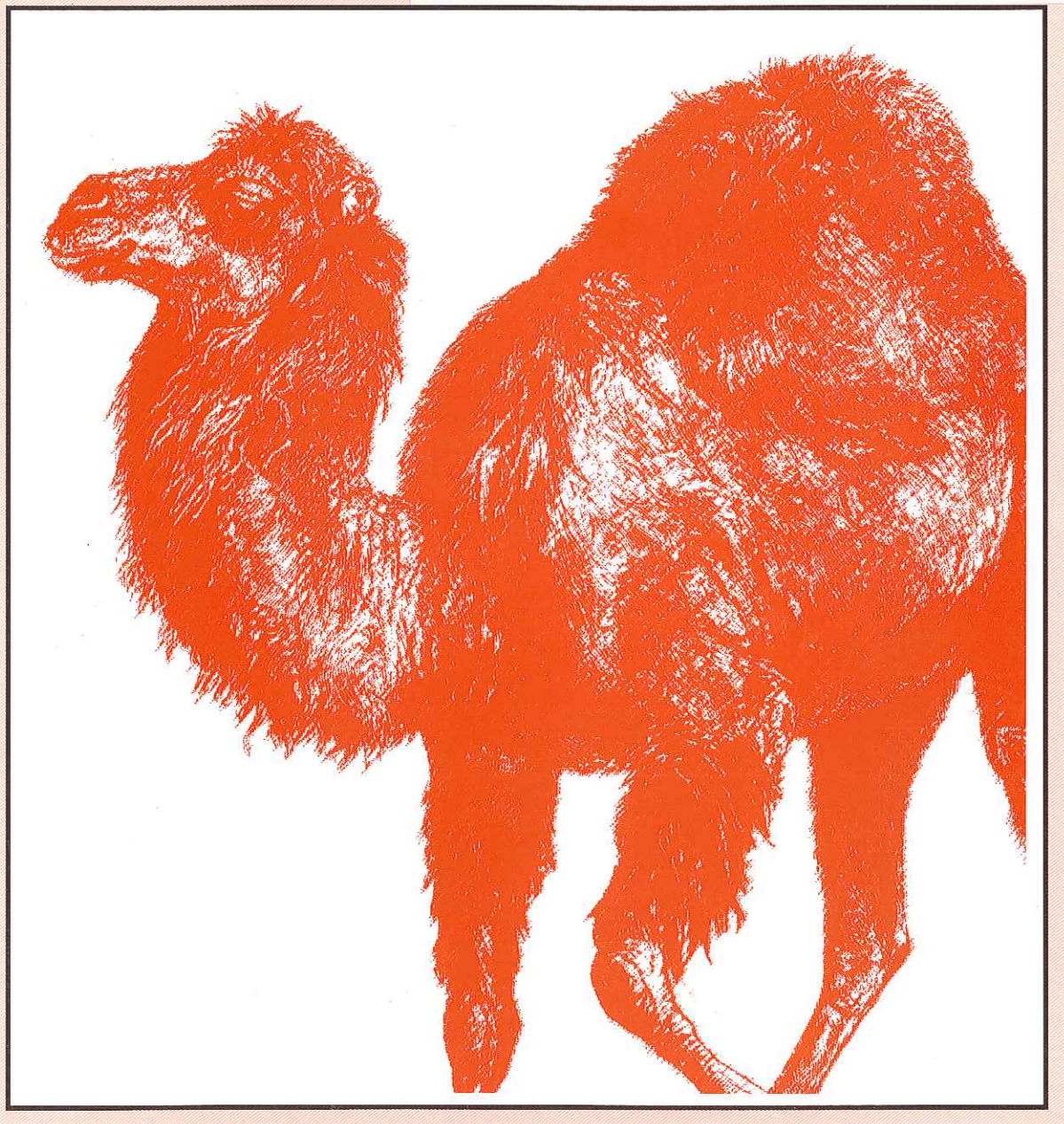
9-4-2002

Standing Committee
on Agriculture and
Resource Management

Model Code of Practice
for the Welfare of Animals

The Camel
(*Camelus dromedarius*)



Standing Committee
on Agriculture and
Resource Management

Model Code of Practice
for the Welfare of Animals

The Camel
(Camelus dromedarius)

SCARM Report — No. 61

CSIRO Cataloguing-in-Publication

Agriculture and Resource Management Council of Australia of Australia and New Zealand

Model Code of Practice for the Welfare of Animals — The Camel

ISBN 0 643 06282 3

1. Camels — Australia. 2. Animal Welfare — Australia.
I. CSIRO PUBLISHING. II. Title. (Series: Model Code of Practice for the Welfare of Animals; SCARM Report; no. 61)

664.90021894

This book is available from:

CSIRO PUBLISHING
PO Box 1139
Collingwood, Victoria 3066
AUSTRALIA

Ph: +(61 3) 9662 7500

Fax: +(61 3) 9662 7555

URL: http://www.publish.csiro.au

email: sales@publish.csiro.au

CONTENTS

AGRICULTURE AND RESOURCE MANAGEMENT COUNCIL OF AUSTRALIA AND NEW ZEALAND

The Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ) consists of the Australian Federal, State/Territory and New Zealand Ministers responsible for agriculture, soil, water (both rural and urban) and rural adjustment policy issues.

The objective of the Council is to develop integrated and sustainable agricultural and land and water management policies, strategies and practices for the benefit of the community.

The Council is supported by a permanent Standing Committee, the Standing Committee on Agriculture and Resource Management (SCARM). Membership of Standing Committee comprises relevant Departmental Heads/CEOs of Commonwealth/State/Territory and New Zealand agencies as well as representatives of the CSIRO and the Bureau of Meteorology.

PREFACE

The Australian Model Codes of Practice for the Welfare of Animals have been prepared for the Standing Committee on Agriculture and Resource Management (SCARM) by representatives of State and Federal Departments with responsibility for agriculture and/or animal welfare, CSIRO and other relevant committees within the SCARM system. Extensive consultation also takes place with industry and animal welfare groups in the development of the Codes.

This Model Code of Practice was endorsed by the Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ) as a national code at its 9th meeting in February1997.

The Codes are intended as models to enable the States to develop codes of practice to meet their individual needs. The Model Codes of Practice that have been endorsed by ARMCANZ (and its predecessor, the Australian Agricultural Council) are:

Animals at Saleyards (1991)
Buffalo, Farmed (1995)
Cattle (1992)
Deer, Farming of (1991)
Feral Animals, Destruction or Capture, Handling and Marketing of (1991)
Goat, The (1991)
Horses, Land Transport of (1997)
Livestock, Air Transport of (1986)
Livestock, Rail Transport of (1983)
Livestock, Road Transport of (1983)
Livestock, Sea Transport of (1987)
Livestock and Poultry at Slaughtering Establishments (1986)
Pig, The (1983)
Pigs, Land Transport of (1997)
Poultry, The Domestic (3rd Edition) (1995)
Rabbits, Intensive Husbandry of (1991)
Sheep, The (1991)

and by agreement with the National Health and Medical Research Council and the CSIRO:

Care and Use of Animals for Scientific Purposes (1990).

The following Code is based on current knowledge and technology. It will be reviewed in five years to take account of advances in the understanding of animal physiology and behaviour, technological changes in animal husbandry and their relationship to the welfare of animals.

This work was largely written by Dr Taffy Williams while he was an officer of the Northern Territory Department of Primary Industry and Fisheries. It will be reviewed in five years.

1 INTRODUCTION

This Code should be read in conjunction with other Codes of Practice endorsed by the Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ) (previously Australian Agricultural Council).

The Code is intended as a guide for all people responsible for the welfare and husbandry of camels, with the aim of achieving humane husbandry throughout all types of camel enterprises. Assistance and specific advice on management and disease control in camels should be obtained from experienced advisers.

Camels are used in situations which vary from camels trained for personal pleasure and tourist enterprises, to controlled extensive grazing, and harvesting of uncontrolled or feral stock. General guidelines for harvesting operations involving feral camels are contained in the SCARM *Australian Model Code of Practice for the Destruction or Capture, Handling and Marketing of Feral Livestock Animals.* Owners, managers and handlers have a responsibility to care for the welfare of camels under their control, whether they are farmed or harvested.

The basic behavioural, anatomical and physiological needs of camels are considered in this code.

The basic requirements for the welfare of camels are:

- Water, food and air to maintain good health;
- Social contact with other camels, with sufficient individual space to stand, walk freely, lie down, escape aggressors, stretch and groom;
- Protection from predation;
- Protection from disease;
- Protection from the adverse effects of climate extremes or unseasonal changes in weather conditions;
- Provision of reasonable precautions (eg fire breaks) against the effects of natural disaster;
- Protection from unnecessary, unreasonable or unjustifiable pain, suffering and injury;
- Provision of a supply of common salt.

2 WATER

A camel's water requirements depend on age, bodyweight, disease status, level of exercise, lactation status, temperature, humidity, and dry matter content of the feed eaten.

Unless trained to be without water, camels should have daily access to sufficient clean water to satisfy their needs. This is particularly important for domesticated camels as the diet is normally low in plants containing moisture. Average size camels require 30–40 litres each per day.

Free-ranging camels derive all, or most of their water, from the plants they eat. When plants are dry, camels walk up to 60 km to water holes every second or third day. If water holes and plants are both dry, then camels will perish.

Even though camels can go without water for 3 days and not suffer adverse affects in moderate climates, limiting access to water without specific reason is unacceptable and inhumane.

Domesticated camels fed commercially available foods can be deprived of access to water for extended periods, eg 7–10 days *provided* they have been trained to be without water. This is done by progressively increasing the period of absence from water.

Camels that are dehydrated will engorge themselves on when reintroduced to water. Several short, eg 5 minute, periods of access to water followed by a 30 minute rest are recommended for the initial drinking session. A camel will rehydrate in a few hours after even severe dehydration.

3 FOOD

Camels are browsers, and possess a split upper lip which is well suited to this purpose. They are adept at eating leaves from the prickliest trees and shrubs.

Free-ranging camels browse trees and select a very wide range of plants. They tend to select the freshest first but always mix their intake. Studies at Alice Springs found camels selected up to 82% of available plant species located in a 200 square kilometre study area. They preferred plants with high moisture and mineral content and the leaves of trees and shrubs and herbs or forbs to grass. Grass is primarily eaten after rain and before herbs or forbs are available (Dorges & Heucke 1996).

Camels fed in yards need a diet high in bulk ie, a third of a bale of hay per camel per day. They adapt to the gradual introduction of supplements or pelleted foods to their diets. Camels used to dry feed need a gradual change to fresh foods (fresh cut lucerne etc) or bloat will result.

Feeding facilities should allow adequate access for all camels and should be maintained in good repair and in a clean condition. Feeding of camels in troughs located off the ground avoids waste, consumption of dirt or sand and reduces the transmission of intestinal parasites.

Feral camels prefer plants high in salts. It is considered essential to provide coarse salt or salt blocks to fed camels. These blocks should be a soft type as camels have softer tongues than cattle. Salt blocks may include only low levels of urea.

Several of the plant species eaten by the camel are digested in the small intestine. Products from these plants are absorbed by a different pathway to those broken down in the rumen. To mimic this system in fed camels, it is advisable to provide a supplement that contains 'protected proteins', eg meat meal, cotton seed meal. It has been found that 100 grams per day of protected proteins produces weight gain in camels in poor condition.

Camels should be protected, as far as possible, from toxic plants or other substances deleterious to their health. Camels are particularly susceptible to many poisonous plants found in desert areas. Camels on treks are often unfamiliar with the area and will eat poisonous plants, especially if hungry or tethered. It is therefore essential for the camel handlers to make themselves aware of any poisonous plants in their locality.

Camels being fed on barley grass or similar should receive regular checks of the mouth as seeds collect in the gums and under the tongue.

Ensure that there is minimum weight loss in lactating cows. Poor nutrition of lactating cows will result in decreased milk production and high mortalities in calves. Camel calves are more dependent on milk in their diet than cattle calves of a similar age.

4 PREDATION

Predation of feral camel calves by dingoes is thought to be a major population control mechanism. Adult camels will form a protective ring around juvenile camels when threatened.

Camels, particularly young camels, must be provided with adequate protection from predators.

The crow is a major predator of farmed camels. The bird will land on the hump or adjacent to the camel's side and peck off the hair, possibly for nesting material. The hump has little feeling and often a crow will peck through the skin and into the hump fat leaving a 2–3 cm deep wound. These injuries may prevent the camel from being saddled. Crow control is difficult, and in some areas of Australia a permit from the relevant Wildlife Agency is needed.

5 Protection From Climatic Extremes

Camels tend to store their latent heat during the day and shed it at night when heat transfer is optimal. However, once the body temperature exceeds 40°C, or 104°F, the camel will commence sweating.

Efficient ventilation and protection from sunlight and rain is essential in tropical climates. In addition, yards must be well drained with dry areas to permit camels to sit down and rest away from the elements.

Camels can withstand the cold relatively easily provided there has been time for acclimatisation and growth of wool. There must be provision for escape from the elements into dry shelters. Transportation from hot to cold climates should occur in summer unless specific arrangements to protect the camels have been made. It is essential to protect poorly adapted camels on transport trucks, especially during cold or wet conditions.

6 MUSTERING

6.1 General

Free-ranging camels run in different groupings during the breeding season (July to December) and the non-breeding season. In the non-breeding season camels are found in separate herds of immature and mature bulls, isolated old bulls and the cow–calf herds. The cow–calf herd is lead by an old matriarch past breeding age. Male calves are forced out of the cow–calf herd at 2 years of age. In the breeding season the pregnant cows seek solitude during parturition. They will return to the same herd within 2–3 weeks of giving birth.

Bulls come into rut primarily from July to November. Bulls in rut break up the cow herds to create harems. As one bull's rut decreases, the harem will be taken over by another bull in rut. The size of the individual herds thus become smaller. It is therefore easier to capture bull camel herds and/or cow herds out of the breeding season when herd sizes are largest. The type of herd selected for capture depends on the available market.

Free-ranging camels can be captured by a variety of techniques, eg by trapping the available waters, by the use of helicopters, motorbikes and portable yards, by the use of specifically trained horses or by a combination of all the above. Selection of the technique that captures the selected camels and causes the least stress is recommended.

Camels should have access to water and feed if they are to be held in a portable yard for more than 24 hours after mustering. Camels must be watered and offered hay as soon as they are shipped to a permanent yard. Where a long journey by transport is to take place, the camels should have access to feed and water for at least 24 hours before the start of the journey.

6.2 Trapping

Camels must be trained to use traps. This is done by closing the trap over a series of days. This allows them to get used to the feeling of the trap on their ribs. Once trained, camels use a trap without concern and educate others to walk through it.

A disadvantage of trapping is that camels may not need water for long periods. This can be partially overcome by offering attractive foods eg. salt licks or hay.

Trapping tends to minimise stress and is a preferable method of mustering.

6.3 Mustering by horses

This process is similar to the yarding of cattle. Coacher camels assist the movement of feral camels and should be used both in the mustering and the yarding process.

Mustering by horses tends not to stress the camel and is another preferred method of mustering.

6.4 Mustering by helicopter and vehicles into portable yards

Portable yards need to be set up in a location that prevents the camels from seeing them until it is too late for efficient evasion.

Yards should have 100-metre long wings of hessian or similar material to help contain the camels during the final mustering process. Yards must be designed to allow drafting of the herd. Drafting off mature bulls from cow/calf herds must occur as soon as possible after capture. Unwanted camels are to be either released immediately they are drafted or destroyed by a humane method.

Bulls in rut may have to be humanely destroyed to protect the welfare of both calves and operators.

Camels must not be driven to the point of collapse.

Loading of drafted camels onto trucks via a portable loading ramp is difficult. Covering the base of the ramp with sand to deaden the noise of walking will assist. It may be easier to dig the truck into the sand so the camels can be loaded directly on to the truck.

6.5 Capture of individuals by vehicles or motorbike

Once captured the camel is to be tied in sternal recumbency (normal resting position) in such a manner as to prevent injury. The rear legs should not be tied to allow the camel to partly stand.

Camels are not to be tied to trees, etc by ropes attached to the neck as strangulation may result.

Loading into vehicles, stock crates or into yards is to be as rapid as practical and within 1 hour of being tied up. Once loaded onto a vehicle, camels should be allowed to stand. It is preferable to construct a portable yard around camels and then allow them to stand rather than to hold them tied up.

Limiting sternal recumbency to the minimum period after capture helps prevent injury to the muscles in the hind legs. Standing assists removal of muscle by-products from the hind legs, allows the camel to relax, increases the blood supply to the limbs and helps to prevent the development of severe muscular stiffness (capture myopathy).

7 MANAGEMENT PRACTICES

7.1 Handling — general

Patience and the use of rewards in handling camels are effective principles.

All camels, particularly feral camels, are quick to learn good and bad behaviour and which experiences to avoid. If camels are handled quietly and with a minimum of fuss, within a couple of days even feral camels will approach humans in the yard.

Bulls in rut have no fear and thus pose a particular danger to other camels and to humans. When in rut they should be held isolated from other camels and treated with the utmost respect by handlers.

Unless part of a breeding herd, bulls should be held isolated from other camels. In small breeding herds it is preferable to bring the cow to the bull than let the bull into the cow herd.

Management practices that may cause pain may not be carried out if painless practical methods of husbandry are available. Restraint should be the minimum necessary to perform management procedures efficiently.

Any injury, illness or distress observed should be treated promptly. In any situation, supervision must be by competent stock persons.

Camels are not normally broken for riding until about 3 years of age. This allows the bone structures to mature and take the weight of the rider. Riding of immature camels by heavy riders is unacceptable. A 4–5 year old camel is regarded as mature. In the early 1900s maximum weights were not carried by freight camels until the camel was 7 years old. Maximum loads that can be carried by draught camels vary according to the type of camel. 300 kg is regarded as maximum for draught camels.

Camels are often haltered or neck roped to fences, trees etc during rest periods. Once a camel starts to sit down it must sit all the way down before it can restand. *Because of this phenomenon camels that are tied to the top rail or high in a tree with a short rope can strangle.*

Hobbling is an acceptable husbandry procedure. It is essential that the hobbles are well constructed and used so as to avoid inflicting injury and pain. Camels hobbled by both fore legs (similar to horses) and left to free range during safaris can still cover considerable distances during the night. Once trained, camels can be temporarily hobbled by one fore leg to trees, yards etc during rest periods.

Any tethered camel must be checked regularly, however when a camel is tethered as part of a daily routine constant supervision is not necessary.

7.2 Yard design

Cattle yards are capable of being used for camel handling with a few alterations. These are:

— height of race walls should be increased to 1.8 m

— height of bows over race and gate slides increased to 2.4 m

— metal loading races should be covered with dirt to lessen the hollow sound.

Floors of yards, sheds, pens and loading ramps must have surfaces that minimise slipping. Camels should spend as little time as possible confined on hard, abrasive surfaces that can cause injury to the foot pad or wearing of the pedestal and kneeling pads.

Camels require yards that are not wet or boggy. It is essential to create a raised mound of sand in yards that are subject to wet or boggy conditions.

Holding yards must be designed without protruding objects so as to minimise injury. They must be large enough to allow all animals to lie down. If the yards are for holding for longer than one day they must be large enough to enable adequate exercise.

Facilities should be constructed to permit efficient handling of camels without unnecessary danger to animals or handlers.

7.3 Testing feral camels

Testing of freshly caught camels is required to prevent the introduction of disease and for pre-quarantine export protocols.

Initially it is preferable to run camels through a race to a bribe (eg. hay) without handling them.

When testing feral camels ensure that all workers wear a hat as the frightened camel may reach over the top rail and bite. Camels will also kick with both the front and rear legs. They are very accurate and can kick any point near their body.

Restraint, when jugular bleeding, is by a rope passed around the neck and secured to the top rail of the race. This does not restrict the trachea and provides sufficient restraint to bleed.

TB testing is done in the caudal fold area. One person is needed to lift the tail and the other to inject. Take care as a kick is likely to follow lifting the tail.

7.4 Testing handled camels

Most inspections and treatments are carried out with the camels in sternal recumbency. Place a foot on the folded limb closest to your position to prevent attempts by the camel to stand or kick.

Camels will need to be tied in sternal recumbency, so they cannot rise if the procedures are threatening to the camel.

7.5 Castration

Castration is normally carried out on sub-adult and adult bulls and not on calves. Handlers believe that growth of calves is better and camels are less prone to obesity if castrated after puberty.

Castration should not be performed on bulls in rut. Both the blood supply and size of the testicles doubles during rut so there is increased risk of fatal haemorrhage.

Surgical castration without local or general anaesthetics is unacceptable and must not be performed in sub-adult or adult camels.

Particular attention must be paid to skin sterilisation and hygiene during castration. Camels are particularly susceptible to scirrhous cord following castration.

7.6 Nose pegging

It is recognised that nose-pegged camels are more effectively controlled than haltered camels. The nose peg is used as a steering aid and not to restrain the camel. Once a camel is trained to hoosh down and stand up, a light tug only is necessary as the camel should respond to voice commands. The string attached to the nose peg must be designed to break in emergencies. It must not be used as a lead or pulled continually as this may cause injury.

Nose pegging must only be carried out by a trained, competent operator. Selection of the correct position avoids damage to the nasal septa by the base of the nose peg and limits bleeding during installation. Nose lines must not be used on freshly nose pegged camels until the wound is totally healed unless it is for the purpose of controlling the camel during dressing of a wound.

Other methods of control of camels are the use of a rope halter, nylon halter or chain halter. These are preferable to nose pegs on welfare grounds, however camel control is less. Selection of whether to nose peg or not may be influenced by the requirements of the insurance company.

7.7 Identification

A suitable method of permanent identification of camels needs to be developed. Currently fire branding remains the only practical method and this is unacceptable on welfare grounds. In the interest of animal welfare, alternative practical methods must be developed urgently.

Branding with corrosive chemicals is unacceptable. Freeze branding has not been attempted, but may work on darker camels. Tattooing of the inner lip is successful but must be done under anaesthetic. Plastic and metal eartags are suitable for temporary identification.

The use of microchips for permanent identification of camels is currently under trial in the United Arab Emirates and should be evaluated in Australia.

7.8 Use of dogs, goads or electric jiggers

The use of dogs in working feral camels through yards and forcing pens is counter productive as the animal's natural instinct is to turn and face danger. Goads and electric jiggers must only be used sparingly, particularly when handling feral camels in drafting races. Overuse will cause undue distress and prompt a stubborn response.

The use of a movable visual barrier (eg hessian) assists transfer into smaller yards and forcing pens. The barrier must be higher than the head of the camel.

There is no justification for using electric jiggers on trained or quiet camels.

8 REPRODUCTION

Seasonal sexual activity occurs in both the male and the female. Increasing daylight is believed to activate the urge to breed. The main breeding season commences in July and continues to December. Limited breeding outside these times can still occur.

8.1 Females

Sexual activity usually commences in the cow at 2–3 years of age, however pregnancies have been recorded in 18-month-old feral camels. To limit calving difficulties in managed herds, the first calf should not be born until the cow is 5 years old.

The mating process induces ovulation. The average cycle length is 27 days. Heat lasts 3–4 days. Cows come on heat 2–3 days after calving or abortion and usually also 1 month later. After this period lactation anoestrus may prevent further cycling until lactation ceases.

Gestation is variable and depends on food etc. The range is between 364 days (12 months) and 419 days (14 months). Cows must not be over fat or difficult birth may occur.

8.2 Males

Bulls become sexually mature at 3 years, but in managed herds are not used until 4–5 years old. In feral herds it is probably later, as dominance must be established to get a harem.

Sexually mature bull camels respond to the increasing daylight that occurs after winter and commence coming into rut in the period from July to October in Australia. The length of an individual camel's rut varies from 1 to 4 months, depending on nutritional status and dominance rating.

In feral herds the rutting bull will move from the bachelor herd to dominate the cow herd and any other males in the area. Alternatively it will drive off some cows and establish its own harem. Scattered small cow herds reform into large herds at the end of the rut. Not all bulls come into rut at the one time.

Periods of rut are nutritionally demanding and severe weight loss occurs. In a feral herd this has the effect of ceasing the rut for that bull. Consequently several dominant males are active through the breeding season.

In controlled breeding farms, bulls will stay in rut longer due to more available feed and a lack of fighting for dominance.

Once one bull commences rut its behaviour tends to stimulate rut in other bulls. Separating bulls to an area out of sight of other bulls and cows will reduce the period and strength of the rut.

8.3 Artificial rearing of calves

It is important that calves suckle colostrum within the first 12 hours of birth. If this is not possible then the feeding of serum from a healthy camel will give some antibody protection to the calf. As little as 50 ml has been found adequate.

Camel calves can be fed on milk formulas provided for cattle calves. Formula strength should follow the recommendations for cattle. Camel milk contains more salt than cattle milk, however, the addition of 5 gm or 1 teaspoon of salt per 500 ml of formula is recommended.

8.4 Calving and weaning practices

Proper management practices will minimise calving difficulties. Cows should not be too young or overweight and a dry sheltered and preferably isolated calving area should be provided.

Calving cows should be under frequent surveillance but with minimal disturbance. Any difficult calving should be promptly diagnosed and alleviated by a competent operator.

Calves should be weaned only when their digestive systems have developed sufficiently to enable continued growth and good health. The minimum age is approximately 3 months.

8.5 Growth rates

Normal calf weight at birth is between 30 and 40 kg. Weaning weight at 1 year is 150–180 kg and weight at maturity is 500–600 kg. This is normally reached at 6–7 years.

The weights of mature camels recorded at Wamboden Abattoir, Alice Springs, have ranged from 514 to 635 kg for bulls and 470 to 510 kg for cows. Animals of approximately 5 years of age ranged in live weight from 340 to 430 kg.

9 HEALTH

Appropriate preventive treatment should be administered to camels for diseases that are common in a district or are likely to occur in the herd.

Internal medications, such as vaccines and drenches, and external medications, such as dips and pour-on formulations, should be stored and given in strict accordance with the manufacturer's instructions or with veterinary advice.

Camels treated for internal parasites with injectable ivermectin or avermectin will build up a worm population of the large intestinal worm *Trichuris*. Specific treatments for this parasite are required.

Vaccination against clostridial diseases is recommended if camels are farmed in moist areas.

Mange caused by *Sarcoptes* sp. is a serious problem in camels of all ages but especially the young. Mange is believed to cause many deaths in feral camels. Treatment is difficult in camels affected over more than 30% of their body surface. The mange causes thickening of the skin which prevents effective drug penetration either internally or externally. In these cases it is necessary to scrub the skin to remove some of the scaly material prior to treatment. The use of external and internal treatments every 2 weeks for 3 treatments will break the cycle and permit the skin to regain normal texture. Camels affected with mange that has not yet caused skin thickening should respond to external treatments.

Ringworm caused by *Trichophyton* sp. fungi is a serious disease of young camels. Treatment is often protracted. Spraying the whole camel with chloramines is preferable to spot treatments.

10 CAMEL TRANSPORT

10.1 General

Camels dislike the hollow sound made by transportable loading ramps. It is preferable to cover such ramps with sand prior to loading.

Camels of similar sizes must be drafted into groups prior to loading. Bulls that are fully in rut should be penned individually. Generally bulls are not fully in rut even in the breeding season and such bulls can be penned in groups. Cows with suckling calves can be transported together. Full-term pregnant cows with good udder development, milk vein distension and vulval swelling should not be transported as transport may induce calving.

Camels must have at least 150 mm clearance over their heads during transport.

10.2 Road transport

Camels will normally sit down when being transported. Sufficient room must be available for all camels to sit. Failure to do so will result in camels sitting on one another and falling over, which causes entwining. During transportation camels will sit for several hours at one time, however they will move their legs to stimulate blood flow as required. This free movement is different to tying up the legs of camels where movement is restricted. If tying up is required, then they must be released and allowed to stand at least every 4 hours.

Cross cleats must either be removed from trucks or covered totally with hay, straw or sand. Failure to do so will injure the pedestal and the pads on the legs.

Camels may be transported for up to 3 days in suitably constructed transports which provide shade and allow daily feeding. Water is not essential but desirable. It is often preferable to leave the camels in the truck versus unloading and loading.

Because of their height, camels must only be transported in single deck trailers with sufficient clearance for them to stand comfortably (normally 2.4 m).

10.3 Stocking densities during transport.

	5 m deck*	12.2 m deck*
Yearlings	12	26
250–300 kg	10	22
350–400 kg	9	20
500+ kg*	8–9	18–20

**(both 2.44 m wide)*

10.4 Rail transport

The above conditions for road transport apply equally to rail transport.

In addition, the opening above the wall slats in rail vans must be closed either by mesh or by well attached shade cloth, hessian or timber. Failure to do so will allow camels to protrude their necks in an attempt to see where they are travelling. Injury or decapitation may result.

10.5 Air transport

International Air Transport Association Regulations stipulate that camels are to be penned individually for air transport. These recommendations are based on the experience in the Middle East with trained individual camels.

Recently captured camels are not used to individual penning or segregation and such penning is very stressful. Penning groups of camels in cattle pens is efficient, humane and safe. Air transport of camels in cattle pens should be restricted to camels under 300 kg liveweight.

10.6 Sea transport

Camels are best transported on upper decks as they have difficulty in walking down steep gangways and doing tight turns to reach the lower decks.

11 EMERGENCY DESTRUCTION OF CAMELS

Whenever camels are being handled, and particularly during mustering and transport of untrained camels, an experienced operator, equipped to perform humane destruction must be available. Quiet camels should be sat down prior to euthanasia. Camels can be euthanased by firearm or captive bolt by the frontal or poll method or by lethal injection.

When using a firearm from in front of a camel, the aim point is a point where two imaginary lines drawn from the base of the ears to the opposite eyes intersect. If the operator is standing above the head of the camel the aim point is approximately 4 cm behind this point.

The aim point for the poll method is the intersection of the skull and the neck. In this case the aim is perpendicular to the neck line. New operators should be trained in these procedures, initially on skulls taken from dead camels.

The use of captive-bolt pistols and the frontal method is suitable for younger stock. For mature bull camels and especially for bulls in rut, the captive bolt is applied to the base of the skull or alternatively a firearm can be used. Bulls in rut, develop thick glands on the top of their head that prevent the effective use of the captive bolt by the frontal method.

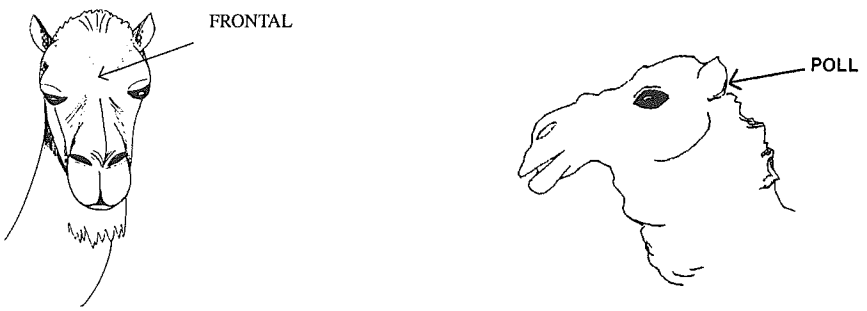


Figure 1: Humane destruction of camel — recommended position for frontal and poll methods

When the animal has been stunned using a captive-bolt pistol, it must be either pithed or bled out by severing the major vessels of the neck as soon as it collapses to the ground. The operator should stand behind the neck to avoid injury due to the animal's involuntary leg movements.

It is recognised that exceptions to the recommended practice may occur under extreme conditions. In those circumstances considerations of common sense for both animal and human welfare should prevail.

Euthanasia by overdose of an anaesthetic administered by a veterinarian or other trained person is acceptable. Other methods of euthanasia are not acceptable.

Culling programs for feral camels must comply with the *Australian Code of Practice for the Welfare of Animals — Feral Livestock Animals.*

12 REFERENCES

B. Dorges & J. Heucke (1996) *Ecology, Social Organization and Behaviour of the feral Dromedary* Camelus dromedarius *in Central Australia* (L 1758), Internal Report, Northern Territory Department of Primary Industry and Fisheries.

Standing Committee on Agriculture and Resource Management (1991) *Model Code of Practice for the Welfare of Animals—Feral Livestock Animals.* CSIRO Publishing, Melbourne.