

Husbandry Manual For



Artist: *Neville.W.Cayley (1887-1950)*

Brushtail Possum
Trichosurus vulpecula
Mammalia:Phalangeridae

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Date of Preparation: August 2004
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Course Name and Number: Animal Care & Husbandry III 5883
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TABLE OF CONTENTS

1	Introduction	5
2	Taxonomy	6
2.1	Nomenclature	6
2.2	Subspecies	6
2.3	Other Common Names	6
	Natural History	7
2.4	Morphometrics	7
2.4.1	<i>Mass and Basic Body Measurements</i>	7
2.4.2	<i>Sexual Dimorphism</i>	7
2.4.3	<i>Distinguishing Features</i>	7
2.5	Distribution and Habitat	8
2.6	Conservation Status	9
2.7	Diet in the Wild	9
2.8	Longevity	10
2.8.1	<i>In the Wild</i>	10
2.8.2	<i>In Captivity</i>	10
3	Housing Requirements	11
3.1	Exhibit/Enclosure Design	11
4	Spatial Requirements	12
4.1	Size of Enclosure	12
4.2	Position of Enclosures	12
4.3	Weather Protection	12
4.4	Temperature Requirements	12
4.5	Substrate	13
4.6	Nest boxes and/or Bedding Material	13
4.7	Enclosure Furnishings	13
5	General Husbandry	14
5.1	Hygiene and Cleaning	14
5.2	Record Keeping	14
5.3	Methods of Identification	15
5.4	Routine Data Collection	15
6	Feeding Requirements	16
6.1	Captive Diet	16
6.2	Supplements	17
6.3	Presentation of Food	18
7	Handling and Transport	19

7.1	Timing of Capture and Handling	19
7.2	Catching Bags.....	19
7.3	Capture and Restraint Techniques	19
7.4	Weighing and Examination.....	20
7.5	Release.....	20
7.6	Transport Requirements	20
7.6.1	Box Design	21
7.6.2	Furnishings	22
7.6.3	Water and Food.....	22
7.6.4	Animals per Box.....	22
7.6.5	Timing of Transportation	22
7.6.6	Release from Box	22
8	Health Requirements	23
8.1	Daily Health Checks	23
8.1.1	Chemical Restraint	23
8.1.2	Physical Examination	23
8.2	Routine Treatments	23
8.3	Known Health Problems	24
8.4	Quarantine Requirements.....	24
9	Behaviour.....	25
9.1	Activity	25
9.2	Social Behaviour.....	25
9.3	Reproductive Behaviour.....	26
9.4	Behavioural Problems	26
9.5	Signs of Stress.....	26
9.6	Behavioural Enrichment	26
9.7	Intra-specific Compatibility	27
9.8	Inter-specific Compatibility	27
9.9	Suitability to Captivity	27
9.10	Feeding a captive diet	27
10	Breeding.....	28
10.1	Mating Systems	28
10.2	Ease of Breeding.....	28
10.3	Reproductive Condition	28
10.4	Techniques used to control Breeding.....	28
10.5	Occurrence of Hybrids	29
10.6	Timing of Breeding	29
10.7	Age at First Breeding and Last Breeding	29
10.8	Ability to Breed Every Year.....	29
10.9	Ability to Breed More than Once Per Year.....	30
10.10	Nesting, Hollow or Other Requirements	30
10.11	Breeding Diet.....	30
10.12	Oestrous Cycle and Gestation Period	30

10.13	Litter Size.....	30
10.14	Age at Weaning	31
10.15	Age of Removal from Parents.....	31
10.16	Growth and Development	31
11	Artificial Rearing of Mammals.....	32
11.1	Housing	32
11.2	Temperature Requirements.....	32
11.3	Diet and Feeding Routine.....	32
11.4	Specific Requirements	33
11.5	Data Recording.....	33
11.6	Identification Methods.....	33
11.7	Hygiene.....	33
11.8	Behavioural Considerations.....	33
11.9	Use of Foster Species.....	33
11.10	Weaning	33
11.11	Rehabilitation and Release Procedures	34
12	Acknowledgements.....	35
13	References	35
14	Bibliography	36
15	Glossary	38
15.1	Appendix.....	39

1 Introduction

The Brushtail Possum is a native Australian marsupial; that lives in the tall forests and nests in the hollows of trees.

They make barking and hissing sounds during breeding season, which happens twice a year. They are extremely territorial and mark their territory with their secretion glands; found under the chin and the base of the tail.

Their sizes vary, from females being 60 - 80cm and males 68 – 95cm, depending from what area of Australia. The weight of a Brushtail Possum; for a female is 2.5 – 3.8kg; and males 3.2 – 4.3kg. Their colouring is varied, depending on the area in which they are found around Australia. The NSW common Brushtail Possum is grey along the back, golden chin and breast, their underbelly is cream to bronze, their tail is thick black and bushy. In comparison, the Tasmanian Common Brush tail is dark brown/caramel along the back, golden breast and chin, caramel underbelly and thick black/brown bushy tail.

The geographic range for the Brushtail Possum is from far North Queensland right down to the colder climates of Tasmania; smaller colonies exist in lower Western Australia. Their habitat should be around semi arid to the humid wet weather. *Wet climates can induce breeding in the NSW Brushtail population due to the resent decrease in rain fall.* "Courtesy of ABC television Native Australian mammals documentary 2001".

The Brushtail possum has adapted to suburban areas that we cohabit and it is by far the most common of the possum and glider family found in built up areas.

The Brushtail possums prefer substrate dry soil and medium foliage of the forest flooring, thus allowing the ability to forage through litter to find fruit and roots, the Brushtail spends a great deal of time on the ground, especially in the winter months as fruiting trees are rare. The Brushtail possum is an Omnivore which means it eats, both plant and meat matter.

2 Taxonomy

2.1 Nomenclature

Kingdom - Animalia
Phylum - Chordata
Class - Mammalia
Order - Diprotodontia
Family - Phalangeridae
Genus - *Trichosurus*
Species - *Trichosurus vulpecula*

2.2 Subspecies

Trichosurus vulpecula arnhemensis
Trichosurus vulpecula eburacensis
Trichosurus vulpecula johnsoni
Trichosurus vulpecula fuliginosus,

2.3 Other Common Names

Mountain Brushtail
Bobuck
Brushtail phalanger

3 Natural History

3.1 Morphometrics

Width between ears	3 – 5cm
Fore arms	10 – 15cm
Back legs	15 – 18cm
Paw span approximately	8 – 10cm
Waist girth	30cm
Chest girth	40cm
Cranial circumference	20 – 25cm
Length of head	15cm

3.1.1 Mass and Basic Body Measurements

Male

Head to end body	50 – 55cm
Tail length	30 – 35cm
Total length.....	80 – 90cm
Height.....	25 – 32cm
Weight.....	3.2 – 4.3kg

Female

Head to end body	35 – 45cm
Tail length	25 – 30cm
Total length.....	65 – 80cm
Height.....	20 – 30cm
Weight.....	2.5 – 3.8kg

3.1.2 Sexual Dimorphism

The sexual dimorphism:

3.1.3 Distinguishing Features

In males a scent gland is located on the chest, chin and cloaca. Used to mark their territory, the reddish secretions from this gland, gives the fur around it a brown or rusty appearance. Males are considerably larger than that of females. Females do not have scent glands rather they leave a concentrated urine track when travelling around its territory.

3.2 Distribution and Habitat

The Brushtail possum, usually resides in forests and woodland areas. These habitats vary greatly throughout its natural habitat range.

In Tasmania, the Brushtail can be found throughout the rainforests and dry woodlands that cover over 60% of the state.

In Australia's northwest, the Brushtail Possum prefers eucalyptus forests and mangroves in which to dwell.

In southern Australia, they reside in woodland and wooded scrubland areas, sometimes found living a semi-terrestrial area's.

In New Zealand, in which the Brushtail possums are listed as a pest; can be found in most forested areas. It is not native to New Zealand and was introduced there in 1840 for the fur trade.



■ The black areas are the Brushtail possums' distribution throughout Australia.

Their introduced countries include only that of New Zealand as a wild population the black areas indicate their distribution.



3.3 Conservation Status

IUCN states that the Brushtail Possum is Secure.

3.4 Diet in the Wild

Family – *mimosaceae* which includes

Golden Wreath Wattle {new shoots of leaves and flowers}

Sydney Golden Wattle {new shoots of leaves and flowers}

Sunshine Wattle {new shoots of leaves and flowers}

Family – *proteaceae*

Red Spider Grevillea {new shoots branches and flowers old and new}

Common Grevillea {new shoots branches and flowers old and new}

Family – *Myrtaceae*

Pink Tea Tree – *Leptospermum Squarrosum* {new flower and leaves nor so much new growth as Brushtail possums body weight is to heavy to balance on the thin branches of the tea tree they eat all species of Tea Tree}

Bottle Brush – *Callistemon subulatus* {new shoot and flowers}

Family – *Eucalyptae / Myrtaceae*

They eat the new shoots, however pink stems and leaves are toxic to the Brushtail possums and great care should be taken when picking Eucalyptus foliage, however the flowers are not toxic.

Pink gum blossom Black gum – *Eucalypt aggretata*

Kamarooka Mallee – *Eucalypt froggatti*

Swamp Gum – *Eucalypt cadens*

Ghost Gums

Squiggly Gum

Blue Gum

Carnivorous diet

Baby chick's commonly noisy miners

Plover chicks if parents have left the nest to forage although very rare.

Arthropods

Invertebrates

3.5 Longevity

4- 6 years

3.5.1 In the Wild

Depending on their habitat environment and predators:

Their longevity in the wild has a life span of 1- 6 years.

Studies have been carried out by the CSIRO, and Brushtail Possums have been known to live in exceptions of 8years in the wild.

3.5.2 In Captivity

Brushtail possums in captivity tend to have a longer life span due to the environment in which they are kept. Some factors are health treatments, constant supply of nutritious diets and no predators.

The longest life span has been recorded as 10years by Taronga Zoo, but generally they live between 7-9 years.

4 Housing Requirements

4.1 Exhibit/Enclosure Design

Brush-tail Possums are nocturnal semi arboreal marsupials. They dwell in hollowed out trees and live within the canopy of Sclerophyll forest.

Therefore, the captive possum's enclosure should be quite tall in order to make these mammals feel comfortable and reduce their stress. Brush-tail possums are quiet good at squeezing through small holes and chewing through wood, "they are skilled in escaping".

Exhibited Animals Protection Act 1986 No 123 – EAPA of NSW

An Act with respect to the exhibition of animals at marine or zoological parks, circuses and other places. **Schedule 3 - Licensing standards** (Sections 14, 25) **1** Housing fencing, caging and exercise facilities for animals. [Website 2].

The enclosure in which animal or animals are kept must be structurally sound and allowing for adequate exercise/movement and be kept in good repair.

EAPA of NSW

Enclosure of the Brush-tail possum should be as follows: –

7 – 8 ft in height length 4 – 5 meters this ensures for adequate room for foraging on the ground. The height for making the enclosure; is to simulate its environment within the wild in order to reduce stress.

Colour bond fencing on 3 sides of the enclosure is to stop any unwanted escapes. Walls and ceiling should be insulated with natural wood panelling, ensuring that there are no sharp corners to cause injury. The use of wire that is approximately grade 4, this must be smooth metal, as non metal can be torn nor abrasive.

The floor should be concrete and sealed with a non toxic sealer to stop moisture from being absorbed/soaking into the concrete which can cause bacteria and fungal build-up.

The enclosure should be designed so that it receives the afternoon sun, but kept out of direct sunlight as they are nocturnal mammals and do not require great amounts of sunlight/UV.

An enclosure that has 7 or more animals sharing the same area, must allow for group behaviour patterns. [EAPA of NSW]

5 Spatial Requirements

5.1 Size of Enclosure

Brushtail Possums require a rather high enclosure with adequate foraging room on the ground.

The animal has to be provided with sufficient space for exercise.
To be provided with social husbandry needs [EAPA of NSW]

5.2 Position of Enclosures

It is recommended that the enclosure is kept out of direct, all day sunlight. The enclosure should face north and be placed where it will receive the morning sun. They are nocturnal and can become stressed from being in direct sunlight. Caution should also be taken so Brushtail possums are not overheated in their enclosures this will happen around 27 degrees Celsius.

Weather Protection

The enclosure should be given an area where possums can be exposed completely to the night's environment; a meshed part of the roof is ideal, extending down the enclosed 3 walls because although nocturnal, they do rely on the moon's rays to light their way through the dark hours of the night.

Their bedding/hollows should be placed under cover and away from sunlight, winds and roain. In the wild, Brushtail possums close all other holes to their hollow especially when they have young to keep warm.

In the summer months it has been suggested that shade cloth be placed over the part of the enclosure where sunlight does hit the enclosure, example, the front where mesh is, to avoid the enclosure from over heating and to avoid animal discomfort and stress.

5.3 Temperature Requirements

The recommended temperature for NSW Common Brushtail Possum is 24 – 27 degrees Celsius and humidity should be kept at 30 – 45%

Queensland Common Brushtail Possum, their temperature is increased to 26 – 35 degrees Celsius and humidity should be kept at 58 – 65%

Victorian/ Tasmanian and lower Western Australia their temperature range requirement is 18 – 28 degrees Celsius and humidity 20 – 30%.

5.4 Substrate

The substrate should be kept as natural as possible, so having it on dirt floor is great but due to hygienic reasons, the following is advised:

Lay smooth concrete painted with sealer [non – toxic] to stop moisture and urine seeping in and causing bacteria and fungal build up.

Fresh dry dirt, foliage and sandstone rocks.

If possible plant small grevilleas in terracotta planters, place with in enclosure for natural vegetation (you will need a large selection of these plants for rotational purposes).

Dry native leaf matter should be scattered around the enclosures floor to aid foraging stimulus.

Climbing Eucalyptus branches should be added for environmental stimuli, exercise and means to move around the enclosure using optimal space usage.

5.5 Nest boxes and/or Bedding Material

Hollow tree stumps are to be placed within the enclosure as this is the natural nesting habitat.

Bedding material is gathered in the wild, consisting of dry leaves and bark. Offering dry native leaf matter and bark strips is advised to maintain their wild instincts.

5.6 Enclosure Furnishings

The Brushtail Possum enclosure furnishings must contain the:-

The flooring must have a covering of dry dirt and loose foliage such as sandstone rocks and if possible plant small grevillea plants in terracotta planters; for the natural vegetation few are needed, as it is important they are rotated. It is also a source of their wild diet and adds to environmental enrichment.

Place thick ropes hanging around the enclosure for exercise and enrichment, plenty of hollows in which to hide. Eucalyptus stumps should also be placed within the enclosure for climbing and sleeping.

Treat logs (where food is hidden) should be placed around the enclosure, and should be placed where the Brushtail is able to get to them, but, by using its instincts, this helps with environmental enrichment.

The animal's enclosure must resemble as much as possible its natural habitat in order to aid its physical wellbeing as well as behavioural. (EAPA of NSW)

6 General Husbandry

6.1 Hygiene and Cleaning

The Brushtail possum enclosure must be kept clean to reduce the amount of contamination of zoonosis disease from spreading, and non zoonosis spreading to others within its enclosure.

Brushtail possum waste should be removed from the enclosure, daily. Gloves and aprons should be worn while cleaning. (Queensland Government)

Sick animals should be quarantined immediately to avoid out breaks.

The food must be prepared with high standards of cleanliness of both food and utensils. (EAPA of NSW)

Fresh food and water must be given to the animal every day.

Food and water bowls should be cleaned every day to prevent rodent infestations from occurring.

Enclosures should be cleaned thoroughly to stop fungal and bacteria of faeces and urine building up causing illness to other animals.

(Provide a regime for cleaning enclosures, indicating lists of both 'safe' cleaning agents/chemical agents and ones that should not be used. Indicate how often nest material, soil and branches should be changed)

6.2 Record Keeping

It is essential to keep records of animals that you have in your care.

Keeping daily distant examinations of your animal so you are aware of any behavioural changes.

Keeping a record of oestrus with in your females Brushtails.

Keeping records of feed types and exemptions of foods for allergies or that are breeding triggers.

Keeping records of medication dosages and times.

Records for vaccinations given and when they are due.

Records for breeding purposes.

Records for veterinary examination eg blood tests, cloaca smears, and faecal floats.

Records for growth, including weight, height, length and age.

6.3 Methods of Identification

Methods of identifications are important for a collection of your Brushtail. This ensures safety when being used in breeding cycles, eg if sent overseas for breeding programs or if a selected characteristic was needed for your breeding collection.

The recommended ways to identify your Brushtail are listed below:

Micro- chipping

Ear tags

Ear tattooing

Markings

Photos

Ear notching

6.4 Routine Data Collection

Writing data reports on the following:

Feeding patterns:-

Time of feeds, lunar cycles, temperature, seasonal behaviours

Faecal examinations:-

Preferred foods- Brushtail possums will eat sugary foods first, because nectar is so hard to come by in the wild especially in the summer and winter.

7 Feeding Requirements

7.1 Captive Diet

Omnivorous animals are able to adapt to different diets as long as the food is digestible and nutritious (zoo biology & Cheryl Standen)

The captive diet of Brushtails should be a variety of foods, and as they are mostly omnivores their diet should contain:-

Apple, banana, carrot, figs dried and fresh, grapes/kiwifruit, and kangaroo cubes, Lettuce [not large amounts due to water content and can give your Brushtail possum diarrhoea].

Orange, rock melon, watermelon, spinach, sweet potatoes uncooked, corn uncooked, minced meat/chicks/dog kibble good quality and Bacon can be used for training purposes.

Brushtail possums should be feed 10% of their body weight a night plus 1, being that you have 4 females in the enclosure 5 portions of food should be placed around the enclosure to stop aggressive behaviour between the dominant female and omega female Brushtail.

The ratio of vegetable to meat should be 90% vegetation 10% meat product.

Example: 3kg Brushtail consumes 300grams of food, 270grams of vegetation and 30grams of meat.

Fresh water should be available at all times (EAPA of NSW)

Being that the Brushtail is native to Australia you should add its natural diet with in its captive diet; the browsing should consist of:

The natural native diet for the Brushtail possum is a variety of plant matter, fruit and meat including invertebrates and arthropods as they are omnivores and eat the full spectrum of foods. If feeding Brushtail possums eucalyptus plant matter NOTE: The Brushtail possum eats only the blossoms, gum nuts, and new shoots, never feed new shoots that have pink stems and leaves; the pinkish colour has high amounts of eucalyptus toxins and is fatal to the Brushtail.

Brushtail possums wild diet consists of:

Black gum – scientific name *Eucalyptus Aggregata*

Warby swamp gum – scientific name *Eucalyptus Cadens*

Kamarooka mallee – scientific name *Eucalyptus Froggatti*

Sydney golden wattle – scientific name *Acacia Longifolia*

Pink tea tree – scientific name *Leptospermum Squarrosum* this includes species of tea tree.

Sunshine wattle – scientific name *Acacia Terminalis*

Red spider flower grevillea – scientific name *Grevillia Speciosa ssp speciosa*

Ghost gum – scientific name *Corymbia*

Sub-species of the bleeding gum or red gum are as follows:-

Tranversaria, Angophora, Symphomyrtus

Non native wild diet consists of:-

Plumbago

Rose plants

Rosemary

Apple trees

Ficus [fig tree]

Lemon [they only eat small amount of the rind]

Baby chick's commonly noisy miners

Plover chicks

Arthropods

Invertebrates.

See Appendices 5 for suppliers

7.2 Supplements

Supplements should only be given in the winter months if you do not wish your Brush tail to have coprophagy [www.animalbehaviour.com].

Calcium supplements should be feed to pregnant or lactating Brushtail Possums, (they eat a root of the Eucalypt that is high in calcium and phosphorus)

Feeding day old chicks at the time of gestation and pregnancy can be used as an alternate feeding rather than using calcium powder or liquids.

Veterinary advice should be sought out before supplementing your collection as over dosing of some nutrients can be toxic.

7.3 Presentation of Food

Brushtail Possums only feed every second night where they eat half their body weight in the winter months.

Place food around the enclosure for environmental enrichment; place it in the trees and on the ground under foliage as they are not strictly tree dwellers.

Utensils used for feeding animals must not be used for any other purpose, and must be easy to clean and designed to avoid risk of injury to animal (EAPA of NSW)

Food presentation should be fresh and appealing to animals.

When placing food in enclosures for Brushtails, be sure to make it environmentally enriched, some suggestions are, place the food in places hard to get to by the possum this gives it stimuli and helps pass the time in the enclosure, this will aid wild behaviour. Brushtail have a good memory so try and constantly move the food around to different places in the enclosure, as this helps the natural behaviour to browse.

8 Handling and Transport

8.1 Timing of Capture and Handling

Never attempt to handle a juvenile or adult possum, without a thick towel or gloves on hand.

Is your Tetanus booster up to date?

Best time for catching Brushtail Possums is late dusk and or early morning when it is not hot, the temperature should be below 20 Celsius.

Avoid chasing the Brushtail Possum as this can lead to capture myopathy and this will lead to death. It is the main cause of death after capture has taken place as it can take up to two weeks to show signs.

8.2 Catching Bags

Brushtail possums have sharp claws and teeth so thin cotton bags are **NOT** recommended.

To ensure safety for the person doing the capturing of the animal, use dark hessian bags as this reduces claws from protruding and causing injury to the captor, and reduces stress for the Brushtail.

Thin rubber backed calico capture bags are good for Brushtail Possums that have broken limbs as the material breaths but it is thinly lined to stop claws from being caught. Natural fibres are best as synthetics can cause over heating in Brushtail, and the natural fibres allow air flow.

8.3 Capture and Restraint Techniques

The Brushtail juveniles can be captured by placing a cotton bag over your hand, and scoop the animal inside. For adult Brushtails grasp the scruff of the neck and base of the tail keeping animal gently stretched out with claws away from you. For further reading Care of Australian Wildlife by Erna Walraven Chapter 5 handling and emergency care for common mammal groups; page 70 possum restraint

See appendices 1

For young Brushtail Possums hold within the towel to examine/restrain.

8.4 Weighing and Examination

Weigh the animal before it is transported, when stress is not present.

Distant examination routines should be made in detail and a copy sent with the Brushtail possum/s.

On arrival the animal should be weighed again and distant examinations should be carried out in detail for the following 3 weeks; stress myopathy can take this long before signs are shown and in most cases by the time you notice the behaviour changes for stress myopathy the Brushtail Possum is close to death.

Stress myopathy is the biggest killer in Possums and Macropods.

8.5 Release

To release the Brushtail Possum, face the animal away from you, release the tail first then release the scruff and back away from animal.

8.6 Transport Requirements

The loading and movement of all aircraft within and from Australia is controlled by the Commonwealth Air Navigation Act and the Air Navigation Orders and Regulations. In practical terms the Regulations require that:

When live animals are carried by air they are adequately contained so as to ensure the safety of the aircraft and the comfort and safety of handlers and passengers.

All animals are handled as live cargo and are stowed in the cargo bays of aircraft unless the aeroplane has been specially converted as a dedicated livestock carrier.

The International Air Transport Association (IATA) Live Animals Regulations prescribe the minimum standards for transporting animals by air in containers, pens and stalls.

It is a condition of membership of IATA that airline operators accept live animals for air transport in accordance with the IATA regulations.

The IATA regulations are not fully satisfactory for Australian conditions particularly as they do not take into account the special requirements for the containment of Australian native animals.

The code does not take into account that the majority of animals transported within Australia are companion and native animals.

The Code of Practice need to be reviewed and developed into a "user friendly" Australian manual for the air transport of all live animals within or from Australia.

The State and Territory POCTA Acts apply to those incidents which occur during air transport of live animals. In practical terms the application of the Acts is limited. It is usually difficult to ascertain precisely where an incident involving animals occurred during flight and therefore which Act has been transgressed. None of the Acts apply to those airports which are Commonwealth Territory.

These legal limitations would be overcome with the passage of a Commonwealth POCTA Act which binds the Crown, Commonwealth Employees and those persons working on Commonwealth Territory.

The Commonwealth Export Controls (Animals) Act ensures that all animals exported from Australia by air are subject to inspection by Australian Quarantine Inspection Service officers and the containers in which the animals are to be confined approved. Animals shipped by air within Australia are received by normal cargo staff and loaded and unloaded by normal baggage staff. Only animal containers are checked to ensure aircraft safety and hygiene standards.

All the provisions for the humane road transport of animals must be applied when animals are transported to the airport.

Only air cargo workers who have received proper animal handling training and understand their needs should accept animals for air transport, and transfer them from the reception area and load them onto an aircraft.

Provision must be made for holding animals prior to loading or after unloading from aircraft in a sheltered and quiet area. Clean fresh water must be made available especially on warm days or where trans-shipping times are prolonged.

Airline companies accepting animals for transport should have in place at every airport from which they operate, a contingency plan to ensure prompt assistance for any animal which becomes ill or injured during air transport.

Airline companies accepting animals for transport should ensure that all of their staff handling the animals understands that the responsibility for the care of the animals rests with the officer-in-charge from the time they are accepted for transportation until the animals are discharged at the destination port.

Airline companies accepting live animals for transport should ensure that the container is clearly labelled 'LIVE ANIMAL-HANDLE WITH CARE' and must have a contact number, both during and after hours, for the consignee, and should make contact with that person if the aircraft is delayed or the animals are not collected promptly on arrival. "All above information for transport requirements are quoted directly from the IATA on www.affa.gov.au date visited 05/06/2004"

8.6.1 Box Design

Possums should be kept in the dark at all times where possible.

Juvenile Brush tail Possums should be placed in cotton bag and placed within a secure plastic box. Adult Brush tail Possums should be placed directly into a plastic box or bin.

See appendices 2

8.6.2 Furnishings

All transport crates should be floored with straw, as it is a good insulator and is absorbent; this makes it as comfortable as possible for animals.

8.6.3 Water and Food

All animals must be given water within 12 hrs of departure, temperature pending, if it is in the summer months water must be supplied prior to departure and on arrival.

All animals must be given food 24 hrs after departure failure to do so falls under the prevention of cruelty Act.

8.6.4 Animals per Box

Each container must contain one Brushtail possum, presumed pregnant or lactating females are not to travel with or without their young. The young must be fully weaned to travel in transport containers.

8.6.5 Timing of Transportation

All animals are to be kept in a dark, cool and quiet place prior to transport and after arrival.

As a reasonable animal carer it is your job to ensure that all animals are to be transported from terminal holding areas as quickly as possible.

8.6.6 Release from Box

All animals are to be released from containers in a dark, cool and quiet place.

To avoid stress the animal is to be kept as far from fencing and walls as possible to avoid collision.

9 Health Requirements

9.1 Daily Health Checks

Daily health checks are to be carried out every dawn as the sun is rising when Brushtails are at their most active time.

Distant examinations are to be completed daily, with date, time, year, and signed by the keeper. *See appendices 3*

Note normal and abnormal behaviour; refer to section 10 in this husbandry manual for the definition of normal and abnormal behaviour.

Check food intake and waste excretion, weigh the food left in the bowl and check for scats.

All abnormal behaviour should be reported to head carer for further investigation/ review.

9.1.1 Chemical Restraint

Chemical restraint is not recommended for Brushtail Possums, as they do not fare well under anaesthetics.

Dr Donna Schofields Surgical Veterinarian 2004.

9.1.2 Physical Examination

Physical examinations should be carried out before mating season, quarterly, or when animal/s shows signs of illness

See appendices 4

9.2 Routine Treatments

It is important to arrange regular veterinary inspection (EAPA)

9.3 Known Health Problems

Brushtail possums are susceptible to disease, such as bovine tuberculosis.

Reproductive/mating inadequacies, stress and parasite control such as ticks, mites, lice, fleas, ringworm, internal worms, bacteria and protozoa.

It is important to reduce this risk of contamination by keeping food and water fresh and at a safe distance from the public, as it has been known that people put poisons and unsuitable foods in the food containers. Food supplies are to be inspected regularly.

Brushtail Possums also suffer from; nutrient deficiencies and overdoses, such as vitamin E, D & A.

Although rare in captivity, it is important to keep the possum's enclosure between 24 to 27 degree Celsius this is to avoid upper respiratory influenza.

Coccidiosis – pathogen that live in the lining of the stomach and all mammals have healthy amounts however if an over production of *Coccidia* occur it causes inflammation of the small and large intestine and chronic diarrhoea and is fatal if not treated immediately.

Stress Dermatitis – break outs are more frequent when environmental changes are made too suddenly, this causes hair loss and ulcers on the skin, more present on the face and base of tail. This is extremely common in male Brushtail Possums due to the territorial dilemma and habitat destruction.

9.4 Quarantine Requirements

Any newly – acquired animal must be kept in isolation until it has been examined or restored to good health before being placed with other animals. (EAPA)

Any animals with contagious disease such as tuberculosis or influenza should be removed from the enclosure, the facility sterilized, and any other animals also taken for examination that are or were in contact with the infected animal.

For all other regulations contact AQIS or your supervisor for a copy of the standards.

Quarantine should be for a minimum of 40 days from the moment of the last animal/s is placed into quarantine.

10 Behaviour

10.1 Activity

The chronobiology of the Brushtail Possum was investigated in a vivarium and in light-controlled cabinets to determine what controls the timing of natural patterns of activity and rest. It is proposed that the timing of natural behaviour of the possum is not regulated entirely by direct response to environmental factors, but that it may have an element of internal control. Unless perturbed by wind and/or rain, the onset of activity is precisely timed each day, beginning as light intensity declines following sunset. In tests of an internal clock hypothesis, possums in constant darkness exhibited free-running circadian rhythms of activity with periods initially slightly shorter than 24 hrs, spontaneously reducing to 22 hrs 40 min after 40 days. The internal rhythm of the possum could be **entrained** by 24-h light/dark cycles with activity initiated at the onset of the dark phase. We propose that the timing of the onset of natural behaviour of the possum is controlled through the output of a circadian clock that may be modulated by direct responses to wind and rain.

[The above information is directly quoted from CSIRO publishing the 'Australian Journal of Zoology' article name: The Chronobiology of the Brushtail Possum, *Trichosurus vulpecula* (Marsupialia:Phalangeridae): tests of internal and external control of timing "www.publish.csiro.au date visited 5/06/2004 "

The activity of Brushtail Possums showed, that about 16% of their time is spent feeding, 30% travelling, 44% immobile and 10% grooming.(DPIWE)

10.2 Social Behaviour

Brushtail Possums lead mainly solitary lives.

If shelter is short and numbers are high, they will share sleeping areas this has only been noted in female groups 10/11/2005.

Home range varies between 1 – 15 hectares and each home range has an overlap into another.

The *Trichosurus vulpecula* is an aggressive animal especially in male to male contact however female Brushtail Possum's are very neutering to the young and even males have been known to be less aggressive to juvenile males when passing through their home territory.

They are Nocturnal and are a semi arboreal species coming to the ground to change trees of forage for foods such as insects, fungi and native grasses. This behaviour was sited on 23/06/2004 Excelcior Park Baulkham Hills NSW Australia.

females call to females and other males to alert them of predator intruders such as quolls cats, foxes and dogs.

10.3 Reproductive Behaviour

Brush-tail Possums rub secretions from glands under their chin, on the chest and near the cloaca to mark home ranges and define occupancy of a home site. If a home site is vacant or undefended because the occupant has died or has been removed then another brush tail will claim it!

The female becomes aggressive after courtship has taken place and male returns to his home territory.

Males spray around the female's tree to let other males know she has been mated with. Males seek out the females.

Females bark when in oestrus and males bark back until they locate the female. *Its like a homing device, they go of the time the bark takes to receive them* "Sydney botanical gardens information sheet".

The male Brush-tail mounts the female in the lordosis position, frequent but short burst of copulation happens over the next 24hrs. During this time the female is overly submissive to the male and the male feeds his mate, after which time however the female turns aggressive and throws the male off her and he returns to his home territory.

10.4 Behavioural Problems

The main behavioural problem with captive Brush-tail Possums is the environment is lacking in stimuli. Which leads to an unhappy possum and in extreme cases self mutilation.

Inadequate environment surroundings.

And aggression to other Brush-tails and keepers.

10.5 Signs of Stress

The signs of stress is constant cleaning of paws which cause ulcers in the mouth.

Excessive drinking.

Abnormal behaviour, in being out during day light hours.

Lack of appetite, anorexia in extreme cases.

Over submissive behaviour.

Aggression.

Ears laying flush with their head, and/or drooping of the ears.

10.6 Behavioural Enrichment

It is important to give all animals some form of environmental enrichment. This contributes to health and mental well being [Cheryl Standen & Zoo Biology]

It is important to hide food with in the enclosure to stimulate their highly developed sense of smell.

Brush tail Possums are curious animals and it is good to give them hollow logs and boxes to hide in, and explore in as well as bark and buster cubes to chew on, as they chew on bark to file down their incisors.

10.7 Intra-specific Compatibility

Brushtail Possum's of all sub- species will live happily in the one exhibit providing they are of female gender.

Male and females can be housed together however this will lead to poor breeding as they are predominately solitary animals.

No more than 2 males in an enclosure, males are highly territorial and the enclosure should give plenty of space between tree hollows.

10.8 Inter-specific Compatibility

Brushtail Possums cope well with other species of possums, example ringtails, sugar gliders, feathertails and yellow bellied glider as their dietary requirements is greatly different. Brushtail Possums have not been known to this date to breed outside the own genus.

10.9 Suitability to Captivity

Brushtail Possums fare well in captivity if acquired when young.

Brushtail Possums are easily imprinted .

They are easy to hand raise and tame.

If housed correctly, they don't suffer from stress or behaviour problems.

10.10 Feeding a captive diet

Brushtail Possums respond well to captive diets as long as there is plenty of area to browse to help environmental stimulation and enough food diversity otherwise Brushtail Possums go of their food feed an arrangement of 4 species of foliage daily and 6 types of fruit and vegetables per day with occasion meat source such as crickets. Day old chick.

Be sure to spread the food around on fruit sticks, congs, up with in the foliage on the ground for insect feeding foliage mixed together to enhance olfactory gland stimuli.

11 Breeding

11.1 Mating Systems

There are a number of ways to mate Brushtail Possums.

1. Introduce male to female in night time hours and remove before sun rise repeat the process over a period of a week.
2. AI, this proves to have a very low success rate and is an expensive way to breed animals.
3. IVF proves to be successful but these techniques are not carried out for cost reasons.
4. Keep male and female completely away from each other as this can reduce the chances of mating in the long run.

11.2 Ease of Breeding

If male and female Brushtail Possums are housed separately and only brought together when female is in oestrus, breeding success tends to have a higher rate.

11.3 Reproductive Condition

For the Brushtail breeding conditions are not that complex, however there are many breeding triggers which can cause females and males to know instinctively that its time to breed.

Triggers – for breeding are; shorter light cycles

Rain fall

Cool climate temperature

Food quality and amounts

Australian native blossoms which only blossom during their breeding cycle.

Breeding males should be ranked by size, weight, libido and fertility which are done by sperm counts and vaccinations up to date and veterinary check ups should also be carried out prior to breeding.

Breeding females should be ranked by size, weight, oestrus length, libido and also fertility which are done by cloaca smear and ultra sounds and ovum tests for fertility and to make sure there are no damaged follicle cells that may reduce the breeding ability.

The breeding times for Brushtail Possums is March through to May, and second breeding season is September to October, and this is a shorter breeding cycle.

11.4 Techniques used to control Breeding

Separation of both males and females within an enclosure.

Young male juveniles removed from the mother at 1 year of age/ at weaning, as inbreeding occurs in Brushtails.

11.5 Occurrence of Hybrids

There has been an offspring developed from sub species cross breeding, and in most of the time this hasn't proven to be successful and are not always able to breed. This seems to be more of a fluke breeding, rather than the ability to constantly breed a sub species, these are known as "Golds" (Kept at Feather Dale Wildlife Park) 2004

Common Brushtail Possums in captivity or in the wild have not bred with any other species of possum; example Ringtail female with Brushtail male. No scientific research has been carried out to find if the common Brushtail Possum will breed with the other Possum species or, to this date 05/06/2004.

11.6 Timing of Breeding

Timing of breeding is important as females do not remain on oestrus very long 14 -16 days at the most; therefore, it is important that cloacal smears are carried out at the beginning of the breeding season.

Males tend to hunt females on full moon nights, although not proven scientifically.

However, on my own observations this theory has been proven.

Males should be placed in an open enclosure along with the female from 10pm on wards as this is their most active time in the wild and when they are most seen on the sides of road and in people's backyards.

11.7 Age at First Breeding and Last Breeding

Females can begin to breed from 1 year of age and breeding ability slows at 4 -5 years, therefore breeding Brushtail would cease at 5 years, as the young and the mother would not be in peak condition.

Males can't breed before two years of age, however puberty does start at 1 year of age; the male can produce sperm, although little, if any fertilized sperm is evident. Males tend to live around to the same age as females, however this is not prevalent in wild populations as males are usually hit on the roads by vehicles or preyed upon by predators; as males travel to females and come to the ground a lot more, thus making them more at risk.

In captivity males cease to have high fertility at 6 years of age and up, therefore the last time you would breed from the animal is at about 5 years of age.

11.8 Ability to Breed Every Year

No matter what type of climate the Brushtail may live in, they will breed at least once if not twice a year.

If breeding is denied by the keepers, male Brushtails portray homosexual behaviour.

11.9 Ability to Breed More than Once Per Year

Brushtails tend to have 2 breeding seasons, a short breeding season at the beginning of the year and a sustained breeding season in the spring months

11.10 Nesting, Hollow or Other Requirements

Nesting material should be added such as eucalyptus leaves and coconut fibre.

Light cycle daylight hours, gradually longer than that of the night.

Nesting boxes should be added in just before mating season, and not during breeding season. The possum dwells in hollows anyway, so using existing ones is better, because of the smells and scent marking.

11.11 Breeding Diet

As much foliage as it will consume

Such as new eucalyptus leaves

Grevillia foliage flowers and buds included

Melaleuca

Wattle foliage

Tea tree

Apple ½ core removed

¼ orange / mandarin

¼ cup rolled oats

1 baby chick every 3 days dusted with calcium powder

3 grapes green are more nutritious than red

¼ kiwi fruit peel removed

½ boiled egg once a week

1 floweret for broccoli

Sun flower seed, grey striped variety ¼ teaspoon

Spray multi vitamin supplement on foliage every 3rd day

11.12 Oestrous Cycle and Gestation Period

Oestrous cycle of the Brushtail Possum is 5 days .

The gestation period of the Brushtail Possum 17 – 18 days after mating where the foetus climbs from the cloaca through a wet trail that the mother Brushtail Possum licks before giving birth so it can slide quickly over the fur before drying out.

11.13 Litter Size

Brushtail Possums usually only have one young at a time but have been known to have two depending on the environmental factors, such as plenty of rain fall and good supply of food to sustain mother and young.

11.14 Age at Weaning

6 – 7 months or 500grams this is when weaning usually starts.

The young spends a lot of time on the mother's back.

When weaning is complete they still stay with the mother for another 3 months.

11.15 Age of Removal from Parents

At about 10 months the mother encourages her young to leave her side by biting and hissing at them when they touch or try to climb on her back, she leaves them and no longer shares her food.

11.16 Growth and Development

Joey – 17 – 18 days within the mother's uterus weighs less than 1 gram .

4 – 5 months suckling on mother's teat still unfurred/furred weighs 50 – 120grams.

5 – 6 months still suckling now furred weighs 200 – 300 grams ready for weaning, solids are now being offered to the young.

Juvenile – 7 – 9 months, its complete diet now consists of solid food its own weight.

10 – 12 months sub – adult no longer in the home range of their mother sub - adult establishing its own home territory.

Adult - 12 – 24 months sexually matured, seeking a mate, fully grown 60 – 90cm head To tail weight range 3.2 – 4.3kg

2 – 3 years in peak mating range giving birth to young twice a year.

Geriatric - 4 – 6 years beginning to become geriatric teeth wearing down.

Immune System shutting down, secondary disease starting to set in.

12 Artificial Rearing of Mammals

12.1 Housing

Pouch made from wool, tight fitting to make Joey feel secure

Pouch liner made from cotton not synthetics as this does not breathe and can breed fungal growth and bacteria. Pouch and liner should be changed daily as young Joeys toilet where they sleep.

12.2 Temperature Requirements

Young joeys 40 – 150 grams must be kept at a constant temperature of 32 degrees

Joeys from 150 – 210 should be kept at 29 degrees.

Young Joeys until they reach 210 – 250 grams, heat pads can be used and kept at a constant temperature of 28 degrees rather than the use of heat bags; hot water bottle have been known to leak and scald the young. Once at 250 grams Brushtail young can thermo regulate by themselves.

12.3 Diet and Feeding Routine

Weight in grams	No. feeds per day	Quantity per feed (mls)	Formula strength	Solids	Toilet
40 – 80	6	0.5 – 1.5	70mls water per scoop	Nil	Every feed
80 -110	5 -6	2	60 mls water per scoop	Offer native plants	Every feed
110 – 130	5	5 – 6	50 mls water per scoop	Offer native plants and apple	Every feed
130 – 150	5	6	Same as above	Same as above	Same as above
150	5	7	Same as above	Same as above	Same as above
180	5	8	Same as above	Should be eating solids	Same as above
200	4	10	Same as above	Same as above	Same as above
250	3	12 – 14	Same as above	Same as above	May be able to toilet on own
300	2 (increase if weight lost)	20 – 25	Same as above	Offer plenty of solids and formula	On own

This chart is for feeding Divetalac

12.4 Specific Requirements

Brushtail Joeys can not thermo regulate nor toilet with out assistance.

12.5 Data Recording

Growth and weight charts should be carried out every second day and be weighed before feeding to get an accurate weight.

A record of pellets passed should also be carried out as the young Joey may be consuming his faecal waste and this is not normal behaviour in Brushtails, if this occurs you may need to re evaluate your feeding plan or supplement the food with powders or sprays.

12.6 Identification Methods

Micro- chipping is the most effective way to ID your collection but coloured ear tags have been used in the past to determine males from females.

12.7 Hygiene

Brushtails are prone to thrush and as this is a contagious disease, wash your hands before, during and after feeding young, also wash your hands between animals.

Clean pouches and their liners daily or when they have been soiled by body waste.

Sterilize all feeding equipment and do not share teats among other Brushtails.

Don't store milk in plastic containers, glass bottles are best.

Chewed teats must be discarded.

Milk formula must be cooled to room temperature before being refrigerated and can only be kept for 24 hours, after which time it must be discarded.

12.8 Behavioural Considerations

Do not place Brushtails in the same pouch straight away if they are not from the same mother as this can cause aggression and stress to the Joey.

Each Joey must have its own pouch available to them.

As these are strictly solitary animals, they should not be buddied with other Brushtails from the time they are juveniles.

12.9 Use of Foster Species

Although it has been proven, in rare cases to be successful; not every female Brushtail sub species will foster another's young.

12.10 Weaning

Weaning Brushtails is time consuming; patience must be upheld to make the weaning process as easy and the least stressful for you and animal. Getting the animal to lap by its self as soon as possible at around 400- 500grams can be done by reducing strength the of the milk to avoid "teat dependence" this will also reduce humanisation in young Brushtail Possums.

12.11 Rehabilitation and Release Procedures

Micro chip all release stock prior to release if for scientific research otherwise don't.

Vet check all pre-release Brushtails.

Releasing Brushtails can be quite challenging as they are highly territorial and vacant and low wild numbers are very rarely found and great care must be taken before planning for a release as over crowding in Brushtails cause outbreaks of stress dermatitis.

Pre release sites should be monitored, wild numbers must be taken.

Release must be done softly and support feeding offered until released Brushtails become accustomed to their wild surroundings.

Post release monitoring/support must be carried out for a cycle of two breeding seasons.

All off springs are to be micro chipped.

See appendices 5 for local Rehabilitation Organisation

13 Acknowledgements

Cheryl Standen

Author of Brazilian / Lowland Tapir Manual

SYDNEY WILDLIFE volunteers

Cheryl Walkington

Cindy Talbot

Barbara Potts

Gill Wilks

Val Scott

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<http://www.anbg.gov.au/anbg/mammals/possum-brushtailed.html> **The link where picture on cover of this husbandry manual can be sited for reference purposes.**

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All sites where re-checked as of 12/02/2006 and all came up as direct hits.

16 Glossary

(Of terms used that may not be easily understood without explanation/definition)

Oestrus – hormonally controlled cycle of activity of the reproductive organs in many Female mammals.

Habitat – the natural home of an animal or plant or where the animal is known to dwell.

Imprinting – the development through exceptionally fast learning in young animals of recognition of and attraction to members of their own species or to surrogates.

Marsupials – any mammal of the order of marsupialia in which the young are born in an immature state and continue the development in the marsupium [pouch] or fold of skin on the underbelly.

Chronobiology – the branch of biology concerned with the periodicity occurring in the living organisms.

Diamorphism – behaviour between other species or intra specific breeds.

Terrestrial – An earthly place of where species are located.

Longevity – life expectancy of the animal

Substrate – enclosure flooring materials

17 Appendix

17.1 Capture and Restraint

length of cement pipe. The animal also needs shade to avoid high temperatures.

Feeding Good quality hay, vegetables and a concentrate such as horse-pellets are suitable.

Possums and gliders

Handling Possums and gliders are readily handled by the tail, while the neck and shoulder region is grasped simultaneously. Hessian sacks or straw-filled boxes are adequate for transport.



Possums and gliders can be handled by the tail while the neck and shoulder region is grasped simultaneously.

Temporary accommodation An aviary with nesting areas and climbing structures can be used. Nest-boxes or hollow logs, blocked at one end and placed above the ground, can be used for nesting. Ringtail possums in the wild make a nest, called a drey, from branches and twigs. They can be given a 'pretend' drey made from two wire hanging-plant baskets and fibre liners to form a sphere. The two baskets can be joined with

wire ties. Branches and ropes can be used for climbing.

Feeding A wide variety of fruits and vegetables should be offered. Native fruits and flowers, for example, grevillea, melaleuca (tea-tree) and callistemon (bottlebrush), are appreciated. Ringtail possums normally eat large quantities of leaves so gum leaves and tips and other native vegetation should be provided. Greater Gliders are almost exclusively leaf eaters so the feeding practices outlined for Koalas (pages 68–9) should be followed. Smaller Sugar Gliders, pygmy possums, Feathertail Gliders and Leadbeater's Possums have a higher protein diet that is provided by insects and pollen in the wild.

A high-protein, high-energy gruel should be provided in small quantities as a supplement. For example, mix the following ingredients in a blender for two minutes to make a palatable and balanced feed. This mix can be stored in the refrigerator.

25g Heinz high-protein baby cereal
1 hard-boiled egg
1 teaspoon Sustagen
150mL honey
150mL warm water

Large kangaroos and wallabies

Handling Kangaroos are highly strung, panic easily and may sustain further injury if handled incorrectly. Large kangaroos can be particularly dangerous during catching and handling. Capture must be as quick as possible to avoid the

17.2 Transport Requirements



Container Requirements

CONTAINER REQUIREMENT 31

The illustrations shown in this Container Requirement are examples only. Containers that conform to the principle of written guidelines for the species but look slightly different will still meet the IATA standards.

Applicable to primates of size and weight of an adult vervet/ African green monkey or smaller.

Multiple Container Species *Single Container Species*

- | | |
|-----------------------------|--|
| Capuchin monkey | Aye-Aye |
| Guenon | Colobus monkey |
| Howler monkey | Drill |
| Langur | Indri |
| Leaf monkey | Mandrill |
| Lemur species (large) | Mangabey |
| Macaque | Proboscis monkey |
| Marmoset species | Saki |
| Patas monkey | Sifaka |
| Rhesus monkey | Uakari species |
| Spider monkey species | Wanderoo |
| Squirrel monkey | |
| Swamp monkey | <i>Multiple/Single Container Species (Nocturnal species)</i> |
| Tamarin species | Bush-baby |
| Tarsier | Douroucouli |
| Titi monkey | Galago |
| Vervet/African green monkey | Lemur (small) |
| Woolly monkey | Loris |
| | Opossum species |
| | Phalanger |
| | Potto species |

See *USG Exceptions in Chapter 2* and *Exceptions BA-01, CX-02, GF-01 and OS-02 in Chapter 3*.

Note: All primates come under CITES regulations and reference must be made to the CITES documents at the time of requesting any reservation for these species.

1. CONTAINER CONSTRUCTION

(see *Exception QF-01 in Chapter 3*)

Materials

Wood, metal, wire mesh and muslin or other light material.

Principles of Design

The following principles of design must be met in addition to the General Container Requirements outlined at the beginning of this chapter.

Certain countries have government regulations controlling container dimensions and the quantity of monkeys that can be carried. The following design specifications, in principle, comply with such regulations but are primarily intended for use where detailed national regulations do not exist.

Frame

Solid wood, screwed or nailed and glued with a non-toxic glue, metal or non-toxic plastic.

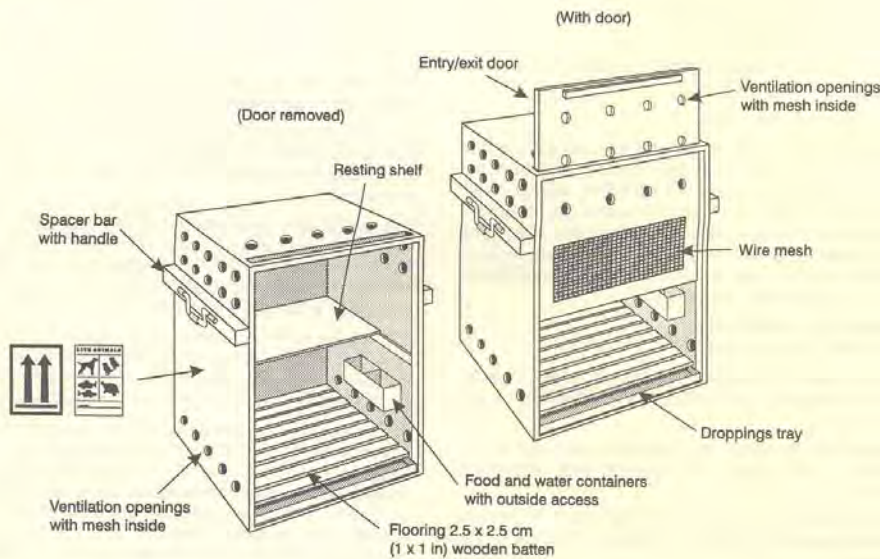
Sides

Wood, metal or plastic. The front must consist of a 2/3 solid panel with ventilation openings above a 1/3 wire mesh.

Handling Spacer Bars/Handles

Must be provided as shown in the illustration on three sides of the container.

EXAMPLE:



8
31



CONTAINER REQUIREMENT 31 (cont'd)

Floor

The base of the container must be solid and leak-proof. A slatted floor made of 2.5 x 2.5 cm (1 x 1 in) battens spaced at 0.5 - 1 cm (1/2 - 3/8 in) intervals and covered with absorbent bedding must be placed over a droppings tray, with a locking device, fitted into the base of the container. If a droppings tray is not provided then there must be sills at both the front and rear of the container to prevent excreta escaping.

Roof

Solid but with meshed ventilation openings optional.

Door

Either the front of the container can be constructed as a vertical sliding door or a rear hinged or sliding door, extending the whole height of the container, must be provided. In either case the door must be fastened with tamper proof fastenings.

Interior

For some species a resting shelf of 1/3 the length of the container must be provided in the rear of the container.

Branch-like timber must be provided for bush baby and lemur species, it must be firmly attached within the container so that the animal can climb and rest safely.

Ventilation

Meshed ventilation openings, approximately 2.5 cm (1 in) in diameter must be provided along the base of the two long sides and in the upper 1/3 of the sides and front of the container. Whenever openings are covered by mesh care must be taken that there are no sharp edges present within the container, all edges must be covered with a smooth material that is tamper-proof.

A muslin, or similar material, curtain must cover all ventilation opening including the front.

Feed and Water Containers

Separate food and water containers must be provided, either revolving or fixed. If fixed inside the container they must be placed at a height that does not allow the animal to sit upon it and there must be an outside access for filling and emptying which does not allow the animal any chance of escape. Water containers should only be filled to demand and must be emptied after use as monkeys will splash themselves and become wet and chilled.

Rigid Plastic Pet Containers
(see Container Requirement 1)

These containers are suitable for transport of lemur, bush baby and small monkeys. The following modifications must be undertaken:

- a slatted floor must be firmly fixed to the base of the container which must be covered with absorbent material;
- a low resting shelf or a branch-like structure for lemurs and bush babies must be firmly fixed in the back of the container;

the method of closing the container must be completely tamper-proof. When monkeys are being shipped the use of padlocks at the top and bottom of the door rather than clasps or clips is the method of choice;

fine wire mesh must be securely fixed over the door grill and all ventilation openings, these must also be covered with a muslin, or similar material, curtain;

separate food and water containers, with outside access, must be fixed to the upper part of the door grill in order that the animal cannot sit on them. Water must only be offered when required and must not remain in the container after use but must be siphoned out;

the container must be correctly labelled.

If a container has wheels, they must be removed or rendered inoperable.

2. PREPARATIONS BEFORE DISPATCH

(see Chapter 5)

These animals instinctively fear the strange environment encountered during transportation. Therefore, in transporting these animals, there are a number of basic principles with which the shipper and the carrier must comply as these affect the welfare and comfort of the animal. This, in turn, has a bearing on the animal's behaviour during air transportation as the strain may cause the necessary stimulus for the animal to become difficult. Therefore, the container must be constructed to adequately contain and restrain the animal.

Adult monkeys must be crated individually or separated by partitions, unless they are used to each other.

Mature males will become upset by the presence of females in heat. Therefore, accepting females in this condition for shipment must be avoided whenever possible. If it is necessary to accept male and female monkeys, each sex must be in its own container and the containers separated from each other as far as possible.

Pregnant females and females with suckling young must not be accepted for air transport.

Young animals must not be separated from one another as this increases stress. They must be in partitioned containers or in separate containers loaded adjacent to each other in the aircraft.

Animals of the same species and size may be shipped together in the same container *only* if they have previously been contained together. Otherwise, they must be carried completely separately. Care must be taken to prevent any possibility of snapping and disturbing one another.

It is natural for these animals to investigate their surroundings and try to escape. With very few exceptions, these animals do not willingly accept confinement. They become frustrated and will often make determined efforts to escape.

These animals are affected by temperature changes and severely affected by temperature extremes. Care must be taken to ensure that they are not subjected to drafts. Most species can withstand reasonable variations in temperature but exposure to the wind or to a draft can be fatal. Therefore, consideration must be given not only to the temperature changes but also to the chill factors involved. On the other

CONTAINER REQUIREMENT 31 *(cont'd)*

hand, these animals must not be exposed to direct heat, such as placing them in sunlight or against hot radiators. Monkeys unavoidably subjected to extreme heat must be cooled so as to prevent dehydration or heat prostration. During prolonged transit stops, when the ramp temperature exceeds approximately 20°C (68°F), the aircraft compartment doors must be opened and, in extreme temperatures, ground equipment must be used to ventilate the compartments. The different climatic factors prevailing during a journey must always be considered when arranging the routing and carriage of these animals.

3. FEEDING AND WATERING GUIDE *(for emergency use only)*

Animals do not usually require additional feeding or watering during 24 hours following the time of dispatch.

If feeding or watering is required due to an unforeseen delay, cereal or appropriate primate food, bread and non-citrus fruits, must be provided but care must be taken not to over-feed. After offering water, the water container must be emptied or removed.

4. GENERAL CARE AND LOADING *(see Chapters 5 and 10)*

See 5.3 for special segregation of animals known to be for laboratory use.

There are a number of contagious diseases carried by monkeys communicable to man, consequently, care must be taken to avoid physical contact with the animal and full personal hygiene precautions must always be taken.

Monkey container ventilation openings must be covered with muslin or other light material that does not occlude ventilation to prevent possible inhaling of infectious droplets by handlers.

Monkeys from different continents must not be shipped together nor come in airborne contact with each other in aircraft holds, airport cargo warehouses, animal holding facilities, and during all phases of ground transportation.

5. CONSIGNMENTS OF LABORATORY MONKEYS

Laboratory monkey consignments must be kept isolated from any other consignments of primates at all times (see 5.3).

17.3 Distant Examinations

Distant Examination Record Sheet

Date: _____ Species: _____

Sex: _____ Age: _____

Animals ID/Cage Card Number: _____

General Examinations: *Please circle the correct statement below write in notes where applicable to the health and husbandry of the animal in question.*

General Coat Condition:	Dull	Shiny/sleek	Moulting	Patchy
Gait:	Normal	Uneven	Staggered	Lame
Odour:	Smelly	Normal	Pungent	No odour noticed
Food Consumed:	All	Half	None	Weight left over
Urine:	Excessive	None	Normal	Colour if visual
Faeces:	Loose	Normal	Diarrhoea	None
Eyes:	Weeping	Clear	Cloudy	Discharge
Nose:	Running	Dry	Wet	Discharge
Ears:	Erect	Drooping	Swollen	Lame
Behaviour:	Paw Licking	Self Mutilation	Aggressive	Alert
	Lethargy	Hyperactivity	Submissive	Normal

NOTES: _____

Medical Treatments:

Medications Administered: N/A or
Dosage: N/A or
Time of drug administered: N/A or
Course of medications: N/A or
Veterinarian contact: {this should always be copied with details of Vet}

NOTES: _____

Name of Accessor:

Position Title:

Time Carried Out:

17.4 Physical Examinations

Physical Examination Form

Date: _____ Species & ID number: _____

Heart Rate: _____ C/Refill: _____ Mucous Membrane Color _____

Pulse Rate: _____

Hydrated Status: Normal Semi Acute

Temperature: _____

Abdominal Palpation: Normal Swallow Abnormalities

NOTES: _____

Specific Examinations

Lactation: Yes No

NOTES:

Feecal Sample: Tests Required _____

Blood Tests Tests Required _____

Ultra Sound Outcome _____

Rectal Examination Prognosis _____

Urine collection Tests Required _____

Semen Count Prognosis _____

Other Tests Required _____

Outcomes _____

Action _____

Recommendations _____

Veterinarian Name: _____
Address of Pathology Unit _____ Contact Details _____

(If Carried out in institution print the name of Pathologist below)

17.5 Rescue and Rehabilitation Organisations

QUEENSLAND WILDLIFE ORGANISATIONS

Noahs Ark Wildlife Coalition Inc., PO Box 1249, Beenleigh, Qld, 4207 Ph: 07 3807 3404 email; admin@noahsark.org.au Web: www.noahsark.org.au

North Queensland Wildlife Care Group, PO Box 1446, Aitkenvale, 4814

North Queensland Wildlife Care Group, PO Box 1629, Townsville, 4810

Orphaned Native Animals Rear and Release Darra, PO Box 15, Darra, 4076

RSPCA Old native animal rescue, 301 Fairfield Road, Fairfield, 4103 Ph: 07 3426 9999

Queensland Wildlife carers & Volunteers, 33 Holland St, Bargara(Bunderberg), 4670. Ph: 07 41591504

West Chermside Vet (emergency wildlife Vet) Ph: 07 3359 5333

Wildcare Queensland, PO Box 2379, Nerang Mail Centre, 4211 Ph: 07 5527 2444

Wildlife Education and Rescue Service of Central Queensland, PO Box 8308, Mt Pleasant 4740

Wildlife Volunteers Association Inc., 14 Osprey Street, Bli Bli, 4560

Wildlife Preservation Society of Queensland (WPSQ), Head Office, 95 William Street, Brisbane, 4000

New South Wales Wildlife Organisations

National Parks and Wildlife Service, 43 Bridge Street, Hurstville, 2220 Ph: 02 9585 6444

Australian Wildlife Hospital Association, PO Box 84, Raymond Terrace, 2324

Australian Seabird Rescue Inc. PO Box 733, Alstonville NSW 2477.

For Australian Wildlife Needing Aid (FAWNA), PO Box 218, Wauchope, 2446

Fund for Animals (FFA), 313 Mona Vale Road, Terry Hills, 2

Great Lakes Wildlife Rescue (GLWR), Huntley, The Lakes Way, Bungwahl 2423

International Fund for Animal Welfare (IFAW), 29 Georgina Street, Newtown, 2042

Looking After Our Kosciusko Orphans (LAOKO), 18 Kurrajong Street, Jindabyne, 2627

Native Animal Network Association (NANA), PO Box 2191, Tomerong, 2540

Native Animal Trust Fund (NATF), PO Box 1052 Toronto. 2283 24hour Hotline Ph: 0500502294

Northern Rivers Wildlife Carers (NRWC), PO Box 6432, Lismore, 2480

Northern Tablelands Wildlife Carers (NTWC), PO Box 550, Armidale, 2350

Rescue and Rehab of Aust Native Animals (RRANA), 107 Boughtman Street, Broken Hill, 2880

RSPCA NSW, PO Box 34, Yagoona, 2199

Sunraysia Wildlife Carers Group (SWCG), PO Box 189, Gol Gol, 2738

Sydney Metropolitan Wildlife Service (SMWS), 31 Chiltern Road, Ingleside, 2101 Ph: 02 94134300

Taronga Zoo Wildlife Clinic, PO Box 20, Mosman, 2088

The Big Scrub Environment Centre, 49 Keen Street, Lismore, 2480

The Wildlife Preservation Society of Australia (WPS), 8 Reiby Road, Hunters Hill, 2110

Tweed Valley Wildlife Carers (TVWC), PO Box 898, Murwillumbah, 2484

Wildlife and Rehabilitation Providers (WARP), PO Box 476, Muswellbrook,

Wildcare Queanbeyan, PO Box 852, Queanbeyan, 2620

Wildlife Animal Rescue and Care (Wildlife ARC), PO Box 2383, Gosford, 2250

Wildlife Carers Network Central West (WCNCW), 'Grunty Fen', Running Stream,
2850

Wildlife Carers of Glen Innes (WCGI), PO Box 520, Glen Innes, 2370

Wildlife Information and Rescue Service (WIRES), PO Box 260, Forestville 2087

WIRES Blue Mountains, PO Box 607, Springwood, 2777

17.6 Captive Diet Suppliers

Pet Product wholesalers

NSW	WA	VIC	QLD	SA	CANBERRA
<u>The Pet Warehouse</u> 1- 3 Lawrence St Alexandria NSW 2015 ph: (02) 9519 0444	<u>Pets Direct Australia</u> Kardinya WA 6163 ph: (08) 93373468	<u>Murphy Brothers</u> Cnr Burwood & Auburn Rds Hawthorn VIC 3122 ph: (03) 9882 2296	<u>The Pet Shop</u> Shop 5, Crn Mains Rd & McCullough Rd Sunnybank QLD 4109 ph: (07) 3345 8900	<u>P & K Pets</u> 19 Magill Rd Stepney SA 5069 ph: (08) 8362 2375	<u>Cardawan Pet Foods & Supplies</u> 116 Uriarra Rd Queanbeyan NSW 2620 ph: (02) 6297 9154
<u>Custom Pet Food Co</u> Bellevue Hill NSW 2023 ph: (02) 9388 9999	<u>Budget Pet Shop</u> 86 Lockyer Ave Albany WA 6330 ph: (08) 98417911	<u>Ascot Vale Stockfeeds</u> 536 Racecourse Rd Flemington VIC 3031 ph: (03) 9376 6871	<u>Purebread Pet Pantry & Supplies</u> 293 Given Tce Paddington QLD 4064 ph: (07) 3369 0699	<u>Mitchell Park Pet Supplies</u> 97b McInerney Ave Mitchell Park SA 5043 ph: (08) 8374 2988	
<u>Condell Park Produce</u> Rear 44 Simmat Ave Condell Park NSW 2200 ph: (02) 9790 6231	<u>Greenslade & Co Pty Ltd</u> 77 Rockingham Rd Hamilton Hill WA 6163 ph: (08) 93351811	<u>Lilydale Pet Foods</u> Fact 11/ 478 Maroondah Hwy Lilydale VIC 3140 ph: (03) 9739 6434	<u>Southside Pet Barn</u> 467 Underwood Rd Rochedale QLD 4123 ph: (07) 3341 4937		
<u>Pet Food Delivery</u> Sydney NSW 2000 ph: (02) 9984 1746		<u>Buddies Pet Supplies</u> 359 Nepean Hwy Brighton East VIC 3187 ph: (03) 9596 4472	<u>Andergrove Veterinary Clinic</u> 195a Bedford Rd Andergrove QLD 4740 ph: (07) 4955 5181		
<u>Hiland Pet Supplies</u> Cnr Cavendish & Davy Sts Mittagong NSW 2575 ph: (02) 4872 1940			<u>Fur N Fins</u> 169 Station Rd Burlpengary QLD 4505 ph: (07) 3888 5052		
<u>Peninsula Pet Supplies</u> 1 Niangala Cl Belrose NSW 2085 ph: (02) 9450 2112			<u>Plain Jane Wholesalers</u> PO Box 1076 Slacks Creek QLD 4127 ph: (07) 3209 5610		
<u>Bazza's Pet Shack</u> Units 6-8/ 10 Grieve Cl Gosford West NSW 2250 ph: (02) 4325 2915					

<u>Petbarn Ltd.</u> Unit 5C, Lot 6 Boundary Rd Northmead NSW 2152 ph: (02) 9630 1600					
<u>Woonona Petfood & Produce</u> 500 Princes Hwy Woonona NSW 2517 ph: (02) 4284 3162					
<u>Supasave Pet Supplies</u> 14 Hall St Newcastle West NSW 2302 ph: (02) 4926 2006					
<u>Dollar Save Pet & Produce Supplies Pty Ltd</u> 321 Hillsborough Rd Warners Bay NSW 2282 ph: (02) 4956 6522					
<u>Pet Stock Animal Supplies</u> 47 Princes Hwy Albion Park Rail NSW 2527 ph: (02) 4257 4001					
<u>The Pet People</u> Shop C103, Menai Central Carters Rd Menai NSW 2234 ph: (02) 9543 1077					
<u>The Pet Cave</u> 956A Woodville Rd Villawood NSW 2163 ph: (02) 9728 9777					
<u>Yummi Pet Food Products</u> 128 Bungaree Rd Pendle Hill NSW 2145 ph: (02) 9636 9708					
<u>The Pet Warehouse</u> 246 Railway Pde Kogarah NSW 2217 ph: (02) 9587 9000					

Bio Lac Supplier: - 15 O'Shannassy St Mt Pritchard 2170 ph: (02) 9823 9874					
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Fruit and Vegetable Produces Suppliers

NSW	WA	VIC	QLD	SA	CANBERRA
<u>Lahood Bros The Fresh Food Specialists</u> 17 Milperra Rd Revesby NSW 2212 ph: (02) 9771 1222	<u>Chantec Pty Ltd</u> 250 Bernard Road North Carabooda WA 6033 ph: (08) 9407 0000	<u>Melbourne Markets</u> Box 1, 542 Footscray Rd West Melbourne VIC 3003 ph: (03) 9258 6100	<u>Buy 'n' Rite</u> Sunrise Beach QLD 4567 ph: 0438 884 461	<u>City Fruit & Vegetable Supply</u> Building M Diagonal Rd Pooraka SA 5095 ph: (08) 8262 7272	<u>Direct Fruit Distribution Pty Ltd</u> Unit 21 Koala Court 151 Gladstone St Fyshwick ACT 2609 ph: (02) 6239 2432
<u>Sydpro Pty Ltd</u> 13 Woodburn St Redfern NSW 2016 ph: (02) 8399 0822	<u>About Produce</u> Warehouse E4, Units 11 & 13, Market City Canning Vale WA 6155 ph: (08) 9456 3244	<u>Simply Fresh Fruit</u> 15 Virginia St Mornington VIC 3931 ph: (03) 5976 3944	<u>Growers Own Ready Fresh</u> 220 East St Rockhampton QLD 4700 ph: (07) 49222777	<u>A To Z Fruit & Vegetables Supplies</u> Unit 1/ 32 Cnr Mary St & Park Tee Salisbury SA 5108 ph: 0411 411 492	<u>Erindale Fruit Market</u> 65 Sternberg Crs Wanniassa ACT 2903 ph: (02) 6231 9342
<u>Nowra Fruit Market Pty Ltd</u> Lot 3, 164 Princes Hwy Nowra South NSW 2541 ph: (02) 4421 2241	<u>Broome Fruit & Veges</u> Clementson St Broome WA 6725 ph: (08) 9192 2242	<u>Yarra Valley Farms</u> PO Box 321 Yarraville VIC 3013 ph: 1300 734 433	<u>Market Garden Produce</u> 98 Scott St Cairns QLD 4870 ph: (07) 40521477	<u>Adelaide Fruit & Veg Supply</u> 422 Churchill Rd Kilburn SA 5084 ph: (08) 8349 6331	<u>Gundaroo Growers</u> Shop 9, Mawson Pl Mawson ACT 2607 ph: (02) 6286 7333
<u>Perfection Fresh Australia Pty Ltd</u> Unit 3/ 7- 9 Underwood Rd Homebush NSW 2140 ph: (02) 9763 1877	<u>Bullet Produce</u> Mail Point 99/ 280 Bannister Rd Canning Vale WA 6155 ph: (08) 9456 0422		<u>Brisbane Markets Limited</u> Upper Level, Brisbane Markets Commercial Centre Sherwood Rd Rocklea QLD 4106 ph: (07) 33791062	<u>A.M.J. Produce Co Pty Ltd</u> 302 Cormack Rd Wingfield SA 5013 ph: (08) 8349 5222	
<u>A & H Fruit Supply</u> BldgA Flemington Markets Flemington NSW 2140 ph: (02) 9746 7649	<u>Bunches Galore</u> 150 East Rd Pearsall WA 6065 ph: (08) 9405 1564		<u>Arcadia Greengrocers</u> Unit 1, 13 Lionel Donovan Drv Noosaville QLD 4566 ph: (07) 5442 4855	<u>Arharidis Brothers Pty Ltd</u> Lot 8 Penfield Rd Virginia SA 5120 ph: (08) 8380 9233	
<u>A Fresh Delivery Pty Ltd</u> PO Box 323 Plumpton NSW 2761 ph: (02) 9835 0755	<u>Cloe Foods</u> Unit 2, 75 Forsyth St O'Connor WA 6163 ph: (08) 9337 7588				

			<u>Ashmore Wholesale Markets</u> 1/ 22 Commercial Drv Southport QLD 4215 ph: (07) 5532 3434		
<u>Abalode Pty Ltd</u> 27 Karimbla Rd Miranda NSW 2228 ph: (02) 9525 3390			<u>Ausfruit</u> 2 Nicholson Cl Bribie Island QLD 4507 ph: (07) 34087053		
<u>All Seasons Vegie Factory</u> Shop 2/ 3 Russell St Woonona NSW 2517 ph: (02) 4283 1032			<u>Betros Bros Pty Ltd</u> Annand St Toowoomba QLD 4350 ph: (07) 4632 4166		
<u>Allambie Heights Fruit Market</u> S16 Grigor Pl Allambie Heights NSW 2100 ph: (02) 9975 4616					
<u>Anchors Fresh Fruit & Veg</u> Unit 1c Banyette & Station Sts Bowral NSW 2576 ph: (02) 4861 1501					
<u>Armidale Wholesale Fruit Market</u> 168 Rusden St Armidale NSW 2350 ph: (02) 6772 5970					
<u>Beaumont's Produce</u> 3954 Waterfall Way Dorrigo NSW 2453 ph: (02) 6657 2389					

