



# Code of Practice

For injured, sick and orphaned koalas

Department of Planning and Environment



## Acknowledgement of Country

The Department of Planning and Environment acknowledges the Traditional Custodians of the lands where we work and live.

We pay our respects to Elders past, present and emerging.

This resource may contain images or names of deceased persons in photographs or historical content.



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# Preface

The *Code of Practice for injured, sick and orphaned koalas* (the code) is intended for those authorised to rescue, rehabilitate and release koalas (*Phascolarctos cinereus*). The code has been developed to ensure the welfare needs of these mammals are met, and the conservation benefits stemming from their rehabilitation and release are optimised. It also aims to ensure that risks to the health and safety of volunteers rescuing and caring for these animals are reduced and easily managed.

Compliance with the code does not remove the need to abide by the requirements of the:

- Animal Research Act 1985
- Firearms Act 1996
- Local Government Act 1993
- Poisons and Therapeutic Goods Act 1966
- Prevention of Cruelty to Animals Act 1979
- Veterinary Practice Act 2003

or any other relevant laws and regulations.

Compliance with the standards in the code is a condition of a biodiversity conservation licence (BCL) issued under the NSW *Biodiversity Conservation Act 2016* (BC Act) to rehabilitate and release sick, injured and orphaned protected animals. A person who contravenes a condition of a BCL is guilty of an offence under section 2.14 (4) of the BC Act.

The code is neither a complete manual on animal husbandry, nor a static document, and must be implemented by a person trained in accordance with the *Koala Rehabilitation Training Standards for the Volunteer Wildlife Rehabilitation Sector*. The code will be reviewed periodically to incorporate new knowledge of animal physiology and behaviour, technological advances, developments in standards of animal welfare, and changing community attitudes and expectations about the humane treatment of koalas. The Department of Planning and Environment (the department) will consult with licence holders regarding potential changes to the code and give written notice when the code is superseded.

# 1. Introduction

This code sets standards for the care and housing of a koala that is incapable of fending for itself in its natural habitat.

Koalas are listed as endangered under Schedule 1 of the BC Act.

The combined koala populations of Queensland, New South Wales and the Australian Capital Territory are listed as endangered under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The NSW Koala Strategy commits to supporting native animal rehabilitation groups and establishing common minimum standards of care. Records of koalas in care will inform an understanding of population density, viability, and the effectiveness of threat mitigation actions.

This code comprises both enforceable provisions and guidelines. Enforceable provisions are identified by the word 'Standards' and they must be followed.

## 1.1 Principles

The development of the code has been guided by 4 key principles that apply to all aspects of koala rescue, rehabilitation and release:

### Prioritise the welfare of koalas

The main objective of wildlife rehabilitation is to relieve suffering in sick or injured wildlife. The rehabilitation and release of koalas to the wild is the primary goal, but it must not be pursued to preserve life of the animal at all costs or to achieve broader conservation outcomes if the animal is subject to unreasonable and unjustifiable suffering.

### Avoid harm to wild koala populations and other wildlife communities

In wildlife rehabilitation, there is a risk of adverse ecological outcomes. The inappropriate release of animals can have significant detrimental effects on the local ecosystem and wildlife communities. At all stages of wildlife rehabilitation, the potential adverse ecological outcomes must be considered and conservation benefits for wild koala populations maximised.

### Minimise the risks to human health and safety

There are many risks in all aspects of rehabilitation, including both personal injury and disease, that require consideration to ensure prevention measures are in place. All personnel involved in rescue, rehabilitation and release of koalas must understand practical health and safety measures such as undertaking a risk assessment, using personal protective equipment (PPE) and even delaying action to ensure safety measures are in place to protect their health and safety.

### Optimise capacity to care

Wildlife rehabilitators must ensure they have the capacity to provide for the essential needs of koalas undergoing rehabilitation, and the resources to adequately prepare the koala for release back into the wild. When the wildlife rehabilitator's capacity to care is exceeded, unacceptable standards of care or welfare may result. Wildlife rehabilitators

must be mindful of their capacity to care, particularly when there is an influx of wildlife requiring care due to major incidents, significant weather events or disease outbreak.

When the capacity to care is exceeded there are 3 acceptable management options:

- refer the koala to another licensed wildlife rehabilitator with a current capacity to care for the mammal
- increase the capacity to care by increasing or pooling resources
- lower the euthanasia threshold in combination with early-stage triage of newly rescued animals and proper veterinary assessment and prognosis of koalas in care.

Lowering the standards of care to the point where they are not consistent with this code is not an acceptable response to exceeding the capacity to care. In circumstances that involve major catastrophic events and where capacity to care is exceeded, lowering the threshold for euthanasia is a more appropriate response than not rescuing animals in distress.

## 1.2 Interpretations

### Objectives

'Objectives' are the intended outcomes for each section of this code.

### Standards

'Standards' describe the mandatory specific actions needed to achieve acceptable animal welfare levels. These are the minimum standards that must be met. They are identified in the text by the heading 'Standards' and use the word 'must'.

### Guidelines

'Guidelines' describe the agreed best practice following consideration of scientific information and accumulated experience. They also reflect society's values and expectations regarding the care of animals. A guideline is usually a higher standard of care than minimum standards, except where the standard is best practice.

Guidelines will be particularly appropriate where it is desirable to promote or encourage better care for animals than is provided by the minimum standards. Guidelines are also appropriate where it is difficult to determine an assessable standard. Guidelines are identified in the text by the heading 'Guidelines' and use the word 'should'.

### Notes

Where appropriate, notes describe practical procedures to achieve the minimum standards and guidelines. They may also refer to relevant legislation.

## 1.3 Definitions

In this code:

**Barrier nursing** means husbandry protocols used to provide complete patient isolation to minimise the risk of cross-contamination between the patient and the wildlife rehabilitator responsible for their care. It includes wearing PPE (e.g. masks, eye protection, gloves, gowns, aprons, overshoes), infection control procedures (e.g. equipment sterilisation and regular use of disinfectant) and isolation of the sick animal.

**Caecum** is a pouch that is connected to the junction of the small intestine and the start of the large intestine.

**Experienced koala rehabilitator** means someone who has an extensive knowledge of current rehabilitation techniques gained through training courses and many years of successfully rehabilitating and releasing koalas.

**Husbandry plan** means developing a plan for the rehabilitation and care of a koala that includes monitoring, feeding, treatment and toileting as well as the plans for release.

**Immediate risk of injury** means that the likelihood of an animal becoming injured and requiring care is high if immediate intervention is not undertaken, based on a reasonable situation assessment.

**Pap** is special faeces produced by a koala that plays an important role in the development of the gut microbiome of a koala joey. It contains bacteria that are introduced into the gut allowing the koala joey to start eating and digesting eucalyptus leaves. The papping process is commenced whilst the koala joey is still in the pouch.

**Park** means a national park, historic site, state conservation area, regional park, nature reserve, karst conservation reserve or Aboriginal area, or any land acquired by the Minister under the *NSW National Parks and Wildlife Act 1974*.

**Protected animal** means any amphibian, reptile, bird or mammal (except dingos) listed or referred to in Schedule 5 of the BC Act that is native to Australia or that periodically or occasionally migrates to Australia (including their eggs and young).

**Proximal colon** is the first section of the large intestine and includes the ascending colon and the transverse colon.

**Recovery**, when referring to an individual, means a return to a functional condition after an injury or illness. This includes the natural ability of an animal to feed, interact, move, and evade risks and hazards in a wild situation.

**Species coordinator** is an experienced wildlife rehabilitator nominated by a licensed wildlife rehabilitation group to liaise and advise volunteers on the rehabilitation of particular species (e.g. possums and gliders, native birds, koalas, macropods). Species coordinators should be people who are skilled in applying the code and have a role in monitoring volunteers, distributing rescued animals to volunteers and liaising with the local veterinary hospitals.

**Wildlife rehabilitator** means someone who is either authorised by a wildlife rehabilitation provider or zoological park or is individually licensed by the department to rehabilitate and release protected animals.

**Wildlife rehabilitation** means the temporary care of an injured, sick or orphaned protected animal with the aim of successfully releasing it back into its natural habitat.

**Wildlife rehabilitation provider** means an incorporated wildlife rehabilitation group or individually licensed wildlife rehabilitator who is licensed by the department under the BC Act to rehabilitate and release protected animals.

**Zoonoses** are diseases that can be transmitted from animals to humans.



## 2. Case assessment

### 2.1 Assessing koalas

#### Objective

To assess a koala to determine the type of intervention required. The primary goal of rehabilitation is the successful reintegration of the koala back into the wild population; all decisions are in pursuit of this goal. This will mean that some koalas may benefit from rehabilitation whereas others will need to be euthanased.

#### Standards

- 2.1.1 The decision tree in Figure 1 must be followed when determining how to respond to a koala encounter.
- 2.1.2 On admission a koala must undergo veterinary assessment based on its injuries and condition; for example:
  - as soon as possible and no longer than 24 hours for all koalas rescued with major trauma (e.g. dog attack, vehicle strike), emaciation, moribund, dehydrated, bushfire or grinding their teeth
  - within 72 hours for all other koalas.

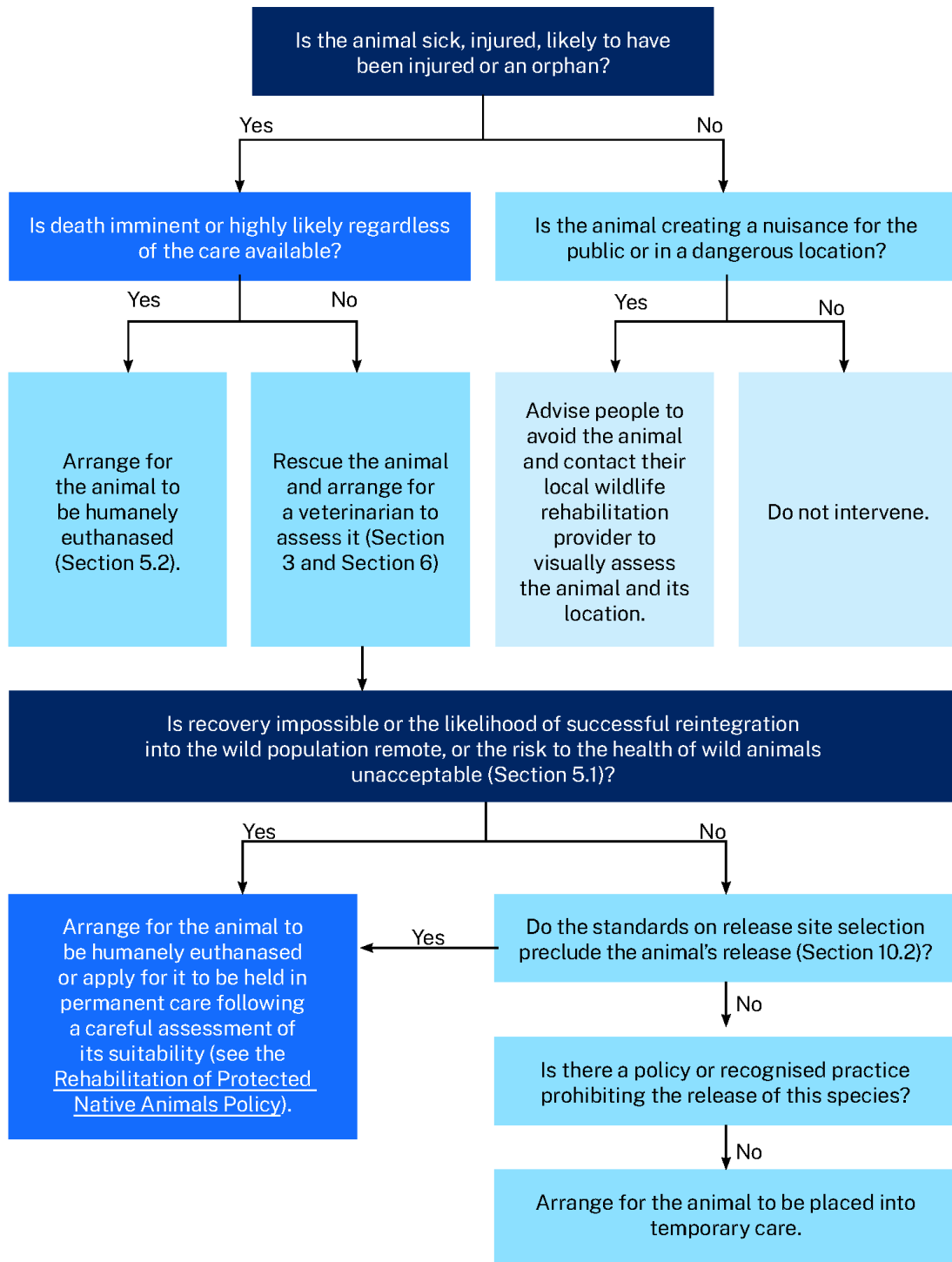


Figure 1 Decision tree for course of action when a koala is encountered

## 3. Rescue

### 3.1 Rescuing koalas

#### Objective

To conduct a koala rescue to minimise further stress and injury to the animal.

#### Standards

- 3.1.1 Prior to a rescue attempt, the rescuer must assess the risks to the koala from environmental hazards and from capture.
- 3.1.2 Prior to a rescue attempt, the rescuer must assess the risks to themselves and members of the public.
- 3.1.3 Rescuers must employ the correct rescue equipment for the condition and location of the koala and be trained in its use (see Section 11 Training); for example, techniques for setting up a wildlife camera on a koala trap.
- 3.1.4 The following methods must not be used to capture a koala:
  - noosing with a rope
  - shaking the tree
  - cutting the branches or tree down
  - deliberately forcing a koala to jump from a height.
- 3.1.5 A koala must not be grabbed around the chest.
- 3.1.6 If the koala has not been captured after being pursued for 10 minutes or is exhibiting signs of stress (e.g. bleating, panting, ear flicking or jumping from tree to tree), the rescue attempt must be suspended to allow the koala to recover.
- 3.1.7 Rescuers must use suitable work, health and safety techniques to minimise the risk of injury to the rescuer; for example:
  - wearing PPE such as long sleeves and closed-in shoes
  - koalas must not be rescued during an electrical storm
  - all rescues that involve climbing a tree or using a ladder must be undertaken by rehabilitators who have undertaken certified ‘working with heights’ training
  - seeking professional help when rescues are near or involve electrical powerlines.
- 3.1.8 Rescuers must take steps to protect the koala from additional stressors during rescue, such as onlookers, loud noises and other animals.
- 3.1.9 If the koala is a suspected orphan, the surrounding area must be searched for the mother. If the mother is found and is healthy, attempts must be made to reunite her with her young.
- 3.1.10 If the koala is an injured female with signs of having a pouch young (e.g. elongated teat), the surrounding area must be searched for the young.
- 3.1.11 Rescuers must not move a healthy, independent koala unless it is at immediate risk of injury; for example, the koala is on a road roundabout, a bridge, trapped inside a house or backyard, or in a tree that is about to be felled.

- 3.1.12 Care must be taken when using traps for rescue to prevent further injury and stress to a koala. Wildlife rehabilitators must ensure the trap:
- is monitored continuously
  - is placed and secured on a flat surface
  - has no sharp surfaces, to prevent injury
  - is not placed in a yard where a dog will be let out unrestrained.
- 3.1.13 If multiple koalas are rescued (e.g. on a fire ground), the containers they are placed in must be labelled with the unique ID number, capture location, date and rescuer's name.
- 3.1.14 Rescuers must only attempt to rescue a koala when a sufficient number of trained personnel for that species and size are involved.
- 3.1.15 Koalas have re-curved claws, and these must be disengaged before the koala is removed during rescue.
- 3.1.16 Koalas will hide injury and pain and rescuers must take this into consideration when designing their rescue plan.

## Guidelines

- 3.1.17 The rescue of a koala should not be attempted unless at least 2 trained personnel are involved.
- 3.1.18 If the koala is not captured after 3 attempts, the rescue should be stopped.
- 3.1.19 Rescue of koalas during extreme weather conditions (e.g. temperatures over 37°C) should be avoided to prevent further stress.
- 3.1.20 A koala trap should be removed after 4 days if the koala has not come down the tree.
- 3.1.21 If the risk of injury to a healthy, independent koala is not immediate, the hazard should be removed, where possible, and the animal should be observed and allowed the opportunity to move away from the risk independently.
- 3.1.22 Care must be taken when using long poles and flagging when rescuing a koala that is higher than 10 m in a tree as the poles and flagging are difficult to handle. Consideration should be given to using different rescue methods such as a koala trap or a cherry picker to rescue the koala.
- 3.1.23 All rescues that involve climbing a tree or using a ladder should be undertaken by rehabilitators who have undertaken certified 'working with heights' training.

## Notes

- A canvas bag, blanket or large towel is suitable for catching a koala on the ground.
- A long pole with flagging at one end is suitable for encouraging a koala to move down a tree.
- A hoop net is suitable for catching a koala in a difficult location.
- Covering a koala's head with a towel, blanket or bag will often assist with calming it down.
- In the event of a wildlife emergency, approval to move a healthy koala must be sought from the local National Parks and Wildlife Service (NPWS) area manager.

## 4. Transport

### 4.1 Moving koalas

#### Objective

To minimise further stress and injury to a koala during transport. This section applies to all movements of the koala, including from the point of rescue to a veterinary surgery, between rehabilitation facilities and to a release site.

#### Standards

- 4.1.1 Transport methods and container sizes must be appropriate for the size and condition of the koala; for example:
- an orphaned pouch young requires an artificial pouch that is secured within a container (e.g. cage, box or basket)
  - artificial heat sources (e.g. a heat pad) may also be required and must not be positioned in contact with the koala or transport pouch
  - an adult or sub-adult requires a soft substrate in the container
  - a koala with suspected fractures, spinal or pelvic injuries requires additional padding to reduce pain and prevent movement and further injury.
- 4.1.2 The transport container must be designed, set up and secured to prevent injuries to the koala; for example:
- hessian sacks must not be used as the koala's claws can become entangled and threads can irritate the eye or be inhaled
  - covering floors with a non-slip, non-ingestible, tangle-free surface
  - garbage bins without ventilation must not be used as the koala will overheat, its breathing is restricted, and it is dangerous for the rescuer to remove the koala
  - front opening pet carriers or cages must not be used as the koala can become stuck and is not easily removed from them
  - securing the container to prevent movement.
- 4.1.3 The container must be designed to prevent the koala from escaping.
- 4.1.4 A container used for transporting an adult or sub-adult koala must contain something for the koala to hold on to (e.g. a rolled-up towel).
- 4.1.5 Whilst in a container, the koala must be positioned so its breathing is not restricted, and its pain or discomfort is minimised.
- 4.1.6 Adult and sub-adult koalas must be positioned upright in the container, unless they are unconscious or moribund. An unconscious or moribund koala must be placed on its belly supported with a rolled-up towel positioned to ensure their head is above their feet.
- 4.1.7 The container must be ventilated so air can circulate around the koala.
- 4.1.8 The container must be kept at a temperature appropriate for the age and condition of the koala:
- a range of 20–25°C is appropriate for an adult in most circumstances
  - a range of 28–32°C is appropriate for an unfurred pouch young.

- 4.1.9 The ambient temperature and condition of the koala must be monitored during transport; for example, unfurred pouch young require hourly monitoring using a thermometer probe with an external display to ensure minimal disturbance to the koala joey.
- 4.1.10 The rehabilitator must minimise light, noise (e.g. radio) and vibrations, and prevent the koala being exposed to young children, domestic pets and livestock, cigarette smoke and strong smells.
- 4.1.11 A koala must not be transported:
- in the back of an uncovered utility vehicle
  - in a car boot that is separate from the main cabin which is not temperature controlled
  - on the rescuer’s lap
  - on the body and under the clothing of a rescuer.
- 4.1.12 The container must be constructed from a non-porous material that can be easily cleaned and disinfected.
- 4.1.13 The container must be covered with a breathable cloth to minimise stress.
- 4.1.14 Transport of the koala must be the sole purpose of the trip and undertaken in the shortest possible time.
- 4.1.15 If medication is to be used to facilitate transport this must be assessed and approved by a veterinarian.

## Guidelines

- 4.1.16 Koalas should not be given food or water when being transported from the initial rescue location. Eucalyptus leaves should be provided for the koala to hide under or eat for other transport situations (e.g. follow-up vet visits or to the release site) to reduce stress.
- 4.1.17 A koala joey should be transported with its mother to reduce stress.

# 5. Euthanasia

## 5.1 When to euthanase

### Objective

To end a koala's life in situations where death is imminent, full recovery is impossible, the likelihood of successful reintegration into the wild population is remote, or the koala poses an unacceptable disease risk to other animals in the wild once released.

### Standards

5.1.1 A koala must be euthanased without exception when:

- death is imminent or highly likely regardless of the treatment provided
- it is suffering from chronic, unrelievable pain or distress
- it is permanently unable to consume leaf unaided due to an injured jaw or missing/worn teeth
- it has significant burns to the face, digits, nail beds, or leather padding on feet
- it has cancer (e.g. mesothelioma)
- it has a prolapsed bowel
- it is at a stage of development where it is unlikely to be successfully hand-reared to the point where it can be released (i.e. non furred pouch young with its mouth still fused and ear canals not open).

5.1.2 A koala must be euthanased (unless the department has granted permission to hold it in permanent care) when:

- there is no suitable release location
- it is permanently incapable of climbing trees
- its ability to sense its environment (i.e. see, hear, smell, taste or feel) is permanently impaired due to a missing or injured organ (e.g. injury to both eyes, ears, nose)
- its ability to handle branches is permanently impaired due to several missing or injured digits (e.g. fewer than 2 functional claws on each hand or foot).

In certain exceptional circumstances, the department may grant permission to hold such animals in permanent care or arrange placement with an authorised animal exhibitor licensed by the NSW Department of Primary Industries (DPI). See the Rehabilitation of Protected Native Animals Policy for details.

5.1.3 The decision to euthanase must not be based solely on availability of rehabilitators within the rescue group. The group must liaise with other licensed groups to facilitate care if necessary.

### Guidelines

5.1.4 Injured and sick female koalas in care that meet the criteria for euthanasia without exception (clause 5.1.1) that have non-viable dependent pouch young should not be kept alive to incubate the young.

- 5.1.5 A koala's temperament should be carefully considered before a licensed wildlife rehabilitation provider applies for permanent care (particularly a blind koala) as some koalas will not adapt to the constraints of captivity.

## Notes

- A koala with a late-stage chlamydia infection is extremely difficult to cure and poses a health risk to wild koalas.

## 5.2 How to euthanase

### Objective

To induce death with minimal pain and distress to the koala.

### Standards

- 5.2.1 A euthanasia method must be used that produces a rapid loss of consciousness immediately followed by death.
- 5.2.2 Death must be confirmed immediately following the euthanasia procedure and before disposal of the carcass. The absence of a heartbeat and loss of corneal reflexes indicate death has occurred.
- 5.2.3 Acceptable methods for euthanasia of koalas include:
- anaesthesia followed by an intravenous (preferred) or intracardiac injection of sodium pentobarbital. This must be performed by a veterinarian
  - gunshot to the head or heart for large koalas on the ground
  - blunt force trauma to the base of the skull for small joeys under 5 kg.
- 5.2.4 The following euthanasia methods must not be used on koalas:
- suffocation via drowning, strangulation or chest compression
  - freezing or burning
  - carbon dioxide or carbon monoxide in any form
  - poisoning with household products
  - air embolism
  - exsanguination or decapitation
  - electrocution or microwave irradiation
  - chloroform or strychnine
  - neuromuscular blocking agents.
- 5.2.5 Shooting must be undertaken by a licensed, skilled and experienced wildlife rehabilitation provider or an appropriate agency such as NPWS, the Royal Society for the Prevention of Cruelty to Animals (RSPCA) or NSW Police Force.

### Guidelines

- 5.2.6 Wildlife rehabilitators should arrange for a veterinarian to perform euthanasia.
- 5.2.7 A koala that requires euthanasia should not be exposed to additional stressors such as large numbers of onlookers, people touching it, loud noises or extremes of temperature.



## Notes

For further information on appropriate euthanasia methods refer to:

- Australian Code for the Care and Use of Animals for Scientific Purposes (8th edition, NHMRC 2013)
- Australian Veterinary Association – Policy for Euthanasia of Injured Wildlife
- *Firearms Act 1996*, which specifies animal welfare as a genuine reason for having a firearms licence
- *Veterinary Practice Act 2003*, which places restrictions on the types of procedures non-veterinarians can perform on animals
- *Poisons and Therapeutic Goods Act 1966*, which places restrictions on the types of poisons people can possess.

## 5.3 Disposal of carcasses and animal waste

### Objective

To dispose of waste so that the risks of disease transmission are minimised.

### Standards

- 5.3.1 Carcasses and organic waste suspected or confirmed to be contaminated with infectious disease or that have been exposed to chemicals (e.g. barbiturates) must either be incinerated (under Environment Protection Authority licence), taken to a licensed waste facility or, if on private land, buried at a depth that will prevent scavengers from reaching them.
- 5.3.2 A koala that has died from disease or chemical means (e.g. barbiturate overdose) must not be fed to other animals.
- 5.3.3 When collecting pap from a recently deceased koala it must be harvested:
- from the caecum and proximate colon within one hour of death (unless the body is refrigerated, in which case a longer period of 5 hours is allowable)
  - but not from a koala with a damaged caecum, suffering from any illness or exposed to barbiturates.

### Guidelines

- 5.3.4 A deceased koala should, whenever possible, undergo a necropsy by a veterinarian.
- 5.3.5 Wildlife rehabilitators should make every effort to reduce the risk of contracting zoonoses such as salmonella, Q fever, mange, thrush, and fungal infections, by:
- implementing barrier nursing techniques (e.g. wearing PPE such as a mask, gloves and gown)
  - ensuring they are vaccinated for tetanus and Q fever.
- 5.3.6 Samples for DNA analysis should be collected from a deceased koala; for example, ear biopsy, fresh blood, buccal swab and tissue samples (Appendix A). Label or affix details including as a minimum: name of species, date, location, organisation and the unique rehabilitation ID number. A certificate of deed will need to be provided for all samples sent to the Australian Museum. Samples are to be sent to the Australian Museum Koala Biobank, Australian Centre for Wildlife Genomics, Australian Museum, 1 William Street, Sydney, NSW 2010.

5.3.4 Pap should be harvested from recently deceased koalas.

### Notes

- Further information on carcass disposal can be found in the DPI fact sheet: *Animal carcass disposal*, including specific information on the proper construction and location for a burial site to protect the water table.
- The University of Sydney Koala Health Hub fact sheet: *Tissue-based (necropsy) sampling* provides a standardised approach to the necropsy of koalas.

## 6. Care procedures

### 6.1 Assessment

#### Objective

To identify the severity of wounds, injuries or disease to determine the best course of action for a koala undergoing rehabilitation.

#### Standards

- 6.1.1 On admission a koala must undergo veterinary assessment based on its injuries and condition; for example:
- as soon as possible and no longer than 24 hours for all koalas rescued with major trauma (e.g. dog attack, vehicle strike), emaciation, moribund, dehydrated, bushfire or grinding their teeth
  - within 72 hours for all other koalas.
- 6.1.2 On admission a koala must be weighed, measured and its stage of development identified.
- 6.1.3 On admission a koala must be checked for:
- bleeding, puncture wounds or matted wet-looking fur
  - bone fractures
  - body condition by manual assessment (standardised score out of 5)
  - rapid breathing or elevated heart rate
  - dilated pupils or erratic eye movements
  - pale or blue mucous membranes
  - hydration level
  - cold extremities
  - discharge from the eyes, nostrils, mouth or cloaca
  - abnormal behaviour
  - external parasites (e.g. ticks, maggots, mange mites)
  - condition of ear canals, nasal canals
  - internal mouth condition (i.e. gum health, age estimation and signs of disease)
  - pouch condition for females (e.g. presence of young, enlarged or elongated teat, infection)
  - testes condition for males
  - mobility levels (e.g. stiff joints)
  - level of gut fill (i.e. check the abdomen)
  - odd smells
  - condition of fur
  - condition of hand and foot pads and claws.

- 6.1.4 Once identified, disease or injury must be managed according to severity (triage) and this will generally require veterinary input. Management of koalas in care must always strive for optimal animal welfare. Recognition and management of pain is important.
- 6.1.5 A koala must be sedated while being assessed or undergoing treatment for burns.
- 6.1.6 All koalas suspected to have chlamydia must have the following tests completed under general anaesthetic:
- a full blood count
  - swab of eyes and urogenital tract
  - check for enlarged lymph nodes.
- 6.1.7 All koalas confirmed to have chlamydia must have a full abdominal ultrasound under general anaesthetic.

## Guidelines

- 6.1.8 A koala should be assessed for cancer (e.g. leukaemia, lymphoma, mesothelioma) and koala retrovirus (KoRV).
- 6.1.9 All koalas should be assessed for chlamydia with the following tests completed under general anaesthetic:
- a full blood count
  - swab of eyes and urogenital tract
  - check for enlarged lymph nodes
  - full abdominal ultrasound.
- 6.1.10 When assessing a koala joey for viability, wildlife rehabilitators should consider the following criteria, as their presence will reduce viability:
- severe dehydration
  - low body temperature
  - lethargy (unresponsive to gentle handling)
  - wounds (other than a superficial scratch to a non-essential area)
  - bruising indicative of attempted predation or other trauma.

## Notes

- A koala can be aged via pre-molar and molar wear using a tooth-wear chart; for example, see Figure 8.4 in Vogelnest and Woods (2008).
- Pain relief and fluid hydration must be undertaken in accordance with the *Veterinary Practice Act 2003*.
- The University of Sydney *Koala Health Hub fact sheet: Koala clinical examination* provides a scoring system for measuring the symptoms of chlamydia in the eye and rump (wet bottom) as well as a guide to body scoring.
- The University of Sydney *Koala Health Hub factsheet: Drug formulary for koalas* provides information on the dosage for commonly used drugs for koalas including pain relief to assist veterinarians.
- Keeping the koala in the capture bag and removing only the part of the body to be examined will assist assessment while reducing the stress of handling the koala.

- Weighing a koala while it is still in the rescue container and then subtracting the weight of the empty container is a quick technique to obtain weight while reducing the stress of handling a koala.
- Shining a UV light on a koala may assist in identifying possible victims of dog attack, as it shows the presence of body fluids.

## 6.2 Monitoring

### Objective

To determine the health status of koalas undergoing rehabilitation so that concerns can be promptly identified and managed. The type and frequency of monitoring will vary with the age or stage of development, type of injury or illness and required treatment.

### Standards

6.2.1 Monitoring a koala must include:

- visually assessing body condition and behaviour
- checking for signs of injury, disease and parasites
- assessing hydration
- determining leaf consumption
- noting the quantity and quality of scats and the quality of urine
- looking for indications of activity.

6.2.2 A koala in intensive care must be monitored repeatedly during the day and night and weighed at least once per week.

6.2.3 An orphaned dependent koala joey (i.e. pouch young) must be monitored repeatedly during the day and night and weighed at least twice per week.

6.2.4 Orphaned dependent pouch young koalas and koalas in intensive care must be monitored for stress and pain (e.g. grinding teeth, ear flicking, urination upon handling or approach, increased number of scats present, repeatedly chewing at bark, bulging eyes and rapid breathing). Disturbance to koalas in care and the risk of increasing stress levels must be considered when deciding the frequency of monitoring; for example:

- monitoring at the same time as handling the koala for treatment and feeding
- weighing a joey while it is still in the pouch and then subtracting the weight of the empty pouch.

6.2.5 An independent juvenile koala or a koala in intermediate care must be monitored at least once per day and weighed at least once per week.

6.2.6 A koala being prepared for release must be discreetly monitored every day from a distance to determine if it is physically and behaviourally ready for release (see Section 9 Suitability for release).

6.2.7 Buddied orphaned joeys must be monitored for signs a joey is repeatedly riding on the back of another joey (back riding) as this will lead to behavioural issues.

6.2.8 Wildlife rehabilitators must regularly monitor the temperature of any artificial heat source (e.g. blankets and electric heat mats) within artificial pouches and enclosures containing thermal support, to ensure appropriate temperatures are maintained. A thermostat must regulate electrical heat sources.

6.2.9 A koala with chlamydia must be monitored closely to ensure the treatment is improving their symptoms as the koala may need a second course of treatment; for example:

- observe urination and note if the koala cries, has pressure sores on the rump, pus or blood in the urine, and if the urination staining is reducing
- observe whether inflammation and discharge from the eyes is reducing for koalas with ocular chlamydia symptoms
- weight loss.

6.2.10 Antibiotics must be given by or under the guidance of a veterinarian and with extreme caution due to the spread of antibiotic resistance and harm to wild populations.

### Note

- Covering enclosure furniture beneath the area a koala is sitting with a white towel is a useful non-invasive tool to monitor for pus and blood as it will stain the towel. A dip stick can then be used to ascertain if the staining on the towel contains blood.

## 6.3 Controlling disease transmission between animals

### Objective

To prevent the spread of diseases among koalas undergoing rehabilitation. Stressed animals are more susceptible to contracting and expressing infectious diseases.

### Standards

- 6.3.1 A newly arrived koala must be isolated in a separate area until its disease status can be determined. Any koala that has not tested negative for chlamydia must be considered as positive.
- 6.3.2 A koala suspected or known to be carrying an infectious disease must be kept under strict quarantine conditions (e.g. each individual is in their own enclosure in a separate room) throughout its rehabilitation, and wildlife rehabilitators must wear PPE (e.g. gown, mask and gloves) to prevent contracting zoonoses.
- signs of disease may include coughing, sneezing, abnormal respiration, discharge from the eyes, nose or cloaca, diarrhoea, skin irritation, patchy fur (mange and ringworm) or a strong offensive smell.
- 6.3.3 Dedicated cleaning equipment must be used for enclosures housing koalas with a suspected or confirmed infectious disease. This equipment must not be shared.
- 6.3.4 All enclosures, transport containers, enclosure furniture, food containers and water containers must be thoroughly cleaned and disinfected after each occupant.
- 6.3.5 Porous furniture (e.g. timber) and substrate (e.g. bark chips) must be disposed of carefully in enclosures that house a koala with a suspected or confirmed infectious disease to reduce the transfer of disease.
- 6.3.6 Wildlife rehabilitators must wash their hands thoroughly with soap or disinfectant before and after handling each animal in care.
- 6.3.7 Other species undergoing rehabilitation must not be kept in the same enclosure as a koala.

- 6.3.8 Koalas undergoing rehabilitation must be prevented from coming into contact with domestic pets and livestock.
- 6.3.9 If a koala is carrying a notifiable disease (e.g. Q fever), or an unusual disease or mortality event is suspected, the wildlife rehabilitator must immediately contact their species coordinator to notify the 24-hour DPI Emergency Animal Disease Hotline on 1800 675 888 for immediate assessment of emerging health threats.
- 6.3.10 When handling multiple animals, wildlife rehabilitators must start with the healthiest and finish with the sickest to reduce the risks of disease transmission.

## Guidelines

- 6.3.11 Wildlife rehabilitators should make every effort to reduce the risk of contracting zoonoses such as salmonella, Q fever, mange, thrush, and fungal infections by:
- implementing barrier nursing techniques (e.g. wearing PPE such as a mask, gloves and gown)
  - ensuring they are vaccinated for tetanus and Q fever.

## Notes

- If unwell, wildlife rehabilitators should seek medical advice and advise the doctor they are caring for a sick animal and there is a possibility of having contracted a disease.
- It is recommended that pregnant women or immunocompromised people seek medical advice before handling or caring for sick animals.

# 7. Husbandry

## 7.1 Food and water

### Objective

To ensure a koala has a feeding and watering regime that encourages rapid recovery, supports growth in juveniles, and assists with the maintenance of foraging behaviour necessary for survival in the wild.

### Standards

- 7.1.1 Clean, fresh drinking water must be always available and changed daily, except in the case of orphaned dependent young (see Paragraph 7.1.8).
- 7.1.2 Water containers must be designed and positioned to avoid spillage, contamination and must be appropriate for the size, age and mobility of the koala.
- 7.1.3 Fresh leaves (i.e. no evidence of wilting or desiccation) must be available for the koala to eat at all times. Partially eaten branches must be trimmed back (cut the stems that have been eaten). Leaves may be stored prior to use.
- 7.1.4 Stored leaves must:
  - not be accessible to pets, pests and wild animals
  - be protected from contamination
  - be protected from nutritional and moisture loss (i.e. stored in containers of fresh water in the shade for a maximum of 3 days)
  - have the based trimmed each day for better fluid intake
  - be sprayed with water before being offered to a koala.
- 7.1.5 Leaves from at least 3 different koala food tree eucalyptus species must be offered to the koala each day.
- 7.1.6 Branches must be placed:
  - in a position that allows the koala to sit under the leaves
  - in holders that contain clean water. The water must be emptied, the holder cleaned and refilled daily to keep the leaf hydrated
  - not bunched tightly but spread out to assist the koala with foraging.
- 7.1.7 Food that is available in the wild must form the basis of the koala's diet.
- 7.1.8 A hand-reared koala must be fed a milk formula that is appropriate for its stage of development and condition.
- 7.1.9 Both young and mature leaves must be offered to a koala until their preference is established.
- 7.1.10 Leaves must not be dragged across the ground as they may become contaminated.
- 7.1.11 Leaves must not be collected from the side of a major road as they are likely to be contaminated.



- 7.1.12 If multiple koalas are kept within the same enclosure (e.g. pre-release for hand-reared koalas), branches must be placed in different locations so that all koalas can feed simultaneously.
- 7.1.13 All koalas in intermediate care and pre-release must be offered bark and contaminant-free dirt (avoid soil at risk of contamination from cat's faeces or pesticides).
- 7.1.14 When providing pap to a joey, it must be:
- warmed to body temperature before feeding to the joey
  - from a dead koala from the same habitat type (same mix of dominant eucalyptus species) the koala joey will be released to
  - stored separately from domestic food products.
- 7.1.15 After a joey has had pap, it must be offered eucalyptus leaves (e.g. little tips, a small number of mature leaves in good condition).
- 7.1.16 Adult koalas being prepared for release must be fed leaves from the eucalyptus species from the area they are being released.
- 7.1.17 Once eating leaves, joeys must be fed leaves from the eucalyptus species in the area they are to be released as the window between pouch emergence and independence is a critical time in shaping the koala's adult microbiome.

## Guidelines

- 7.1.18 Young dependent joeys may require extra nutritional support and vitamins and a variety of suitable liquidised and commercial formulas should be used for this purpose, as advised by a veterinarian or experienced koala rehabilitator.
- 7.1.19 Leaves from non-eucalyptus native food trees (e.g. melaleuca or casuarina species) should also be offered.
- 7.1.20 The choice of eucalyptus species offered to a koala should be varied every few days.
- 7.1.21 Leaf collectors should consider the health of the tree when collecting leaves and harvest them in a way that keeps them sustainable.

## Notes

- Storing leaves in a cool room will assist with protecting them from moisture loss and prolonging their viability for feeding.
- Follow the exact measurement directions for hydration products and milk formulas, as modifying the amounts and adding extra product into a solution will hinder rehydration.
- Leaves eaten by insects are a good choice as they indicate the leaf is not toxic.

## 7.2 Hygiene

### Objective

To maintain clean rehabilitation facilities so that diseases are prevented or contained.

### Standards

- 7.2.1 Faeces must be removed daily.
- 7.2.2 Uneaten leaf must be removed every 2 days and kept separate from the fresh leaf provided daily.
- 7.2.3 Leaf holders and water containers must be cleaned and refilled with fresh water daily. Cleaning involves the use of water and the physical removal of all residues.
- 7.2.4 Bottles and teats used for feeding hand-reared joeys must be sterilised prior to every feed.
- 7.2.5 Enclosure furniture, bedding, weighing bags and pouches must be cleaned when soiled.
- 7.2.6 A koala must be gently cleaned when soiled with faeces, urine or uneaten food.
- 7.2.7 Wildlife rehabilitators must minimise the disturbance to koalas when cleaning.
- 7.2.8 Wildlife rehabilitators must wash their hands thoroughly and clean all food preparation surfaces and equipment prior to preparing koala food.
- 7.2.9 Equipment used for cleaning animal enclosures, containers and furniture must be separate from those used domestically and must be safe to use on animals.

## 7.3 General care

### Objective

To ensure koalas have a care regime that encourages rapid recovery, supports growth in juveniles and assists with behaviours necessary for survival in the wild.

### Standards

- 7.3.1 Each koala must have a husbandry plan.
- 7.3.2 Koalas with bushfire burn injuries must be anaesthetised for treatment of the burn wounds and bandage changes.
- 7.3.3 Koalas are very prone to habituation to people. All care must be taken to protect natural wild behaviours, minimise social interactions with humans, and natural behaviours must be allowed to develop for joeys.
- 7.3.4 The rehabilitation of unfurred and lightly furred joeys is difficult and complex and must only be undertaken by experienced koala rehabilitators. Experience can be gained by first rehabilitating adult and sub-adult koalas and then furred orphaned joeys.
- 7.3.5 Wildlife rehabilitation providers without the skills to rehabilitate unfurred and lightly furred joeys must liaise with other groups and if needed transfer them to another wildlife rehabilitation group that can provide the specialist care they require.

## Guidelines

- 7.3.6 To reduce stress and to develop natural behaviours an orphaned koala joey should not be carried around but placed on a soft, clean support (e.g. a sheepskin log, soft toy) which mimics the natural position on its mother, then placed in an artificial pouch or buddied with another koala joey (from commencement of weaning) based on weight and/or stage of development. Wildlife rehabilitation providers should liaise with other providers to facilitate buddying where possible.

## 8. Housing requirements

### 8.1 General housing

#### Objective

To ensure a koala undergoing rehabilitation is housed in enclosures that keep it safe, secure and free from additional stress.

#### Standards

- 8.1.1 Enclosures must be escape-proof.
- 8.1.2 Housing must be made safe for koalas to live in by excluding hazards that might harm them; for example:
  - openings on foliage containers need to be small enough to prevent the koala from getting their head trapped or drowning
  - enclosures must be free of exposed wires, sharp edges, or sharp sticks.
- 8.1.3 Housing must be made safe for the rehabilitator by excluding hazards that may harm them; for example:
  - free of sharp branches that could cause eye injury
  - no electrical equipment near water to prevent electrocution
  - base of enclosure is a flat non-slip surface with no trip hazards.
- 8.1.4 Housing must be designed and positioned to protect the koala from:
  - visual or physical contact with domestic pets
  - physical contact with wild animals, livestock and pests.
- 8.1.5 Housing must be positioned so the koala is not exposed to strong vibrations, noxious smells (e.g. wood smoke) or loud noises (e.g. radios, televisions, heavy machinery and vehicles).
- 8.1.6 Artificial pouches must be made from soft fibres and have no loose threads. Woollen pouches must have an inner lining.
- 8.1.7 From 1.5 kg a koala joey must start to spend time outside and be dehumanised. From 2 kg the koala joey must be outside all the time. These weights need to be increased by 500 g for koala joeys in the southern NSW alpine region.
- 8.1.8 Housing must be constructed from non-toxic materials that can be easily cleaned and disinfected.
- 8.1.9 If multiple koalas are kept within a single enclosure there must be sufficient space for individuals to avoid undue conflict or harm from each other.

#### Guidelines

- 8.1.10 Enclosures listed in each stage of rehabilitation are suitable for average-sized adults. Smaller individuals may not require the space specified and larger individuals (e.g. koalas from the southern NSW alpine region) may require more space.

## 8.2 Intensive care housing

### Objective

To facilitate frequent monitoring, treatment, feeding and rehydration during the period immediately after coming into care and until the animal is stabilised.

### Standards

- 8.2.1 Intensive care housing must provide sufficient space for the koala to stretch its body and limbs.
- 8.2.2 Intensive care housing must contain a prop for the koala to hold on to (e.g. rolled-up towels).
- 8.2.3 Intensive care housing must provide a constant temperature appropriate to the koala's stage of development and nature of its illness or injury:
  - a range of 25–28°C is appropriate for fully furred joeys and adult or sub-adult koalas
  - a range of 32–34°C is appropriate for unfurred orphaned joeys
  - a range of 30–32°C is appropriate for a hypothermic koala (koala has a body temperature under 34.5°C) or lightly furred orphaned joeys
  - artificial warmth (e.g. a heat pad) may be required for an orphaned unfurred or lightly furred joey and must be placed on the outside of the pouch to prevent the koala from coming into direct contact with it.
- 8.2.4 The temperature in intensive care housing must be monitored regularly using a thermometer, with minimal disturbance to the koala.
- 8.2.5 Electrical heat sources must be regulated by a thermostat.
- 8.2.6 Koalas (excluding unfurred joeys) in intensive care housing must experience a light–dark cycle that replicates outside conditions.
- 8.2.7 Intensive care housing must be designed and positioned so that visual and auditory stimuli are reduced (e.g. by covering with a towel and placing in a quiet room).
- 8.2.8 Intensive care housing must be adequately ventilated without allowing excessive draughts.
- 8.2.9 Substrate used in intensive care housing must be soft (e.g. towels, newspaper or hospital padding) and replaced when soiled.
- 8.2.10 Intensive care housing must permit easy access for the wildlife rehabilitator to clean the facility, feed, medicate and assess the animal.
- 8.2.11 Intensive care enclosures must have floor dimensions of at least 0.7 m long by 0.7 m wide.

### Guidelines

- 8.1.12 Intensive care enclosures should be a minimum of 0.8 m from the ground.

## 8.3 Intermediate care housing

### Objective

To provide a mobile koala with enough space to allow some physical activity while enabling it to be readily captured for monitoring or treatment.

### Standards

- 8.3.1 Intermediate care housing must provide sufficient space for the koala to move about freely whilst being conveniently sized for capture.
- 8.3.2 The housing must contain 2 branches, each with a fork, and one slanted pole.
- 8.3.3 A koala in intermediate care housing must experience a light–dark cycle that replicates outside conditions. This may be achieved by placing the enclosure in a well-lit room with a UV light or in a sheltered area outside.
- 8.3.4 Intermediate care housing must have a roof.
- 8.3.5 Adult koalas (except mother–joey pairs) in intermediate housing must be kept in their own individual enclosures
- 8.3.6 Juvenile hand-reared koalas must be exposed to other juvenile koalas during the intermediate care stage.
- 8.3.7 Intermediate housing must be designed so rehabilitators can readily access the koala.
- 8.3.8 Substrate used in intermediate housing must be easily replaced or washed and disinfected.
- 8.3.9 Intermediate care enclosures must have floor dimensions of at least 2 m long by 2 m wide and a height of 2 m.

### Guidelines

- 8.3.10 Intermediate care enclosures should have floor dimensions of at least 3 m long by 3 m wide and a height of 2.5 m.
- 8.3.11 Age and sex should be considered when determining the location of koalas in intermediate care:
  - adult females should be housed as far as possible from adult males
  - adult males should be housed as far as possible from other large adult males.

## 8.4 Pre-release housing

### Objective

To give the koala the opportunity to regain its physical condition, acclimatise to current weather conditions and practice natural behaviour. At this stage of rehabilitation, interactions between the koala and humans will be greatly reduced.

- 8.4.1 Pre-release housing must provide sufficient space for the koala to move about freely, express a range of natural behaviours and withdraw from cohoused koalas.
- 8.4.2 Pre-release housing must provide areas where the koala can gain exposure to prevailing weather conditions and areas where it can shelter (e.g. gunyah).

- 8.4.3 Pre-release housing must contain habitat elements that enable the koala to perform a range of natural behaviours; for example:
- contain a variety of natural branches (native species) oriented both vertically and horizontally
  - branches must have different thicknesses and textures (rough and smooth bark) with at least one branch (central vertical tree branch) with a diameter of at least 15 cm
  - each koala requires a minimum of 3 tree forks and height of at least 3 m to allow climbing
  - the forks need slanting (angled) runners positioned to encourage natural movement, muscle strength and climbing skills
  - leaves positioned in such a way as to encourage exercise.
- 8.4.4 Pre-release housing must be designed and positioned so that exposure to humans is kept to the minimum required for monitoring, feeding and cleaning.
- 8.4.5 Pre-release enclosures must have floor dimensions of at least 6 m long by 6 m wide and provide at least 3 m of usable vertical space.
- 8.4.6 Pre-release enclosure walls must be smooth on both sides, at least 1.5 m high and at least 2 m from the nearest branch, to prevent escape.

## Guidelines

- 8.4.7 Pre-release enclosures should have a live native tree.
- 8.4.8 Age and sex should be considered when determining the location of koalas in pre-release care:
- adult females should be housed as far as possible from adult males
  - adult males should be housed as far as possible from other large adult males.

## 9. Suitability for release

### 9.1 Preparations for release

#### Objective

To ensure the koala is physically fit and has the appropriate survival skills prior to its release. Preparations for release will start at the time of rescue and continue throughout the rehabilitation process. Many species will gradually lose their survival skills in captivity, so it is vital their time in care is kept to a minimum.

#### Standards

- 9.1.1 A koala must not be released until it is physically ready. This status has been achieved when:
- it has fully recovered from any injury or veterinary procedure (e.g. climbs normally)
  - it has recovered from any disease
  - its weight is within the appropriate range for its age
  - its body score is 3/5 (fair) or better as determined by scapula, cranial and limb musculature examination
  - its pelage is adequate for survival in its natural habitat (i.e. fur covering the entire body)
  - it has acclimatised to prevailing climatic conditions.
- 9.1.2 A koala must not be released until it is behaviourally ready. This status has been achieved when:
- it can recognise and consume eucalyptus leaves unaided
  - it is not attracted to humans or to sights, sounds or smells that are specific to captivity (i.e. humanised or imprinted)
  - it can climb effectively (climb quickly up the tree and enclosure furniture, and can jump)
  - it can recognise and interact normally with other koalas.
- 9.1.3 A koala that has tested positive for chlamydia must not be released until its fitness is assessed by the following tests:
- a polymerase chain reaction (PCR) test for chlamydia is negative
  - a urogenital tract ultrasound screen.
- 9.1.4 A koala's readiness for release must be confirmed either by a veterinarian or experienced koala rehabilitator.
- 9.1.5 In cases where an animal is determined to be non-releasable, the wildlife rehabilitation provider must:
- consider euthanasia (see Section 5 Euthanasia)
  - if euthanasia is not considered appropriate, contact NPWS and apply for permanent care
  - contact NPWS to arrange placement with an authorised animal exhibitor licensed by DPI.



# 10. Release considerations

## 10.1 Timing of release

### Objective

To ensure a koala is released as soon as it is ready and at a time that minimises stress and maximises its chances of survival in its natural habitat.

### Standards

- 10.1.1 Once a koala is deemed ready for release, it must be released as soon as conditions are suitable (see Paragraph 10.1.2.). This excludes koalas that are candidates for an authorised translocation program in New South Wales.
- 10.1.2 A koala must be released at a time of year that facilitates survival and reintegration into the wild population; for example, for sexually immature koalas, release must occur before sexual maturity, and when they would naturally disperse (e.g. around 15 months).
- 10.1.3 A koala must be released when weather conditions encourage high activity levels. Release during extremes of temperature and storms must be avoided.

## 10.2 Release site selection

### Objective

To ensure the wild koala population and natural environment are not negatively impacted by the release of the koala and the released koala has the highest likelihood of survival.

### Standards

- 10.2.1 If the exact location where the koala was found is known and it has been assessed as a suitable environment for release, it must be released there. The exception is sub-adult hand-reared koalas (see Paragraph 10.2.9). A suitable environment for release is one that:
  - contains appropriate habitat and an adequate number of food trees
  - is occupied by other koalas
  - is free from immediate risk of injury to the animal.
- 10.2.2 If the location where the koala was found is assessed as an unsuitable environment for release, it must be released in a suitable environment as near as possible to this location without transporting it:
  - across a physical boundary that it would not normally cross (e.g. a large river)
  - across a hazard that would pose significant risk of injury (e.g. a road roundabout)
  - further than 10 km for sub-adult or adult koalas.
- 10.2.3 If only the general location where the koala was found is known and it contains or adjoins a suitable environment for release, the koala must be released there without transporting it:
  - across a physical boundary that it would not normally cross (e.g. a river)

- across a hazard that would pose significant risk of injury (e.g. a road roundabout)
  - further than 10 km for sub-adult or adult koalas.
- 10.2.4 If there is no information about where the koala was found, it must not be released.
- 10.2.5 In cases where there is no suitable release site, the wildlife rehabilitation provider must:
- consider euthanasia (see Section 5 Euthanasia)
  - if euthanasia is not considered appropriate, contact NPWS and apply for permanent care
  - notify NPWS to arrange placement with an authorised animal exhibitor licensed by the DPI.
- 10.2.6 A koala can only be released in a park if:
- written consent for the release has been obtained from the relevant NPWS area manager (issued under clause 11 of the National Parks and Wildlife Regulation 2019)
  - the release complies with the relevant department policies on translocation and environmental integrity.

These conditions also apply to the release of a koala in a location where it might reasonably be expected to immediately enter a park (e.g. on a property adjoining a park).

- 10.2.7 A koala being released more than 5 km and less than 10 km from the original location where it was found requires consultation with the department by contacting the Wildlife programs and regulation unit ([wildlife.licensing@environment.nsw.gov.au](mailto:wildlife.licensing@environment.nsw.gov.au)).
- 10.2.8 Wildlife rehabilitators who propose to release a koala outside these standards require approval from the department by contacting the Wildlife programs and regulation unit ([wildlife.licensing@environment.nsw.gov.au](mailto:wildlife.licensing@environment.nsw.gov.au)).
- 10.2.9 Hand-reared koalas must not be released more than 50 km from their original location.
- 10.2.10 A koala must only be released away from its original location when the known in situ hazards outweigh the hazards associated with relocation.
- 10.2.11 A koala must only be released into a population known to be free of chlamydia if:
- it was originally encountered in that location
  - it has not been exposed to chlamydia during rehabilitation
  - it has undergone a PCR test to confirm it is free of chlamydia.

## Guidelines

- 10.2.12 A koala should be released in an area that is connected to other suitable habitat.
- 10.2.13 The release site tree should be surveyed prior to release to ensure another koala is not already in it.
- 10.2.14 Koala rehabilitators should apply the best available knowledge on local koala populations.

## 10.3 Release techniques

### Objective

The use of release techniques that ensure the released koala has the highest likelihood of survival, and information is collected regarding the rehabilitated koala's fate after release so the relative merits of different rehabilitation and release techniques can be compared.

### Standards

- 10.3.1 A koala must be fitted with a microchip prior to release.
- 10.3.2 Rehabilitators must arrange for a DNA sample to be taken and sent to the Australian Museum (Appendix A).
- 10.3.3 A koala that has been in care for an extended timeframe (over 1 month) that has not been in a pre-release enclosure must be provided with temporary post-release support (soft release). This will include placing the koala into a food tree surrounded by a temporary fence that is removed as soon as the koala is confirmed to have adequate fitness levels (e.g. climbing skills).

### Guidelines

- 10.3.4 A koala should be fitted with a numbered swivel sheep tag in the ear as well as the microchip to assist with post-release monitoring from a distance. Wildlife rehabilitation providers and zoological parks are encouraged to participate in post-release monitoring programs to determine survivorship.
- 10.3.5 A hand-reared koala should be provided with temporary post-release support (soft release). This may include placing the koala into a food tree that is surrounded by a temporary fence and after a few days the fence can be removed.
- 10.3.6 A hand-reared koala should be released with a similarly aged koala that it has been housed with, on the edge of an existing population.
- 10.3.7 Rehabilitators should not release multiple hand-reared joeys at a single location, as increased competition is likely to have a detrimental effect on the existing koala population.
- 10.3.8 When releasing a koala, only people directly involved in the release should be at the release site to reduce stress.

### Note

- All research involving protected animals requires a licence issued under the BC Act and approvals as specified in the *Animal Research Act 1985*.

# 11. Training

## 11.1 Requirements

### Objective

To ensure koala rehabilitators have appropriate knowledge and skills to ensure the welfare of koalas in their care.

### Standards

- 11.1.1 New wildlife rehabilitators must undertake an introductory training course.
- 11.1.2 Before undertaking koala rehabilitation, a person must undertake specialist training.
- 11.1.3 A specialist training course must:
- teach the standards and guidelines described in this code
  - focus on what a person will be able to do as a result of completing the course (i.e. be competency-based)
  - include leaf identification and selection
  - teach health and safety issues associated with koala rehabilitation (e.g. disease transmission, managing hazardous chemicals and operating in dangerous locations)
  - have a written assessment component (this point does not apply to training for rehabilitation assistants who assist under the direct supervision of an experienced koala rehabilitator).
- 11.1.4 Wildlife rehabilitators must understand:
- the objectives of koala rehabilitation
  - wildlife ecology (e.g. population dynamics, habitat selection, competition, and predator-prey interactions)
  - animal behaviour (e.g. feeding and social interactions)
  - how to keep accurate records.
- 11.1.5 Wildlife rehabilitators must be proficient in:
- koala handling techniques
  - first aid for injured koalas
  - recognising the signs of disease
  - animal husbandry.
- 11.1.6 Wildlife rehabilitators must be assessed as competent in the relevant areas before undertaking rescue, rehabilitation or release of koalas.
- 11.1.7 Training must be accompanied by ongoing in-field support from experienced koala rehabilitators.
- 11.1.8 All wildlife rehabilitators must undertake professional development and refresh their training for koalas every 3 years (e.g. refresher or advanced training course, attendance at a koala conference).

## Guidelines

11.1.9 Koala rehabilitators looking after orphaned joeys should have proven experience in koala rehabilitation for adults and juveniles or in-house practical training at a koala central facility.

## Note

- Attendance at koala conferences may require pre-approval from a wildlife rehabilitator's group training coordinator to be eligible for consideration.

# 12. Record keeping

## 12.1 Keeping a register

### Objective

To maintain a database of koalas that have entered rehabilitation to inform improved rehabilitation outcomes for individual animals and contribute to the ecological viability of koalas.

### Standards

- 12.1.1 Licensed wildlife rehabilitation providers, zoological parks and individuals must maintain a current register of all koalas reported, encountered or rescued. The register must contain the following information on each animal:
- encounter details (date, exact location, encounter circumstances, the animal's condition and unique ID number)
  - species data (species name, sex, stage of development, initial weight and pouch condition)
  - care providers (name and address of the initial assessor, name and address of the koala rehabilitator)
  - fate details (date, final disposition, location and any permanent marking).
- These records must be submitted to the Wildlife program and regulations unit of the department ([wildlife.licensing@environment.nsw.gov.au](mailto:wildlife.licensing@environment.nsw.gov.au)) in an approved electronic format on an annual basis.
- 12.1.2 Wildlife rehabilitators must record the weight and body score (1–5) of the koala in their care so changes can be identified quickly (weighing frequency will depend on the type of care provided; see Section 6.2 Monitoring).
- 12.1.3 Wildlife rehabilitators must record the following additional information at the time of rescue:
- who discovered the koala (name and contact details)
  - when the koala was discovered (time of day)
  - any treatment provided prior to transport.
- 12.1.4 Wildlife rehabilitators must record the following additional information at the time of assessment by a veterinarian or experienced koala rehabilitator:
- details of wounds, injuries, diseases and external parasites
  - details of mobility
  - details of abnormal behaviour
  - recommended management (e.g. euthanasia or prescribed treatment)
  - burn classification and location for koalas from a fire ground
  - eye score (0–3) and rump (wet bottom score (1–7)) for koalas with chlamydia.
- 12.1.5 Wildlife rehabilitators must record the following additional information at the time of entry into a rehabilitation facility:
- standard length measurements (CRL – crown rump length and a head measurement)

- identifying features if the koala is to be housed communally
  - housing (e.g. intensive care, intermediate care or pre-release) (see Section 8 Housing requirements).
- 12.1.6 Wildlife rehabilitators must record details of the following daily care information:
- the type (e.g. species of leaf, quantity and frequency of food/liquid ingested)
  - treatment (e.g. medication, therapy, DNA sampling, pathology results)
  - instructions from veterinarians and species coordinators
  - changes to general fitness and behaviour
  - enclosure cleaning (e.g. quantity and quality of faeces and frequency of urination).
- 12.1.7 Wildlife rehabilitators must record the following additional information regarding fate:
- if released, details about the type of release (hard or soft)
  - if released, details about the condition of the animal (e.g. weight)
  - tag number and/or microchip number
  - if transferred to another authority (e.g. as part of an authorised translocation program in New South Wales) the details of the licence/authority.
- 12.1.8 Wildlife rehabilitators must record the following information for a koala vaccinated for chlamydia:
- vaccination name, dosage, number and date
  - name of veterinarian that administered the vaccine
  - microchip number
  - date, symptom status and chlamydia testing status
  - eye score (0–3) and rump (wet bottom score (1–7)) if the koala is being re-admitted for rehabilitation.
- 12.1.9 When an individual koala is transferred to another wildlife rehabilitator or organisation for any reason, copies of its records must be transferred with it.
- 12.1.10 If the death of a koala is suspected to be the result of a serious disease outbreak, the wildlife rehabilitator must immediately contact their species coordinator to ascertain whether tissue analysis or a necropsy is required. The 24-hour DPI Emergency Animal Disease Hotline on 1800 675 888 must be notified immediately.

## Guidelines

- 12.1.11 Wildlife rehabilitators should keep duplicates or backups of records to avoid information being lost.
- 12.1.12 Records of koala sightings should be uploaded to the NSW BioNet Atlas with encounter details (date, location, encounter circumstances and a unique ID number) as well as whether the koala was alive or dead.
- 12.1.13 If the koala has been attacked wildlife rehabilitators should record the breed of dog if known.
- 12.1.14 For koalas transferred to another rehabilitation facility, the receiving facility should keep the original wildlife rehabilitation provider updated with the status of the transferred koala.

12.1.15 Wildlife rehabilitators should record the following information for dead koalas:

- cause of death
- necropsy notes
- DNA testing results
- records of care of previous rehabilitation.

### Note

- The University of Sydney Koala Health Hub fact sheet: Koala clinical examination provides a scoring system for measuring the symptoms of chlamydia in the eye and rump (wet bottom) as well as a guide to body scoring.



## 13. Further reading

Flanagan C (2015) *Koala Rehabilitation Manual 4th edition*, Koala Hospital, Port Macquarie NSW.

Gillett A (2013) *Veterinary handbook for the assessment and treatment of sick and injured koalas*, Australia Zoo Wildlife Hospital, Beerwah QLD, 67pp.

Hanger J and Gipp G (2010) *Principles of koala rehabilitation for volunteer wildlife rehabilitators, veterinary students and veterinarians*, Wildcare Australia Inc., Nerang QLD.

Jackson S (2003) *Australian Mammals: Biology and Captive Management*, CSIRO Publishing, Collingwood VIC.

Rose K (2007) *Wildlife Health Investigations Manual*, Zoological Parks Board of NSW, Mosman NSW.

Vogelnest L and Portas T (eds) (2019) *Current therapy in medicine of Australian mammals*, CSIRO Publishing, Clayton South VIC.

Vogelnest L and Woods R (eds) (2008) *Medicine of Australian Mammals*, CSIRO Publishing, Collingwood VIC.

### More information

- [Animal Research Act 1985](#)
- [Australian Code for the Care and Use of Animals for Scientific Purposes](#)
- [Australian Veterinary Association – Policy for Euthanasia of Injured Wildlife](#)
- [Biodiversity Conservation Act 2016](#)
- [Biodiversity Conservation Act 2016 Schedule 5](#)
- [Biodiversity Conservation Regulation 2017](#)
- [DPI Emergency Animal Disease Hotline \(24 hours\) 1800 675 888](#)
- [DPI fact sheet \[PDF 249KB\]: Animal carcass disposal](#)
- [Environment Protection and Biodiversity Conservation Act 1999](#)
- [Exhibited licensing and complaints DPI contact details](#)
- [Firearms Act 1996](#)
- [Guidelines for the initial treatment and care of rescued koalas](#)
- [Hand washing fact sheet \[PDF 102KB\]](#)
- [Koala Rehabilitation Training Standards for the Volunteer Wildlife Rehabilitation Sector](#)
- [Local Government Act 1993](#)
- [National Parks and Wildlife Act 1974](#)
- [National Parks and Wildlife Regulation 2019](#)
- [NSW BioNet Atlas](#)
- [NSW Koala Strategy](#)
- [Prevention of Cruelty to Animals Act 1979](#)
- [Poisons and Therapeutic Goods Act 1966](#)

- [Rehabilitation of protected animals policy](#)
- University of Sydney Koala Health Hub: [Doses for commonly used drugs](#) [PDF 111KB]
- University of Sydney Koala Health Hub: [Koala clinical examination](#) [PDF 652KB]
- University of Sydney Koala Health Hub: [Tissue based \(necropsy\) sampling](#) [PDF 1MB]
- [Veterinary Practice Act 2003](#)

# Appendix A: Australian Museum instructions for sample collection

**Warning:** Wear gloves when sampling. Animal samples may contain infectious agents.

## Special notes

Please try to ensure **sterile and accurate collection**. Poor technique may result in failed tests due to contamination of the sample. Be very careful not to touch sterile swabs with anything other than the sample to be collected.

**Fresh blood or tissue samples are best for DNA analysis**, but hair and swabs can also give a result. Dried blood or tissue samples are still good. Rotting samples can be a challenge in more ways than one.

## Ear biopsy/tissue sample – from live animal

- Use appropriate equipment to obtain biopsy/tissue sample (i.e. sterile surgical scissors, biopsy punch), remove sample into a tube with 90–95% ethanol or DMSO for preservation, or store dry in a freezer.

## Moist/fleshy tissue – from carcass

- Sample the most unexposed piece of tissue you can find to avoid external contaminants. If the sample is rotting, try to locate an intact blood-coloured part. Cut a small chunk of flesh/muscle about the size of a pen lid. Place into a tube with 90–95% ethanol or DMSO for preservation, or store dry in a freezer.
- If you cannot cut a piece of flesh use a dry gauze dressing pad to wipe up the moist remains.
- Place the flesh/muscle or dressing pad into a plastic bag and seal.
- Double bag the sample and freeze until transport.

## Fresh blood

- If using a **swab stick**, wipe the cotton tip of the stick over the sample.
- Place swab stick into a sterile tube.
- If using **filter paper**, soak or spot blood onto paper, dry at room temperature (avoid direct sunlight). Once dry, seal in ziplock bag and freeze before sending via express post.
- Blood collected in EDTA vacutainers is also suitable for DNA extraction, please make sure the blood is well mixed with the EDTA in the tube if this collection method is used.

## Dry blood

- Use a wet alcohol swab. Wipe the swab over the blood smear.
- Put the wet swab into a small plastic bag and seal.

## Hair

- To sample hair, **pluck (do not cut)** – the best DNA comes from the root of the hair) a variety of hairs, especially those with obvious colour patterns.
- Place hair remains into a tube or plastic bag and seal.

## Buccal swabs

- DNA can be obtained using a buccal cavity/cheek swab. Use a swab stick to wipe in the inside of the cheek/mouth and place into a sterile tube.

## Scat

- Sun-dried scats will not yield suitable DNA quantities, so avoid collecting these.
- Avoid touching the scat directly. Use forceps or gloves to place scat into a tube/ziplock bag or envelope and seal and label.

**To ensure best possible results from DNA analysis please send sample immediately or freeze/refrigerate sample until immediately prior to sending.**

## Preferences for sample types

	Sample type						
	Tissue/ ear punch	Fresh blood	Dry blood	Hair	Buccal swab	Scats	Decomposing tissue
Live animals	1	1	2	2	1	3	3
Carcasses	1	1	2	2	2	3	3

- 1 First preference
- 2 Second preference
- 3 Third preference

## Labelling your samples

It is important to clearly label your sample and record some basic data when collecting for scientific purposes.

**Always record a unique identifier** – a **unique** sample number should be assigned to each sample taken, so that any sample can be individually identified and traced back to the source. While animal names are useful, they are often not unique and may not be able to be traced back to a source, therefore, we recommend a numbering system if possible.

It is important that labels be applied to the submitted samples using pencil or alcohol-proof ink. Leaks during shipment are not uncommon and can remove the unique identifiers that are critical for linking physical specimens to the associated metadata. If labelling is not integrated into the tubes themselves (i.e. they don't come with preformatted/numbered barcodes etc.), then it is recommended that the unique identifier for each sample be recorded in pencil on waterproof cardboard and then inserted into the collection tube.

## Basic data required

- Name of species (scientific and/or common name)
- Date of sample collection
- Location (GPS or address) of where the animal was found in the wild and/or Organisation (i.e. name of the vet or zoo where the sample was collected)
- If recording a latitude/longitude or GPS coordinates, please including the datum the coordinate is taken in (e.g. WGM84/GDA/UTM)

## Extra useful information

- Gender
- Sample collector/rehabilitation group/wildlife hospital the animal was processed at
- Age cohort (adult, sub-adult, juvenile)
- If the animal is deceased – how it died, e.g. disease/roadkill/dog attack
- Disease status – if the animal is alive and showing symptoms of disease

## Australian Museum Deed of Gift

It is a requirement that any biological material donated to the Australian Museum be accompanied by a signed Deed of Gift. This ensures that the transfer of ownership of all objects donated to the Australian Museum is fully documented. To facilitate the easy accession of donated biological materials into the Australian Museum collection, it is strongly recommended that potential sample donors contact us at the email address below to arrange the receipt and completion of the Deed of Gift paperwork. Failure to accompany submitted biological material with a signed Deed of Gift may greatly delay or even prohibit its accession into the Australian Museum collection.

## Mailing address for samples

Australian Museum Koala Biobank  
Australian Centre for Wildlife Genomics  
Australian Museum  
1 William Street  
Sydney NSW 2010

Any questions please email: [wildlife.forensics@austmus.gov.au](mailto:wildlife.forensics@austmus.gov.au)