

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 mammal species
- Various reptile species
- Various bird species
- Various amphibian species

Purpose

The purpose of this SOP is to describe spotlighting of wildlife. Spotlighting can be done either on foot or by vehicle, usually along pre-determined transects (Eyre et al. 2018). This method is useful for obtaining estimates of nocturnal animal abundance and incidence, particularly arboreal species and medium-large terrestrial species, while being relatively non-invasive (Eyre et al. 2018). However, it is of limited use in densely vegetated areas due to limited light penetration (Department of Sustainability, Environment, Water, Population, and Communities 2011). In order to optimise detections, it is important to understand the factors affecting detectability including animal behaviour, life history, and ecology of the target species, as well as weather variables such as rain and wind (Eyre et al. 2018). It is recommended that transects are 100 m apart to optimise detections, as detection distances are usually up to 50 m (Department of Sustainability, Environment, Water, Population, and Communities 2011).

White light can temporarily reduce visibility for animals, and so avoiding prolonged exposure (<2 minutes) to a white spotlight beam is highly recommended (Eyre et al. 2018; Jackson 2020). Spotlights under 50 W are recommended in most usual circumstances (Charles Darwin University AEC 2016). If there is a need to observe the animal for several minutes, such as to determine identification or monitor behaviour, it is recommended to dim the light, or use a red filter over the light to minimise disturbance (Eyre et al. 2018).

Definitions

AEC	Animal Ethics Committee
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Linked SOPs

SOP ID number	SOP title
N/A	

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

- Enclosed footwear
- Insect repellent

Animal wellbeing considerations

Perceived stressors	Management strategy
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Temporary reduction in night vision due to exposure to spotlight beam	If there is a need to observe the animal for several minutes, such as to determine identification or monitor behaviour, it is recommended to dim the light, or use a red filter over the light to minimise disturbance.
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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

- Suitable spotlights – 30-50 W or up to 1,000 lumens is recommended. Easily carried and suitable battery life.
- Vehicle (if required)
- Red filter, or if using LED use a light with a wavelength range of 620-700 nm to produce red light

Site specification or location requirements

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

Waste disposal

Not applicable.

Duration of the procedure

- Variable depending on transects, but approximately 1-5 hours.

Procedure

Walk spotlighting

1. Walk the transect at a slow and steady pace.
2. Move the light in a consistent, sweeping arc, at a slow speed to detect eye shine. Keep the light near the observer's line of sight to maximise the probability of detection.
3. When eye shine is detected, momentarily focus the spotlight on the animal for identification purposes. Avoid prolonged exposure. If required, use a red filter when longer observations are necessary.
4. Note down relevant details such as location, species, number of animals observed, sex (if possible to distinguish), and distance from observer.
5. Continue walking the transect.

Vehicle spotlighting

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1. Drive the transect at a slow and steady pace (e.g. 5 km/hour or 20 km/hour).
2. Move the light in a consistent, sweeping arc, at a slow speed to detect eye shine. Keep the light near the observer's line of sight to maximise the probability of detection.
3. When eye shine is detected, slow the vehicle to a stop, and momentarily focus the spotlight on the animal for identification purposes. Avoid prolonged exposure. If required, use a red filter when longer observations are necessary.
4. Note down relevant details such as location, species, number of animals observed, sex (if possible to distinguish), and distance from observer.
5. Continue driving the transect. It is recommended to keep the car engine turned on if possible, to avoid startling animals with a restart of the engine.
6. Note: vehicle spotlighting is recommended for larger species only.

Training, qualifications or competencies required

Researchers with relevant experience or qualifications 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

Charles Darwin University AEC (2016), *Standard Operating Procedure: Addressing Animal Welfare in Fauna Surveys*, Charles Darwin University.

Department of Sustainability, Environment, Water, Population, and Communities (2011), *Survey guidelines for Australia's threatened mammals*, <http://www.environment.gov.au/system/files/resources/b1c6b237-12d9-4071-a26e-ee816caa2b39/files/survey-guidelines-mammals.pdf>

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, version 3.0.

Jackson, S (2020), *Wildlife Surveys*, Animal Ethics Infolink – NSW Department of Primary Industries and Animal Research Review Panel, Guideline 10, <https://www.animaethics.org.au/policies-and-guidelines/wildlife-research/wildlife-surveys>.

Licences and permits

Please confirm well prior to use that you do not require Department of Environment and Science (DES) wildlife permits to do spotlight surveys by contacting DES. Other states in Australia may have different requirements for permits.

SOP approval and review history

Date	Version	Review Pathway	Notes
3/11/2021	0.0	07/10/2021 UniSQ AEC "Subject to Modifications." 03/11/2021 Reviewed and approved by the UniSQ AEC Executive.	N/A
28/11/2023	0.1	28/11/2023 Converted SOP to new UniSQ branding and revised all reference of 'USQ' to 'UniSQ'	UniSQ Rebrand