UniSQ AEC Standard Operating Procedure

Wildlife survey – sand plot

UniSQ AEC SOP ID: WL001

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

- Various species

Purpose

Non-invasive wildlife survey and monitoring is a fundamental aspect of almost all field-based wildlife research projects. Common techniques include camera trapping, spotlighting, walk-line transects, point counts, passive tracking indices (e.g. sand plots), scat collection, and active searches. The goal of these activities are typically to determine animal distribution, abundance and/or behaviour, by observing them or their spoor in situ. This information is typically used for improving the conservation prospects for threatened species, obtaining a greater understanding of wildlife ecology, improving best-practice pest animal management practices, assessing and reducing non-target risks and impacts, and ultimately improving the wellbeing of wildlife and livestock.

Identification of fauna from tracks is often done opportunistically, but there are a number of ways to use track identification as a formal survey method including track plots and sand plots. Additionally, some species often use roads/tracks for travel and thus an excellent opportunity is provided to non-invasively monitor their populations without significant environmental modification.

Sand plots rely on creating (bringing sand in) or modifying (clearing litter from suitable substrate and raking or sweeping it smooth) discrete areas to increase the quality of tracks. The technique could involve laying a smooth damp sand pad across an unsealed road, leaving for a specified period of time, and then counting and identifying the animal tracks laid in the sand (Eyre et al., 2018).

Sand plots are particularly useful for monitoring activity of feral animals (e.g. foxes and cats) and they can also be used to detect other species that leave distinctive tracks. Passive tracking indices or relative abundance indices (e.g. the Allen activity index; Allen et al. 1996, Engeman et al. 1998) can be calculated from the number of tracks observed, but these are not always good measures of relative abundance unless certain criteria are met. However, the advent of camera trap technology and its increased certainty of species identification and ease of use can provide additional support to information gathered from sand plots.

Unbaited sand plots provide a passive observational technique to track wildlife abundance and activity and does not require any direct contact with animals or any deleterious or adverse modification of their behaviour or resources.

Unbaited sand plots are appropriate for a wide number of species and situations, there is no pain or distress caused to animals through their use or through indirect effects arising from impact on habitat or environment (National Health and Medical Research Council, Section 3.3.33, 2013).

Definitions	
Nil.	

Linked SOPs	
SOP ID number	**SOP title**
Nil.	

Potential hazard to Research Workers

Potential Hazard	Management Strategy
Heat stress, heat stroke, exhaustion leading to serious personal injury or death	Regular breaks, chilled water available, loose clothing, fatigue management policy, shade and fridge available, essential tasks only, compliance with “working in remote regions policy”, communication equipment available training.
Frostbite, wind-chill, or hypothermia leading to serious injury or death	Warm and dry clothing, shelter and power available, essential tasks only, compliance with “working in remote regions” policy, communication equipment, training
Working in harsh environment: Cuts, scratches and bruises leading to discomfort, bleeding and pain and/or trips, falls, breaks resulting in broken bones or serious injury leading to death	Wear sturdy closed footwear, appropriate protective clothing (for environment working in, e.g., warm and dry clothing for cold environment or light, cool, sun-protection clothing for hot environment), training, first aid kit, communications equipment
Manual labour, lifting or bending	Completion of induction and training
Unfamiliar territory, getting lost, unable to access shelter/food/water, resulting in exposure	Maps available, compliance with “working in remote regions” policy, communication and navigation equipment available.
4WD and UTV accident in the field resulting in serious injury or death	Compliance with procedure, training. Authorised users only to operate vehicles. Buddy system, communication system.

UniSQ Risk Management Plan ID number	UniSQ Management Plan title

Personal Protective equipment required

- Safety boots
- Appropriate clothing for the environment in which the procedure is being undertaken, e.g., sun-protective, loose-fitting clothes for high heat environments, warm and dry clothes for cold environments

Animal wellbeing considerations	
Perceived stressors	**Management strategy**
Nil.	

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

- Trowel, broom or rake
- Ruler
- Field notebook
- Camera (optional)
- 50c coin (optional)

Site specification or location requirements

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

Waste disposal

Not applicable.

Duration of the procedure	
Pre-procedure and prepartion	Nil.
Procedure	2 minutes
Post procedure and monitoring	2 mintues

Procedure

Preparing the sand plot (where suitable substrate occurs naturally):

1. Use the trowel, broom or rake to manually remove any leaves, sticks, or stones from the intended location of the sand plot.
2. Smooth the remaining sand or dirt and ensure the sand plot is sufficient size to record tracks of the expected animals present. Sand plots across a road should be at least 1m wide to provide information on stride length.
3. Footprints can be easily identifiable in firm, slightly damp sand (a clay component helps hold the footprint). Place a small mark in the sand (within the corner of the sand plot) to use as confirmation of the readability of the sand plot the following day.

Recording data from the sand plot

1. Check the sand plot as required (e.g. daily).
2. If the mark from the previous day has blown or washed away, discard any information from that sand plot.
3. If the mark from the previous day is visible, identify tracks present. Track identification is best done early in the morning with the sun in front of the observer, when tracks are fresh and before the sand has dried and the wind has blurred the imprint.
4. Count and record all animal tracks on the sand plot via a continuous measure (not just presence/ absence).
5. Identification of footprints also takes into account the gait, including the position of the front feet relative to the back feet and the locomotion type (quadrupedal, bipedal, hop, bound or stride).
6. When necessary, measurements should be taken with a tape measure or ruler and recorded to the nearest millimetre, preferably on flat ground where the animal is travelling at an even pace.
7. Measurements taken could include track length, width, group width, and group length and be repeated at least five times
8. Record animal tracks of all species down to the lowest taxonomic level possible.
9. If confirmation is required of threatened species or unidentified tracks, take photographs of the tracks including a scale (e.g., a ruler, a 50c coin). Avoid using the camera flash.
10. Records should be kept in a field notepad or entered on to an electronic device as soon as possible. All research data must be maintained in accordance with the University's Research Data Management Policy.

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

Allen, L., Engeman, R. M., and Krupa, H. W. (1996). Evaluation of three relative abundance indices for assessing dingo populations. Wildlife Research 23, 197-206.

Engeman, R. M., Allen, L., and Zerbe, G. O. (1998). Variance estimate for the Allen activity index. Wildlife Research 25, 643-648.

Eyre TJ, Ferguson DJ, Hourigan CL, Smith GC, Mathieson MT, Kelly, AL, Venz MF, Hogan, LD & Rowland, J. 2018. Terrestrial Vertebrate Fauna Survey Assessment Guidelines for Queensland. Department of Environment and Science, Queensland Government, Brisbane.

Moseby, K.E., Nano, T and Southgate, R. (2012). 'Tales in the Sand; A guide to identifying Australian arid zone fauna using spoor and other signs'. Ecological Horizons, South Australia.

National Health and Medical Research Council (2013) Australian code for the care and use of animals for scientific purposes, 8th edition. Canberra: National Health and Medical Research Council.

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**
30/05/2019	0.0	**04/04/2019** UniSQ AEC "Subject to Modifications." 30/05/2019 Reviewed and approved by the UniSQ AEC Executive.	Approved
14/04/2022	1.0	**14/04/2022** UniSQ AEC 3 year SOP review. UniSQ AEC "Approved."	3 Year Review
16/09/2022	1.1	**16/09/2022** Converted SOP to new UniSQ branding	UniSQ 2022 Rebrand