, cones), trigger sensitivity, and trigger type, size, and conformation are essential considerations that could affect a kill trap's ability to reach efficacy standards. Several kill traps, modifications, and set specifics have been scientifically evaluated and found to meet standards for various species.
- 5.5.2.5. Care must be taken to avoid trapping and injuring non-target species.
- 5.5.2.6. Traps need to be checked at least once daily.
- 5.5.2.7. In those instances when an animal is wounded or captured but not dead, the animal must be killed quickly and humanely.
- 5.5.2.8. Traps for nocturnal species should not be activated during the day to avoid capture of diurnal species.
- 5.5.2.9. Traps that entrap a conscious animal in glue or other sticky substance are **not** acceptable for euthanasia.

#### 5.6. Thoracic Compression

- 5.6.1. Thoracic compression is widely used to humanely kill small birds and mammals in field studies but alternate methods must be considered for euthanizing small animals in the field.
- 5.6.2. Rapid Cardiac Compression is acceptable for euthanasia of wild small mammals and birds < 100g when pain and distress have been managed by a primary procedure (e.g., anesthesia).
- 5.6.3. Where alternatives are not feasible, or research objectives necessitates this method of humane killing, the IACUC can grant approval for appropriately trained protocol participants.

#### 5.7. Cervical Dislocation

##### 5.7.1. General considerations:

- 5.7.1.1. Manual cervical dislocation is acceptable with conditions for euthanasia of small birds, poultry, mice, rats weighing < 200 g, and rabbits when performed by individuals with a demonstrated high degree of technical proficiency.
- 5.7.1.2. For heavy rats and rabbits, the large muscle mass in the cervical region makes manual cervical dislocation physically more difficult. Commercially available cervical dislocators are encouraged to improve efficacy.

##### 5.7.2. Mice/rats:

- 5.7.2.1. Rodent is restrained in a normal standing position on a firm, flat surface which provides grip.
- 5.7.2.2. One hand grasps the base of the tail or hind limbs. The thumb and first finger of the other hand are placed on either side of the neck at the base of the skull (or holds a rod-shaped piece of sealed wood/metal to the base of the skull).
- 5.7.2.3. To produce the dislocation, quickly push forward and down with the hand/object restraining the head while pulling backward at a 30 degree angle from the table with the hand holding the tail/hind limbs. The animal is stretched and the neck is hyperextended and dorsally twisted to separate the first cervical vertebra from the skull.
- 5.7.2.4. Check closely to confirm respiratory arrest, and when possible verify, by palpation, that there is no heartbeat. Additionally, appropriate dislocation of C1-C2 should be verified by palpation.

##### 5.7.3. Rabbits:

5.7.3.1. For immature rabbits, the head is held in one hand and the hind limbs in the other. The animal is stretched and the neck is hyperextended and dorsally twisted to separate the first cervical vertebra from the skull.

5.7.4. Avian species:

5.7.4.1. Cervical dislocation has generally been used for small birds (< 200 g) when no other method is available, but the procedure has been performed on birds as large as 2.3 kg (5.1 lb).

5.7.4.2. For poultry and other birds, the legs of the bird should be grasped (or wings if grasped at the base) and the neck stretched by pulling on the head while applying a ventrodorsal rotational force to the skull. Crushing of cervical vertebrae and spinal cord is not acceptable unless the bird is first rendered unconscious.

## 5.8. Decapitation

5.8.1. Equipment for Decapitation

5.8.1.1. Scissors

5.8.1.1.1. For decapitation of altricial neonatal rodents.

5.8.1.1.2. Must be clean, rust-free, and sharp.

5.8.1.1.3. Sharpness should be assessed prior to each use, per laboratory SOP.

5.8.1.1.4. The frequency of sharpening depends on frequency of use and the species euthanized.

5.8.1.1.5. Equipment is to be cleaned after use and disinfected; see TAMU-G-026.

5.8.1.1.6. Scissors that are no longer serviceable must be placed in a sharps container for disposal.

5.8.1.2. Guillotine

5.8.1.2.1. For decapitation of adult rodents/small rabbits/small birds.

5.8.1.2.1.1. Based on information currently available, decapitation is considered to be acceptable with conditions for euthanasia of small (< 200 g) birds.

5.8.1.2.2. A commercial guillotine must be used.

5.8.1.2.3. Guillotines should be clean, in good condition, sharp and move freely. The action should be smooth with no perceptible binding or resistance, and the blade must be rust-free, sharp, and decapitate with minimal force.

5.8.1.2.4. The frequency of guillotine sharpening will depend on the animal species involved and volume of use; however, the guillotine should be checked for sharpness before each use, as per the laboratory SOP.

5.8.1.2.5. Methods for sharpening guillotines can be obtained from the guillotine manufacturer.

5.8.1.2.6. Lubrication may not be needed, but if it is, the use of a Teflon® or Silicone® containing compound is recommended over petroleum-based compounds.

5.8.1.2.7. After use, the entire guillotine should be rinsed under cold water to remove blood and tissue and gross contamination. Otherwise, subsequent rodents will be subject to the stress of smelling blood. After removing gross contamination, the unit should then be thoroughly disinfected and dried; see TAMU-G-026.

5.8.1.2.8. Blades that are no longer serviceable must be placed in a sharps container for disposal.

5.8.1.2.9. Disposable plastic containers (such as Decapicones® or Rodent Restraint Cones®) can be used to improve positioning and increase personnel safety.

5.8.1.3. Methods for assessing sharpness of guillotine/scissors:

- 5.8.1.3.1. Blades are sharp enough if they will cut through either special testing paper for scissor sharpness or a wet piece of weighing paper without dragging it between the blades and sticking.
- 5.8.1.3.2. Blades can be assessed using the fresh carcass of an animal that was euthanized by a different protocol-approved method of euthanasia.
- 5.8.1.3.3. Alternatively, Razor Edge Systems, Inc. sells a razor edge tester that can be used to “feel” any flaws in the cutting edge.
- 5.8.1.3.4. An SOP for assessing sharpness will be created by the PI and maintained in the laboratory.

5.8.1.4. Recordkeeping

- 5.8.1.4.1. A log of guillotine use and maintenance must be kept in the laboratory. A sample document is available from the AWO – see TAMU-F-011.
- 5.8.1.4.2. The PI, or their designee, must document the dates on which the guillotine was sharpened, tested and used.

**5.9. Hypothermia**

- 5.9.1. The gradual cooling of fetuses and altricial neonates (mice and rats) is acceptable with conditions.
  - 5.9.1.1. There are no data to support the use of hypothermia as a single method, and it should be followed with a secondary method following loss of movement.
  - 5.9.1.2. As cold surfaces can cause tissue damage and presumably pain, the animals should not come in direct contact with ice or precooled surfaces. Hypothermia for anesthesia is not recommended after approximately 10 days of age.

**6. EXCEPTIONS**

- 6.1. The PI may request an exception to the above standards by describing the departure in the AUP
- 6.2. For programmatic exceptions, the facility director or manager may submit a request for the exception using TAMU-F-013

**7. REFERENCES, MATERIALS, AND/OR ADDITIONAL INFORMATION**

7.1. References

- 7.1.1. AVMA Guidelines for the Euthanasia of Animals: [2020 Edition](#)
- 7.1.2. Caveats from AAALAC’s Council on Accreditation regarding this resource: 2016 Guidelines of the American Society of Mammalogists for the use of wild mammals in research and education <https://www.aaalac.org/pub/?id=E9018E7B-F482-C1E4-934B-A415AE4ED86B>
- 7.1.3. For more information on thoracic compression and rapid cardiac compression, please see:
  - 7.1.3.1. [https://grants.nih.gov/grants/olaw/2013avmaguidelines\\_comments/Appendix%20A%20OC%20Fact%20Sheet-%20thoracic%20compression.pdf](https://grants.nih.gov/grants/olaw/2013avmaguidelines_comments/Appendix%20A%20OC%20Fact%20Sheet-%20thoracic%20compression.pdf)
  - 7.1.3.2. Fair, J., E. Paul, and J. Jones, Eds. 2010. Guidelines to the Use of Wild Birds in Research. Washington, D.C.: Ornithological Council
  - 7.1.3.3. Jr, Andrew & Engilis, Irene & Paul-Murphy, Joanne. (2018). Rapid cardiac compression: An effective method of avian euthanasia. The Condor. 120. 617-621. 10.1650/CONDOR-18-35.1.
  - 7.1.3.4. Ornithological Council Fact sheet: Rapid cardiac compression (revised 2020)
- 7.1.4. For more information regarding the use of kill traps, please see:
  - 7.1.4.1. International Organization for Standardization. Animal (mammal) traps-part 4: methods for testing killing trap systems used on land or underwater. TC 191, ISO/DIS 19009–4E. Geneva: International Organization for Standardization, 2000;1–15.





- 7.1.4.2. Gilbert FF. Assessment of furbearer response to trapping devices, in Proceedings. Worldw Furbearer Conf 1981;1599– 1611.
- 7.1.4.3. Proulx G, Barrett MW. Evaluation of the Bionic trap to quickly kill fisher (*Martes pennanti*) in simulated natural environments. *J Wildl Dis* 1993;29:310–316.
- 7.1.4.4. Proulx G, Barrett MW, Cook SR. The C120 Magnum with pan trigger: a humane trap for mink (*Mustela vison*). *J Wildl Dis* 1990;26:511–517.
- 7.1.4.5. Hiltz M, Roy LD. Rating of killing traps against humane trapping standards using computer simulations, in Proceedings. 19th Vertebr Pest Conf 2000;197–201.

7.2. Resources

- 7.2.1. [Razor Edge Systems, Inc](#)
- 7.2.2. Suppliers of Cervical Dislocators:
  - 7.2.2.1. [Otto Environmental, LLC](#)
  - 7.2.2.2. [Stoelting Co.](#)

7.3. For more information on animal handling training, or more information regarding the performance of euthanasia, please contact:

- 7.3.1. [CMP](#) at (979) 845-7433
- 7.3.2. [ARU](#): at (214) 828-8149
- 7.3.3. [PAR](#): at (713) 677-7471
- 7.3.4. [PRF](#): at (361) 221-0770
- 7.3.5. Sea Life Center: at (409) 740-4574

7.4. [IACUC/AWO Referenced Documents](#): (requires TAMU NetID authentication)

- 7.4.1. TAMU-F-011 Guillotine Use and Maintenance Log
- 7.4.2. TAMU-F-013 Request for Programmatic Exception from Animal Welfare Standards
- 7.4.3. TAMU-G-002 Guidelines on the use of Anesthesia and Analgesia
- 7.4.4. TAMU-G-003 Guidelines for the Safe Use of Inhalant Anesthesia
- 7.4.5. TAMU-G-010 Guidelines for the Use of Pharmaceutical and Non-Pharmaceutical Grade Drugs and Compounds
- 7.4.6. TAMU-G-015 Guidelines for Reporting Animal Concerns, Unanticipated or Adverse Events, and Potential Noncompliance
- 7.4.7. TAMU-G-026 Guidelines for Evaluation of Sanitation Practices
- 7.4.8. TAMU-G-029 IACUC Guidelines for Animal Protocol Participation and Handling
- 7.4.9. TAMU-G-048 Guidelines on Euthanasia of Fish, Amphibians and Reptiles

7.5. Acknowledgements:

- 7.5.1. This document was partially adapted using materials obtained from Indiana University, and the Universities of South Carolina, California, San Francisco and Arizona.

**8. HISTORY**

Effective Date	Version #	Description
08/15/2019	000	College Station/Galveston: New Document
08/03/2020	001	College Station/Galveston: Renewal of expiring document; updated definitions and text related to 2020 AVMA Euthanasia Guidelines; reviewed and approved via email.
09/01/2020	002	Houston/Kingsville: New format and content; replaces IBT-209; reviewed and approved via email.
09/15/2020	003	Dallas: New format and content; replaces CD-209
9/28/2020	004	Administrative update of location-specific definitions in 3.2. Additional review not needed per TAMU-S-001.



02/17/2022	005	College Station/Galveston: Renewal; change in title, content updated to include additional definitions, species and methods. Addition of Exceptions section.
03/24/2022	006	College Station/Dallas/Galveston: Merging of Dallas animal care and use program with College Station/Galveston
04/01/2022	007	Houston/Kingsville: Renewal; change in title, content updated to include additional definitions, species and methods. Addition of Exceptions section. Reviewed and approved via email.
10/20/2022	008	College Station/Dallas/Galveston/Kingsville: Merging of Kingsville animal care and use program with College Station/Dallas/Galveston.