

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 vertebrates

Purpose

The purpose of this procedure is to provide information to the UniSQ AEC, and people considering photographic identification of small vertebrates as part of surveying and research of wildlife populations, why photographic identification is used and how to utilise this method.

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, Elliot and pitfall trapping. To obtain information about abundance to determine population sizes (and trends) and demographic information (e.g. different age classes), it is vital to obtain information on large numbers of individual animals to obtain sufficient data that is accurate and statistically meaningful.

Traditional methods of identifying small vertebrates, such as frogs, include toe clipping, branding, or PIT or VIE tags (Brown 1997). However, these methods are invasive, impose on the welfare of the animal and expose the animal to disease (McCarthy & Parris 2004; Brannelly *et al.* 2013). Therefore, a non-invasive method of individual identification is required to obtain the required data with minimal impact on the welfare of the animal.

Photographic identification as a method for individual identification in mark-recapture-release surveys offers a non-invasive method for obtaining data on the morphometrics of individual animals (Gomez-Salazar *et al.* 2011; Bardier *et al.* 2020). Morphometrics are measurements of an animal that assist in confirming its identity (e.g. body and leg length) and can be used to allocate individuals into different age classes. This is vital in establishing data on the demographics of a population and, therefore the trends occurring within a population.

This SOP describes a method of utilising photographic identification as a method for individual identification of animals. This method's efficacy will be supported by microchipping cane toads (see relevant SOP) to confirm the reliability of the method for population studies.

Definitions

| | |
|-----------------|--------------------------------|
| AEC | Animal Ethics Committee |
| PIT | Passive Integrated Transponder |
| VIE tags | Visible Implant Elastomer tag |

Linked SOPs

| SOP ID number | SOP title |
|----------------------|--|
| WL012 | Dry pitfall trapping for vertebrates |
| WL002 | Pipe trapping (small vertebrates) |
| WL009 | Microchipping cane toads |
| WL005 | Removing amphibians from pitfall traps |

Potential hazard to Research Workers

| UniSQ Risk Management Plan ID number | UniSQ Management Plan title |
|--------------------------------------|--|
| RMP_2020_4960 | Wildlife research and teaching fieldwork |

Personal Protective equipment required

- Disposal gloves

Animal wellbeing considerations

| Perceived stressors | Management strategy |
|-----------------------------|---|
| Disease risk from equipment | Clean gloves must be used for each individual animal and all equipment sterilised in disinfectant solution between each individual animal |
| Handling of animals | Handlers must ensure that procedure is completed as quickly as possible with minimal animal handling to reduce prolonged stress to the animal |
| Extreme weather | Avoid trapping or close traps in extreme weather conditions. Close traps if there is excessive rain or heavy rain is forecast |

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

☐ High

☐ Medium

☒ Low

Substances to be administered

| Substance | Dose | Route | Purpose |
|-----------|------|-------|---------|
| Nil. | | | |

Equipment/ materials required

- Data record sheet
- 150mm petri dish
- 90mm petri dish
- Camera with batteries and SD card
- Laminated 1mm graph paper larger than the diameter of the Petri dishes
- 70% ethanol or 1% bleach solution
- All relevant trapping equipment (listed in relevant SOPs)

Site specification or location requirements

Spicer's Old Hidden Vale Property – 617 Grandchester Mount Mort Road, Grandchester, Queensland.

Sampling sites: Billabong (-27.71202,152.46767) and the Ridge (-27.71729,152.45752).

Waste disposal

Nil.

Duration of the procedure

| | |
|-------------------|-----------|
| Total time | 5 minutes |
|-------------------|-----------|

Procedure

In field photographing animal

1. Pre-fill data sheet with non-animal related details such as trap number,/ day/ date/ time.
2. Prepare the camera to the required setting and set it aside
3. Using a clean pair of gloves, remove the animals from the trap and place in the appropriately sized petri dish, ensuring the animals is positioned so limb length can be recorded from grid paper, and gently place the lid on top of petri dish.
4. Place the petri dish containing the animal on top of the grid paper on a flat surface (e.g. clipboard).
5. Use the camera to photograph the dorsal side of the animal, ensuring minimal glare/ reflection from the petri dish. Gently rotate the petri dish and photograph the ventral side of the animal.
6. Check the photographs are of adequate quality, i.e. clear images and that all markings (e.g. patterns, scars) and colours on the animal have been clearly photographed.
7. Once all data has been obtained for the animal (see Dry Pitfall Trapping and Removing Amphibians, Mammals and Reptiles from Pitfall Traps SOPs), the animal can be released near where it was caught where there is appropriate shelter.
8. Ensure all equipment is cleaned after use. Petri dishes must be sprayed with 70% ethanol or 1% bleach disinfectant solution and allowed to soak for 1-2 minutes in a sealed zip-lock sandwich bag before being thoroughly rinsed with clean water into a bucket, ensuring all contaminated water is collected for later disposal.
9. Repeat this procedure for all animals and for all traps.

After filed data storage

1. All photographs must be transferred on to a computer hard drive and back up copies made in two other locations (e.g. external hard drive, USB, cloud storage).
2. Photographs can then be incorporated into the database and transferred to identification software (e.g. I3S, Hotspotter, WildID) and processed accordingly.

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

- Bardier, C., Székely, D., Augusto-Alves, G., Matínez-Latorraca, N., Schmidt, B. & Cruickshank, S. 2020. Performance of visual vs. software-assisted photo-identification in mark-recapture studies: a case study examining different life stages of the Pacific Horned Frog (*Ceratophrys stolzmanni*). *Amphibia-Reptilia*, 1, pp. 1-12.
- Brannelly, L., Chatfield, M. & Richards Zawacki, C. 2013. Visual implant elastomer (VIE) tags are an unreliable method of identification in adult anurans. *Herpetological Journal*, 23, 125-129.
- Brown, L. 1997. An Evaluation of Some Marking and Trapping Techniques Currently Used in the Study of Anuran Population Dynamics. *Journal of Herpetology*, 31, 410-419.
- Gomez-Salazar, C., Trujillo, F. & Whitehead, H. 2011. Photo-Identification: A reliable and noninvasive tool for studying pink river dolphins (*Inia geoffrensis*). *Aquatic Mammals*, 37, 472-485.
- McCarthy, M. & Parris, K. 2004. Clarifying the effect of toe clipping on frogs with Bayesian statistics. *Journal of Applied Ecology*, 41, 780-786.

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 |
| 16/09/2022 | 0.2 | 16/09/2022 Converted SOP to new UniSQ branding | UniSQ 2022 Rebrand |