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Charles Darwin University Animal Ethics Committee

Standard Operating Procedure:

DPAW SOP 21.2022 Hand Capture of Wildlife

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CHARLES DARWIN UNIVERSITY AUSTRALIA

Standard Operating Procedure

SC24-08 HAND CAPTURE OF WILDLIFE (OCTOBER 2024)

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 1.3

October 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 Nicole Godfrey, Teagan Johnston and Colleen Sims.

2 Purpose

Hand, or active, capture may be required as part of fauna monitoring and research activities and for the removal of nuisance, derelict or displaced fauna. Monitoring methods that require the hand capture of animals may include active searches or the use of artificial installations such as nest boxes or tiles.

There are numerous methods suitable for capturing wildlife by hand, either using one's hands or with the assistance of tools. All methods of hand capture described in this standard operating procedure require the presence of a person for the capture of the animal.

Hand capture is stressful to animals and steps must be taken to minimise any distress that is caused to the animal and the population from which they are taken. Careful consideration must be given when selecting the appropriate hand capture technique, as well as evaluating whether an alternative trapping method may be more suitable.

This Standard Operating Procedure (SOP) provides general guidelines for the various types of hand capture of fauna for research purposes to ensure minimal stress and injury to the animals and handlers.

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 hand capture of wildlife 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 the hand capture of wildlife 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 hand capture 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 and contingencies for managing welfare issues have been identified. All personnel involved in the project should be 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 hand capture will require approval from the department's AEC. Key animal welfare considerations that should be considered when employing hand capture 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 and any unnecessary stress to the animal. 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 and Biosecurity in Wildlife Management* for further guidance.

4.2 Level of impact

If the animal is captured immediately after it is seen and released within a few minutes (usually no more than five minutes), the impact on the animal is reduced. If the animal needs to be pursued, the effect will be greater.

Potential animal welfare impacts of hand capture include:

- Physical trauma (e.g. accidental injuries inflicted)
- Stress
- Capture myopathy

It is not always possible to tell if an animal is stressed, and therefore at risk of injury or death. Some signs that they may show they are stressed include:

- Obvious increase in heart rate or breathing rate
- Animal is limp or closes its eyes (mammals)
- Animal may feel hot to the touch
- Eyes open, rigid with fright
- Panting, heat stress
- Licking forearms, shoulders and flanks (Macropods)
- Hypersalivation (drooling, slobbering and frothing in Macropods)
- Shivering
- Vocalising (sounds of pain or aggression)
- Struggling that does not settle down (behaviour such as mouth open, baring teeth, lunging/biting, excessive kicking)
- Throwing pouch young.

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 impacts are specifically associated with hand capture, an animal may also experience other impacts from associated procedures such as handling and transport. 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 Methods

The hand capture of an animal may require the use of a tool that either aids in the capture of the animal such as a net or tongs, or one that protects the captor or animal from injury, such as protective gloves, hand nets and cover boards.

ANIMAL WELFARE: All equipment touching the animal or at risk of contamination should be properly cleaned, sanitised, and/or isolated after use to avoid cross-contamination of disease between sites and animals. This also applies to hands and any clothing making direct or indirect contact with the animal (e.g. via a soiled or urine-soaked handling bag). Refer to the department SOP for *Managing Disease Risk and Biosecurity in Wildlife Management* for further information.

ANIMAL WELFARE: Incorrect capture techniques can injure or kill animals therefore hand capture is only to be used by competent personnel with recognised appropriate training and/or experience. Capture must be as stress free as possible. If at any stage during hand capture the circumstances increase the potential for human or animal injury to an unacceptable level, the procedure must be stopped.

It is important to plan for hand capture by:

1. Having a thorough knowledge of the species being caught (behaviour, reaction to stress, ability to defend itself) and the appropriate hand restraint techniques (see department SOPs for *Hand Restraint of Wildlife* and *Animal Handling and Restraint using Soft Containment*).
2. Having all equipment required for hand capture ready and accessible.
3. Considering the best time of day, year, and weather conditions to undertake the procedure.

The rate of success in hand capture is greatly dependent on the skills of the handler/operator.

ANIMAL WELFARE: Animals should only be handled during capture for as long as it takes to secure them in a holding bag/container to reduce stress.

ANIMAL WELFARE: 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 when they are normally active. Animals should be released into good shelter where necessary, and precautions should be taken to minimise risks such as predation. Animals must be released, or reach an alternate endpoint approved by the department's AEC, within 24 hours of capture.

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 but death may also occur weeks after capture as a result of complications including organ failure and a loss of mobility, which increases susceptibility to predation (Abbott *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. An experienced and competent operator/team leader must closely monitor the target animal for signs of excessive stress and decide when to abandon a pursuit. Animals should only be handled for as long as required to conduct any approved procedures (usually no more than five minutes). 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.

5.1 Capture by hand

Capture by hand involves the capture of individual animals by grasping it with the hands before it is able to escape and is generally only employed when other capture methods are not suitable. All species can potentially be collected in this manner, but it is most typically applied during the survey of reptiles and amphibians, or for the capture of sick or injured wildlife. The exact technique will depend on the situation and species involved. **The following is general advice only.**

(a) When capturing an animal by hand, the grip and force applied must be appropriate for the species in question. The animal may be at risk of suffocation if pressure is too strong, and bones may be broken with too much force or incorrect holding technique. Too soft a restraint makes the animal think it has a chance to escape, therefore making it struggle more. Where possible, covering the animal's eyes can quickly and effectively reduce stress.

Personnel also need to take care to ensure that they do not injure/kill animals by stepping on them or on objects under which the animal may be hiding (e.g. rocks, etc.).

(b) Prolonged pursuit to capture by hand must not be performed. Personnel must use judgement in deciding when an animal cannot be caught quickly or when it is not safe to do so and abandon the capture. Other ways to capture and safely handle the animal may be more suitable to help prevent injury to the animal and handler.

ANIMAL WELFARE: Once captured, the animal may benefit from a brief period in a dark, quiet, confined space, such as a catch bag, to reduce its stress prior to processing.

(c) Plan the capture so that the animal is quickly restrained with minimal stress and risk of injury. Most small or docile animals can be managed by one person. Larger or more agile animals may require multiple people, in which case it is important to clearly define roles for each participant in the capture process.

(d) In some cases, this process may disturb or destroy the shelter site, and hence decrease the survival chances of the animal. Researchers should aim to minimise damage to important shelter sites, and wherever possible repair such damage.

ANIMAL WELFARE: All logs and rocks that have been displaced during the hand capture should be restored to their original position.

(e) Gloves (properly fitted so as not to compromise a good grip on the animal) or other personal protective equipment (e.g. glasses, long sleeve clothing, boots etc.) may be worn if required for added protection against scratches and bites.

(f) Once the animal is in hand, be mindful that unexpected escape may result in it falling to the ground causing injury. Depending on the species and skill of the operator the potential risk of this can be reduced by holding the animal closer to the ground.

5.2 Hand netting (terrestrial species)

Hand-netting is a technique most commonly used to capture medium-sized ground-dwelling mammals in open terrain but it can also be used for birds, reptiles, frogs and some invertebrates. It has particular application for mammals that are not easily captured in traps or which tend to injure themselves in cage traps.

A long-handled landing net designed for recreational fishing or smaller hand nets are commonly used in this method of capture. The rate of success depends on many factors, the most important being the proximity of the animal to cover, as well as the speed and skill of the operator(s). The benefit of this technique is that it can be quick and involve only short-term stress to the animals, compared to cage trapping where an animal can be subject to longer-term stress factors. The following steps are to be used as a guide to assist in the successful and safe capture of an animal using a hand net.

(a) Choose an appropriate net hoop size, handle length and net characteristics (e.g. mesh size and material), and overall net weight to suit the target animal(s). The net should be deep enough so that it can be flipped back on itself or twisted to keep the animal in the net and provide control.

(b) Ensure that the bags/containers in which the animal will be placed post capture are ready and open.

(c) Locate the target animal(s). In the case of nocturnal species, this may be done with the aid of a spotlight or head torch. Consider whether the location can be selected with terrain/vegetation characteristics that will restrict the animal's speed or the distance that the animal can run. Vegetation type, density and height will greatly impact the ability to spot the animal and use a hand net effectively.

(d) A temporary fence made of shade-cloth may help in directing movement of the animal in a preferred direction if practical. In certain circumstances involving the targeting of a specific individual (e.g. capture to remove radio collar) a temporary fence made of shade cloth or netting can be constructed to either partially or fully encircle an animal while still

in its refuge. This method requires returning to the site before the animal emerges, as per the species' activity pattern, and positioning personnel along the perimeter with hand nets to intercept the animal when it vacates the refuge. This may also entail waiting on the outside of the fence and manually collapsing the fence gently over the animal when it contacts or runs along the internal fence boundary while looking for an exit. A second person can then assist with extracting and bagging the animal while the captor gently secures the animal to prevent further stress and injury.

(e) The use of a well-coordinated team can be useful for the capture of some species that are particularly quick or flighty. In these instances, it can be helpful if the person who spots the animal remains relatively still while keeping the target in their light. Sometimes this serves to temporarily daze the animal causing it to freeze and remain in place while it assesses the danger; be mindful that some high-powered focused spotlights or head torches are capable of damaging animal eyes if direct and unrelenting so should be directed with some restraint (i.e. consider aiming slightly off center). Meanwhile the rest of the team can form a wide circle around the animal and methodically tighten the circle. It is often helpful for the circling team to minimize excessive noise and refrain from "breaking" any light that is being used to daze the animal to avoid startling it. With the circle tightened and escape routes anticipated and minimized, a single netter may be able to bring their net down on the animal.

(f) Take care when bringing the net down to not injure the animal as contact with the net rim or handle can cause significant harm. If a chase occurs, be mindful of foot placement to avoid stepping on the animal or refugia. A skilled operator will anticipate the direction of movement and position the net accordingly to ensure the animal comes into contact with it. It is useful for backup operators to position themselves behind or beside the first operator in case they miss or the animal changes direction. Good communication is key.

(g) Once the animal is netted, flatten the rim of the net to the ground or twist the handle of the net by at least 90° so that the animal is enclosed within the net. If a mesh net is used, care must be taken as animals can injure themselves by getting caught or tangled in the mesh. Depending on the circumstances a second person may be required to control the netted animal and minimise struggling and potential harm while the other disentangles it from the net. Remove the animal from the net and place in a holding bag as quickly and gently as possible. Minimise noise and excess light to reduce further stress to the animal.

5.3 Tonging

Tonging is a technique used to capture snakes (e.g. snake tongs) or to retrieve invertebrates from pit fall traps (e.g. BBQ tongs or long-handled tweezers) using padded metal tongs to grasp the animal gently but tightly enough so that the animal cannot escape before it can be restrained. If the technique is correctly applied, there is little chance of harming the animal. The following steps should be followed to efficiently undertake hand capture with the aid of tongs.

(a) Ensure that the bags/containers in which the animal will be placed post capture are ready and open.

(b) Grasp the animal with a set of padded metal tongs gently but tightly enough to prevent the animal from escaping.

(c) Animals should only be held long enough to safely grasp them, and if necessary, to remove them from their sheltering site. The animal is then grasped in the hand/s or released into a bag/container.

It is important that the bodies of long animals (e.g. snakes, lizards etc.) are supported once they are firmly but safely grasped with the tongs (provided the safety of the handler is not at risk), which can be done with a padded handling hook.

ANIMAL WELFARE: Care should be taken when grasping to ensure death or injury is not caused to the animal. Hanging animals from the neck is not acceptable and can lead to injury or death.

(d) It is recommended that larger reptiles, and specifically venomous snakes, are placed into a bag or a secure size-appropriate container with a lid via tongs rather than hand restraining, which could result in more damage to the animal from excessive struggling (ASIH, 1987).

5.4 Raking

Some fossorial squamates are difficult to catch via trapping methods and so active searching by raking through leaf litter and topsoil is sometimes employed. Raking is used to detect burrowing species by disturbing substrate under rocks and other habitats (DEC, 2004). It is not recommended in summer unless it is conducted early morning or evening, but it is very successful during winter and early spring, when most small reptiles are generally inactive and easier to catch (Bush *et al*., 2007). This method is quite destructive to habitat and consideration should be given to the environmental cost of using the method versus the gain in knowledge of the species sampled. Knowledge of the microhabitat requirements of species can significantly improve catch rates. The following are general steps involved in the hand capture of animals with the aid of raking.

(a) Ensure that the bags/containers in which the animal will be placed post capture are ready and open.

(b) Use a rake to gently scrape across the top of a patch of soil or leaf litter to expose sheltering animals.

(c) Capture exposed animals by hand (as per Section 5.1) and process as required.

(d) Ensure the built-up litter from raking is pulled back into place to minimise exposure impacts to other animals at the site.

5.5 Cover boards

Many ground dwelling species of wildlife (e.g. amphibians, reptiles, small mammals, insects, etc.) seek shelter under surfaces such as rocks, boards, sheets of iron and other flat material. Cover boards (metal, wood or ceramic) can be intentionally laid and left in situ for months to attract wildlife to the artificial shelter. The simple concept can be applied in many situations.

(a) Ensure that the bag/container in which the animal will be placed post capture is ready and open.

(b) Carefully lift the cover board to observe animals sheltering underneath. Do not slide the board as this may crush or injure animals underneath. Exercise the same level of caution when replacing the board. Personal protective equipment may be advisable where

venomous species may be encountered. If boards are small enough to reach over easily, they can be lifted by the far edge towards you to prevent animals moving towards your feet/legs. This technique works well when there are two operators and also allows for larger boards to be lifted.

(c) Capture exposed animals by hand (as per Section 5.1) and process as required.

5.6 Dip net (aquatic species)

Aquatic invertebrates, tadpoles and fish may be captured using a dip net dragged through shallow water. Such nets are light, robust and simple to use (Marchant and Hehir, 1999). Alternative methods should be considered for highly mobile species. The following steps should be followed when attempting hand capture of animals with the aid of a dip net.

(a) Ensure that the containers of site water, intended for the animal's placement after capture, are prepared in advance.

(b) Sweep the net through the water to catch animals. The exact technique used (e.g. rapid or slow sweep) will depend on the species being targeted.

(c) Nets and other equipment (e.g. waders, boats, boat trailers, anchors, bilge, etc.) to be thoroughly inspected and cleaned to remove all biological material (and mud) to prevent the spread of aquatic invasive plant and animal species (including invertebrates, eggs, etc.) to other sites.

6 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 hand capture of animals require approval from the committee and will need to satisfy the competency requirements (Table 1). Other groups, organisations or individuals using this SOP to guide their fauna capture 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 involving the hand capture of wildlife

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 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 in hand capture of target species	Personnel should be familiar with the animal welfare principles relating to hand capture (e.g. when to call off a pursuit, how firmly to grasp an animal). This experience is best obtained under supervision of more experienced personnel. 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 handling and restraint of the target species . 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 hand capture 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 2-4 weeks undertaking hand capture of similar species.
- Recency of time in field: within the past 5 years.

7 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.

8 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

9 Further Reading

The following SOPs have been mentioned in this advice and it is recommended that they are consulted when proposing hand capture of wildlife:

- Department SOP *Hand Restraint of Wildlife*
- 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:

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.

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.

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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.

Cover board: A method used to assist in the hand capture of animals by providing an artificial shelter made from pieces of plywood or similar materials aimed at attracting small and medium sized animals to utilise them, and therefore enable them to be captured when the board is lifted.

Raking: A hand capture method where a rake is used to loosen leaf litter and topsoil to reveal any animals.

Tonging: A hand capture method where padded metal tongs are used to grasp the animal tightly enough so that the animal cannot escape.