

# Policy on Exhibiting Primates in New South Wales

---

## Exhibited Animals Protection Act



NSW Agriculture

A policy pertaining to the exhibit conditions for primates ordinarily held at animal display establishments. Policy approved by the Director-General of NSW Agriculture on 27 March 2000.

# CONTENTS

<b>DEFINITIONS</b>	<b>3</b>
<b>INTRODUCTION</b>	<b>5</b>
<b>PART 1 GENERAL</b>	<b>6</b>
<b>PART 2 HUSBANDRY AND MANAGEMENT</b>	<b>7</b>
2.1 Group Caging	7
2.2 Construction	7
2.3 Space	8
2.4 Substrate	9
2.5 Capture Facilities	9
2.6 Requirements for Fences and other Enclosure Barriers	9
2.7 Exhibit Furniture	10
2.8 Lighting	11
2.9 Temperature	11
2.10 Permanent Indoor Housing	11
2.11 Breeding	11
2.12 Rejected Individuals and Off-exhibit Holding	12
2.13 Hand-rearing	12
<b>PART 3 ANIMAL HEALTH</b>	<b>14</b>
3.1 General	
3.2 Preventative Medicine	14
3.3 Quarantine	15
3.4 Cleaning	16
3.5 Disposal of Carcasses	16
3.6 Euthanasia	16
<b>PART 4 NUTRITION AND HYGIENE</b>	<b>17</b>
4.1 Variety	17
4.2 Quantity	17
4.3 Supplements	17
4.4 Presentation	17
4.5 Activity Feeds	18
4.6 Food Preparation and Storage	18
4.7 Water	18

*Edited by: Matthew Crane (Registrar, Exhibited Animals Protection Act, NSW Agriculture, Locked Bag 21, ORANGE NSW 2800)*

*Cover photo: Chimpanzee using artificial termite mound. Reproduced with the permission of Taronga Zoo.*

<b>PART 5</b>	<b>SAFETY AND SECURITY</b>	<b>19</b>
5.1	General	19
5.2	Zoonotic Diseases	19
5.3	Staff Health	20
5.4	First Aid	20
<b>PART 6</b>	<b>RECORDS</b>	<b>21</b>
6.1	Identification	21
6.2	Records	21
6.3	Documents	21
<b>PART 7</b>	<b>TRANSPORT AND HANDLING</b>	<b>22</b>
7.1	General	22
7.2	Handling	22
7.3	Transport	23
<b>PART 8</b>	<b>INTRODUCTIONS &amp; RE-INTRODUCTIONS INTO A GROUP</b>	<b>24</b>
8.1	General	24
<b>REFERENCE LIST</b>		<b>25</b>
<b>SCHEDULE ONE</b>	Minimum Enclosure Dimensions	<b>26</b>
<b>SCHEDULE TWO</b>	Minimum Barrier Requirements	<b>28</b>
<b>SCHEDULE THREE</b>	Groups and Minimum Exhibit Furniture	<b>31</b>
<b>SCHEDULE FOUR</b>	Transport	<b>33</b>
	General Container Requirements	<b>33</b>
	Container Requirement 31	<b>36</b>
	Container Requirement 33	<b>42</b>
	Container Requirement 34	<b>47</b>
<b>APPENDIX ONE</b>	Taxonomy of primates held in New South Wales	<b>52</b>
<b>APPENDIX TWO</b>	Basic biology of primates	<b>53</b>
<b>APPENDIX THREE</b>	Breeding and behaviour in relation to exhibit design	<b>57</b>
<b>APPENDIX FOUR</b>	Methods of identification and handling	<b>61</b>
<b>APPENDIX FIVE</b>	Diet	<b>63</b>

## DEFINITIONS

**Agonistic Behaviour:** any behaviour which is associated with or elicits aggression.

**Arboreal:** an adjective used to describe a species which, in the wild, lives primarily in trees.

**Ape:** an animal of the Family Hominidae (Chimpanzees, Bonobos, Gorillas, Orangutans and Humans) or Hylobatidae (Gibbons, including Siamangs).

**Behavioural enrichment:** any device, mechanism or process which provides positive physical or psychological stimulation to an animal and promotes natural behaviours.

**Body length:** the head to rump length of a primate (see Schedule 1).

**Browse:** leaves, bark and branches of trees, bushes and shrubs.

**Conspecifics:** individuals of the same species.

**Disease:** any condition suffered by an animal such that normally accepted parameters of health are not met.

**Distress:** occurs when the animal's mechanisms for coping with stressors have been over-extended and are breaking down. May be short ('acute') or long term ('chronic'). Chronic distress results in increases in the animal's susceptibility to disease and reduces its capacity to grow and reproduce. Signs may include hair loss, dermatitis, weight loss, stereotypic behaviour, abnormal ingestion, scouring, increased incidence of disease, self-mutilation, abnormal activity levels, depression, elevated aggression levels and inhibited digestion.

**Diurnal:** a species which is normally active during the day.

**Enclosed** (in relation to an enclosure): indicates that a fenced enclosure is fully roofed.

**Enclosure:** any facility that, by use of physical barriers, enables loose confinement of an animal within a given area.

**Environmental enrichment:** (see Behavioural enrichment).

**Exhibit:** any enclosure designed for the display of animals to the public.

**Existing (in relation to primate facilities):** constructed before, and being used for primates at, the date upon which the Director-General gave his approval to this policy document.

**Family Group:** a group of related animals which contains one or more parents and their offspring.

**Fence:** any structure that comprises an upright physical barrier used either to prevent passage or direct passage of any person or animals.

**Holding Area:** any fixed animal enclosure which is not an exhibit.

**Intermembral Index:**  $(\text{length of humerus} + \text{length of radius}) \div (\text{length of femur} + \text{length of tibia}) \times 100$ .

**Monkey:** a member of the Order Primates other than humans, apes and prosimians

**New (in relation to primate facilities):** constructed after, or not being used for primates at, the date upon which the Director-General gave his approval to this policy document.

**New World Monkey:** a member of the Family Cebidae or Callitrichidae, which has its natural habitat in the Americas - the 'New World'.

**Nocturnal:** an animal active by night.

**Old World Monkey:** a member of the Family Cercopithecidae, which has its natural habitat in Europe/Africa/Asia - the 'Old World'

**Olfactory:** relating to the sense of smell.

**Open** (in relation to an enclosure): indicates that a fenced enclosure has no roof.

**Primate or Non Human Primate:** all members of the Order Primates except humans.

**Restraint:** any method, be it physical, chemical or behavioural, of preventing an animal from performing an act or movement that is deemed undesirable at the time.

**Routine Management Enclosure:** a holding area used to facilitate routine removal of animals from an exhibit. It may serve as night quarters and hold the exhibit animals while keepers access the exhibit for daily cleaning, feeding or maintenance activities.

**Semi-arboreal:** an adjective used to describe a species which, in the wild, spends time moving about in trees or sleeping in trees but which also spends time on the ground.

**Semi-enclosed** (in relation to an enclosure): indicates that a fenced enclosure is partially roofed.

**Spp:** abbreviated plural of species used in scientific names.

**Stressor:** any factor that produces stress, for example heat, cold, overcrowding, inadequate husbandry, social deprivation, pain, inability to exhibit normal behaviours, disease.

**Substrate:** the material which covers the ground or floor, for example bedding or litter placed on the flooring of a cage, box, stall or enclosure, or the soil or grass covering of an outdoor ground surface.

**Surplus list:** list of animals excess to the needs of the animal display establishment.

**Terrestrial:** a description of a species which in the wild, primarily lives and moves on the ground.

**Veterinarian:** a qualified Veterinarian registered in New South Wales who has at least 2 years experience with exotic species.

**Veterinary Care:** provision of satisfactory standards of physical and mental health to primates, prevention and treatment of diseases and injuries, and provision of advice to ensure proper health precautions are practised by animal carers.

**Zoonosis/Zoonotic Disease (Plural Zoonoses):** a disease which can affect both humans and animals and may be passed between them.

## INTRODUCTION

This policy applies specifically to the exhibition of non-human primates normally kept in animal display establishments licensed under the Exhibited Animals Protection Act. In the absence of a prescribed standard for exhibiting primates in animal display establishments the Director-General of NSW Agriculture will have regard to this policy. Additional relevant standards are to be found in the “General Standards for Exhibiting Animals in New South Wales”.

Standards for primates kept in circuses can be found in the "Standards for Exhibiting Circus Animals in NSW".

Appendices 1 to 5 give additional information to assist exhibitors.

Successful maintenance and display of primates requires special housing and knowledge. Both the physical and psychological needs of primates must be met. Enclosures should provide a complex and stimulating environment to promote normal behaviour and prevent boredom. In most primate species, social interaction is of fundamental importance to development and maintenance of normal behaviour. Therefore primate groups should comprise natural family groups or larger social groups as appropriate. These requirements are dealt with in Part 2 and by Schedules One to Three.

Animal health is covered by Part 3, whilst Part 4 covers nutrition and hygiene.

Special precautions must be taken in maintaining primates because these animals may carry serious diseases that pose a potential health hazard to personnel and the visiting public. Primates are also susceptible to a number of human diseases. The requirements for safety and security of the public, of staff and of animals are included in Part 5.

Record keeping requirements are dealt with in Part 6. Requirements for transport and handling are set out in Part 7 and Schedule Four.

Integration of primates into groups requires special care and requirements. These are set out in Part 8.

*Explanatory notes or further information which do not form part of the policy requirements are given in boxes such as these, below the relevant clause.*

**Exhibitors are encouraged to exceed the minimum requirements contained in this policy document.**

---

## **PART 1 - GENERAL**

---

- 1.1 The Registrar, Exhibited Animals Protection Act, must be provided with satisfactory evidence as to the relevant and appropriate expertise of the exhibitor and/or the exhibitor's staff before NSW Agriculture will give approval to an exhibitor to keep a species of primate not previously kept by that exhibitor.

***For information***

*People not familiar with the husbandry and management of a particular species of primate need to seek the advice of experts before seeking approval to acquire a new species.*

- 1.2 All applications for a permit to display a primate must be accompanied by an escape / recapture plan.

---

## **PART 2 - HUSBANDRY AND MANAGEMENT**

---

### **2.1**

### ***Group Caging***

- 2.1.1 Only compatible animals are to be kept together and the composition of the group must be monitored daily. Factors such as male / female ratios, dominance and social patterns in the wild must be taken into consideration when grouping animals.

***For information***

*By establishing the right grouping for a species, and allowing normal interaction between animals, boredom and other behavioural problems are alleviated. Some level of agonistic behaviour is normal, but this should not be excessive. Schedule Three lists the groups which have been held successfully in captivity. Appendix Two provides information on group sizes in the wild. The time of day that group compatibility is monitored should be varied.*

- 2.1.2 Primates must not be exhibited singly, with the exception of adult Orangutans. Primates must be held with other members of their own species in one of the types of group listed for that species in Schedule 3. In exceptional circumstances, where a particular primate is shown not to accept companionship, approval may be given by the Director-General for the housing of a single primate.
- 2.1.3 Steps must be taken to prevent abnormal behaviour patterns from developing, because once established they become more difficult to rectify. This is to be achieved by housing the animals in appropriate groups and by establishing a behavioural enrichment program.

***For information***

*Abnormal behaviour patterns include: excessive grooming; hair pulling; repetitive pacing, running, jumping or rocking; social withdrawal; and self mutilation.*

### **2.2**

### ***Construction***

- 2.2.1 Enclosures may be open, semi-enclosed or totally enclosed or consist of islands surrounded by water.
- 2.2.2 Enclosures must be well constructed and maintained in good repair. Particular attention must be given to eliminating sharp edges and broken wires.
- 2.2.3 Sufficient shelter must be provided to allow protection from wind, rain and extremes in temperature. Access to both shade and sunlight must be provided.
- 2.2.4 Primates must be exhibited in a setting which will educate the public about the primate's natural habitat and provide for its behavioural and physical well-being.
- 2.2.5 All exhibit enclosures for primates must include living or fresh vegetation.

***For information***

*For some species, this can be achieved by establishing plants in the exhibit or by using potted plants or replenishable turf which can be rotated, to represent the natural habitat and preferably be accessible to the animals. It is recognised that with some species such as macaques and baboons, provision of a naturalistic setting may be difficult to maintain. In these instances, all attempts must be made to provide access to living vegetation and to other replenishable items, such as large cut branches and areas of natural substrate for foraging.*

- 2.2.6 The majority of the enclosure must be out of visual range of any neighbouring exhibits housing potential predator species or other groups of the same primate species if the species is territorial. Where visual contact is available, and signs of distress are observed, action must be taken to alleviate this distress.

***For information***

*This does not preclude the primates from being able to see other groups or potential predators from some parts of the exhibit. Such contact may in fact stimulate normal behaviours and provide for some level of enrichment. The effects will depend on the species and individuals.*

- 2.2.7 Primate enclosures must be constructed so that the enclosed animals can rest at least 2 body lengths above the eye level of any member of the viewing public. Monkey pits are therefore not acceptable housing for any primate species.

Exception: where the viewing public is in an enclosed building and views primates through a sealed glass frame and the primates are able to rest at least at the eye level of any member of the public viewing the animals from inside that building.

***For information***

*Body lengths are defined in Schedule 1.*

- 2.2.8 Routine feeding, watering and movement of animals between enclosures must be able to be carried out by the keeper with minimal disturbance to the group.

***For information***

*Disruption can be avoided by having a routine to which the animals become familiar, by keeping time spent in the enclosure by care staff to a minimum and by using the same staff to which the animals become familiar. This is particularly important for new, nervous or breeding animals.*

**2.3**

***Space***

- 2.3.1 Sufficient space must be provided, both horizontally and vertically to enable the animals to take exercise, to protect animals from undue dominance or conflict and to provide for their social, breeding and behavioural needs. Sufficient exhibit furniture must be provided to meet the requirements set out in Schedule 3.

***For information***

*These needs will be different for arboreal, semi-arboreal and terrestrial species.*

- 2.3.2 Minimum enclosure dimensions are set out in Schedule One.

***For information***

*These requirements are based on an enclosure to hold three animals or a pair plus offspring (except for Orangutan, where requirements are for two adults, and chimpanzees and gorillas where the minimum is for five adults). Minimum sizes have been based on the animal's body size and activity patterns, but no internationally agreed formula currently exists to calculate size requirements. These figures are the best fit from information available. They may be subject to change should new information come to light. Exhibitors should refrain from basing enclosure designs solely on the minimum size however. In order to provide an appropriate environment, many factors must be provided for, space being just one of these. The size of the enclosure must be based on ability to provide all of the factors including; social grouping, climbing structures, nesting and feeding station and predicted growth of the group.*

- 2.3.3. Where more than one species is exhibited, the enclosure size must meet the cumulative space and furniture requirements for both species.

**2.4**

***Substrate***

- 2.4.1 The enclosure must be well drained.
- 2.4.2 A mixture of artificial and natural, or all natural substrate must be provided, to allow for normal behaviours, such as foraging and scent marking.
- 2.4.3 The substrate must be effectively managed to avoid disease.

***For information***

*The substrate may need regular changing so that it does not become a harbour for parasites such as fleas or intestinal worms. Exhibitors may wish to use appropriately managed deep litter as an option for avoiding disease.*

**2.5**

***Capture Facilities***

- 2.5.1 Each exhibit must allow access to an area such as a nest box, raceway or night den, suitable for the physical isolation of individuals so that animals can be restricted for close examination and veterinary treatment.

***For information***

*Regularly used races between enclosures or nest boxes provide a low stress mechanism for capture.*

**2.6**

***Requirements for Fences and other Enclosure Barriers***

- 2.6.1 Requirements for fences and other enclosure barriers are listed in Schedule Two.
- 2.6.2 Heights of moat walls and other fences are measured from an adjacent ground level to which the animal has access. In the case of wet moats the height refers to the height above the maximum water level (i.e. above the overflow outlets).

- 2.7.1 Minimum exhibit furniture required for each species or genus of primate is listed in Schedule Three. Minimum height of mandatory climbing structures is given in Schedule One. Where more than one species are kept together, the cage furniture must be the sum of that required for each species.
- 2.7.2 In general, enclosures must be furnished with horizontal, vertical and sloping pathways, shelves and perches above ground level. New enclosures must include animal access doors at a level which allows the animals to use their normal method of locomotion (i.e. above ground level for arboreal and semi-arboreal species).
- 2.7.3 Resting places and perches sufficient to accommodate all members of the group must be provided in a manner that is appropriate for the species as listed in Schedule Three.
- 2.7.4 Surfaces of resting places and perches must be roughened, or otherwise textured, so that they are not slippery when wet. Walls, floors and ceilings must be impervious and easily cleaned.
- 2.7.5 Ropes must be maintained in good condition. The ends must be sealed against fraying and be heavy enough to remain taut when the animals are actively using them.
- 2.7.6 There must be areas within the exhibit for any animal to withdraw from the group, (e.g. to hide from an aggressor) and from the public. This may be provided by visual barriers.

***For information***

*Visual barriers should have escape routes so that animals cannot be trapped by an aggressor.*

- 2.7.7 A behavioural enrichment program which stimulates all five of the animals' senses must be established to provide for the behavioural and psychological needs of the group.

***For information***

*The aim of these programs is to create novel situations. These may include such things as replenishable material, manipulative objects and activity feeds replaced as necessary, presenting foods whole rather than chopped, seasonal variations in fresh food and browse, alterations to the substrate or climbing structures, placement of a scented object, or playing recordings of vocalisations from conspecifics. Items need to be presented randomly and unpredictably for them to continue to be novel.*

*Alterations should not be so drastic however that no familiar items are left, especially those used for scent marking or other routine behaviours.*

*Activity feeds may include puzzle feeders such as artificial termite mounds, high fibrous food such as non toxic tree branches and other browse (eg willows, banana palms, Ficus spp), or small food items hidden in the substrate throughout the exhibit. Avoid Australian natives with high volatile oil content (Eucalyptus, Melaleuca and Leptospermum spp). Manipulative objects may be in the form of coconut shells or clean shredded paper.*

- 2.8.1 Light quality, duration and intensity must be either natural or mimic that of the wild (such as reversed lighting for nocturnal species).

***For information***

*Access to ample direct sunlight, or artificial light with a similar UV spectrum, is required for maintenance of normal vitamin D levels in many species.*

- 2.8.2 Lighting must be adequate for routine health and hygiene checks of animals and for cleaning of the enclosure.

**2.9**

***Temperature***

- 2.9.1 Enclosures must provide animals with access to shelter from climatic extreme.

***For information***

*Shelters should provide an air temperature between 18 and 30 degrees Celsius. Heated concrete shelving may be used in shelters to provide appropriate heating.*

**2.10**

***Permanent Indoor Housing***

- 2.10.1 Where primates are housed indoors, there shall be sufficient air changes per hour to provide ample fresh air and prevent the build up of odours and noxious gases.

***For information***

*Noxious gases may include carbon dioxide and ammonia.*

- 2.10.2 Humidity must be kept at levels appropriate to the species and so that the health of the animals is maintained.

- 2.10.3 Lighting must comply with section 2.8 above.

***For information***

*New World monkeys require supplementation with vitamin D3 if kept for more than a couple of days indoors. See 4.3*

**2.11**

***Breeding***

- 2.11.1 Due to the longevity of most primates and the difficulty in rehousing surplus animals, the eventual fate of the offspring once they have become adult must be established **before** breeding occurs.

- 2.11.2 Breeding must not occur if it can be reasonably expected that the welfare of the progeny would be adversely affected because of inbreeding, budgeting or space constraints.

- 2.11.3 NSW Agriculture may require that breeding of primates be compatible with the Australasian Species Management Programs (ASMP) of the Australasian Regional Association of Zoological Parks and Aquaria (ARAZPA).

***For information***

*The ASMP generates captive species management recommendations for ARAZPA institutional members throughout Australasia using conservation genetics principles.*

2.11.4 Breeding must maintain or increase genetic diversity of the population.

## **2.12** *Rejected Individuals and Off-exhibit Holding*

2.12.1 All attempts must be made to integrate solitary animals into a group (except where the species is naturally solitary), whether at the exhibitor's institution or another institution.

2.12.2 Animals that are constantly rejected by other members of the group must be removed. If possible they must be housed where they have visual, auditory and olfactory contact with the rest of the group. Individuals must not be housed long term in isolation from others. (See also Part 8).

### ***For information***

*Depending on the individual animal, continued contact by sight, sound or smell for a rejected animal may be stressful. Therefore rejected individuals should be under daily, long-term monitoring.*

2.12.3 Off-exhibit holding areas where animals are held for longer than six weeks, or routine management enclosures where animals would normally spend more than half of any 24 hour period, must meet the minimum space, furniture and enrichment requirements for exhibits.

### ***For information***

*Naturalism is not essential in off-exhibit holding enclosures, but is preferred because of the benefits to the animals' health and well being.*

2.12.4 Routine management enclosures must be able to be connected to the exhibit area to allow animals to be moved easily between them. The design must minimise the risk that animals can be cornered and attacked by another. Connections must allow the animals to use their normal methods of locomotion, eg. arboreal species require raised raceways.

### ***For information***

*A circular raceway system is useful to ensure that an animal cannot be cornered by other animals and attacked.*

2.12.5 Animals must be held in off-exhibit holding areas for the shortest time possible, except where the off-exhibit facilities meet the requirements for exhibits. All reasonable efforts must be made to place surplus animals at other institutions.

## **2.13** *Hand-rearing*

Hand-rearing must only be undertaken in exceptional circumstances, in consultation with animal management staff and a veterinarian with primate experience. Hand-reared primates must have visual and olfactory contact with other members of the group at the earliest opportunity and be physically re-introduced to the group as early as possible. There must be minimal human contact and use of a surrogate mother is preferred.

***For information***

*The extended developmental period of juvenile primates requires older animals to associate with juveniles so that behaviour develops normally. The juvenile animals then learn to function as part of a social group, reproduce and care for young. Artificial rearing disrupts this natural process and often results in socially maladjusted animals which may be difficult to place in a group or lack the skills for normal breeding behaviour. This can be avoided by treating the youngster as a member of its own species and not as a baby human. Behavioural enrichment should be maintained.*

---

## PART 3 - ANIMAL HEALTH

---

The 'General Standards for Exhibiting Animals in New South Wales' must be consulted regarding overall requirements for animal health (Part Three, Clauses 18-21).

### 3.1

### *General*

- 3.1.1 Basic health evaluations of the animals within a primate colony must be carried out at frequent and regular intervals, and at least quarterly, by a qualified veterinarian with primate experience or by a veterinarian in consultation with a recognised captive primate expert.
- 3.1.2 In order to observe their physical condition and behaviour, a person familiar with the animals must spend sufficient time each day observing the animals.

***For information***

*The actual amount of time will vary depending on the species, group size and activity level of the animals. If possible, observations over an extended period should be made at different times of the day, including after hours. The time should also be used to observe the use of enrichment material and to develop alternatives.*

- 3.1.3 Records must be kept of any changes observed in behaviour, feeding, urination and defecation, veterinary or other treatment, or changes in husbandry or diet. (See also section 6.0 Records).

***For information***

*Industry bodies, such as the Circus Federation of Australasia and the NSW Fauna and Marine Parks Association, have indicated that they have sample record forms available.*

- 3.1.4 Any treatment must be administered so as to create the least disturbance as is practical, and must take into account the disruption to the group and the animal's position in the dominance hierarchy as well as the stress to the individual.

### 3.2

### *Preventative Medicine*

- 3.2.1 A preventative medicine program must be established for the colony including vaccination and parasite control programs, as advised by the veterinarian.
- 3.2.2 Vaccination for tetanus must be performed on a case by case basis, as advised by the veterinarian.

***For information***

*Tetanus outbreaks have been reported overseas in Squirrel Monkeys, Rhesus Monkeys and Baboons.*

- 3.2.3 Every opportunity must be taken to take samples and carry out routine tests (such as recording body weight, taking faecal samples) when an animal is being handled for husbandry or other purposes, as recommended by a veterinarian with primate experience.

- 3.2.4 Adequate provision must be made for the isolation and treatment of sick animals including during quarantine.

***For information***

*Removal of a single individual from a group must be undertaken with care, as attempts to re-introduce the animal later may fail.*

**3.3**

***Quarantine***

- 3.3.1 Newly received primates must remain quarantined from resident primates until their health status has been established, in accordance with acceptable veterinary practice and any importation requirements. Any disease in a newly acquired primate must be successfully treated before it is placed with other residents.

***For information***

*Staff should take appropriate precautions to reduce the risk of transmission of zoonoses (see Section 5.2).*

- 3.3.2 Primates which have been acquired in compatible groups must be retained in those groups during quarantine. Introductions to a new group must be undertaken slowly and with care (see Part 8).
- 3.3.3 The quarantine area and its drainage system must be totally separate from regular holding areas. Staffing and feeding regimes must ensure that there is no contamination of the quarantine area from outside and vice versa. The physical and psychological needs of the animals whilst in quarantine must be provided for.
- 3.3.4 Newly received primates must be vaccinated in accordance with the vaccination program of the resident animals.
- 3.3.5 While primates are in quarantine, examination and, where indicated, treatment for internal and external parasites and any other tests or treatments prescribed by the veterinarian must be undertaken.

***For information***

*Handling, new environments, noise, separation from compatible group members, unfamiliar personnel and routines are all stresses, the effects of which may be cumulative. Acute or prolonged low grade distress can result in decreased resistance to diseases and parasites and/or death from shock (in the case of acute distress). See 3.1.4*

- 3.3.6 Keepers' protective outer clothing that has been heavily soiled whilst caring for primates which are in quarantine must be soaked in an appropriate disinfectant prior to being sent for washing.
- 3.3.7 A footbath containing an effective disinfectant must be used prior to entering all primate quarantine enclosures, or areas containing quarantine enclosures and its use strictly adhered to by all personnel.

**3.4**

***Cleaning***

The 'General Standards for Exhibiting Animals in New South Wales' (Part Two) must be consulted regarding overall hygiene requirements.

- 3.4.1 Hard-surfaced enclosure substrate and furniture must be washed as frequently as necessary to keep them free from contamination.
- 3.4.2 Where cleaning will disrupt scent marking behaviour in particular species, areas of the enclosure must be cleaned in rotation.
- 3.4.3 Perches, shelves and nest boxes must be cleaned frequently enough to prevent the accumulation of faecal matter and urine.
- 3.4.4 Soil or other natural substrates must be spot-cleaned daily to remove organic waste.
- 3.4.5 Feeders, watering devices, feeding equipment and other metal or plastic equipment, if disinfected after cleaning, must be rinsed thoroughly.
- 3.4.6 Animals must have access to dry areas during and after the cleaning process.

### **3.5** *Disposal of Carcasses*

---

- 3.5.1 Where a primate dies, and after the cause of death has been determined by a veterinarian, the exhibitor should offer the Australian Museum any relevant parts of the animal and the Taronga Zoo Pathology Registrar any relevant tissues or samples.

### **3.6** *Euthanasia*

---

Euthanasia must only be undertaken in accordance with NSW Agriculture policy.

***For information***

*Exhibitors should be aware of the fact that euthanasia is a highly sensitive issue, and should only be undertaken in circumstances where it is fully justifiable.*

---

## **PART 4 - NUTRITION AND HYGIENE**

---

The 'General Standards for Exhibiting Animals in New South Wales' must be consulted regarding overall requirements for nutrition and hygiene.

### **4.1**

#### ***Variety***

---

Exhibitors must provide diversity in the taste, colour, size and nutritional value of food items fed to primates. Food offered must meet the nutritional requirements of the species as determined by the natural diet in the wild. Commercial monkey diets must be supplemented with fresh items such as fruits, raw vegetables and browse on a daily basis.

### **4.2**

#### ***Quantity***

---

- 4.2.1 Food preparation and feeding of primates must be carefully planned to satisfy the nutritional requirements of all group members, including growing and lactating animals.
- 4.2.2 Primates must be fed in small portions at least twice a day, with additional activity feeds offered on a daily basis (see 4.5).

### **4.3**

#### ***Supplements***

---

- 4.3.1 Primates must be fed a nutritionally balanced diet as per Clause 4.1 above, rather than relying on artificial vitamin and mineral supplements.

#### ***For information***

*Primates may require supplementary Vitamin C and Vitamin D, in accordance with veterinary advice. Tamarins and marmosets have a very high Vitamin D3 requirement.*

### **4.4**

#### ***Presentation***

---

- 4.4.1 Food must be presented in a manner appropriate to the feeding behaviour of the species and designed to prolong feeding and foraging, whilst at the same time minimising contamination. The feeding regime must minimise the amount of uneaten food accessible to rodents overnight.

#### ***For information***

*Food should not be left out over night where rodents can gain access, due to the risks of disease, such as Encephalomyocarditis (EMC) virus (a virus which causes heart failure and is spread in the urine of feral rodents) being transmitted. To minimise contamination, over-ripe, liquid and semi-liquid foods should be offered in feeding trays or handed out individually to each primate.*

- 4.4.2 Arboreal primates must be fed at least 1.5 metres off the ground to accommodate natural behaviour and to reduce faecal contamination of the food. Exception: some activity feeds may be provided at ground level.

#### ***For information***

---

*To encourage familiarity with a catching cage, box or race, it is appropriate to entice group animals into the area by feeding.*

- 4.4.3 Food must be presented in several areas to ensure that all members of the group have sufficient access. The exception is where food is being used to entice animals into a catching cage, nest box or night area.

#### **4.5**

#### ***Activity Feeds***

---

- 4.5.1 The daily feeding regime must include feed presented in such a manner as to prolong feeding and foraging behaviour.

***For information***

*For example, food items can be scattered across substrate or included in wood chips, hay, paper, feeding puzzles or other suitable material or presented amongst the climbing structures for arboreal animals (See also 2.7.7).*

- 4.5.2 Activity feeds must not promote weight gain or dietary imbalances.

#### **4.6**

#### ***Food Preparation and Storage***

---

***For information***

*The 'General Standards for Exhibiting Animals in New South Wales' must be consulted regarding overall requirements for preparation and storage of animal food (Clauses 10, 11, 12, 13).*

#### **4.7**

#### ***Water***

---

***For information***

*The 'General Standards for Exhibiting Animals in New South Wales' must be consulted regarding overall requirements for providing water (Clauses 9, 11, 14).*

- 4.7.1 Fresh clean water must be available at all times.
- 4.7.2 Watering devices such as monkey-activated drinkers must be designed to minimise contamination of the water by primate excreta. They must be kept in good working order and checked daily.
- 4.7.3 There must be sufficient watering points within the enclosure to allow all animals to have access to water, although not necessarily at the same time.
- 4.7.4 Species that wash food items or search for food in water need appropriate water points to allow for this natural behaviour.

---

## PART 5 - SAFETY AND SECURITY

---

### 5.1

### General

**For information**

*General provisions for the security of enclosures are described in the 'General Standards for Exhibiting Animals in New South Wales' (Part Five).*

- 5.1.1 Individual species' abilities must be taken into account in the design of exhibits, to ensure adequate security for both staff and the public.

**For information**

*Primates can be extremely strong and dexterous, therefore lights and any other fittings must be recessed or inaccessible, while nuts and other fasteners should be outside the exhibit and inaccessible or welded closed.*

- 5.1.2 Enclosures (except islands) must be provided with a vestibule or other arrangement to ensure that there are always two doors between the primate enclosure and the building corridor or the outside. All doors must open in towards the enclosure.

### 5.2

### Zoonotic Diseases

- 5.2.1 The hazards posed to personnel by the range of primate zoonoses must be explained by the primate exhibitor to all personnel in contact with primates. Information on all known primate zoonoses must be available to the staff as reference material. Measures necessary to prevent disease transmission must be clearly explained.

**For information**

*These diseases include: tuberculosis, viral hepatitis and Herpes simiae virus or Herpes B virus. Animals bred in Australia are unlikely to carry these diseases but they must be anticipated in newly imported animals. Exhibitors can make information on zoonoses available on wall charts, in resource files, etc. The location of this information should be explained to staff.*

- 5.2.2 As a matter of public health all waste must be disposed of safely, for instance by incineration.
- 5.2.3 People with diseases which may be passed on to primates, must not work with primates for the duration of the infective period. Employees with mild colds or cold sores must wear face masks and avoid close contact with primates for the duration of the infective period.

**For information**

*Many viral diseases that cause mild symptoms in humans, such as measles, mumps, or chicken pox can cause more severe disease in primates. Some may even be fatal. Appropriate*

*veterinary advice should be sought wherever there is a question of possible disease transmission from humans to primates.*

- 5.2.4 As some species can inflict serious injuries, all primate handling must be done by experienced trained personnel. Animal care staff must be aware of the potential for injuries and ways to prevent them.

### **5.3**

### ***Staff Health***

- 5.3.1 It is the exhibitor's responsibility to ensure that all staff, prior to being exposed to non-human primates, have had an appropriate course of immunisation and a pre-employment medical assessment. Continued and regular testing should be undertaken.

#### ***For information***

*It is strongly recommended that all personnel in direct contact with primates have a Mantoux skin test to determine prior exposure to tuberculosis and a pre-employment chest x-ray to detect the possible presence of tuberculosis. This chest x-ray should be repeated if the person develops respiratory problems.*

- 5.3.2 Any staff member with a medical condition which reduces their resistance to infections must be restricted from working with non-human primates. This may include personnel who are pregnant, who have a condition affecting their immune system, or who are taking medication which suppresses their immune system.
- 5.3.3 Basic hygiene, such as washing hands thoroughly with disinfectant soap and water after handling animals and cleaning the exhibit, must be practised at all times and particularly where animals are in quarantine.

#### ***For information***

*Primates are a source of biohazards such as parasites and protozoal, viral and bacterial infections. These may be transmitted through faecal contamination of hands and objects, or by bites and scratches. Particular precautions should be taken when dealing with quarantine, sick or new animals.*

### **5.4**

### ***First Aid***

- 5.4.1 A complete first aid kit must be readily accessible to all staff working with primates and used when required.
- 5.4.2 There must be a written protocol for dealing with bite and scratch wounds from primates, including arrangements with the local hospital.

---

## **PART 6 - RECORDS**

---

### **6.1**

### ***Identification***

---

- 6.1.1 Each primate shall be individually and permanently identified by an appropriate method of identification (Appendix Four lists some appropriate methods).

### **6.2**

### ***Records***

---

- 6.2.1 Establishments shall keep records of all primates on an individual basis in a form which can be quickly and easily examined, analysed and compared with those kept by other establishments.
- 6.2.2 The records shall provide the following information:
- i) identification number, common name, scientific name, any personal name and any distinctive markings;
  - ii) origin (details of parents and their origin and of any previous locations);
  - iii) dates of acquisition and disposal, with details of circumstances and addresses;
  - iv) date of birth;
  - v) veterinary records, including results of physical examinations, details and dates of any treatments, results of routine health examinations;
  - vi) breeding (including mating, reproductive and behavioural cycles, parenting ability) and details of any offspring;
  - vii) date of death and cause including results of post mortem reports;
  - viii) normal diet;
  - ix) any other specific details pertaining to the individual such as changes in behaviour or diet.
- 6.2.3 Where an Australasian or international studbook exists for a primate species held by the exhibitor, records must be provided to the studbook keeper at least yearly or as required by the studbook.
- 6.2.4 Holders of surplus primates must actively seek to place their surplus animals into another institution capable of providing appropriate care and housing.

***For information***

*Surplus lists that include primates should be circulated in industry publications at least every three months.*

### **6.3**

### ***Documents***

---

- 6.3.1 All documents, records and other information pertaining to each animal including those from previous locations must be kept safely and maintained for the life of the primate plus five years.
- 6.3.2 Animals moving to new locations must be accompanied by copies of all relevant records.

---

## **PART 7 - TRANSPORT AND HANDLING**

---

Handling and transport of primates must be kept to the minimum required for health or management reasons and primates must be handled and transported safely.

***For information***

*Handling, new environments, separation from the group, noise, unfamiliar personnel and routines are all stressful, the effects of which may be cumulative and not readily apparent. Acute or chronic distress can result in death from shock (in the case of acute distress), decreased resistance to disease or parasites, abnormal behaviours or reduced levels of activity. The decision to capture and handle any primate must take into account the likely disruption to the group and the animal's position in the dominance hierarchy as well as the likely stress to the individual. The removal of any individual for more than a few days means that, when reintroduced to the group, the animal may not be able to re-establish itself or may be totally rejected.*

7.2.1 All handling must be undertaken by trained and experienced staff. All staff members, including assistants, must be made aware of the dangers posed by the particular animals with which they might come in contact.

***For information***

*Primates pose a risk to handlers because their reactions are frequently unpredictable. There are significant dangers to staff due to the strength, tenacity and aggressiveness of many species. Primates may also grab loose clothing and throw objects and have an extended reach due to long limbs. Therefore due caution must be exercised. Specific handling techniques depend on the species, size and social grouping (some alternatives are suggested in Appendix 4). The target animal should first be isolated from the rest of the group. All species of primate defend themselves by biting with their strong jaws and large teeth. In many species, particularly baboons, gibbons and langurs, adult males have large canine teeth. Primates can also inflict deep and painful scratches. Thick protective gloves are not recommended however as they hinder dexterity and create a false sense of security.*

7.2.2 As part of their daily routine primates must be accustomed to enter a night area, nest box or race where they can be safely restrained.

***For information***

*The ability of primates to learn can be utilised by training animals to accept temporary restraint in reward for food.*

7.2.3 Restraint may take the form of chemical or physical restraint or a combination of both, such as catching in a race or night box and subsequent sedation. It must be undertaken in the manner least stressful to the animal and should not result in injuries. Restraint must be under the supervision of a senior keeper with extensive primate handling experience or an experienced veterinarian.

***For information***

*Immobilisation by remote injection is the method of choice for animals heavier than 8-10 kg.*

*For animals of smaller body weight, netting prior to anaesthesia is preferred due to the risk of trauma associated with remote injection. The use of squeeze cages is not recommended. See Appendix Four for more information.*

- 7.2.4 Attempts to immobilise an animal that become drawn out must be abandoned before they cause distress to the animal or group members.
- 7.2.5 Primates which have been sedated or anaesthetised must be allowed to recover in a separate area, nest box or night cage without any risks from other animals, of falling or of other injuries.
- 7.2.6 Anaesthesia, sedation, tranquillisation and analgesia must be used to minimise pain and distress, as determined by the veterinarian.

***For information***

*Many primates species are prone to overheating during chemical immobilisation.*

**7.3**

***Transport***

Primates must be transported between establishments according to the International Air Transport Association's "Live Animal Regulations" as indicated in Schedule Four.

---

## **PART 8 - INTRODUCTIONS AND RE-INTRODUCTIONS INTO A GROUP**

---

### **8.1**

### **General**

---

- 8.1.1 Introduction or re-introduction of animals into a group must be undertaken with caution.
- 8.1.2 Introduction must occur in a stepwise manner, increasing contact from sound and smell to sight and finally to physical.

***For information***

*This process may take several months. Often the use of a different, neutral cage facilitates introductions/reintroductions. Integration may be manipulated by temporarily using neuroleptic hormonal drugs.*

- 8.1.3 A separate area must be available to allow for introductions to take place which allows for ready separation of individuals and constant monitoring.
- 8.1.4 Once given physical contact, the group must be very closely observed for 48 hours with daily monitoring for at least two months.

## REFERENCE LIST

Further information on keeping primates can be found in the following references. Animal display establishment staff with animal management and keeping responsibility should have access to up to date literature as part of their on the job training.

Anon. (1978) *Nutrient Requirements of Non-human Primates*, National Academy of Science, Washington DC

Anon. (May 1995) *Policy on the Use of Non-human Primates in Medical Research*. NH & MRC Animal Welfare Committee.

*Australasian Primatology*, Bulletin of the Australasian Primate Society. Available from Graeme Crook, PO Box 500, One Tree Hill, SA 5114.

Chan J. (ed) (1998). *Live Animals Regulations*. 25<sup>th</sup> Edition, International Air Transport Association, Montreal - Geneva.

Fowler M.(Ed) (1986) *Zoo and Wild Animal Medicine*, Second Edition. W B Sanders, Philadelphia. ISBN 0-7216-1013-7.

Griede, T. (1989) *Guidelines for adequate housing and care of non-human primates in zoos*, National Foundation for Research in Zoological Gardens, PO Box 20164, 1000 HD Amsterdam, Netherlands.

Huntress, S. (1997) "B Virus in Zoo Macaques: Current Issues" in *ARAZPA Newsletter*, Number 31, April 1997, page 12.

Jacobsen, L. And Hamel, R. (1994) *International Directory of Primatology*, Wisconsin Regional Primate Research Centre, University of Wisconsin, 1220 Capitol Court, Madison, WI, USA.

Kleiman, D.G., Allen, M.E., Thompson, K.V. and Lumpkin, I.S. (1996) *Wild Mammals In Captivity*, University of Chicago Press.

Macdonald, D. (Ed) (1984) *The Encyclopaedia of Mammals*, Volume One. George Allen & Unwin, London. ISBN 0-04-500028-X .

Napier, J.R. and P.H. (1985) *The Natural History of the Primates*, The British Museum (Natural History), London.

Nowak, R.M. and Paradiso, J.L. (1983) *Walker's Mammals of the World*, Volume II, 4th Edition, Johns Hopkins University Press, Baltimore and London.

Rowe, N. (1996) *The Pictorial Guide to the Living Primates*, Pogonias Press, New York.

Tribe, A. and Spielman, D. (1996) "Restraint and handling of captive wildlife", insert in *ANZCCART News*, Vol 9 No 1 March.

Wilson, D.E. and Reeder, D.M. (1993) *Mammal Species of the World: a Taxonomic and Geographic Reference*, 2<sup>nd</sup> Edition, Smithsonian Institution Press, Washington & London.

Information may also be sought from the Australasian Species Management Program, such as husbandry manuals for certain species. Contact The Convenor, ASMP Primate Taxon Advisory Group, c/o Melbourne Zoo, PO Box 74, Parkville, Vic 3052. Ph 03 9285 9419, fax 03 9285 9360.

## Schedule One: Minimum Enclosure Dimensions

Exhibitors are given **five years** from the date upon which the Director-General approved this policy document to phase in these enclosure dimensions. Existing exhibits that are within 10% of these dimensions will be considered to be in compliance.

Dimensions apply to the enclosure space which is actually accessible to the animals, ie, to the edge of electric fences, moats, fenced-off areas.

**The minimum enclosure dimensions are designed to provide space for up to *three* adult animals, or a pair plus dependent offspring *except for the following species:***

- a) **orangutan:** designed to provide space for up to *two* animals; and
- b) **chimpanzee and gorilla:** designed to provide space for up to *five* adults.

The minimum width and length dimensions have been calculated using each species maximum body length as the basic unit. Floor area per animal is roughly equal to  $50 \times (\text{maximum body length})^2$ . The minimum height dimensions have been calculated to allow primates to comfortably move above the reach of an adult human. (See clause 2.2.7). Maximum body lengths have been taken from Rowe, N.(1996) except for Gorilla which was provided by Dr Colin Groves, Australian National University (pers. comm.).

The species listed are those that are currently held in New South Wales. The onus is on the exhibitor wishing to introduce a new species to provide written argument for the minimum enclosure dimensions based on the formulae given in this Schedule.

**Formulae used to calculate the minimum dimensions** (values are rounded to nearest 0.5 metres - see table on next page):

For group housing of 2 or 3 animals (most species)	Length of the enclosure <sup>a</sup>	15 x maximum body length
	Width of enclosure <sup>b</sup>	10 x maximum body length
For group housing of 5 animals: ( <i>Chimpanzees and Gorillas</i> )	Length of the enclosure	25 x maximum body length
	Width of enclosure	10 x maximum body length
All roofed enclosures	Minimum height of roof and fence	2.4m + (2 x maximum body length)
All enclosures	Minimum height of climbing structures <sup>c</sup>	2.4m + (2 x maximum body length)

**For each additional animal add at least  $50 \times (\text{maximum body length})^2$  to the floor area. Minimum height of roofed enclosures is independent of the number of animals.**

<sup>a</sup>The minimum width of an enclosure is 2.5 metres even if the formulae indicate a narrower width.

<sup>b</sup>The minimum length of an enclosure is 3.0 metres even if the formulae indicate a shorter length.

<sup>c</sup> All primate enclosures must contain at least two climbing structures with a minimum of the indicated height. Where staff routinely enter enclosures containing primates those enclosures must contain sufficient climbing structures for all the enclosed primates to simultaneously climb to the minimum height indicated.

## Minimum Enclosure Dimensions

**Note:** These are basic minimum dimensions. Enclosures must be large enough that all requirements (such as cage furniture) are met.

Common name (scientific names are given in Appendix One)	Maximum body length (head to rump) (cms)	Minimum width (m)	Minimum length (m)	Minimum height (m) (of enclosure roofs/climbing structures)
Ring-tailed Lemur	43	4.5	6.5	3.5
Ruffed Lemur	50	5.0	7.5	3.5
Common Marmoset	21	2.5	3.0	3.0
Pygmy Marmoset	15	2.5	3.0	3.0
Red-handed Tamarin	28	3.0	4.0	3.0
Cotton-top Tamarin	24	2.5	4.0	3.0
Emperor Tamarin	26	2.5	4.0	3.0
Golden Lion Tamarin	34	3.5	5.0	3.0
Common Squirrel Monkey	37	3.5	5.5	3.0
Brown or Black-capped Capuchin	49	5.0	7.5	3.5
Black-handed Spider Monkey	63	6.5	9.5	3.5
Entellus Langur	78	8.0	11.5	4.0
Eastern Black and White Colobus	67	6.5	10.0	3.5
Guinea or Western Baboon	69	7.0	10.5	4.0
Chacma Baboon	82	8.0	12.5	4.0
Hamadryas Baboon	75	7.5	11.5	4.0
Mandrill	81	8.0	12.0	4.0
De Brazza's Monkey	60	6.0	9.0	3.5
Rhesus Macaque	64	6.5	9.5	3.5
Pigtail Macaque	56	5.5	8.5	3.5
Crab-eating Macaque	65	6.5	10.0	3.5
Stump-tail Macaque	65	6.5	10.0	3.5
Bonnet Macaque	59	6.0	9.0	3.5
Patas Monkey	88	9.0	13.0	4.0
Lar Gibbon	59	6.0	9.0	3.5
Mueller's Gibbon	47	4.5	7.0	3.5
Siamang	89	9.0	13.5	4.0
Chimpanzee *	96	9.5	24.0	4.5
Orangutan +	97	9.5	14.5	4.5
Lowland Gorilla*	120	12.0	30.0	5.0

\* exhibits to house these species must be built to accommodate a minimum of five animals to allow for normal social groupings.

+ may be exhibited as single male, a single female plus offspring, or as a pair (temporarily) for mating purposes. Therefore the minimum enclosure size is designed to give space for up to two adult animals.

## **Schedule Two: Minimum Barrier Requirements.**

### **Barriers**

This schedule sets requirements for enclosure barriers incorporating wet moats or wire-meshed fences and roofs. Other barriers (including non-physical) may be used if the exhibitor satisfies the Director-General that the enclosed animals will be contained.

### **Minimum height of perimeter moat wall above maximum water level**

A wet moat requires a perimeter moat wall (e.g. smooth-faced) which cannot be scaled by the primate species kept in the enclosure. The minimum height of the perimeter moat wall above the moat's maximum water level has been calculated for each species by multiplying the maximum body length by 1.3 (for species recorded by Rowe (1996) as having an intermembral index of 120 or greater), by 1.2 (for species recorded by Rowe (1996) as having an intermembral index of 90 or greater but less than 120), or by 1.1 (for species recorded by Rowe (1996) as having an intermembral index of less than 90) and rounding the result up to the next 0.05 metres. This height should be longer than a primate's arm of that species and prevent it, when in the water, from being able to reach the top of the wall to obtain purchase.

**Note:** approval to utilise a perimeter moat wall lower than the minimum height may be granted if an electric hot-wire is appropriately installed on the perimeter moat wall above the maximum water level of the moat (i.e. above overflow outlets and not able to be touched by members of the public).

### **Minimum moat width**

Many of the minimum moat widths are based on Griede's (1989) data on jump distances (where this appears to apply to horizontal jump distances). Minimum moat widths for other species have been calculated by using Griede's data on jump distances for related species or similarly-sized animals.

### **Minimum depth of water at perimeter moat wall**

The minimum depth of water at the moat's perimeter wall has been calculated for each species by multiplying the maximum body length by 2.0 (for species recorded by Rowe (1996) as having an intermembral index of less than 80), by 1.75 (for species recorded by Rowe (1996) as having an intermembral index of greater than 80 but less than 100) and by 1.5 (for species recorded by Rowe (1996) as having an intermembral index of greater or equal to 100).

Unless otherwise approved by the Director-General, the floor of the moat must slope upwards from the bottom of the perimeter moat wall at a constant angle to the edge of the land area provided for the animals so that the chance of the primates slipping into deeper water is minimised.

The moat shall incorporate an automatic filling device which ensures water levels do not fall below the minimum moat depth. Exhibit moats may be provided with a narrow submerged keeper walkway to provide access across the moat provided that it is not visible to the animals and is at least 20 cm below the water surface.

**Note:** approval to utilise a moat wall with less than the indicated minimum depth of water at the perimeter moat wall may be granted if an electric hot-wire is appropriately installed on the perimeter moat wall above the maximum water level of the moat (i.e. above overflow outlets and not able to be touched by members of the public).

### **Minimum mesh wire diameter**

A minimum wire diameter of 0.80 mm is required for primate species recorded by Rowe (1996) as having a maximum weight of 1.0 kg or less.

A minimum wire diameter of 1.25mm is required for primate species recorded by Rowe (1996) as having a maximum weight of more than 1.0 kg but less than or equal to 2.0 kg.

A minimum wire diameter of 2.5mm is required for primate species recorded by Rowe (1996) as having a maximum weight of more than 2.0kg but less than or equal to 5.0kg.

A minimum wire diameter of 3.15mm is required for primate species recorded by Rowe (1996) as having a maximum weight of more than 5.0kg but less than or equal to 15kg.

A minimum wire diameter of 4.00mm is required for primate species recorded by Rowe (1996) as having a maximum weight of more than 15.0kg but less than or equal to 30kg.

Wire mesh fences are not recommended for species recorded by Rowe (1996) as having a maximum weight of more than 30.0kg.

### **Maximum mesh dimensions**

Maximum mesh dimensions have been set to minimise the possibility of juvenile animals passing through the mesh.

A maximum mesh dimension of 10mm x 10mm is required for primate species recorded by Rowe (1996) as having a maximum body length of  $\leq 18$ cm.

A maximum mesh dimension of 10mm x 25mm is required for primate species recorded by Rowe (1996) as having a maximum body length of  $> 18$ cm and  $\leq 25$ cm.

A maximum mesh dimension of 25mm x 25mm is required for primate species recorded by Rowe (1996) as having a maximum body length of  $> 25$ cm and  $\leq 50$ cm.

A maximum mesh dimension of 50mm x 50mm is required for primate species recorded by Rowe (1996) as having a maximum body length of  $> 50$ cm and  $\leq 65$ cm.

A maximum mesh dimension of 75mm x 50mm is required for primate species recorded by Rowe (1996) as having a maximum body length of  $> 65$ cm.

*See the table on the following page for species-specific minimum barrier requirements*

<b>Common name (scientific names are given in Appendix One)</b>	<b>Intermembral Index</b>	<b>Minimum height of perimeter moat wall above maximum water level (m)</b>	<b>Minimum depth of water at perimeter moat wall (m)</b>	<b>Minimum moat width (m)</b>	<b>Minimum mesh wire diameter (mm)</b>	<b>Maximum mesh dimensions (mm)</b>
Ring-tailed Lemur	70	0.50	0.90	3.0	2.50	25 x 25
Ruffed Lemur	72	0.55	1.00	3.0	2.50	25 x 25
Common Marmoset	75	0.25	0.45	2.0	0.80	12 x 12
Pygmy marmoset	83	0.20	0.30	2.0	0.80	12 x 12
Red-handed Tamarin	74	0.30	0.60	2.0	0.80	25 x 25
Cotton-top Tamarin	74	0.30	0.50	2.0	0.80	12 x 12
Emperor Tamarin	75	0.30	0.55	2.0	0.80	25 x 25
Golden Lion Tamarin	87	0.40	0.60	2.0	0.80	25 x 25
Common Squirrel Monkey	79	0.40	0.75	2.5	1.25	25 x 25
Brown or Black-capped Capuchin	82	0.55	0.85	3.0	2.50	25 x 25
Black-handed Spider Monkey	105	0.75	0.95	3.5	3.15	50 x 50
Entellus Langur	83	0.85	1.40	5.0	4.00	75 x 50
Eastern Black and White Colobus	79	0.75	1.35	5.0	3.15	75 x 50
Guinea or Western Baboon	(94)	0.85	1.20	3.5	4.00	75 x 50
Chacma Baboon	94	1.00	1.45	3.5	4.00	75 x 50
Hamadryas Baboon	94	0.90	1.35	3.5	4.00	75 x 50
Mandrill	96	1.00	1.45	3.5	4.00	75 x 50
De Brazza's Monkey	82	0.75	1.05	3.5	3.15	50 x 50
Rhesus Macaque	93	0.80	1.15	3.5	3.15	50 x 50
Pigtail Macaque	92	0.70	1.00	3.5	3.15	50 x 50
Crab-eating Macaque	93	0.80	1.15	3.5	3.15	50 x 50
Stump-tail Macaque	98	0.80	1.15	3.5	3.15	50 x 50
Bonnet Macaque	(93)	0.70	1.05	3.5	3.15	50 x 50
Patas Monkey	92	1.05	1.55	3.5	3.15	75 x 50
Lar Gibbon	130	0.80	0.90	5.0	3.15	50 x 50
Mueller's Gibbon	129	0.65	0.70	5.0	3.15	25 x 25
Siamang	147	1.15	1.35	5.0	3.15	75 x 50

Chimpanzee	106	1.15	1.45	3.5	*	*
Orangutan	139	1.30	1.45	3.5	*	*
Gorilla	116	1.45	1.80	3.5	*	*

\* mesh is not recommended for use in these species

## Schedule Three: Groups and Minimum Exhibit Furniture

The following table contains the requirements for groups in captivity and exhibit furniture as per clauses 2.1.2 and 2.3.1.

These are **in addition to those requirements stipulated under Sections 2.2, 2.3, 2.4, 2.5, 2.7 and 4.4.**

Basic biology and further information is contained in Appendices Two and Three

### Key to Table

#### Group Types

1. adult female group with or without offspring, or adult male group.
2. females with their offspring plus one adult male.
3. one pair plus offspring, (males must be removed once they reach maturity if necessary to avoid aggression).
4. juvenile group.
5. group comprised of adult males and females and their offspring - males should be able to remove themselves out of sight of each other.

#### Minimum Exhibit Furniture

6. sitting or sleeping perches at least 2.0 metres above ground and of sufficient number to allow each adult animal to be by itself but also to allow for more than one animal to sit for mutual grooming etc.
7. sitting or sleeping perches at least 1.0 metre above ground and of sufficient number to allow each adult animal to be by itself but also to allow for more than one animal to sit for mutual grooming etc.
8. elevated nest box large enough for the whole family with an entrance wide enough for an adult carrying young.

9. at least 4 horizontal pathways in upper half of the exhibit of a mixture of flexible and rigid materials and of a diameter appropriate to the size of the species.
10. at least 4 horizontal pathways of rigid or semi-rigid materials.
11. at least 4 vertical pathways in upper half of exhibit, of a mixture of flexible and rigid materials such as ropes, bamboo or tree limbs.
12. one elevated feeding platform for each adult in the group.
13. access to water for swimming.
14. areas for sitting at or near ground level for the animals to sun themselves.

Common Name (Scientific name see Appendix One)	Arboreal or Terrestrial	Group Types					Minimum Exhibit Furniture									
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	
Ring tailed Lemur	semi-arboreal	✓	✓					✓			✓				✓	
Ruffed Lemur	arboreal	✓		✓				✓	✓	✓		✓	✓			
Marmosets and Tamarins	arboreal	✓		✓	✓		✓		✓	✓		✓	✓			
Capuchins	arboreal	✓				✓	✓			✓		✓	✓	✓		
Squirrel monkeys	arboreal but may descend to ground to forage	✓				✓	✓			✓		✓	✓			
Spider monkeys	arboreal	✓				✓	✓			✓		✓	✓			
Entellus langur	semi-arboreal	✓				✓		✓		✓					✓	
Colobus monkeys	arboreal	✓	✓			✓	✓			✓					✓	
Baboons	terrestrial	✓				✓		✓			✓				✓	
Mandrill	semi-arboreal	✓				✓		✓			✓				✓	
De Brazza's monkey	semi-arboreal	✓				✓	✓			✓					✓	
Macaques	semi-arboreal, <i>M.</i> <i>arctoides</i> more terrestrial	✓				✓	✓			✓				✓ (a)	✓	
Patas monkey	terrestrial	✓	✓				✓				✓				✓	
Gibbons/Siamang	highly arboreal			✓			✓			✓		✓	✓			
Common chimpanzee	terrestrial, also arboreal	✓				✓ (b)	✓ (c)				✓				✓	
Orangutan	arboreal	(d)			✓		✓ (c)			✓		✓	✓			
Gorilla	terrestrial, do climb	✓	✓				✓ (c)				✓				✓	

(a) *M. fascicularis* only

(b) Related females should be kept together

(c) Require nesting material daily

(d) To be kept as single adults, as a single adult female with offspring, or temporarily as a pair during mating.

## **Schedule Four: Transport**

*These requirements have been extracted from the 25<sup>th</sup> edition of the IATA Live Animals Regulations and is reproduced with the permission of the International Air Transport Association. Any reference in this Schedule to a chapter or an exemption is a reference to a chapter or an exemption in the 25th edition of the IATA Live Animals Regulations.*

### **GENERAL CONTAINER REQUIREMENTS FOR MONKEYS AND NON-HUMAN PRIMATES (CR 31-34)**

#### **Design and Construction**

Primates must be carried in closed containers. The containers must be well constructed. Dimensions, where stated, are length, width and height.

The container must be well constructed and be able to withstand other freight damaging it or causing the structure to buckle or bend. It must be rigid enough to prevent the animal escaping through gaps at the seams or joints. Certain species require re-enforced containers due to size and weight.

It must be constructed of non-toxic materials. Chemically impregnated wood may be poisonous which must not be used.

The container must be suitable to keep the animal inside at all times and protect the animal from unauthorised access. The door must be constructed so that accidental opening cannot occur, either from the inside or the outside.

The container must not cause the animal to damage itself. All inside edges must be smooth or rounded. There must be no sharp projections, such as nails, upon which the animal can injure itself. Joints of a wooden container must be made so that they cannot be damaged by the animal gnawing or clawing the container from the inside.

The container must be clean and leak-proof. If the container is to be reused, it must be cleaned thoroughly and then either disinfected or sterilised prior to reuse. Absorbent bedding must be provided by the shipper that is suitable for the species. Straw is unacceptable as many countries prohibit its importation.

It must be easy for staff to handle and provide the handlers protection from being clawed or bitten by the animal. Spacer devices must be incorporated into the design as they will provide handles for moving the container as well as preventing the ventilation openings becoming blocked by other freight. Handles may be attached in addition to the spacer bars.

If forklift spacers are required they must be at least 5 cm (2 in) thick. Allowance for the extra height must be made when calculating the dimensions of the container.

Suitably modified plastic pet containers are suitable for use in the shipment of some smaller species, such as Lemur and Bush Baby, when shipped individually or as small numbers of compatible animals. The container must be finger proof and have a secure fastening in accordance with the general species requirements. The container must be correctly labelled according to IATA standards. If the container has wheels, they must be removed or rendered inoperable.

### **Dimensions and Stocking Density**

Dimensions of containers shown in these Regulations are illustrative and therefore must be related to the actual size of the animal for which the container is constructed. It must allow the animal to stand, turn and lie down in a natural manner.

### **Ventilation**

The container must be adequately ventilated on at least three sides, with the majority of the ventilation being provided on the upper part of the container. The ventilation openings must be small enough so that any part of the animal cannot protrude from the container and they must be covered with a light material such as muslin.

### **Feeding and Watering**

Food and water containers must be provided, either fixed inside the container or attached to it with a means of access provided, in case of undue delays during the journey. These containers must have rounded edges and be made of nontoxic material suitable for the species. Shipper's instructions for feeding and watering must be given in writing at the time of acceptance.

Feeding and watering instructions must be affixed to the container and a copy accompany the documents. Any feed or water given must be recorded on the container instructions with the date and time of supply.

Food must be provided by the shipper but it must be checked that it does not contravene any regulations of the country(-ies) of transit or importation. In the case of sealed containers, feeding is not possible and the shipper must be aware of this fact.

### **Labelling and Marking**

The container must be correctly labelled. Labels must not block ventilation holes, especially on small containers. Any labelling, especially on small containers must not occlude ventilation openings.

### **Specific Pathogen Free (SPF)**

When animals are carried in SPF conditions, the shipper must at least comply in all respects with the specific container requirement in this section. Special measures must be taken to ensure that ventilation rates are maintained within the container.

### **Special Care**

For monkeys which are obviously disturbed by the shipment, reducing the light within the container and the noise level within its vicinity will usually be sufficient to quieten the animal. They must preferably be held in a darkened area with as little noise as possible nearby.

### **Important Notes**

Because all primates are CITES listed species, it is imperative that all the appropriate CITES documentation be completed before acceptance of the shipment and such documents must accompany the shipment as well as the usual shippers and health certification.

It is a CITES prerequisite that all CITES listed species are packed and shipped in accordance with the IATA Live Animals Regulations. See Chapter 11 for CITES requirements. It is also a legal requirement by many governments which have incorporated these Regulations into their national legislation in regards to the shipment of live animals by air. Therefore care must be taken that compliance is evident at the time of live animal shipment acceptance.

It must be noted that the IATA Live Animals Regulations container requirements stipulate the minimum requirements for air shipment. The construction principle of containers described within these Regulations are not intended to conform any air worthiness requirements. Structural aircraft containers must comply with the specifications published in the IATA ULD Technical Manual.

The size of the aircraft compartment door and the area of the aircraft hold must be considered when determining the size of the container to be used.

**In addition to the above General Requirements, the Specific Requirements that are relevant to the individual species must be consulted and adhered to.**

**The illustrations shown in the following specific container requirements are examples only. Packages that conform to the principle of the written guidelines for the species but look slightly different will still meet the IATA standards.**

**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.**

**Money 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.**

## 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*

Capuchin monkey  
Guenon  
Howler monkey  
Langur  
Leaf monkey  
Lemur species (large)  
Macaque  
Marmoset species  
Patas monkey  
Rhesus monkey  
Spider monkey species  
Squirrel monkey  
Swamp monkey  
Tamarin species  
Tarsier  
Titi monkey  
Vervet/African green monkey  
Woolly monkey

### *Single Container Species*

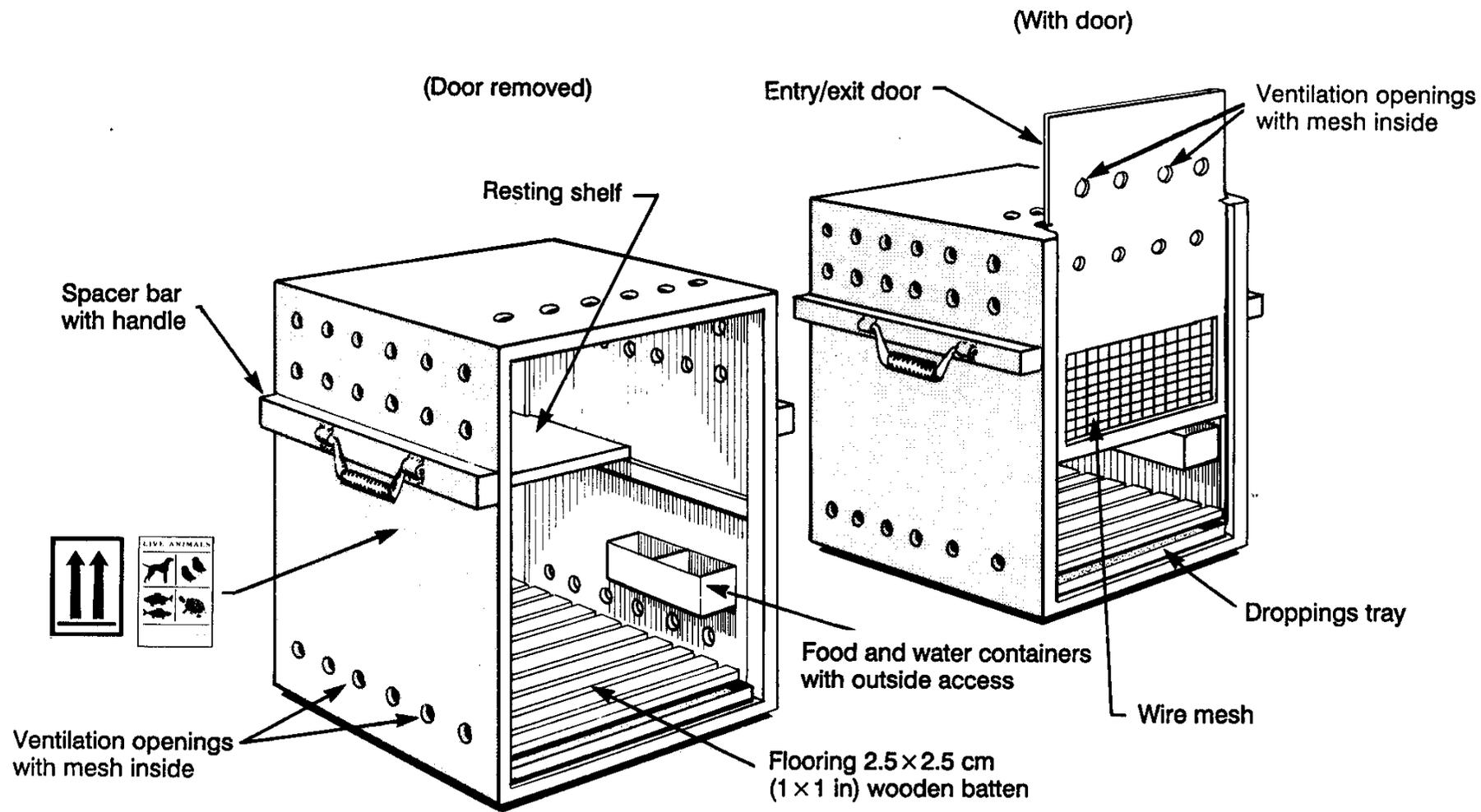
Aye-Aye  
Colobus monkey  
Drill  
Indri  
Mandrill  
Mangabey  
Proboscis monkey  
Saki  
Sifaka  
Uakari species  
Wanderoo

### *Multiple/Single Container Species (Nocturnal species)*

Bush-baby  
Douroucouli  
Galago  
Lemur (small)  
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.



## Container Requirement 31 (continued)

### 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.

#### **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 (1/5 - 2/5 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 excrete escaping.

#### **Roof**

Solid but with meshed ventilation openings optional.

## Container Requirement 31 (continued)

### 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 femur 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 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;

### Container Requirement 31 (continued)

- 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.

### **Container Requirement 31 (continued)**

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 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 overfeed. After offering water, the water container must be removed.

### **4. GENERAL CARE AND LOADING**

*(see Chapters 5 and 10)*

**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.**



## CONTAINER REQUIREMENT 33

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:

Baboon (young/sub-adult)  
Chimpanzee (young/sub-adult)  
Gibbon, including Siamang (young/sub-adult)  
Gorilla (young/sub-adult)  
Orang-Utan (young/sub-adult)

See *USG Exceptions in Chapter 2 and Exceptions CX-02 and GF-01 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 or metal, bolted or screwed.

#### Sides

Wood or metal. The front must consist of 2.5 cm (1 in) weld mesh or chain link which must be attached to the frame with a steel strip (staples must not be used). Behind the mesh 2 cm (4/5 in) bore steel tubes must be sunk into the top and bottom of the frame to a depth of approximately 2.5 cm (1 in) at a distance of 7.5 cm (3 in) apart, center to center. The

distance between the bars and the mesh must be such that the animal cannot poke its fingers outside the container. A 2/3 solid panel with 1/3 wire mesh at

### **Container Requirement 33 (continued)**

its lower portion and two 10 cm (4 in) observation openings in the upper part must be placed in front of the weld mesh/chain link. The other three sides must be solid with ventilation openings.

#### **Handling Spacer Bars/Handles**

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

#### **Floor**

The base of the container must be solid and leak-proof and covered with an absorbent material, such as wood shavings, to a depth of at least 10-15 cm (4-6 in).

#### **Roof**

Solid but with meshed ventilation openings.

#### **Door**

Access into the container must be by a vertical sliding door at the back which extends the whole height of the container. It must be fastened with tamper proof fastenings or screwed shut after loading. A centre batten must be provided across the whole width of the container, including the door, which is put in position after the door is closed.

#### **Interior**

A resting shelf of 1/3 the length of the container must be provided at the rear if required by the species being transported.

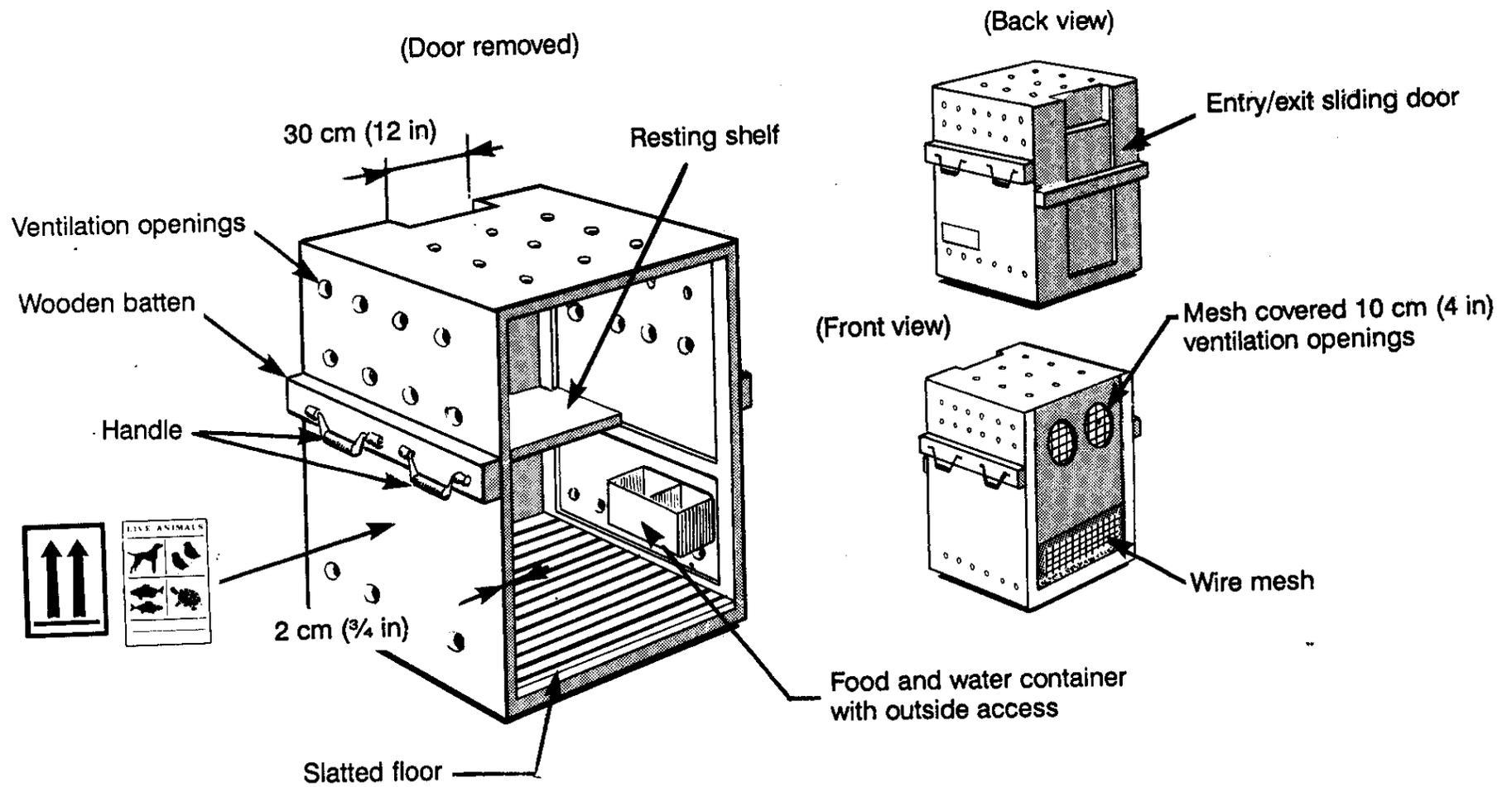
#### **Ventilation**

Meshed ventilation openings, approximately 2.5 cm (1 in) in diameter must be provided along the base, in the upper 1/3 of the sides and rear and on the top 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



## Container Requirement 33 (continued)

be filled to demand and must be emptied after use as monkeys will splash themselves and become wet and chilled.

### Stocking Density

Normally one animal per container, unless the animals are used to cohabiting. The recommended space per animal must not be less than 0.5 m<sup>3</sup> (17.63 ft<sup>3</sup>) in multiple containers.

### Forklift Spacers

Forklift spacers must be provided when the combined weight of the container and content exceeds 60 kg (132 lb).

## 2. PREPARATIONS BEFORE DISPATCH

*(see Chapter 5)*

Primates instinctively fear the strange environment encountered during transportation. Therefore, in transporting live primates, 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.

Young primates 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.

Primates 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 primates to investigate their surroundings and try to escape. With very few exceptions, primates do not willingly accept confinement. They become frustrated and will often make determined efforts to escape.

Primates 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 hand, primates must not be exposed to direct

heat, such as placing them in sunlight or against hot radiators. Primates unavoidably subjected to extreme heat must be cooled so as to

### **Container Requirement 33 (continued)**

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 live primates.

### **3. FEEDING AND WATERING GUIDE**

*(for emergency use only)*

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

If feeding is required due to an unforeseen delay, bread with butter, jam or honey must be provided for anthropoid apes (gorilla, chimpanzee, orang-utan, etc.). Lump sugar, cake and biscuits may be fed. Soft fruit and vegetables must be fed sparingly since, if taken in excess, can cause the animal discomfort. After offering water, the water container must be removed.

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

**There are a number of contagious diseases carried by primates 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.**

## CONTAINER REQUIREMENT 34

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:

Baboon (adult)

Chimpanzee (adult)

Gorilla (adult)

Orang-Utan (adult)

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

Hardwood, metal, weld 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.

The dimensions will vary with the species but they must either allow the animal to turn around completely and easily or not to be able to turn at all. The height of the container must allow the animal to stand fully upright with its head extended and the length of the container must allow it to lie down in the fully prone position.

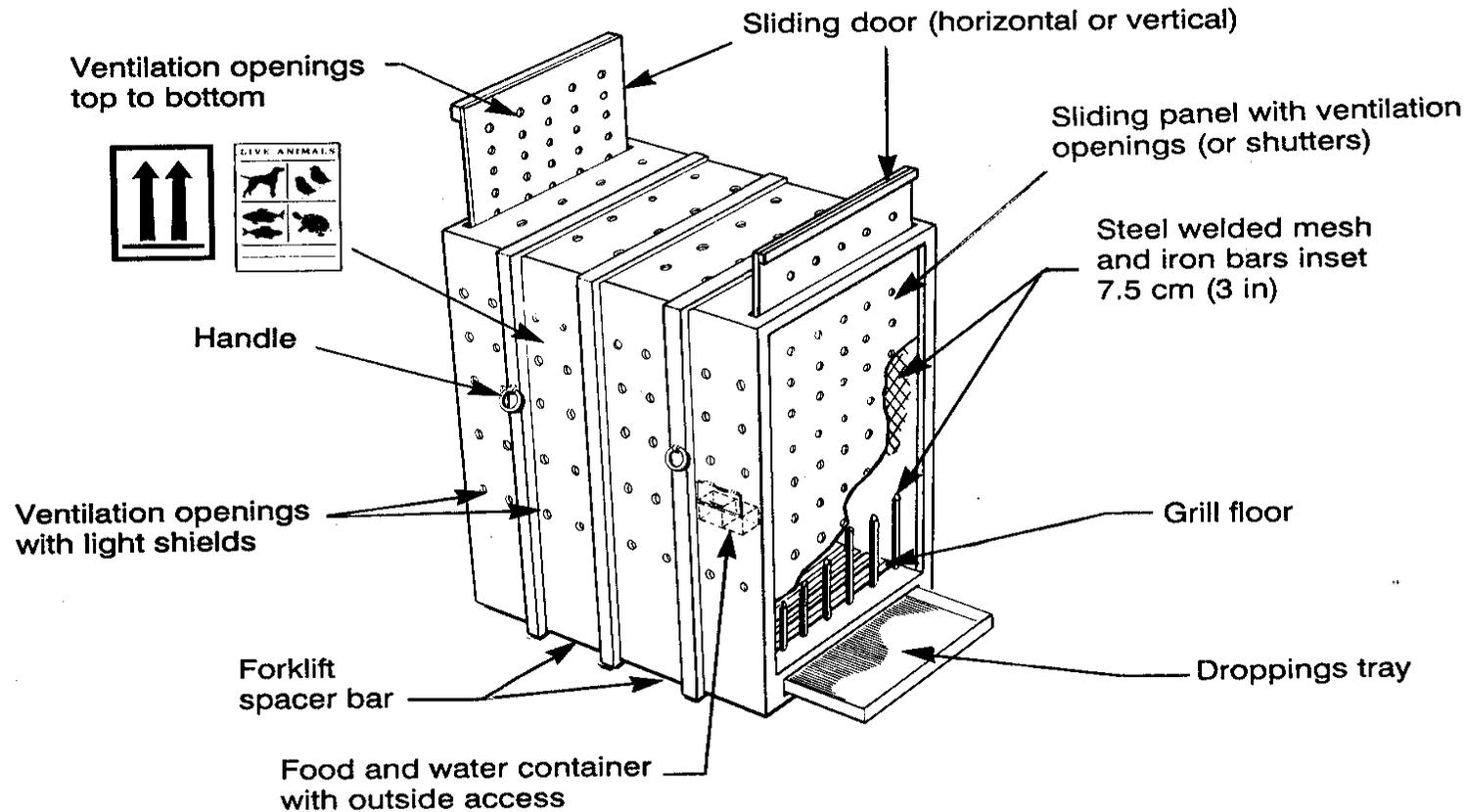
#### Frame

Welded metal lined with smooth wood or other similar material of a minimum thickness of 1.2 cm (1/2 in). Additional strengthening braces must be present on the sides of the container when the total weight is more than 60 kg (132 lb).



**Note 1** Normally one animal per container, unless the animals are used to cohabiting.

**Note 2** The general provisions of this Container Requirement apply to adult apes, however, construction of the container is based on the principles of design as detailed in Container Requirement 72 for other large wild animals, except that the water trough must be at a higher level



## **Container Requirement 34 (continued)**

### **Sides**

Solid wood or lined metal. The front must consist of strong iron bars, spaced in such a manner that the animal cannot push its arms through the bars. The bars must have a sheet of welded mesh fixed at a distance of 7.5 cm (3 in) in front of them. A wooden shutter with slots or holes for ventilation must cover the whole front in order to reduce the amount of light inside the container as well as to reduce the disturbance to the animal and to protect the handling personnel. The other three sides, one of which is the door, must be solid with ventilation openings.

### **Handling Spacer Bar/Handles**

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

### **Floor**

The base of the container must be solid and leak-proof. A grill flooring must be securely fixed and placed over a leak-proof droppings tray in order that the excreta falls onto it. If a grill or slatted floor is not suitable there must be sufficient absorbent bedding material on the floor to absorb all the excreta, sills must then be used at the front and rear of the container.

### **Roof**

Solid with meshed ventilation openings.

### **Door**

A sliding door, the same height and made of the same material as the container, must be placed in the rear of the container. It must have strong and secure means of fastening that cannot be opened accidentally.

### **Ventilation**

Meshed ventilation openings, approximately 2.5 cm (1 in) in diameter must be provided at heights that will give good ventilation at all levels but particularly when the animal is in a prone position. Openings must cover the sides, rear door and top as well as the sliding shutter as shown in the illustration. All the openings can have exterior mesh screening.

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

## **Container Requirement 34 (continued)**

## **Feed and Water Containers**

Separate food and water containers, either revolving or fixed, must be provided. If fixed they must be placed above the floor at a suitable height and must have outside access for filling and emptying. The water container must be emptied after use as monkeys will splash themselves and become wet and chilled.

## **Stocking Density**

One animal per container or compartment of a container. The partitions can take the form of metal grills, each compartment must provide all the above requirements. Compatible animals can be shipped together without a divider when it is unlikely that they will hurt each other during the transport.

## **Forklift Spacers**

Must be provided when the total weight of the container plus animal weighs more than 60 kg (132 lb).

## **2. PREPARATIONS BEFORE DISPATCH**

*(see Chapter 5)*

Primates instinctively fear the strange environment encountered during transportation. Therefore, in transporting live primates, 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.

Males will become upset by the presence of females in heat. Therefore, accepting female primates in heat for shipment must be avoided whenever possible. If it is necessary to accept male and female primates, it is preferable that the animals in the same container must be of the same sex.

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

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

Primates 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

## Container Requirement 34 (continued)

temperature changes but also to the chill factors involved. On the other hand, primates must not be exposed to direct heat, such as placing them in sunlight or against hot radiators. Primates 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 live primates.

### **3. FEEDING AND WATERING GUIDE**

*(for emergency use only)*

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

If feeding is required due to an unforeseen delay, bread with butter, jam or honey must be provided. Lump sugar, cake and biscuits may be fed. Soft fruit and vegetables must be fed sparingly since, if taken to excess, can cause the animal discomfort. After offering water, the water container must be removed.

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

There are a number of contagious diseases carried by primates 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.

## Appendix One: Taxonomy of Primates held in New South Wales

Family or Sub family	Latin Name	Common Name
Lemuridae (Lemurs)	<i>Lemur catta</i> <i>Varecia variegata</i>	Ring-tailed Lemur Ruffed Lemur
Callitrichidae (Marmosets and Tamarins)	<i>Callithrix jacchus</i> <i>Cebuella pygmaea</i> <i>Saguinus midas</i> <i>Saguinus oedipus</i> <i>Saguinus imperator</i> <i>Leontopithecus rosalia</i>	Common Marmoset Pygmy Marmoset Red-handed Tamarin Cotton-top Tamarin Emperor Tamarin Golden Lion Tamarin
Cebidae (Capuchin-type monkeys and Spider monkeys)	<i>Saimiri boliviensis</i> <i>Cebus apella</i> <i>Ateles geoffroyi</i>	Common Squirrel Monkey Brown or Black-capped Capuchin Black-handed Spider Monkey
Cercopithecidae (Langurs, Colobus monkeys, Mandrill, Baboons and allies)	<i>Semnopithecus entellus</i> <i>Colobus guereza</i> <i>Papio hamadryas papio</i> <i>Papio hamadryas ursinus</i> <i>Papio hamadryas hamadryas</i> <i>Mandrillus sphinx</i> <i>Cercopithecus neglectus</i> <i>Macaca mulatta</i> <i>Macaca nemestrina</i> <i>Macaca fascicularis</i> <i>Macaca arctoides</i> <i>Macaca radiata</i> <i>Erythrocebus patas</i>	Entellus Langur Eastern Black and White Colobus Guinea or Western Baboon Chacma Baboon Hamadryas Baboon Mandrill De Brazza's Monkey Rhesus Macaque Pigtail Macaque Crab-eating Macaque Stump-tail Macaque Bonnet Macaque Patas Monkey
Hylobatidae (Gibbons)	<i>Hylobates lar</i> <i>Hylobates muelleri</i> <i>Hylobates syndactylus</i>	Lar Gibbon Mueller's Gibbon Siamang
Hominidae (Great apes)	<i>Pan troglodytes</i> <i>Pongo pygmaeus</i> <i>Gorilla gorilla gorilla</i>	Chimpanzee Orangutan Lowland Gorilla

## Appendix Two: Basic biology of Primates

Species/ genus (common name)	natural habitat	head body length (mm)	tail length (mm)	weight of adult (kg)	oestrous cycle (days)	gestation (days)	number of off-spring	age sex. Maturity females (mths)	age sex. Maturity males (years)	lifespan captivity yrs (in wild)	groups in the wild
<i>Lemur catta</i> (Ring-tailed Lemur)	rainforest and woodland	425	600	up to 2.7	40	136	single, some- times twins	19	2	18	5 - 30 (av 15) males move between groups, females dominant
<i>Varecia variagata</i> (Ruffed Lemur)	rainforest	500	600	up to 3.5	30	90 - 102	50% twins, also singles, triplets	20	?	20	pair bonded family units
<i>Callithrix jacchus</i> (Common Marmoset)	sclerophyll forest	158 - 207	243 - 312	0.23 - 0.26	16	138 - 148	twins	20 - 24	9 - 13 mths	up to 16 (10)	dominant monogamous pair +offspring, up to 15 members including adults who remain to help rear siblings
<i>Cebuella pygmaea</i> (Pygmy Marmoset)	tropical rainforest	117-152	172 - 229	0.11 - 0.16	?	136 - 142	twins?	6	6 mths	?	dominant monogamous pair +offspring, up to 15 members including adults who remain to help rear siblings
<i>Saguinus spp.</i> (Tamarins)	tropical rainforest and woodland regrowth	200 - 336	315 - 440	up to 0.79	15	140 - 150	twins	18	2	up to 23	dominant monogamous pair +offspring, up to 15 members including adults who remain to help rear siblings
<i>Saimiri boliviensis</i> (Common Squirrel Monkey)	forest and cultivated areas	265 - 370	360 - 452	0.55 - 1.25	16 - 20	168 - 180	single	3 yr	5	15 - 20	multi-male, multi-female groups of 30-40 animals or more
<i>Cebus apella</i> (Brown Capuchin)	humid forest	350 - 488	375 - 488	1.3-4.8	16 -20	180	single	4 yr	8	44 +	harem groups with 1-3 females or larger groups with up to 20
<i>Ateles geoffroyi</i> (Spider Monkey)	rainforest	305 - 630	635 - 840	6.0-9.0	24 - 27	226 - 232	single	4 yr	5	33	polygamous groups, 5-30 animals with variable subgroups

Species/ genus (common name)	natural habitat	head body length (mm)	tail length (mm)	weight of adult (kg)	oestrous cycle (days)	gestation (days)	number of off-spring	age sex. maturity females (mths)	age sex. maturity males (years)	lifespan captivity yrs (in wild)	groups in the wild
<i>Semnopithecus entellus</i> (Entellus Langur) note different sub species vary greatly in size	deserts to forests	406 - 780	693 - 1016	females 6.7 -15.6 males 10.6-19.8	21 - 26	168 - 172	single, rarely twins	3 - 3.5 yr	4.5	25	stable social groups, 10-30 animals variable number of males depending on environment, all male groups
<i>Colobus guereza</i> (Eastern Black and White Colobus)	forests	521 - 673	521- 826	females 7.9 - 9.2 males - 13.5	?	154 - 178	single	55 - 58	6	30	small, cohesive social groups 3-15 animals, usually one adult male
<i>Papio</i> spp. (Baboons)	deserts	550 - 840	380 - 840	females 12. 9-16.8 males 20.4 -28.3	30	170 - 173	single	5 yr	7	30 +	complex social groups, larger groups - up to 700 may split into smaller groups and forage in single male, multi-female groups
<i>Mandrillus sphinx</i> (Mandrill)	deserts to savanna	560 - 810	70	females 11. 5 males 26.9	33	152 - 176	single	3 - 5 yr	5 but full weight at 8	20	form complex and stable social groups, multi- male multi-female polygamous groups, males with changing dominance hierarchies, excess males solitary
<i>Cercopithecus neglectus</i> (De Brazza's Monkey)	forests	394 - 595	470 - 784	females 4.1- 4.8 males 7.0 - 8.0	177 - 187		single				family groups

Species/ genus (common name)	natural habitat	head body length (mm)	tail length (mm)	weight of adult (kg)	oestrous cycle (days)	gestation (days)	number of off-spring	age sex. maturity females (mths)	age sex. maturity males (years)	lifespan captivity yrs (in wild)	groups in the wild
<i>Macaca</i> spp. (Macaques)	very wide range habitats, urban areas										
<i>M. mulatta</i> (Rhesus Macaque)		470 - 635	189 - 305	4.4-10.9	29	155 - 180	single	24 - 35		25 - 39 mths	<i>M. mulatta</i> - 8 to 180 animals of mixed sexes with 2-4 times more adult females than males, also single males or small groups. <i>M. nemestrina</i> - 3-15 animals, 30-45. <i>M. fascicularis</i> - 6 to 100 animals, 2 and a half times more females than males, central group with male leader, females, young, peripheral group of young males. <i>M. arctoides</i> - 20 to 100 animals, usually led by an adult male. <i>M. radiata</i> - 7 to 80 animals with more adult males than females
<i>M. radiata</i> (Bonnet Macaque)	very wide range habitats, urban areas	375 - 590	330 - 693	3.9-8.8		162					
<i>M. nemestrina</i> (Pigtail Macaque)	primary & secondary forests	467 - 564	130 -253	4.7-14.5	30-35			30 - 46			
<i>M. fascicularis</i> (Crab-eating Macaque)		385 - 648	400 - 655	2.5-8.3	28	171					
<i>M. arctoides</i> (Stump-tail Macaque)	dense forests, urban areas	485-650	3 - 69	7.5-10.2	29	160-170					
						166-185					
<i>Erythrocebus patas</i> (Patas Monkey)	open grass and woodland savanna	490 - 875	490 - 875	female 4 - 7 male 7 - 13	30	160	single	30	1-2	21	moderate sized groups with a single male, up to 30 animals, average 15, male groups
<i>Hylobates lar</i> (Lar gibbon)	thick rainforest	420 - 585	absent	4.4 - 7.6	30	210 - 225	single	8 - 9 yr	8-9	38+ (25)	monogamous pairs and offspring, single animals
<i>Hylobates muelleri</i> (Mueller's gibbon)	thick rainforest	420-470	absent	5 - 6.4							

Species/ genus (common name)	natural habitat	head body length (mm)	tail length (mm)	weight of adult (kg)	oestrous cycle (days)	gestation (days)	number of off-spring	age sex. Maturity females (mths)	age sex. Maturity males (years)	lifespan captive yrs (in wild)	groups in the wild
<i>H. syndactylus</i> (Siamang)	thick rainforest	737 - 889	absent	10-14.7	?	230 - 235	single	?	?	19	monogamous pairs and offspring, single animals
<i>Pan troglodytes</i> (Chimpanzee) weight refers to <i>P.t. troglodytes</i>	woodland and woodland savanna	737 - 959	absent	females 32 - 47 males 40 - 60	34 - 35	202- 261	single	puberty 7 reproduc-tive 13	puberty 7 reproduc-tive 15	53+ (60)	complex social groups 30-80 animals, with male and female dominance hierarchies, dominant male leaders, males leave group
<i>Pongo pygmaeus</i> (Orangutan)	tropical rainforest	780-970	absent	female 33 -45 male 70-90	30	233 - 267	single rarely twins	7 yr	8	59	solitary, female plus immature offspring, female home ranges overlapping, males antagonistic to each other, small loose groups
<i>Gorilla gorilla</i> (Gorilla)	tropical rainforests, mountain forests	up to 1200	absent	male 135 - 220 female 60 - 80	31	251 - 295	single rarely twins	8 yr	11	47+ (up to 50)	adult mature male plus subdominant males, females and immature offspring, 5-28 individuals, females leave natal groups at maturity

Sources Rowe (1996), Nowak and Paradiso (1983), Chan (1998), Griede (1989), Groves, C. (pers. comm.).

### Appendix Three: Breeding and behaviour in relation to exhibit design (for basic breeding biology see Appendix Two)

Species/ genus	breeding	behaviour in relation to exhibit design
<i>Lemur catta</i> (Ring-tailed Lemur)	nesting boxes needed, one per adult, 0.5 m cubed and heated in cold weather, seasonal breeders once per year, twins usual, mother carries young in her mouth initially	feeds arboreally, habitually travels on the ground, in trees prefers broad horizontal limbs, territorial, 6-8 ha home range in denser forest, 20 ha in more open habitat diurnal - may be active at night, territorial aggression amongst the group, scent marking
<i>Varecia variagata</i> (Ruffed Lemur)	require natural sunlight or artificially replicated UV light for breeding cycles, seasonal, nesting boxes needed, females leave young in the nest at first	use scent marking from ano-genital and wrist glands, walks or runs along larger branches, jumps between trees, crepuscular, territorial
<i>Callithrix and Cebuella</i> spp. (Marmosets), <i>Saguinus</i> and <i>Leontopithecus</i> spp. (Tamarins)	males assist in the birth and carry offspring, feed from mother every 1-2 hours, males and females provide parental care, require experience in rearing offspring and should remain with the group once they become adult until at least two further litters are raised, and can remain permanently unless there are problems with aggression, twins usual, born twice a year	diurnal and territorial, use scent marking from throat glands, members of the group help carry and find food for the young, active climbers and feeders, require complex environments, natural substrates, fresh vegetation and foliage in order to exhibit their natural foraging behaviours, 10-40 ha home ranges, Tamarin family groups should be visually isolated from each other if constantly showing threat displays and aggression
<i>Saimiri boliviensis</i> (Squirrel Monkey)	breeding season of 2-4 months, polygamous, form dominance hierarchy in breeding season, other females may help raise the young but males do not	powerful leapers, diurnal, are more active and have larger home ranges than <i>Cebus. spp</i> (4 square kilometres compared to 1-2 square kilometres), not territorial
<i>Cebus</i> spp. (Capuchins)	polygamous, multi male/female groups.	diurnal, like to bathe in hot weather, prehensile tail

Species/ genus	breeding	behaviour in relation to exhibit design
<i>Ateles</i> spp. (Spider Monkeys)	dominant female may attack and kill unrelated females, clitoris of female elongated, often mistaken for penis of male	diurnal, move by brachiation and prehensile tail, rarely descend to ground
<i>Semnopithecus entellus</i> (Entellus Langur)	if a new male achieves dominance or is introduced, he may kill the infants which brings females into oestrous, breed throughout the year with peaks, infants often handled by other females in the group	will forage on the ground, capable of long leaps (3-5 metres), diurnal - constantly active throughout the day, adapts well to a terrestrial environment, home ranges 0.05 - 13 sq km, up to 22 sq km for all male groups
<i>Colobus</i> spp. (Colobus)	infants often handled by other females in the group	capable of long leaps, diurnal, small home ranges in wild eg 15 ha, territorial, maybe active at any time of the day but spends long periods inactive
<i>Papio</i> spp. (Baboons)	polygamous, male dominance hierarchy, female hierarchy less obvious, slow to mature, long lived (30 + years), 6 months gestation, non seasonal, females mature 4-8 years	constantly active throughout the day, very strong and dexterous, hunt and forage collectively, well developed learning behaviour in relation to feeding, male/s establish changing dominance hierarchies, possess cheek pouches, may sleep on ledges in cliff faces, large males may sleep on the ground
<i>Mandrillus sphinx</i> (Mandrill)	polygamous, but probably only one permanent male per group, male and female dominance hierarchies, slow to mature females mature 4-8 years, long lived (up to 20 years), 6 months gestation, non seasonal	constantly active throughout the day, very strong and dexterous, hunt and forage collectively, well developed learning behaviour in relation to feeding, male/s establish changing dominance hierarchies, possess cheek pouches, may sleep in trees, large males may sleep on the ground, feed mainly on ground, definite home ranges, 2 up to 40 sq km
<i>Cercopithecus neglectus</i> (De Brazza's Monkey)	one male, multi female groups	diurnal to crepuscular, social, highly active, strong and dexterous. Possess cheek pouches, <b>good swimmers</b> , territorial but avoid conflict

Species/ genus	breeding	behaviour in relation to exhibit design
<i>Macaca</i> spp. (Macaques)	non-seasonal, single young, rarely twins. <i>M. mulatta</i> - mating tends to be between high ranking animals, females reach menopause at around 25 years. <i>M. fascicularis</i> - spring births	sleep above ground (in trees), <b>good swimmers</b> particularly <i>M. fascicularis</i> . Diurnal, highly active, dexterous and strong, store food in cheek pouches. Not territorial, groups may overlap, home ranges in wild - <i>M. mulatta</i> up to 16 sq km in forests, 0.05 sq km in urban areas, <i>M. fascicularis</i> - 0.8 sq km, <i>M. radiata</i> 0.4 - 5.2 sq km. Dominance hierarchies usually in both sexes, male <i>M. mulatta</i> lead and defend group, may be aggressive/ agonistic. <i>M. radiata</i> males more tolerant. Dominance hierarchies based on age, kinship, coalitions, offspring may inherit mother's status
<i>Erythrocebus patas</i> (Patas Monkey)	one male per group, seasonal breeders, mature at 3 years, gestation 5½ months	highly active, strong and dexterous, diurnal, <b>able to swim</b> , will climb to avoid danger but not high, very fast runner (55 km per hr), able to cover large distances, have large home ranges in wild (eg 51 sq km for a group of 30)
<i>Hylobates</i> spp. (Gibbons & Siamang)	males may be kept with females during breeding, weaning at 20 months, male <i>H. syndactylus</i> may carry young after first year	travel by brachiation, feed off the ground, <b>unable to swim so care should be taken with moats</b> . Diurnal, pairs are territorial, recordings of territorial calls played back will increase activity for extended periods. Activity feeds should be placed high up in several places. Small home ranges - <i>H. syndactylus</i> 23 ha, <i>H. lar</i> 40 ha.
<i>Pan troglodytes</i> (Common Chimpanzee)	male may be kept with females and new born offspring, females may mate with several males, females receptive for about 6 days when maximal genital swelling, birth weight 1.9 kg, carried for several years weaning 3½-4½ years, young dependent on mother and travel together up to 10 years	highly intelligent, rapid learners, diurnal, possess great strength and dexterity, bolts and fasteners should be exterior to exhibit, lights flush or recessed, need activity items and manipulable objects. Highly social, if isolated, single animals should have visual, auditory and if possible, tactile contact with others. Require nest sites raised above ground level. <b>Do not swim</b>

Species/ genus	breeding	behaviour in relation to exhibit design
<i>Pongo pygmaeus</i> (Orangutan)	birth weight 1.5 kg	highly intelligent, rapid learners, diurnal, possess great strength and dexterity, bolts and fasteners should be exterior to exhibit, lights flush or recessed, need activity items and manipulable objects, highly social, if isolated, single animals should have visual, auditory and if possible, tactile contact with others. Require rest sites raised above ground level. <b>Do not swim</b>
<i>Gorilla</i> spp. (Gorillas)	need to learn maternal behaviour, 2 kg birth weight	highly intelligent, rapid learners, diurnal, possess great strength and dexterity, bolts and fasteners should be exterior to exhibit, lights flush or recessed, need activity items and manipulable objects, highly social, if isolated, single animals should have visual, auditory and if possible, tactile contact with others. Require rest sites raised above ground level. <b>Do not swim</b>

## Appendix Four: Methods of identification and handling.

In general, heavy gloves should be avoided as they give a false sense of security and hinder dexterity. Surgical gloves may be worn for hygiene purposes.

Species/ genus	methods of identification#	methods of handling	relevant behavioural characteristics
<i>Lemur catta</i> (Ring-tailed Lemur) <i>Varecia variagata</i> (Ruffed Lemur)	microchips, ear tags, tattoos, Ruffed Lemur: photos of body markings	trap in nest box or net then anaesthesia for any procedures other than very minor. Hold by grasping behind the head and above the tail	can inflict serious bite wounds, Ruffed Lemurs possess sharp claws
<i>Callithrix and Cebuella</i> spp. (Marmosets) <i>Saguinus and Leontopithecus</i> <i>spp</i> (Tamarins)	microchips, ear tags, tattoos,	trap in nest box or net then anaesthesia for any procedures other than very minor. Hold by grasping behind the head and above the tail	docile and not aggressive to known handlers, will bite when alarmed
<i>Saimiri boliviensis</i> (Squirrel Monkey) <i>Cebus</i> spp. (Capuchins) <i>Ateles</i> spp. (Spider Monkeys)	microchips, ear tags, tattoos, tail tip print	trap in nest box or net then anaesthesia for any procedures other than very minor. Can be held by pinning the arms behind the body and holding above the tail but preferable to hold in a sack and administer gas anaesthetic	difficult to restrain due to dexterity, length of limbs and prehensile tail
<i>Semnopithecus</i> <i>entellus</i> (Entellus Langur) <i>Colobus</i> spp.	microchips, ear tags, tattoos	immobilisation by remote injection for animals larger than 8-10 kg*	<i>cercopithecids</i> with full cheek pouches should be handled carefully and pouches emptied if anaesthetised to prevent food being inhaled

(Colobus)			
-----------	--	--	--

<b>Species/ genus</b>	<b>methods of identification</b>	<b>methods of handling</b>	<b>relevant behavioural characteristics</b>
<i>Papio</i> spp.(Baboons) <i>Mandrillus sphinx</i> (Mandrill) <i>Cercopithecus</i> spp.(De Brazza's Monkey)	microchips, tattoos,	isolation of target animal, darting of males, capture by netting carried out by appropriately trained and skilled personnel, may be followed by hand injection through the net	very strong and aggressive, males have large canine teeth can inflict severe wounds
<i>Macaca</i> spp. (Macaques) <i>Erythrocebus patas</i> (Patas Monkey)	microchips, tattoos	isolation of target animal, darting of males, capture by netting carried out by appropriately trained and skilled personnel, may be followed by hand injection through the net	very strong and potentially very aggressive, males have large canine teeth, can inflict severe bite and scratch wounds
<i>Hylobates</i> spp. (Gibbons & Siamang)	microchips	isolation of target animal, darting of males, capture by netting carried out by appropriately trained and skilled personnel, may be followed by hand injection through the net	highly agile and possess sharp canine, may bite or scratch, capable of learning to grab a blow pipe or other remote injection device
<i>Pan troglodytes</i> (Common Chimpanzee) <i>Pongo pygmaeus</i> (Orangutan) <i>Gorilla</i> spp. (Gorillas)	microchips, photos, finger prints, nose prints (Gorillas)	immobilisation by remote injection using tiletamine/zolazepam or medetomidine/ketamine combination, isolate target animal first, drawn out attempts to immobilise should be avoided/abandoned	apes quickly learn to recognise situations and people involved in catching and take evasive action including throwing objects, hiding or covering exposed body parts

# small coloured metal ear tags placed at different sites on the ear have been used as an alternative to larger numbered tags

\* remote injection is not recommended for animals less than 8 - 10 kg due to the risk of injury and difficulty in hitting the target animal.

## Appendix Five: Diet

species/ genus	diet in wild	diet in captivity	supplements <sup>1</sup>	presentation
<i>Lemur catta</i> (Ring-tailed Lemur)	fruit, leaves and flowers, other plant parts	monkey chow, fresh fruit & vegetables, leaves, hard boiled eggs, seeds, nuts, browse, bread, boiled chicken		twice daily
<i>Varecia variagata</i> (Ruffed Lemur)	fruit	fruit, vegetables, leafy vegetables, monkey cubes, hard boiled eggs, cheese browse	females tend to go off their feed following the birth of young, provide extra fruit and juices	twice daily off the ground
<i>Callithrix and Cebuella</i> spp. (Marmosets)	gum, latex and sap from trees, fruit, flowers, nectar, invertebrates and small vertebrates (have specialised short lower canine teeth for sap eating behaviour)	# commercial monkey diet specifically for South American species,* fresh fruits and vegetables, protein such as mealworms, crickets, milk, cheese, meat, grain substitute	500 IU per animal per day of Vitamin D3	off ground (at least twice a day)
<i>Saguinus and Leontopithecus</i> spp. (Tamarins)	insects, fruit, invertebrates and small vertebrates, flowers and plant exudates (nectar and gum)	# commercial monkey diet specifically for South American species,* fresh fruits and vegetables, protein such as mealworms, crickets, fly pupae, meat (occasionally), canned dog food cooked noodles	500 IU per animal per day of Vitamin D3	off ground (at least twice a day)

<b>species/ genus</b>	<b>diet in wild</b>	<b>diet in captivity</b>	<b>supplements<sup>1</sup></b>	<b>presentation</b>
<i>Saimiri boliviensis</i> (Squirrel Monkey)	insects, fruits such as figs, berries, nuts, flowers, buds, seeds, leaves, gums, insects, spiders, small vertebrates	fruit and vegetables, bread , mealworms, flies, crickets, browse and flowers such as Callistemon, primate cake*	Vitamin D3 Vitamin B12	off the ground twice a day
<i>Cebus</i> spp. (Capuchins)	ripe fruits, berries insects, also unripe fruit, vegetation, seeds, roots, other invertebrates, small vertebrates, cultivated crops	commercial primate diet, fresh fruits and vegetables, insects - mealworms, crickets, meat, chicks, eggs, nuts, seeds, browse	Vitamin D3	feed off ground in several places twice a day
<i>Ateles</i> spp. (Spider Monkeys)	insects, small fruit, new leaves, bamboo, nuts, seeds, buds, flowers, leaves, eggs	fresh fruit and leafy green vegetables, browse, bamboo, shoots, bean sprouts/shoots, nuts	Vitamin D3	off ground in several places
<i>Semnopithecus entellus</i> (Entellus Langur)	young leaves, fruit, flowers, fungi, buds, seeds, shoots, galls, insects, soil and clay also eaten, cultivated crops	fresh browse, non toxic deciduous trees, variety of green leafy vegetables, commercial leafeater pellets, fruits, seeds, nuts	Vitamin B12	may be fed at ground level, twice a day

<b>Species/ genus</b>	<b>diet in wild</b>	<b>diet in captivity</b>	<b>supplements<sup>1</sup></b>	<b>presentation</b>
<i>Colobus</i> spp. (Colobus Monkeys)	leaves, fruit, buds, shoots, flowers, occasionally insects	fresh browse, non toxic deciduous trees, variety of green leafy vegetables, commercial leafeater pellets, occasional hard fruits, seeds, nuts, primate cake*	Vitamin B12	at least twice a day plus activity feeds, off the ground
<i>Papio</i> spp. (Baboons)	grass seeds, roots, bulbs, insects and larvae, small mammals	vegetables, nuts & seeds, commercial monkey chow, bean shoots, fresh hay, fruits, browse, primate cake*	Vitamin B12	provide food twice a day plus activity feeds
<i>Mandrillus sphinx</i> (Mandrill)	fruit, seeds, roots, invertebrates and small vertebrates, fungi	commercial monkey cubes fruits and vegetables, nuts, seeds, insects, browse	Vitamin B12	may be fed at ground level twice a day plus activity feeds
<i>Cercopithecus neglectus</i> (De Brazza's Monkey)	fruit, leaves, insects, grain, roots, small vertebrates, eggs	commercial monkey cubes, fruits and vegetables, nuts, seeds, browse, hard boiled eggs, boiled chicken, primate cake*	Vitamin B12	twice a day plus activity feeds

<b>Species/ genus</b>	<b>diet in wild</b>	<b>diet in captivity</b>	<b>supplements<sup>1</sup></b>	<b>presentation</b>
<i>Macaca</i> spp. (Macaques)	fruit, insects, leaves, small vertebrates, other in vertebrates, eggs, <i>M. mulatta</i> - wild and cultivated fruits, berries, grains, buds, seeds, flowers, bark, as well as above. <i>M. fascicularis</i> -in addition, crabs, crustaceans shell fish, other beach/shore live animals	fruits, vegetables, commercial monkey cubes, nuts, seeds, hard boiled eggs, cheese, browse, insects including mealworms, <i>M. silenus</i> predominantly fruit and browse	Vitamin B12	twice a day in several places in the exhibit, plus activity feeds
<i>Erythrocebus patas</i> (Patas Monkey)	acacia fruit, galls and leaves, other fruit, insects, crops, grasses, beans, seeds, invertebrates and small vertebrates occasionally	fruit and vegetables, hard boiled eggs, dog kibble, fly pupae, nuts, browse		twice a day in several places in the exhibit, plus activity feeds
<i>Hylobates</i> spp. (Gibbons and Siamang)	primarily fruit, especially figs, also leaves (especially Siamangs), flowers, bark, occasionally meat	fruit and vegetables with browse, boiled chicken, primate cake*		fruit and vegetables - chopped into medium sized pieces, once a day plus browse
<i>Pan troglodytes</i> (Common Chimpanzee)	fruit, leaves, blossoms, seeds, stems, bark, resin, honey, insects, eggs, meat	commercial monkey cubes, green vegetables, fruits, eggs, nuts, browse		3-4 times a day, in multiple places throughout exhibit

<b>Species/ genus</b>	<b>diet in wild</b>	<b>diet in captivity</b>	<b>supplements<sup>1</sup></b>	<b>presentation</b>
<i>Pongo pygmaeus</i> (Orangutan)	fruit - figs, other vegetation, soil, insects, small vertebrates, eggs	commercial diets, fruits, vegetables, occasional eggs, live insects, meat, browse		3-4 times a day, provide in multiple places throughout exhibit
<i>Gorilla</i> spp. (Gorillas)	browse-leaves, stems, wood, roots, fruit, flowers, grubs	leafy green vegetables, monkey cubes, fruits, browse, primate cake*, occasional insects		3-4 times a day, in multiple places throughout exhibit

<sup>1</sup> daily vitamin/mineral mix should be fed to **all species** on a daily basis as advised by a veterinarian

# baby mice should not be fed to marmosets and tamarins as they may be a source of Callithricid hepatitis

\* recipe for Tamarin and Marmoset cake and primate cake available from the Royal Melbourne Zoological Gardens, Taronga and Western Plains Zoological Gardens