Charles Darwin University Animal Ethics Committee

Standard Operating Procedure:

Cage traps for live capture of terrestrial vertebrates (WA DBCA)

Version No:	Version 1.4
Date of Approval by the CDU AEC:	16/10/2024
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Please note: this SOP has been developed for animal use in WA. Consideration should be taken to the specific conditions of the region in which your work is being conducted, and modifications to procedures made accordingly to ensure the best welfare of the animal and safety of the project participants. Any modifications required should be outlined in the project application.

The CDU AEC approves the following SOP with the below amendments/conditions:

- Traps must be checked within 2 hours of sunrise to account for NT weather conditions.

CHARLES DARWIN UNIVERSITY AUSTRALIA

Standard Operating Procedure

SC24-03 CAGE TRAPS FOR CAPTURE OF TERRESTRIAL VERTEBRATES

Animal welfare is the responsibility of all personnel involved in the care and use of animals for scientific purposes.

Personnel involved in an Animal Ethics Committee approved project should read and understand their obligations under the *Australian code for the care and use of animals for scientific purposes*.

Version 1.4

August 2024

GOVERNMENT OF WESTERN AUSTRALIA

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Approved by the DBCA Animal Ethics Committee:

Dr Jacqui Richards
Chairperson, Animal Ethics Committee
Department of Biodiversity, Conservation and Attractions

Contents

1 Acknowledgements

This standard operating procedure was originally developed by Christine Freegard and Vanessa Richter, with contributions from Peter Orell, Peter Mawson and Neil Thomas.

2 Purpose

Cage trapping is a common method used for monitoring many species of small to medium-sized mammals. Cage traps usually operate using a treadle plate mechanism, which is set off when an animal steps on the elevated trigger plate and springs the door closed. Cage traps may also catch a range of non-target species including birds and reptiles.

This Standard Operating Procedure (SOP) provides advice on the use of cage traps for non-lethal trapping of terrestrial vertebrate fauna.

3 Scope

This SOP has been written specifically for scientific and education purposes, and approved by the Department of Biodiversity, Conservation and Attractions (DBCA) Animal Ethics Committee (AEC). However, this SOP may also be appropriate for other situations.

This SOP applies to all fauna survey and monitoring activities involving the use of cage traps undertaken across Western Australia by DBCA (hereafter department) personnel. It may also be used to guide fauna related activities undertaken by Natural Resource Management groups, consultants, researchers and any other individuals or organisations. All department personnel involved in cage trapping should be familiar with the content of this document.

This SOP complements the *Australian code of practice for the care and use of animals for scientific purposes* (The Code). The Code provides the ethical framework and governing principles to guide decisions and actions of all those involved in the care and use of animals for scientific purposes, and should be referred to for all AEC approved projects. A copy of the code may be viewed by visiting the National Health and Medical Research Council website (https://www.nhmrc.gov.au/about-us/publications/australian-code-care-and-use-animals-scientific-purposes).

4 Animal Welfare Considerations

To reduce the level of impact of cage trapping on the welfare of animals, personnel must consider, address and plan for the range of welfare impacts that may be encountered. Strategies to reduce impacts should be identified during the planning stage to ensure that they can be readily implemented during trap set up and trap checking, and contingencies for managing welfare issues have been identified. Ensure that all personnel involved in the project are aware of the range of issues that they may encounter, the options that are available for reducing impacts and improving animal welfare, and the process for managing adverse events.

Department projects involving cage trapping will require approval from the department's AEC. Key animal welfare considerations that should be considered when cage trapping are listed below and highlighted throughout the document.

4.1 Injury and unexpected deaths

If adverse events including injury, unexpected deaths or unplanned requirement for euthanasia occur, then it is essential to consider the possible causes and take action to prevent further issues. Adhering to the guidance in this SOP will assist in minimising the likelihood of adverse events. For projects approved by the department's AEC, adverse events must be reported in writing to the AEC Executive Officer as soon as possible after the event by completing an *Adverse Event Form*. Guidance on first aid for animals and field euthanasia procedures are described in the Department SOPs for *First Aid for Animals* and *Euthanasia of Animals Under Field Conditions*. Where infectious disease is suspected, refer to the department SOP for *Managing Disease Risk in Wildlife Management* for further guidance.

4.2 Level of impact

Potential animal welfare impacts experienced during cage trapping include:

- Capture myopathy (particularly for macropods)
- Trauma (e.g. head or nose injuries from hitting walls of the trap; toe / nail injuries from capture under treadle or in mesh)
- Smaller non-target species trapped in the mesh of the cage
- Stress as a result of exposure to harsh environmental conditions within the trap (i.e. temperature, rain).
- Distress (caused by confinement, discomfort, social isolation, separation of mother and young, exposure to predators, ants, etc.)
- Predation

If cage traps are properly monitored and preventative actions are utilised, then the welfare risk and overall impact should be low and short-term. Project planning must involve the identification and mitigation of all potential welfare risks to minimise their impacts as much as possible. Note that whilst these risks are specifically associated with the use of cage traps, an animal may also experience other impacts from associated procedures. Investigators must be aware that the effects of a series of stressors, such as capture, handling, transportation, sedation, anaesthesia and marking can be cumulative.

5 Approved Trap Types

Large Cage: Galvanised wire mesh cage trap (approx. 45 cm x 45 cm x 90 cm) with a treadle plate release mechanism. Large cages are used primarily for feral cat (*Felis catus*) trapping.

Small Cage: Galvanised wire mesh cage trap (20 cm x 20 cm x 56 cm) with a treadle plate release mechanism. Collapsible forms are available. Used for most medium-sized mammals such as chuditch (*Dasyurus geoffroii*), quenda (*Isoodon fusciventer*), brushtail possums (*Trichosurus vulpecula*) and woylies (*Bettongia penicillata ogilbyi*). Small cages also catch small Dasyurids and rodents as well as Varanids, large skinks and occasionally birds.

Smaller cage traps have been specifically manufactured for northern quolls (*Dasyurus hallucatus*).

Some older trap models use a trigger mechanism attached to a bait hook hanging from the roof of the trap. When the hook is tugged on by an animal, the door releases and closes. Other

traps use hooks to keep bait off the ground. Traps with hook-release mechanisms are not acceptable. Where traps with bait hooks are still in use, the hook must be completely closed to form a loop so that an animal is unable to get caught on the hook.

Many cage traps used in Western Australia are manufactured by Sheffield Animal Traps (previously Sheffield Wire Products) and so are sometimes referred to as "Sheffields." Cage traps manufactured with different trigger mechanisms may also be appropriate and their use is not excluded, provided they do not pose additional welfare risks to animals (see reference to 'hooks' above). Projects approved by the department's AEC preferring to use alternative cage style traps to those mentioned here may do so if they describe in detail the differences in design and are able to report survivorship rates and welfare impacts which are acceptable to the AEC.

All traps should be checked for sharp edges, protrusions, or gaps/holes large enough for entrapment of digits/limbs which can cause injury, regardless of age of trap (some new traps can have rough or sharp edges from the milling/cutting process.) Proper function of the doors and trigger mechanisms should also be checked, particularly after long distance or rough (4WD track) transportation, as malfunctioning devices may pose a risk by partially trapping an animal.

The solid nature of cage traps means that animals can injure themselves whilst inside the trap. To minimise these injuries soft trap options have been developed and are covered in the Department SOP for *Soft Cage Traps for Capture of Macropods*. These soft traps are preferred for species that are particularly prone to injury or capture myopathy and have been effectively used for a variety of species including rock-wallabies (*Petrogale spp.*), tammar wallabies (*Notamacropus eugenii derbianus*) and rufous hare-wallaby (*Lagorchestes hirsutus*).

Figure 1 A cage trap with hessian and vegetation cover. Photo: Christine Freegard/DBCA

6 Procedure Outline

6.1 Setting and positioning traps

(a) The location and configuration of trap placement (e.g. transect or grid) as well as the number of traps will be determined by the purpose of the study and should be planned before commencing the survey. Consider the target species' likely use of habitat, home range size, and welfare implications of trap placement when designing trap configuration.

Example: Transects of 50 small cage traps spaced at 200 m intervals (total 10 km) have been used as the standard method for monitoring target species under the *Western Shield* program.

(b) Trap locations must be marked so that no traps are missed when checking or removing them (e.g. with flagging tape which is labelled and using a numbering system which uniquely identifies each trap). A GPS reading for each trap point is strongly recommended as it allows animal handlers who are unfamiliar with the traps to find them easily if necessary. Permanent monitoring trap sites should also be marked using a permanent marker (e.g. numbered dropper post). The location information for permanent monitoring transects and their trap points should be recorded on datasheets and a database.

(c) If setting traps along roads or vehicle tracks, traps must be placed away from the roadside (generally a distance of 5 m or greater on publicly accessible roads and tracks) so that they are not readily visible from the road to avoid public curiosity and possible theft of traps, and to reduce the disturbance on trapped animals from passing vehicles. In areas with a high level of risk of public interference, mark the trap location on the track using flagging on the opposite side to the trap. Mark the trap itself with a GPS.

(d) Trap placement:

ANIMAL WELFARE: Trap placement can greatly affect animal welfare. Consider the climate of the area you are trapping in and the species' biology (e.g. thermoregulation characteristics) when choosing a trap position. Traps need to be placed in suitable locations that provide shelter from the sun and protection from rain to reduce exposure of trapped animals. For example, consideration needs to be given to the movement of the sun (and therefore shade), prevailing winds and drainage in wet conditions. Consider the orientation of the sun and the period of the day when the captured animal will be in the trap.

Thick trap covers that provide protection from the elements and reduce the sense of exposure by the animals are required (refer point (f) below). If the traps are likely to capture species that are prone to panic or stress (e.g. woylies), trap placement should also allow animal handlers to approach the traps without increasing the stress of the animal (e.g. approach trap from the side rather than the front, reduced noise from walking on leaf litter, and minimal talking).

Do not place traps on or in the vicinity of ant nests.

(e) Traps must be set in level positions using natural cover wherever possible (e.g. Figure 1). Debris and/or vegetation should be cleared from under the trap to ensure stability and prevent obstructions from stopping the dropping and locking of the trap door. In some

areas where the ground is uneven or ground vegetation makes it difficult for the door to close, it may be appropriate to place a short straight stick, no longer than the width of the cage, under the bottom front edge of the trap to lift the bottom lip of the trap mouth just off the ground and provide clearance for the door to close easily. Note that this must be done in a way that will not reduce trap stability and will not create issues for an animal stepping into the trap.

(f) Traps can be tampered with by animals seeking to access the bait or trapped animal. If an animal is in the trap this can cause them great stress, and if the trap is empty, this can allow individuals to access the bait without triggering the trap, reducing the quality of the data. Weighing down traps, for example with a rock or log, can prevent traps from tipping or rolling over if disturbed.

(g) Cage traps must have adequate shelter and protection for the welfare of captured animals. Cage traps should be covered with heavy weight hessian (or similar material with the same protective qualities) to provide captured animals with security and shelter from the elements. Place the hessian over the top of the trap and wrap around to cover exposed sides. The cover needs to be secured to ensure that it cannot be easily removed by an animal and wind cannot blow the hessian off the trap. Options include using a rock or log, nestling the trap into a bush, tucking the edges of the bag under the trap (ensuring the stability of the trap is not impeded) or piling sand on the edges of hessian. Ensure that the trap release mechanism is not impeded by the hessian or method used to secure it.

(h) Before the trap is left, it is important to re-check that the mechanism is working properly, the trap cover is effective and secure, and the trap is positioned to take advantage of shade in the morning. Faulty equipment reduces the opportunity to trap animals and can result in poor data and reduce the value of the trapping effort.

(i) All traps must be accounted for before and after each trapping session.

6.2 Baiting traps

When choosing the type of bait for your traps always consider the target species and possible non-target captures. Bait is intended to lure an animal into the trap. In some instances bait can also be used to provide a small amount of sustenance to trapped animals.

Small Cage: The standard bait used in small cages is a mixture of peanut paste, rolled oats and sometimes sardines which is also known as “universal bait” (*Note: sardines may increase the attraction of ants and you may want to consider excluding them from the bait if ants are an issue, however this may reduce the likelihood of capturing dasyurids or other carnivorous species*). Small cages require a quantity about half to a third of the size of a golf ball. Refer to Appendix I for more information.

ANIMAL WELFARE: Some peanut butters use xylitol as a sugar substitute. There are no data available regarding the toxicity of xylitol to Australian wildlife, but xylitol is toxic to dogs. If using universal bait, please check the ingredient list on the peanut butter and avoid brands containing xylitol.

Alternative baits such as tuna, sardines, and chicken can be considered when targeting

carnivorous mammals such as chuditch. Use of a meat bait may also increase captures of reptiles, particularly varanids and skinks. The use of meat baits may increase the likelihood of ant issues. See Section 6.3(g) below for advice on mitigating this risk.

If using a meat bait, personnel should maintain good hygiene practices when handling the baits, such as washing and disinfecting their hands after contact with the bait, and avoiding touching their face, mouth and trapping equipment until cleaned. Incorrect handling and hygiene surrounding meat baits can potentially lead to foodborne infections, such as Salmonella. Gloves can also be worn when preparing or handling meat baits. Gloves should be removed when no longer handling baits to avoid contaminating other equipment.

Other bait types or ingredients may be used if these have been identified as appropriate and approved for use for a particular project and/or species.

Care must be taken when baiting traps to ensure that the bait is placed clear of the treadle plate and does not impede the closing mechanism. To avoid bait rolling underneath the treadle plate and rendering the trap inoperative, it is recommended that universal bait balls are slightly squashed so that they cannot roll under the treadle.

Baits should be replaced when their effectiveness as a lure is reduced (e.g. when the odour of the bait is reduced or gone) or if the bait may impact on an animal's health if consumed (e.g. rancid). Baits should be replaced rather than additional baits placed in the cage – more bait in the cage may increase the probability of the treadle being impeded. Collect and remove all old baits entirely rather than leaving on site as to prevent any alternative food source and potential missed captures.

6.3 Checking traps

ANIMAL WELFARE: In determining the duration and frequency of trapping, you should consider the purpose of your study and the potential welfare impacts from recapturing animals on multiple occasions (e.g. limitations on feeding, welfare of dependent young). Consider the duration and frequency that will allow the goal of the activity to be achieved with the minimal impact on animals. Some animals become "trap happy" (entering traps on multiple consecutive nights) and this can impact their wellbeing by disrupting behaviours such as normal feeding, foraging, breeding and defending territories.

Avoid trapping in breeding seasons where lactating females may be separated from dependent young or when there is an increased likelihood of injury or separation of dependent young (e.g. brushtail possums during pouch emergence). However, many species breed throughout the year making it impossible to completely avoid trapping animals at sensitive times. If captured, lactating animals should be released as soon as possible. If the same lactating female is caught on successive nights, consideration should be given to moving or closing the trap. Recapture condition can be monitored by weighing animals on each recapture. If an individual has lost >10% body weight from the first capture event then traps in the area should be closed at least for one night but potentially for the rest of the session to give the individual time to recuperate.

Avoid trapping or close traps in extreme weather conditions. Plan ahead and monitor long-range and daily weather forecasts.

For programs such as *Western Shield* monitoring it is recommended that traps are set for a minimum of four consecutive nights.

(a) All traps must be accounted for when setting and checking traps. Personnel undertaking the trapping should keep tallies of traps to ensure that all are checked on every occasion. This is the responsibility of the person in charge at the survey location on the day. There is no excuse for leaving traps unchecked.

ANIMAL WELFARE: The timing and frequency of trap checking and clearing is determined by considering the behaviour and biology of the target species (and potential by-catch species) in association with the environmental conditions at the site. The timing and frequency of trap checks should be reviewed and adapted when and if conditions change or adverse events occur. Traps may need to be checked more frequently throughout the day and/or night if prolonged trap confinement or environmental conditions are likely to increase the impact on animal welfare and affect survivorship.

(b) Where nocturnal species are being targeted, traps must be checked early in the morning during the period when temperatures will have minimal effect on the trapped animals (no later than 3 hours after sunrise but as early as possible in high temperature conditions). If checking of traps cannot be completed within this timeframe, trap numbers must be reduced or the number of personnel increased before any further trapping occurs.

(c) Traps must either be closed on checking and re-opened late afternoon, or, if they need to remain open (i.e. targeting diurnal animals), the Animal Ethics application must provide information to show that leaving traps open during the day will not impact animal welfare. Traps remaining open during the day must be in a shaded position, and consideration should be given to more frequent checking throughout the day, particularly in hot weather or if there are non-target captures.

(d) An appropriate handling bag must be carried when approaching a trap to ensure rapid removal of the animal from the trap (see the department SOP for *Animal Handling and Restraint using Soft Containment*).

(e) Take care when approaching the trap and minimise noise during your approach (reduce noise from walking, leaf crunch, vehicles, talking etc.). A second handling bag may be used to quickly cover the front of the trap (the exposed front of the trap) which may aid in calming agitated trapped animals, particularly woylies.

(f) Bait within each trap should be checked daily and replaced when necessary. Traps without bait reduce the validity of trapping results.

(g) The presence of ants in the trapping area can lead to detrimental impacts on captured animals. A small amount of surface insecticide (e.g. a liquid-based permethrin product such as Coopex®) can be applied around and below traps to discourage ants. Extreme care must be taken to ensure that no free-standing liquid droplets remain when using liquid-based permethrin as absorption/ingestion can be lethal to frogs and reptiles Consider alternatives in areas with a high likelihood of capturing amphibians or reptiles. Always read the Safety Data Sheet (SDS) of chemicals before use. If ants become highly attracted to the trapping area, remove and relocate the traps to a more suitable position. One way to reduce risk of ant infestation is to remove bait each morning when clearing traps and replace when resetting in the afternoon.

ANIMAL WELFARE: If moderate to high numbers of ants are identified at a trap site, or if small numbers of ants cause welfare issues, then the trap must be closed or moved to another location.

(h) Trapping data should be recorded on an appropriate trapping datasheet and transferred to a suitable database as soon as possible after trapping.

6.4 Removing animals from traps

All animal handling must be done by (or under the direct supervision of) trained and competent personnel. Techniques for removing animals from traps vary depending on the species involved and the experience and skills of the animal handler. This information is provided as a general guide only.

ANIMAL WELFARE: Capture myopathy is a condition which may be seen in many species of mammals and birds. It may be associated with:

- capture and restraint
- transport
- repeated handling
- placing animals in an unfamiliar environment or close confinement
- pursuit

Although it is mostly associated with prolonged muscle exertion, it may also be seen in animals experiencing fear or anxiety without physical exertion, as the physiological changes which occur are caused by prolonged and sustained adrenaline effects on the circulation, as well as muscle damage and lactic acid buildup (Vogelnest and Portas, 2008).

The condition can result in sudden death. Death can also occur weeks after capture as a result of complications including organ failure and a loss of mobility which increases susceptibility to predation (Abbot *et al*., 2005).

Affected animals may exhibit panting, increased heart rate, shock, hyperthermia, muscle tremors and spasms, collapse, inability to hold the head up and inability to stand.

Capture myopathy carries a guarded to poor prognosis and management should focus on preventing its occurrence through efforts to minimise stress. Animals should only be handled for as long as required to identify them, undertake a brief assessment for any signs of injury, and to collect any necessary measurements (usually no more than five minutes). At a maximum they must be released (or reach alternate end point) within 24 hours of capture. Every effort should be made to avoid stressful events during hot weather.

Records of animals suspected to be suffering from capture myopathy need to be reported to the department's AEC. Any animal suspected to have died from capture myopathy must be sent for necropsy and a copy of the report provided to the department's AEC with an Adverse Event Form.

ANIMAL WELFARE: Ejection of pouch young is common in species of the Macropodidae, Potoroidae and Peramelidae families. Personnel that may encounter species of these families whilst trapping must be familiar with the department SOP for *Short-term joey intervention procedures*. Records need to be kept on the care and fate of ejected pouch young for annual reporting requirements for the department's AEC approved projects.

(a) Use handling bags appropriate for the species and length of containment as advised in department SOP for *Animal Handling and Restraint using Soft Containment*.

ANIMAL WELFARE: All handling bags and equipment should be kept clean to minimise risk of disease, contamination etc. Refer to the department SOP for *Managing Disease Risk and Biosecurity in Wildlife Management* for further guidance.

(b) Remove animals from the trap as efficiently as possible.

(c) Keep traps covered as much as possible during removal of the animal to minimise stress.

(d) Small Cage: Animals should be encouraged to enter the handling bag by placing the bag over the end of the trap and manipulating the door to the open position. Lifting small cages with an animal inside should be avoided. Gentle encouragement via blowing on the animal (e.g. short, sharp breaths), using light and dark or positioning of the animal handler's body toward the rear of the trap can help.

(e) Check for dependent young after an adult is removed from a trap (inside the back of the trap, under hessian and beside the trap).

(f) Particular care should be taken for those species that may eject pouch young.

(g) Venomous or dangerous animals such as snakes should be released with consideration given to the best possible escape route for both animal and personnel. The door can be propped open to allow the animal to leave when the animal is ready. Similarly, the cage can be gently turned upside down from behind the cage with the aid of a long stick. A similar method can used to release echidnas from traps, given they will often avoid moving in the presence of people.

(h) Provided there is no risk to personnel safety, captured animals must undergo a brief assessment for any signs of injury.

ANIMAL WELFARE: Repeatedly recapturing individuals, particularly over a short timeframe, may increase the impact on their welfare. Consideration should be given to temporary marking individuals where (semi)permanent marking is not necessary to meet the objectives of a given project. This will aid animal handlers in understanding recapture rates. Recaptured animals should be released immediately when their data are not required. In cases where the same individual is being caught repeatedly, animal handlers should consider if sufficient data have been collected, and close the site/trap.

(i) Captured animals must be released at point of capture (unless an alternate fate has been approved by the AEC). Animals should be released as soon as possible and at an appropriate time of day or night. Animals must be released, or reach an alternate endpoint approved by the department's AEC, within 24 hours of capture. Animals should be released into good shelter where necessary and caution taken to reduce exposure to risks such as predation. Be aware of raptors in the vicinity when clearing traps.

6.5 Picking up traps

(a) All traps must be counted out upon setting and counted in when removed from the trapping site. Personnel undertaking the trapping should keep tallies of traps to ensure that all have been collected and that there are no traps remaining in the field. If traps are not being collected immediately after checking (i.e. traps are not being checked and

picked up simultaneously), the traps must be closed on checking and remain closed until they are picked up. This is the responsibility of the person in charge at the survey location on the day. There is no excuse for leaving traps set in the field.

(b) Ensure residual bait is removed from traps and flagging tape is removed from the area.

7 Trap hygiene and maintenance

ANIMAL WELFARE: Traps and hessian covers must be cleaned and disinfected after each trapping session. Do not move dirty hessian covers and traps from one working site to another as it poses a disease risk for animal populations. To avoid possible transfer of pathogens use one batch of hessian covers and traps for each site or connected group of sites. Refer to the Department SOP for *Managing Disease Risk and Biosecurity in Wildlife Management*.

(a) Traps must be maintained in good working order.

(b) In some instances, particularly traps that have held reptiles or brushtail possums, the trap will require faecal material to be removed within a trapping period. Particular attention should be paid to the release mechanism to ensure it is kept free of bait and scats. Also, clear the scats that can build up below the trap. Instructions on cleaning and disinfection of traps are available in the department SOP for *Managing Disease Risk and Biosecurity in Wildlife Management*.

(c) Hessian bags used as trap coverings should also be cleaned and disinfected after each trapping session following the instructions contained in the department SOP for *Managing Disease Risk and Biosecurity in Wildlife Management*.

(d) Do not carry the traps by any of the moving parts and do not put any excessive weight into traps that will be carried. Minimise cage damage during transport in / on vehicles by orientating all cages in the same direction to prevent them catching on one another.

(e) Any damaged traps requiring attention need to be flagged and labelled in the field when a problem is identified so that it can be attended to and removed from use until repaired.

8 Competencies

A person who is competent has the knowledge, skills, and experience that allows them to capture and handle animals successfully, and appropriately manage adverse events as required. Department personnel, and other external parties covered by the department's Animal Ethics Committee, undertaking projects involving cage traps require approval from the committee and will need to satisfy the competency requirements detailed in Table 1. Other groups, organisations or individuals using this SOP to guide their cage trapping activities are encouraged to also meet these competency requirements as well as their animal welfare legislative obligations.

It should be noted that sampling design details such as intensity and scope of the project being undertaken will determine the level of competency required and Table 1 provides advice for standard monitoring only.

Table 1. Competency requirements for Animal Handlers of projects using cage traps to capture fauna

Competency category	Competency requirement	Competency assessment
Knowledge	Broad understanding of the framework governing the use of animals in research and environmental studies in Western Australia	Training (e.g. DBCA Fauna Management Course or equivalent training). In applications, provide details on the course provider, course name and year.
	Understanding species biology and ecology	Personnel should be able to correctly identify the likely species to be encountered in cage traps for the site(s) being studied, and have an understanding of the species' biology and ecology. This knowledge may be gained through sufficient field experience and consultation of field guides and other literature.
	Understanding environmental conditions	Personnel should be aware of the environmental and seasonal conditions that may be expected on the project, and understand location-specific animal welfare considerations. In applications, provide details of time spent undertaking similar work in similar locations.
Fauna survey and capture skills/experience required	Experience setting and checking cage traps	Personnel should be familiar with the animal welfare principles of cage trapping (e.g. appropriate locations for trap installation, frequency of trap checking depending on climatic conditions, considerations for trap closure). In applications, provide details on the longevity, frequency & recency of experience.
Animal handling and processing skills/experience required	Experience handling terrestrial fauna	Personnel should be experienced at retrieving fauna from cage traps and restraint of the range of species likely to be captured. This experience is best obtained under supervision of more experienced personnel. In applications, provide details on experience relating to the expected species or species groups.
	Experience managing disease risk in wildlife management	Personnel should be familiar with hygiene procedures. This knowledge may be gained through sufficient field experience and consultation of literature.

In conjunction with possessing the required understanding and knowledge of cage trapping procedures and animal welfare requirements, a guide to the experience and skill requirements for an animal handler to be considered competent to capture and handle animals is as follows: (noting that some personnel with experience may still require initial supervision in unfamiliar locations or with species that they have not encountered previously):

- Total time in field: minimum 4-8 weeks undertaking cage trapping.
- Recency of time in field: within the past 5 years.
- Minimum 30 individuals of similar species handled.

9 Approvals

In Western Australia any person using animals for scientific purposes must be covered by a licence issued under the *Animal Welfare Act 2002*, which is administered by the Department of Primary Industries and Regional Development.

Projects involving wildlife may also require a licence/authorisation under the *Biodiversity Conservation Act 2016* (examples below). Personnel should consult the department's Wildlife Licensing Section for further guidance. It is your responsibility to ensure you comply with the requirements of all applicable legislation.

- Fauna taking (scientific or other purposes) licence (Reg 25)
- Fauna taking (biological assessment) licence (Reg 27)
- Fauna taking (relocation) licence (Reg 28)
- Section 40 Ministerial Authorisation to take or disturb threatened species.

10 Occupational Health and Safety

The following departmental SOPs for wildlife survey and monitoring activities are relevant to occupational health and safety:

- SOP *Managing Disease Risk and Biosecurity in Wildlife Management*
- SOP *Hand Restraint of Wildlife*

Departmental personnel, contractors and volunteers have duties and responsibilities under the *Occupational Safety and Health Act 1984* and Occupational Safety and Health Regulations 1996 to ensure the health and safety of all involved. Fieldwork is to be undertaken in line with the department's corporate guidelines, policies and standard operating procedures, including but not limited to, risk management and job safety analyses. Further information can be found at https://dpaw.sharepoint.com/Divisions/corporate/people-services/HS/SitePages/SOPs.aspx

If department personnel or volunteers are injured, please refer to the departmental Health, Safety and Wellbeing Section's 'Reporting Hazards, Near-misses and Incidents' intranet page, which can be found at https://dpaw.sharepoint.com/Divisions/corporate/people-services/HS/SitePages/Reporting-Hazards,-Near-Misses-and-Incidents.aspx

11 Further Reading

The following SOPs have been mentioned in this advice and it is recommended that they are consulted when proposing to capture wildlife with cage traps:

- Department SOP *Soft Cage Traps for Capture of Macropods*
- Department SOP *Animal Handling and Restraint using Soft Containment*
- Department SOP *Short-term joey intervention procedures*
- Department SOP *First Aid for Animals*
- Department SOP *Managing Disease Risk and Biosecurity in Wildlife Management*
- Department SOP *Euthanasia of Animals Under Field Conditions*

For further advice refer also to:

Environmental Protection Authority and Department of Environment and Conservation (2020) *Technical Guidance - Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment*, EPA, Western 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.

12 References

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13 Glossary of Terms

Animal handler: A person listed on an application to the department's Animal Ethics Committee who will be responsible for handling animals during the project.
Bait: A consumable lure used to attract the target species into a trap.
Cage trap: A trap for the live capture of animals constructed of wire mesh. Cage traps operate by the animal treading on a weight-sensitive trigger plate which causes the door to close and lock.

14 Appendix I: Universal Bait Recipe

Equipment

- Mixing bowl or bucket
- Mixing spoon (optional: can just use your hands)
- Container with lid to store bait
- Disposable gloves

Ingredients

- 500g Quick cooking oats
- 2 kg (5-6 375g tubs) Smooth peanut butter (Xylitol free)
- *Optional:* Between 110g (1 tin) and 636g (6-8 tins) Sardines (preferably in oil, or springwater)
- *Optional:* Cooking oil, preferably peanut oil
- *Note: Avoid using ingredients that contain additives, preservatives or artificial colours and flavours.*
- Serves: makes enough bait for approximately 100 cage traps for 4 trap nights.

Methodology

- Ensure personnel mixing bait are not allergic to peanuts.
- Place oats (and sardines if using) into clean mixing bowl or bucket and mix so that the sardines are well distributed though the oats.
- Mix in peanut butter until the oats and sardines are well distributed and the mixture is not too dry or too sticky. Form a ball that is sticky and cohesive. Keep in mind that the mixture will become drier over time as the oats absorb the oil from the peanut butter.
- Store bait in a sealed container.
- Clean bait mixing equipment.
- Add extra peanut butter if mixture becomes too dry. Water or cooking oil can be used if extra peanut butter is not available.

Optional: Bait can be pre-rolled.

Roll bait into balls ready for placing in traps (approx. 20c coin size for cage traps and 10c coin size for box traps). The bait balls can be counted to match the number of traps being set. This will ensure that you have enough bait for all traps being set and will also act as an additional check to ensure all traps have been set and baited.

Animal Welfare

To reduce the risk of impact of the use of universal bait on wildlife ensure that bait is stored for no longer than the specified period of 5 days fresh, or 3 months frozen, to avoid the risk of the components spoiling and being unsuitable for consumption. Where possible do not leave bait in open sun. Any old bait should be disposed of after trapping and not frozen for later reuse. Do not use bait or bait containers which contain mould.
Potential animal welfare impacts of mixing universal bait include:

- Food poisoning
- Changing behaviour by providing a food source

References

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