Charles Darwin University Animal Ethics Committee

Standard Operating Procedure:

Dry Pitfall Trapping for Vertebrates (DBCA, 09/2022)

Version No:	1.4
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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. Consideration should particularly be given to the weather conditions of the Northern Territory and the presence of extreme hazards such as crocodiles.

Note: Section 5.3 Checking pitfall traps. In addition to this SOP, trap checks must be conducted within two (2) hours of dawn.

CHARLES DARWIN UNIVERSITY AUSTRALIA

Standard Operating Procedure

SC24-04 DRY PITFALL 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

Department of **Biodiversity, Conservation and Attractions**

Department of Biodiversity, Conservation and Attractions
Locked Bag 104
Bentley Delivery Centre WA 6983
Phone: (08) 9219 9000
Fax: (08) 9334 0498

www.dbca.wa.gov.au

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This document was prepared by Species and Communities Program, Biodiversity and Conservation Science, Department of Biodiversity, Conservation and Attractions.

Questions regarding the use of this material should be directed to:
Species and Communities Program
Department of Biodiversity, Conservation and Attractions
Locked Bag 104
Bentley Delivery Centre WA 6983
Email: animalethics@dbca.wa.gov.au

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This document is available in alternative formats on request.

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Revision History Log

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*Previously titled Dry Pitfall Trapping for Vertebrates

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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 and Brent Johnson.

2 Purpose

Pitfall trapping is a sampling technique that is widely used in a range of studies including species-specific and ecological community surveys with the purpose of describing species occurrence, relative abundance, community structure, examining spatial and temporal distribution patterns, comparing abundance of species in different habitats and studying activity patterns.

A range of taxonomic groups can be caught using pitfall traps including small mammals, reptiles, amphibians and invertebrates.

Pitfall traps consist of a container (generally a bucket or PVC tube) dug into and set flush with the ground, usually in combination with a barrier (i.e. a 'drift fence') which is used to direct traversing animals towards and into the trap. Animals fall into the trap and cannot get out due to the unscalable surface and depth of the bucket or tube.

This Standard Operating Procedure (SOP) provides advice on the use of dry pitfall 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 that may require the use of dry pitfall traps (hereafter 'pitfall traps') undertaken across Western Australia by DBCA (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 pitfall traps 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 pitfall 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 setup and trap checking, and to ensure that 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 impact and improving animal welfare, and the process for managing adverse events.

Department projects involving pitfall trapping will require approval from the department's AEC. The key animal welfare considerations that should be considered when pitfall trapping are listed below and are 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 is 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 pitfall trapping include:

- Trauma (e.g. accidental injuries inflicted during retrieval from trap),
- Hypothermia,
- Hyperthermia,
- Dehydration or desiccation (particularly for amphibians),
- Starvation,
- Distress (caused by confinement, discomfort, social isolation, separation of mother and young, exposure to predators, ants etc.),
- Death through predation (often from ants and other invertebrates) or drowning.

If pitfall traps are properly monitored and preventative actions are utilised, then the welfare risk and overall impact should be low, short-term and manageable. 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 pitfall 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

Plastic 20L Buckets: Plastic buckets with snap on lids (30 cm diameter, 40 cm deep) are one of the most common types of pitfall traps used for survey and monitoring (see Figure 1).

PVC Tube: PVC tubes are also commonly used (at least 15 cm diameter, should be around 60 cm deep). The bottom of the tube should have an insert, be capped, plugged or covered (e.g. a piece of flywire or similar) to prevent animals burrowing to where they cannot be seen and retrieved.

Other types of containers may be used as pitfall traps and should be clearly described in study or fauna management plans and applications to the department's AEC.

Pitfall traps should contain suitable shelter for captured animals, and may require drainage holes to reduce flooding and a raised roof to provide shelter from the sun and direct rainfall (see Section 6.1).

Figure 1 A pitfall trap made using a 20L bucket with shelter provided (left) and a drift fence leading to a pitfall trap (right). Photo: Christine Freegard/DBCA.

6 Procedure Outline

6.1 Installing pitfall traps

(a) The location and configuration of pitfall trap locations and layout (e.g. transect, grid etc.), 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. Consider the likelihood of water runoff draining into the pit or causing erosion around it, as well as the likelihood of underground water levels causing problems with 'popping' of pitfall buckets (buckets will lift out of the ground).

ANIMAL WELFARE: Pitfall traps should not be placed in the vicinity of ant nests. Ants are known to distress and kill trapped animals.

When placing pitfall traps in low-lying areas (e.g. near swamps or in drainage channels), greater consideration should be given to the possibility of traps filling with water and drowning trapped animals.

(b) Trap locations must be marked to ensure that none are missed when checking or closing traps (e.g. with flagging tape which is labelled and using a numbering system that uniquely identifies trap points). A GPS reading for each trap line is strongly recommended as it allows animal handlers who are unfamiliar with the traps to find them easily if necessary.

Trap lines which are intended to be in place for the medium to long term (i.e. years rather than weeks or months) should be marked using a permanent post (e.g. numbered dropper post). The location information for permanent monitoring transects and their trap points should be recorded on datasheets and in a database / GIS application.

(c) If setting up traps near roads or vehicle tracks, traps must not be readily visible from roads to avoid public curiosity and possible interference. Pitfall traps can be a long-term fixture and therefore it may be appropriate to have these much further from roads than other traps which are only temporarily present.

(d) Installing a pitfall trap:

1 Measure the depth and width of the bucket or PVC tube and dig a hole that is deep enough to allow the container to fit in it.

2 Consider water drainage from within and around the trap. In sandy, well-drained soils, small (approx. 3 mm diameter) holes drilled into the bottom of the trap or replacing the base of a PVC pipe with wire gauze will allow for water drainage during rainfall events. However, in areas prone to waterlogging or excessive soil water movement, holes may facilitate flooding of pitfall traps and are not recommended.

3 Place the container in the hole and fill in soil around the container ensuring the lip of the container is level with or slightly above (reduces water runoff entering traps) the ground surface. Soil needs to be compacted around the rim to avoid it caving in over time. Repeat for all traps.

4 Appropriate and adequate shelter must be provided in the bottom of the trap, including a layer of soil or leaf litter (i.e. a layer of at least 2 cm of soil and/or leaf litter for fossorial reptiles, damp layer of soil or leaf litter for amphibians) and an appropriate above soil-shelter (i.e. egg cartons[1]). Consider the range of species likely to be captured and install adequate 'refuge areas' for the diversity of taxa that may be occupying the pitfall trap at the same time.

A raised shelter or roof can be placed over the top of the trap to prevent rain directly falling into the trap and provide shelter from the sun. Make sure the roof is wide enough to project shade well beyond the trap entrance otherwise it will have little to no effect in reducing temperature. When the sun is at an angle that is encroaching the base of the trap, the temperature within the bucket is likely to be greater than the ambient temperature. A temperature-logger (e.g. i-button) can be used to monitor trap temperatures so that trap design can be amended if required (e.g. larger shelter). A bucket lid suspended over the top of the bucket is generally insufficient for mitigating temperature issues. An application that can be used to identify key sun angle times for any season of the year at any geographic location (and for varying pit trap dimensions) can be accessed at: http://ningaui.ddns.net/apps/sun%20angle/ (M. Cowan, 2019)

ANIMAL WELFARE: Always provide appropriate and adequate shelter in the bottom of pitfall traps to offer protection for animals against exposure to environmental conditions and

[1] While some foam trays may be appropriate for some species as shelter in pitfall buckets, egg cartons generally provide greater complexity of shelter and are biodegradable. Foam or polystyrene trays are not appropriate to be installed as 'floats' in the event of rainfall.

predation or attack from other animals. Depending on the species that you might trap, consider complexity of shelter (e.g. egg cartons), depth of soil and/or leaf litter and providing damp soil or leaf litter for amphibians.

5 Run the drift fence (approx. 25 cm high and partially buried at the base) along the trap line, over the middle of the pitfall traps. Drift fence material commonly used is aluminium fly-wire mesh. Nylon fly-wire mesh can be used but requires supporting with wire pegs and/or sticks and is more prone to damage and wear and tear.

Ensure that the drift fence runs right to the rim of the pit or across the pit so animals are not able to move through any gaps in the fence near the rim of the pit. Drift fence should be trimmed or folded appropriately over the pits so animals do not use the drift fence as a 'walkway' across the pit. It may be helpful to cut slits in opposite sides of the pit, running in alignment with the drift fence line, to hold it in place across the top of the pit.

6.2 Opening pitfall traps

(a) As identified above, ensure pitfall traps (buckets) contain appropriate and adequate shelter such as egg cartons, leaf litter, soil or sand for any captured animals. Predatory species such as dunnarts and snakes may be trapped with potential prey species. Ants, carabid beetles, centipedes and scorpions are often captured in pitfall traps and may also kill vertebrate species that are trapped with them. Appropriate shelter can provide a place for captured animals to hide or escape.

ANIMAL WELFARE: Avoid trapping or close traps in extreme weather conditions. The combination of rain and cool temperatures, or low humidity and high temperatures can produce poor welfare outcomes (or increase death rates), so decisions should be made based on expected conditions and the physiology of animals likely to be captured. Trap temperature is impacted by trap depth and can be much higher than ambient temperatures. Close pitfall traps if there is excessive rain or heavy rain is forecast. Plan ahead and monitor long-range and daily weather forecasts.

(b) Before the trap is left, it is important to check that it is all set up correctly.

ANIMAL WELFARE: If an ant nest is noticed in the vicinity of an installed trap and ants are likely to be an issue, close the trap.

(c) Depending on the purpose and target species it is often recommended that traps are set for a minimum of seven nights.

6.3 Checking pitfall 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. Pitfall trapping can greatly impact the wellbeing of animals by disrupting their feeding, foraging and defending territory activities. This is particularly relevant to small mammals (e.g. honey possums) which due to their small size, are at risk of death if prevented

from feeding. Where honey possums are likely to be captured, a sugar solution (e.g. Spark) should be available when checking traps.

Spring to early summer is usually the optimal time for pitfall trapping and this coincides with breeding of many mammal species. If captured, lactating females should be released as soon as possible. If the same lactating female is caught on successive nights, consideration should be given to closing the trap.

Rainfall events that occur during a trapping session in a normally dry weather period can result in a number of species becoming active that may not normally be trapped (e.g. amphibians and some species of ants and other invertebrates). It is essential that staff monitor and manage these often large 'emergence' events to ensure that welfare of animals is not compromised. Modifications to trap set up and increased trap checking may be required when large numbers of adult and metamorph amphibians appear.

(a) It is vital that extreme care is taken when checking traps in case venomous animals are caught inside. It is best to use long handled tweezers or tongs to check for venomous snakes and invertebrates before putting hands in. Gloves or padded tongs can be used to remove potentially harmful animals; however, particular care needs to be taken not to injure them.

(b) Timing of trap checking:

ANIMAL WELFARE: The timing and frequency of trap checking and clearing should be determined by giving consideration to the behaviour and biology of the target species (and potential by-catch species) in association with the environmental conditions at the site. Trap check 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.

For pitfall trapping, traps need to be checked more frequently throughout the day if weather conditions are of concern for captured species, capture rate is high or the combination of species trapped results in unacceptable trap deaths through predation or attack.

Reptiles in arid environments often adjust activity in relation to ambient conditions with peaks for diurnal species mid to late morning and again late afternoon. Trap checking in these areas should be adapted to the conditions (e.g. take place early and late morning to avoid confinement of trapped animals throughout the heat of the day). The risk of animals entering traps during the hottest part of the day is lower for most species as they will be sheltering during this time.

If traps are to remain open overnight at a site where nocturnal small mammals may enter traps, trap checking must occur early morning before temperatures impact on the welfare of the animals in the trap and /or timing of release of the animals will negatively impact on their welfare. Checking traps within three hours of sunrise is the department's standard timeframe for nocturnal mammal captures and anything differing from this must be justified.

(c) 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 inspected, closed or removed as appropriate. This is the responsibility of the person in charge at the survey location on the day. There is no excuse for leaving traps unchecked.

(d) Remove invertebrates from the pitfalls each day and release a reasonable distance away from the pitfall trap.

(e) 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) can be applied on ant trails or in traps to discourage ants when they are observed or when they are likely to become an issue. Only very small amounts (i.e. a single puff from a puffer pack) should be used in traps and mixed through the soil surface and this should be evenly spread so it is not possible for vertebrates to actively ingest or be exposed to large quantities of the insecticide. This should not be used as a default action and is only appropriate where ants are entering and remaining in traps. Generally liquid or spray insecticides should not 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. The use of permethrin-based powders spread around the perimeter of pit traps is discouraged as ants often still enter traps despite this, and it is also possible this will have a negative impact on trap effectiveness for vertebrates. Always read the Safety Data Sheet (SDS) of chemicals before use.

    A thin reed or stem can also be placed in the trap to provide an opportunity for ants to exit. If ants become highly attracted to the trapping area it may be necessary to either close or remove the traps and relocate them to a more suitable position.

(f) Carry a range of appropriate handling bags when approaching a trap to ensure efficient removal of trapped animals.

6.4 Removing animals from pitfall traps

All animal handling should be done by (or under the direct supervision of) trained and competent personnel. Techniques for removing animals from traps vary depending on the species of invertebrate, mammal, reptile or amphibian involved and the experience and skills of personnel. General advice on handling animals is contained in the department SOP for *Hand Restraint of Wildlife*.

(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) Removal and processing of animals should be as quick and as efficient as possible so that stress is kept to a minimum. Use appropriate field equipment for the species you are likely to target.

(c) 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.

ANIMAL WELFARE: To ensure minimal stress to 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).

(d) Record trapping data on an appropriate trapping datasheet and database.

(e) Release animals at point of capture at an appropriate distance away from the pitfall trap; generally a few metres from the trap for small fossorial species with increasing distances of up to ten metres or more for more mobile species (larger reptiles and mammals). Consideration should always be given to the mobility of the species being released, the likelihood of the animal re-encountering the drift fence, and appropriate species-specific refuge. Re-entering a trap shortly after release can result in the animal's death as it is then exposed to the maximum heat of the day, as well as having greater exposure to predatory species, including ants. It is therefore critically important to make informed decisions on both the distance at which a species is released and the appropriateness and adequacy of shelter at release points to minimise the likelihood of this occurring. It may be beneficial in some situations, depending on the environment and availability of cover, to release mammals (or some reptiles) off the end of pit trap lines to reduce the likelihood of encountering traps if they immediately move from the point of release. Animals should be released as soon as possible and at an appropriate time. 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 with caution taken to reduce exposure to risks such as predation. If animals are not to be released at their point of capture shortly after their removal from the trap (e.g. temporary holding is required for identification purposes), this must be approved by the AEC. Refer to SOP *Transport and Temporary Holding of Wildlife* for further guidance.

6.5 Identification

The taxonomy of many of the species captured by pitfall traps is not static. Some species may not be found in (or not be fully described in) field guides and can be difficult to identify. Personnel should stay up to date with taxonomic revisions for species they are likely to be encountering (the WA Museum vertebrate taxonomic checklist is updated annually and provides information on recent taxonomic changes). If trapping in new or poorly surveyed areas, personnel should contact the WA Museum to check if new specimens are required. If required by the WA Museum, any trap deaths involving these species should be retained and provided to the museum. If personnel have trouble identifying species in-situ, taking photos of characteristics used to identify fauna groups (e.g. foot pads for dasyurids) can be a valuable tool to assist with follow-up identification.

6.6 Closing, maintaining and removing pitfall traps

(a) All traps must be counted upon deployment/opening and counted again upon closing/removal. Personnel undertaking the trapping should keep tallies of traps to ensure that all are securely closed/removed and that there are no traps left behind.

(b) When closing pitfall traps, personnel must ensure that lids are secure and cannot come off other than by human intervention. Cover with sand, soil, leaf litter and/or rocks to weigh down the lid and reduce potential UV exposure and fire damage between trapping sessions. Ensure through appropriate means that all traps left *in situ* can be located in the future. Pitfall traps must be checked as soon as possible after a flood or fire event, to ensure that none of the traps have opened. Neglect will lead to unnecessary deaths of animals. Traps left in the ground over longer periods of time (years) should be checked annually, at a minimum.

(c) Traps must be removed and holes filled in if they will no longer be used.

(d) Remove flagging tape or any other unnecessary equipment from the area.

7 Trap Care

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

(b) When pitfall traps and fences are removed or are being moved between sites, they must be cleaned and disinfected, especially when used in areas affected by dieback (*Phytophthora cinnamomi*).

(c) Any damaged traps/drift fences requiring attention need to be noted and repaired or replaced before subsequent use. Poorly maintained equipment can reduce the value of the trapping event (e.g. rips in the drift line that allow fauna to move through), or increase the likelihood of adverse events.

(d) Spare lids for pitfall traps should be kept available and carried in the field when closing pitfall traps.

8 Competencies

A person who is competent has the knowledge, skills, and experiences that allow 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 AEC, undertaking projects involving the use of pitfall 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 pitfall 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 animal welfare legislative obligations.

It should be noted that sampling design details such as intensity and scope of the study 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 pitfall traps to capture vertebrates.

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 pitfall 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. Experience and understanding of the fundamentals of dichotomous keys and a basic understanding of diagnostic characteristics is required.
	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 installing and checking pitfall traps	Personnel should be familiar with the animal welfare principles of pitfall trapping (e.g. appropriate locations for trap installation, frequency of trap checking depending on climatic conditions, considerations for trap closure, the need to thoroughly search traps). 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 hand retrieval from pitfall traps and restraint of the range of species likely to be captured. The retrieval of reptiles should not result in the loss of any individual's tail. This experience is best obtained under supervision of more experienced and competent 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 the survey technique 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 4-10 weeks undertaking pitfall trapping or similar animal handling, at different biogeographic locations and under varying climatic conditions.
- Recency of time in field: within the past 5 years.
- Minimum 80 individuals of a variety of species handled.

Animal handlers that are considered competent and able to work unsupervised should be signed off by an experienced and competent Chief Investigator.

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 use pitfall traps.

- Department SOP *Animal Handling and Restraint using Soft Containment*
- Department SOP *Hand Restraint of Wildlife*
- Department SOP *First Aid for Animals*
- Department SOP *Euthanasia of Animals Under Field Conditions*
- Department SOP *Managing Disease Risk and Biosecurity in Wildlife Management*

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 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.

Drift fence: A length of short fence which runs across the centre of the pit(s). Animals encounter the fence and follow it to the pitfall. Pitfall traps can be set up with or without drift fences. A drift fence increases the probability of capturing animals.

Dry pitfall trap: A hole in the ground in which a plastic bucket or PVC tube is placed so that the lip of the bucket or tube is level with the ground surface. Animals fall into the trap and cannot get out due to the unscalable surface and the depth of the bucket or tube. Pitfall traps are most useful for invertebrates, small mammals, frogs and reptiles.