USQ AEC Standard Operating Procedure
Microchipping cane toads

USQ AEC SOP ID: WL009

This Standard Operating Procedure (SOP) is applicable to all USQ 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

- *Rhinella marina* (cane toads)

Purpose

The purpose of this SOP is to provide information to people considering microchipping cane toads as part of surveying and research on wildlife, specifically cane toads, why cane toads are microchipped and how to microchip 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.

Microchipping animals is increasingly being used (e.g. for pets) and is a permanent method to individually identify small animals, including toads, both in captive colonies and free-living populations.

As an introduced to Australia, pest species, the cane toad has been used as a 'model' for research in place of native Australian frogs (e.g. the effect of climate change on frogs) and is used routinely in teaching as an amphibian example for dissections and nerve/muscle physiology. With this background, that toads have been used as a surrogate for frogs. Microchipping free-living cane toads allow the development and validation of a new photographic method for individual animal identification of amphibians. The animal is recorded photographically for identification and to record its morphometrics. Morphometrics is measurements of an animal that assist in confirming its identity (e.g. body and leg length) and can be used to allocate animals of the same species into different age classes, which assists with establishing the demographics of a population (e.g. population declining).

Thus this SOP describes a method of microchipping free-living cane toads (as a surrogate for frogs) that will be microchipped and photographed the first time that are captured and then released at the point of capture, and when recaptured and photographed again, the presence of the microchip will validate the accuracy of the photographic method to identify the same toad correctly.

If this procedure, confirmed by microchip, that the photographic method can correctly identify the same toad each time it is seen, then we can have confidence that the photographic method can correctly identify individual frogs each time they are seen, and thus replace the more invasive methods used to mark frogs (e.g. toe clipping) for population studies.

Definitions

AEC	Animal Ethics Committee

Linked SOPs

SOP ID number	SOP title
WL012	Dry pitfall trapping

Potential Hazard to Research Workers

USQ Risk Management Plan ID number	USQ Risk Management Plan title
RMP_2020_4960	Wildlife research and teaching fieldwork

Personal Protective Equipment required

- Disposable examination gloves – various sizes
- Eye protection – Safety glasses
- Long sleeve shirt

Animal wellbeing considerations

Perceived stressors	Management strategy
Disease risk	Handlers must wash hands thoroughly before and after handling toads. Microchip implanter is disinfected with 70% alcohol before use.
Injection of microchip	An experienced operator must perform this procedure. The microchip is the appropriate size for cane toads.
Stress from a prolonged process	Handlers must be sufficiently trained prior to start work on cane toads so that the process is quick.
Heat or cold stress	Microchipping should not be undertaken if the animal is likely to be exposed to temperature extremes.

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

	High		Medium	X	Low

Substances to be administered

Substance	Dose	Route	Purpose
Microchip	one microchip	Subcutaneous injection	Individual identification

Equipment/ materials required

- Datasheet
- Microchips
- AVID® mini-tracker, scanner – or similar
- Needle and syringe implanter
- 70% ethanol

Site specification or location requirements

At locations/fields outlined in a USQ AEC approved application that includes the use of this SOP.

Duration of the procedure

- Less than two minutes to complete the procedure

Procedure

1. Ensure PPE is being worn and eyes are protected. This procedure to be performed by a competent USQ staff member or suitably trained student.
2. Either remove the microchip and implanter from the sterile container as received from the supplier or disinfect needles and microchips in 70% alcohol and place the microchip into the needle.

3. Record the microchip number using the microchip reader.
4. Take the cane toad from its container and restrain the cane toad by holding it around the pelvis such that the pelvis and back legs are held within your hand.
5. Inject the microchip intracoelomically in the left caudal body or subcutaneously in the left dorsal lymph sac. Insert the needle until halfway in.
6. Inject the chip and remove the needle while holding the chip in place.
7. Place the cane toad into its container and observe for two minutes to ensure the microchip is not expelled.

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 USQ 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.

AVA (2016). Electronic identification of animals. Fish and other aquarium species. https://www.ava.com.au/policy-advocacy/policies/identification-of-animals/electronic-identification-of-animals/

Hammond, T. (2019). Finding frogs in the field using new technology. https://institute.sandiegozoo.org/science-blog/finding-frogs-field-using-new-technology

Department of Biodiversity, Conservation and Attractions (2017). Standard Operating Procedure: Permanent Marking of Vertebrates Using Microchips. Perth, WA: Department of Biodiversity, Conservation and Attractions

Licences and permits

- Scientific Purposes Permit

SOP approval and review history

Date	Version	Review pathway	Notes
17 December 2020	0.0	**3/12/2020** USQ AEC "Subject to Modifications." **17/12/2020** Reviewed and approved by the USQ AEC Executive.	N/A
23 June 2021	0.1	**23/06/2021** Added 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."	N/A