

This Standard Operating Procedure (SOP) is applicable to all UniSQ Research Workers who care for and use Animals for Scientific Purposes. The procedure must only be performed by those persons who have been deemed competent, and who believe they remain competent to do so. Access to supervision by suitably qualified staff whilst undertaking this procedure is encouraged, where required.

Species

- Small mammals
 - *Mus musculus*
 - *Antechinus*
 - *Pseudomys*
 - *Sminthopsis*
 - *Rattus*
 - *Planigale*
 - *Phascogale*

Purpose

The purpose of this SOP is to provide information to researchers/ teachers considering ear notching small mammals as part of surveying and research on wildlife, specifically small mammal populations; why small mammals are ear notched and how to ear notch them.

Population surveys and monitoring play a key component to many ecological research projects. Population data is obtained through ecological survey techniques such as camera, cage, Elliott and pitfall trapping. To obtain information about abundance from surveys, to determine population sizes (and changes) and demographic information (e.g. different age classes) it is vital to obtain information on large numbers of individual animals to obtain sufficient data to obtain accurate and statistically meaningful results.

Ear notching is the most commonly used, permanent method to individually identify small mammals, both in captive colonies and for free-living wild small mammals.

Definitions

Elliott trap

an aluminium box trap typically 30x8x10cm with a trap door at one end. Used in the field with bait (peanut paste, oats, etc) to capture small mammals.

Linked SOPs

SOP ID number

WL012

SOP title

Dry pitfall trapping for vertebrates

Potential hazard to Research Workers

UniSQ Risk Management Plan ID number

RMP_2020_4960

UniSQ Management Plan title

Wildlife research and teaching fieldwork

Personal Protective equipment required

- Disposable examination gloves

Animal wellbeing considerations

Perceived stressors	Management strategy
Stress from prolonged process	Handlers must be sufficiently trained prior to starting work on small mammals so that the process is efficient and performed with a minimum of handling.
Disease risk	Handlers must wash hands thoroughly before and after handling animals and put on a clean pair of disposable examination gloves between each animal.
Disease risk	Ear hole punch/notcher is sterilised with 70% alcohol or alcohol swab before use and between each animal.
Unwell animal	Ear notching must not be undertaken if the animal is unwell, or injured in any way. Unwell or injured animals must be monitored and assessed as per the approved animal score sheet for that species to determine what action is to be taken, i.e. Emergency euthanasia.
Heat or cold stress	Ear notching should not be undertaken if animal is likely to be exposed to temperature extremes.

The overall perceived level of risk to an animal undergoing this procedure is:

☐ High

☐ Medium

☒ Low

Substances to be administered

Substance	Dose	Route	Purpose
Not applicable			

Equipment/ materials required

- Data record sheet
- Earhole punch or notcher
- 70% ethanol and alcohol wipes
- Calico bag with cloth tape or string to close the bag - if the animal has been removed from a trap, e.g. pitfall or small mammal box trap, Elliott trap.
- Eppendorfs containing 70% ethanol for ear sample for DNA analysis
- Tweezers

Site specification or location requirements

At locations/ fields outlined in UniSQ AEC approved applications that include the use of this SOP

Waste disposal

Nil.

Duration of the procedure

Procedure	1 minute
Post-procedure and monitoring	3 minutes

Procedure

Small mammal in an open container

1. Clean the ear notching instrument and tweezers with alcohol wipes.
2. If ear notch sample is to be used for genetic analysis, then label Eppendorf containing 70% ethanol with species, individual ID (or trap number) and date.
3. In one movement, swiftly place the palm of your hand over the small mammal.

4. Scoop and hold the small mammal in your palm.
5. Place the forefinger of the same hand under the chin to hold the head upwards
6. Use the other hand to position the ear for notching (Figure 1).
7. Position ear hole punch/notcher on either side of the ear, taking care to ensure you don't cut any large blood vessels in the ear, and in one swift movement, press down.
8. Ensure that the ear is cut completely through so that the cut piece of skin is totally removed from the ear. If a tissue sample is to be kept for research purposes (e.g. genetic analysis) then carefully use disinfected tweezers to place the tissue sample into the labelled Eppendorf containing ethanol. Transport samples in Eppendorfs in a cool box and then store them in a refrigerator in a clearly labelled container until analysis.
9. Place the animal back into the container.

Small mammal in a small cloth bag (i.e. calico)

1. Clean the ear notching instrument and tweezers with alcohol wipes.
2. If an ear notch sample is to be used for genetic analysis, then label Eppendorf containing 70% ethanol with species, individual ID (or trap number) and date.
3. Undo the tapes or string that has closed the cloth bag while holding the small mammal through the cloth of the bag such that you are holding the small mammal in the palm of your hand.
4. While the animal is still in the calico bag, gently manipulate the small mammal such that the animal is held with one hand through the calico bag. To do this, cup the animal through the calico bag such that it is held in the palm of your hand with the head pointing towards your fingers. The thumb and second (middle) finger can be utilised to restrain the animals head (fingers on either side of the head), and the index finger is placed on the top of the head. This is the three-finger hold.
5. Holding the mammal firmly drawback the cloth such that the animal's head and ears are exposed, i.e. outside the cloth bag, while you still hold the body of the animal through the cloth back, in your palm.
6. Place the forefinger of the same hand under the chin to hold the head upwards.
7. Use the other hand to position the ear for notching (Figure 1)
8. Position ear hole punch/ notcher on either side of the ear, taking care to ensure you don't cut any large blood vessels in the ear, and in one swift movement, press down.
9. Ensure that the ear is cut completely through so that the cut piece of skin is totally removed from the ear. If a tissue sample is to be kept for research purposes (e.g. genetic analysis), then carefully use disinfected tweezers to place the tissue sample into the labelled Eppendorf containing ethanol. Transport samples in Eppendorfs in a cool box and then store them in a refrigerator in a clearly labelled container until analysis.
10. If necessary, to retain the small mammal in the cloth bag, pull the cloth bag up such that the animal is fully covered and close the entrance to the bag using the tape or string while holding onto the animal in your palm.
11. Tie off the entrance of the bag, so the mammal is enclosed and safe within the cloth bag.



Figure 1: Hold the small mammal firmly and position the ear so it is ready for ear notching.

Training, qualifications or competencies required

Researchers with relevant experience or qualification can only undertake this SOP to complete the procedures required.

Student researchers must receive appropriate training and supervision from UniSQ research supervisors or qualified individuals prior to undertaking procedures.

References

Hau, J. and VanHoosier, G.L. Jr. (eds) (2002). *Methods of Identification in Handbook of Laboratory Animal Science* 2nd Edition; Vol I. Essential Principles and Practices, CRC Press, pp. 363-365.

Weyand, M.E. (1998). Methods for the Identification of Laboratory Mice and Rats. *Lab Animal*, 27:47-50.

The University of Queensland Standard operating procedures. SOP No: AHT27(d) Ear Notching in Rodents (May 2015)

Licences and permits

Any required licences and/or permits to undertake the procedure(s) under this SOP must be obtained before undertaking this SOP.

SOP approval and review history

Date	Version	Review Pathway	Notes
17/12/2020	0.0	3/12/2020 UniSQ AEC "Subject to Modifications". 17/12/2020 Reviewed and approved by the UniSQ AEC Executive.	Approved
23/06/2021	0.1	23/06/2021 Inserted under "Licences and Permits", the words: "Any required licences and/or permits to undertake the procedure(s) under this SOP must be obtained before undertaking this SOP."	Update
18/10/2022	0.2	16/09/2022 Converted SOP to new UniSQ branding and revised 'USQ' to 'UniSQ'	UniSQ 2022 Rebrand