
Australian Animal Welfare Standards and Guidelines

Exhibited Animals

Macropod

Endorsed

Agriculture Ministers Forum (AGMIN)

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This document forms part of the Australian Animal Welfare Standards and Guidelines.

This document will be reviewed regularly.

Suggestions and recommendations for amendments should be forwarded to:

Animal Health Australia
Manager Welfare
Level 2, 95 Northbourne Ave. Turner ACT 2612
PO BOX 5116, Braddon ACT 2612.
Email: admin@animalhealthaustralia.com.au

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<http://www.animalwelfarestandards.net.au>

<https://www.dpi.nsw.gov.au/animals-and-livestock/animal-welfare/exhibit>

www.zooaquarium.org.au

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Writing Group for the Australian Animal Welfare Standards and Guidelines – Exhibited Animals

Exhibited Animals Expert Consultation Forum participants

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Introduction

Purpose

The principal purpose of this document is to describe standards and guidelines that ensure the welfare and security of *macropods* used for *exhibition purposes*.

This document promotes measures and conditions that, if implemented, would see exhibited *macropods* kept to the same standard throughout Australia.

The document considers a broad range of operational issues facing *facilities* that keep *macropods* for *exhibition purposes*. Failure to address these issues could result in adverse animal welfare and security outcomes.

Scope

These standards and guidelines apply to those people and industries responsible for the care and management of:

- *macropods* kept for *exhibition purposes* at *facilities*, i.e. for display, conservation, education and entertainment;
- *macropods* during their temporary removal from a *facility*; and
- *macropods* during their transport to or from a *facility*.

These standards and guidelines do not apply to:

- wild *animals* (i.e. free-living and not confined to a *facility* by an *enclosure*, a leash or by management practices);
- the keeping of *animals* solely for the purposes of feeding to other *animals* at the *facility*;
- feeding of wild *animals*;
- *animals* kept for *animal* competitions, horse racing and sporting events, wildlife farming and domestic *animal* farming;
- wildlife rehabilitation of *animals* that are not displayed to the public at the *facility*;
- *animals* at pet shops; or
- circuses and mobile exhibitors.

These standards and guidelines should be considered in conjunction with other requirements for *animals* kept for *exhibition purposes*, and related Commonwealth, state and territory legislation for:

- animal welfare;
- exhibiting *animals*;
- pest control; and
- nature conservation.

Where legislation requires a higher standard than these standards, the higher standard will apply.

Interpretation

- **Objective** – the intended outcome(s) of a section of the standards and guidelines.
- **Standards** – the acceptable *animal* welfare and security requirements designated in this document. They are requirements that must be met under law with respect to *animals* kept for *exhibition purposes*.

The standards are intended to be clear, essential and verifiable statements. However, not all issues are able to be well defined by scientific research or are able to be quantified. Standards use the word “must”. Non-compliance with one or more standards will constitute an offence under law.

They are presented in a box and are numbered consecutively with the prefix ‘S’.

- **Notes** – provide background and guidance on interpreting the standards and guidelines.
- **Guidelines** - complement the standards by providing advice and/or recommendations to achieve desirable *animal* welfare and security outcomes. Non-compliance with guidelines does not constitute an offence under law.

They are numbered consecutively with the prefix 'G'.

Document organisation

These *taxon standards* contain standards and guidelines that apply to the keeping of a specific *animal* group for *exhibition purposes at facilities*. They are additional to the standards and guidelines in the *Australian Animal Welfare Standards and Guidelines. Exhibited Animals – General* which apply to all *animals* kept for *exhibition purposes at facilities*.

- ***Taxon standards must always be read in conjunction with the Australian Animal Welfare Standards and Guidelines. Exhibited Animals – General.***

The *Australian Animal Welfare Standards and Guidelines. Exhibited Animals – General* contain the following sections:

- Introduction;
- Definitions;
- Responsibilities;
- Security;
- Enclosures;
- Dietary and water requirements;
- Health and wellbeing;
- Reproductive management;
- Euthanasia;
- Capture and restraint;
- Training;
- Interactive programs;
- Transportation; and
- Animal identification and records.

The same section headings are used in these *taxon standards*. An additional *taxon* preface section follows this Introduction. Where a section of these *taxon standards* does not include any standards or guidelines that are additional to those in the *Australian Animal Welfare Standards and Guidelines. Exhibited Animals – General*, the section includes the following statement: 'This section has been deliberately left blank'.

Definitions are given in the Definitions section of this document. These definitions are additional to those in the *Australian Animal Welfare Standards and Guidelines. Exhibited Animals – General* that also apply to these *taxon standards* unless otherwise stated. Defined words in this document are italicised.

Taxon preface

Macropods

Macropods are diprotodont marsupials in the Suborder Macropodiformes, which encompasses three Families:

- Hypsiprymodontidae – the musky rat-kangaroo (*Hypsiprymodon moschatus*);
- Potoroidae – other rat-kangaroos, bettongs and potoroos; and
- Macropodidae – kangaroos, wallaroos, tree-kangaroos, wallabies, hare-wallabies, rock-wallabies, pademelons and quokka.

Most *macropods* are endemic to Australia, but the forest wallabies (*Dorcopsis* spp. and *Dorcopsulus* sp.) as well as some species of pademelon (*Thylogale* spp.) and tree-kangaroo (*Dendrolagus* spp.) are endemic to the island of New Guinea. The distribution of the agile wallaby (*Macropus agilis*), red-legged pademelon (*Thylogale stigmatica*) and spectacled hare-wallaby (*Lagorchestes conspicillatus*) extends into both countries. In the order of 50 extant species are found in Australia and these represent around 40% of the continent's marsupial fauna.

Macropods are characterised by powerfully developed hind limbs, elongated hind feet and an enlarged fourth toe, and all but one species (the musky rat-kangaroo) are capable of a distinctive high-speed locomotion – bipedal hopping or bounding with the forefeet clear of the ground. They are a diverse group, living in a wide variety of habitats from deserts through heathland, open plains and woodlands to rainforest. *Macropods* range in size from the approximately 0.5 kg musky rat-kangaroo to the red kangaroo (*Macropus rufus*) whose adult males may exceed 90 kg in weight and stand erect at more than 2 metres tall.

While most *macropods* are nocturnal, the medium and larger species tend to be crepuscular. The musky rat-kangaroo is the only strictly diurnal species. It and members of the Potoroidae tend to be solitary or form small loose social groups within suitable habitat, while the Macropodidae tend to be more gregarious and can form large tight-knit groups known as mobs.

The musky rat-kangaroo is frugivorous/omnivorous, feeding mainly on fruits, seeds, fungi, and small invertebrates such as insects and worms. Diets of potoroos, bettongs and the two other rat-kangaroos vary between species with a tendency for plant roots, tubers and invertebrates to be major components. Tree-kangaroos are folivorous/frugivorous. Kangaroos and most wallabies (including rock-wallabies) are grazers, while hare-wallabies, pademelons, the swamp wallaby (*Wallabia bicolor*) and the quokka (*Setonix brachyurus*) are predominantly browsing animals.

Definitions

Capture myopathy: a syndrome of complex primary and secondary pathological changes in many organs, particularly in skeletal and cardiac muscle that may:

- i. be precipitated by prolonged muscular exertion, e.g. pursuit by predators or during capture and *restraint*;
- ii. occur as a result of fear and anxiety without overt physical activity, e.g. during close confinement or placement in an unfamiliar environment; and
- iii. cause acute death or lead to chronic debility.

Inhang: a continuous feature on an *enclosure* perimeter barrier, orientated towards the interior, whose angle and width provide a physical impediment to *animal* escape or as a barrier to visitor/*animal* interaction.

Large macropod: a macropod that is a member of one of the following species: Antilopine Wallaroo *Macropus antilopinus*, Western Grey Kangaroo *Macropus fuliginosus*, Eastern Grey Kangaroo *Macropus giganteus*, Common Wallaroo *Macropus robustus*, Red Kangaroo *Macropus rufus*.

Macropod: a member of the Suborder Macropodiformes, including kangaroos, wallaroos, tree-kangaroos, wallabies, hare-wallabies, rock-wallabies, pademelons, quokka, bettongs, potoroos and rat-kangaroos.

All definitions cover the singular, plural and all variations of the word.

1 Responsibilities

Objective

Operators and staff understand their responsibilities and collectively manage the *facility* to ensure the welfare, safety and security of *animals*.

General

Standards

S1.1 All standards in the *Australian Animal Welfare Standards and Guidelines. Exhibited Animals – General* relating to *dangerous animals* apply to *large macropods* that show aggressive behaviour towards humans.

Endorsed

2 Security

Objective

Animals are held securely to ensure their welfare and prevent pest establishment. Access by unauthorised persons and escape of *animals* is prevented.

This section has been deliberately left blank.

Endorsed

3 Enclosures

Objective

Enclosures are designed, constructed and maintained to ensure the welfare, safety and security of *animals*.

General

Standards

- S3.1 The operator must ensure *macropods* are held within a dog-proof *enclosure* or that *macropod enclosures* are within a dog-proof *facility perimeter barrier*.
- S3.2 If *macropods* are kept in regions where wild fox populations occur the operator must ensure that:
- i. the *macropods* are held within a fox-proof *enclosure*; or
 - ii. the *macropods* are held in an enclosure that is located within a fox-proof facility perimeter barrier; or
 - iii. an effective fox control program is in place. Records of control measures and their efficacy must be maintained.

Note - The operator is exempted from complying with S3.2 in respect of *enclosures* containing only adult *large macropods*.

Note - *Enclosure barriers* and *facility perimeter barriers* are not considered fox-proof if they incorporate apertures larger than 50 mm by 50 mm.

- S3.3 The operator must ensure that a walk-through *enclosure* housing *macropods* provides at least one visitor exclusion area where *animals* are able to withdraw from visitor contact.
- S3.4 The visitor exclusion area must be a minimum of 25% of the minimum required *enclosure* floor area contained in Appendix 1 for the number of *macropods* kept in the *enclosure*.

Note - The visitor exclusion area requirement does not require the operator to provide an *enclosure* larger than the minimum required *enclosure* floor area contained in Appendix 1 for the number of *macropods* kept in the *enclosure*.

- S3.5 The operator must ensure *enclosures* housing *macropods* capable of climbing (including musky rat-kangaroos, bettongs, tree-kangaroos and rock-wallabies) incorporate at least one of the following features:
- i. non-climbable enclosure barriers;
 - ii. a 500 mm inhang; or
 - iii. a secure roof.
- S3.6 Unless otherwise approved by the relevant *government authority*, the operator must ensure *macropod enclosures* incorporate an *enclosure barrier* of at least the following height:
- i. 1800 mm for large *macropods*;
 - ii. 1400 mm for medium *macropods* (e.g. swamp wallabies, agile wallabies, whiptail wallabies and red-necked wallabies);
 - iii. 1000 mm small *macropods* (e.g. mala, bettongs, potoroos, pademelons, musky rat-kangaroos);
 - iv. 1500 mm non-climbable or 1500 mm wire-mesh with a 500 mm inhang for

tree-kangaroos; and

- v. 2000 mm with 500 mm inhang for rock-wallabies.

Note - The minimum *enclosure* barrier heights referred to in S3.6 have been developed with the aim of keeping *macropods* confined within their *enclosures* and do not infer compliance with the dog-proofing requirements in S3.1.

Guidelines

- G3.1 One design of a dog and fox proof *enclosure* that has been successfully used incorporates a 2.0 metre high 50 mm x 50 mm mesh fence, with electrified wires on outriggers attached 100 mm out from the outside of the mesh fence at 100 mm, 1.0 metre and 2.0 metres above ground, with a 900 mm wide footing mesh laid over the ground and clipped to the bottom of the vertical mesh to deter burrowing.
- G3.2 An effective fox control program may include a range of elements including baiting, trapping, fumigation and shooting. Information resources are available at www.feral.org.au. These resources include summaries of State legislation, the *Model code of practice for the humane control of foxes* and various Standard Operating Procedures relating to fox control measures.
- G3.3 Where the *facility perimeter barrier* forms part of the boundary of a *macropod enclosure*, provision should be made to protect the *animals* from outside disturbances through the use of suitable visual screening.
- G3.4 Hand-raised male *macropods* should not be housed in walk-through *enclosures*.
- G3.5 Walk-through *enclosures* should be monitored to prevent inappropriate behaviour by visitors or *macropods*.

Gates and Doors

Guidelines

- G3.6 Gates to walk-through *enclosures* housing *macropods* should be fitted with self-closing devices.
- G3.7 Walk-through *enclosures* housing *macropods* should have a double gate entry system to minimise the risk of escape.

Enclosure Furniture

Standards

- S3.7 The *operator* must ensure that *enclosures* housing tree-kangaroos contain climbing structures that:
- i. provide a minimum of 15 lineal metres of aerial pathways; and
 - ii. attain a minimum height of 2500 mm.
- S3.8 The *operator* must ensure that tree-kangaroos are provided a minimum of one elevated nest box/hollow per *animal*.
- S3.9 The *operator* must ensure that *enclosures* housing rock-wallabies provide physical features including, but not limited to, boulder piles and tree trunks.

Note - Suitable *furniture* for *macropod* species include;

- i. rocks, logs and grass tussocks;
- ii. low plants, shrubs and bushes;
- iii. shade trees, rock knolls, hollow logs;
- iv. opportunities for burrowing, and climbing; and
- v. ponds.

Guidelines

- G3.8 When housing rock-wallabies, *furniture* placement and fence angles should not facilitate escape.
- G3.9 When housing tree-kangaroos, climbable features inside the *enclosure* should not facilitate escape and should not be closer than 2.5 metres to the external *enclosure* barriers of open-roofed *enclosures*.

Spatial Requirements

Standards

- S3.10 The *operator* must ensure *macropod* *enclosures* meet the minimum floor area requirements specified in Appendix 1.

Holding Enclosures

Guidelines

- G3.10 *Enclosures* should incorporate adjoining *holding enclosures*.

4 Dietary and water requirements

Objective

Animals are provided food and water of an appropriate quality and quantity to maximise their welfare.

Food

Standards

- S4.1 The *operator* must ensure browsing and grazing *macropod* species are provided with suitable fibrous plant material as a major component of their diet.
- S4.2 The operator must provide at least one food station per tree-kangaroo that is at least 1.2 metres above ground level.

Guidelines

- G4.1 Coarse sharp feed items (e.g. the awns found on some grass seeds or cereal grain sheaths) should be avoided in *macropod* diets.
- G4.2 *Macropods* should be provided with vitamin and mineral supplements as appropriate.
- G4.3 Food stations should be provided in multiple locations within an *enclosure*.
- G4.4 Shelters should be used for food stations.

Water

Guidelines

- G4.5 Water troughs should be in a shaded area away from fence lines.
- G4.6 The size of a water trough should allow each *macropod* to immerse its forelegs for cooling purposes.

5 Health

Objective

The physical and psychological health of *animals* is maximised, and *disease* and *disease* transmission is prevented.

General

Standards

S5.1 The *operator* must ensure *macropod enclosures* provide elevated positions where all *animals* in the *enclosure* can avoid wet, boggy conditions.

Enrichment

Note - Species-appropriate *enrichment* for *macropods* may include provision of:

- i. age and species appropriate opportunities for social interaction with conspecifics;
- ii. additional climbing structures for tree-kangaroos and rock-wallabies;
- iii. browsing and grazing opportunities;
- iv. hollow logs;
- v. opportunities to dust bathe; and
- vi. scatter feeds.

Quarantine

Standards

S5.2 The *operator* must ensure newly acquired *macropods* undergo a minimum 30 day period of *quarantine*, unless advised otherwise by a *veterinarian*.

6 Reproductive management

Objective

Animal breeding is managed to maintain the genetic integrity, sustainability and/or diversity of the species, to ensure the health and welfare of breeding animals and their offspring, and to minimise production of surplus animals.

General

Standards

S6.1 The *operator* must not display or keep for display more than 50 individuals of *large macropod* species at any one time unless specifically granted an exemption by the relevant *government authority*.

Guidelines

G6.1 Removal of pouch young is not a recommended method of reproductive management and should only be undertaken when all other methods have been investigated and considered.

7 Euthanasia

Objective

If an *animal* is to be killed, it is done humanely.

Note - *Macropods* may be *euthanased* by:

- i. barbiturate overdose;
- ii. humane captive bolt pistol (in firmly secured *animals*); and
- iii. an appropriate calibre bullet directly to the brain.

Endorsed

8 Capture and restraint

Objective

Animals are captured, *restrained* and herded in a manner that ensures *animal* safety and minimises negative impacts on the *animal*.

Standards

S8.1 The *operator* must ensure written procedures for capture and *restraint* of macropods deal with minimising the risk of *capture myopathy* and the *macropods* overheating.

Note - Acceptable methods of *macropod* capture and *restraint* may include:

- i. hand capture by the base of the tail;
- ii. capture bags;
- iii. deep hoop nets;
- iv. a race made of hessian or similar material; and
- v. darting with an appropriate sedative or anaesthetic by or under the direction of a veterinarian.

Note - Precautions to maintain *macropod* health during capture and *restraint* may include:

- i. cool water applied to the forearms and belly;
- ii. vitamin E given prior to and post capture; and
- iii. chemical tranquilisation by or under the direction of a veterinarian.

9 Training

Objective

Animal training is humane and beneficial to the *animal's* welfare.

This section has been deliberately left blank.

Endorsed

10 Interactive programs

Objective

Animal welfare, safety and security are maintained during *interactive programs* so that people have a positive experience and have an enhanced appreciation of *animals*.

This section has been deliberately left blank.

Endorsed

11 Transportation

Objective

Animal welfare, safety and security are maintained during transport.

Standards

S11.1 The *operator* sending a *macropod* must ensure *macropod transportation* containers do not have slatted floors.

Note - Acceptable methods for containing *macropods* during *transport* may include:

- i. solid containers with a padded or flexible ceiling; and
- ii. suspended hessian or calico bags.

Guidelines

G11.1 *Macropods* may be sedated by or under the direction of a *veterinarian* before being enclosed in *transportation* containers.

G11.2 *Enclosure* barriers for *enclosures* in which *macropods* are to be released after *transportation* may be made more visible by attaching hessian or similar material.

G11.3 *Transportation* crates should not contain hazardous material as bedding.

Note - Additional *transportation* requirements apply to *macropods* being *transported* internationally: DEWHA (2008) *Conditions for the Overseas Transfer of Macropods* (Effective from November 2008). Australian Government Department of the Environment, Water, Heritage and the Arts, Canberra. < <http://www.environment.gov.au/biodiversity/trade-use/publications/export-conditions/pubs/Macropod-conditions.pdf> >

12 Animal identification and records

Objective

Animal identification methods and *animal* records enable monitoring of welfare of *animal* collections and inform approved management programs.

Animal Identification

Standards

- S12.1 The *operator* must ensure exotic *macropods* have *individual permanent identification*.
- S12.2 Native *macropods* are exempt from the requirement for *individual permanent identification*.

Guidelines

- G12.1 A passive integrated transponder (PIT) is the recommended form of *individual permanent identification* for *macropods*.
- G12.2 The standard location for PIT insertion in *macropods* is in the dorsal midline (or slightly to the left) between the scapulae, or behind the left ear.
- G12.3 Native *macropods* should have *individual permanent identification* wherever practicable.

Records

Guidelines

- G12.4 Records kept for *macropods* used in demonstrations and *interactive programs* should include:
- i. feeding; and
 - ii. behavioural issues.

Appendix 1

Minimum floor areas for *macropod enclosures*

Minimum floor areas required to house up to two individual *macropods* in an *enclosure* are shown in the table below.

For each additional *macropod* of the same species to be housed, the minimum floor area must increase by:

- i. 25% for each adult female; and
- ii. 50% for each adult male

Note - Some species may not tolerate additional males.

Where *macropods* are housed in mixed-species *enclosures*, the minimum floor area required is the sum of the floor areas required for each different species.

Species	Common name/s	Minimum enclosure floor area (square metres)
<i>Hypsiprymnodon moschatus</i> <i>Aepyprymnus rufescens</i> <i>Bettongia gaimardi</i> <i>Bettongia lesueur</i> <i>Bettongia penicillata</i> <i>Bettongia tropica</i> <i>Potorous tridactylus</i>	Musky rat-kangaroo Rufous bettong Eastern bettong Burrowing bettong Brush-tailed bettong Northern bettong Long-nosed potoroo	15
<i>Lagorchestes conspicillatus</i> <i>Lagorchestes hirsutus</i>	Spectacled hare-wallaby Mala	20
<i>Macropus eugenii</i> <i>Macropus parma</i> <i>Setonix brachyurus</i>	Tammar wallaby Parma wallaby Quokka	30
<i>Dendrolagus bennettianus</i> <i>Dendrolagus goodfellowi</i> <i>Dendrolagus lumholtzi</i> <i>Dendrolagus matschiei</i> <i>Petrogale brachyotis</i> <i>Petrogale concinna</i> <i>Petrogale inornata</i> <i>Petrogale lateralis</i> <i>Petrogale penicillata</i> <i>Petrogale percephone</i> <i>Petrogale xanthopus</i> <i>Thylogale billardieri</i> <i>Thylogale stigmatica</i> <i>Thylogale thetis</i>	Bennett's tree-kangaroo Goodfellow's tree-kangaroo Lumholtz's tree-kangaroo Matschie's tree-kangaroo Short-eared rock-wallaby Nabarlek Unadorned rock-wallaby Black-footed rock-wallaby Brush-tailed rock-wallaby Proserpine rock-wallaby Yellow-footed rock-wallaby Tasmanian pademelon Red-legged pademelon Red-necked pademelon	40
<i>Macropus dorsalis</i> <i>Macropus irma</i> <i>Macropus rufogriseus</i> <i>Onychogalea fraenata</i> <i>Onychogalea unguifera</i> <i>Wallabia bicolor</i>	Black-striped wallaby Western brush wallaby Red-necked wallaby Bridled nailtail wallaby Northern nailtail wallaby Swamp wallaby	60

Species	Common name/s	Minimum enclosure floor area (square metres)
<i>Macropus agilis</i>	Agile wallaby	200
<i>Macropus antilopinus</i>	Antilopine wallaroo	
<i>Macropus bernardus</i>	Black wallaroo	
<i>Macropus fuliginosus</i>	Western grey kangaroo	
<i>Macropus giganteus</i>	Eastern grey kangaroo	
<i>Macropus parryi</i>	Whiptail wallaby	
<i>Macropus robustus</i>	Common wallaroo	
<i>Macropus rufus</i>	Red kangaroo	

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