

Charles Darwin University Animal Ethics Committee

Standard Operating Procedure:

DPAW SOP 23.2022 Soft cage traps for capture of macropods

Standard Operating Procedure No:	DPAW SOP 23.2022	Version No:	1.0
Date of Approval:	2 February 2022		
Last Amendment:	N/A		
Date for Review:	2 February 2025		

NOTE:

- In reference to section 5.3 b): The CDU AEC requires that cages are to be checked within 2 hours of sunrise.
- Consideration should be given to the environmental conditions of the research site. The project application should outline an appropriate monitoring and welfare regime in relation to the environmental conditions (i.e. will water be supplied in the traps, how frequently/when will traps be checked).

Standard Operating Procedure

SOFT CAGE TRAPS FOR CAPTURE OF MACROPODS

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

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

Prepared by: Species and Communities Branch, Biodiversity and Conservation Science, Department of Biodiversity, Conservation and Attractions

Prepared for: Animal Ethics Committee

Version 1.2

February 2018



Department of **Biodiversity,**
Conservation and Attractions

Department of Biodiversity, Conservation and Attractions
 Locked Bag 104
 Bentley Delivery Centre WA 6983
 Phone: (08) 9219 9000
www.dbca.wa.gov.au

This work is copyright. You may download, display, print and reproduce this material with suitable acknowledgement. Requests and enquiries concerning reproduction and rights should be addressed to the Department of Biodiversity, Conservation and Attractions.

Questions regarding the use of this material should be directed to:
 Principal Zoologist
 Species and Communities Branch | Department of Biodiversity, Conservation and Attractions
 Phone: (08) 9219 9511 | Email: fauna@dbca.wa.gov.au

The recommended reference for this publication is:
 Department of Biodiversity, Conservation and Attractions (2018). *Standard Operating Procedure: Soft Cage Traps for Capture of Macropods*. Perth, WA: Department of Biodiversity, Conservation and Attractions.

Disclaimer
 The State of Western Australia and its employees do not guarantee that this publication is without flaw of any kind or is wholly appropriate for your particular purposes and therefore disclaims all liability for any error, loss or other consequence that may arise from you relying on any information in this publication.

Acknowledgments
 This standard operating procedure was originally developed by Christine Freegard and Vanessa Richter, with contributions from Neil Thomas, Nicole Willers, Nicole Godfrey and Nicky Marlow.

Revision history log

Version	Date	Details	Author/Reviewer	Approved By	Approval
1.0	24/01/2009	Document created	V. Richter and C. Groom	P. Mawson P. Orell K. Morris	May 2009
1.1	23/04/2013	Revision with minor changes	R. Kay	M. Page	July 2015
1.2	20/02/2018	Revision with clarification of procedures	G. Yeatman, G. Anderson, M. Page, J. Renwick	D. Pearson	February 2018

Approved Version: 1.2

Approved by:  Date: February 2018
 David Pearson
 Principal Research Scientist, Animal Science
 Department of Biodiversity, Conservation and Attractions

Contents

1 Purpose	4
2 Scope	4
3 Animal Welfare Considerations	4
3.1 Injury and unexpected deaths	5
3.2 Level of impact	5
4 Approved Trap Types	5
5 Procedure Outline	6
5.1 Setting and positioning traps	6
5.2 Baiting traps	8
5.3 Checking traps	8
5.4 Removing animals from traps	10
5.5 Picking up traps	12
6 Trap care and maintenance	12
7 Competencies and Approvals.....	12
8 Occupational Health and Safety.....	14
8.1 Animal bites, stings and scratches	14
8.2 Zoonoses	14
8.3 Allergies.....	14
9 Further Reading.....	14
10 References.....	15
11 Glossary of Terms.....	15

1 Purpose

Soft cage traps are preferred for species that are particularly prone to injury in metal cage traps or to capture myopathy. The “soft” cage is usually made from shade-cloth or similar material which is attached to a rectangular metal frame. They operate using a treadle plate mechanism, which is set off when an animal steps on an elevated trigger plate and springs the door closed. They have been effectively used for a variety of species, including black-flanked rock-wallabies (*Petrogale lateralis lateralis*), quokka (*Setonix brachyurus*), tammar wallabies (*Macropus eugenii derbianus*) and some hare-wallabies.

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

2 Scope

This SOP has been written specifically for scientific and education purposes, and endorsed by the Department’s Animal Ethics Committee. However, this SOP may also be appropriate for other situations.

This SOP applies to all fauna survey and monitoring activities that may require the use of soft cage traps undertaken across the State by Department of Biodiversity, Conservation and Attractions (hereafter Department) personnel. It may also be used to guide fauna monitoring activities undertaken by Natural Resource Management groups, consultants, researchers and any other individuals or organisations. All Department personnel involved in the use of soft cage traps should be familiar with the content of this document.

Projects involving wildlife may require a licence under the provisions of the *Wildlife Conservation Act 1950* and/or the *Biodiversity Conservation Act 2016*. Personnel should consult the Department’s Wildlife Licensing Section and Animal Ethics Committee Executive Officer for further guidance. In Western Australia any person using animals for scientific purposes must also be covered by a licence issued under the provisions of the *Animal Welfare Act 2002*, which is administered by the Department of Primary Industries and Regional Development. This SOP complements the *Australian code of practice for the care and use of animals for scientific purposes* (The Code). The Code provides governing principles to guide decisions and actions of personnel involved in the care and use of animals, and contains an introduction to the ethical use of animals in wildlife studies. A copy of the code may be viewed by visiting the National Health and Medical Research Council website (<http://www.nhmrc.gov.au>).

3 Animal Welfare Considerations

To reduce the level of impact of soft cage trapping on the welfare of animals, staff 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 handlers and volunteers

involved in the project are aware of the range of issues that they may encounter, the options that are available for reducing impact and improving animal welfare and the process for managing adverse events.

Department projects involving soft cage trapping will require approval from the Department's Animal Ethics Committee.

Key animal welfare considerations that should be considered when soft cage trapping are listed below and highlighted throughout the document.

3.1 Injury and unexpected deaths

If adverse events including injury, unexpected deaths or euthanasia occur then it is essential to consider the possible causes and take action to prevent further incidents. For projects approved by the Department's Animal Ethics Committee, adverse events must be reported in writing to the AEC Executive Officer as soon as possible after the event by completing an *Adverse Events* form. Guidance on field euthanasia procedures is described in the Department SOP for *Humane Killing of Animals under Field Conditions*. Where disease may be suspected, refer to the Department SOP for *Managing Disease Risk in Wildlife Management* for further guidance.

3.2 Level of impact

The design of soft cages reduces the occurrence of injuries to captured animals, compared with metal cage traps. However, injuries can occur if the traps are not well maintained or are not manufactured in accordance with specifications. Details such as mesh size in Bromilow traps are specified for a reason and should not be substituted.

Potential animal welfare impacts of cage trapping include:

- Capture myopathy (particularly for macropods),
- Trauma (e.g. minor abrasions),
- Hypothermia,
- Heatstroke,
- Dehydration,
- Starvation,
- Distress (caused by confinement, discomfort, social isolation, separation of mother and young, exposure to predators, ants etc.).

If the soft cage traps are properly monitored and preventative actions are implemented then the impacts should be small and only short-term.

4 Approved Trap Types

A common feature of the soft cage traps is the use of soft material in the walls of the trap to absorb the movement of trapped animals and minimise injury. Approved soft cage trap types are:

Thomas Trap: Comprises a shade cloth 'bag' attached to a collapsible galvanised steel rod frame. The 'bag' is attached to the front of the frame by cable ties (for easy replacement of the shade cloth) and is hooked to the rear of the trap by shock-cord loops (see Figure 1). The

door is released via a treadle plate mechanism similar to that of a cage trap. The door consists of shade cloth attached to a steel rod frame by cable ties. This trap was designed by Neil Thomas (Science Division, Woodvale), with assistance from Sheffield Wire Products (Sheffield Rd, Welshpool WA), specifically for use with small to medium-sized macropods. It is manufactured commercially by Sheffield Wire Products. Two sizes have been manufactured: a 30cm high frame for hare-wallabies and 45cm high frame for tammar wallabies and rock-wallabies.



Figure 1: A Thomas trap set up with a hessian sack as shade (left) and a Thomas trap with a black-flanked rock-wallaby at Querekin Rock. Photo: Neil Thomas/DBCA (left) and Christine Freegard/DBCA (right).

Several variations of the Thomas trap have been field trialled and subsequent modifications have been made. Such modifications include different accessibility options for removing animals and methods of stabilising traps. The shade cloth 'bag' can be made to include a zip closing device or may just have overlapping layers of shade cloth material at the top for the easy removal of animals. A stabilising rod (approximately 1m in length; often metal or timber) may be secured to the rear of the larger (45 cm frame) trap to better stabilise the trap from rolling over. This is particularly helpful where the ground is too hard to use tent pegs to secure the trap. However, the use of tent pegs with the stabilising rod is recommended where possible, to provide maximum stability.

Bromilow Trap: Comprises a strong cotton or synthetic mesh 'cage' suspended within a collapsible aluminium frame with sliding door and treadle release mechanism. Shade cloth is fitted to the external frame, on all sides of the trap to provide shade for the animals and to reduce their sense of exposure. Bromilow traps were originally designed to capture black-flanked rock-wallabies (*Petrogale lateralis lateralis*) and design specifications are published in Kinnear *et al.* (1988). They are also suitable for tammar wallabies and other similar sized macropods. This trap design is not manufactured commercially.

5 Procedure Outline

5.1 Setting and positioning traps

(a) The location and configuration of trap placement (i.e. 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 and home range and welfare implications of trap placement when designing trap configuration and layout. Vegetation and habitat mapping may assist in survey design.

(b) Trap locations must be marked so that no traps are missed when checking or removing traps (e.g. with flagging tape which is labelled using a numbering system to uniquely identify traps and a GPS reading for each trap point). Permanent monitoring trap sites should also be marked using a permanent marker (e.g. numbered dropper post). The location information of monitoring transects and their trap points should be recorded on datasheets and a database.

(c) If setting traps along roads or vehicle tracks, the traps must be set so that they minimise the impact on the animals. Traps should be placed away from the roadside (generally a distance of 10m or greater on publicly accessible roads and tracks) so that they are not be readily visible from the road to avoid public curiosity and possible theft, and to reduce the disturbance of trapped animals by passing vehicles.

(d) Trap placement:

ANIMAL WELFARE: Trap placement can greatly affect animal welfare. Consider the climate and temperatures of the area you are trapping in and the species biology (thermoregulation characteristics) when choosing a trap position. Traps need to be placed in suitable locations that provide shelter from the sun and rain to reduce exposure (hot, cold or wet) 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 (g) below). If the traps are likely to capture species that are prone to panic or stress (e.g. woylies), trap placement should also consider allowing animal handlers to approach the traps without the knowledge of the potential captives (e.g. 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. Debris should be cleared from under the trap to ensure stability and check to make sure that no obstructions will stop the effective dropping and locking of the trap door.

(f) Thomas traps are designed to be light and some species may be able to flip the trap onto its side. Ensure that the trap is set on a stable surface, and where possible anchor the trap to the ground or nearby objects. Tent pegs, rocks or cables may be used to anchor the trap and prevent it from rolling.

(g) Soft cage traps are constructed in such a way that some protection from the elements is provided by the trap itself. The hessian carry bag for each Thomas trap should be draped over the top of the trap for added protection (see Figure 1). The hessian needs to be secured to ensure that it cannot be easily removed by an animal (e.g. brushtail possum) and so the wind cannot blow it off the trap. Options include using cables ties, nestling the trap into a bush, or using rocks or sand piles on the edges of hessian. Alternatively the hessian carry bag can be weaved under one side of the trap frame (the side opposite to the release mechanism) and if necessary secured with clothes pegs. Check that the trap cover is effective and secure and that the trap will always be positioned in the shade until emptied.

(h) Faulty equipment reduces the opportunity to trap animals, may injure animals and can result in poor data and reduce the value of the trapping effort. Check that the treadle release mechanism and the door are working properly and are not impeded by any obstacle under the treadle plate or that the hessian bag is not affecting the release mechanism on top of the trap.

(i) When rodents and rabbits are abundant they can cause problems as they enter the traps, set off the trigger and then chew their way out through the netting. Placing a series of aluminium box traps or cage traps next to the soft cage trap may assist in reducing the chance of the rodents or rabbits occupying the soft cage trap and maximises trap availability for the target species. Similarly, other locally common non-target species (e.g. brushtail possums) may decrease trap success of the target species by occupying traps. This problem may be overcome by placing standard cage traps beside soft cage traps in areas where numbers of non-target animals are high.

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

5.2 Baiting traps

When choosing the type of bait for your traps always consider the target species and possible non-target captures.

Various bait types are used in soft cage traps depending on the target species. Bait options include apples, Lucerne (fresh or dry), chaff, grain or pellets. *Note: If using grain, it should be treated in such a way that it cannot germinate.* Other bait types or ingredients may be used if they have been identified as appropriate and approved for use for a particular project.

It is recommended that some bait is placed outside the trap and leading into the trap to entice the target animals. The majority of bait should be placed at the very rear of the trap to minimise animals spending too much time around the front door and triggering the trap without capture.

To increase trap success, soft cage traps are often set up on site, wired open and pre-baited, a few days before the trapping session begins. This may help the target species become accustomed to the traps and therefore more likely to enter during the trapping session.

5.3 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 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). Tammar wallabies are synchronous breeders and have large young in the pouch or at heel between May and October. 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.

Avoid trapping or close traps in extreme weather conditions. Close pitfall traps if there is excessive rain or heavy rain is forecast. 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 during each day's trapping. Personnel undertaking the trapping should keep tallies of traps to ensure that all are checked. 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 should be determined by considering the behaviour and biology of the species being targeted (and potential by-catch species) in association with the environmental conditions at the site. Trap checking timing and frequency 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) Most studies using soft cage traps are targeting nocturnal species. For these studies, traps should be opened in the late afternoon/ dusk (to avoid both target and non-target animals being captured during the day) and are checked at night and at dawn to avoid stress, exposure and possible capture myopathy of animals from prolonged containment. Only under AEC approved conditions should traps for nocturnal species be left open during the day.

For macropods such as tammar wallabies and black-flanked rock wallabies 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 be closed after checking in the morning and re-opened late afternoon, or, if they need to remain open, the Animal Ethics application must provide compelling information to show that leaving traps open during the day will not impact animal welfare on target or non-target animals. 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 is a risk of birds or diurnal mammal capture.

(d) An appropriate handling bag must be carried when approaching a trap to ensure efficient 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, vehicles, minimal talking etc.).

(f) The bait must be checked daily in every trap and replaced where necessary. Traps without bait reduce the real statistical 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. permethrin-based products) in powder form can be applied around traps or in traps to discourage ants. Liquid or spray insecticides should never be used inside traps and 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. Always read the MSDS of chemicals before use. If ants become highly attracted to the trapping area remove the traps and relocate them to a more suitable position.

ANIMAL WELFARE: If moderate to high numbers of ants are identified at 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 in a database.

5.4 Removing animals from traps

All animal handling must be done by (or under the guidance of) trained and competent personnel. Techniques for removing animals from soft cage traps vary depending on the species involved and the experience and skills of the person(s) involved. Removal of animals from traps should be demonstrated in person and these notes are provided as general guidance only.

ANIMAL WELFARE: Removing animals from traps always poses a risk of injury. Consideration should be given to the risk of injury to spine and fore/hind claws when animals are being removed using a grip to the base of the tail. This method of removing an animal from a trap should only be performed by experienced personnel or under close supervision.

Capture myopathy is a condition associated with the capture and handling of many species of mammals and birds that results in degeneration of skeletal and/or cardiac muscle (Shepherd *et al.*, 1988). The condition can result in sudden death but death may also occur weeks after capture as a result of complications including abnormalities to posture and gait and increased susceptibility to predation (Abbott *et al.*, 2005). Signs and symptoms include a drooping head and neck, laboured breathing, tremors, lethargy and lack of coordination or paralysis.

Prevention of the condition through efforts to minimise stress to animals is better than treatment options. Records of animals suspected to be suffering from capture myopathy need to be provided to the Animal Ethics Committee for annual reporting requirements.

To ensure minimal stress to the animals, they should only be handled for as long as required to identify them and to collect any necessary measurements (usually no more than five minutes).

Ejection of pouch young can occur in macropods. Staff should ensure they are familiar with the Department SOP for *Care of Evicted Pouch Young*. Records need to be kept on orphans, their care and fate for annual reporting requirements for the Department's Animal Ethics Committee 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 in Wildlife Management* for further guidance.

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

(c) Techniques for efficiently removing an animal using the grip at the base of the tail depend on the physique of the operator, size and demeanour of the animal and the availability of an assistant. Access to the animal can be achieved through the top of the trap (depending on how it is constructed) or the door.

In the case of medium-sized animals such as tammar wallabies or black-flanked rock-wallabies, the trap is usually tipped on its end and the operator reaches in to grasp the base of the tail to lift the animal out of the trap (see Figure 2). Prevent animals from gripping the sides of the trap during removal by acting swiftly. If the animal does grip the trap, take care not to injure the animal by pulling against their grip.

The animal is then placed into the opening of an appropriate handling bag (refer to the Department SOP for *Animal Handling and Restraint using Soft Containment*). Assistants can help by holding the handling bag open ready to receive the animal.



Figure 2: A black-flanked rock-wallaby grasped by the base of the tail (left) and being removed from a Thomas trap and transferred into a waiting handling bag (right). Photo: Roger Groom.

(d) Some non-target species captured in soft cage traps should not be removed using a grip at the base of the tail. If non-target animals cannot be easily removed or scooped into a handling bag, consider leaving the trap upside down so that the door can remain open and allow the animal to exit of its own accord.

(e) Particular care should be taken for those species that may drop pouch young (see the Department SOP for *Care of Evicted Pouch Young* for further information). Ensure that you check the bottom of the trap and handling bag (before you release the animal) for any dropped pouch young.

(f) Captured animals must be released at point of capture (unless the purpose of the trapping is translocation, specimen collection, or for some other approved reason). Animals must be released, or reach an alternate endpoint approved by the Department's Animal Ethics Committee, within 24 hours of capture. Furthermore, animals must be released at a time that is appropriate to their normal activity and caution taken to reduce exposure to

risks such as predation (i.e. nocturnal animals should be released early morning or kept until late afternoon before release at the point of capture).

5.5 Picking up traps

(a) All traps must be counted out upon setting traps and counted in when picking up. Personnel undertaking the trapping must keep tallies of traps to ensure that all are collected and that there are no traps left behind. 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. Responsibility for animal welfare rests with the person in charge at the survey location during fauna trapping events. 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.

6 Trap care 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 in Wildlife Management*.

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

(b) All bait must be removed and traps stored in an area that is free of rodents. The trap release mechanism must be kept clean of bait and scats. Advice on cleaning and disinfection of traps is available in the Department SOP for *Managing Disease Risk in Wildlife Management*.

(c) Take care in assembling and disassembling traps to ensure components are not bent or lost.

(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.

(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.

7 Competencies and Approvals

Department personnel, and other external parties covered by the Department's Animal Ethics Committee, undertaking monitoring projects involving soft cage traps require approval from the Committee and will need to satisfy the competency requirements detailed in Table 1. This is to ensure that personnel involved have the necessary knowledge and experience to minimise the potential impacts of soft cage traps on the welfare of the animals. Other groups, organisations or individuals using this SOP to guide their fauna

monitoring activities are encouraged to also meet these competency requirements as well as their basic animal welfare legislative obligations.

It should be noted that details such as intensity of the study being undertaken will determine the level of competency required and Table 1 provides advice for basic monitoring only.

Table 1 Competency requirements for Animal Handlers of projects using soft cage traps to capture Macropods

Competency category	Competency requirement	Competency assessment
Wildlife licences	Licence to take fauna for scientific purposes (Reg 17) OR Licence to take fauna for educational or public purposes (Reg 15)	Provide licence number
Formal training <i>Note: Suitable levels of skills/experience can substitute for formal training requirements</i>	Department Fauna Management Course or equivalent training	Provide course year
General skills/experience	Relevant knowledge of species biology and ecology	Personnel should be able to correctly identify the likely species to be captured in soft cage traps for the site/s being studied. This knowledge may be gained through sufficient field experience and/or consultation of field guides and other literature. Estimated total time in field: Min 1 year involved in similar projects.
Fauna survey and capture skills/experience	Experience in setting and use of live traps	Personnel should be confident at identifying the best locations to set traps and how to set traps so that the mechanism works and animal welfare is considered at all times. This knowledge may be gained through sufficient field experience and/or consultation of literature. Estimated total time in field: Min 1 year involved in similar projects.
	Training and experience in trap hygiene, disease transmission	Personnel should be familiar with hygiene procedures. This knowledge may be gained by sufficient field experience and/or consultation of literature. Estimated total time in field: Min 1 year involved in similar projects.
Animal handling and processing skills/experience	Experience in handling terrestrial mammal fauna	Personnel should be confident at handling and restraint of the range of species likely to be captured. This

Competency category	Competency requirement	Competency assessment
		<p>knowledge may be gained through sufficient field experience and/or consultation of literature.</p> <p>Estimated total time in field: Min 2 year involved in similar projects.</p>

8 Occupational Health and Safety

Always carry a first aid kit in your vehicle and be aware of your own safety and the safety of others as well as the animals when handling.

A job safety analysis is recommended prior to undertaking any monitoring which involves hand capture. This safety analysis should include the following considerations.

8.1 Animal bites, stings and scratches

Care should be taken when handling animals to avoid bites, stings or scratches. All inflicted injuries (even superficial ones) should be appropriately treated as soon as possible to ameliorate possible allergic reaction, prevent infection and promote healing.

To improve safety, field personnel should be aware of the treatment for snakebite and carry appropriate pressure bandages. Personnel should also have up-to-date tetanus vaccinations. Department personnel must not capture bats unless fully vaccinated against Australian Bat Lyssavirus.

If Department personnel or volunteers are injured, please refer to the Department's Health and Safety Section's 'Report a Hazard, near-miss or incident' intranet page, which can be found at http://intranet/csd/People_Services/rm/Pages/ReportingHazards,Near-MissesandIncidents.aspxZoonoses.

8.2 Zoonoses

There are a number of diseases carried by animals, including ticks, that can be transmitted to humans (i.e. zoonoses such as Toxoplasmosis, Leptospirosis, Salmonella). All personnel must take precautions to minimise the risk of disease transmission to protect themselves, their families and wildlife populations.

Advice on minimising disease risk is contained in the Department SOP for *Managing Disease Risk in Wildlife Management*

8.3 Allergies

People with or that develop severe allergies associated with animals or animal materials should consult with their medical practitioner on appropriate precautions and actions for the handling of wildlife.

9 Further Reading

The following SOPs have been mentioned in this advice and it is recommended that they are consulted when proposing to use cage traps.

- Department SOP *Animal Handling and Restraint using Soft Containment*
- Department SOP *Care of Evicted Pouch Young*
- Department SOP *First Aid for Animals*
- Department SOP *Humane Killing of Animals under Field Conditions*
- Department SOP *Managing Disease Risk in Wildlife Management*

For further advice refer also to:

Environmental Protection Authority and Department of Environment and Conservation (2010) *Technical Guide - Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment* (Eds. B.M. Hyder, J. Dell and M.A Cowan). Perth, Western Australia.

10 References

- Abbott, C.W., Dabbert, C.B., Lucia, D.R. and Mitchell, R.B. (2005). Does muscular damage during capture and handling handicap radiomarked northern bobwhites? *Journal of Wildlife Management* 69: 664-670.
- Kinnear J.E., Bromilow R.N., Onus M.L., Sokolowski R.E.S. (1988). The Bromilow trap: a new risk-free soft trap suitable for small to medium-sized Macropodids. *Australian Wildlife Research* 15: 235-237.
- NHMRC (2004). *Australian code of practice for the care and use of animals for scientific purposes* (7th ed.). Canberra: National Health and Medical Research Council.
- Shepherd, N.C., Hopwood, O.R. and Dostine, P.L. (1988). Capture myopathy: Two techniques for estimating its prevalence and severity in red kangaroos, *Macropus rufus*. *Australian Wildlife Research* 15: 83-90.

11 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.

Soft cage trap: A trap for the capture of live macropods constructed of a soft material and a sturdy steel frame. Cage traps operate by the animal treading on a weight-sensitive trigger plate which causes the door to close and lock.