

RES001 live capture of pest animals used in research

Prepared by Trudy Sharp, Glen Saunders and Bruce Mitchell,
NSW Department of Primary Industries

Background

Research involving pest animals may require the live capture, restraint and handling of individual animals. Wild animals may try to avoid capture, handling and restraint during which they are capable of inflicting damage to themselves and their potential captors. When physical contact is necessary, the safety of animals and operators should be the primary consideration.

Capture techniques must be appropriate for the species and minimise distress and the risk of injury to the animal. Inappropriate techniques may lead to major and possibly fatal physiological disturbances.

This standard operating procedure (SOP) is a guide only; it does not replace or override the legislation that applies in the relevant State or Territory jurisdiction. The SOP should only be used subject to the applicable legal requirements (including OHS) operating in the relevant jurisdiction.

Application

- This document provides guidelines for research involving pest animals. It aims to ensure live capture procedures are performed humanely and effectively.
- The acquisition, care and use of animals for scientific purposes in Australia must be in accordance with the Australian Code of Practice for the Care and Use of Animals for Scientific Purposes, and with Commonwealth, State and Territory legislation. All animal research must be approved by an Animal Ethics Committee (AEC) and covered by a valid animal research authority.
- Personnel handling animals should be thoroughly trained in the planned procedure as well as in contingency methods of capture and restraint that may be required.
- The majority of live capture techniques require that animals be physically restrained. Proper handling and restraint is essential to minimise any pain, fear, distress and anxiety experienced by the animal and also for the safety of the operator. For more information on handling and restraint techniques refer to **RES002 Restraint and Handling of Pest Animals used in Research**.
- Where capture and restraint may cause significant pain, injury, anxiety or distress to the animal or pose a danger to the operator, the use of sedative and/or immobilising drugs may be necessary. For more information on sedative and immobilising techniques refer to **RES002 Restraint and Handling of Pest Animals used in Research**.

- The objectives of many wildlife studies depend upon the reliable identification of individual animals and therefore require some form of identifying mark be applied to the animal while it is restrained. For more information on marking techniques refer to **RES004 Marking of Pest Animals used in Research**.
- The live capture of wild animals for research requires valid trapping and banding permits.

Animal Welfare Considerations

- Evidence from behavioural and physiological studies indicates that capture and restraint are significant stressors for wild animals which also present a great risk of injury. Live capture techniques must therefore aim to minimise the stress on the animal and maximise the safety of the animal and also the operator.
- The potential welfare implications of capture include:
 - Trauma
 - Hypothermia
 - Heatstroke
 - Dehydration
 - Starvation
 - Capture myopathy in susceptible species
 - Distress (due to confinement, discomfort, social isolation, separating dam and offspring, exposure to predators)
 - Conflict when re-establishing social status in groups after an absence.
- Capture, handling and restraint should be avoided in animals already compromised by pre-existing stressors (such as pregnancy, lactation, lack of food and/or water, social factors or extremes of temperature) as they have a decreased ability to deal with more stress. Whenever possible, avoid capture during late pregnancy, birthing periods or when females have dependent young at foot, unless capture of these animals is a necessary and approved part of the research protocol.
- To understand and potentially reduce the impact of restraint and handling procedures on animals, the researchers must have a thorough knowledge of the habits and behaviours of the species under study and be experienced in handling the species. For example, details of social structure, defensive capabilities and reaction to stress and pain.
- Operators must anticipate and be prepared to deal with the range of conditions that may cause undue stress and/or injury to the animals. If an animal is injured during capture it must receive appropriate treatment. Animals that are suffering intractable pain and/or distress should be euthanased using a technique that is suitable for the species. For more information on euthanasia techniques refer to **GEN001 Methods of Euthanasia**.
- Precautions must be taken to prevent the spread of infectious disease from one animal to another. Contaminated equipment, including traps, should be cleaned between animals.
- Trap sites must be identified and recorded to ensure that all traps are checked and that no active traps are left in the field upon completion of sampling.

- Traps should be shaded or positioned to avoid full exposure to the sun or rain.
- Placement must ensure that traps will not be submerged in the event of rain.
- Where possible, trapping should be avoided when adverse weather conditions threaten the welfare of trapped animals.
- Traps and nets used to capture animals in water must be set and monitored to prevent drowning captured animals
- Where baits are used they must be appropriate to the diet of the target species. The bait should not only lure the animal into the trap, but should also provide its food and water requirements for the period it will be in the trap. This is particularly important for small mammals which have high metabolic rates.
- Animals must not be left in traps any longer than is necessary. The timing of trap checks will depend on the type of trap, target species, weather, season and the trap configuration. Typically, for nocturnal and crepuscular species, traps should be set before dusk and checked as soon as possible after dawn.
- Ant activity around traps should be monitored. If ant activity is high, measures must be taken to limit their impact on trapped animals.
- Animals that are to be released at the point of capture should be released as soon as possible.
- Traps should be moved to another location or inactivated if an individual animal is repeatedly caught in the same trap.
- Records should be kept on the effects of capture on both target and non-target species. Trapping should be stopped immediately if there is an unusually high mortality in the animals captured.
- When not in use, traps must be closed, deactivated or removed to avoid unintentional captures.
- The technique chosen should minimise non-target species capture.
- Non-target animals that are accidentally captured should be released as soon as possible, where permitted.

Health and Safety Considerations

Setting traps

- Operators should be aware of the risks of injury when placing and setting traps. Protective clothing, footwear and gloves may reduce the chances of injury from tools such as shovels, hammers and from trap jaw mechanisms.
- Some traps require construction and operators should be aware of the risks of injury from lifting and moving heavy items.

Animal handling and restraint

- Operators need to be wary of the potential for serious injury when handling wild animals. Some species can be aggressive and may attack e.g. feral pigs.
- When working in the field, personnel should work in teams of at least two people.
- Protective clothing, footwear and gloves may reduce the chances of injury when handling wild animals. However, the use of heavy gloves decreases sensitivity and dexterity and may increase the risk of handling injuries to small species.

Zoonotic hazards

- Care must be taken when handling live animals and carcasses as they may carry diseases that can affect humans and other animals e.g. hydatidosis, sarcoptic mange, leptospirosis, Q fever, brucellosis, melioidosis, salmonellosis, tuberculosis, psittacosis (chlamydiosis/chlamyphilosis) etc.
- Routinely wash hands and other skin surfaces after handling all animals and also carcasses or bodily fluids.
- Operators must be protected by tetanus immunisation in case of infection of wounds.
- Bite wounds from some animals (e.g. feral cats, foxes, wild dogs) can result in serious infections and should be treated by a doctor.
- Q fever can be transmitted to humans during contact with infected animals, or with infected uterine or placental tissue. A variety of animals may be infected including kangaroos, wallabies, dogs, cats, cattle, sheep and goats. Vaccination is recommended for people who come into regular contact with potentially infected animals. Blood testing of personnel is recommended to assess previous exposure, followed by vaccination for susceptible individuals.
- Zoonotic risks from birds include psittacosis (chlamydiosis), aspergillosis, erysipelas, yersiniosis and salmonellosis. Face masks, are recommended to reduce the risk of contracting disease.
- Some bird species can deliver painful bites and scratches. For example, parrots (e.g. cockatoos, galahs, corellas) have large, heavy beaks and strong jaws that are capable of inflicting serious injury. Protective gloves can be used if required for handling large birds, although these may hinder dexterity. A towel is useful to place over the birds head.

Methods of Live Capture

The following capture methods are described in *Standard Operating Procedures for the Humane Capture, Handling or Destruction of Feral Animals in Australia*

Cage Trap	FOX006, DOG002, CAT002
Soft Jaw Trap	RAB008, FOX005, DOG001, CAT003
Trap yards	PIG001, GOA004, HOR004
Mustering	GOA003, HOR003
Bird Traps	BIR002

Other methods of capture include:

Hand capture

- Small animals such as cane toads can be caught by hand. This would often involve moving rocks, timber etc and quickly picking up the animal firmly but gently to avoid injury. When appropriate, the animal is then replaced in the spot from which it was removed. Replacing rocks or timber may pose a threat of injury to the animal or the blocking of entrances to other retreat areas.
- To help prevent disease transmission, powder free latex or vinyl gloves should be worn and the gloved hands should be washed and thoroughly rinsed between individual animals. In the case of amphibians, the gloves should be wet when capturing to minimise damage to the animal's integument.

- Where animals were captured from under rocks or timber, they should be placed next to these sites and allowed to move back under the object rather than trying to place the object back over the animal, potentially injuring it.
- Care should be taken to avoid blocking entrances to burrows or dens during this process.

Hand nets

Hand nets may be used to capture small species such as cane toads. The net is placed over the animal, and then the animal is grasped by hand with the net wrapped over it. The animal and net are then inverted and the animal removed from the net (freeing limbs from the net if necessary) with the other hand.

Stunning

Used for catching macropods and rabbits at night, this technique requires a team of experienced operators comprising of a marksman/spotlighter, 2 to 4 catchers and a vehicle driver.

- Once a suitable animal has been located it should be 'held' in a 100-W spotlight beam until the vehicle is within approximately 50 metres of it.
- The animal must be kept in the spotlight beam throughout the procedure, with noise kept to a minimum.
- Fire a shot between the animal's ears approximately 3 cm above the top of its skull. The firearm used should be a .22 calibre rim fire rifle with the shot fired by a reliably accurate marksman.

For Macropods:

- Immediately following the shot, catchers sprint along both margins of the spotlight beam and rush the animal from both sides.
- Small macropods can be caught bodily or by the base of the tail. Large male kangaroos are best caught by a rugby tackle from behind with a lunge over its hindquarters. In this way the animal will come to rest on its side with the catcher across its pelvis, minimising injury to both animal and catchers.
- Captured animals must be immediately placed in large bags to minimise distress.
- Stunning is best suited to open habitats and dark, still nights as macropods tend to be skittish in bright moonlight and wind.

For Rabbits:

- After firing the shot, catchers should approach quickly and place a large handheld net (75 mm nylon mesh) over the rabbit. Mesh material and size is important to ensure rabbits are not injured or become entangled inside the netting.
- The entire process should take no more than 20 seconds from the firing of a shot to the restraint of the rabbit.

Elliott Trap

Elliott traps are collapsible box traps available in two sizes (325 × 85 × 95 mm and 460 × 160 × 160 mm). The weight of a visiting animal stepping on a treadle plate triggers a spring-loaded or gravity-fed door to close.

- Set traps out as required (e.g. grid formation of 5 × 5 or 4 × 20 with 10 m intervals between traps, or a line formation).
- A small amount of bait (i.e. no more than the size of a golf ball) is placed at the rear of the trap (e.g. a mixture of peanut butter, rolled oats and honey, or wheat seeds).
- Bedding (e.g. dry leaf litter, wood shavings, tissues, Dupont Hollofill™) is also placed inside each trap to assist with thermoregulation. Cotton wool should not be used because it absorbs moisture, increasing the risk of hypothermia.

Ecotrap®

The Ecotrap® comprises a flexible metal frame and netting and/or bag which collapses over the animal when triggered by a tripwire, relying on entanglement to trap the animal.

- Place the trap into position and peg to the ground to prevent animals from moving it or tipping it over when trapped allowing their escape.
- Ensure that surrounding shrubs or debris will not interfere with the spring mechanism before setting the trap.
- Place appropriate baits inside the trap behind the trip wires and lures in suitable positions inside and outside of the trap. Capture efficiency may be improved by using bait that reflects the target animal's staple prey for the area rather than being novel.
- These traps should be checked at regular intervals (at least every 4–8 hours) to reduce the distress to entangled animals.

Recommended Methods of Capture for a Range of Species

Rabbits

Soft Jaw Traps: See RAB008

Cage Traps: Small cage traps, such as those used for cats (see CAT002) may also be used

Stunning: See above

Foxes

Soft Jaw Traps: See FOX005

Cage Traps: See FOX006

Pigs

Trap Yards: See PIG001

Dogs

Soft Jaw Traps: See DOG001

Cage Traps: See DOG002

Cats

Soft Jaw Traps: See CAT003

Cage Traps: See CAT002

Goats

Trap Yards: See GOA004

Mustering: See GOA003

Deer

Baited enclosure traps, similar to those used for horses and goats are used to capture deer.

- Trap yards should be large enough to comfortably handle the work they are expected to do (e.g. up to 2 ha). Large trap sizes give deer enough room to move away from people entering the trap, allow for effective handling and will also reduce the pressure on and therefore damage to the fences.
- The yard fencing should form both a physical and visible barrier to minimise the potential for injuries. The external fence should be constructed of 2 m deer netting on wooden posts with 3 strands of plain wire on top (final height of fence should be 2.5 m). Internal fencing does not require the extra strands of wire. Hessian should be attached to all fences to a height of 2 m to provide a visual barrier, reducing injuries from running into fences.
- A lane and circular catching/loading pen is incorporated into the trap design that allows for on-site animal handling. The height of the fencing in the catching/loading pen should be 2.7 m.
- The entrance to the trap (as well as the lane and catching pen gates) should be made of galvanised steel and deer netting (2.5 m high). The main entrance should be approximately 10 m wide (i.e. two gate panels 5 m wide).
- Construct the trap at a site which deer are known to frequent. If possible, choose a site that is in a shady area with as much natural vegetation as possible.
- Water, food and shelter must be provided in appropriate quantities.
- A trail of bait is used to lure deer inside the trap yard and may need to be a few hundred metres in length. Suitable baits include lucerne, whole grain oats and molasses.
- The trap must be checked each day, preferably in the afternoon from a raised and concealed position. If deer are inside the yards, the entrance gates need to be closed by personnel moving quietly from the observation position. Always approach the trap from the direction of the gate. This will prevent the deer being forced into the gate area of the trap where they will escape.
- Once the gate is closed the enclosed deer should be left until nightfall to settle down. The use of a sedative in food inside the closed trap may be useful and make handling easier.
- After dark, personnel should enter the trap and move the deer quietly towards the lane (the lane will appear as a potential escape route to deer). Once in the lane the gate should be closed and then the deer may be moved into the catching/loading pen where the confined space facilitates handling.
- Deer should not be held in the trap or holding yards for extended periods. If they are being held for any length of time they should be drafted into a large holding paddock with adequate shelter, feed and water.
- Traps can be left at permanent sites with the gates open and reactivated when further trapping is required.

Birds

Bird Traps See BIR002

Rodents

- Elliott and small wire cage traps are both suitable. Possum traps (wire cage traps measuring 30 cm × 30 cm × 60 cm) are an appropriate size for larger rodents.

- It is preferable to set traps at the end of each day and check them each morning. If traps are left set during the day, they should be checked again in late afternoon. During periods of high temperatures in areas where traps cannot be sheltered from the sun, close traps during the day.

Horses

Trap Yards: See HOR004

Mustering: See HOR003

Macropods

Stunning

Suitable for most macropods and may be the only method suitable for larger individual animals.

Cage traps

Cage traps are suitable for small to medium sized macropods (for swamp wallabies the cage should be at least 100 cm × 70 cm × 70 cm).

- Wire mesh cage traps are used with a shade cloth bag suspended within the frame to prevent injury to animals from running into the closed end of the trap. It is preferable to set traps at the end of each day and check them every 4–6 hours.
- Traps should be set where a wallaby is most likely to find and investigate the unfamiliar bait odour (e.g. on regularly used pads, or near scats and footprints).
- Suitable baits placed at the rear of the trap to lure the animal inside include apple, bread, hay, grain and pellets. Attractiveness and palatability of the lures and bait will vary with season and location.
- Cage traps should be set squarely on the ground and the doors of the trap bent upward to increase the openness of the trap space.
- The trap should be pegged to the ground to prevent the animal from tipping it over and injuring itself and/or releasing the trap door.
- A cover must be placed over the top of the trap (e.g. shade cloth or plastic) to provide shade and shelter from rain.
- It may be necessary to leave the trap locked in an open position and replenished with bait for up to a week to get wallabies to enter them regularly.

Cane toads

Hand capture or hand nets

- Cane toads secrete a toxin from the parotid glands situated behind the eardrums. Although gentle handling does not normally elicit secretion of this milky substance, hands should always be washed thoroughly after any contact with toads.
- Toads may be gently gripped around the body (more suitable for smaller toads) or picked up and held by the hind legs, with support of the body.
- Damp gauze may be wrapped around the legs to assist with control.

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