I. PURPOSE
The purpose of this policy is to describe the proper toe clipping technique and the conditions in which it is appropriate. According to the Guide for the Care and Use of Laboratory Animals (p75), “toe-clipping, as a method of identification of small rodents, should be used only when no other individual identification method is feasible and should be performed only on altricial (hatched or born in an undeveloped state and requiring care and feeding by parents) neonates.”

II. STANDARDS - LAB
Toe clipping must be scientifically justified in an approved IACUC protocol. Adequate justification does not include cost, convenience or lack of formal training.

Toe clipping, as a method of identification, should only be used when no other identification methods are feasible and should be combined with genotyping.

Toe clips must be performed on or before 10 days of age with the ideal time being between 5-7 days of age when the toes are separate and the bone not calcified.

Toe clipping beyond 10 days of age is considered painful and is not an acceptable procedure for either identification or genotyping. If tissue for genotyping is required beyond 10 days of age, alternative methods of collecting tissues should be considered. Contact veterinarian for additional information.

The IACUC allows toe clips on a maximum of 4 toes and no more than 2 toes per foot. Any identification numbering system should be designed to minimize the number of toes clipped per animal.

The hallux (also referred to as dew claw or thumb) may not be cut as this may decrease the rodent’s grasping ability.

III. PROCEDURES - LAB
Obtain adequate training from Principal Investigator (PI) and/or Laboratory Animal Resources.

Restrain the animal for the minimum amount of time required for the procedure.
With a sharp instrument, remove the toe(s) at the most distal joint of the toe (i.e., remove the last phalangeal [toe] bone).

Sharp scissors are recommended for toe-clipping in neonatal rodents.

Instruments must be clean and disinfected initially, and blade surfaces should be cleared of debris and wiped with 70% alcohol between animals.

Apply pressure to the exposed tissue with gauze or other clean and absorbable material to ensure hemostasis.

Monitor animals continuously until bleeding has stopped.

During the procedure, the neonatal rodents should be handled gently and then placed back with the mother as quickly as possible.

IV. REFERENCES - LAB:


V. STANDARDS and PROCEDURES - WILDLIFE

Toe clipping is an invasive, potentially painful technique that requires justification to the IACUC. However, it is sometimes the most appropriate marking technique to use. Researchers should follow the appropriate guidelines highlighted below when writing protocols that propose the use of toe clipping, and demonstrate that other marking techniques are not feasible. While excerpts of the guidelines specific to toe clipping are provided here, the IACUC strongly recommends reading the entire set of guidelines for information about alternatives to toe clipping.

Mammals

Guidelines from Sikes et al. 2011

“Toe clipping involves removal of 1 or more digits (generally only 1 per foot) or terminal phalanges and provides a permanent identifying mark. These marking methods necessarily involve recapture because neither is generally suitable for identification at a distance. Further, ear punches might become unidentifiable through time in free-ranging individuals because of healing, subsequent injuries sustained in the field, or being obscured by hair. Because both of these methods involve removal of a small amount of tissue, they might be especially appropriate in studies where tissue samples also are required.

Because it is more invasive and addressed specifically in the Guide (NRC 1996), toe clipping requires justification to the IACUC. Justification for toe clipping as a means of identification should include consideration of the natural history of the species, how the feet are used in the animal’s environment, and the size of the toe. Digits generally should not be removed from the forefeet of subterranean or fossorial taxa where they are used for digging, nor should primary digits be removed from arboreal or scansorial taxa where they are used for climbing. Toe clipping in species with fleshy digits should be avoided. Toe clipping might be especially suitable for permanent identification in small species (e.g., Chaetodipus, Perognathus, Peromyscus, Reithrodontomys, and Sorex) and in neonates of larger taxa. Toe clipping and ear punches should not be used for marking bats; bats can be wing punched or freeze branded effectively. Toe clips and ear punches should be performed with sharp, sterilized instruments. Anesthetics and analgesics generally are not recommended because prolonged restraint of small mammals to administer these substances and consumption of the analgesic substances (e.g., creams) via licking likely cause more stress and harm than conducting the procedure without their use.”

Amphibians and Reptiles

Guidelines from HACUC 2004. A recent review (Perry et al. 2011) further investigated potential impacts of toe clipping on amphibians and reptiles, and could also be consulted/cited when developing a protocol.

“Toe clipping, a ubiquitous technique (Dunham et al., 1988), may be used for general marking of free-ranging animals when toe removal is not judged (by observation of captives or of a closely-related species) to impair the normal activities of the marked animal. Toes essential to animals for activities such as burrowing, climbing, amplexus, or nest excavation, should never be removed. Removal of more than two non-adjacent toes per foot should be avoided. If behavior or survival of the animal is likely to be seriously impaired, alternate marking techniques should be employed. Aseptic technique should be maintained to avoid infection. Surgical equipment needs to be disinfected prior to each animal being clipped. If a scissor is used, the instrument can be dipped in alcohol and flamed. The impact of toe clipping on survival of marked amphibians has been discussed (Golay and Durrer, 1994; Reaser, 1995). Clarke (1972) reported adverse effects of toe-clipping on survival of Bufo woodhousei. Further work is needed to determine the impact that toe
clipping may have on differential mortality, growth, or reproduction. However, the high incidence of natural toe loss among small lizards suggests that for small species at least, toe clipping, when prudently applied, may result in only minimal impact. The most important point to realize is that toe clipping is potentially a painful procedure and can result in infection if aseptic procedures are not followed.”

VI. REFERENCES
