



Department of Planning, Industry and Environment

Code of Practice

for injured, sick and orphaned flying-foxes



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Environment, Energy and Science
Department of Planning, Industry and Environment
Locked Bag 5022, Parramatta NSW 2124
Phone: +61 2 9995 5000 (switchboard)
Phone: 1300 361 967 (Environment, Energy and Science enquiries)
TTY users: phone 133 677, then ask for 1300 361 967
Speak and listen users: phone 1300 555 727, then ask for 1300 361 967
Email: info@environment.nsw.gov.au
Website: www.environment.nsw.gov.au

Report pollution and environmental incidents
Environment Line: 131 555 (NSW only) or info@environment.nsw.gov.au
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Preface

The *Code of Practice for Injured, Sick and Orphaned Flying-foxes* (the code) is intended for those authorised to rescue, rehabilitate and release flying-foxes.

The code has been developed to ensure the welfare needs of these flying-foxes 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:

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

or any other relevant laws and regulations.

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

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will consult with licence holders regarding potential changes to the code and give written notice when the code is superseded.

The code is complemented by Initial Treatment and Care Guidelines for Rescued Flying-foxes. The purpose of the guidelines is to standardise the management of flying-foxes requiring rescue or rehabilitation, in line with the code. It includes detailed information about the management of these animals following rescue, from capture to physical examination, initial stabilisation and treatment before presentation to a veterinarian.

1. Introduction

This code sets standards for the care and housing of a flying-fox incapable of fending for itself in its natural habitat.

Grey-headed flying-foxes (*Pteropus poliocephalus*) are listed as vulnerable under the NSW BC Act and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*. Black flying-foxes (*Pteropus alecto*) and little red flying-foxes (*Pteropus scapulatus*) are not threatened but are protected species under the NSW BC Act.

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 which apply to all aspects of flying-fox rescue, rehabilitation and release:

Prioritise the welfare of flying-foxes

The main objective of wildlife rehabilitation is to relieve suffering in sick or injured wildlife. The rehabilitation and release of flying-foxes to the wild is the primary objective. It must not be pursued to preserve the animal's life at all costs or achieve broader conservation outcomes where the animal is subject to unreasonable and unjustifiable suffering.

Avoid harm to wild flying-fox 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. The potential adverse ecological outcomes must be considered at all stages of wildlife rehabilitation, and conservation benefits for wild flying-fox populations maximised.

Minimise the risks to human health and safety

Wildlife rehabilitators must make every effort to reduce the risk of contracting zoonoses such as Australian bat lyssavirus and other infections by wearing personal protective equipment (e.g. mask and puncture-resistant gloves). As Australian bat lyssavirus is transmitted by the saliva of an infected animal, exposure occurs via a bite or scratch, or by contamination of mucous membranes or broken skin.

Flying-foxes must be handled only by vaccinated individuals that have followed the NSW Department of Health guidelines for vaccination and boosters.

Members of the public must not handle a flying-fox. They must be encouraged to keep away from the animal to minimise risk of Australian bat lyssavirus transmission during rescue.

In the event of a flying-fox bite, scratch or other significant contact, the person involved must seek urgent medical attention and report to NSW Health on 1300 066 055. While waiting for medical assistance, follow the first aid advice recommended by the Department of Primary Industries (DPI).

There are many risks in all aspects of rehabilitation, including personal injury and disease, requiring consideration to ensure preventative measures are in place. All personnel involved in rescue, rehabilitation and release of flying-foxes must understand practical health and safety measures such as undertaking a risk assessment, using personal protective equipment 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 can provide for the essential needs of flying-foxes undergoing rehabilitation, and the resources to adequately prepare the flying-fox 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 flying-fox to another licensed wildlife rehabilitator with a current capacity to care for the flying-fox
- 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 flying-foxes in care.

Lowering the standards of care, such that 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 the 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 usually indicates a higher level of care than the minimum standard, 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:

Creche is an enclosure for juvenile flying-foxes once they are weaned. They need to be placed with other flying-foxes to learn flying-fox behaviours and commence attaining flight fitness before release. There is also reduced contact with humans to ensure they become dehumanised before release. They will move to the pre-release flight aviary after their time in the creche.

Dependent flying-fox means a young flying-fox that is not yet able to fly.

Experienced wildlife rehabilitator means someone who has extensive knowledge of current rehabilitation techniques gained through training courses and many years of successfully caring for native wildlife.

Flying-fox is a fruit bat (megabat) from the genus *Pteropus*.

Husbandry plan means developing a plan for the rehabilitation and care of a flying-fox that includes monitoring, feeding, treatment and toileting.

Juvenile flying-fox means an immature flying-fox that can fly.

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).

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.

Spat is the fibrous pulp ejected by a flying-fox after it has chewed and crushed fruit against the roof of its mouth to obtain juice.

Species coordinator is an experienced wildlife rehabilitator nominated by a group to liaise and advise volunteers on the rehabilitation of particular species, e.g. possums and gliders, koalas, or 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 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, individually licensed wildlife rehabilitator, or facility that is licensed by the department under the BC Act to rehabilitate and release protected animals.

Vaccinated individual refers to immunisation for anyone that handles flying-foxes. A vaccinated individual has been immunised with the rabies vaccination to protect against

Australian bat lyssavirus. This includes an initial course of vaccinations as well as continued monitoring and booster vaccination to ensure virus neutralising antibody (VNAb) titre readings are greater than 0.5 international units per millilitre (IU/ml). See the Australian Government Department of Health webpage Rabies Virus and Other Lyssavirus (Including Australian Bat Lyssavirus) Exposures and Infections.

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

2. Case assessment

2.1 Assessing a flying-fox

Objective

To assess flying-foxes to determine the type of intervention required. The primary objective of rehabilitation is the successful reintegration of the flying-fox back into the wild population, and all decisions are in pursuit of this goal. This will mean that some flying-foxes may benefit from rehabilitation, whereas others will need to be euthanased.

Standards

- 2.1.1 The decision tree (Figure 1) must be followed when determining how to respond to a flying-fox encounter.
- 2.1.2 Rescuers must arrange for flying-foxes to be assessed by a veterinarian or experienced flying-fox rehabilitator within 24 hours of rescue to ensure accurate diagnosis and prompt treatment or euthanasia. If this is not possible due to the remoteness of the location, expert advice must be sought from a veterinarian or experienced flying-fox rehabilitator via telephone, video link or email.

Note

An animal creating a nuisance for the public generally refers to an animal that has entered a person's house or represents a human health risk. The department has a range of policies guiding the response to flying-fox management: Living near a flying-fox camp.

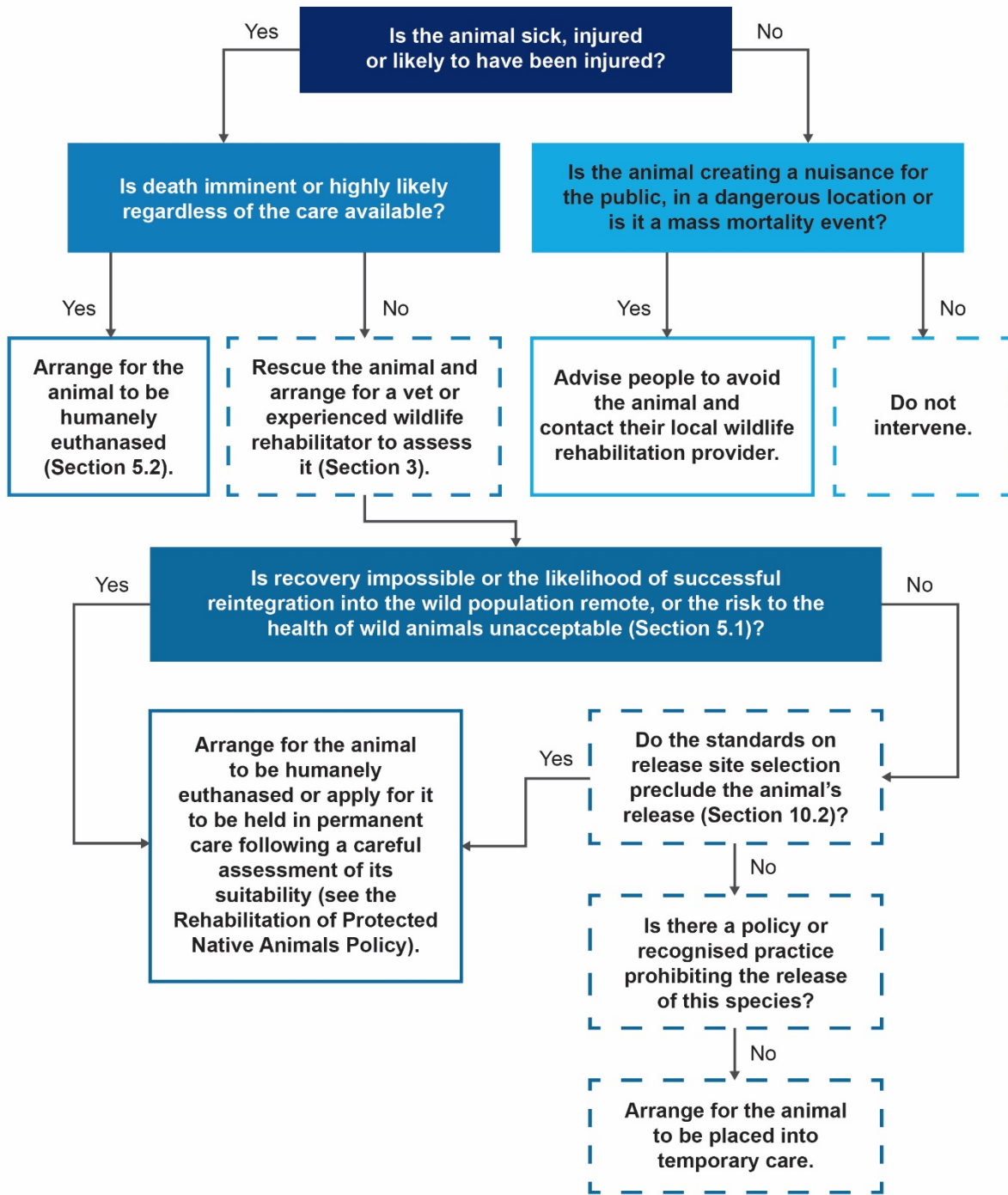


Figure 1 Decision tree for course of action when a flying-fox is encountered

3. Rescue

3.1 Conducting a flying-fox rescue

Objective

To conduct a flying-fox rescue to minimise further stress and injury to the animal.

Standards

- 3.1.1 Before a rescue attempt, rescuers must assess the risks to the flying-fox from environmental hazards and capture.
- 3.1.2 Before 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 flying-fox and be trained in its use.
- 3.1.4 Rescuers must take steps to protect the flying-fox from additional stressors during rescue, such as onlookers, loud noises, other animals and extremes of temperature. For example:
 - noise must be kept to a minimum when entering a flying-fox camp, particularly in a mass casualty event.
- 3.1.5 When a rescue is required in a flying-fox camp, before the rescue is attempted, the rescuer must consider:
 - the impact of the rescue on the entire camp (e.g. the rescue attempt causes several other flying-foxes to fly in multiple directions and then drop their flying-fox pups in the panic)
 - monitoring a suspected abandoned flying-fox pup for 24 hours, when it is still roosting in the canopy, as the mother may return
 - the welfare of the injured flying-fox
 - assessment by an experienced flying-fox rehabilitator for heat stress events.
- 3.1.6 A dependent flying-fox that is attached to its dead mother must be separated as soon as possible.
- 3.1.7 A flying-fox with a fracture must be stabilised before transport by placing extra padding and support around the fracture.
- 3.1.8 The rescue of a flying-fox must only be undertaken by vaccinated individuals that have followed the NSW Department of Health guidelines for vaccination and boosters.
- 3.1.9 In the event of a flying-fox bite, scratch or other significant contact, the person involved must seek **urgent** medical attention and report to NSW Health on 1300 066 055. While waiting for medical assistance, follow the first aid advice recommended by the Department of Primary Industries (DPI). As Australian bat lyssavirus is transmitted by the saliva of an infected animal, exposure occurs via a bite or scratch, or by contamination of mucous membranes or broken skin. Members of the public must not handle a flying-fox. They must be encouraged to keep away from the animal to minimise risk of Australian bat lyssavirus transmission during rescue.

- 3.1.10 Rescuers must use suitable work, health and safety techniques to minimise the risk of injury to the rescuer, including personal protective equipment (e.g. gloves, long sleeves and covered feet).
- 3.1.11 Wildlife rehabilitation providers must notify the NSW National Parks and Wildlife Service (NPWS) by contacting the local NPWS office during business hours (or calling 13000 PARKS outside business hours) for all flying-fox mass casualty events (e.g. heat stress events, mass pup abandonment, cold snaps and hailstorms).

Guidelines

- 3.1.12 Rescuers should attempt to rescue flying-foxes only when a sufficient number of trained personnel for that species, size and location are involved (e.g. the rescue of a flying-fox from barbed wire should not be attempted unless two people are involved, one of whom is trained in this type of rescue).
- 3.1.13 An orphaned dependent flying-fox should be placed on a covered, rolled-up towel (known as a mumma roll) to mimic the natural position on its mother. It should be able to change position and move its feet. It should also be given a dummy to suck. A loose covering can be placed over its head.
- 3.1.14 A rescued flying-fox should be rehydrated before transport unless it is cold. The method of rehydration will depend on the situation and the condition of the flying-fox.

Notes

- Rescuers are responsible for gaining permission from property owners before gaining access to their properties and should avoid damaging assets such as fences. The Royal Society for the Prevention of Cruelty to Animals (RSPCA) and NSW Police Force may be able to assist.
- Scissors are suitable for freeing a flying-fox entangled in netting. Wire cutters or pliers are suitable for freeing a flying-fox entangled in barbed wire with care taken in both situations not to cut the flying-fox.
- Researchers are responsible for the welfare of the flying-foxes covered by their animal research authority. It may be useful for researchers and local rehabilitation groups to establish a relationship with each other in case an animal requires rescue.
- Rescue during mass casualty events (e.g. heat stress, mass pup abandonment or hailstorm) is complex and difficult. It may be useful for wildlife rehabilitation groups to prepare an emergency response plan and have their members prepared to work cohesively within the plan to achieve the best outcome.

4. Transport

4.1 Moving a flying-fox

Objective

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

Standards

- 4.1.1 The transport container must be tall enough for the flying-fox to hang by its feet without its head touching the floor.
- 4.1.2 The flying-fox must be allowed to hang by its feet from the top of the container or, if it is unable to hang, placed in a sling or placed in the transport cage so its feet are higher than its head and the feet have something to grasp.
- 4.1.3 An orphaned dependent flying-fox must be placed on a covered, rolled-up towel (known as a mumma roll) to mimic the natural position on its mother, then placed in a sling or placed in the transport cage, so its feet are higher than its head.
- 4.1.4 The container must be designed, set up and secured to prevent injuries to the flying-fox. For example:
 - the sides of the container must prevent the flying-fox from poking its head or wings out (e.g. wire mesh aperture is small, or the roof is covered with a trellis or lightweight cover)
 - padding must be included for flying-foxes to prevent exacerbating existing injuries or wounds and to prevent excessive movement during transport.
- 4.1.5 The container must be designed to prevent the flying-fox from escaping.
- 4.1.6 The container must be kept at a temperature appropriate for the age and condition of the flying-fox. For example:
 - a range of 25–27°C is appropriate for an adult
 - a temperature of 28°C is appropriate for an orphan
 - a higher temperature range of 29–31°C is appropriate for premature flying-foxes or flying-foxes in very poor condition to assist them in regulating their body temperature
 - artificial warmth (e.g. a hot water bottle or heat pad) may be required for a dependent flying-fox and must not be positioned in direct contact with the flying-fox.
- 4.1.7 The temperature and condition of the flying-fox must be monitored during transport.
- 4.1.8 The container must be ventilated so air can circulate around the flying-fox.
- 4.1.9 The transport container must be covered; however, the covering must be light to facilitate good ventilation.
- 4.1.10 While in the container, the flying-fox must be positioned, so its breathing is not restricted and its pain or discomfort is minimised.

- 4.1.11 The container must minimise light, noise (e.g. radio) and vibrations and prevent contact with young children, pets, cigarette smoke and strong smells.
- 4.1.12 A container holding a flying-fox must have a clearly visible warning label that says 'Danger – live bat' during transport.
- 4.1.13 A flying-fox must not be transported in the back of an uncovered utility vehicle or a car boot that is separate from the main cabin, on the rescuer's lap or on the body and under the clothing of a rescuer.
- 4.1.14 Transport containers must be constructed from a non-porous material that can be easily cleaned and disinfected. If an emergency transport container is made from a porous material (e.g. cardboard box with a stick attached for the flying-fox to hang), it must be disposed of after use.
- 4.1.15 Transport methods and container sizes must be appropriate for the species, size, strength and temperament of the flying-fox. For example:
- hanging flying-foxes need enough space to move and partially stretch their wings without touching other bats
 - a small transport container (0.3 metres x 0.4 metres) is suitable for four flying-fox pups lying down.
- 4.1.16 Flying-foxes being transported by plane must be transported:
- in containers that meet the approved requirements of the airline
 - with the container clearly marked to indicate the top and with a clearly visible warning label that says 'Danger – live bat'
 - with the cabin or hold temperature between 26 and 28°C.
- 4.1.17 Transport of flying-foxes on longer journeys (over three hours) must include the following:
- regular breaks or stops for feeding and hydrating flying-foxes (i.e. flying-fox pups less than six weeks require feeding every three hours)
 - regular stops for human health and safety.

Guidelines

- 4.1.18 Flying-fox transport should be the sole purpose of the trip and undertaken in the shortest possible time.
- 4.1.19 A flying-fox should never be left unattended in a vehicle.
- 4.1.20 Wildlife rehabilitation providers that do not have suitable enclosures for flying-foxes should transport them to facilities with these enclosures within 24 hours unless following the directions of a veterinarian experienced with flying-foxes.
- 4.1.21 In mass casualty events (e.g. heat stress, mass pup abandonment or hailstorm), consideration should be given to transporting orphaned flying-foxes together and dependent flying-foxes with their mother.

Note

The best time to undertake long-distance transport is when bats are least active (i.e. during the day).

5. Euthanasia

5.1 When to euthanase

Objective

To end a flying-fox's life in situations where death is imminent, recovery is impossible, the likelihood of successful reintegration into the wild population is remote, or the animal poses an unacceptable health risk to other animals in the wild.

Standards

5.1.1 A flying-fox 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 carrying (or suspected to be carrying) an incurable disease that may pose a health risk to wild animals
- its ability to consume food unaided is permanently impaired due to a missing or injured jaw
- an experienced wildlife veterinarian makes that recommendation.

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

- it is permanently incapable of flying, hanging or manoeuvring with feet and wings due to a missing or injured wing, leg, foot or backbone
- it is unable to survive in its natural habitat because it is permanently vision-impaired, hearing impaired or anosmic (unable to smell)
- its ability to consume food unaided is permanently impaired due to a missing or injured digit (e.g. both thumbs missing)
- its advanced age renders it unable to survive in its natural habitat.

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 DPI. See the Rehabilitation of Protected Native Animals Policy for details.

5.1.3 A flying-fox showing signs consistent with Australian bat lyssavirus must be immediately quarantined and isolated from other flying-foxes until euthanased and then sent to the DPI laboratory for testing (see Section 5.3.5).

Guidelines

5.1.4 A flying-fox should be euthanased when its ability to fly is expected to be impaired for more than 12 months.

5.2 How to euthanase

Objective

To induce death with minimal pain and distress to the flying-fox.

Standards

- 5.2.1 A euthanasia method must be used, which 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 the loss of corneal reflexes indicate death has occurred.
- 5.2.3 Acceptable methods for euthanasia of flying-foxes include:
- anaesthesia followed by an intravenous (preferred) or intracardiac injection of sodium pentobarbital; this must be performed by a veterinarian
 - gunshot to the brain
 - blunt force trauma to the head such that immediate destruction of the brain is achieved (the flying-fox must be on a hard surface and contained in a bag to reduce human health risk).
- 5.2.4 The following euthanasia methods must not be used on flying-foxes:
- suffocation via drowning, strangulation or chest compression
 - freezing or burning
 - carbon dioxide in any form
 - poisoning with household products
 - air embolism
 - exsanguination or decapitation without prior stunning
 - electrocution or microwave irradiation
 - chloroform or strychnine
 - neuromuscular blocking agents.
- 5.2.5 A flying-fox that requires euthanasia must not be exposed to additional stressors such as large numbers of onlookers, people touching it, loud noises or extremes of temperature. The decision to euthanase a flying-fox must be taken only with approval from an experienced flying-fox rehabilitator or a veterinarian.

Guidelines

- 5.2.6 Wildlife rehabilitators should arrange for a veterinarian to perform euthanasia.
- 5.2.7 Shooting should be undertaken by a licensed, skilled and experienced wildlife rehabilitation provider or an appropriate agency, such as NPWS, RSPCA or NSW Police Force.

Notes

For further information on appropriate euthanasia methods, refer to:

- Australian Code for the Care and Use of Animals for Scientific Purposes₁ (8th edition, NHMRC 2013)
- the *Firearms Act 1996* specifies animal welfare as a genuine reason for having a firearms licence
- the *Veterinary Practice Act 2003* places restrictions on the types of procedures non-veterinarians can perform on animals
- the *Poisons and Therapeutic Goods Act 1966* places restrictions on the types of poisons people can possess.

5.3 Disposal of carcasses and animal waste

Objective

To dispose of waste, so the risks of disease or contamination are minimised.

Standards

- 5.3.1 Carcasses and organic waste must either be incinerated (under 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 Flying-foxes must not be fed to other animals.
- 5.3.3 Wildlife rehabilitators must make every effort to reduce the risk of contracting zoonoses such as Q fever, Australian bat lyssavirus and leptospirosis, through wearing personal protective equipment (e.g. eye protection, mask and gloves).
- 5.3.4 Flying-fox carcasses must be handled with caution as they can still pass on Australian bat lyssavirus. This includes the use of personal protective equipment (e.g. mask and gloves). They must be handled only by vaccinated individuals who have followed the NSW Department of Health guidelines for vaccination and boosters.
- 5.3.5 A flying-fox carcass must be submitted to NSW DPI Laboratory Services (contact laboratory.service@dpi.nsw.gov.au or 1800 675 623) by a veterinarian:
 - where the flying-fox shows clinical signs suggestive of Australian bat lyssavirus
 - where there has been known, probable or possible human exposure to Australian bat lyssavirus from the flying-fox
 - where there has been known or probable exposure of an animal to Australian bat lyssavirus from the flying-fox.
- 5.3.6 The NSW Environment Protection Authority (EPA) must be contacted (telephone the Call Duty Incident Advice Coordinator on 0418 445 035) to report all mass mortality events (e.g. heat stress, mass pup abandonment or hailstorm) to ensure data is collected and to enable them to liaise with the land manager to arrange carcass disposal.

Guidelines

- 5.3.7 A deceased flying-fox should, whenever possible, undergo a necropsy by a veterinarian, with strict necropsy protocols followed to prevent exposure to Australian bat lyssavirus.

Notes

- Further information on carcass disposal can be found in the Department of Primary Industries fact sheet: Animal carcass disposal, including particular information on the proper construction and location for a burial site to protect the water table.
- Wildlife rehabilitators should consider providing dead flying-foxes to research institutions for study.

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 flying-fox undergoing rehabilitation.

Standards

- 6.1.1 Within 24 hours of admission, all flying-foxes must be examined by an experienced flying-fox rehabilitator or veterinarian.
- 6.1.2 On admission, a flying-fox must be checked for:
 - body condition (e.g. prominence of shoulders or sternum)
 - abnormal behaviour e.g. excessive aggression
 - swelling or lumps on the head
 - bone fractures
 - bleeding or wounds
 - matted or missing fur
 - dull, sunken or discoloured eyes or the lack of a normal pupil reflex
 - audible breathing
 - inflamed or pale gums or palate
 - broken palate or cleft palate
 - excess salivation
 - throat obstructions
 - discharge from the eyes, nostrils, ears or genital area
 - external parasites, e.g. ticks or maggots
 - holes, tears, burns or bruises in the wing membranes
 - missing digits
 - missing or broken teeth
 - colour and consistency of faeces
 - lack of a normal wing retraction reflex or foot grasping reflex.
- 6.1.3 Upon admission, the weight and right forearm measurement of a flying-fox must be recorded.
- 6.1.4 Once identified, disease or injury must be managed according to severity, and this will generally require veterinary input. Management of flying -foxes in care must always strive for optimal animal welfare. Recognition and management of pain is important.
- 6.1.5 A flying-fox with a suspected head injury or entanglement injury must be placed flat until the injury is fully assessed.

- 6.1.6 Flying-foxes suspected or showing signs of Australian bat lyssavirus (e.g. excessive aggression) must immediately be isolated from other flying-foxes for observation and handled only when necessary. As Australian bat lyssavirus is a notifiable disease, the DPI Emergency Animal Disease Hotline must also be notified. See Section 6.3.3.

6.2 Monitoring

Objective

To check the health of a flying-fox undergoing rehabilitation so concerns can be promptly identified and managed. The type and frequency of monitoring will vary with the species, age, stage of development, type of injury or illness and required treatment.

Standards

- 6.2.1 Monitoring a flying-fox must entail:
- assessing body condition and observing demeanour
 - checking for signs of injury, disease (including neurological) and parasites
 - assessing hydration (e.g. observe urine output, check for sunken, dull eyes)
 - determining how much food has been consumed.
- 6.2.2 A flying-fox in intensive care must be monitored repeatedly during the day and weighed at least twice a week.
- 6.2.3 Orphaned dependent flying-foxes and juvenile flying-foxes must be monitored and weighed as follows:
- premature flying-foxes repeatedly monitored during the day and weighed daily
 - orphaned dependent flying-foxes (0–3 weeks) repeatedly monitored during the day and weighed twice a week
 - orphaned dependent flying-foxes (over three weeks) repeatedly monitored during the day and weighed once a week
 - juvenile flying-foxes (until they are in pre-release) monitored once a day, weighed once a week.
- 6.2.4 Orphaned dependent flying-foxes and juvenile flying-foxes must be measured (forearm length) once a week unless it will hinder recovery of healing wounds on the forearm.
- 6.2.5 A flying-fox in intermediate care must be monitored at least once a day and weighed at least once a week.
- 6.2.6 A flying-fox being prepared for release must be observed every few days to determine if it is physically and behaviourally ready for release (see Sections 10.1.1. and 10.1.2.).
- 6.2.7 All flying-foxes must be weighed before release unless they have been in care for less than a week.
- 6.2.8 Wildlife rehabilitators must regularly monitor the temperature in a heated enclosure to ensure that appropriate temperatures are maintained.

- 6.2.9 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.

Guidelines

- 6.2.10 An apparently healthy flying-fox that has been entangled in netting or wire should be held and observed for at least 4 weeks before release.
- 6.2.11 When measuring the forearm of a flying-fox, the same side should be used each time.

6.3 Controlling disease transmission between animals

Objective

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

Standards

- 6.3.1 Each newly arrived flying-fox must be isolated in a separate area until its disease status can be determined by a veterinarian or experienced wildlife rehabilitator, except in environmental events with mass casualties (e.g. heat stress event or major hailstorm).
- 6.3.2 A flying-fox suspected or known to be carrying an infectious disease must be kept under strict quarantine conditions (e.g. individual cage with no direct contact but within sight and sound of other flying-foxes) until its health status is confirmed or it has been treated for the disease.
- signs of disease may include aggression and strange vocalisations, abnormal breath sounds, dull sunken eyes, discharge from eyes and nose, diarrhoea, excess salivation, smelly breath, abnormal movement and agitation.
- 6.3.3 If a flying-fox is suspected to be carrying a notifiable disease (e.g. Australian bat lyssavirus), or an unusual disease or mortality event is suspected, the wildlife rehabilitator must immediately contact their species coordinator so they can notify the DPI Emergency Animal Disease Hotline (24 hours) on 1800 675 888 for immediate assessment of emerging health threats.
- 6.3.4 Dedicated cleaning and feeding equipment must be used for enclosures housing flying-foxes with a suspected or confirmed infectious disease.
- 6.3.5 All enclosures, transport containers, cage furniture, food containers and water containers must be thoroughly cleaned and disinfected after each occupant.
- 6.3.6 Flying-foxes undergoing rehabilitation must not come into contact with domestic pets.
- 6.3.7 Wildlife rehabilitators must make every effort to reduce the risk of contracting zoonoses such as Australian bat lyssavirus and other infections by wearing personal protective equipment (e.g. mask and puncture-resistant gloves). Flying-foxes must be handled only by vaccinated individuals that have followed the NSW Department of Health guidelines for vaccination and boosters.

- 6.3.8 When handling flying-foxes in isolation, gloves must be changed between each animal to prevent disease transfer.
- 6.3.9 Where multiple flying-foxes are housed in one enclosure, or multiple orphans are being fed at one time, one set of gloves can be used, and the gloved hands either washed thoroughly with soap or disinfected with hand sanitiser (> 60% alcohol) applied between handling different animals.
- 6.3.10 During a mass casualty event, personal protective equipment must be used.

Guidelines

- 6.3.11 When handling multiple animals, wildlife rehabilitators should divide them into manageable groups (e.g. adults, dependent flying-foxes or females). Then, start with the healthiest and finish with the sickest to reduce the risks of disease transmission.
- 6.3.12 During a mass casualty event, gloved hands should be either washed thoroughly with soap or disinfected with hand sanitiser (>60%) applied between handling different animals.
- 6.3.13 Pest control is recommended for all rehabilitation facilities.

Note

- Flying-foxes and other bats are natural hosts of coronaviruses, with a diversity of these viruses found in bat species worldwide. SARS-CoV-2 and SARS-CoV-1 have not been detected in Australian bats nor other wildlife to date. Human to animal transmission of SARS-CoV-2 has occurred (rarely) overseas, and wildlife rehabilitators should assume that SARS-CoV-2 could be transmitted from humans to flying-foxes. Further information and measures to minimise the risk of this occurring can be found at COVID-19 and Australian bats (Wildlife Health Australia factsheet).
- Transmission of Hendra virus has occurred from flying-foxes to horses. All human cases have resulted from direct contact with infected horses. There is no evidence of bat to human transmission of Hendra virus. For more information, see Hendra virus and Australian Wildlife (Wildlife Health Australia factsheet).

7. Husbandry

7.1 Food and water

Objective

To ensure a flying-fox has a feeding and watering regime that encourages rapid recovery, supports growth in juveniles, and assists with maintaining foraging behaviour necessary for survival in the wild.

Standards

- 7.1.1 Clean, fresh drinking water must be available at all times and changed daily, except in the case of a dependent flying-fox which must be offered water at least once daily.
- 7.1.2 Water containers must be designed and positioned to avoid spillage and contamination, and must be appropriate for the size, age and mobility of the flying-fox.
- 7.1.3 An adult flying-fox must be offered fruit mixed with a protein supplement daily. For a debilitated flying-fox or flying-fox with no appetite, the protein supplement can be included in juice or pureed and fed through a syringe.
- 7.1.4 Fruit that is available in the wild must form the basis of the flying-fox's diet. This can include non-native species – see 'Note' under 'Guidelines' below.
- 7.1.5 Flying-foxes must be provided with a balanced and complete diet that supports growth and development and is appropriate for the species, size, stage of development, mobility and physiological status of the animal. For example:
 - a hand-reared flying-fox must be fed a milk formula that is appropriate for its stage of development
 - a premature flying-fox or a flying-fox with poor body condition will require more frequent feeds.

Guidelines

- 7.1.6 Food in storage should not be accessible to pets, pests and wild animals and should be protected from contamination and nutritional loss.
- 7.1.7 Fresh native flowers (e.g. bottlebrush and eucalyptus) and leaves should be offered to the flying-fox as a supplement.
- 7.1.8 A choice of different types of fruit should be offered to the flying-fox.

Note

Non-native fruit species such as apples, pears and stone fruit are commonly available in the wild.

7.2 Hygiene

Objective

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

Standards

- 7.2.1 Uneaten food must be removed each day and disposed of so it cannot be consumed by other animals (e.g. in closed garbage or compost bins).
- 7.2.2 Faeces and spat must be removed at least daily and as soon as it is seen for dependent flying-foxes.
- 7.2.3 Food and drinking water containers must be cleaned daily, except for water in dripper containers which are replaced when empty. If juice is placed in a drinking container, it must be changed and cleaned more frequently (e.g. twice a day) to avoid spoilage. Cleaning involves the use of water, detergent and the physical removal of all residues.
- 7.2.4 Bottles, teats and syringes used for feeding juvenile flying-foxes must be sterilised before every feed.
- 7.2.5 Water used to mix formula for juvenile flying-foxes must be cool, pre-boiled water. At sea level, water needs to be boiled for one minute to sterilise it.
- 7.2.6 Enclosure furniture, bedding, weighing bags and pouches must be cleaned when soiled.
- 7.2.7 A flying-fox must be cleaned when soiled with faeces, urine or uneaten food.
- 7.2.8 Food that requires thawing must be thawed in a refrigerator (less than 4°C) over 24 to 48 hours, and unused food must never be refrozen. Food that is thawed and has been in a fridge for 24 hours and not fed to the flying-fox must be discarded.
- 7.2.9 Wildlife rehabilitators must wash their hands and clean all food preparation surfaces and equipment before preparing animal food.
- 7.2.10 Equipment used for cleaning animal enclosures, containers and furniture must be separate from those used domestically.

Guidelines

- 7.2.11 Wildlife rehabilitation providers should minimise the disturbance to flying-foxes when cleaning (e.g. don't talk, no loud radios).
- 7.2.12 Dependent flying-foxes should be given a preventative treatment for intestinal worms before the introduction of fruit. This should also be considered for all flying-foxes in areas with a high incidence of intestinal worms.

7.3 General care

Objective

To ensure flying-foxes 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 All husbandry requirements must be covered in flying-fox specific training (see Section 11: Training).
- 7.3.2 The rehabilitation of premature dependent flying-foxes is difficult and complex and must only be undertaken by experienced flying-fox rehabilitators.
- 7.3.3 Orphaned dependent flying-foxes that are starting to fly must not be left unattended and uncontained outdoors at any time (e.g. feet are firmly grasped, or the flying-fox is within a cage).

Guidelines

- 7.3.4 Each flying-fox should have a husbandry plan.
- 7.3.5 Flying-foxes are very prone to habituation to people. All care should be taken to minimise social interactions with humans, and natural behaviours should be allowed to develop. For example, by moving hand-reared flying-foxes to be with other flying-foxes (including adults) when they are weaned.

8. Housing

8.1 General requirements

Objective

To ensure a flying-fox 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 Flying-fox enclosures must be secured and, when not on private property, have a clearly visible warning label that says 'Danger – live bats'.
- 8.1.3 Housing must be made safe for the flying-fox to live in by excluding hazards that might harm it, including:
 - ensuring there are no exposed wires, no loose threads and no gaps around the base of the enclosure
 - ensure water dishes do not pose a drowning risk by being too big and deep
 - excluding rough or abrasive surfaces to prevent injury to wing membranes
 - heat lamps and heat sources are covered so they are shielded and bite-proof
 - when caring for a dependent or juvenile flying-fox, open windows are allowed when enclosed with a screen
 - ceiling fans must not be operating when an uncaged flying-fox is present.
- 8.1.4 Housing must be made safe for the rehabilitator by excluding hazards that may harm them (e.g. no possibility of electrocution from electrical equipment near water, and the base of an aviary has a flat, non-slip surface).
- 8.1.5 Housing must be designed and positioned to protect the flying-fox from physical contact with wild animals, pests and domestic animals.
- 8.1.6 Housing must be designed so wildlife rehabilitators can readily access the flying-fox.
- 8.1.7 Housing must be positioned so flying-foxes are not exposed to strong vibrations, noxious smells (e.g. smoke) or loud noises (e.g. radios or televisions).
- 8.1.8 Housing must be designed and positioned to avoid extremes of temperature. For example:
 - not exposed to the western sun and prevailing winds
 - providing access to water such as a sprinkling system if the temperature is above 35°C.
- 8.1.9 Housing must be constructed from non-toxic materials that can be easily cleaned and disinfected.
- 8.1.10 If multiple animals are kept within a single enclosure, there must be sufficient space for individuals to avoid undue conflict with other flying-foxes in the same enclosure.

Guidelines

- 8.1.11 When multiple flying-foxes are housed together, care should be taken to observe for aggressive interactions and overly dependent flying-foxes that start to suck other flying-foxes. Flying-foxes showing signs of either of these behaviours should not be co-housed.
- 8.1.12 Housing should be designed and positioned so flying-foxes cannot see domestic pets.

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 flying-fox to maintain a normal posture, e.g. hang, and stretch its body and limbs, but not enough space to fly. For example:
- the flying-fox must be allowed to hang by its feet from the top of the container, or if it is unable to hang, placed in a sling, so its feet are higher than its head, or placed flat.
- 8.2.2 Intensive care housing must provide a constant temperature appropriate for the age of the flying-fox and nature of the illness or injury. For example:
- a range of 25–27°C is appropriate for an adult
 - a temperature of 28°C is appropriate for an orphan
 - until they are at least three weeks old, dependent flying-foxes are unable to regulate their temperature and will require artificial warmth
 - a higher temperature range of 29–31°C is appropriate for premature flying-foxes or flying-foxes in very poor condition, to assist them in regulating their body temperature.
- 8.2.3 The temperature in intensive care housing must be regularly monitored using a thermometer, and a thermostat must regulate electrical heat sources.
- 8.2.4 A dependent flying-fox in intensive care must be exposed to at least 15 minutes of direct sunlight every day to assist with vitamin D synthesis.
- 8.2.5 Intensive care housing must be designed and positioned so visual and auditory stimuli are reduced, e.g. by covering the sides with a towel and placing it in a quiet room.
- 8.2.6 Intensive care housing must be raised at least 0.7 metres off the ground.
- 8.2.7 A flying-fox in intensive care must not be housed in the same room as a predator.
- 8.2.8 Intensive care housing must be adequately ventilated without allowing excessive drafts.
- 8.2.9 Substrate used in intensive care housing must be replaced daily.

- 8.2.10 A flying-fox undergoing intensive care must not be kept in housing with a straw substrate as it can lead to infection.
- 8.2.11 Intensive care housing must have floor dimensions of at least 0.4 metres long by 0.3 metres wide.

Guidelines

- 8.2.12 Intensive care housing should have floor dimensions of at least 0.5 metres long by 0.5 metres wide.

8.3 Intermediate care housing

Objective

To provide a mobile flying-fox with enough space to allow some physical activity while enabling it to be readily caught for monitoring or treatment.

Standards

- 8.3.1 Intermediate care housing must provide sufficient space for the flying-fox to move about freely while being conveniently sized for quick capture.
- 8.3.2 If an artificial heat source is provided in intermediate care housing, the flying-fox must be able to move to a cooler section of the enclosure. Electrical heat sources must be regulated by a thermostat.
- 8.3.3 A flying-fox in intermediate care housing must experience a light–dark cycle that replicates outside conditions. Such a cycle may be achieved by placing the animal in a well-lit room or in a sheltered area outside.
- 8.3.4 If a portable enclosure is used for intermediate care housing it must be raised at least 0.7 metres off the ground.
- 8.3.5 A flying-fox in intermediate care must not be housed in the same room as a predator.
- 8.3.6 If intermediate care housing is situated outside, it must have a double-skinned roof with at least 10 centimetres between the layers, to avoid predators attacking the bat's feet as they hang, e.g. bird peck.
- 8.3.7 If intermediate care housing is situated outside, the flying-fox must have cage mates except when it is being held for no more than 3 days.
- 8.3.8 A hand-reared flying-fox must be transferred to a creche when it is weaned and beginning to fly. This will occur between 12 and 16 weeks of age.
- 8.3.9 Intermediate housing for flying-foxes must contain vertical hanging foliage and equipment (e.g. ropes, foam noodles, netting) for the flying-fox to hold on to or climb if they fall to the ground.
- 8.3.10 Intermediate enclosures must have the following floor dimensions:
- at least 2.4 metres long by 2.4 metres wide by 2 metres high for outside enclosures; an enclosure this size can hold up to 10 individuals
 - at least 0.8 metres long by 0.5 metres wide by 0.8 metres high for inside enclosures; an enclosure this size can hold up to four individuals.

Guidelines

- 8.3.11 Creche enclosures should have floor dimensions of at least 6 metres long by 2.4 metres wide by 2 metres high. An enclosure this size should hold 30 individuals, but it can be increased to a maximum of 80 individuals.

8.4 Pre-release housing

Objective

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

Standards

- 8.4.1 Pre-release housing must provide sufficient space for the flying-fox to fly freely and express a range of natural behaviours. For example:
- adequate room for multidirectional flying, including room to fly back and forth and gain height.
- 8.4.2 Pre-release housing must provide areas where the flying-fox can gain exposure to prevailing weather conditions and locations where it can shelter.
- 8.4.3 Pre-release housing must have a doubled-skinned roof with at least 10 centimetres between the layers, to avoid predators attacking the bat's feet as they hang, e.g. bird peck.
- 8.4.4 Pre-release housing must contain habitat that enables the flying-fox to perform a range of natural behaviours. For example, a flying-fox requires netting or similar on the roof to hang from and bags or ropes to land on.
- 8.4.5 Pre-release housing must be designed and positioned so exposure to humans is kept to the minimum required for observation, feeding and cleaning.
- 8.4.6 A flying-fox in pre-release housing must have visual and auditory contact with other flying-foxes, unless there is only one in care.
- 8.4.7 Pre-release housing must have dimensions of at least 8 metres long by 3 metres wide by 2 metres high. An enclosure this size can hold up to 30 individuals.

Guidelines

- 8.4.8 A flying-fox in pre-release housing should have some opportunity for extended flight.
- 8.4.9 Pre-release housing should have dimensions of at least 10 metres long by 3.5 metres wide by 2 metres high. An enclosure this size can hold up to 30 individuals.
- 8.4.10 Every effort should be made to provide the largest possible enclosure for flying-foxes in the pre-release stage.
- 8.4.11 Pre-release housing should not have mouse-proof wire as the inner layer or chicken-proof wire as either layer.
- 8.4.12 A flying-fox creche should contain at least five individuals.

- 8.4.13 Pre-release housing for a flying-fox should have a double-door entry system.
- 8.4.14 Pre-release housing should be designed or positioned (or both) so exposure to humans is kept to the minimum required for observation, feeding and cleaning.

9. Suitability for release

9.1 Preparations for release

Objective

To ensure the flying-fox is physically fit and has the appropriate survival skills before its release. Preparations for release will start at the time of rescue and continue throughout the rehabilitation process.

Standards

- 9.1.1 A flying-fox must not be released until it is physically ready. This status has been achieved when:
- it has recovered from any injury or disease (e.g. it flies normally)
 - its weight, condition and growth rate are within the appropriate range for its age
 - it has appropriate fitness levels as determined by both passive observation and active assessment (e.g. by encouraging the animal to fly)
 - it has fur on its entire body
 - it has acclimatised to prevailing climate conditions.
- 9.1.2 A flying-fox must not be released until it is behaviourally ready. This status has been achieved when:
- it can recognise and eat fruit, pollen and nectar
 - it is not attracted to humans (i.e. not humanised) or to sights, sounds or smells that are specific to captivity (i.e. not imprinted)
 - it can navigate effectively through its natural environment (e.g. showing the ability to gain height or evidence of multidirectional flying, including flying back and forth)
 - it can recognise and interact normally with other flying-foxes.
- 9.1.3 A flying-fox's readiness for release must be confirmed by either a veterinarian or experienced wildlife rehabilitator.
- 9.1.4 A hand-reared grey-headed flying-fox or black flying-fox must not be released until it has a forearm measurement of 140 millimetres and a weight of 400 grams.
- 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 the Wildlife Team (wildlife.licensing@environment.nsw.gov.au) and apply for permanent care
 - notify the Wildlife Team (wildlife.licensing@environment.nsw.gov.au) to arrange placement with an authorised animal exhibitor licensed by DPI.

Guidelines

- 9.1.6 A hand-reared grey-headed flying-fox or black flying-fox should not be released until it has a forearm measurement of 140 millimetres and a weight of 450 grams.

10. Release considerations

10.1 Timing of release

Objective

To ensure a flying-fox 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 flying-fox is deemed ready for release, it must be released as soon as conditions are suitable (clauses 10.1.2–10.1.4 describe suitable conditions).
- 10.1.2 A flying-fox must be released at a time of year that facilitates survival and reintegration into the wild population. For example:
 - little red flying-foxes and black flying-foxes must be released only when others of the same species are in the area.
- 10.1.3 Hand-reared flying-foxes must be released at a time of year when trees are flowering.
- 10.1.4 A flying-fox must be released when weather conditions encourage high activity levels. They must not be released during extreme temperatures or immediately before or during a storm.
- 10.1.5 A flying-fox must be released at a time of day that enables it to immediately investigate its environment. Morning is an appropriate release time for a flying-fox being 'hard' released, i.e. released without the flying-fox needing to be held in an enclosure near a flying-fox camp beforehand. Late afternoon is an appropriate release time for a flying-fox being 'soft' released (see Section 10.3).

10.2 Release site selection

Objective

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

Standards

- 10.2.1 A flying-fox must be released in the nearest suitable environment to the location it was found. A suitable environment for release is one that:
 - is at or close to a camp occupied by other flying-foxes of the same species
 - contains appropriate habitat and adequate food resources
 - does not place the flying-fox at a high risk of injury
 - has infrastructure for 'soft' release for animals that require it (see Section 10.3)
 - is within the natural range of the species (e.g. spectacled flying-foxes must be released in Far North Queensland).

10.2.2 A flying-fox can be released in a national park only if:

- it was originally encountered in that location
- written consent for the release has been obtained from the relevant NPWS Area Manager (issued under s.11 of the National Parks and Wildlife Regulation 2019)
- the release complies with the relevant Department of Planning, Industry and Environment policies on translocation.

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

Note

Little red flying-foxes are highly nomadic, and for those in care for longer than three days, consider locating the nearest occupied colony for release. This may be interstate if the nearest colony is in southern Queensland.

10.3 Release techniques

Objective

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

Standards

- 10.3.1 A hand-reared flying-fox must be released with other flying-foxes.
- 10.3.2 If the release enclosure is in a different location to the pre-release enclosure, the flying-fox must be held nearby in the release cage for at least two weeks. The enclosure must be set-up in the same way as pre-release housing (see Section 8.4).
- 10.3.3 A hand-reared flying-fox must be provided with temporary post-release support (soft release), including supplementary feeding.
- 10.3.4 When releasing a flying-fox, only vaccinated individuals that have followed the Australian Government Department of Health guidelines for vaccination and boosters must be in the release enclosure.

Guidelines

- 10.3.5 An adult flying-fox that has been in intermediate care for three weeks or longer should be provided with temporary post-release support (soft release). This will involve holding it in an enclosure near a flying-fox camp for three days and may include support feeding. The enclosure should be set up in the same way as pre-release housing.
- 10.3.6 A flying-fox should be released with other flying-foxes of the same species.
- 10.3.7 Rehabilitators should arrange for the flying-fox to be banded or microchipped for individual identification before release. Wildlife rehabilitation groups and zoological parks are encouraged to participate in post-release monitoring programs to determine survivorship.

Note

- All research involving protected animals requires a licence issued under the BC Act, and an ethics approval issued under the *Animal Research Act 1985*.
- Banding bats requires an authority issued by the Australian Bird and Bat Banding Scheme.

11. Training

11.1 Requirements

Objective

To ensure wildlife rehabilitators have appropriate knowledge and skills to ensure the welfare of the flying-foxes in their care.

Standards

- 11.1.1 New wildlife rehabilitators must undertake an introductory training course.
- 11.1.2 Before undertaking flying-fox rehabilitation, a person must undertake specialist training.
- 11.1.3 A specialist flying-fox 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)
 - teach health and safety issues associated with flying-fox rehabilitation (e.g. disease transmission with information on Hendra virus, Australian bat lyssavirus including post-exposure protocols, and operating in hazardous locations)
 - have a written assessment component.
- 11.1.4 A wildlife rehabilitator who cares for flying-foxes must be proficient in:
 - species identification
 - flying-fox handling techniques
 - first aid for injured flying-foxes
 - recognising normal behaviour (e.g. posture) and identifying deviations from the norm
 - animal husbandry
 - flying-fox anatomy and physiology.
- 11.1.5 A wildlife rehabilitator who cares for flying-foxes must have an understanding of:
 - the objectives of flying-fox rehabilitation
 - flying-fox behaviour (e.g. feeding and social interactions)
 - how to care for flying-foxes
 - how to keep accurate records.
- 11.1.6 A wildlife rehabilitator must be assessed as competent before undertaking the rescue, rehabilitation or release of a flying-fox.
- 11.1.7 Training must be accompanied by ongoing support from experienced flying-fox rehabilitators.

- 11.1.8 All wildlife rehabilitators must undertake professional development and refresh their training for flying-foxes every three years, e.g. completing a refresher or advanced training course, or attending a flying-fox conference, seminar or online course.

Guidelines

- 11.1.9 A wildlife rehabilitator who cares for flying-foxes should have an understanding of flying-fox ecology (e.g. population dynamics, habitat selection, competition and predator–prey interactions).
- 11.1.10 Wildlife rehabilitators should undertake nationally accredited microchip training (e.g. RSPCA training course) before microchipping a flying-fox.

Notes

- The department has prepared Flying-fox Rehabilitation Training Standards for the Volunteer Wildlife Rehabilitation Sector, including a flying-fox trainer's guide to ensure volunteers are trained to be competent in implementing this code.
- Attendance at flying-fox conferences or seminars 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 flying-foxes that have been reported to wildlife rehabilitation providers, to inform improved rehabilitation outcomes for individual animals and contribute to our knowledge of the ecological viability of flying-fox species.

Standards

- 12.1.1 Licensed wildlife rehabilitation providers, zoological parks and individuals must maintain a current register of all protected flying-foxes rescued. The register must contain the following information on each animal:
- encounter details (date, location, encounter circumstances, the animal's condition and unique ID number)
 - species data (species name and stage of development)
 - sex
 - initial weight
 - standard length measurements (forearm length)
 - care provider's details (name and address of the initial assessor, name and address of the flying-fox rehabilitator)
 - fate details (date, final disposition, location and any permanent marking).
- 12.1.2 These records must be submitted to the Wildlife Team (wildlife.licensing@environment.nsw.gov.au) once a year, using an approved electronic template.
- 12.1.3 When an individual is transferred to another wildlife rehabilitation provider or organisation for any reason, copies of its records should be transferred with it, except in mass mortality events when limited records are transferred with the flying-fox. The originating wildlife rehabilitation provider will report the missing records to NPWS in their annual report.
- 12.1.4 If the death of a flying-fox is suspected to be the result of a serious disease outbreak, the flying-fox rehabilitator must immediately contact their species coordinator to ascertain whether tissue analysis or a necropsy is required. The DPI Emergency Animal Disease Hotline (24 hours) on 1800 675 888 must be notified immediately.

Guidelines

- 12.1.5 Wildlife rehabilitators should record the following additional information at the time of rescue:
- who discovered the flying-fox (name and contact details)
 - when the flying-fox was discovered (time of day)
 - any treatment provided before transport
 - environmental history (e.g. unusual weather events or drought).

- 12.1.6 Wildlife rehabilitators should record the following additional information at the time of assessment by a veterinarian or experienced flying-fox rehabilitator:
- details of wounds, injuries, diseases and external parasites
 - details of mobility
 - details of abnormal behaviour
 - recommended management (e.g. euthanasia or prescribed treatment).
- 12.1.7 Wildlife rehabilitators should record the following additional information at the time of entry into a rehabilitation facility:
- identifying features if it is to be housed communally
 - housing (e.g. intensive care, intermediate care or pre-release) (see Section 8: Housing).
- 12.1.8 Wildlife rehabilitators should record details of the following daily care information:
- the type and quantity of food and liquid ingested
 - treatment (e.g. medication, therapy, test results and sampling)
 - instructions from veterinarians and species coordinators
 - changes to general fitness and behaviour
 - enclosure cleaning (e.g. quantity and quality of faeces and urine)
 - weight of flying-foxes in their care so changes can be quickly identified.
- 12.1.9 Wildlife rehabilitators should record the following additional information regarding fate:
- if released, details regarding the type of release
 - if released, details regarding the condition of the animal
 - band or microchip number.
- 12.1.10 Wildlife rehabilitators should keep duplicates or backups of records to avoid information being lost.
- 12.1.11 Records of flying-fox sightings that do not require rescue should be uploaded to NSW BioNet and should contain encounter details (date, location, encounter circumstances and a unique ID number) as well as whether the flying-fox was alive or dead.
- 12.1.12 Wildlife rehabilitators should record the following information for dead flying-foxes:
- cause of death
 - necropsy notes
 - DNA testing results
 - records of care of previous rehabilitation
 - research project details if it was used for scientific research.

13. Further reading

Department of Primary Industries 2019, *Australian Bat Lyssavirus – Information for the public*, https://www.dpi.nsw.gov.au/_data/assets/pdf_file/0011/461873/Australian-Bat-Lyssavirus-information-for-the-public.pdf.

Department of Primary Industries 2019, *Australian Bat Lyssavirus guidelines for veterinarians*, https://www.dpi.nsw.gov.au/_data/assets/pdf_file/0007/513547/Australian-Bat-Lyssavirus-guidelines-for-veterinarians.pdf.

Department of Planning, Industry and Environment 2021 *Flying-fox Rehabilitation Training Standards for the Volunteer Wildlife Rehabilitation Sector*, <https://www.environment.nsw.gov.au/topics/animals-and-plants/native-animals/rehabilitating-native-animals/wildlife-rehabilitation-licences>

Department of Planning, Industry and Environment 2021 *Initial Treatment and Care Guidelines for Flying-foxes*, <https://www.environment.nsw.gov.au/topics/animals-and-plants/native-animals/rehabilitating-native-animals/wildlife-rehabilitation-licences>

Department of Planning, Industry and Environment 2020, *Living near a flying-fox camp*, <https://www.environment.nsw.gov.au/topics/animals-and-plants/native-animals/native-animal-facts/flying-foxes/living-near>.

Department of Planning, Industry and Environment 2020, *Rehabilitation of Protected Native Animals Policy*, <https://www.environment.nsw.gov.au/research-and-publications/publications-search/rehabilitation-of-protected-native-animals-policy>.

NSW Health 2019, *Rabies and Australian bat lyssavirus infection fact sheet*, <https://www.health.nsw.gov.au/infectious/factsheets/pages/rabies-australian-bat-lyssavirus-infection.aspx>.

Pinson D 2020, *The Flying-Fox Manual V3*, <https://www.ffmv3.com.au/>, Stickeebatz Publishing, Cowboy, QLD.

Wildlife Health Australia 2019, *Australian bat lyssavirus – fact sheet*, https://www.wildlifehealthaustralia.com.au/Portals/0/Documents/FactSheets/mammals/Australian_Bat_Lyssavirus.pdf.

Wildlife Health Australia 2020, *Personal protective equipment (PPE) information for bat handlers*, https://www.wildlifehealthaustralia.com.au/Portals/0/Documents/ProgramProjects/PPE_Info_for_Bat_Handlers.pdf.

Wildlife Health Australia 2020, *COVID-19 and Australian bats – information for bat carers, researchers and others interacting with bats*, https://www.wildlifehealthaustralia.com.au/Portals/0/Documents/ProgramProjects/COVID-19_Aust_bat_carers_researchers_Dec2020.pdf.

14. More information

- [Animal carcass disposal](#)
- [Animal Research Act 1985](#)
- [Australian Bird and Bat Banding Scheme](#)
- [Australian Code for the Care and Use of Animals for Scientific Purposes](#)
- [Australian Government Department of Health guidelines](#)
- [Biodiversity Conservation Act 2016](#)
- [Biodiversity Conservation Act 2016 \(BC Act\) Schedule 5](#)
- [Biodiversity Conservation Act 2016 \(BC Act\) section 2.14 \(4\)](#)
- [COVID-19 and Australian bats](#)
- [Department of Primary Industries](#)
- [DPI Emergency Animal Disease Hotline](#)
- [Emergency Animal Disease Hotline](#)
- [Environment Protection and Biodiversity Conservation Act 1999](#)
- [Firearms Act 1996](#)
- [Flying-fox Rehabilitation Training Standards for the Volunteer Wildlife Rehabilitation Sector](#)
- [Hendra virus and Australian Wildlife](#)
- [Initial Treatment and Care Guidelines for Rescued Flying-foxes](#)
- [Leptospirosis](#)
- [Living near a flying-fox camp](#)
- [Local Government Act 1993](#)
- [National Parks and Wildlife Act 1974](#)
- [National Parks and Wildlife Regulation 2019](#)
- [National Parks and Wildlife Service](#)
- [NSW BioNet](#)
- [NSW Department of Health guidelines](#)
- [NSW Department of Health guidelines for vaccination and boosters](#)
- [NSW DPI Laboratory Services](#)
- [NSW Health](#)
- [Personal Protective Equipment \(PPE\) Information for Bat Handlers](#)
- [Poisons and Therapeutic Goods Act 1966](#)
- [Prevention of Cruelty to Animals Act 1979](#)
- [Q fever](#)
- [Rabies Virus and Other Lyssavirus \(Including Australian Bat Lyssavirus\) Exposures and Infections](#)
- [Rehabilitation of Protected Native Animals Policy](#)
- [RSPCA training course](#)
- [The Royal Society for the Prevention of Cruelty to Animals](#)
- [Translocation operational policy](#)
- [Veterinary Practice Act 2003](#)
- [Wildlife rehabilitation reporting](#)