AAP Minimum Husbandry Guidelines

Barbary macaque, *Macaca sylvanus*

Foraging & Feeding	
Theoretical conclusion	→ Biological need to vary in food items. → Ethological need to express natural foraging behaviour.
Foraging opportunity	- Food is offered dispersed, ensuring that all animals in the group can eat. - Meals are presented in various ways (e.g. hidden, in food puzzles). - Fresh browse is fed multiple times a week if available.
Frequency	Feeding at least twice a day.
Other remarks	Food and water must be offered at multiple locations to ensure low-ranking individuals have adequate access to water/food sources.
Social interaction	
Theoretical conclusion	→ Ethological need for social contact with conspecifics. → Managerial need for gradual introductions of unfamiliar conspecifics.
Group structure (sexe, age)	Social housing with conspecifics: at least 2, but preferably ≥4 individuals per group. Possible social structures: 1. multi-male/multi-female, with ♂♂ = ♀♀ or ♂♂ < ♀♀. 2. one male/multi-female. 3. single sex group.
Group management	- The enclosure must have at least 2 compartments to shift or separate animals. - Number of hatches between enclosures depend on group size: 1-4 animals: 1 hatch ≥5 animals: 2 hatches
Social introductions (hatches, acquaintance)	- There must be a possibility to have visual & protected contact (animals). - There must be a possibility to interfere during the physical phase (caretakers). - There must be escape routes available, i.e. animals should always be able to get away in a safe manner.
Other remarks	All-male groups should preferably not have visual contact with females. In the wild males aged 3-8 yrs change groups when forced out by adults.

	Regular observations of social groups is advised to find out whether (individuals in) the group is(/are) functioning well. Social introductions must be carefully considered, according to appropriate techniques.
Environment	
Theoretical conclusion	→ Biological need to perform natural locomotion behaviour (e.g. climbing). → Biological need for shelter from sun/rain/wind. → Ethological need for hiding/retreat (from conspecifics, humans, loud noises, etc).
Accessible space (indoor m^2, outdoor m^2, height)	A space as large as possible to maintain natural locomotion and foraging, **at least**: <u>Total required space</u> 35 m^2 per 1-2 animals, 3 m high + 12 m^2 per extra individual. Divided over outside and possible inside enclosures. At least half of the space must always be accessible. The total amount of space should be accessible at least 6 hours per day. <u>Indoor</u> optional, if applicable: 15 m^2 per 1-2 animals, 3 m high + 6 m^2 per extra individual. Maximum of 10 animals.*
Environmental parameters	- Above 30°C cooling (e.g. fan/air conditioning, shallow pool, mist, sprinklers) is provided. - Optimal indoor humidity 40%-70%. - Preferably natural lighting indoors.
Structural elements (does furnishing meet behavioural needs such as locomotion pattern)	- Climbing structures with horizontal perching areas, varying in size and height, that allow for resting, eating, and social behaviour (providing space for several animals at a time). - Materials to play or swing must be available. - Optimal use of enclosure height must be ensured.
Visual barriers	Multiple out of sight areas so the animals can retreat from each other, neighbouring animals and/or humans.
Resting areas	- The number of resting areas depends on group size: 1-3 animals: 1 per animal >3 animals: #animals / 2 (round up) - At least one resting area must be large enough for the entire group.
Shelters	- In the outdoor enclosure(s) shelters must provide shade and protection against rain/wind. - At least one shelter should be large enough for the entire group. - The number of shelters depends on group size: 1-3 animals: 1 per animal

	4-6 animals: 3 shelters >6 animals: #animals / 2 (round up)
Substrate	Floor with natural substrate like grass or soil, or bedding material, like bark mulch, wood chips, leaf litter, wood wool, straw, hay, shredded paper or wood shavings.
Escape routes	- With a group of ≥5 animals at least 2 hatches between enclosures must be available. - Escape routes must be available, i.e. animals should always be able to get away in a safe manner.
Other remarks	The environment must be safe for all individuals living in it; e.g. no sharp edges which can cause wounds, spaces need to be small (or large enough) so body parts cannot get stuck, structures need to be solid/connected securely so nothing will disintegrate.
Behaviour management	
Theoretical conclusion	→ Ethological need to perform play behaviour in young/subadult individuals. → Ethological need to perform exploratory behaviour. → Managerial need for approaching/handling/shifting/separating animals.
Enrichment frequency	- Offer enrichment; frequency depending on enclosure type and group size. - Offer elements to stimulate play behaviour.
Animal training	Preferably animals are trained using positive reinforcement to reduce stress for transportation or medical treatments.
Catch & restraint	Advisable to have a possibility to connect a transport box or tunnel to the enclosure in order to be able to train and catch animals.
Other remarks	Enrichment should be alternated and temporarily removed in order to stay interesting to the animals.
Safety	
Theoretical conclusion	→ Managerial need for safety procedures (protection of animals and people).
Preventing escape	- Enclosures surrounded by a fence/wall/moat. - Open top enclosures with a fence with an insurmountable upper side plus electric wiring. - Fencing securely anchored. - A dry moat with a height or depth of at least 3,5 m in combination with an insurmountable barrier. - A water moat with a width of ≥4,5 m and depth of ≥1 m in combination with an insurmountable outer barrier. - An emergency power system must be in place when using electric fencing. - Doors/hatches must be visible from the location of operation.
Safety measures (public)	Stand-off barrier to avoid contact with the actual enclosure (unless closed wall).
Safety measures (caretakers)	- Enclosures are designed for proper and safe cleaning. - At places where keepers operate hatches/doors, a barrier is used to prevent the risk of primates grabbing staff.
Veterinary issues	Macaques may be carrier of zoonotic pathogens dangerous to humans.

Other remarks	Highly tensile electric fencing can be used as supporting barrier, but cannot be used as primary barrier. When an artificial rock wall is used as a barrier, ensure that the surface does not provide escape routes. When having a dry moat a means is provided to escape back to the enclosure when animals fall into the moat. At the same time prevent animals to approach the outer edge (e.g. fence, wall, hedges). Water moats must have a shallow bank zone on the side of the enclosure, so animals will be able to climb back in the enclosure when ended up in the water.

* in case of more than the stated number of animals consultation with the specialists team is necessary