

Recommendations for species-appropriate animal husbandry of Old World Camels in Europe

Combination of herds

Camels are social animals, keeping camelids solitarily is not species-appropriate.

For the formation of a camel group, gender, age and constitution (body weight) of the animals is important. In the wild camels live in same sex herd structures, preferably with individuals of similar age. In Europe camel herds often consist of just 2 or 3 members which reflects only a limited species-appropriate herd structure.

Usually castrated males and females can be kept together without any problems. If there is a great difference in age and constitution of the animals, some points need to be considered: young camels are highly active, they need other young camels for playing, running and interacting. Older camels however often like their tranquillity and prefer to have a moment's rest from the young ones.

Adult males need special attention. Out of season, generally in summer, they are usually quiet and can be kept together with other members of the herd. However, with the beginning of the rut, about November, they start to become moody and often even aggressive. Their „full combat alert“ often increases with age and is basically threatening male conspecifics but sometimes even humans. During this period of time it is recommended to separate the rutting male or to keep him together with those females which are about to be inseminated. Often the rutting male behaves aggressive towards young calves or subadult males, which complicates a joint keeping. Additionally aspects of job safety should be considered. During the rut several adult males can only be kept together when females are absent, both by vision and by smell. The rut is not necessarily linked to the winter. Caused by year-round good food supply prolonged rutting periods increasingly appear.

If the size of the herd allows it, it is essential to establish a mother-calf group and keep it until the calves are weaned. After weaning the young camels should be kept together in an infant group. Here they can play and run and grapple together without disturbing the adults.

Age of weaning: Free ranging camels under natural conditions are usually weaned at about 15 months of age. With domestic camels of course, the nursing period can be shortened due to optimum nutrition, although this seems to be unfavourable for the social development of the calf. To make things worse, in Europe just weaned calves are often sold and transported to other areas to be integrated in a strange herd. Such calves should be weaned as late as possible. If in contrast the calves are kept in an infant group in the vicinity of the adults, weaning can take place earlier. Under good future husbandry conditions calves can be weaned at about 1 year of age. Otherwise the calf should stay as long as possible with it's mother in the maternal group. To avoid too early weaning at least camels younger than 15 month of age should never be bought of a professional dealer but directly at the authorized raiser. A buyer who has no optimal husbandry conditions for just weaned calves should keep his calf temporarily at the keeper of it's mother.

At the age of 2 to 3 years camels can be integrated into adult groups without any problem. From the age of 4 to 5 years a camel is kept according to it's gender respectively it's use (i.e. stallion, mount, brood mare). Only at the age of 7 years a camel ist fully adult.

Important: Each camel is individual, it behaves according to it's nature and on the base of it's experience. Camels have a high degree of social adaptability, this is why it's behaviour under kept

conditions can be quite various. For example: not every adult male turns to be aggressive during rut, castrated males can show features of rutting behaviour, individual camels can be permanently aggressive or some adult females cannot tolerate other calves. Consequently at each group composition the individual characters need to be considered and individuals should be integrated into suitable groups.

Stable, Enclosure and Fences

A stable or shelter is absolutely essential.

It's function is to protect the animals from humidity, from intensive sun, from insects, to protect dromedaries from cold in winter and to protect young or sick animals from cold.

The stable always has to be unheated. Dromedaries too, don't need a heated stable, as they are confronted with temperatures well below zero in the countries, they come from. It should be breezily, very bright and dry. It can be open to one, two or even three sides, thus being a broad shelter. Usually camels tolerate wind, but draft – as a punctiform air-flow at single parts of the body - must be avoided.

According to herd structure and the ensuing group dynamics the following aspects need to be considered:

Two exits respectively entrances have to be available and blind spots need to be prevented when males and females and/or subadults run together, and/or when newborns are within a mixed group. The stable should be a free stall barn, that means freely traversable for the animals and without single compartments. An additional single compartment is sensible for the temporary keeping of mothers with newborns, for the preliminary separation of rutting adult males and for cases of disease.

The floor of the stall should be firm, skidproof and easy to clean, from its shaping it should potentially have a drainage for urine. Stone- or concrete floors are more practical and hygienic than wooden floors, gravel soil or natural soil. Only in exceptional cases camels need a soft and/or warming litter. In case litter is used it should be considered that due to the humidity and warmth the pollution with microbes increases and the matting needs to be exchanged regularly. Additionally the feet and all the calluses touching the ground while the animals are resting are extremely sensitive towards ammonia and wetness. With firm floors a thin layer of urine absorbent litter which is exchanged daily, has proved to be practical. Caution needs to be taken when using chipped wood: camels eat wood and consequently chipped wood too. Therefore the chipped wood needs to be clean and free of such as oil or paint.

The recommended minimum size of the stable averages for example in Germany at 4 sqm per animal, but at least at 12 sqm as from the first animal. These measurements are only sufficient for herds which have enough exercise outside of the stable. Especially with small herds and a partly closed stable a minimum size of 10 sqm per animal should be pursued.

The recommended minimum size of the enclosure in Germany is 300 sqm for a group of three camels, for each further camel an additional size of 50 sqm is required. Again, these measurements are only sufficient when the animals have enough exercise. An enclosure for a group of 3 camels should otherwise have at least 500 sqm in size, with another 150 sqm for each additional camel.

An exercise area, respectively enclosure is supplementary to the stable absolutely necessary. Its main function is to ensure enough direct solar radiation and sufficient exercise for the animals. Food and water should rather be served in the enclosure than in the stable. Sunny or shady places should be available as well as sandy places and areas with hard ground for the scoring of the soles. Grassed areas are worthwhile, sites for rubbing are necessary. Due to a smart spacial arrangement

of food, water, salt, resting area, nibbling area, grassed area and stable the camels can be motivated to have a maximum of exercise.

In general applies: the less the camel is kept active by its holder, the larger and more diversified its enclosure should be.

Feeding grounds: Depending on herd structure and the resulting group dynamics more than one feeding ground may become necessary. Ingesting sand with the food has to be absolutely avoided. Therefore hay, grass, branches and minerals have to be fed out of troughs, hayracks or from a clean hard ground and never from sandy grounds. Having an appliance to tie the animal within the stall or enclosure is helpful, just as a device to close off individual camels for treatment with medicine or minerals. Trees growing within the enclosure should be protected from browsing.

There are various options for the boundary of the enclosure. In contrast to frequently published suggestions, ditches or moats are not necessarily recommended. There were several cases of death due to downer syndrome and drowning. Furthermore some camels are well able to successfully get over these obstacles. Electric fences are useful in summer, due to the short fur the camels learn about electric shocks. In winter however their fur is too thick and they only respect the electric fence when they have learned about it in summer. In general electric fences should be constructed to break in a case of emergency to avoid severe snags.

The following applies to all solid fences made from wood, metal or plastic. They have to reach completely up to the ground. Otherwise there is the danger of camels getting caught with their legs or even humps. Advisable is an additional electric lead with spacers close to the ground. Fences must not have any holes which allow for camel legs to get jammed. Trellis-work fences for example in this regard bear a high risk of accident. Usually camels can be kept behind firm fences which are relatively low. To be on the safe side a height of 1,40 m is recommended.

As in the stable there should also be a device to separate individuals in the enclosure, for example for adult males. Repeatedly it happened that adult males during rut reached for newborns, competitors or even humans over or through the fence, thereby causing severe injuries. The barrier for the adult male in rut therefore needs to be higher and more solid. Furthermore when building a fence you should keep in mind to prevent visitors from feeding any camel, touching them or visiting them. Therefore it is recommended to construct about 2 m from the actual enclosure fence an additional visitor's fence.

Feeding

In the wild camels feed on dry grass and thorny shrubs. Their digestion is consequently adapted to this type of food, which has to be considered for their food supply. Their daily basic diet consists of rough food, water and salt and as dietary supplement as needed selenium and vitamin E. With these supplements both an undersupply as well as an oversupply needs to be prevented. The main food is rich in crude fibre, i.e. hay, straw, green fodder and if applicable haylage.

The amount of fodder per day and animal as a guideline is 5-10 kg of dry rough food. As food for sustenance (dry matter) about 1% of body mass is calculated, when the animal is working this amount comes up to 2%. Thus a camel of 500 kg body mass obtains for instance 5 kg hay per day in winter for sustenance and 10 kg hay per day when it is working.

Hay: Hay rich in fibre should be preferred. If necessary fine hay can be mixed with straw. With animals with increased energy demand various sorts of hay with different nutritional values can be offered ad libitum.

Besides hay straw should always be offered, the best is straw from barley and wheat. Straw for camels is always a filling and nutritive rough food.

Green fodder: In the countries of origin green food is usually available only for a short time per year. This food resource is used by the animals to restock their energy reserves. Green food for camels is therefore a natural and very popular food.

Both walking on the meadows or giving cut green food is possible. With rich green meadows the walks should be limited, for example to 2 hours per day, poor meadows can be used unlimited. Giving straw especially with young green food is categorical to ensure the intake of crude fibre.

Leaves/Branches: They belong to the normal food spectrum of camels. They are usually rich in nutrients, tasty and favoured. They contain various ingredients like bitters, minerals, essential oils, tannins, alkaloids and glycosides.

Same as various herbs leaves and branches of some plants can be poisonous. Camels don't necessarily avoid all poisonous plants! They do for example feed on common ragwort. Camels need to learn to avoid poisonous food plants. Especially young or relocated animals unfortunately did not survive this learning process. Healthy and favoured however are beech, hornbeam, birch, lime, willow, poplar, ash and hazel.

Minerals/Salt: They are absolutely necessary as food supplement, white or himalaya salt licks are preferred. Red mineral licks however should be avoided to prevent excessive supply. Suitable are salt licks for sheep or cattle - but caution needs to be taken with salts or supplements containing copper. Camels need only a very small amount of copper, excessive copper is stored in the liver and metabolised only slowly, which can lead to copper poisoning. The actual need of copper for camels is unknown.

Soft food like apple, carrot and field mangel are preferred by the camels, although it should not be fed too often due to the relatively high sugar- and energy contents. The same applies to bread. Additionally there is the danger of blockage of the pharynx.

Concentrated feed:

Usually camels don't need any concentrated feed. It should only be fed in exceptional situations, as the high energy and protein supply may cause sickness.

Exceptions for giving concentrated feed maybe sick animals or lactating females in poor condition. In such a case the following concentrated feed or alternative fodder are possible:

Oat/squeezed oat: Oat is rich in crude fibre and low in nutrient content, rich in vitamine E and fat. It contains polyunsaturated fatty acids and is high in amino acids lysine and cystine. As oat also is rich in protein some care needs to be taken.

Bran/wheet bran: is rich in iron, magnesium, potassium, zinc, copper, manganese, selenium; the vitamins thiamine B1, riboflavin B2, B3, B5, B6, folic acid B9 and vitamine E.

Camel pellets: should have a high content of crude fibre and a low content of protein and energy.

Haylage: is rich in nutrients and vitamins. Haylage can be fed additionally to hay and straw. (Please consider the danger of listeriosis when haylage is polluted).

Haycobs: are a mixture of more than 60 species of grass and herbs. They are rich in crude fibre, natural vitamins and trace elements, free from dust, mildew and treacle.

Water: Camels like to drink water several times a day, when they have got the chance. It can be offered ad libitum, at least once a day a camel should drink.

Camels are quite tolerant towards changing feeding times and amounts of food, but as creatures of habit they prefer a regular feeding. Several small noshes a day are better than one substantial

meal, the longer the animals are occupied with feeding, the better. At least once a day a camel has to be fed.

Main feeding mistakes in Europe:

- Overfeeding: Camels are always hungry, as due to their nature they need to built up reserves for periods of drought.
- Lack of crude fibre, for example when they feed exclusively on the meadow with young grass.
- Excess of carbohydrates and protein due to additional feeding of concentrated feed, fruit, vegetable and bread.
- Lack of minerals, vitamine E and selenium.

Care:

Besides feeding the animals, daily tasks of care consist of cleaning. Stable and enclosure should be cleaned from urine and faeces daily.

By taking a look at each animal and it`s droppings daily they can be controlled for signs of illness.

Measures of hygiene:

Care of the fur: Grooming does not exclusively suit the care of the fur but also establishes contact and the animal becomes accustomed to getting touched at any part of the body. This close contact can be used to observe any changes in the fur or of the skin.

Especially when loosing the winter fur (round here in April/May) some help with care is welcome. For this purpose ordinary cleaning equipment for horses can be used (coarse scrubbing brush, curry comb, body brush etc.). Advantageous are also just normal hair brushes or some brushes used for the care of dogs. Partially the wool can just be picked by hand.

As a rule of thumb applies: the less fur the animals have, the more careful should be cleaned and the softer the brush needs to be!

Some camels are sensitive to insect bites, in this case it can be done without brushing out the winter fur. This way the animals have a natural protection against insect bites for longer and the new fur can grow underneath. By the end of July the discharge of the coat should be finished, with dromedaries perhaps a little later.

The new winter coat should not be combed or brushed through as it might get damaged by this procedure, except for the coat discharge in spring, the fur should just be brushed on the surface.

Foot care: The best foot- and claw care is to provide dry subsoil and thus enough wear. The swollen foot and nails of the camel should be checked regularly. Depending on the season, the type of soil in the stable and enclosure and the individual mobility of the animal they wear differently. Best is to get the animal early accustomed to being touched at the leg and giving the foot. Alternatively the animals can be taught to be constrained or hobbled. If applicable the nails should be adjusted to the level of the foot. For cutting the nails clippers, forceps or scissors can be used.

Loculation in the feet due to deficient wear needs to be avoided as infection may occur in this area when foreign matter or microbes penetrate.

Treatment against worms: Every six months the faeces should be laboratory investigated for worms, dependent on requirement treatment has to succeed as a routine care procedure.

Teeth: Starting about the age of 10 years camels can have problems with their teeth. Sometimes sharp ends of their teeth cause injuries or irritation of their mucous membranes, then they can`t feed properly and start to loose weight. Increased salivation or avoidance of rough food may indicate a problem with the teeth. A regular dental check up will help.

Handling:

Basic rules of handling are calm, patience and lack of violence and pain.

Reasons: Free ranging camels intraspecific are almost pacific. Exceptions of aggressive behaviour occur only around the period of reproduction. Furthermore free ranging camels have a hierarchy which is not established by agonistic interactions, i.e. a high-ranking camel does not fight for its position within the herd. Leaders of the group are always and naturally the elder, experienced camels.

If we wish, that the camels behave towards us without aggression and when we want to handle them without violence, the camels have to accept us right from the start as an experienced leading camel. Leading camels are never noisy, hectic or forcible towards the herd.

A camel which reacts towards humans aggressively is anxious and therefore not socialised with humans. Using violence under these conditions is counterproductive. A lot of time, confidence building, calm during handling and prevention of violence and stress can help to reduce the fear and thus reduce the aggressive behaviour towards humans.

Future camel owners should first have a look at experienced camel owners, get educated and collect some experience with old world camels, before they purchase their own camels.

Keeping adult males should only be pursued when enough experience is collected by keeping females and castrated males.

In Germany a proof of competence from the appropriate veterinary authority is needed for keeping old world camels.