Exhibited Animals – Macropod Standards and Guidelines

December 2011
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 and public safety.

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, security and human safety 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, security and public safety 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
Exhibited Animals – Macropod Standards and Guidelines

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, security and public safety outcomes. Non-compliance with guidelines does not constitute an offence under law.

  They are presented in a box and 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 *Exhibited Animals – General Standards and Guidelines* which apply to all *animals* kept for *exhibition purposes* at *facilities*.

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

The *Exhibited Animals – General Standards and Guidelines* contain the following sections:

- Introduction;
- Definitions;
- Responsibilities;
- Human health and safety;
- 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 *Exhibited Animals – General Standards and Guidelines*, 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 *Exhibited Animals – General Standards and Guidelines* that also apply to these *taxon standards* unless otherwise stated. Defined words in this document are italicised.
Macropods

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

- Hypsiprymnodontidae – the musky rat-kangaroo (*Hypsiprymnodon 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 (*Thyllogale* 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 (*Thyllogale 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 m 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;

iii. cause acute death or lead to chronic debility.

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 health and welfare of *animals*, and both human and *animal* safety and security.

HUMAN HEALTH AND SAFETY

<table>
<thead>
<tr>
<th>Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>S1.1 All standards in the <em>Exhibited Animals – General Standards and Guidelines</em> relating to <em>dangerous animals</em> apply to large <em>macropods</em> that show aggressive behaviour towards humans.</td>
</tr>
</tbody>
</table>
2 Security

Objective

*Animals* are held securely to ensure their welfare and prevent pest establishment and the *facility* is managed to ensure human safety and security. Access by unauthorised persons and escape of *animals* is prevented.

This section has been deliberately left blank.
## 3 Enclosures

### Objective

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

### GENERAL

#### Standards

| S3.1 | The *operator* must ensure *macropods* are held within a dog-proof *enclosure*.  
**Note** - Where necessary to satisfy the requirements of S3.1, *macropods* may be kept behind fences that are not dog-proof as long as the *enclosures* are within a dog-proof perimeter. |
| S3.2 | The *operator* must ensure that if *macropods* are kept in regions where wild fox populations occur they are held within a fox-proof *enclosure*. *Enclosures* containing only adults of *Macropus giganteus*, *M. rufus*, *M. robustus*, *M. antelopinus* and *M. bernardus* are exempt.  
**Note** - Where necessary to satisfy the requirements of S3.2, *macropods* may be kept behind fences that are not fox-proof as long as the *enclosures* are within a fox-proof perimeter. |
| 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. 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*. |
| S3.4 | The *operator* must provide visitors with information on appropriate behaviour in walk-through *macropod* *enclosures*. |
| S3.5 | The *operator* must ensure *enclosures* have a fence of at least the following height:  
  i. 1800 mm for large *macropods* (red kangaroos, grey kangaroos and wallaroos); and  
  ii. 1400 mm for medium *macropods* (e.g. swamp wallabies, agile wallabies, whiptail wallabies and red-necked wallabies); and  
  iii. 1000 mm small *macropods* (e.g. mala, bettongs, potoroos, pademelons, musky rat-kangaroos); and  
  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; and  
  vi. unless otherwise approved by the relevant *government authority*. |

#### 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 10 cm out from the outside of the mesh fence at 10 cm, 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 Apertures in enclosure barriers are not considered fox-proof if the apertures are larger than 50 mm by 50 mm.

G3.3 A macropod enclosure barrier should be of sufficient height and/or suitable design to prevent macropods from escaping over the barrier.

G3.4 Where the perimeter fence of a facility 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.

G3.5 Enclosures housing macropods capable of climbing (including the musky rat-kangaroo, bettongs, tree-kangaroos and rock-wallabies) should have:
   i. non-climbable enclosure barriers; and/or
   ii. a 500 mm inhang; or
   iii. a secure roof.

G3.6 Hand-raised male macropods should not be housed in walk-through enclosures.

G3.7 Walk-through enclosures should be monitored to prevent inappropriate behaviour by visitors or macropods.

GATES AND DOORS

Guidelines

G3.8 Gates to walk-through enclosures should be fitted with self-closing devices.

G3.9 Walk-through enclosures housing macropods should have a double gate entry system to minimise the risk of escape.

ENCLOSURE FURNITURE

Standards

S3.6 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.

S3.7 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

G3.10 When housing rock-wallabies, furniture placement and fence angles should not facilitate escape.
G3.11 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.

G3.12 Tree-kangaroos should be provided a minimum of one elevated nest box/hollow per animal.

SPATIAL REQUIREMENTS

Standards

S3.8 The operator must ensure macropod enclosures meet the minimum floor area requirements specified in Appendix 1.

HOLDING ENCLOSURES

Guidelines

G3.13 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 health and wellbeing.

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.

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 Food stations for tree-kangaroos should be at least 1.2 metres above ground level.
G4.5 Shelters should be used for food stations.

WATER

Guidelines

G4.6 Water troughs should be in a shaded area away from fence lines.
G4.7 The size of a water trough should allow each macropod to immerse its forelegs for cooling purposes.
5 Health and wellbeing

Objective

The health and wellbeing 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 and to prevent the production of unplanned surplus animals.

Standards

S6.1 The operator must take all reasonable steps to prevent the production of macropod offspring unless in accordance with an animal collection management plan.

S6.2 The operator must not display or keep for display more than 50 individuals of large species of macropods 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.
8 Capture and restraint

Objective

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

Standards

S8.1 The *operator* must ensure written procedures for capture and *restraint* are developed, maintained and implemented and guidelines that deal with *capture myopathy* are developed and followed.

**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 tranquillisation by or under the direction of a *veterinarian*.

Guidelines

G8.1 Care should be taken during capture and *restraint* that *macropods* do not overheat.
Objective

*Animal training* is humane and beneficial to the *animal’s* health, safety, behavioural and management needs.

This section has been deliberately left blank.
10 Interactive programs

Objective

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

This section has been deliberately left blank.
11 Transportation

Objective

Animal welfare, safety and security are maintained during transport and human safety is ensured.

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.

12 Animal identification and records

Objective

Animals are identified by standardised means and have a detailed written history.

ANIMAL IDENTIFICATION

Standards

S12.1 The operator must ensure exotic macropods have individual permanent identification.
S12.2 Native macropods are exempt from the general standards 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 areas required for each different species.

<table>
<thead>
<tr>
<th>Species</th>
<th>Common name/s</th>
<th>Minimum enclosure floor area (square metres)</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Hypsiprymnodon moschatus</em></td>
<td>Musky rat-kangaroo</td>
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<tr>
<td><em>Aepyprymnus rufescens</em></td>
<td>Rufous bettong</td>
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<tr>
<td><em>Bettongia gaimardi</em></td>
<td>Eastern bettong</td>
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<tr>
<td><em>Bettongia lesueur</em></td>
<td>Burrowing bettong</td>
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<tr>
<td><em>Bettongia penicillata</em></td>
<td>Brush-tailed bettong</td>
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<tr>
<td><em>Bettongia tropica</em></td>
<td>Northern bettong</td>
<td></td>
</tr>
<tr>
<td><em>Potorous tridactylus</em></td>
<td>Long-nosed potoroo</td>
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<td><em>Lagorchestes conspicillatus</em></td>
<td>Spectacled hare-wallaby</td>
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<td><em>Lagorchestes hirsutus</em></td>
<td>Mala</td>
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<tr>
<td><em>Macropus eugenii</em></td>
<td>Tammar wallaby</td>
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<td><em>Macropus parma</em></td>
<td>Parma wallaby</td>
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</tr>
<tr>
<td><em>Setonix brachyurus</em></td>
<td>Quokka</td>
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<tr>
<td><em>Dendrolagus bennettianus</em></td>
<td>Bennett’s tree-kangaroo</td>
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<td><em>Dendrolagus goodfellowi</em></td>
<td>Goodfellow’s tree-kangaroo</td>
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<td><em>Dendrolagus lumholtzi</em></td>
<td>Lumholtz’s tree-kangaroo</td>
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<td><em>Dendrolagus matschiei</em></td>
<td>Matschie’s tree-kangaroo</td>
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<td><em>Petrogale brachyotis</em></td>
<td>Short-eared rock-wallaby</td>
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<td>Nabarlek</td>
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<td><em>Petrogale inornata</em></td>
<td>Unadorned rock-wallaby</td>
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<td><em>Petrogale lateralis</em></td>
<td>Black-footed rock-wallaby</td>
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<td>Proserpine rock-wallaby</td>
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<td><em>Petrogale xanthopus</em></td>
<td>Yellow-footed rock-wallaby</td>
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<td><em>Thylogale billardieri</em></td>
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<td>Red-necked pademelon</td>
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<td>Agile wallaby</td>
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<td>Red-necked wallaby</td>
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<td><em>Onychogalea fraenata</em></td>
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<td>Northern nailtail wallaby</td>
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<tr>
<td><strong>Wallabia bicolor</strong></td>
<td>Swamp wallaby</td>
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<tr>
<td><em>Macropus antiopinus</em></td>
<td>Antilopine wallaroo</td>
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<td><em>Macropus rufus</em></td>
<td>Red kangaroo</td>
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